

1. Legal Ad

Documents: [PB LEGAL AD 10-27-15.PDF](#)

2. Agenda

Documents: [PB AGENDA 10-27-15.DOCX](#)

3. 802 Ocean Avenue

3.I. Memo

Documents: [PB MEMO -OCEAN AVE -802-10.27.15.PDF](#)

3.II. Report Attachments

Documents: [OCEAN AVE. - 802 \(REPORT ATTACHMENTS\).PDF](#)

3.III. Applicants Submittal

Documents: [OCEAN AVE. - 802 \(APPLICANTS SUBMITTAL\).PDF](#)

3.IV. Public Comment

Documents: [OCEAN AVE. - 802 \(PUBLIC COMMENT\).PDF](#)

3.V. Plans

Documents: [OCEAN AVE. - 802 \(PLANS\).PDF](#)

4. 3 Pleasant Avenue

4.I. Memo

Documents: [PLEASANT AVE. - 3 \(MEMO\).PDF](#)

4.II. Report Attachments

Documents: [PLEASANT AVE. - 3 \(REPORT ATTACHMENTS\).PDF](#)

4.III. Applicants Submittal

Documents: [PLEASANT AVE. - 3 \(APPLICANTS SUBMITTAL\).PDF](#)

4.IV. Plans

Documents: [PLEASANT AVE. - 3 \(PLANS\).PDF](#)

4.V. Public Comment

Documents: [PLEASANT AVE. - 3 \(PUBLIC COMMENT\).PDF](#)

5. 58 Fore Street

5.I. Report And Attachments

Documents: [FORE ST. - 58 \(REPORT AND ATTACHMENTS\).PDF](#)

6. 667 Congress Street

6.I. Report

Documents: [CONGRESS ST. - 667 \(REPORT\).PDF](#)

6.II. Report Attachments

Documents: [CONGRESS ST. - 667 \(MEMO ATTACHMENTS\).PDF](#)

6.III. Applicants Submittal

Documents: [CONGRESS ST. - 667 \(APPLICANTS SUBMITTAL\).PDF](#)

6.IV. Plans

Documents: [CONGRESS ST. - 667 \(PLANS\).PDF](#)

7. 415 Cumberland Avenue

7.I. Report

Documents: [CUMBERLAND AVE. - 415 \(REPORT\).PDF](#)

7.II. Report Attachments

Documents: [CUMBERLAND AVE. - 415 \(REPORT ATTACHMENTS\).PDF](#)

7.III. Applicants Submittal

Documents: [CUMBERLAND AVE. - 415 \(APPLICANTS SUBMITTAL\).PDF](#)

7.IV. Plans

Documents: [CUMBERLAND AVE. - 415 \(PLANS\).PDF](#)

**LEGAL ADVERTISEMENT
PORTLAND PLANNING BOARD MEETING**

The Portland Planning Board will hold a meeting on Tuesday, October 27, 2015, Council Chambers, 2nd Floor, City Hall, 389 Congress Street. **Public comments will be taken at this meeting.**

Workshop – 4:30 p.m.

- i. Level III Site Plan; 802 Ocean Avenue; Lenity Architecture, LLC., Applicant.
(4:30 – 5:30 p.m. estimated time) The Board will hold a workshop on a proposed 4 story, 150 unit congregate care facility with a footprint of 39,869 sq. ft. and a total floor area of 134,646 sq. ft. The proposal includes a total of 102 vehicle parking spaces located in garages and on surface lots.
- ii. Level III Subdivision and Site Plan, 3 Pleasant Avenue, Hardy Pond Development Co, LLC, applicant. (5:30- 6:30- estimated time) The Planning Board will hold a public workshop on a proposal is to convert the former Pleasant Avenue Church at 3 Pleasant Avenue into 25 market rate apartment units. The proposal includes subdividing the parcel into two lots and converting the vestry building into a single family home. The proposal also includes 23 parking spaces in an existing parking lot across from the site, 2 handicapped spaces on site, and two spaces for the single family home.

Public Hearing – 7:00 p.m.

- i. Recommendation by Historic Preservation Board to Designate the Portland Company Complex; 58 Fore Street; City of Portland, Applicant. (7:00 - 8:00 p.m. estimated time) The Board will hold a public hearing to consider the recommendation of the Historic Preservation Board to designate the Portland Company complex at 58 Fore Street as a local historic district subject to the provisions of Portland Historic Preservation Ordinance.
- ii. Level III Site Plan and Subdivision; 667 Congress Street; Redfern Properties, Applicant.
(8:00-9:00 p.m. estimated time) The Board will hold a public hearing on a proposed mixed use development to include an 8 story building with 139 market-rate residential units with ground floor retail space along Congress Street in the B-3 zone. The bedroom mix includes 34 efficiencies, 97 one-bedroom and 8 two-bedroom units. Parking for 78 vehicles is proposed on two levels of structured parking along with 56 bicycle spaces.
- iii. Level III Subdivision; 415 Cumberland Avenue; Patrick Ducas, Applicant.
(9:00 p.m. estimated time) The Board will hold a public hearing on a proposal to convert office space into ten (10) residential units in the existing building at 415 Cumberland Avenue. Six parking spaces are proposed in the ground level garage.

ELIZABETH BOEPPLE, VICE CHAIR - PORTLAND PLANNING BOARD

Elizabeth Boepple, Chair
Sean Dundon, Vice Chair
Bill Hall
Carol Morrisette
Jack Soley
David Eaton

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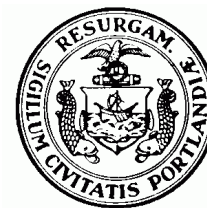
PUBLIC HEARING – 7:00 p.m.

1. **ROLL CALL AND DECLARATION OF QUORUM**
2. **COMMUNICATIONS AND REPORTS**
3. **REPORT OF ATTENDANCE AT THE MEETING HELD ON OCTOBER 13, 2015:**
Workshop: Boepple, Eaton, Hall, Morrisette (5:00 arrive) and Soley present; Dundon absent.
Public Hearing: All members present.
4. **REPORT OF DECISIONS AT THE MEETING HELD ON OCTOBER 13, 2015:**
 - i. Election of Officers Morrisette moved and Hall seconded a motion to elect Elizabeth Boepple as Chair. Vote: 6-0. Morrisette moved and Hall seconded a motion to elect Sean Dundon as Vice Chair. Vote: 6-0.
 - ii. Level III Site Plan and Subdivision; 11 Brown Street; LK Exchange, LLC., Applicant.
Morrisette moved and Hall seconded a motion to grant a waiver for 2 street trees with a monetary contribution of \$400 to the street tree fund. Vote: 5-0, Soley recused. Morrisette moved and Hall seconded a motion to grant a waiver for 3 compact spaces sized at 8 X 16 ft. Vote: 5-0, Soley recused. Morrisette moved and Hall seconded a motion to approve the subdivision plan with one condition of approval. Vote: 5-0, Soley recuse. Morrisette moved and Hall seconded a motion to approve the site plan with six conditions of approval. Vote: 5-0, Soley recused.

5. NEW BUSINESS

- i. Recommendation by Historic Preservation Board to Designate the Portland Company Complex; 58 Fore Street; City of Portland, Applicant. (7:00 - 8:00 p.m. estimated time) The Board will hold a public hearing to consider the recommendation of the Historic Preservation Board to designate the Portland Company complex at 58 Fore Street as a local historic district subject to the provisions of Portland Historic Preservation Ordinance.
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ELIZABETH BOEPPLE, CHAIR - PORTLAND PLANNING BOARD



Memorandum

Planning and Urban Development Department

Planning Division

To: Elizabeth Boepple, Chair and Members of the Portland Planning Board

From: Barbara Barhydt, Development Review Services Manager

Date: October 21, 2015

Re: Level III Site Plan for 150 unit Congregate Care Facility, 802 Ocean Avenue;
Lenity Architecture, LLC, c/o Mark Lowen, Applicant
Project #: 2015-164 CBL: 411 A007001

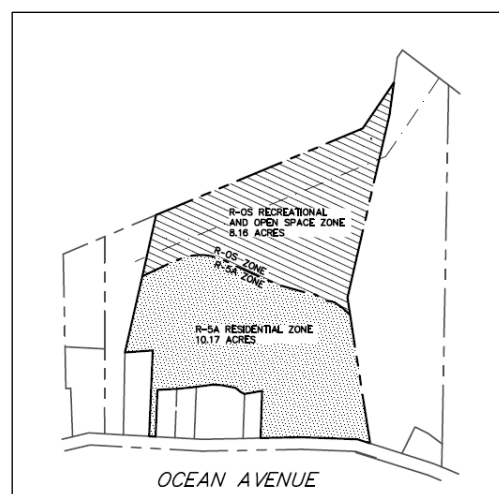
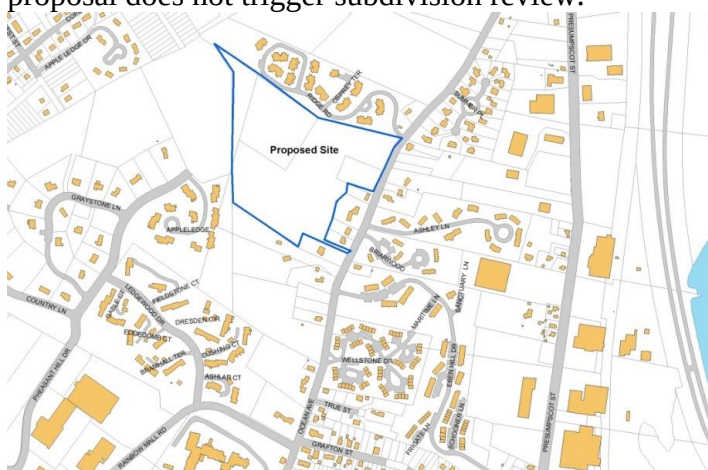
Workshop Date: October 27, 2015

I. INTRODUCTION

Lenity Architecture LLC and the Hawthorn Development Group LLC have submitted a Level III site plan application for a 150 unit congregate care facility at 802 Ocean Avenue. The proposal includes surface parking areas, garages, landscaping, stormwater management systems and pedestrian connections along Ocean Avenue and within the site.

The total site has a total of 18.33 acres with 10.16 acres recently zoned to Residential R-5A and the remainder of the parcel (8.17 acres) is zoned Recreation Open Space (ROS). The proposed development is located with the R-5A zone.

The site is subject to the recently approved R-5A Map and Text amendments that the Planning Board considered earlier this year. The Council approved the R-5A text amendments as part of the Board's recommendations for the proposal for the Motherhouse on Stevens Avenue. The Council approved the map amendments for 802 Ocean Avenue as recommended by the Planning Board and the Council rescinded the original conditional rezoning agreement for this site. The project is being reviewed as congregate care facility under the zoning ordinance and the units do not have individual kitchens, so the proposal does not trigger subdivision review.



Development Team

Applicant and Architect: Lenity Architecture, LLC, Mark Lowen
Representative and Engineer: Robert McSorley, PE
Current Property Owner: Graves Hill Land Company, LLC

Required Reviews

Site Plan Review	Art. V Site Plan, Sec 14-521-540
Stormwater Permit	DEP Chapter 500, as revised

Request for Waiver

Seeking a waiver from the requirement for bicycle parking. Ten spaces would be required under the commercial standard.	Section 14-526 4.b. Location and Number of bicycle parking spaces. b. <i>Non-residential structures.</i> Two (2) bicycle parking spaces for every ten (10) vehicle parking spaces for the first one hundred (100) required vehicle parking spaces, plus one (1) bicycle parking space for every twenty (20) required motor vehicle parking space over one hundred (100) required vehicle parking spaces.
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A notice of this Workshop was sent to 384 property owners within 500 feet and interested citizens, and appeared in the October 19 and 20, 2015 editions of the *Portland Press-Herald*. A Neighborhood Meeting was held for this project on October 8, 2015 and the packet is under Public Comment with the neighborhood packet (PC-1) and presentation (PC-2).

II. PROJECT DATA

Project Data	Proposed
Existing Zoning	R5A: 442,875 sf (10.16 acres) ROS : 355,885 (8.17 acres)
Existing Use	Wooded undeveloped
Proposed Use	Congregate Care facility
Proposed Development	150 units of Congregate Care- for ambulatory residents: no medical or nursing services, Suites include 57 studio units, 78 one and 15 two bedroom units. All meals served in a central dining room.
Parcel Size	798,184 sf (18.33 acres)
Building Footprint	39,869 sf
Building Floor Area	134,646 sf
Impervious Surface Area	127,631 sf
Parking Spaces (on site)	102 (including garages)
Bicycle Parking Spaces	0
Estimated Cost of Project	\$18,000,000.00

III. BACKGROUND AND EXISTING CONDITIONS

a. Background

The Board reviewed the OBO Hawthorn Development LLC and Lenity Architecture, LLC's request for zoning map amendments to this site at a public hearing held on June 9, 2015. The Board voted unanimously (Dundon absent) to recommend adoption of the map amendments to R-5A and ROS for the parcel. The Board also recommended to Council that the underlying conditional zoning agreement be rescinded. The agreement regulated the property since 2004 and is allowed for a 98 condominium unit project with two mid-rise buildings of up to 100 feet in height along with associated trail improvements. The City Council enacted the amendments and rescinded the underlying agreement on July 20, 2015 (Attachment 1).

The City Council adopted R-5A text amendments on June 15, 2015, which were developed concurrently for McAuley Place and Portland Retirement Residence. The order as passed by the Council is included as

Attachment 2. The text amendments defined congregate care to include living units or dwelling units. The term living units is now defined as follows:

Living Unit: An independent self-contained dwelling unit that does not include full kitchen facilities.

Also under the definition section of the Land Use Code, revisions to the net residential density calculations were enacted. Within the R-5A zone multifamily dwellings and congregate care are permitted uses in the zone along with an updated dimensional chart.

b. Existing Conditions

The 18 acre parcel at 802 Ocean Avenue is a wooded site about a half a mile from Washington Avenue, which has one of the highest elevations in Portland with views of Casco Bay. The high point is roughly 170 feet with the elevation varying from 145 to 160 along the western property line and the elevation is 100 to 110 feet along Ocean Avenue. Slopes vary on the site with steep slopes of 15 to 25% near Ocean Avenue and much of the site has bedrock near the surface. A 135 foot wide CMP easement runs along the rear property line, which is within the portion of the site zoned ROS. The site has 427.62 feet of frontage along Ocean Avenue and the site extends behind single family homes along Ocean Avenue. The Ocean Ridge Condominium project is located to the north of the site along Ocean Avenue and the Alden's Walk condominium project on Wildwood Circle abuts the rear boundary line. There are single family homes and condominium projects along the easterly side of Ocean Avenue in the vicinity of the site.

IV. PROPOSED DEVELOPMENT

Hawthorn Development Group, LLC and Lenity Architecture, LLC propose to construct a 150 unit congregate care facility. The 150 suites are considered as living units and not Dwelling units, per the City's new definition, since full kitchens are not proposed within each unit. The proposal includes 57 efficiency, 78 one bedroom, and 15 two bedroom units. This will be a privately funded and operated facility with no medical or nursing services; however there will be 24 hour coverage by the management team. The services to be provided include the following:

- Three prepared meals daily
- Housekeeping
- Laundering service
- Private van transportation,
- Variety of social and physical services

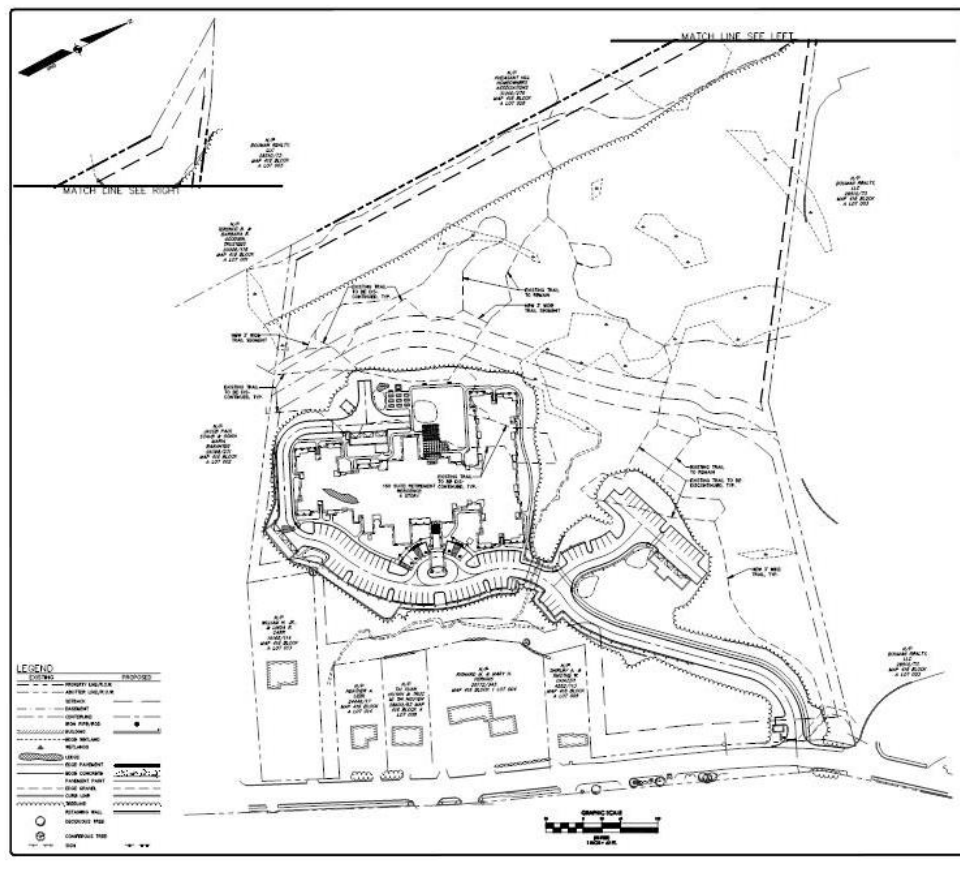
The building includes a central dining room, porch, activity room, tv room, beauty salon, media room, reading room, and multi-purpose room. The site improvements for the residents include gardens, outdoor seating areas, patios, and sidewalks around the building. A landscaping plan has been submitted, which shows landscaping along the access road, around and within the surface parking lots, and by the building.

Access to the site is from Ocean Avenue with one roadway leading to the facility. Parking for 102 vehicles is proposed on site, which include three garages that house 16 vehicle spaces and two van spaces. The applicant is requesting a waiver from providing any bicycle parking. Most of the parking is located along the driveway near the building with one area of parking to the northerly side of the site. The applicant is proposing to install roughly 393 feet of sidewalk along the easterly side of Ocean Avenue in order to fill a gap in the public sidewalk system.

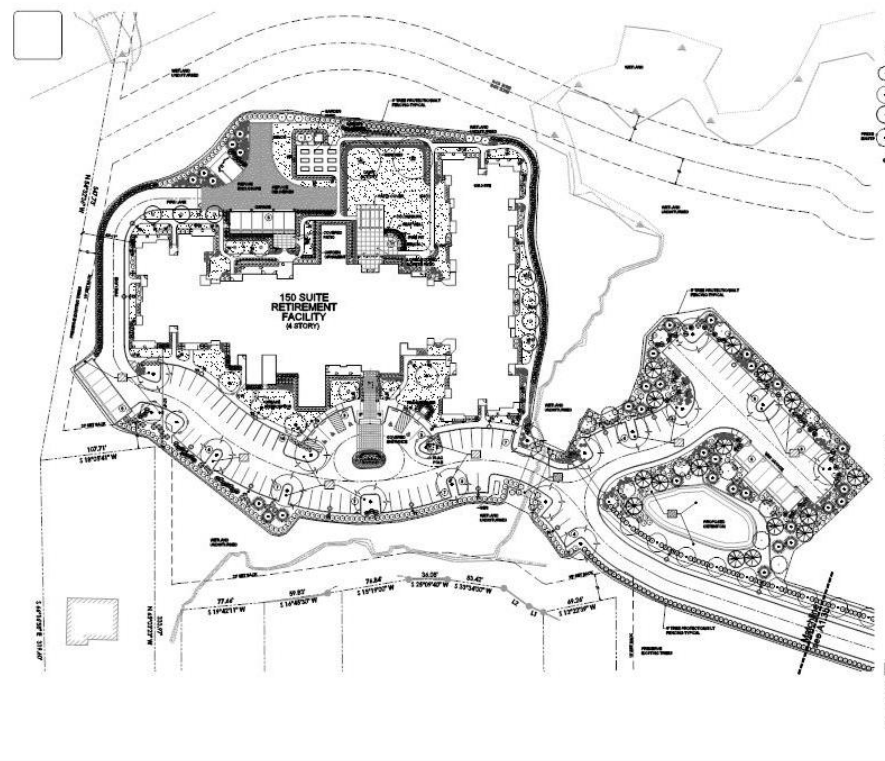
The congregate care facility is proposed to the southerly side of the site. The location is chosen to meet the following objectives:

- Minimize the potential visual impacts of the development from adjoining properties;
- Provide separation and buffering between the existing development;
- Maintain the height of the structure below the tree canopies to the west of the proposed building, which can be accomplished due to the changes in the grade;
- Minimize the amount of material that needs to be excavated and/or blasted; and
- Minimize impacts on the natural resources of the site, including wetlands.

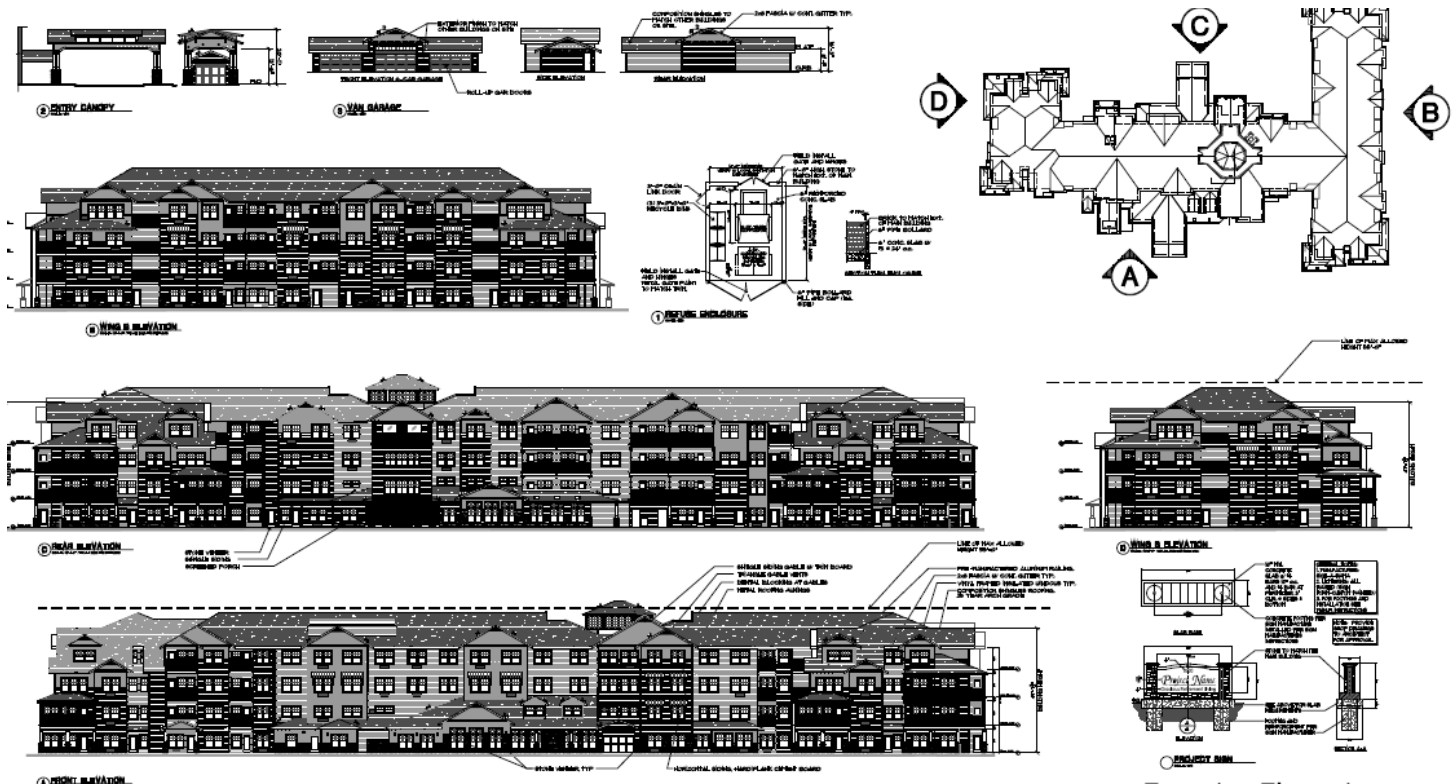
Following is the site plan, landscaping plan, building elevations and first level floor plan.



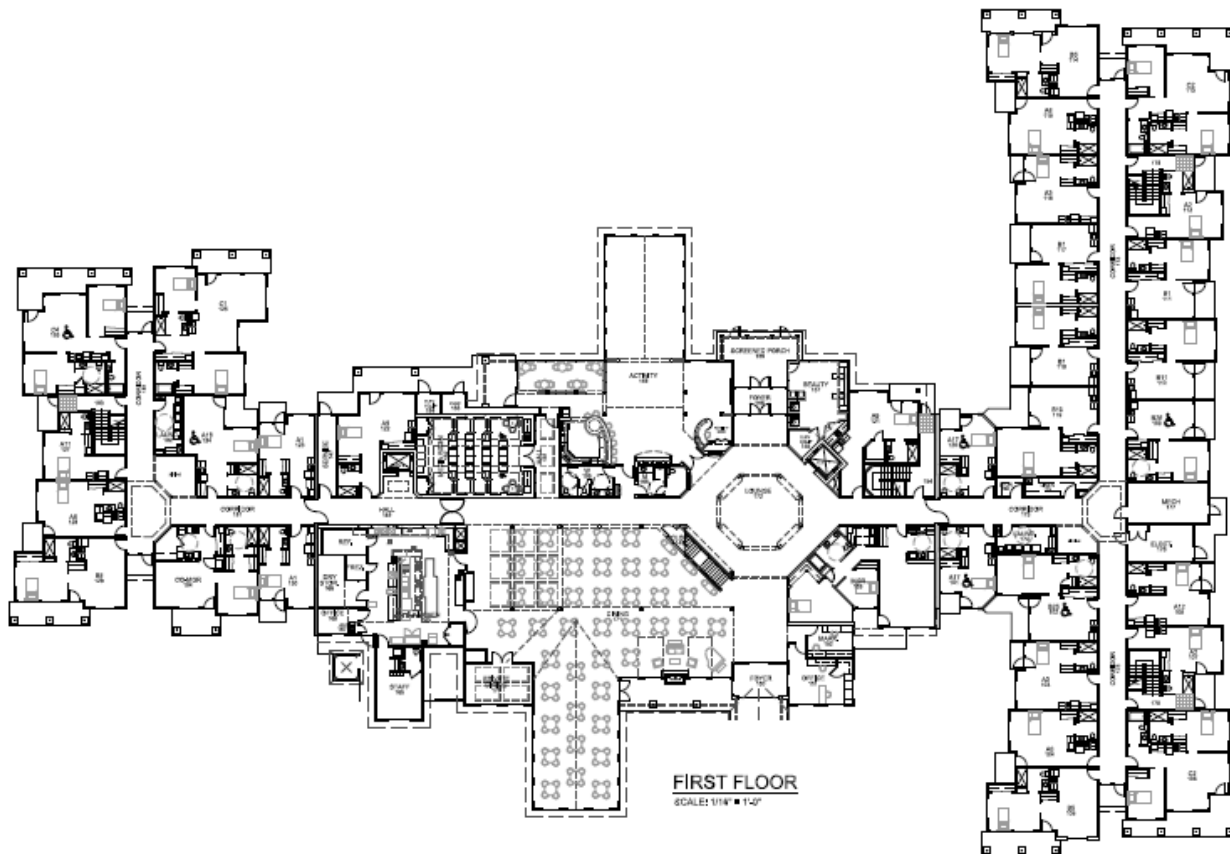
Portland Retirement Residence Overall Site Plan - excerpt



Portland Retirement Residence Landscaping Plan



Portland Retirement Residence Exterior Elevations



Portland Retirement Residence First Floor Plan

V. RIGHT, TITLE AND INTEREST; FINANCIAL & TECHNICAL CAPACITY & SUBMISSION REQUIREMENTS

The application includes a purchase and sales agreement for the property. The applicant has submitted information pertaining to the development team credentials. The application does not include a letter of financial capacity for the project, thus evidence of financial capacity should be submitted prior to the public hearing.

The applicant has provided evidence of the trail easement that they have signed with Portland Trails, which is being held in escrow until the time of closing (Applicant's submission- H). The easement gives Portland Trails permission to construct and maintain unpaved foot path or walking trails within the ROS portion of the site. A discussion of the trail and pedestrian connections is found under the environmental standards of this memo.

ZONING ANALYSIS

The proposed use for the site is a congregate care facility, which is a permitted use in the R-5A zone. The total site has 798,184 sf and 443,875 sf of the site is located within the R-5A zone. As part of the application, the net residential density calculations are presented based upon the land area within R-5A. The deductions are as follows:

- Wetlands – 6,481 sf
- Slopes greater than 25% - 32,650 sf

The total amount deducted is 39,131 for a net area of 403,744 sf , which allows up to 252 units at 1,600 sf of land area per unit. The proposal is for 150 units, which is well within the maximum density.

The setbacks from the property boundaries are being met or exceeded. The garage on the southerly end of the site meets the side setback of 16 feet and the front setback of 25 feet. The building exceeds the zoning requirements with a side yard setback to the southerly line of 51.79 feet, front setback of 114.07 feet, and a rear setback to the R-5A line of 62.78 feet (the property boundary encompasses the ROS). All of the proposed setbacks to the northerly boundary exceed zoning standards. The application states and the renderings show the building height at 47 ft 8 inches, which is below the maximum height of 55 feet. The staff does want to confirm the height based upon the final average grades prior to the final review.

Fifty (50) vehicle parking spaces are required under zoning and 102 spaces are proposed. Ten bicycle parking spaces are required based upon the 50 required parking spaces for a non-residential structure.

V. SITE PLAN REVIEW (Section 14-526)

The proposed development has been reviewed by staff for conformance with the relevant review standards of the City of Portland's site plan ordinance. Staff preliminary comments are included where staff have identified issues.

1. Transportation Standards

a. Impact on Surrounding Street Systems

The site has one point of access off Ocean Avenue. The applicant describes the use as a low traffic generator in both overall trips and at peak hours and notes that the facility will be providing transportation services for their residents. The application includes a traffic generation assessment calculated for either the number of beds or by units. Tom Errico, P.E. Consulting Traffic Engineer has reviewed the analysis (Attachment 1) and has the following comment:

- *The applicant conducted a trip generation analysis and I find the methods used to be acceptable. The project does not require a Traffic Movement Permit and would not be expected to have a significant impact on traffic operations and safety in the vicinity of the project.*

b. *Access and Circulation*

a. *Site Access and Circulation*

b. *Loading and Servicing*

c. *Sidewalks*

The 24 foot wide single driveway extends from Ocean Avenue to serve the facility. A porte cochere is located at the main entrance of the building. The driveway extends around the southerly end of the building to the rear where loading and some parking is located along with a turn around to accommodate tractor trailer trucks. This lane also serves for fire access. A sidewalk is shown along the westerly side of the access road, which wraps around the building and extends to the first parking lot. A public sidewalk is proposed on the easterly side of Ocean Avenue to fill a gap in the sidewalk system of approximately 393 feet.

Tom Errico, P.E. Consulting Traffic Engineer, has reviewed the plans and has the following comments:

- *I generally find the Ocean Avenue Sidewalk design to be acceptable. I need to investigate a need for a crosswalk across Ocean Avenue and I will coordinate with DPS on this issue. I would note that if a crosswalk is desired, it will need to be coordinated with pedestrian crossings from Ocean Ridge. Plans note that the centerline is being changed. Specific details on the change and lane width of Ocean Avenue shall be provided.*
- *In general, I find the site circulation and the parking layout to be acceptable. I would note that the sidewalk from the easterly parking lot is indirect and the preference would be to have the sidewalk on the building side of the roadway.*

Mike Farmer, DPS reviewed the plans and has the following comments regarding the sidewalk:

1. On the sidewalk plan, the Ocean Ave. r. o. w. line on the east side of Ocean Ave appears to be incorrectly shown. The sidewalk plans indicates a right of way width of up to 56 feet wide; whereas City records indicate the right of way is 49.5 feet wide. We request that the applicant check this boundary line and revise the plan as necessary.
2. There are two existing street monuments in the proposed sidewalk construction area. The sidewalk plan should show the monuments. The plan should state that the monuments shall be protected, and they should not be disturbed during construction, unless they need to be cut down or reset. If the monuments need to be altered to accommodate the sidewalk, contractor shall either cut them down or replace them as directed by the Engineering Division of the City. If the monuments have to be replaced, the replacement monuments shall be installed in conformance with the City's technical standards.
3. The sidewalk plans should be revised to state that, where ledge removal is required to construct the sidewalk along Ocean Avenue, the ledge should be removed so there is at least two feet of level ground behind the sidewalk.

c. *Public Transit Access*

The site is not located on a designated bus route, so this standard does not apply.

d. *Parking*

a. *Vehicle Parking*

b. *Location and number of Bicycle Parking Spaces*

Parking for 102 vehicles is proposed. This includes 5 handicap spaces at the entrance. There are three garages proposed, which will house 16 vehicles and 2 vans. The remainder of the parking is located along the driveway or the lot to the north of the building. The required number of spaces under zoning is 50 spaces. The applicant is seeking a waiver of

the bicycle parking requirement, which the staff calculates would be 10 spaces.

Tom Errico, P.E. Consulting Traffic Engineer, has reviewed the plans and has the following comments:

- The applicant should provide a detailed parking analysis that supports the project supply.
- Bicycle racks should be provided for the site to serve employees, guest, and residents that may bike.

c. *Snow Storage*

Snow storage areas are shown as follows: a) two locations along the driveway to the northerly parking lot; b) A location near the southeasterly corner of the site; and c) an area at the rear of the site near the patio. The staff request that the applicant further evaluate the snow storage near the southeasterly corner of the site, as it appears from the topography that the water would drain to the adjoining property. The proposed storm water system diverts drainage from a large area above the designated area, so the snow runoff may be an offset, but staff is requesting a further examination of potential impacts, particularly with neighborhood concerns about runoff from the hillside. In general, the locations do not encroach upon areas designated to meet the minimum parking requirements, sidewalks or impact the functioning of storm water management systems.

e. *Transportation Demand Management*

The site plan standard for TDM is required for “all commercial or institutional uses of 50,000 sf or more of total floor area. The applicant should prepare a TDM for the final plan review.

2. Environmental Quality Standards

a. *Preservation of Significant Natural Features*

b. *Landscaping and Landscape Preservation and c Site Landscaping*

As noted above, the 18.33 acre parcel is divided by two zones, Residential R-5A and Recreation Open Space. The ROS land consists of wetlands and forested uplands. Trails are found throughout the area and will be preserved for public use with the easement between the applicant and Portland Trails. Along the boundary of the ROS and R-5A zones is a ridge with Portland’s highest point along the coast called West Graves at an elevation of 170 NAVD. The development will occur on the R-5A portion of the site and it is estimated that 5.46 of the 10.17 acres will be maintained in a natural state. The Department of Agriculture, Conservation and Forestry found there are no rare botanical features document specifically within the project area. Maine’s Department of Inland Fisheries and wildlife confirmed that there are no essential habitats or fisheries on the site. The Department did note that four species of bats are listed as Special Concern. The August 25th letter from John Perry states the following:

While a comprehensive statewide inventory for bats has not been completed, it is likely that several of these species occur within the project area during migration and/or the breeding season. Therefore, we recommend that you contact and will defer to any guidance and recommendations provided by the U.S Fish and Wildlife Service Maine Field Office....

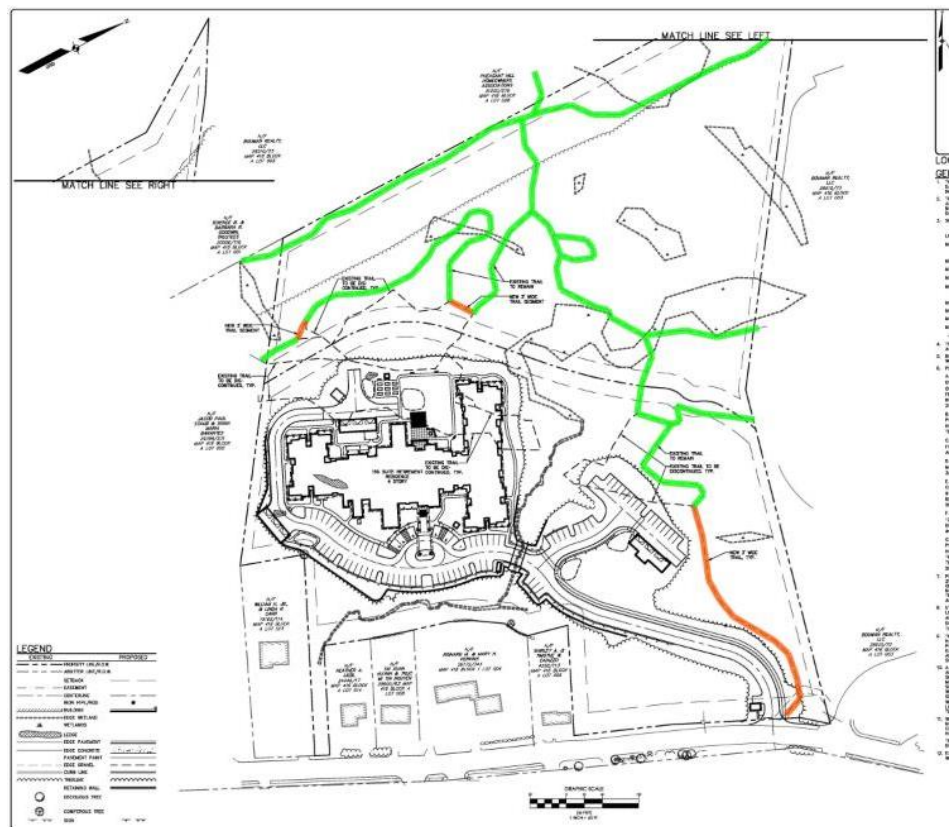
The Department confirmed that there are no identified significant habitats on the site, but recommended that “surveys for vernal pools be conducted within the project boundary by qualified wetland scientists prior to final project design to determine whether there are Significant Vernal Pools present in the area.”

Planning and David Senus asked about the status of the stream, vernal pool evaluation, and bat habitat analysis. Robert McSorley, Applicant Representative, responded on October 23, 2015 with the following status report ([Attachment 7](#)) to address these questions:

To answer your questions and some others that were raised during the peer review, we offer the following. First, the drainage course through the project was reviewed by MDEP several years ago and we have a written determination that it is not a stream by MDEP definitions (copy attached). The project has been planned and designed to preclude any impacts to jurisdictional wetlands. Therefore, there is no federal (ACOE) jurisdiction relative to wetland impacts since there are none. Relative to MEIFW's letter, the wetlands were reviewed and mapped by our wetland scientist and there were no significant vernal pools identified. Therefore, there is no MDEP jurisdiction review relative to wetlands or vernal pools required.

Relative to the bat habitat, this is a new issue that has been raised by the listing of the northern long-eared bat by the Federal Government. In order to avoid a **potential** "take" of the bats, the current guidance is to not impact **potential** habitat during the roosting, breeding and migratory periods for the bats. The period for the bats to be in hibernation in their hibernacula has been established as October 15 to April 20. If we were jurisdictional to ACOE, based upon clearing during this time frame, the ACOE "...would make a 'may effect but not likely to adversely effect' determination..." relative to the bats. We have told our client that the project would therefore require tree clearing to occur during the October 15 to April 20 time frame.

The applicant is working with Portland Trails on connections between the sidewalk and the trail system. The plan as presented only has a connection for the residents from the location off the driveway near Ocean Avenue. Providing a more direct connection from the facility to the trail system is recommended by Planning and Jeff Tarling. The steep slopes of the site pose a challenge to find an acceptable route, but the applicant's representative has stated that they will evaluate that again. Below is the trail map presented for the workshop



(green=existing trails and orange=new connections).

A landscaping plan is included in the applicant's submission ([Applicant's submission Plans 19 and 20](#)). Jeff Tarling, City Arborist, has submitted his review of the proposed landscaping plan (refer

to [Attachment 5](#) for the full review) and offers potential conditions of approval. He also provides suggested resources. He starts his review with the following: summary:

Overall the plant density for the landscape appears to meet city standards. "Tree Save" areas inside the limit of work appears to be non existent perhaps due to grading. Access to existing trails should be shown on plan and perhaps enhanced in places.

Excerpts of Jeff Tarling's recommendations and suggested conditions of approval are as follows:

Native tree & plant recommendation / condition - Recommend using a higher percentage of native plants, trees & shrubs. (see [Attachment 5](#) for specifics)

Cut / Ledge areas - exposed ledge faces should consider risk reduction measures such as fencing, landscaping, or other.

Landscape tree & plant recommendations:

- a) **Trees that should not be used, or are not on the City Recommended tree list include:** Ash species due to the threat of Emerald Ash borer and likely future impact or loss of this species in Maine. Listed as 'Fraxinus Penn. Patmore Green Ash'
- b) **Non native tree species alternative recommendations:** (see [Attachment 5](#) for specifics)
- c) **Alternative native tree recommendations:** (see [Attachment 5](#) for specifics)

Tree Save / Construction Measures - Condition of Approval:

- a) Plan shall include tree protection measures and notes on how to avoid construction damages, such as no storage of construction equipment or supplies in the root zone of 'tree save' areas. Limit of work / 'Tree Save' shall be in place at the time of Pre-construction meeting as shown on plan. Plan currently shows 5' tree protection fence & silt fencing, both are needed. Recommendations in the attached guidelines should be included in construction management plan, International Society of Arboriculture recommendations: (see [Attachment 5](#) for specifics)

d Water Quality/Storm Water Management/Erosion Control

The stormwater plan for the site includes treatment for 90.1% of the non-vegetated area and 85.4% of the new developed area. The applicant notes that this exceeds the required treatment levels of Maine DEP Chapter 500 regulations as recently revised. Treatment is achieved with an underdrained subsurface sand filter located within the parking lot and a grassed underdrained soil filter near the access road. Stormwater management on the site has been a sensitive issue for the adjoining single family homes along Ocean Avenue. Public comment was submitted expressing concerns about storm water flows during the zone change review. David Senus' review is included as [Attachment 2](#) and from Mike Farmer from DPS submitted review comments included as [Attachment 3](#). While David Senus list of items is long he noted in his e-mail the following:

Please note that although we have a lot of comments, I don't anticipate that these will result in the need for large or substantial changes to the plans. The layout and strategy appear to be good, but some of the details need to be ironed out.

Both Dave Senus and Mike Farmer have recommended that the level spreader be moved so that stormwater flows do not impact the home at 804 Ocean Avenue and that the water flows to Ocean Avenue. Mr. Farmer recommends that a new catch basin be constructed in Ocean Avenue and Mr. Senus concurs with this recommendation. Mr. Farmer's recommendations regarding stormwater are as follows:

- a. The level spreader near CB-7 (Grading and Drainage Plan) should be moved easterly so the discharge is not directly above the house at 804 Ocean Ave. and so the discharge would reach Ocean Ave. just uphill from the existing drain manhole in Ocean Ave. (i. e. the drain manhole 180 feet southwest of the intersection of the project driveway and Ocean Avenue. A new catch basin should be constructed about 5-6 feet from the edge of pavement (in Ocean Ave.) and connected to the existing storm drain manhole. The catch basin rim should be lower than the edge of pavement, so the catch basin will collect runoff from a shallow roadside swale just uphill from the new catchbasin location.
- b. The grading and drainage plan shows a proposed connection of a 12-inch storm drain into an existing 18-inch City storm drain in Ocean Avenue. The proposed connection is an "Inserta-T." A Tee connection should not be used; a new, 4-foot diameter manhole should be constructed for such a connection.

3. Public Infrastructure and Community Safety Standards

a. Consistency with Master Plans:

There are no adopted master plans for the Ocean Avenue area. The applicant has provided a detailed statement of compliance with the comprehensive plan in Applicant's submission Q). The proposal is consistent with the Comprehensive Goals for more senior citizen housing options.

b. Public Safety and Fire Prevention

Assistant Chief Keith Gautreau, reviewed the plans (Attachment #3) on 10/7/15 and provided the following comments:

- I need some information in regards to emergency vehicle access to the West Wing or West side of the proposed 4 story structure.
- I need information in regards to hydrants, locations, and how they will achieve adequate pressure for fire protection throughout the proposed structures, i.e. pump houses, etc. The applicant should work with the Portland Water District to achieve adequate water supply & pressure to the site.
- Any Blasting will require the appropriate permits and approvals.

Assistant Chief Gautreau and Barbara Barhydt met with Mr. McSorely on October 21st to discuss the possible options for fire access to the northwesterly wing of the building. Mr. McSorely is exploring extending a fire access lane to the rear of that wing and provided reinforced pavers. A revised plan must be submitted for the final plan review. The applicant has been coordinating with PWD regarding the capacity needs and pump station located at the mouth of the driveway. Obtaining the required blasting permits will be a recommended condition of approval.

c. Availability and Capacity of Public Utilities

The Portland Water District has issued a letter on December 9, 2014 stating their ability to serve this project. The project will have a private pump station near the mouth of the driveway, which will provide sufficient pressure for fire protection and a private hydrant will be located on site near the structure.

Evidence of coordination with CMP and the telcomm/cable providers should be submitted. Regarding fiber optics, Mike Farmer recommends the following:

One of the plans in the City's archives shows an underground telecommunication line along Ocean Avenue in the sidewalk construction area. The location of this utility should be verified and shown on the sidewalk plan.

The Department of Public Services has issued a letter on November 24, 2014, stating the ability to

serve the wastewater flows for this project and reconfirmed the capacity with the additional living units on October 21, 2015 (Attachment 6). Mike Farmer commented as follows:

Where the new sanitary sewer from the project joins the existing sanitary sewer manhole, the project sewer should be re-aligned so it enters the existing manhole at a 90 degree angle to the existing influent pipe to the manhole. The new pipe should enter the manhole 0.1 feet above the outflow pipe. The plans should indicate that the manhole channel will have to be rebuilt to accommodate the new pipe, and that bypass pumping will be required to allow proper construction of the new manhole channel in dry conditions.

4. Site Design Standards

a. Massing, Ventilation, and Wind Impact

The applicant submitted the following response:

The proposed building is sufficiently setback from property lines and adjacent neighboring buildings such that the building will have minimum adverse effects on these adjacent facilities. The project uses individual heating/cooling systems for the suites that do not produce emissions. Other mechanical equipment will be located away from the property lines and meet the applicable state and federal emission standards.

b. Shadows

The applicant submitted the following response:

The proposed building is such that the highest elevations will be at approximately the same elevations as the nature canopies on the site at the proposed location of the building. Based upon the nature of the sun position in Maine, it is expected that the greatest impacts from shadows would be to the west, north and east of the building. In each of the directions, because of the proposed height being at about the height of the natural canopies and the placement of the building, the building will not cast significant shadows onto neighboring properties.

c. Snow and Ice Loading

Snow storage areas were discussed above and no impacts of snow or ice loading are anticipated with the site.

d. View Corridors

The proposed building is designed to fit into the site and to minimize impacts on the shadows and views of adjoining property owners. The preservation of the highest point with access from trails preserves a view, but it is not a regulated view corridor under the city's ordinance.

e. Historic Resources

The Maine Historic Preservation Commission confirmed there are no historic resources impacted by this development.

f. Exterior Lighting

As noted in the application, all the exterior site lighting will be LED fixtures with full cut off type fixtures. Up-lighting of architectural features and landscaping is proposed. The preliminary review of the plan finds the photometric plan to be in compliance with the City's standards. Some of the proposed fixtures do not appear to be full cut off, so more information is requested. In addition, it is unclear how much and where up-lighting is proposed, so more information is requested before the final review.

g. *Noise and Vibration*

The applicant states that the mechanical systems will be energy efficient with individual heating /cooling units in each suite. The mechanical equipment for the common areas and the emergency generator will be located in isolated areas and meet applicable emission standards. The manufacturers specifications for the mechanical equipment must be submitted for final review.

h. *Signage and Wayfinding*

All signage will require a sign permit under the zoning ordinance.

i. *Zoning-Related Design Standards*

There are no specific design standards for this site. There is the general standard for residential projects; which includes special needs housing. This is a congregate care facility and not a multifamily development. The elevations are presented in the applicant's submission along with color boards for the facility (Section 22 of Applicant's submission).

5. Construction Management Plan

A construction management plan was submitted. More information may be needed for the plan, but review comments specific to the construction management statement have not been submitted. David Senus noted:

The project will disturb more than one acre of land, therefore a Notice of Intent (NOI) to Comply with the Maine Construction General Permit must be filed with the MaineDEP. A copy of this NOI should be forwarded to the City Planning Office prior to the start of construction.

The site is steep with a lot of ledge and removal or blasting of ledge will be required. As noted by Assistant Chief Keith Gautreau, a blasting plan meeting the City's regulations for review and approval by the Fire Department is required.

VII. NEXT STEPS

- Address staff comments;
- Address additional comments of the Planning Board;
- Prepare final plan submission for site plan submittal requirements as included 14-527(e) and (f) for review by the Planning Authority and Planning Board; and
- Hold final Planning Board Hearing.

ATTACHMENTS:

Report Attachments

1. Traffic Engineer Review Comments – Tom Errico, - October 22, 2015
2. Civil Engineer Review Comments – David Senus- October 14, 2015
3. DPS Comments – Mike Farmer – October 19, 2015
4. Fire Department Preliminary comments- Assistant Fire Chief Keith Gautreau – Oct. 7, 2015
5. City Arborist comments – Jeff Tarling
6. Sewer Capacity - David Margolis-Pineo – October 21, 2015

Public comments

PC 1 Neighborhood Packet submitted by Applicant on October 8, 2015

PC 2 Neighborhood Presentation

Applicant's Submittal

- | | |
|----------------------|---|
| A. Cover Letter | E. Right, Title and Interest |
| B. Application Forms | F. State of State and Federal Permits |
| C. Location Map | G. Zoning Assessment |
| D. Tax Map | H. Summary of Existing/Proposed Easements |

- I. Waiver requests
- J. Evidence of Financial and Technical Ability
- K. Construction Management Plan
- L. Traffic Report
- M. Significant Natural Features
- N. Stormwater Management Plan
- O. Consistency with City Master Plans
- P. Ability to Serve Letters
- Q. Solid Waste Generation

- R. NFPA 1/Fire Department Standards
- S. Consistency with Design Standards
- T. Mechanical Equipment
- U. Soils Report
- V. Typical Unit Plans
- W. Site Elevations and Color Board
- X. Site Construction/Landscape Plans
- Y. Lighting Cut Sheets/Lighting Plans

Plan Set

- Plan 1 Cover Sheet
- Plan 2 Survey – sheet 1
- Plan 3 Survey – Sheet 2
- Plan 4 Overall Site Plan
- Plan 5 Site Plan
- Plan 6 Grading and Drainage Plan
- Plan 7 Utility Plan
- Plan 8 Box Culvert Plan
- Plan 9 Details – Sheet 1
- Plan 9 Details – Sheet 2
- Plan 9 Details – Sheet 3
- Plan 9 Details – Sheet 4
- Plan 10 Stormtech Details
- Plan 11 Sidewalk – Ocean Avenue

- Plan12 Pre-Dev Watershed
- Plan 13 Post-Dev Watershed
- Plan 14 Electrical
- Plan 15 Site Lighting Photometric -Parking
- Plan 16 Site lighting
- Plan 17 Lighting Details
- Plan 18 Exploration Location Map
- Plan 19 Landscaping Sheet 1
- Plan 20 Landscaping Sheet 2
- Plan 21 First Floor
- Plan 22 Second Floor
- Plan 23 Third Floor
- Plan 24Fourth Floor
- Plan 25 Elevations

From: Tom Errico <thomas.errico@tylin.com>
To: Barbara Barhydt <BAB@portlandmaine.gov>
CC: David Margolis-Pineo <DMP@portlandmaine.gov>, Katherine Earley <KAS@portlandmaine.gov>, Jeremiah Bartlett <JBartlett@portlandmaine.gov>, Jeff Tarling <JST@portlandmaine.gov>
Date: Thursday, October 22, 2015 9:48 AM
Subject: 802 Ocean Avenue - Preliminary Traffic Comments

Barbara - I have reviewed the application materials and the following summarizes my preliminary traffic comments.

* The applicant conducted a trip generation analysis and I find the methods used to be acceptable. The project does not require a Traffic Movement Permit and would not be expected to have a significant impact on traffic operations and safety in the vicinity of the project.

* I generally find the Ocean Avenue Sidewalk design to be acceptable. I need to investigate a need for a crosswalk across Ocean Avenue and I will coordinate with DPS on this issue. I would note that if a crosswalk is desired, it will need to be coordinated with pedestrian crossings from Ocean Ridge. Plans note that the centerline is being changed. Specific details on the change and lane width of Ocean Avenue shall be provided.

* In general, I find the site circulation and the parking layout to be acceptable. I would note that the sidewalk from the easterly parking lot is indirect and the preference would be to have the sidewalk on the building side of the roadway.

* The applicant should provide a detailed parking analysis that supports the project supply.

* Bicycle racks should be provided for the site to serve employees, guest, and residents that may bike.

If you have any questions, please contact me.

Best regards,

Thomas A. Errico, PE
Senior Associate
Traffic Engineering Director
[T.Y. Lin International]T.Y. Lin International
12 Northbrook Drive
Falmouth, ME 04105
207.781.4721 (main)
207.347.4354 (direct)
207.400.0719 (mobile)
207.781.4753 (fax)
thomas.errico@tylin.com<mailto:thomas.errico@tylin.com>
Visit us online at www.tylin.com<http://www.tylin.com>
Twitter | Facebook | LinkedIn | YouTube

"One Vision, One Company"

Please consider the environment before printing.



MEMORANDUM

TO: Barbara Barhydt, Development Review Services Manager
FROM: David Senus, PE
DATE: October 14, 2015
RE: Portland Retirement Residence at 802 Ocean Ave, Level III Site Plan Application

Woodard & Curran has reviewed the Level III Site Plan Application for the proposed Portland Retirement Residence located at 802 Ocean Avenue in Portland, Maine. The project involves the construction of a 150 unit Congregate Care Facility with associated parking and loading, landscaping, and stormwater management systems.

Documents Reviewed by Woodard & Curran

- Level III Site Plan Application and attachments, dated September 17, 2015, prepared by Sebago Technics, on behalf of the Hawthorne Retirement Group.
- Engineering Plans, Sheets 1-16, dated September 17, 2015, prepared by Sebago Technics, on behalf of the Hawthorne Retirement Group.

Comments

- 1) The Applicant has provided letters from utilities confirming capacity to serve the proposed development.
- 2) The project will disturb more than one acre of land, therefore a Notice of Intent (NOI) to Comply with the Maine Construction General Permit must be filed with the MaineDEP. A copy of this NOI should be forwarded to the City Planning Office prior to the start of construction.
- 3) The Applicant should discuss whether the proposed driveway culvert crossing of the small wetland channel will require any permitting action by the MaineDEP or USACOE; has the channel been reviewed to determine if it should be characterized as a stream?
- 4) In a letter contained in the application, the Maine Department of Inland Fisheries and Wildlife recommended conducting vernal pool surveys within the project boundary by a qualified wetland scientist prior to final project design to determine whether there are Significant Vernal Pools present in the area. Has this occurred and if so, were any significant vernal pools identified on the site?
- 5) In accordance with Section 5 of the City of Portland Technical Manual, a Level III development project is required to submit a stormwater management plan pursuant to the regulations of MaineDEP Chapter 500 Stormwater Management Rules, including conformance with the Basic, General, and Flooding Standards. In addition, the project will result in greater than 1 acre of new impervious area, and is therefore subject to review under MaineDEP Chapter 500 standards. We offer the following comments:
 - a) Basic Standards: Plans, notes, and details have been provided to address erosion and sediment control requirements, inspection and maintenance requirements, and good housekeeping practices in general accordance with Appendix A, B, & C of MaineDEP Chapter 500; however the following items should be addressed:
 - i. The grading and drainage plan should specify locations for proposed sediment barriers downgradient of the proposed work, particularly along the southern side of the disturbed project area.
 - ii. Details, notes and plan callouts should be included describing temporary or permanent stabilization measures on steep slope areas (greater than 3:1) such as erosion control matting, rip rap, or other measures (this comment is not applicable to ledge cut areas where the finish surface will be exposed ledge).
 - iii. A significant amount of earthwork will be occurring at the site, with large quantities of materials removed from and imported to the site. Staging and access along Ocean Avenue will be an important consideration and should be outlined in a detailed construction management plan prior to the start of construction. Additional notes should be added to the current plans with requirements for monitoring and sweeping of Ocean Avenue throughout the duration of



construction to ensure the Right-of-Way is properly maintained with minimal dust and minimal tracking of materials.

- b) General Standards: The project will result in an increase in impervious area of approximately 2.9 acres. As such, the project is required to include stormwater management features for stormwater quality control. The Applicant has proposed a Subsurface Sand Filter and Underdrained Soil Filter system. Both systems are generally compliant with the requirements of the General Standards; however, several comments must be addressed as follows:
 - i. Stormwater quality calculations included in the application account for 124,410 SF of new impervious area, which differs from the 127,631 SF reported on the project data sheet. The Applicant should clarify.
 - ii. The Exploration Location Plan prepared by SW Cole indicates that no borings have been conducted in the areas of the proposed Subsurface Sand Filter and Underdrained Soil Filter. Soil exploration should be conducted in these areas per the MaineDEP Stormwater BMP Manual to verify depth to groundwater and bedrock, or appropriate provisions should be taken with these system to anticipate the possible presence of bedrock and groundwater in the excavation.
 - iii. In reference to the Subsurface Sand Filter, per Chapter 7.3 of Volume III of the MaineDEP Stormwater BMP Manual, the overflow outlet shall not be located below the elevation of the storage depth of the water quality volume (in other words, the treatment volume must be discharged solely through an underdrain sand bed and underdrain pipe system). As proposed, the 15" overflow outlet is below the peak depth of the water quality volume.
- c) Flooding Standard: The project will result in an increase in impervious area of approximately 2.9 acres. As such, the project is required to include stormwater management features to control the rate of stormwater runoff from the site. The subsurface storage system and underdrained soil filter system are proposed to temporarily detain runoff on the site, and to discharge runoff at a rate that is at or below the existing condition. The Applicant has noted that there is a minor increase in the peak discharge rate from the primary study point (SP-1) in the 25-year storm event (0.4 cfs, or less than a 1% increase); with other storm events at or below the existing condition. These model results would indicate that the project is largely compliant with the Flooding Standard, however, several comments should be addressed as follows:
 - i. The models utilize inconsistent sheet flow lengths and time of concentration measurements for certain unchanged areas of the site when evaluating the pre- and post-development conditions. The models should be revised to utilize a consistent approach in the pre- and post-development condition with regard to determining Time of Concentration in all subcatchment areas.
 - ii. The plans and model should be checked to ensure consistent orifice dimensions and invert elevations for the Subsurface Sand Filter and Underdrained Soil Filter. For instance, within the model, Pond 210P: Sand Filter mc3500 includes a 1.0" Vert. Orifice/Grate X 2.00 at elevation 121.00'; however, the detail shows three of these 1.0" orifices at elevation 121.87. Also within the model, Pond 220P: UDF includes a 0.9" Vert. Orifice/Grate (Device 1) at elevation 122.83'; however, this does not appear to be consistent with the details for the underdrained soil filter basin or OCS-2.
 - iii. Sheet 6 of 14 – Discharge pipe SD 17 from CB-7 and the Underdrained Soil Filter discharge to a level spreader that, based on the downhill topography, could result in additional flow running onto a neighboring property. This outlet pipe and level spreader should be repositioned to the east of the currently proposed location such that flow below the discharge will remain on the project property prior to entering into the ROW.
 - iv. Based on the findings of the geotechnical engineering report, high groundwater conditions exist at the site. Given the large "cut" into the existing grade at the site and the perimeter foundation drains proposed around the building, the Applicant and their geotechnical engineer should comment on what level of base flow may be anticipated from the foundation drain



system discharging into the drainage channels. The discharge from the foundation drain system should be factored into the stormwater model. Also, the foundation drain outlet depicted on Sheet 6 of 14 may be in conflict with the corner of the subsurface sand filter system; the Applicant should verify.

- 6) StormTech recommends providing additional access structures when Isolator Rows exceed 50-feet. The Applicant should verify that the design, as proposed, provides adequate means of access for inspection and maintenance of the system through communication/verification by Stormtech.
- 7) The Grading and Drainage Plan should be revised to indicate the location of the spillway for the Underdrained Soil Filter.
- 8) Sheet 6 of 14 – A drain manhole should be provided for the 12” storm drain connection into the 18” storm drain in Ocean Ave. The storm drain pipe material should be identified to meet City Standards within the roadway right-of-way (Technical Manual Section 2.5.2).
- 9) Sheet 14 of 14 - The proposed sidewalk along the south edge of Ocean Avenue has several angles in the layout to avoid an adjacent slope and utility poles. These angles should be smoothed out as radius transitions to follow a “desire line” of travel.

**ENGINEERING DIVISION
Portland Department of Public Services
55 Portland Street
Portland, ME 04101**

Att. 3

M E M O

TO: Barbara Barhydt
Dave Margolis-Pineo, Deputy City Engineer
FROM: Mike Farmer, Project Engineer
DATE: Oct. 16, 2015
Revised Oct. 19, 2015
RE: 802 Ocean Avenue Project

I am submitting the following comments, on behalf of the Engineering Division, regarding the Site Plan for the *Portland Retirement* Residence project at 802 Ocean Ave. These comments are based on review of the Thompson's Point project. These comments are based on the Grading and Drainage Plan dated 9/18/2015 and the Sidewalk Plan dated 9/18/2015.

1. The level spreader near CB-7 (Grading and Drainage Plan) should be moved easterly so the discharge is not directly above the house at 804 Ocean Ave. and so the discharge would reach Ocean Ave. just uphill from the existing drain manhole in Ocean Ave. (i. e. the drain manhole 180 feet southwest of the intersection of the project driveway and Ocean Avenue. A new catch basin should be constructed about 5-6 feet from the edge of pavement (in Ocean Ave.) and connected to the existing storm drain manhole. The catch basin rim should be lower than the edge of pavement, so the catch basin will collect runoff from a shallow roadside swale just uphill from the new catchbasin location.
2. On the sidewalk plan, the Ocean Ave. r. o. w. line on the east side of Ocean Ave appears to be incorrectly shown. The sidewalk plans indicates a right of way width of up to 56 feet wide; whereas City records indicate the right of way is 49.5 feet wide. We request that the applicant check this boundary line and revise the plan as necessary.
3. There are two existing street monuments in the proposed sidewalk construction area. The sidewalk plan should show the monuments. The plan should state that the monuments shall be protected, and they should not be disturbed during construction, unless they need to be cut down or reset. If the monuments need to be altered to accommodate the sidewalk, contractor shall either cut them down or replace them as directed by the Engineering Division of the City. If the monuments have to be replaced, the replacement monuments shall be installed in conformance with the City's technical standards.
4. The grading and drainage plan shows a proposed connection of a 12-inch storm drain into an existing 18-inch City storm drain in Ocean Avenue. The proposed connection is an "Inserta-T." A Tee connection should not be used; a new, 4-foot diameter manhole should be constructed for such a connection.

5. One of the plans in the City's archives shows an underground telecommunication line along Ocean Avenue in the sidewalk construction area. The location of this utility should be verified and shown on the sidewalk plan.
6. Where the new sanitary sewer from the project joins the existing sanitary sewer manhole, the project sewer should be re-aligned so it enters the existing manhole at a 90 degree angle to the existing influent pipe to the manhole. The new pipe should enter the manhole 0.1 feet above the outflow pipe. The plans should indicate that the manhole channel will have to be rebuilt to accommodate the new pipe, and that bypass pumping will be required to allow proper construction of the new manhole channel in dry conditions.
7. The sidewalk plans should be revised to state that, where ledge removal is required to construct the sidewalk along Ocean Avenue, the ledge should be removed so there is at least two feet of level ground behind the sidewalk.

MEMORANDUM

To: FILE
From: Barbara Barhydt
Subject: Application ID: 2015-164
Date: 10/23/2015

Comments Submitted by: Keith Gautreau/Fire on 10/7/2015

I need some information in regards to emergency vehicle access to the West Wing or West side of the proposed 4 story structure.

Comments Submitted by: Keith Gautreau/Fire on 10/7/2015

I need information in regards to hydrants, locations, and how they will achieve adequate pressure for fire protection throughout the proposed structures. I.e. Pump houses, etc.
The applicant should work with the Portland Water District to achieve adequate water supply & pressure to the site.

Comments Submitted by: Keith Gautreau/Fire on 10/7/2015

Any Blasting will require the appropriate permits and approvals.

From: Jeff Tarling
To: Barbara Barhydt
Date: Wednesday, October 21, 2015 4:18 PM
Subject: 802 Ocean Avenue - Revised

Hi Barbara -

I have reviewed the landscape planting plan proposed for the 802 Ocean Avenue project and offer the following comments and recommendations:

Overall the plant density for the landscape appears to meet city standards. "Tree Save" areas inside the limit of work appears to be non existent perhaps due to grading. Access to existing trails should be shown on plan and perhaps enhanced in places for resident use.

Native tree & plant recommendation / condition - Recommend using a higher percentage of native plants, trees & shrubs.

The 802 Ocean Avenue site is located in a "Oak - Pine" woodland with a great percentage of existing native trees and plants, the native plant types are more adaptable to the site from a sustainability perspective, and fit into the existing area and offer environmental and habitat benefits. Non native ornamental plants should be focused around the building envelope with a greater percentage of native plant types around the edges and to reduce invasive plant contamination into the existing native woodlands. This is an important feature of the site and should be a condition of approval. There are many useful native plants available that would fit into this site and would meet the landscape objectives of creating seasonal interest. Attached useful links for consideration. Note: Areas with thin soils, depths to bedrock may consider using smaller caliper sizes to better acclimate to site. Planting around the proposed pond should be all native to blend into the surrounding area - Larch, Red Maple, Tupelo, Amelanchier clump form would be recommended. Sweet fern would be highly recommended in the rocky, shallow soil exposed ledge areas.

Cut / Ledge areas - exposed ledge faces should consider risk reduction measures such as fencing, landscaping, or other.

Landscape tree & plant recommendations:

a) Trees that should not be used, or are not on the City Recommended tree list include:

Ash species due to the threat of Emerald Ash borer and likely future impact or loss of this species in Maine. Listed as 'Fraxinus Penn. Patmore Green Ash'

b) Non native tree species alternative recommendations:

Ginkgo - 16, used to line the driveway, while a good urban tree, site would be perhaps better suited for 'Bowhall' or 'Karpick' Maple, 'Regal Prince' Oak, which are upright shaped tree forms more in keeping with a native plant theme.

c) Alternative native tree recommendations:

Acre rubrum - Red Maple suitable for wet areas, Amelanchier - clump form, Betula populifolia (gray birch), Larix laricina, (Eastern Larch) suitable for wet areas, Nyssa suitable for wet areas, Ostrya, Oxydendrum - ornamental, native pines - Pinus resinosa (Red Pine), P. rigida (Pitch Pine), P. strobus (White Pine), P. banksiana (Jack Pine), Quercus rubra (Red Oak), Q. Prinus (chestnut oak) tolerates dry sites and windy conditions.

Tree Save / Construction Measures - Condition of Approval:

Plan shall include tree protection measures and notes on how to avoid construction damages such as no storage of construction equipment or supplies in the root zone of 'tree save' areas. Limit of work / 'Tree Save' shall be in place at the time of Pre-construction meeting as shown on plan. Plan currently shows 5' tree protection fence & silt fencing, both are needed. Recommendations in the attached guidelines should be included in construction management plan, International Society of Arboriculture recommendations:

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Additional information & reference:

Information that may be useful to describe the existing woodland types and plants that are typical to sites like 802 Ocean.

Native landscape resources :

Gardening to Conserve Maine's Native Landscape: Plants to Use and Plants to Avoid:
<http://umaine.edu/publications/2500e/>

802 Ocean Avenue, Woodland descriptions from State of Maine Natural Areas program -

(These descriptions outline the vegetation types that are found in areas similar to the 802 Ocean Avenue site; for reference use)

Oak - Pine Woodland

Community Description: These woodlands support a partial canopy (20-70%) dominated by red oak, or red oak with white pine or red spruce (rarely with red pine). The trees are widely spaced and often stunted, with an open under story. Gray birch is a common small tree. The herb layer is well developed (>25% cover), with one-third to nearly all of the layer consisting of dwarf shrubs. Lowbush blueberry is the most abundant dwarf shrub; sheep laurel is also common. Herbs form 1-20% cover among the dwarf shrubs.

Oak - Pine Forest

Community Description: This type is a closed canopy forest (>75% closure) in which red oak or a mixture of oak and white pine (rarely red spruce or hemlock) dominate. Red maple (up to 30% cover) and paper birch (up to 15% cover) can be common in younger stands. Striped maple is a common subcanopy associate; several other shrubs may be frequent. The herb layer is usually somewhat sparse (<30% cover), and features bracken fern, lowbush blueberry, and various herbaceous species; dwarf shrubs contribute 0-15% cover. The herb layer often includes forest species such as wild-oats and Indian cucumber-root that are seldom found in more open Oak - Pine Woodlands.

Pitch Pine - Scrub Oak Barren

Community Description: This woodland type ranges from very open to nearly closed canopy (25-75% closure) in which pitch pine is dominant (up to 50% cover). Red maple is frequent but rarely abundant in the canopy. In openings among the trees, a dense shrub/sapling layer of scrub oak is typical. Gray birch may be a prominent feature of the shrub layer, and shrubs are locally dense. A low layer of heath shrubs dominated by lowbush or velvet-leaf blueberry is usually present. Bracken fern and woodland sedge are characteristic herbs

Woodland description web links:

<http://www.maine.gov/dacf/mnap/features/communities/oakpinewoodland.htm>

<http://www.maine.gov/dacf/mnap/features/communities/oakpineforest.htm>

<http://www.maine.gov/dacf/mnap/features/communities/pitchpineoakbarren.htm>

Plant & seed resources:

Pierson Nurseries - <http://www.piersonnurseries.com/availabilityandpricelists>

New England Wetland Plants, Inc. - <http://www.newp.com>

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Tree type sheets:

'Regal Prince' Oak - <http://www.jfschmidt.com/pdfs/regalprinceoak.pdf>

Eastern Larch - http://plants.usda.gov/plantguide/pdf/pg_lala.pdf

<http://www.treesaregood.com/treecare/resources/AvoidingTreeDamage.pdf>

<http://www.treesaregood.com/treecare/resources/ConstructionDamage.pdf>

From: David Margolis-Pineo
To: Rob McSorley; Robin Goins
CC: Barbara Barhydt; Benjamin Pearson; Helen Donaldson; Jean Fraser; Jeff Levine; John Emerson; Nancy Gallinaro; Shukria Wiar
Date: Wednesday, October 21, 2015 4:54 PM
Subject: Wastewater Capacity Application Approval - 802 Ocean Ave, Portland, Maine
Attachments: David Margolis-Pineo.vcf

October 21, 2015

Hawthorn Development Group
Attn: Robin Goins (robin.goins@hawret.com)
9310 NE Vancouver Mall Drive – Suite 200
Vancouver, WA 98662-8210
Portland, ME 04101

**RE: Capacity to Handle Wastewater Flows from 802 Ocean Ave
Proposed Congregate Care Facility**

Dear Hawthorn Development Group:

The Department of Public Services, which includes the Water Resource Division, has reviewed and determined that the downstream sewers from 802 Ocean Ave has the capacity to convey the estimated 10,230 gallons per day of wastewater which will be generated from this Congregate Care Facility. It is understood that no sources of stormwater runoff, roof drainage, or any other non-contaminated water shall be introduced to the wastewater collection system from this development.

If the City can be of further assistance, please call me at 874-8850 or 400-6695.
Sincerely,

CITY OF PORTLAND

David

Margolis-Pineo

David Margolis-Pineo
Deputy City Engineer

Anticipated Wastewater Flows from the proposed Congregate Care Facility:

135 Residential Care Units @ 60 gpd/Resident = 8,100 gpd
15 Duplex Residential Care Units @ 120 gpd/Resident = 1,800 gpd
Manager's Unit – 210 gpd
Co-Manager's Unit – 120 gpd

Total = 10,230 gpd

CC: Jeffrey Levine, Director, Department of Planning and Urban Development, City of Portland
Barbara Barhydt, Development Review Services Mgr., Dep't. of Planning and Urban Development, City of Portland
Nell Donaldson, Department of Planning and Urban Development, City of Portland
Shukria Wiar, Planner, Department of Planning and Urban Development, City of Portland
Jean Fraser, Planner, Department of Planning and Urban Development, City of Portland
Nancy Gallinaro, Water Resources Manager
Benjamin N. Pearson, E.I., Industrial Pretreatment Coordinator, City of Portland
John Emerson, Wastewater Coordinator, City of Portland
Robert A. McSorley – Sebago Technics, Inc

David Margolis-Pineo

Deputy City Engineer
Department of Public Services
55 Portland St.
Portland, ME 04101
Office 207-874-8850
Fax 207-874-8852
Cell 207-400-6695
dmp@portlandmaine.gov

From: Robert McSorley <rmcsorley@sebagotechnics.com>
To: Barbara Barhydt <BAB@portlandmaine.gov>, Mark Lowen <markl@lenityarchitecture.com>
Date: Friday, October 23, 2015 8:37 AM
Subject: RE: clarification on state natural resources
Attachments: 14432 MDEP DETERMINATION.pdf

Good morning Barbara,

To answer your questions and some others that were raised during the peer review, we offer the following. First, the drainage course through the project was reviewed by MDEP several years ago and we have a written determination that it is not a stream by MDEP definitions (copy attached). The project has been planned and designed to preclude any impacts to jurisdictional wetlands. Therefore, there is no federal (ACOE) jurisdiction relative to wetland impacts since there are none. Relative to MEIFW's letter, the wetlands were reviewed and mapped by our wetland scientist and there were no significant vernal pools identified. Therefore, there is no MDEP jurisdiction review relative to wetlands or vernal pools required.

Relative to the bat habitat, this is a new issue that has been raised by the listing of the northern long-eared bat by the Federal Government. In order to avoid a potential "take" of the bats, the current guidance is to not impact potential habitat during the roosting, breeding and migratory periods for the bats. The period for the bats to be in hibernation in their hibernacula has been established as October 15 to April 20. If we were jurisdictional to ACOE, based upon clearing during this time frame, the ACOE "...would make a 'may effect but not likely to adversely effect' determination..." relative to the bats. We have told our client that the project would therefore require tree clearing to occur during the October 15 to April 20 time frame.

Hope that helps, Rob
 Robert A. McSorley, P.E.

Senior Project Manager

[face]<<https://www.facebook.com/sebagotechnics>>[link]<<https://www.linkedin.com/company/1317041>> Join us !

[cid:image002.jpg@01CF9509.D29BBDA0]

www.sebagotechnics.com<outbind://16-00000000CD988A28617A96429D6E89AB186971BA0700879CA08C0597694DBA2082B986EDA97900000622FDC00008BEA5CB75FE2434C9879B67929CCC67200003C6ECF5E0000/www.sebagotechnics.com>

An Employee Owned Company

75 John Roberts Road - Suite 1A
 South Portland, ME 04106

Office: 207.200.2100
 Direct: 207.200.2074
 Mobile: 207.939.1809
 Fax: 207.856.2206

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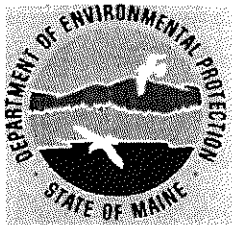
From: Barbara Barhydt [mailto:BAR@portlandmaine.gov]
 Sent: Friday, October 23, 2015 7:44 AM
 To: Mark Lowen <markl@lenityarchitecture.com>; Robert McSorley <rmcsorley@sebagotechnics.com>
 Subject: clarification on state natural resources

Good morning:

I see that no significant habitats were identified for the site, but the Department of Agriculture recommended with US Wildlife regarding bats and to identify if vernal pools exist. Are these requirements or suggestions and what is the status of those requests?

Thank you.

Barbara



DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF LAND AND WATER QUALITY

FIELD DETERMINATION ID 3388

Field Determination Form

CONTACT

DIANE DOYLE
DOYLE ENTERPRISES LLC.
16 TIFFANY LANE
SACO ME 04072
TELEPHONE (207) 229 -3530

PROPERTY OWNER

DOYLE, DIANE
16 TIFFANY LANE
SACO ME 04072

STAFF GALLANT II, FRED

RESOURCE UP

DIRECTIONS

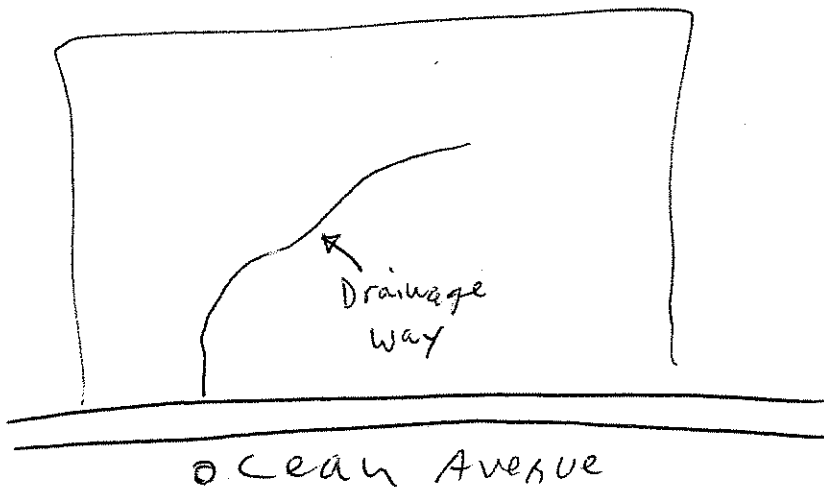
Ocean avenue extension on left before
Dragon Concrete.

TOWN PORTLAND

MAP LOT

MEMO

The depression in the woods on this property is not a stream as defined by the Natural Resources Protection Act. Erosion control devices must be installed and maintained on the project site during any soil disturbance activity. A Maine Construction General Permit "NOI" and "NOT" must be filed with the Department if more than 1 acre of area is going to be disturbed on the project site at any given time during construction.



Name:

Fred Gallant II

RECEIVED 10/26/2004

SITE VISIT 10/26/2004

COMPLETED 11/16/2004



SITE PLAN APPLICATION

**To
City of Portland**

For

**Portland Retirement Residence
802 Ocean Avenue
Portland, ME 04087**

Prepared for

Hawthorne Retirement Group
9310 NE Vancouver Mall Dr., Suite 200
Vancouver, WA 98662-2810

September 2015

Site Plan Application

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September 17, 2015
14432

Barbara Barhydt, Development Review Manager
City of Portland
Planning and Urban Development Department
389 Congress Street
Portland, ME 04101

**Re: Site Plan Submittal – Portland Retirement Residence
802 Ocean Avenue, Portland, ME, Map 411, Lot 7A and Map 416, Lots A6, A7 & A21**

Dear Barbara:

On behalf of our clients, Hawthorn Development Group, LLC and Lenity Architecture, we are pleased to submit the enclosed Level III Site Plan Application for the above referenced project. Hawthorn Development Group, LLC proposes to construct a 150 unit congregate care facility on the property with associated vehicle parking and loading, landscaping, and stormwater management treatment systems.

Independent Senior Housing / Congregate Care Facility Concept

The Congregate Care concept is designed for residents with an average age of 82 who are still ambulatory. The facility does not offer medical or nursing care. This development will be privately funded and operated, and will not receive government subsidies.

Each private suite offers the advantages of independent living while the services included provide support, security, and friendship. The private suites include studio, one, and two bedroom versions. Suites do not contain kitchens, therefore they are not dwelling units, and all resident meals are served in a central dining room.

Services for residents include three prepared meals daily, housekeeping, laundering service, private van transportation, and various social and physical activities. The Management Team lives on the premises and is available to residents 24 hours a day. The residents monthly rent payment covers the cost of their private suite, all meals, services and utilities, no "buy in fee" is required.

Our typical resident is a single woman in her late 70's or 80's who lives within 10 miles of the site. Approximately 10% of suites will be rented by couples resulting in a total building population of approximately 165. Fewer than 20% of the residents will be driving their own cars. Because most of our residents prefer not to drive, we provide private van transportation for their use. Van service is included in the monthly rent, available 24/7 and offers residents independence and mobility while providing their families peace of mind.

This type of use does not create the problems typically associated with higher density developments, such as traffic, noise, or increased demand on public services.

Existing Site

The development site is part of an 18.33 tract of land which is located on the west side of Ocean Avenue approximately 0.5 mile north of Washington Avenue. The property has substantial frontage on Ocean Avenue where it also borders individual residential lots that are on Ocean Avenue. The property is bounded on the north by the Ocean Ridge Condominiums, on the west by Alden's Walk Condominiums and forested land and on the south by a single family residential property. The western portion of the property (8.17 acres) is transversed by a 135 foot wide Central Maine Power transmission line easement and is zoned as Residential Open Space (R-OS). The eastern portion of the property (10.16 acres) which is zoned as R-5A Residential Zoning District is the land on which the development is proposed.

The property grades varies from a high point of approximately elevation 170 (location of USGS marker "West Graves") to elevation 145 to 160 along the western boundary and to elevation 100 to 110 along the Ocean Avenue frontage. Slopes vary from 5 to 10% in central portion of the property up to 15 to 25% slopes along Ocean Avenue. The western portion of the property contains wetlands of varying sizes, some of which overflow to a shallow drainage course/wetland that bisects and flows through the eastern portion of the property and southerly along the boundary which the adjacent lots that front on Ocean Avenue. This drainage course eventually turns to the east and discharges from the property via culverts under Ocean Avenue (see stormwater Management Plan).

Extensive geotechnical explorations (see soils report contained within the submission) have been completed for the property; the site is forested with a surficial layer of forest duff and topsoil. The surface is generally overlaid by a thin layer of silty sand and/or silty glacial till overlying shallow bedrock. This bedrock was encountered at the explorations at depths varying from about ½ to 5 feet.

Site Design

Based upon the neighborhood meetings that we have held to date, one aspect of the site layout and design was based upon locating the main structure to minimize the potential for visual impacts from adjacent properties. This was achieved by locating the building in the flatter portion of the site and setting the finished floor elevation such that the highest points of the structure would be roughly about the height of the natural vegetation. The front portion of the natural grade in this area varies around the proposed finished floor elevation of 135. The existing grade in the back portion of the building site will be cut to this elevation and keeps the height of the structure below the tree canopies to the west. This location was also chosen to maximize the separate from the existing surrounding developments and to minimize the amount of material that would need to excavated and potentially blasted on-site.

Careful consideration was also given to the natural resources on-site with placement of the building. By the layout of the site, we have been able to minimize the amount of land necessary for the development with only 4.93 acres of developed area utilized (less than 50% of the R-5A portion of the property). The site design also avoids impacts to any of the wetlands on-site and leaves a large portion of the undeveloped R-5A zone area contiguous with the preserved area within the R-OS zone. The applicant has coordinated with Portland Trails and executed an easement to allow public access through the developed port of the property to existing trails with the R-OS area.

We have also tried to address some of the concerns of our neighbors in the stormwater design for the project. We have maintained the natural drainage course through the development site which drains the western portion of the property and some areas from the adjacent Ocean Ridge Condominiums. Unlike the prior proposed developments, we have avoided using the main section of this drainage course for discharge of the site; we have chosen to use an underground sub surface sand filter for the southern

portion of the development. This system will discharge closer to the section of the drainage course that flows to the east to Ocean Avenue. Because of concerns relative to the wet pond that was previously proposed on the northerly portion of the site, we have proposed an under drained soil filter. In lieu of discharges to the natural drainage course through the middle of the site, this filter will discharge via a spreader swale down slope of the access roadway to maintain a current drainage path in the site. This discharge will reduce the amount of flow that was previously was designed to flow in the drainage course upslope and in back of the residences that front of Ocean Avenue.

In addition to the changes reflected above, the project will complete the missing link of sidewalk along Ocean Avenue from just north of Ashley Lane to sidewalk opposite the Ocean Ridge Condominiums, north of the property. The design maintains the section that was used to the south on Ocean Avenue when CSO/roadway improvements were completed several years ago. We have coordinated with the Public Services Division to address minimizing the impact to adjacent properties by moving the walk adjacent to the curb line in one area thus avoiding/minimizing the removal of a large ledge outcropping.

The site will be served by public water supplied by Portland Water District and the City's gravity sewer system located within Ocean Avenue. Based upon the height of the property and the operating pressures within the 12" water main in Ocean Avenue, the project will require a booster pump system to ensure that fire protection flows are met. This system will be placed within an accessory building at the project's entrance along the water meter for the project. We have coordinated with Unitil relative to the extension of the gas main that exists to the south on Ocean Avenue to determine the feasibility to extend the main to serve this project. We have also coordinated with some of the neighbors relative to this extension as many of the existing developments would also like the ability to be served by Unitil.

Our clients are looking forward to the continued working relationship that we have had with the City of Portland and City staff as this project moves through the Planning Board review process.

If you have any questions, relative to this submission, do not hesitate to contact me. Thank you once again for your time relative to our application.

Sincerely,

SEBAGO TECHNICS, INC.



Robert A. McSorley, P.E.
Senior Project Manager

RAM:ram/llg
Enc.

cc: Mark Lowen, Lenity Architecture
Kristi Neznanski, Lenity Architecture
Dan Roach, Lenity Architecture

Section 1. Application Forms

- Site Plan Application
- Site Plan Checklist



Jeff Levine, AICP, Director
Planning & Urban Development Department

Electronic Signature and Fee Payment Confirmation

Notice: Your electronic signature is considered a legal signature per state law.

By digitally signing the attached document(s), you are signifying your understanding this is a legal document and your electronic signature is considered a **legal signature** per Maine state law. You are also signifying your intent on paying your fees by the opportunities below.

I, the undersigned, intend and acknowledge that no Site Plan or Historic Preservation Applications can be reviewed until payment of appropriate application fees are **paid in full** to the Inspections Office, City of Portland Maine by method noted below:

☐

Within 24-48 hours, once my complete application and corresponding paperwork has been electronically delivered, I intend to **call the Inspections Office** at 207-874-8703 and speak to an administrative representative and provide a credit/debit card over the phone.

☐

Within 24-48 hours, once my application and corresponding paperwork has been electronically delivered, I intend to **call the Inspections Office** at 207-874-8703 and speak to an administrative representative and provide a credit/debit card over the phone.

☒

I intend to deliver a payment method through the U.S. Postal Service mail once my application paperwork has been electronically delivered.

Applicant Signature: _____

9/17/15

Date: _____

I have provided digital copies and sent them on: _____

9/17/15

Date: _____

NOTE:

All electronic paperwork must be delivered to buildinginspections@portlandmaine.gov or by physical means i.e. a thumb drive or CD to the Inspections Office, City Hall, 3rd Floor, Room 315.



Level III – Preliminary and Final Site Plans Development Review Application

Portland, Maine

Planning and Urban Development Department
Planning Division

Portland's Planning and Urban Development Department coordinates the development review process for site plan, subdivision and other applications under the City's Land Use Code. Attached is the application form for a Level III: Preliminary or Final Site Plan. Please note that Portland has delegated review from the State of Maine for reviews under the Site Location of Development Act, Chapter 500 Stormwater Permits, and Traffic Movement Permits

Level III: Site Plan Development includes:

- New structures with a total floor area of 10,000 sf or more except in Industrial Zones.
- New structures with a total floor area of 20,000 sf or more in Industrial Zones.
- New temporary or permanent parking area(s) or paving of existing unpaved parking areas for more than 75 vehicles.
- Building addition(s) with a total floor area of 10,000 sf or more (cumulatively within a 3 year period) except in Industrial Zones.
- Building addition(s) with a total floor area of 20,000 sf or more in Industrial Zones.
- A change in the use of a total floor area of 20,000 sf or more in any existing building (cumulatively within a 3 year period).
- Multiple family development (3 or more dwelling units) or the addition of any additional dwelling unit if subject to subdivision review.
- Any new major or minor auto business in the B-2 or B-5 Zone, or the construction of any new major or minor auto business greater than 10,000 sf of building area in any other permitted zone.
- Correctional prerelease facilities.
- Park improvements: New structures greater than 10,000 sf and/or facilities encompassing 20,000 sf or more (excludes rehabilitation or replacement of existing facilities); new nighttime outdoor lighting of sports, athletic or recreation facilities not previously illuminated.
- Land disturbance of 3 acres or more (includes stripping, grading, grubbing, filling or excavation).

Portland's development review process and requirements are outlined in the Land Use Code (Chapter 14) which is available on our website:

Land Use Code: <http://me-portland.civicplus.com/DocumentCenter/Home/View/1080>

Design Manual: <http://me-portland.civicplus.com/DocumentCenter/View/2355>

Technical Manual: <http://me-portland.civicplus.com/DocumentCenter/View/2356>

Planning Division
Fourth Floor, City Hall
389 Congress Street
(207) 874-8721

Office Hours
Monday thru Friday
8:00 a.m. – 4:30 p.m.

PROJECT NAME: Portland Retirement Residence

PROPOSED DEVELOPMENT ADDRESS:

802 Ocean Avenue

PROJECT DESCRIPTION:

Site Plan for 150 Unit Congregate Care Facility

CHART/BLOCK/LOT: Map 411, Lot 7A, Map 416, **PRELIMINARY PLAN** N/A **(date)**
Lots A6, A7 & A21 **FINAL PLAN** 9/17/15 **(date)**

CONTACT INFORMATION:

Applicant – must be owner, Lessee or Buyer Name: Lenity Architecture LLC c/o Mark Lowen OBO Business Name, if applicable: Hawthorne Development Group, LLC Address: 3150 Kettle Court SE City/State : Salem, OR Zip Code: 97301	Applicant Contact Information Work # 503-399-1090 Home# Cell # 503-586-4104 Fax# 503-399-0565 e-mail: markl@lenityarchitecture.com
Owner – (if different from Applicant) Name: Graves Hill Land Company, LLC Address: 16 Tiffany Lane City/State : Saco, ME Zip Code: 04702	Owner Contact Information Work # Home# Cell # Fax# e-mail:
Agent/ Representative Name: Sebago Technics, Inc, c/o Robert A. McSorley, PE Address: 75 John Roberts Road, Suite 1A City/State : South Portland, ME Zip Code: 04106	Agent/Representative Contact information Work # 207-200-2074 Cell # 207-939-1809 e-mail: rmcsorley@sebagotechnics.com
Billing Information Name: Lenity Architecture LLC c/o Mark Lowen Address: 3150 Kettle Court SE City/State : Salem, OR Zip Code: 97301	Billing Information Work # 503-399-1090 Cell # 503-586-4104 Fax# 503-399-0565 e-mail: markl@lenityarchitecture.com

Engineer Name: Sebago Technics, Inc, c/o Robert A. McSorley, PE Address: 75 John Roberts Road, Suite 1A City/State : South Portland, ME Zip Code: 04106	Engineer Contact Information Work # 207-200-2074 Cell # 207-939-1809 Fax# 207-856-2206 e-mail: rmcSorley@sebagotechnics.com
Surveyor Name: Sebago Technics, Inc, c/o Robert A. McSorley, PE Address: Same as Above City/State : Zip Code:	Surveyor Contact Information Work # Cell # Fax# e-mail:
Architect Name: Lenity architecture, c/o Mark Lowen Address: 3150 Kettle Court SE City/State : Salem,OR Zip Code: 97301	Architect Contact Information Work # 503-399-1090 Cell # 503-586-4104 Fax# 503-399-0565 e-mail: markl@lenitygroup.com
Attorney Name: Hopkinson & Abdonndanza, c/o James Hopkinson Address: 511 Congress Street, Suite 801 City/State : Portland, ME Zip Code: 04101	Attorney Contact Information Work # 207-772-5845 Cell # Fax# 207-874-2330 e-mail: jhopkinson@hablaw.com

APPLICATION FEES:

Check all reviews that apply. (Payment may be made by Cash or Check payable to the City of Portland)

Level III Development (check applicable reviews) ☐ Less than 50,000 sq. ft. (\$500.00) ☐ 50,000 - 100,000 sq. ft. (\$1,000) ☒ 100,000 – 200,000 sq. ft. (\$2,000) ☐ 200,000 – 300,000 sq. ft. (\$3,000) ☐ over 300,000 sq. ft. (\$5,000) ☐ Parking lots over 11 spaces (\$1,000) ☐ After-the-fact Review (\$1,000.00 plus applicable application fee) Plan Amendments (check applicable reviews) ☐ Planning Staff Review (\$250) ☐ Planning Board Review (\$500) The City invoices separately for the following: • Notices (\$.75 each) • Legal Ad (% of total Ad) • Planning Review (\$40.00 hour) • Legal Review (\$75.00 hour) Third party review is assessed separately. Any outside reviews or analysis requested from the Applicant as part of the development review, are the responsibility of the Applicant and are separate from any application or invoice fees.	Other Reviews (check applicable reviews) ☐ Traffic Movement (\$1,000) ☐ Stormwater Quality (\$250) ☐ Subdivisions (\$500 + \$25/lot) # of Lots ____ x \$25/lot = ____ ☐ Site Location (\$3,000, except for residential projects which shall be \$200/lot) # of Lots ____ x \$200/lot = ____ ☐ Other _____ ☐ Change of Use ☐ Flood Plain ☐ Shoreland ☐ Design Review ☐ Housing Replacement ☐ Historic Preservation
---	--

APPLICATION SUBMISSION:

1. All site plans and written application materials must be submitted electronically on a CD or thumb drive with each plan submitted as separate files, with individual file which can be found on the Electronic Plan and Document Submittal page of the City's website at <http://me-portland.civicplus.com/764/Electronic-Plan-and-Document-Submittal>
2. In addition, one (1) paper set of the plans (full size), one (1) paper set of plans (11 x 17), paper copy of written materials, and the application fee must be submitted to the Building Inspections Office to start the review process.

The application must be complete, including but not limited to the contact information, project data, application checklists, wastewater capacity, plan for fire department review, and applicant signature. The submissions shall include one (1) paper packet with folded plans containing the following materials:

1. One (1) full size site plans that must be folded.
2. One (1) copies of all written materials as follows, unless otherwise noted:
 - a. Application form that is completed and signed.
 - b. Cover letter stating the nature of the project.
 - c. All Written Submittals (Sec. 14-525 2. (c), including evidence of right, title and interest.
3. A stamped standard boundary survey prepared by a registered land surveyor at a scale not less than one inch to 50 feet.
4. Plans and maps based upon the boundary survey and containing the information found in the attached sample plan checklist.
5. One (1) set of plans reduced to 11 x 17.

Refer to the application checklist (attached) for a detailed list of submittal requirements.

Portland's development review process and requirements are outlined in the Land Use Code (Chapter 14), which includes the Subdivision Ordinance (Section 14-491) and the Site Plan Ordinance (Section 14-521). Portland's Land Use Code is on the City's web site: www.portlandmaine.gov Copies of the ordinances may be purchased through the Planning Division.

I hereby certify that I am the Owner of record of the named property, or that the owner of record authorizes the proposed work and that I have been authorized by the owner to make this application as his/her authorized agent. I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in this application is issued, I certify that the Planning Authority and Code Enforcement's authorized representative shall have the authority to enter all areas covered by this permit at any reasonable hour to enforce the provisions of the codes applicable to this permit.

This application is for a Level III Site Plan review. It is not a permit to begin construction. An approved site plan, a Performance Guarantee, Inspection Fee, Building Permit, and associated fees will be required prior to construction. Other Federal, State or local permits may be required prior to construction, which are the responsibility of the applicant to obtain.

Signature of Applicant 	Date: 9/17/15
---	----------------------

PROJECT DATA

(The following information is required where applicable, in order complete the application)

Total Site Area	442,875 R-5A, 798,184 Total sq. ft.
Proposed Total Disturbed Area of the Site	205,168 sq. ft.
(If the proposed disturbance is greater than one acre, then the applicant shall apply for a Maine Construction General Permit (MCGP) with DEP and a Stormwater Management Permit, Chapter 500, with the City of Portland)	
Impervious Surface Area	
Impervious Area (Total Existing)	0 sq. ft.
Impervious Area (Total Proposed)	127,631 sq. ft.
Building Ground Floor Area and Total Floor Area	
Building Footprint (Total Existing)	0 sq. ft.
Building Footprint (Total Proposed)	39,869 sq. ft.
Building Floor Area (Total Existing)	0 sq. ft.
Building Floor Area (Total Proposed)	134,646 sq. ft.
Zoning	
Existing	R-5A
Proposed, if applicable	R-5A
Land Use	
Existing	vacant
Proposed	150 suite congregate care facility
Residential, if applicable	
# of Residential Units (Total Existing)	0
# of Residential Units (Total Proposed)	150
# of Lots (Total Proposed)	N/A
# of Affordable Housing Units (Total Proposed)	N/A
Proposed Bedroom Mix	
# of Efficiency Units (Total Proposed)	57
# of One-Bedroom Units (Total Proposed)	78
# of Two-Bedroom Units (Total Proposed)	15
# of Three-Bedroom Units (Total Proposed)	N/A
Parking Spaces	
# of Parking Spaces (Total Existing)	0
# of Parking Spaces (Total Proposed)	102 including garages
# of Handicapped Parking Spaces (Total Proposed)	5
Bicycle Parking Spaces	
# of Bicycle Spaces (Total Existing)	0
# of Bicycle Spaces (Total Proposed)	None, Senior Housing
Estimated Cost Of Project	\$18,000,000.00

PRELIMINARY PLAN (Optional) - Level III Site Plan

Applicant Checklist	Planner Checklist	# of Copies	GENERAL WRITTEN SUBMISSIONS CHECKLIST
☐	☐	1	Completed application form
☐	☐	1	Application fees
☐	☐	1	Written description of project
☐	☐	1	Evidence of right, title and interest.
☐	☐	1	Evidence of state and/or Federal approval, if applicable.
☐	☐	1	Written assessment of proposed project's compliance with applicable zoning requirements
☐	☐	1	Summary of existing and/or proposed easements, covenants, public or private rights-of-way, or other burdens on the site
☐	☐	1	Written requests for waivers from site plan and/or technical standards, if applicable.
☐	☐	1	Evidence of financial and technical ability
☐	☐	1	Traffic analysis (may be preliminary, in nature, during the preliminary plan phase).
☐	☐	1	Written summary of significant natural features located on the site.
☐	☐	1	Written summary of project's consistency with related city master plans.
☐	☐	1	Neighborhood Meeting Material (refer to page 13 of this application.)
Applicant Checklist	Planner Checklist	# of Copies	SITE PLAN SUBMITTAL CHECKLIST
☐	☐	1	Boundary Survey meeting the requirements of Section 13 of the City of Portland Technical Manual.
☐	☐	1	Preliminary Site Plan Including the following: (*information provided may be preliminary in nature during preliminary plan phase):
☐	☐		Proposed grading and contours;
☐	☐		Existing structures with distances from property line;
☐	☐		Proposed site layout and dimensions for all proposed structures (including piers, docks or wharves in Shoreland Zone), paved areas, and pedestrian and vehicle access ways;
☐	☐		Preliminary design of proposed stormwater management in accordance Section 5 of the Technical Manual (note that Portland has a separate applicability section);
☐	☐		Preliminary infrastructure improvements;
☐	☐		Preliminary Landscape Plan in accordance with Section 4 of the Technical Manual;
☐	☐		Location of significant natural features (including wetlands, ponds, watercourses, floodplains, significant wildlife habitats and fisheries or other important natural features) located on the site as defined in Section 14-526 (b)(1);
☐	☐		Proposed buffers and preservation measures for significant natural features, as defined in Section 14-526 (b) (1);
☐	☐		Location , dimensions and ownership of easements, public or private rights of way, both existing and proposed;
☐	☐		Exterior building elevations.

FINAL PLAN (Optional) - Level III Site Plan

Applicant Checklist	Planner Checklist	# of Copies	GENERAL WRITTEN SUBMISSIONS CHECKLIST (* If applicant chooses to submit a Preliminary Plan, then the * items were submitted for that phase and only updates are required)
☒	☐	1	* Completed application form
☒	☐	1	* Application fees
☒	☐	1	* Written description of project
☒	☐	1	* Evidence of right, title and interest.
☐	☐	1	* Evidence of state and/or Federal approval, if applicable. N/A
☒	☐	1	* Written assessment of proposed project's specific compliance with applicable zoning requirements
☒	☐	1	* Summary of existing and/or proposed easements, covenants, public or private rights-of-way, or other burdens on the site
☒	☐	1	* Evidence of financial and technical ability
☒	☐	1	Construction management plan
☒	☐	1	A traffic study and other applicable transportation plans in accordance with Section 1 of the technical Manual, where applicable.
☒	☐	1	Written summary of significant natural features located on the site (Section 14-526 (b) (a))
☒	☐	1	Stormwater management plan and stormwater calculations
☐	☐	1	Written summary of project's consistency with related city master plans N/A
☒	☐	1	Evidence of utility capacity to serve
☒	☐	1	Written summary of solid waste generation and proposed management of solid waste.
☒	☐	1	A code summary referencing NFPA 1 and all Fire Department technical standards
☒	☐	1	Where applicable, an assessment of the development's consistency with any applicable design standards contained in Section 14-526 and in the City of Portland Design Manual.
☒	☐	1	Manufacturer's verification that HVAC and manufacturing equipment meets applicable state and federal emissions requirements.

Applicant Checklist	Planner Checklist	# of Copies	SITE PLAN SUBMISSIONS CHECKLIST (* If applicant chooses to submit a Preliminary Plan, then the * items were submitted for that phase and only updates are required)
☒	☐	1	Boundary Survey meeting the requirements of Section 13 of the City of Portland Technical Manual.
		1	Final Site Plans including the following:
☒	☐		Existing and proposed structures, as applicable, and distance from property line (including location of proposed piers, docks or wharves if in Shoreland Zone);
☒	☐		Existing and proposed structures on parcels abutting site;
☒	☐		All streets and intersections adjacent to the site and any proposed geometric modifications to those streets or intersections;
☒	☐		Location, dimensions and materials of all existing and proposed driveways, vehicle and pedestrian access ways, with corresponding curb lines;
☒	☐		Engineered construction specifications and cross-sectional drawings for all proposed driveways, paved areas, sidewalks;
☒	☐		Location and dimensions of all proposed loading areas including turning templates for applicable design delivery vehicles;
☒	☐		Existing and proposed public transit infrastructure with applicable dimensions and engineering specifications;
☒	☐		Location of existing and proposed vehicle and bicycle parking spaces with applicable dimensional and engineering information;
☒	☐		Location of all snow storage areas and/or a snow removal plan;
☒	☐		A traffic control plan as detailed in Section 1 of the Technical Manual;
☒	☐		Proposed buffers and preservation measures for significant natural features, where applicable, as defined in Section 14-526(b)(1);
☒	☐		Location and proposed alteration to any watercourse;
☒	☐		A delineation of wetlands boundaries prepared by a qualified professional as detailed in Section 8 of the Technical Manual;
☒	☐		Proposed buffers and preservation measures for wetlands;
☒	☐		Existing soil conditions and location of test pits and test borings;
☒	☐		Existing vegetation to be preserved, proposed site landscaping, screening and proposed street trees, as applicable;
☒	☐		A stormwater management and drainage plan, in accordance with Section 5 of the Technical Manual;
☒	☐		Grading plan;
☒	☐		Ground water protection measures;
☒	☐		Existing and proposed sewer mains and connections;

- Continued on next page -

☒	☐	Location of all existing and proposed fire hydrants and a life safety plan in accordance with Section 3 of the Technical Manual;
☒	☐	Location, sizing, and directional flows of all existing and proposed utilities within the project site and on all abutting streets;
☒	☐	Location and dimensions of off-premises public or publicly accessible infrastructure immediately adjacent to the site;
☒	☐	Location and size of all on site solid waste receptacles, including on site storage containers for recyclable materials for any commercial or industrial property;
☒	☐	Plans showing the location, ground floor area, floor plans and grade elevations for all buildings;
☐	☐	A shadow analysis as described in Section 11 of the Technical Manual, if applicable;
☐	☐	A note on the plan identifying the Historic Preservation designation and a copy of the Application for Certificate of Appropriateness, if applicable, as specified in Section Article IX, the Historic Preservation Ordinance;
☒	☐	Location and dimensions of all existing and proposed HVAC and mechanical equipment and all proposed screening, where applicable;
☒	☐	An exterior lighting plan in accordance with Section 12 of the Technical Manual;
☒	☐	A signage plan showing the location, dimensions, height and setback of all existing and proposed signs;
☒	☐	Location, dimensions and ownership of easements, public or private rights of way, both existing and proposed.



**PORTLAND FIRE DEPARTMENT
SITE REVIEW
FIRE DEPARTMENT CHECKLIST**

A separate drawing[s] shall be provided as part of the site plan application for the Portland Fire Department's review.

1. Name, address, telephone number of applicant
2. Hawthorn Development 9310 NE Vancouver Mall Drive, Vancouver, WA 98662, 360-213-1550
3. Name address, telephone number of architect
Lenity Architecture, LLC, 3510 Kette Court SE, Salem OR 97301 503-399-1090
4. Proposed uses of any structures [NFPA and IBC classification]
5. Type V-A
6. Square footage of all structures [total and per story]
1st flr - 39,869, 2nd flr - 31,552, 3rd flr - 32,911, 4th flr - 30,314 Total - 134,646 sf
7. Elevation of all structures
4 story, 47' - 7 3/4"
8. Proposed fire protection of all structures
 - ***As of September 16, 2010 all new construction of one and two family homes are required to be sprinkled in compliance with NFPA 13D. This is required by City Code. (NFPA 101 2009 ed.)***
9. Hydrant locations
Shown on plan, NE corner of the building
10. Water main[s] size and location
8" main
11. Access to all structures [min. 2 sides]
Access to three sides
12. A code summary shall be included referencing NFPA 1 and all fire department.
Technical standards.
Building to be sprinklered, details to be reviewed with building plans

Some structures may require Fire flows using annex H of NFPA 1

CITY OF PORTLAND WASTEWATER CAPACITY APPLICATION

Department of Public Services,
55 Portland Street,
Portland, Maine 04101-2991



Mr. Frank J. Brancely,
Senior Engineering Technician,
Phone #: (207) 874-8832,
Fax #: (207) 874-8852,

E-mail: fjb@portlandmaine.gov

Date: Revised 8/12/15

1. Please, Submit Utility, Site, and Locus Plans.

Site Address: 802 Ocean Avenue

Chart Block Lot Number: Map 411, Lot A7 and Map 416, Lots A6, 17 and A21

Proposed Use: Congregate Care Facility

Previous Use: Vacant

Existing Sanitary Flows: 0 GPD

Existing Process Flows: 0 GPD

Description and location of City sewer that is to receive the proposed building sewer lateral.

Sanitary Gravity in Ocean Avenue

Site Category

Commercial (see part 4 below) ☐

Industrial (complete part 5 below) ☐

Governmental ☐

Residential ☒

Other (specify) ☐

(Clearly, indicate the proposed connections, on the submitted plans)

2. Please, Submit Contact Information.

City Planner's Name: Barbara Barhydt Phone: 874-8699

Owner/Developer Name: Hawthorn Development Group, LLC

Owner/Developer Address: 9310 NE Vancouver Mall Drive, Suite 200, Vancouver, WA 98662-8210

Phone: 360-213-1550 Fax: 260-213-1540 E-mail: robin.goins@hawret.com

Engineering Consultant Name: Sebago Technics, Inc. attn: Robert A. McSorley, P.E.

Engineering Consultant Address: 75 John Roberts Road, Suite 1A, South Portland, ME 04106

Phone: 200-2074 Fax: 856-2206 E-mail: rmcsorley@sebagotechnics.com

(Note: Consultants and Developers should allow +/- 15 days, for capacity status, prior to Planning Board Review)

3. Please, Submit Domestic Wastewater Design Flow Calculations.

Estimated Domestic Wastewater Flow Generated: 10,080 GPD

Peaking Factor/ Peak Times: 10,080 GPD / 16 hors/day / 60 min/hour x 6 = 63 GPM

Specify the source of design guidelines: (i.e. ☒ "Handbook of Subsurface Wastewater Disposal in Maine,"

☐ "Plumbers and Pipe Fitters Calculation Manual," ☐ Portland Water District Records, ☐ Other (specify)

(Note: Please submit calculations showing the derivation of your design flows, either on the following page, in the space provided, or attached, as a separate sheet)

4. Please, Submit External Grease Interceptor Calculations.

Total Drainage Fixture Unit (DFU) Values:	TBD
Size of External Grease Interceptor:	TBD
Retention Time:	TBD
Peaking Factor/ Peak Times:	TBD

(Note: In determining your restaurant process water flows, and the size of your external grease interceptor, please use The Uniform Plumbing Code. Note: In determining the retention time, sixty (60) minutes is the minimum retention time. Note: Please submit detailed calculations showing the derivation of your restaurant process water design flows, and please submit detailed calculations showing the derivation of the size of your external grease interceptor, either in the space provided below, or attached, as a separate sheet)

5. Please, Submit Industrial Process Wastewater Flow Calculations

Estimated Industrial Process Wastewater Flows Generated:				0	GPD
Do you currently hold Federal or State discharge permits?	Yes	☐	No	☐	
Is the process wastewater termed categorical under CFR 40?	Yes	☐	No	☐	
OSHA Standard Industrial Code (SIC):	http://www.osha.gov/oshstats/sicser.html				
Peaking Factor/Peak Process Times:					

(Note: On the submitted plans, please show where the building's domestic sanitary sewer laterals, as well as the building's industrial-commercial process wastewater sewer laterals exits the facility. Also, show where these building sewer laterals enter the city's sewer. Finally, show the location of the wet wells, control manholes, or other access points; and, the locations of filters, strainers, or grease traps)

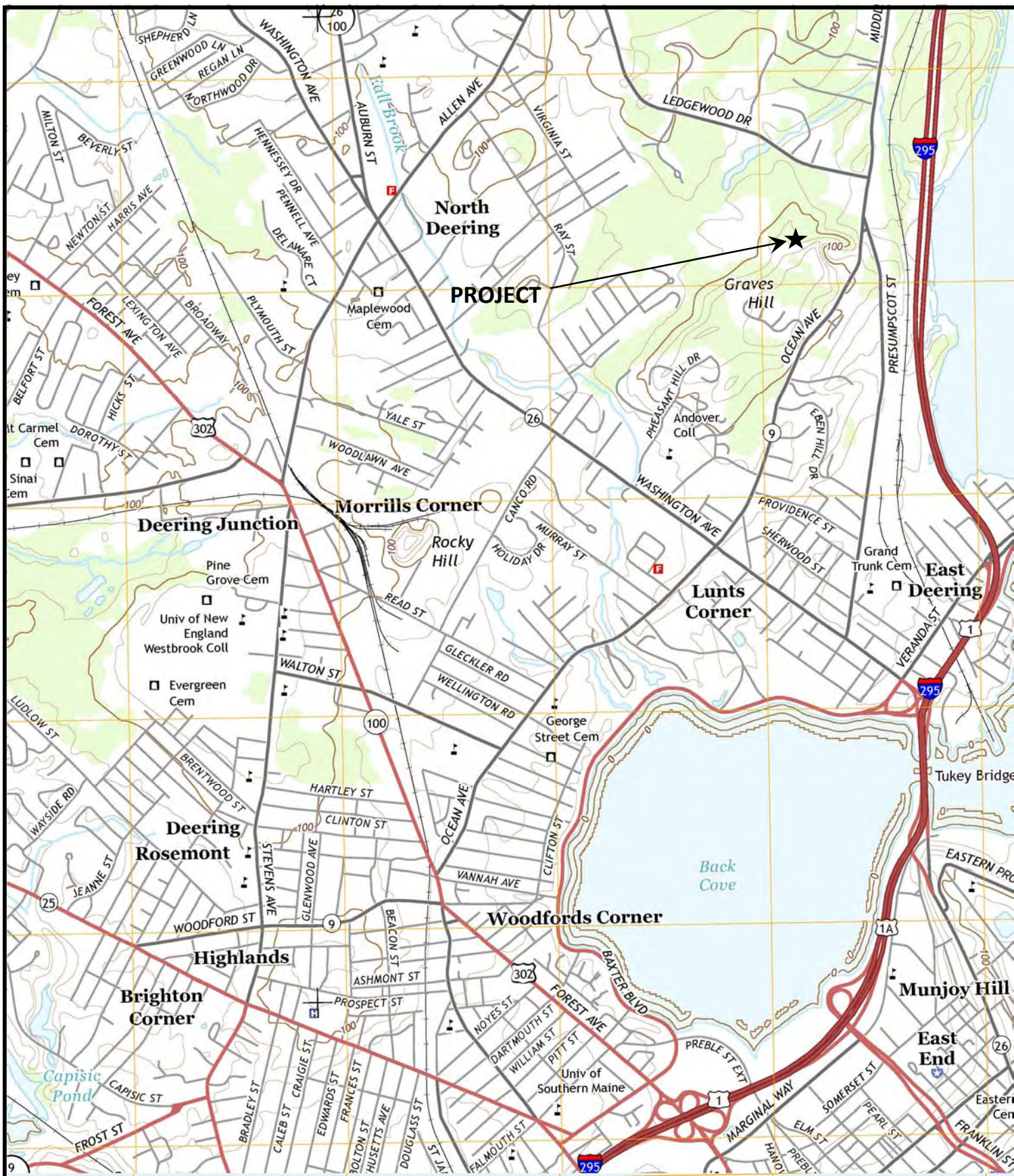
(Note: Please submit detailed calculations showing the derivation of your design flows, either in the space provided below, or attached, as a separate sheet)

Notes, Comments or Calculation

150 Residential Units (135 single units and 15 duplex units) and 2 Manager Units

135 units x 60 gpd/unit = 8,100 gpd, 15 duplex units x 120 gpd/unit = 1,800 gpd, 2 manager units x 90 gpd = 180 gpd. Total: 10,080 gpd.

Section 2. Location Map



WWW.SEBAGOTECHNICS.COM
 75 John Roberts Rd. - Suite 1A South Portland, ME 04106 (207) 200-2100
 250 Goddard Rd. - Suite B Lewiston, ME 04240 (207) 783-5656

SITE LOCATION MAP OF PORTLAND RETIREMENT COMMUNITY

LOCATION:

OCEAN AVENUE
 PORTLAND, ME

FOR:

Hawthorn Retirement Group

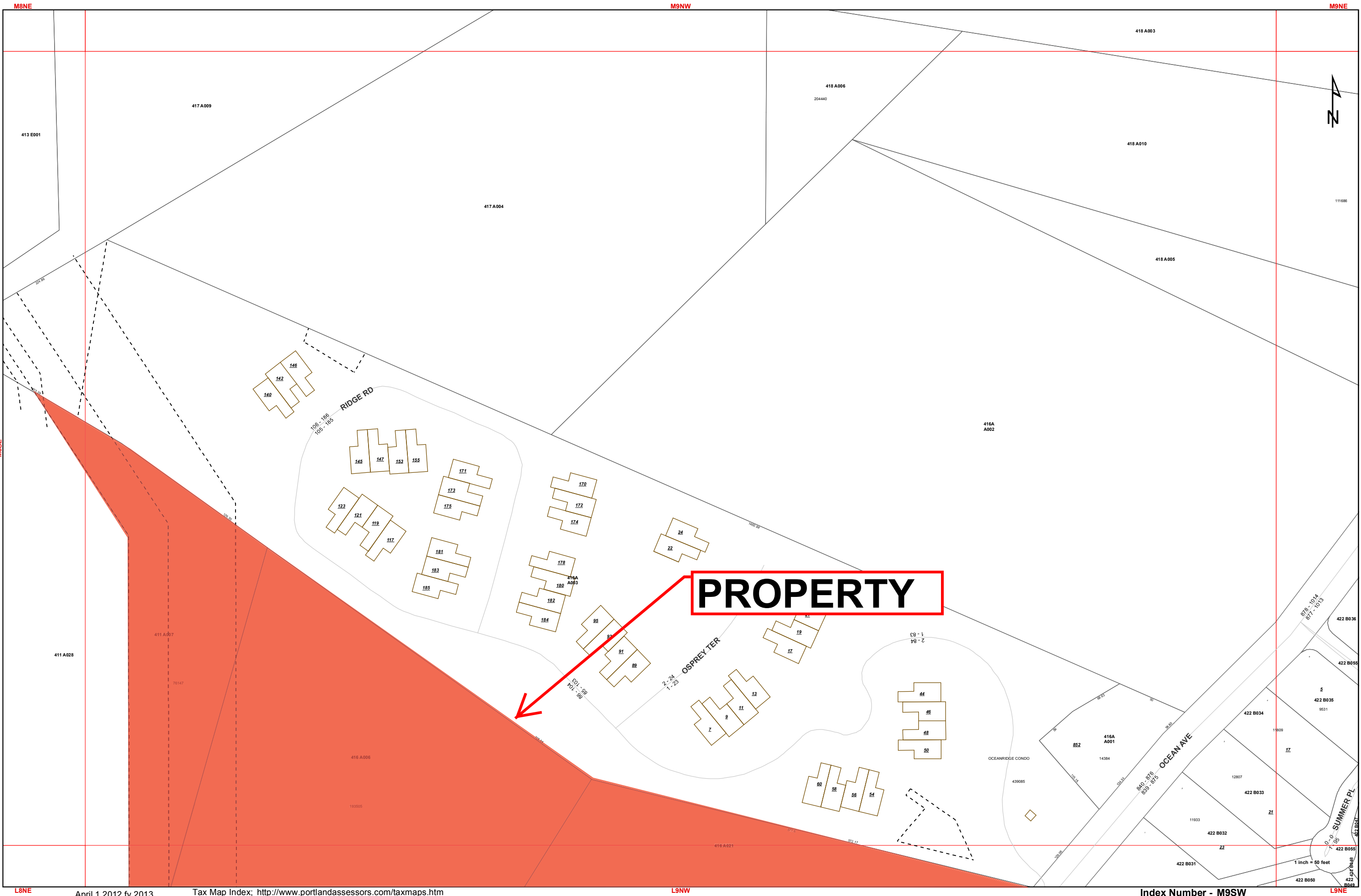
SCALE: 1"=2000'

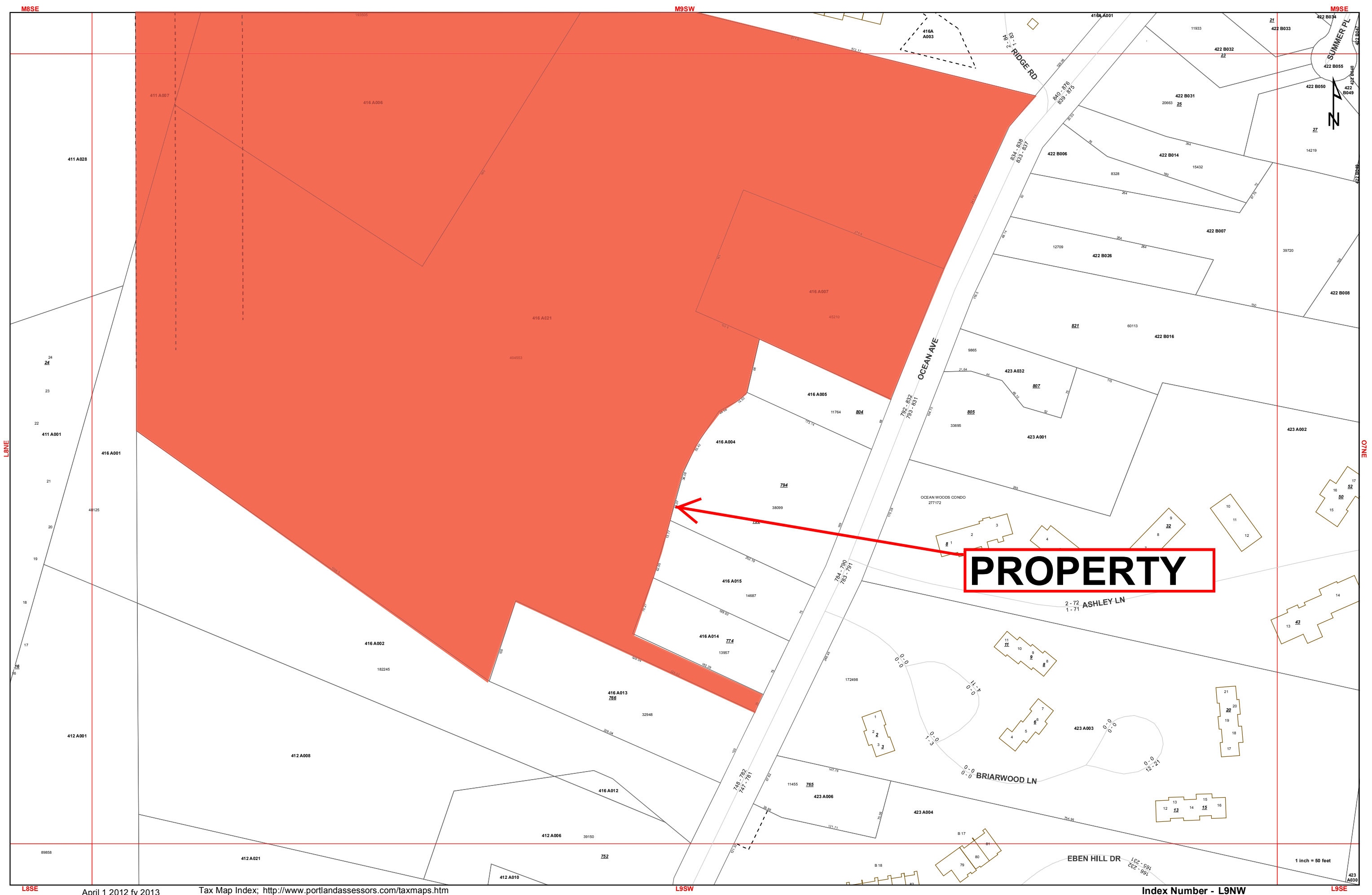
DATE: 11/19/14

SHEET:

1 OF 1

Section 3. Tax Map





Section 4. Right, Title and Interest (Deed)

HAWTHORN DEVELOPMENT LLC
Real Estate and Acquisition Dept.
Vancouver, WA

OFFER AND CONTRACT TO PURCHASE REAL ESTATE

DATE: October 13, 2014

TO: Graves Hill Land Company LLC, 16 Tiffany Lane, Saco, Maine 04072, Owner of Record of the following described property in Portland, Cumberland County, Maine

THROUGH: Malone Commercial Brokers, 5 Moulton Street, Suite 3, Portland, Maine 04101, Joe Malone, Phone: 207-773-2554, Email: joe@malonecb.com; and Jennifer Small, Phone: 207-233-6782, Email: jennifer@malonecb.com.

Malone Commercial Brokers, 5 Moulton Street, Suite 3, Portland, Maine 04101, Mark Malone, Phone: 207-773-6000, Email: mark@malonecb.com.

The following constitutes a firm offer by HAWTHORN DEVELOPMENT LLC or its assignee ("Purchaser") to purchase property located in Portland, Maine, from GRAVES HILL LAND COMPANY LLC, the owner of record, ("Seller") under the following conditions:

1. PROPERTY DESCRIPTION

Approximately 18.3 acres of land with an address of 802 Ocean Avenue in Portland, Cumberland County, Maine ("the Property") as shown on Exhibit A.

The Property is further identified by Assessor's Parcel ID Number 411A007001.

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Purchaser: Hawthorn Development
Seller: Graves Hill Land Company
Location: 802 Ocean Ave., Portland, Maine

2. TOTAL CONSIDERATION

[REDACTED]

3. TERMS OF PAYMENT

[REDACTED]

[REDACTED]

4. CONDITIONS OF PURCHASE

Purchaser's obligation to close is subject to Purchaser's satisfaction of the following conditions at its sole discretion: [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]

[REDACTED]

[REDACTED]

REPORT

A. As a courtesy, Purchaser will provide to Seller a written status report ("Status Report") outlining the known outstanding issues that relate to the entitlement process for Purchaser's intended use. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

6. CLOSING/ POST CLOSING

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

9. REMEDIES

IN THE EVENT OF PURCHASER'S DEFAULT UNDER THIS CONTRACT, AND PROVIDED THAT SELLER HAS FULLY PERFORMED ALL OF ITS OBLIGATIONS HEREUNDER, THE EARNEST MONEY SHALL BE PAID TO SELLER AS FULL LIQUIDATED DAMAGES AND PURCHASER SHALL BE RELEASED FROM ALL LIABILITY OR OBLIGATION HEREUNDER TO SELLER AND NO OTHER REMEDY, INCLUDING THE REMEDY OF SPECIFIC PERFORMANCE, SHALL BE AVAILABLE FOR PURCHASER'S BREACH OF THIS CONTRACT. PURCHASER AND SELLER ACKNOWLEDGE THAT IT WOULD BE DIFFICULT TO ASCERTAIN THE ACTUAL DAMAGES SUFFERED BY SELLER AS A RESULT OF ANY DEFAULT BY PURCHASER AND AGREE THAT SUCH LIQUIDATED DAMAGES ARE AN AGREED UPON REASONABLE ESTIMATE OF THE AMOUNT OF LOSS SELLER WOULD SUFFER AS A RESULT OF PURCHASER'S DEFAULT, AND ARE NOT INTENDED AS A PENALTY.

IF SELLER DEFAULTS AT CLOSING, THEN THE EARNEST MONEY AND ANY OTHER DEPOSITS THEREFORE MADE BY PURCHASER SHALL BE RETURNED TO PURCHASER IMMEDIATELY AND PURCHASER MAY CLAIM DAMAGES AGAINST SELLER FOR THE AMOUNT NO GREATER THAN \$25,000, OR, AT PURCHASER'S OPTION, PURCHASER MAY SEEK THE REMEDY OF SPECIFIC PERFORMANCE.

/s/ Myrle M. Davis
Purchaser

Seller

10. TERMINATION

Unless accepted by Seller in writing, this offer shall expire at 5:00 p.m. Pacific time, seven (7) days from the date of this letter.

Seller agrees that after acceptance of the offer contained herein and until the Contract is terminated, it shall not sell, contract to sell, nor enter into a letter of

6 | P a g e

Purchaser: Hawthorn Development

Seller: Graves Hill Land Company

Location: 802 Ocean Ave., Portland, Maine

intent or negotiate for the sale of Property to another party, and that there shall be no material change to the Property through the date of closing.

The parties hereby agree that copies of this document, and signatures, transmitted by telecopier (fax), and electronic mail (email) shall be for all purposes considered as originals. This Contract may be executed in multiple counterparts, each of which shall be deemed to be an original, but all of which, together, shall constitute one and the same instrument.

The ("Effective Date") of this Contract for the purposes of performance of all obligations is the date the escrow agent receipts this Contract after all parties execute this Contract.

If the time for the performance of any obligation or taking any action under this Contract expires on a Saturday, Sunday or legal holiday, the time for performance or taking such action will be extended to the next succeeding day which is not a Saturday, Sunday or legal holiday. Time is of the essence of this agreement.

Sincerely,

HAWTHORN DEVELOPMENT LLC

/s/ Myrle M. Davis

Myrle M. "Mick" Davis

Representative Agent for Purchaser

AGREED AND ACCEPTED:

Seller By: _____

Date: _____

By: _____

Date: _____

By: _____

Date: _____

7 | Page

Purchaser: Hawthorn Development

Seller: Graves Hill Land Company

Location: 802 Ocean Ave., Portland, Maine

ESCROW RECEIPT:

Escrow agent acknowledges receipt of the Contract on this date:

_____ (Effective Date) and earnest money in the
amount of \$ _____ in the form of _____
on _____.

Escrow Agent: _____

By: _____

Address: _____

Phone: _____

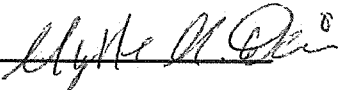
Fax: _____

Email: _____

9. REMEDIES

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/s/ Myrle M. Davis 
Purchaser

Seller

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6 | Page

Purchaser: Hawthorn Development
Seller: Graves Hill Land Company
Location: 802 Ocean Ave., Portland, Maine

intent or negotiate for the sale of Property to another party, and that there shall be no material change to the Property through the date of closing.

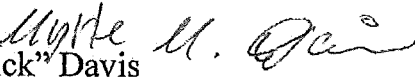
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Sincerely,

HAWTHORN DEVELOPMENT LLC

/s/ Myrle M. Davis 
Myrle M. "Mick" Davis
Representative Agent for Purchaser

AGREED AND ACCEPTED:

Seller By: _____

Date: _____

By: _____

Date: _____

By: _____

Date: _____

7 | Page

Purchaser: Hawthorn Development

Seller: Graves Hill Land Company

Location: 802 Ocean Ave., Portland, Maine

9. REMEDIES

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/s/ Myrle M. Davis
Purchaser

[Signature]
Seller

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6 | Page

Purchaser: Hawthorn Development

Seller: Graves Hill Land Company

Location: 802 Ocean Ave., Portland, Maine

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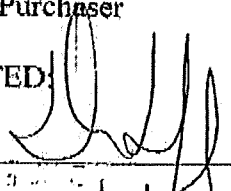
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Sincerely,

HAWTHORN DEVELOPMENT LLC

/s/ Myrle M. Davis *Myrle M. Davis*
Myrle M. "Mick" Davis
Representative Agent for Purchaser

AGREED AND ACCEPTED:

Seller By: 

Date: 10/17/14

By: _____

Date: _____

By: _____

Date: _____

7 | Page

Purchaser: Hawthorn Development
Seller: Graves Hill Land Company
Location: 802 Ocean Ave., Portland, Maine

EXISTING CONDITIONS

A full size electronic copy of this Existing Conditions Plan conducted in 2009 is available on request.

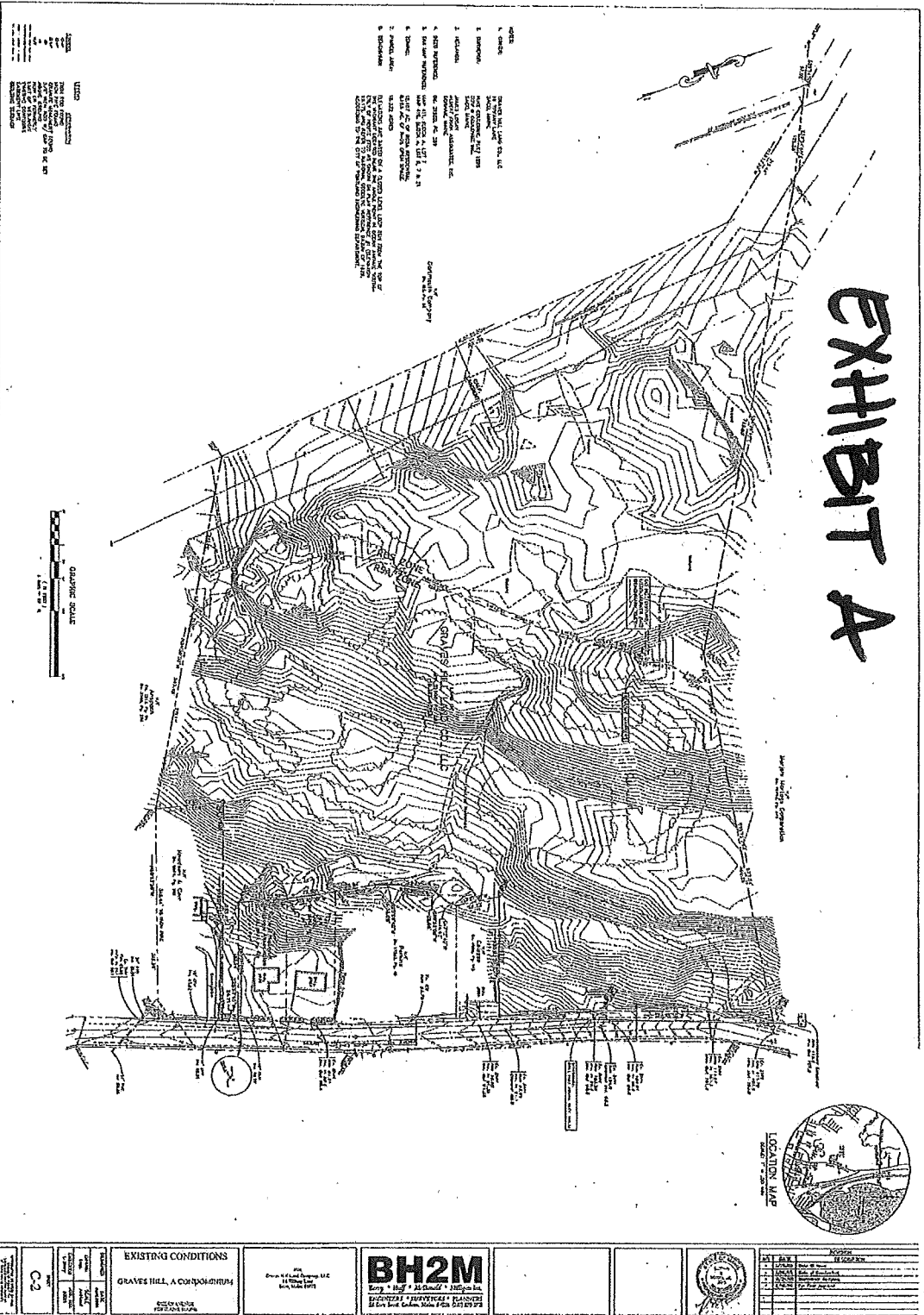
Contact broker for a copy and further details that may be available.

Broker:

Mark Malone, CCIM
(207) 773-6000 direct
(207) 358-7912 direct fax
mark@malonecb.com

MALONE COMMERCIAL BROKERS, INC.

HAKTHORN DEV.



QUITCLAIM DEED WITH COVENANT

Leo J. Delicata and Jeanne B. Delicata, husband and wife, both of Portland, Cumberland County, Maine, for consideration paid, grant to

Graves Hill Land Company, L.L.C. a Maine Limited Liability Company with a principle place of business in Saco, York County, Maine

whose mailing address is:
16 Tiffany Lane, Saco, Maine 04072

with quitclaim covenants,

A certain lot or parcel of land comprising 18 acres more or less, located on the Northwestern side of Ocean Avenue in Portland, Maine more particularly bounded and described on a survey plan entitled Plan Showing Boundary Survey and Topographic Survey made for Diane Doyle by Dow & Coulombe, Inc. Land Surveyors & Land Planners dated July 8, 2002 and recorded in the Cumberland County Registry of Deeds in Plan Book 204, Pages 293 and 294.

Meaning and intending to convey a portion of the real property described in a Deed from CRE I Real Estate Corp. to the Grantors herein dated August 14, 1992 and recorded in the Cumberland County Registry of Deeds in Book 10226 Page 236.

Witness our hands and seals this 1st day of July, 2004.

SIGNED, SEALED, AND DELIVERED
in the presence of

James B. Barns

to both

Leo J. Delicata

Leo J. Delicata

Jeanne B. Delicata

Jeanne B. Delicata

State of Maine
Cumberland, ss

July 1 2004

Personally appeared before me the above named Leo J. Delicata and Jeanne B. Delicata and acknowledged the foregoing instrument to be his or her free act and deed.

Received
Recorded Register of Deeds
Jul 02:2004 02:23:37P
Cumberland County
John B O'Brien

James B. Barns
Notary Public

SEAL

JAMES B. BARNES
Notary Public, Maine
My Commission Expires October 26, 2008

Section 5. Statement of State and Federal Permits/Agency Letters

- Maine Historic Preservation Commission (MHPC)
- Maine Inland Fisheries and Wildlife (MIFW)
- Maine Natural Areas Program (MNAP)

Statement of State and Federal Permits

The proposed project will create 2.86 acres of non-vegetated surface and therefore is subject to the State of Maine Stormwater Law. As this project is within the City of Portland, this review will be completed by the City under delegated review.

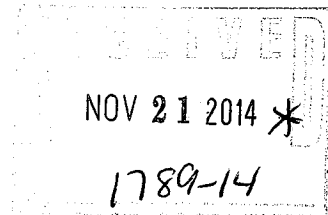
The project will not disturb any jurisdictional waters of the state (wetlands); therefore, project is not subject to State or Federal review of wetland impacts.

Copies of letters from other State of Maine agencies are enclosed.



November 19, 2014
14432

Earle G. Shettleworth, Jr., State Historic Preservation Officer
Maine Historic Preservation Commission
55 Capitol Street
65 State House Station
Augusta, ME 04039



* More info rec'd
12/22/14.

**Re: Site Plan Submittal – Portland Retirement Community
Portland, Maine**

Dear Mr. Shettleworth:

On behalf of our client, Hawthorn Development Group, we are currently in the process of filling a site plan application to the City of Portland. Our client proposes a 142 suite retirement facility at 802 Ocean Avenue. The proposed building will be approximately 4 stories or approximately 50' high at roof peak from finished grade. This proposed project will replace one that has been previously approved by the City for another developer for two ten story condominium buildings.

We request that the Maine Historical Preservation Commission review its files for any known historical sites, structures or archeological sites that have been identified with the vicinity of the proposed project. The response obtained from the Commission is required for the site plan approval process with the City and approvals from other jurisdictional agencies.

I have included a copy of the USGS quadrangle and a plan depicting the proposed development on the property. If you have any questions on this project, do not hesitate to contact me.

Sincerely,

SEBAGO TECHNICS, INC.

Robert A. McSorley, P.E.
Senior Project Manager

RAM/ram:llg
Enc.

cc: Mark Lowen, Lenity Architecture

Based on the information submitted, I have concluded that there will be no historic properties affected by the proposed undertaking, as defined by Section 106 of the National Historic Preservation Act. Consequently, pursuant to 36 CFR 800.4(d)(1), no further Section 106 consultation is required unless additional resources are discovered during project implementation pursuant to 36 CFR 800.13.

Kirk F. Mohnhey,
Deputy State Historic Preservation Officer
Maine Historic Preservation Commission

1/2/15
Date



PAUL R. LEPAGE
GOVERNOR

STATE OF MAINE
DEPARTMENT OF
INLAND FISHERIES & WILDLIFE
284 STATE STREET
41 STATE HOUSE STATION
AUGUSTA ME 04333-0041

CHANDLER E. WOODCOCK
COMMISSIONER

August 25, 2015

Robert McSorley
Sebago Technics
75 John Roberts Road, Suite 1A
South Portland, ME 04016

RE: Information Request - Portland Retirement Community, Portland

Dear Robert:

Per your request received July 27, 2015, we have reviewed current Maine Department of Inland Fisheries and Wildlife (MDIFW) information for known locations of Endangered, Threatened, and Special Concern species; designated Essential and Significant Wildlife Habitats; and fisheries habitat concerns within the vicinity of the *Portland Retirement Community Project* in Portland. For purposes of this review, we are assuming that the proposed development will also include the forested portions of the project search area.

Our Department has not mapped any Essential Habitats or fisheries habitats that would be directly affected by your project.

Endangered, Threatened, and Special Concern Species

Bats

Of the eight species of bats that occur in Maine, four species are listed as Special Concern: red bat (*Lasiurus borealis*), hoary bat (*Lasiurus cinereus*), silver-haired bat (*Lasionycteris noctivagans*), and tri-colored bat (*Perimyotis subflavus*). The three *Myotis* species of bats in Maine will soon be protected under Maine's Endangered Species Act (MESA) and will be afforded special protection against activities that may cause "Take" (kill or cause death), "harassment" (create injury or significantly disrupt normal behavior patterns), and other adverse actions. MDIFW has the legal right, power, and authority to enforce MESA under 12 M.R.S § 12805. The three *Myotis* species include little brown bat (*M. lucifugus*, State Endangered); northern long-eared bat (*M. septentrionalis*, State Endangered); and eastern small-footed bat (*M. leibii*, State Threatened).

While a comprehensive statewide inventory for bats has not been completed, it is likely that several of these species occur within the project area during migration and/or the breeding season. Therefore, we recommend that you contact and will defer to any guidance and recommendations provided by the U.S. Fish and Wildlife Service Maine Field Office (Wende Mahaney, 207-866-3344), as the northern long-eared bat is also listed as a Threatened Species under the Federal Endangered Species Act.

Significant Wildlife Habitat

At this time, MDIFW Significant Wildlife Habitat (SWH) maps indicate no known presence of SWHs within the project area, which include Waterfowl and Wading Bird Habitats, Deer Wintering Areas, Seabird Nesting Islands, Shorebird Areas, and Significant Vernal Pools. However, a comprehensive statewide inventory for Significant Vernal Pools has not been completed. Therefore, we recommend that surveys for vernal pools be conducted within the project boundary by qualified wetland scientists prior to final project design to determine whether there are Significant Vernal Pools present in the area. These surveys should extend up to 250 feet beyond the anticipated project footprint because of potential impacts to off-site Significant Vernal Pools, assuming such pools are located on land owned or controlled by the applicant. Once surveys are completed, our Department will need to verify vernal pool data sheets prior to final determination of significance.

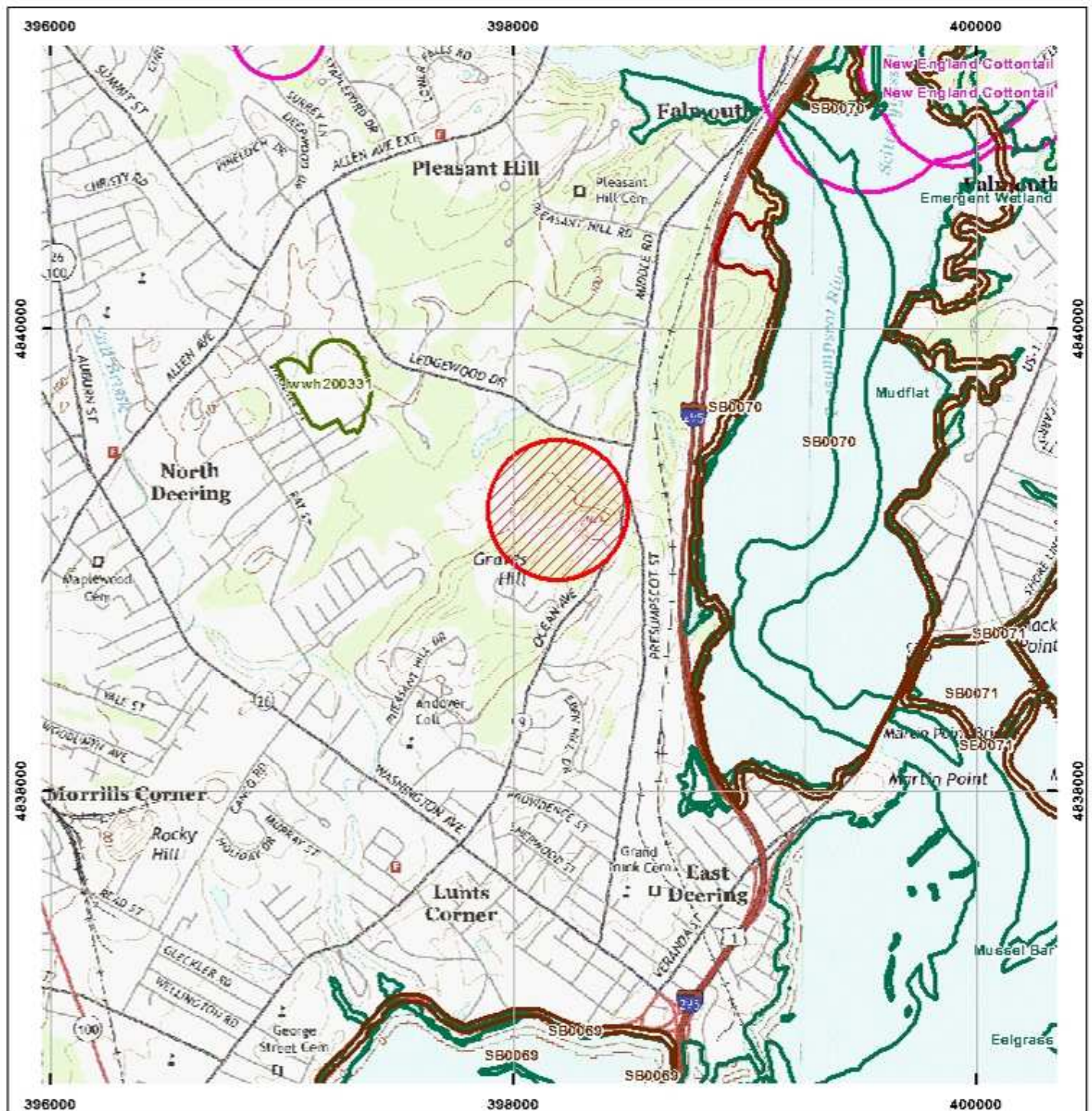
This consultation review has been conducted specifically for known MDIFW jurisdictional features and should not be interpreted as a comprehensive review for the presence of other regulated features that may occur in this area. Prior to the start of any future site disturbance we recommend additional consultation with the municipality, and other state resource agencies including the Maine Natural Areas Program and Maine Department of Environmental Protection in order to avoid unintended protected resource disturbance.

Please feel free to contact my office if you have any questions regarding this information, or if I can be of any further assistance.

Best regards,

A handwritten signature in blue ink, appearing to read 'JPerry'.

John Perry
Environmental Review Coordinator



Environmental Review of Fish and Wildlife Observations and Priority Habitats

Project Name:

ER Tool Test

(Version 1)



Maine Department of
Inland Fisheries and Wildlife



Projection: UTM, NAD83, Zone 19N

Date: 8/25/2015

- | | | |
|--------------------|-------------------------------|--|
| ProjectPoints | Deer Winter Area | Roseate Tern |
| ProjectLines | WURC p-fw | Piping Plover/Least Tern |
| ProjectPolys | Cooperative DWAs | Aquatic ETS (25 mi review) |
| ProjectSearchAreas | Seabird Nesting Islands | Rare Mussels (5 mi review) |
| | Snowbird Areas | Maine Heritage Fish Waters |
| | Inland Waterfowl/Wading Bird | Arctic Char Habitat |
| | Shoreland Zoning Law | E. Brook Trout Joint Venture Subwatershed Classification |
| | Tidal Waterfowl/Wading Bird | Redfin Pickering (Swamp Darter) Habitats (buffer 100ft) |
| | Significant Vernal Pools | Special Concern-occupied habitats (100ft buffer) |
| | Environmental Review Polygons | Wild Lake Trout Habitats |





STATE OF MAINE
DEPARTMENT OF AGRICULTURE, CONSERVATION & FORESTRY
93 STATE HOUSE STATION
AUGUSTA, MAINE
04333-0093

PAUL R. LePAGE
GOVERNOR

WALTER E. WHITCOMB
COMMISSIONER

July 27, 2015

VIA ELECTRONIC MAIL

Robert McSorley
Sebago Technics
75 John Roberts Road, Suite 1A
South Portland, ME 04106

Re: Rare and exemplary botanical features in proximity to: Project 14432, Portland Retirement Community, Portland, Maine

Dear Mr. McSorley:

I have searched the Natural Areas Program's Biological and Conservation Data System files in response to your request received July 27, 2015 for information on the presence of rare or unique botanical features documented from the vicinity of the project site in Portland, Maine. Rare and unique botanical features include the habitat of rare, threatened, or endangered plant species and unique or exemplary natural communities. Our review involves examining maps, manual and computerized records, other sources of information such as scientific articles or published references, and the personal knowledge of staff or cooperating experts.

Our official response covers only botanical features. For authoritative information and official response for zoological features you must make a similar request to the Maine Department of Inland Fisheries and Wildlife, 284 State Street, Augusta, Maine 04333.

According to the information currently in our Biological and Conservation Data System files, there are no rare botanical features documented specifically within the project area. This lack of data may indicate minimal survey efforts rather than confirm the absence of rare botanical features. You may want to have the site inventoried by a qualified field biologist to ensure that no undocumented rare features are inadvertently harmed.

If a field survey of the project area is conducted, please refer to the enclosed supplemental information regarding rare and exemplary botanical features documented to occur in the vicinity of the project site. The list may include information on features that have been known to occur historically in the area as well as recently field-verified information. While historic records have not been documented in several years, they may persist in the area if suitable habitat exists. The enclosed list identifies features with potential to occur in the area, and it should be considered if you choose to conduct field surveys.

This finding is available and appropriate for preparation and review of environmental assessments, but it is not a substitute for on-site surveys. Comprehensive field surveys do not exist for all natural areas in Maine, and in the absence of a specific field investigation, the Maine Natural Areas Program cannot provide a definitive statement on the presence or absence of unusual natural features at this site.

The Natural Areas Program is continuously working to achieve a more comprehensive database of exemplary natural features in Maine. We would appreciate the contribution of any information obtained should you decide to do field work. The Natural Areas Program welcomes coordination with individuals or organizations proposing environmental alteration, or conducting environmental assessments. If, however, data provided by the Natural Areas Program are to be published in any form, the Program should be informed at the outset and credited as the source.

The Natural Areas Program has instituted a fee structure of \$75.00 an hour to recover the actual cost of processing your request for information. You will receive an invoice for \$150.00 for two hours of our services.

Thank you for using the Natural Areas Program in the environmental review process. Please do not hesitate to contact me if you have further questions about the Natural Areas Program or about rare or unique botanical features on this site.

Sincerely,

A handwritten signature in blue ink, appearing to read "Don Cameron", with a long, sweeping horizontal line extending to the right.

Don Cameron
Ecologist
Maine Natural Areas Program
207-287-8041
don.s.cameron@maine.gov

Rare and Exemplary Botanical Features within 4 miles of Project: #14432, Portland Retirement Community, Portland, Maine

Common Name	State Status	State Rank	Global Rank	Date Last Observed	Occurrence Number	Habitat
Allegheny Vine						
	T	S1	G4	1860-10	9	Rocky summits and outcrops (non-forested, upland),Dry barrens (partly forested, upland)
American Sea-blite						
	T	S2	G5	1932-09-12	5	Tidal wetland (non-forested, wetland)
	T	S2	G5	2011-08-15	17	Tidal wetland (non-forested, wetland)
Beach Plum						
	E	S1	G4	2009-09-16	21	Rocky coastal (non-forested, upland)
Bottlebrush Grass						
	SC	S3	G5	1905-09-13	10	Hardwood to mixed forest (forest, upland)
Broad Beech Fern						
	SC	S2	G5	1872-08	15	Hardwood to mixed forest (forest, upland)
Columbia Water-meal						
	SC	S2	G5	2002-08-04	2	Open water (non-forested, wetland)
Ebony Spleenwort						
	SC	S2	G5	1910-06-06	10	Rocky summits and outcrops (non-forested, upland),Hardwood to mixed forest (forest, upland)
Engelmann's Spikerush						
	PE	SH	G4G5Q	1916-08-31	2	Open wetland, not coastal nor rivershore (non-forested, wetland)
Fern-leaved False Foxglove						
	SC	S3	G5	1902-09-02	13	Dry barrens (partly forested, upland),Hardwood to mixed forest (forest, upland)
Foxtail Bog-clubmoss						
	E	S1	G5	2014-09-24	1	<null>
Great Blue Lobelia						

Rare and Exemplary Botanical Features within 4 miles of Project: #14432, Portland Retirement Community, Portland, Maine

Common Name	State Status	State Rank	Global Rank	Date Last Observed	Occurrence Number	Habitat
	PE	SX	G5	1905-09	3	Forested wetland,Non-tidal rivershore (non-forested, seasonally wet)
Hollow Joe-pye Weed						
	SC	S2	G5?	2014-06-18	24	Open wetland, not coastal nor rivershore (non-forested, wetland),Old field/roadside (non-forested, wetland or upland)
	SC	S2	G5?	2011-08-04	19	Open wetland, not coastal nor rivershore (non-forested, wetland),Old field/roadside (non-forested, wetland or upland)
Horned Pondweed						
	SC	S2	G5	1913-09-13	9	Tidal wetland (non-forested, wetland)
Marsh Milkwort						
	PE	SH	G5T4	1903-08-18	1	Dry barrens (partly forested, upland),Open wetland, not coastal nor rivershore (non-forested, wetland)
Missouri Rockcress						
	T	S1	G5?Q	1905-06-11	5	Rocky summits and outcrops (non-forested, upland),Hardwood to mixed forest (forest, upland)
Mountain-laurel						
	SC	S2	G5	1985-08-01	13	Conifer forest (forest, upland),Hardwood to mixed forest (forest, upland)
Mountain Honeysuckle						
	E	S2	G5	2014-08-03	14	Dry barrens (partly forested, upland),Hardwood to mixed forest (forest, upland)
	E	S2	G5	2007-07-30	10	Dry barrens (partly forested, upland),Hardwood to mixed forest (forest, upland)
Pale Green Orchis						
	SC	S2	G4T4Q	1907-07-05	27	Non-tidal rivershore (non-forested, seasonally wet),Open wetland, not coastal nor rivershore (non-forested, wetland)
Palmate-leaved Violet						
	PE	SH	G5	1908	1	Hardwood to mixed forest (forest, upland)
Screwstem						

Rare and Exemplary Botanical Features within 4 miles of Project: #14432, Portland Retirement Community, Portland, Maine

Common Name	State Status	State Rank	Global Rank	Date Last Observed	Occurrence Number	Habitat
	T	S1	G5	2014-09-24	17	Coastal non-tidal wetland (non-forested, wetland)
Slender Knotweed						
	PE	SH	G5	1902-09-07	1	Dry barrens (partly forested, upland)
Smooth Winterberry Holly						
	SC	S3	G5	2010-06-13	32	Forested wetland
Spotted Wintergreen						
	E	S2	G5	1991-09	11	Conifer forest (forest, upland),Hardwood to mixed forest (forest, upland)
Tidal Marsh Estuary Ecosystem						
	<null>	S3	GNR	2011-08-25	8	Tidal wetland (non-forested, wetland)
Upper Floodplain Hardwood Forest						
	<null>	S3	GNR	2010-06-23	20	Forested wetland
Upright Bindweed						
	T	S2	G4G5	2007-06-28	5	Dry barrens (partly forested, upland),Old field/roadside (non-forested, wetland or upland)
Variable Sedge						
	E	S1	G3	1911	8	Dry barrens (partly forested, upland),Hardwood to mixed forest (forest, upland)
	E	S1	G3	1911-06-29	9	Dry barrens (partly forested, upland),Hardwood to mixed forest (forest, upland)
	E	S1	G3	2012-08-09	1	Dry barrens (partly forested, upland),Hardwood to mixed forest (forest, upland)
	E	S1	G3	2006-07-12	6	Dry barrens (partly forested, upland),Hardwood to mixed forest (forest, upland)
	E	S1	G3	2014-09-24	4	Dry barrens (partly forested, upland),Hardwood to mixed forest (forest, upland)
Vasey's Pondweed						
	SC	S2	G4	1901-08-04	7	Open water (non-forested, wetland)

Rare and Exemplary Botanical Features within 4 miles of Project: #14432, Portland Retirement Community, Portland, Maine

Common Name	State Status	State Rank	Global Rank	Date Last Observed	Occurrence Number	Habitat
Wild Garlic						
	SC	S2	G5	1918-07-16	6	Forested wetland,Hardwood to mixed forest (forest, upland)
Wild Leek						
	SC	S3	G5	1978-06-28	17	Hardwood to mixed forest (forest, upland),Forested wetland
	SC	S3	G5	2003-06-17	42	Hardwood to mixed forest (forest, upland),Forested wetland
	SC	S3	G5	2009-07-12	26	Hardwood to mixed forest (forest, upland),Forested wetland

STATE RARITY RANKS

- S1** Critically imperiled in Maine because of extreme rarity (five or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extirpation from the State of Maine.
- S2** Imperiled in Maine because of rarity (6-20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.
- S3** Rare in Maine (20-100 occurrences).
- S4** Apparently secure in Maine.
- S5** Demonstrably secure in Maine.
- SU** Under consideration for assigning rarity status; more information needed on threats or distribution.
- SNR** Not yet ranked.
- SNA** Rank not applicable.
- S#?** Current occurrence data suggests assigned rank, but lack of survey effort along with amount of potential habitat create uncertainty (e.g. S3?).

Note: **State Rarity Ranks** are determined by the Maine Natural Areas Program for rare plants and rare and exemplary natural communities and ecosystems. The Maine Department of Inland Fisheries and Wildlife determines State Rarity Ranks for animals.

GLOBAL RARITY RANKS

- G1** Critically imperiled globally because of extreme rarity (five or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extinction.
- G2** Globally imperiled because of rarity (6-20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.
- G3** Globally rare (20-100 occurrences).
- G4** Apparently secure globally.
- G5** Demonstrably secure globally.
- GNR** Not yet ranked.

Note: **Global Ranks** are determined by NatureServe.

STATE LEGAL STATUS

Note: State legal status is according to 5 M.R.S.A. § 13076-13079, which mandates the Department of Conservation to produce and biennially update the official list of Maine's **Endangered** and **Threatened** plants. The list is derived by a technical advisory committee of botanists who use data in the Natural Areas Program's database to recommend status changes to the Department of Conservation.

- E** ENDANGERED; Rare and in danger of being lost from the state in the foreseeable future; or federally listed as Endangered.
- T** THREATENED; Rare and, with further decline, could become endangered; or federally listed as Threatened.

NON-LEGAL STATUS

- SC** SPECIAL CONCERN; Rare in Maine, based on available information, but not sufficiently rare to be considered Threatened or Endangered.
- PE** Potentially Extirpated; Species has not been documented in Maine in past 20 years or loss of last known occurrence has been documented.

ELEMENT OCCURRENCE RANKS - EO RANKS

Element Occurrence ranks are used to describe the quality of a rare plant population or natural community based on three factors:

- **Size**: Size of community or population relative to other known examples in Maine. Community or population's viability, capability to maintain itself.
- **Condition**: For communities, condition includes presence of representative species, maturity of species, and evidence of human-caused disturbance. For plants, factors include species vigor and evidence of human-caused disturbance.
- **Landscape context**: Land uses and/or condition of natural communities surrounding the observed area. Ability of the observed community or population to be protected from effects of adjacent land uses.

These three factors are combined into an overall ranking of the feature of **A**, **B**, **C**, or **D**, where **A** indicates an **excellent** example of the community or population and **D** indicates a **poor** example of the community or population. A rank of **E** indicates that the community or population is **extant** but there is not enough data to assign a quality rank. The Maine Natural Areas Program tracks all occurrences of rare (S1-S3) plants and natural communities as well as A and B ranked common (S4-S5) natural communities.

Note: **Element Occurrence Ranks** are determined by the Maine Natural Areas Program for rare plants and rare and exemplary natural communities and ecosystems. The Maine Department of Inland Fisheries and Wildlife determines Element Occurrence ranks for animals.

Visit our website for more information on rare, threatened, and endangered species!
<http://www.maine.gov/dacf/mnap>

Section 6. Zoning Assessment

Zoning Assessment

On June 15, 2015, the City of Portland City Council approved a text amendment to Chapter 14, Land Use that included the definition for a living unit and changes to the R-5A Zoning District relative adding congregate care as a permitted use, net residential land area calculation and other dimensional criteria.

On July 20, 2015, the City of Portland City Council approved a rezoning of the subject property to remove an existing contract zone and to zone the property per the underlying R-5A and R-OS zoning Districts. This project will develop the R-5A portion of the property. As stated above, the proposed 150 Unit Congregate Care Facility is an allowed use under the R-5A zoning. The property is not located within a shoreland or flood plain area. It does not appear that the property is subject to any of the requirements of Div. 25, Space and Bulk Regulations and Exceptions. Other zoning requirements are as follows:

Net Residential Calculation		
Total Property Area	442,875	SF
Per Section 14-47 definition of net land area as set forth in Sec. 14-130 Subtract the following from the gross area		
Existing watercourses	0	SF
Wetlands	6,481	SF
Slopes > 25%	32,650	SF
Subtotal deductions	39,131	SF
Net Area	403,744	SF
Min. Area per living unit	1,600	SF/Unit
Net Density Allowed	403,744 SF/1,600 SF/Unit	
	252	Units
Proposed	150	Units

Dimensional Requirements		
	Required	Proposed
Minimum Frontage	50 FT	427.05 FT
Minimum Front Yard	25 FT	114.07 FT
Minimum Rear Yard	25 FT	62.78 FT
Minimum Side Yard	16 FT	25 FT (garage)/51.79 (build)
Maximum Structure Height	55 FT	Approx. 47 FT 8 IN
Maximum Lot Coverage	30%	28.8%
Minimum Lot Width	60 FT	>>60 FT
Minimum Building Setback from external subdivision property lines (building length < 100 feet)	25 FT	25 FT (garage)
Minimum Building Setback from external subdivision property lines (building length > 100 feet)	35 FT	51.79/114.07 FT (build)
Minimum Recreation Open Space	200 SF/Unit	>200 SF/Unit*
Parking (1 space/3 Living Units)	50 spaces	102 spaces

*Lawns, Garden Area, Walking Paths and Site Trails

Section 9. Evidence of Financial and Technical Ability

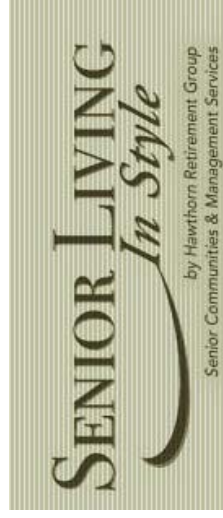
Evidence of Financial and Technical Ability

The project is being proposed by Hawthorn Development Group, LLC. Hawthorn and its predecessor, Holiday Retirement Corporation, has developed and managed approximately 375 of these facilities within the United States and abroad. Hawthorn is a family owned business that has a long standing relationship in development of these projects with Lenity Architecture and its predecessor, Curry Brandaw Architects, and Colson and Colson, General Contractors, both of Salem, OR. This group has successfully developed and managed Canco Woods in Portland and Sunbury Village/Winterberry Village in Bangor.

Sebago Technics, Inc. is a local employee owned firm that has partnered with this development group to design, permit and complete numerous projects in New England including Canco Woods and Sunbury Village/Winterberry Village and projects in York, Maine; Derry, New Hampshire; and Beverly and Tewksbury, Massachusetts.

Information relative to Hawthorn Development Group and Sebago Technics, Inc. are enclosed.

HAWTHORN RETIREMENT GROUP



www.seniorlivinginstyle.com

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- a) Company Overview**
- b) Management Services**
- c) Harvest Development LLC**
- d) Related Entities**
- e) Community Location Map**
- f) Community Listing**
- g) Corporate Organization Chart**

Company Overview

Hawthorn Retirement Group offers management and consulting services to retirement, personal care, assisted living, and memory care communities.

- Currently the company has 31 facilities in operation consisting of 3,447 rentable units with 5 other facilities under construction and 9 new sites in various stages of development in North America and UK.
- Of the 31 existing facilities, 19 are stand alone independent living facilities and 12 are assisted living facilities or facilities with higher care components.
- Geographically Hawthorn Retirement Group's communities cover 13 States in the US, 3 provinces in Canada and 3 locations in UK.
- Of the 28 facilities in its North American portfolio, 10 have been opened for less than a year with an average occupancy of 52% for the portfolio. The "More than 12 Months" portfolio of 18 facilities boasts an average occupancy of 91% with 1/3 of the portfolio 100% occupied and more than 50% of them at or above 95% occupancy.

Company History & Philosophy

Developing senior living options is not only about construction and design, but about bringing people together and establishing a real sense of community, connection, and friendship. In 2000, a group sharing these ideals formalized Hawthorn Retirement Group to pursue the development and operation of senior communities throughout the U.S. and abroad.

The present group of Hawthorn owners and operators are continuing a legacy of quality while providing housing and health support services to seniors around the world. As Hawthorn continues to develop and manage senior communities, its members continue to draw from its roots while building new concepts and designs for the future in senior living.

Hawthorn Retirement Group Mission Statement

At Hawthorn Retirement Group, our caring concern for our residents is the foundation that leads to outstanding resident services. As contributing members of the communities we serve, what is most important is that we love our residents.

Management Services

Accounting Services

Hawthorn Retirement Group offers complete accounting services to the communities managed. Services provided include accounts payable, accounts receivable, payroll, monthly and annual financial statements including balance sheets and income statements. Hawthorn assists with the annual budgeting process with the communities. Additionally, variance reporting is provided to the communities to assist in evaluating financial performance to the communities and owners on a monthly basis.

Food Service

Hawthorn Retirement Group coordinates all dietary services for the communities managed. Including but not limited to menus, daily dietary services, vendor contracts, safety systems and cost control systems. A regional chef is assigned to each community to provide education, oversight and training as necessary.

Human Resources Services

Hawthorn Retirement Group coordinates human resources functions for the communities managed, including all employee benefits, workers' compensation claims, and formal employee complaints. The Hawthorn staff is available to assist with employee recruitment, retention and counseling, as well as, to coordinate and implement the employee orientation and continuing education components of the Hawthorn Operating System.

Health Services

Hawthorn Retirement Group offers extensive health services support to the communities managed. The Hawthorn health services staff is available to advise and assist with education and training of all licensed nurses, medication assistants and resident assistants on staff. Additionally, Health Services will coordinate and implement the effective use of all health services components of the Hawthorn Operating System.

Maintenance Services

Hawthorn Retirement Group coordinates all maintenance services for the communities managed. This includes all issues regarding landscaping, sprinkler systems, pest elimination, snow removal, elevators, HVAC, emergency light systems, smoke detectors, paint, carpet, tile, cabinets, and vehicles.

Management Services

Marketing Services

Hawthorn Retirement Group offers comprehensive marketing services to the communities managed; including advertising, promotional brochures, development, utilization and implementation of marketing plans. Director of Marketing and the Regional Manager for the community are available to coordinate all marketing components of the Hawthorn Management Operating System.

Regional Manager Services

Hawthorn Retirement Group provides a Regional Manager to each community managed. Regional Manager conducts site visits on a routine basis and also is available 24 hours a day, seven days a week for telephone consultation. RM works closely with the Community Manager or Administrator to focus on revenue, expense, marketing, quality assurance, and resident satisfaction issues.

Regulatory Compliance Services

Hawthorn Retirement Group offers extensive assistance and oversight to insure compliance with federal and state rules, regulations, codes, and statutes for communities managed. The Hawthorn Operating System is state specific with respect to policies and procedures required in each state. Facility licensure, both initial or renewal is coordinated by Hawthorn. Also, assistance is provided to communities preparing for annual or other routine inspections by regulatory agencies. Any necessary or required response to these inspections is coordinated by Hawthorn...

Risk Management Services

Hawthorn Retirement Group coordinates all risk management services to communities managed.

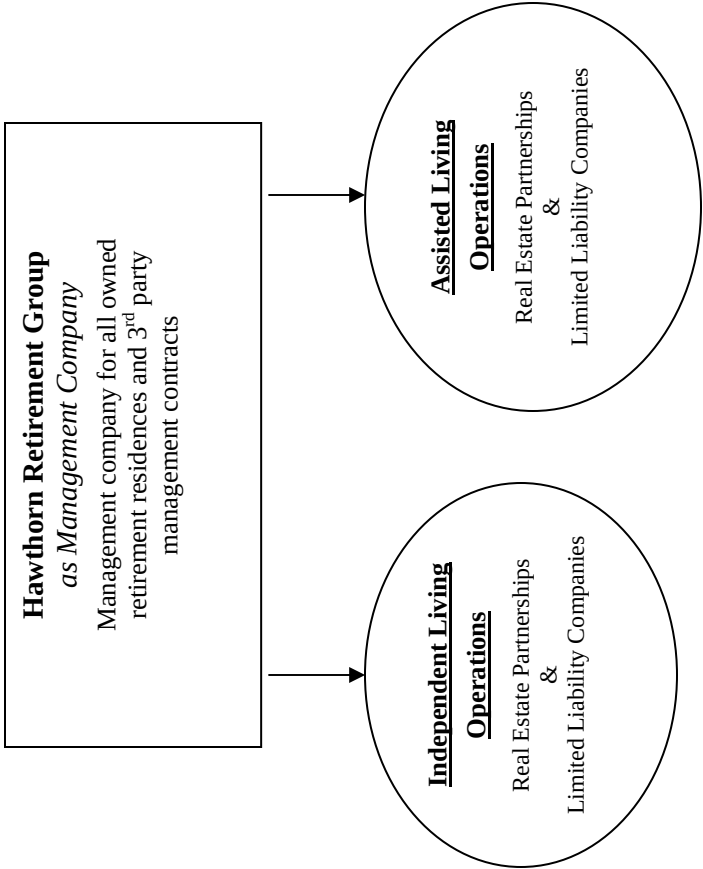
Harvest Development LLC

Harvest Development LLC (“Harvest”) was formed in 2007 following the sale of Holiday Retirement Corp. to manage their joint venture opportunities with the new Holiday, as well as, to provide a vehicle for other real estate related activities of the principals.

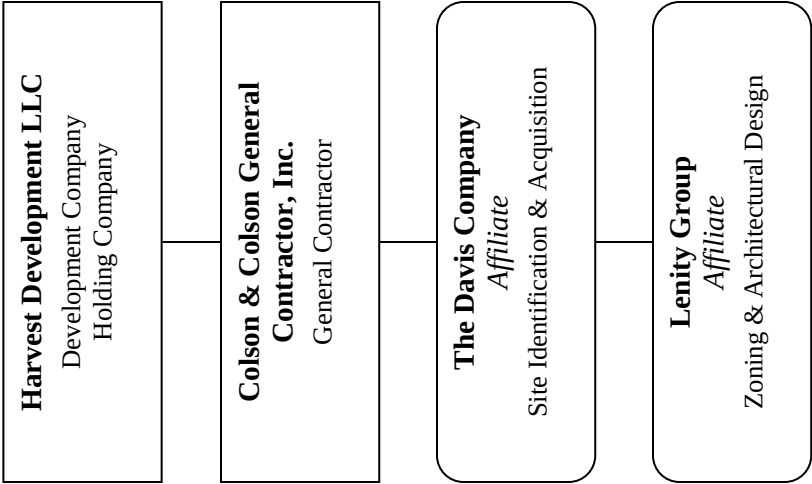
- Harvest is the successor to Colson & Colson Construction Co. (C&C) as the development and holding company for the key principals’ various ownership interests. With over 40 years history, C&C has successfully developed and constructed approximately 300 retirement residences throughout North America.
- Harvest is led by Norm Brenden (President) and Pat Kennedy (CEO), two of the former principals of Holiday Retirement/Colson et al group.
- Mr. Brenden served as the Executive Vice President and CFO at various times with the original Holiday and was instrumental in Holiday’s portfolio growth to over 330 communities leading up to the sale. He is responsible for all real estate related activities at Harvest Development LLC and Hawthorns Retirement Group including the coordination of construction, development and equity investments.
- Mr. Kennedy has an extensive legal background in structuring business transactions and reorganizations. While being responsible for the original Holiday’s International operations, he also served as the interim CEO of Alterra Healthcare Corporation from November 2001 to November 2003. Guiding the company through a financial restructuring. Mr. Kennedy is responsible for the relationship management of the new Holiday Retirement group, overseas development and entity formation activities of Harvest.
- Harvest’s mission is to continue to develop and construct new retirement communities, which are owned by separate partnerships or limited liability companies controlled by the principals of the company.
- Colson & Colson General Contractor, Inc., (“GC”) the contractor for all new projects developed by Harvest. GC is regularly ranked by Builder Magazine as one of the top 10 multifamily builders in the United States.
- Over their respective careers since the early 1970’s, companies led by the key principals have either built or acquired numerous senior housing communities representing more than \$6.0 billion in value.

Related Entities

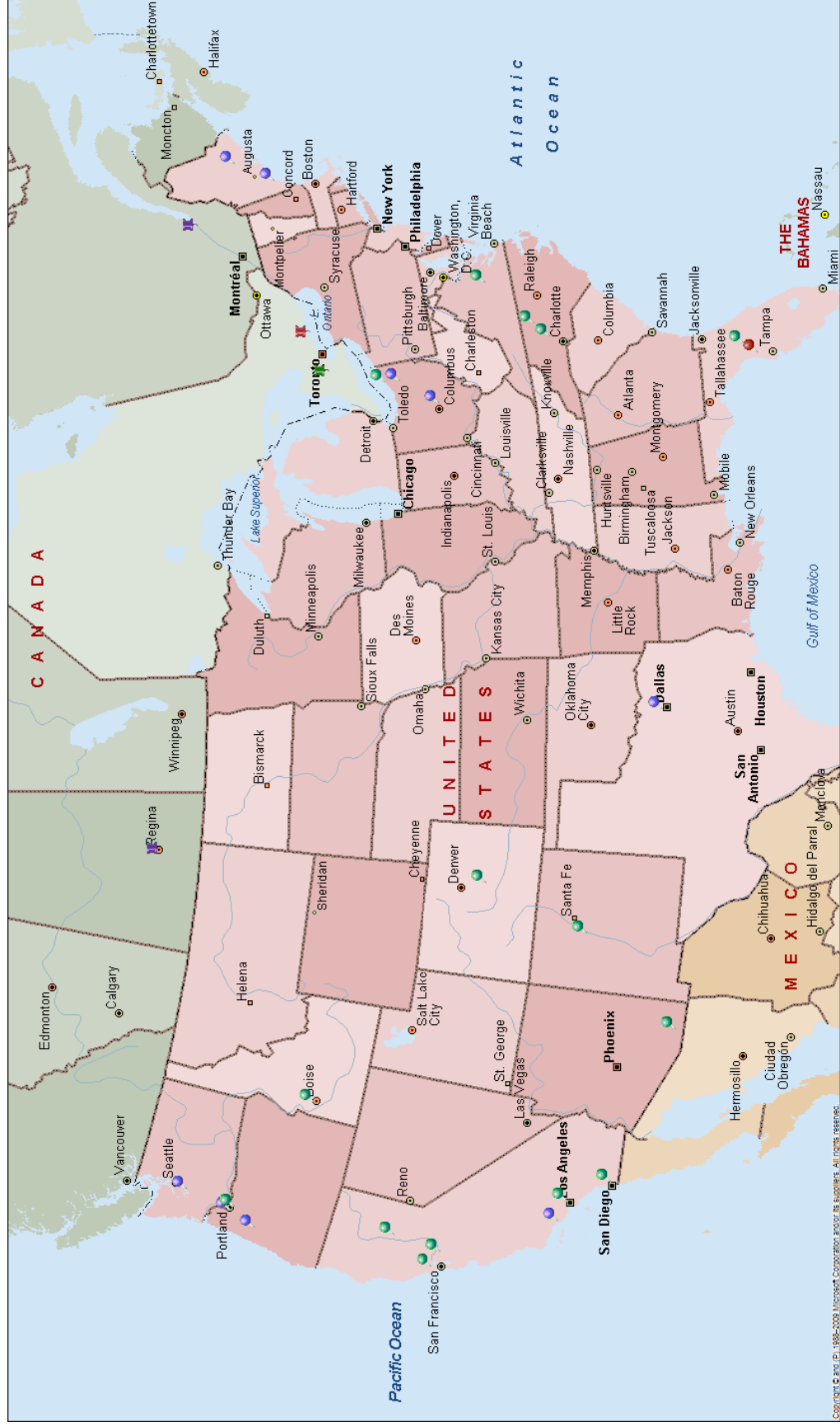
Management Entity



Building and Development Entities



Community Location Map



Community Listing

UNITED STATES	
ARIZONA (1) Mountain View Gardens	Sierra Vista, AZ
CALIFORNIA (6) Deer Park Feather Canyon Palms At Bonaventure AL & MC Quail Lodge Scholl Canyon Estates Waterford Terrace	Novato, CA Paradise, CA Ventura, CA Antioch, CA Glendale, CA La Mesa, CA
COLORADO (1) Summit Glen	Colorado Springs, CO
FLORIDA (2) Salishan (Under Construction) Steeplechase	Spring Hill, FL Oxford, FL
IDAHO (1) Salmon Creek	Boise, ID
MAINE (2) Birchwoods At Canco Assisted Living Winterberry Heights AL & MC	Portland, ME Bangor, ME
NEW MEXICO (1) Paloma Landing	Albuquerque, NM
NORTH CAROLINA (2) Oak Park Carolina Estates	Salisbury, NC Greensboro, NC
OHIO (3) Mulberry Gardens Retirement & Assisted Living Amber Park Assisted Living Parker Place	Munroe Falls, OH Pickerington, OH Mentor, OH
26 PROPERTIES in 13 STATES	
CANADA	
QUEBEC (1) St. Patrick'S	Quebec City, QC
ONTARIO (2) Guelph Lake Commons Rosewood Estates (Under Construction)	Guelph, ON Coubourg, ON
SASKATCHEWAN (1) Victoria Park Personal Care Community	Regina, SK
4 PROPERTIES in 3 PROVINCES	
CANADA	
TOTAL NORTH AMERICA PORTFOLIO - 30 PROPERTIES	

OREGON (4)
Edgewood Point Assisted Living
Somerset Assisted Living
Somerset Lodge
Stoneybrook Assisted Living

TEXAS (1)
Bentley Manor Assisted Living

VIRGINIA (1)
Chesterfield Heights

WASHINGTON (1)
Charlton Place Assisted Living

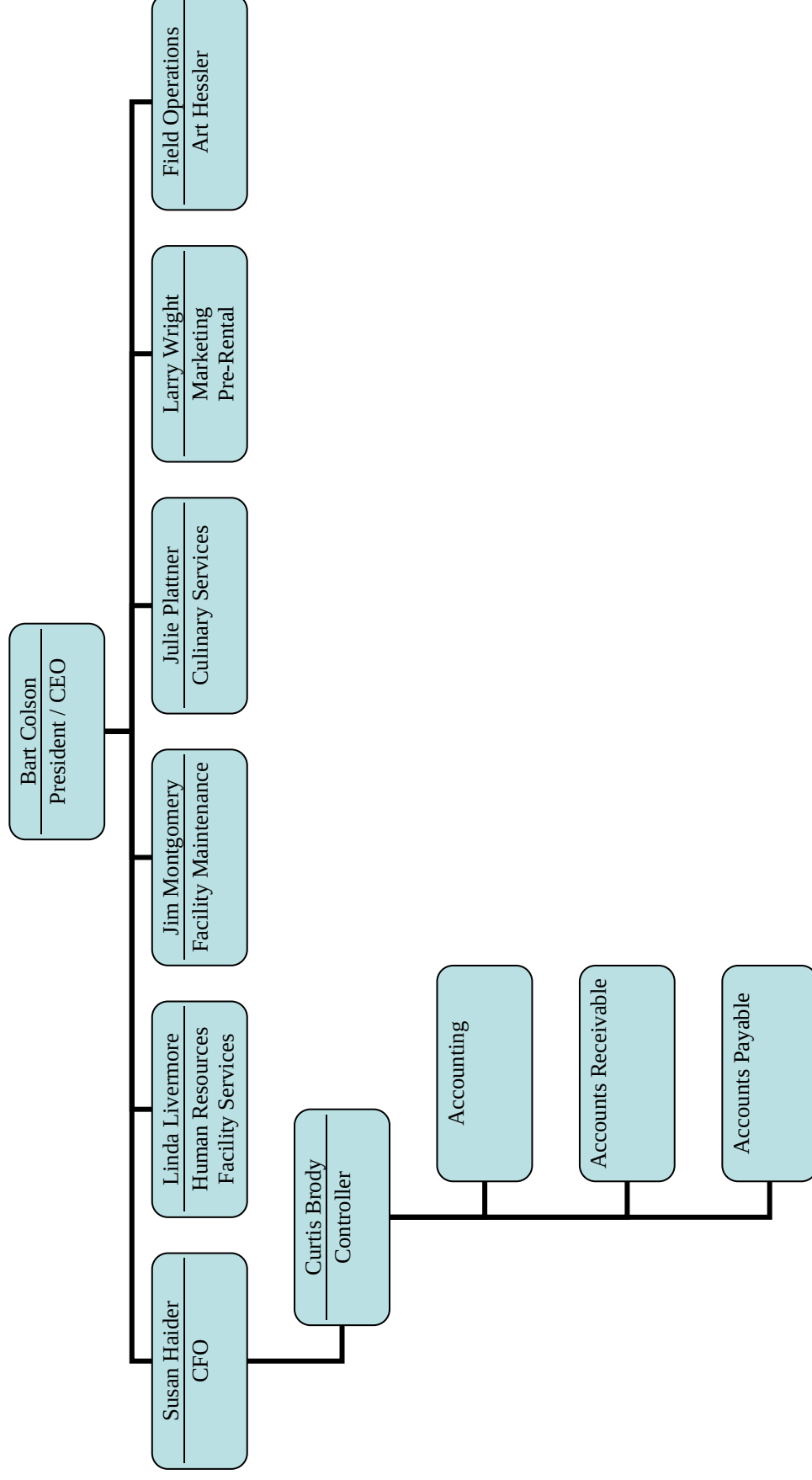
Beaverton, OR
Gladstone, OR
Gladstone, OR
Corvallis, OR

Dallas, TX

Midlothian, VA

Tacoma, WA

Organizational Chart



Facility Number	Facility Name	Units	Phone Number	Street	City, State Zip
ARIZONA (4)					
544	DESERT SPRINGS	125	(520) 219-8100	30 WEST LAMBERT LANE	ORO VALLEY, AZ 85737
561	ESTRELLA ESTATES (under construction)	128	(623) 535-9195	14930 WEST WIGWAM BLVD	GOODYEAR, AZ 85395
525	MOUNTAIN VIEW GARDENS	118	(520) 459-1898	3477 RODEO DRIVE	SIERRA VISTA, AZ 85635
542	PEAKS AT SANTA RITA, THE	196	(520) 777-4800	661 W. CALLE TORRES BLANCAS	GREEN VALLEY, AZ 85614
CALIFORNIA (5)					
538	CAMDEN SPRINGS	115	(916) 714-6565	8476 SHELDON ROAD	ELK GROVE, CA 95624
522	FEATHER CANYON	126	(530) 877-2207	5900 CANYON VIEW DRIVE	PARADISE, CA 95969
217	PALMS AT BONAVENTURE ASSISTED LIVING & MEMORY CARE	97	(805) 647-0616	111 NORTH WELLS ROAD	VENTURA, CA 93004
556	PALMS AT LA QUINTA, THE (under construction)	140	(760) 345-0022	45190 SEELEY DRIVE	LA QUINTA, CA 92253
523	SCHOLL CANYON ESTATES	96	(818) 951-3830	1551 E. CHEVY CHASE DRIVE	GLENDALE, CA 91206
COLORADO (1)					
528	SUMMIT GLEN	119	(719) 380-1409	4825 OLD FARM DRIVE	COLORADO SPRINGS, CO 80917
FLORIDA (5)					
548	CARRIAGE HOUSE, THE	130	(352) 330-5987	4680 BELLWETHER LANE	OXFORD, FL 34484
570	CYPRESS SPRINGS (under construction)	136	(941) 366-6870	9085 TOWN CENTER PARKWAY	BRADENTON, FL 34202
557	ORCHARD HEIGHTS	124	(352) 242-2235	3650 SOUTH HIGHWAY 27	CLERMONT, FL 34711
536	SALISHAN	118	(352) 263-2300	191 ASTAIRE LANE	SPRING HILL, FL 34609
534	STEEPLECHASE RETIREMENT RESIDENCE	118	(352) 259-0493	12029 COUNTY ROAD 103	OXFORD, FL 34484
GEORGIA (2)					
559	ASHWOOD MEADOWS (under construction)	126	(770) 476-4429	11190 MEDLOCK BRIDGE ROAD	JOHNS CREEK, GA 30097
547	COTTONWOOD ESTATES	118	(678) 242-0334	255 VAUGHAN DRIVE	ALPHARETTA, GA 30009
IDAHO (1)					
531	SALMON CREEK	118	(208) 938-5529	4890 N CLOVERDALE ROAD	BOISE, ID 83713
INDIANA (1)					
555	NORTHRIDGE	124	(317) 776-1980	14532 ALLISONVILLE ROAD	FISHERS, IN 46038
KANSAS (1)					
541	MEADOWLARK ESTATES	124	(785) 842-2400	4430 BAUER FARM DRIVE	LAWRENCE, KS 66049
MAINE (2)					
214	BIRCHWOODS AT CANCO ASSISTED LIVING	84	(207) 772-1080	86 HOLIDAY DRIVE	PORTLAND, ME 04103
219	WINTERBERRY HEIGHTS ASSISTED LIVING & MEMORY CARE	92	(207) 942-6002	932 OHIO STREET	BANGOR, ME 04401
MASSACHUSETTS (4)					
540	COLONIAL GARDENS	173	(978) 922-1203	105 CHERRY HILL DRIVE	BEVERLY, MA 01915
564	HEATHERWOOD (under construction)	126	(978) 851-2063	1624 MAIN STREET	TEWKSBURY, MA 01876
551	HIGHLANDS, THE	124	(508) 898-3000	129 E MAIN STREET	WESTBOROUGH, MA 01581
567	MAGNOLIA HEIGHTS (under construction)	136	(757) 312-0003	485 EAST CENTRAL STREET	FRANKLIN, MA 02038

Facility Number	Facility Name	Units	Phone Number	Street	City, State Zip
NEW MEXICO (2)					
524	PALOMA LANDING	118	(505) 243-1979	8301 PALOMAS AVENUE NE	ALBUQUERQUE, NM 87109
549	RIO GRANDE, THE	131	(505) 994-2800	2331 WESTSIDE BLVD SE	RIO RANCHO, NM 87124
NORTH CAROLINA (5)					
539	BELLA VISTA	120	(828) 255-8255	55 PINEY MOUNTAIN DRIVE	ASHEVILLE, NC 28805
533	CAROLINA ESTATES	118	(336) 282-6133	4434 OLD BATTLEGROUND ROAD	GREENSBORO, NC 27410
529	OAK PARK RETIREMENT	118	(704) 636-4600	548 WHITE OAKS DRIVE	SALISBURY, NC 28147
537	SOUTHERN PINES	124	(910) 692-3367	205 SE SERVICE ROAD	SOUTHERN PINES, NC 28387
553	WHISPERING PINES	118	(919) 870-0222	7501 LEAD MINE ROAD	RALEIGH, NC 27615
OHIO (3)					
220	AMBER PARK ASSISTED LIVING	86	(614) 834-3113	401 HILL RD NORTH	PICKERINGTON, OH 43147-0189
210	MULBERRY GARDENS ASSISTED LIVING	86	(330) 634-9919	395 SOUTH MAIN STREET	MUNROE FALLS, OH 44262
530	PARKER PLACE	118	(440) 255-0828	7960 CENTER STREET	MENTOR, OH 44060
OREGON (5)					
207	EDGEWOOD POINT ASSISTED LIVING & MEMORY CARE	79	(503) 671-9474	7733 SW SCHOLLS FERRY ROAD	BEAVERTON, OR 97008
565	GLENMOORE	125	(503) 698-3555	12154 SE 114TH CT	HAPPY VALLEY, OR 97086
202	SOMERSET ASSISTED LIVING	86	(503) 723-7868	8360 CASON ROAD	GLADSTONE, OR 97027
507	SOMERSET LODGE	122	(503) 657-5659	8330 CASON ROAD	GLADSTONE, OR 97027
201	STONEYBROOK ASSISTED LIVING	85	(541) 758-2026	4650 SW HOLLYHOCK CIRCLE	CORVALLIS, OR 97333
PENNSYLVANIA (1)					
546	STERLING HEIGHTS	133	(610) 868-4600	3500 FAIRVIEW STREET	BETHLEHEM, PA 18017
SOUTH CAROLINA (1)					
543	SUMMERVILLE ESTATES	124	(843) 873-3337	704 CENTRAL AVENUE	SUMMERVILLE, SC 29483
TEXAS (4)					
206	ACADIA ASSISTED LIVING	88	(972) 247-2266	3344 FOREST LANE	DALLAS, TX 75234
550	LIBERTY HEIGHTS	118	(972) 722-5129	963 WEST YELLOW JACKET LANE	ROCKWALL, TX 75087
560	OAKS, THE	136	(512) 863-7788	3720 WILLIAMS DRIVE	GEORGETOWN, TX 78628
552	PIONEER RIDGE	126	(972) 547-6800	7210 LINKSIDE POINT DRIVE	MCKINNEY, TX 75071
VIRGINIA (1)					
532	CHESTERFIELD HEIGHTS	118	(804) 379-2768	901 MADRONA STREET	MIDLOTHIAN, VA 23114
ONTARIO (4)					
554	CEDARVIEW	124	(519) 602-0282	511 FINKLE STREET	WOODSTOCK, ON N4V 0C4
527	GUELPH LAKE COMMONS	123	(519) 780-5253	520 VICTORIA ROAD NORTH	GUELPH, ON N1E 0E6
545	HERITAGE MEADOWS	128	(519) 620-9999	208 HESPELER ROAD	CAMBRIDGE, ON N1R 0A5
535	ROSEWOOD ESTATES	118	(905) 373-5000	255 DENSMORE ROAD	COBOURG, ON K9A 0E5
SASKATCHEWAN (1)					
218	VICTORIA PARK PERSONAL CARE COMMUNITY	81	(306) 522-4300	2400 E ARENS ROAD	REGINA, SK S4V 3G6



An Introduction





What Sets Us Apart?

Approach

Our approach to project delivery provides a single point of contact, responsive scheduling and cost efficiency.

Reputation

Sebago Technics is recognized as a firm that excels in the permitting of projects through experienced knowledge and excellent reputation.

Ownership

Employee ownership results in improved responsiveness, commitment and accountability throughout the organization.

Quality

Our designs, graphics and plans are subject to rigorous quality standards and review which results in clear, effective documents.

Innovation

Sebago Technics' design professionals employ the latest engineering and technological methods to develop practical, cost-effective solutions.

Results

Sebago Technics' resources and experience combined with our project team approach provide the capacity to meet client needs and deliver results.

Founded in 1981, Sebago Technics, Inc. is a consulting firm of more than fifty design professionals and technical staff providing services throughout New England. From the start, our business plan was simple: "to provide quality, cost-effective civil engineering services that are responsive to a customer's goals, schedule and budget." Our One Company capabilities and resources provide clients with experience and solutions to respond to their planning, permitting and design needs. Guided by integrity, experience and teamwork we understand that we can only succeed when quality, responsive and cost-effective service is provided to our customers.

At a Glance:

Year Established: 1981
(Employee Owned Since 1998)

Licensed & Certified Professionals

Professional Engineers
Certified Flood Plain Manager
Certified Wetland Scientist
DOT Project Administrators
LEED Accredited Professionals
Professional Land Surveyors

Registered Landscape Architects
Licensed Soil Scientist
Subsurface Disposal Systems Designers
Erosion Control, Sedimentation &
Stormwater Inspectors
Professional Traffic Operations Engineer



We provide engineering, planning, surveying and environmental services to companies, developers, land owners and the public sector for customers and projects, both large and small. Our experience includes projects in commercial, industrial, retail, residential, recreation, utility and government sectors. We meet our client needs through an efficient and effective delivery system providing clients a single point of contact. Our approach combined with our expertise and services allows us to meet the needs of our customers within One Company.

Nearly every project requires some level of regulatory permitting and public process. Sebago Technics excels in these areas. The nature of our work enables us to remain current on the latest regulations and forge important relationships with regulatory and enforcement personnel in governments and agencies throughout the region. Our project managers and technicians are experienced with the requirements and processes of various federal, regional, state and municipal authorities. We work diligently and proactively in pursuit of permits and approvals striving to balance compliance with our clients' needs and interests.

Clients rely on Sebago Technics to guide their projects through design, permitting and construction processes utilizing either traditional or design-build delivery. Our licensed professionals remain current in the latest engineering practices and are certified in LEED, Erosion, Sedimentation and Stormwater Control & Inspection, Wetlands, Soils, Septic Design, and Traffic Operations. Our One Company range of services and expertise allows us to assist projects from concept through construction.

As a 100% employee owned company our employees set us apart through commitment and integrity. Our team-based approach to services provides each client with the expertise and input of multiple disciplines. Whether an engineer, surveyor, landscape architect or environmental scientist each project benefits from the perspective and skills of varied professionals. The combined experience and knowledge, under one roof, benefits each project and customer for a better result.

General Services

- Land Surveying
- Site and Civil Engineering
- Transportation/Traffic Engineering
- Landscape Architecture
- Environmental Engineering
- Natural Resources and Soils Science
- Permitting (Local/State/Federal)
- Construction Services
- GIS & Mapping



Civil Engineering is a broad based profession that deals with the design, construction and maintenance of the physical and naturally built environment. Civil and Site Engineering projects may include regulatory permitting at all levels of government, technical studies and evaluations, planning and implementation, feasibility assessments, stormwater modeling, infrastructure design, site and subdivision planning/design. Often, the Civil Engineer will take the lead on a project coordinating other disciplines such as environmental, geotechnical, survey and transportation components that comprise a complete project approach.

From the beginning, Sebago Technics, Inc. has focused on offering a broad range of Civil Engineering services to the public and private sector. Our diverse Civil Engineering staff provides customers the experience and expertise to evaluate, design and permit projects covering a broad spectrum. As technology advances and regulatory processes evolve, our Civil Engineering staff has remained flexible and adaptive with a focus on customer service. Our Civil Engineers work together in teams of experienced professionals to assist customers on a variety of projects. Our staff works with customers from inception to completion to plan, design, permit and construct projects. Throughout a project, we strive to be attentive to the customer's goals and seek solutions that are cost-effective and responsive to regulatory requirements.

- **Fort Meade**
- **Department of Defense, MD**
Masterplanning for the 500-Acre, Ft. Meade housing development including civil design for Phase I consisting of 1,000 new homes, 330 acres, and 9 miles of roadway and supporting infrastructure.
- **Eastern Manufacturing Facility**
- **Brewer, ME**
Civil Engineering, permitting and transportation planning for a \$19 million site redevelopment for fabricated assembled modular industrial structures for shipment via rail, barge and highway throughout the United States.
- **Government & Municipal**
- **General Engineering Services**
Sebago Technics has a long history of ID/IQ delivery of services to municipalities and government agencies.
- **U.S.P.S. Distribution Center Expansion**
- **North Reading, MA**
Civil Engineering, Regulatory permitting and Traffic Impact Assessment for 140,000 s.f. (design-build) expansion of an existing postal facility.
- **Exit 3, I-295**
- **South Portland, ME**
\$6.5 million redesign of existing interchange to expand capacity and eliminate 3 High Crash Locations.
- **Municipal Streets**
- **Portland, ME**
Redesign of 16 arterial and collector streets, including storm sewer separation, totaling more than 4 miles in length as part of the City's CSO program.



Survey is a fundamental component required by almost every project. We believe maintaining a qualified in-house staff of survey professionals and technicians provides enhanced project coordination and responsive customer service. With one of the largest survey staffs in Maine, we are able to respond promptly to client and project needs. We can produce multiple survey crews on any given day with state of the art technical equipment including, high definition laser scanner, GPS systems, robotic instruments, total stations and technical support. Sebago maintains our own GPS base station allowing us to complete real time kinematic GPS within a supporting network. Data collected in the field is processed electronically by survey technicians and professional land surveyors to produce quality final products whether it is a stand alone survey plan or engineering data to be used in design and construction.

• Cutler Naval Communications Facility Cutler, ME

• Boundary and Existing Conditions Survey using aerial mapping for Naval Facility along the coast of Maine.

• Brunswick Naval Air Station Brunswick, ME

• Boundary Survey of Base perimeter and supporting Existing Conditions survey for Base projects.

• Remote Terminal Survey Statewide, ME

• Boundary survey, existing conditions surveys and topographic surveys on hundreds of Remote Terminal sites. Site design, civil engineering and landscape design were a few of the services performed on the sites. In addition, we performed the site selection, property owner negotiation and represented the utility company before municipal/state agencies.

• Maine Medical Center Multiple Locations, ME

• Boundary, Existing Conditions, Construction Layout and As-Built Surveys for multiple campus and single facility locations throughout Maine. Including a recently completed As-built survey of the entire Bramhall Campus consisting of several city blocks within Portland, Maine.

GPS Mapping – Maine Superfund Sites Statewide, ME

Created maps of all locations identified on the Maine Department of Environmental Protection's Uncontrolled Site Program List. A 2,500 foot radius was mapped to identify all properties within 2,500 feet of the published Superfund Sites for all easements or transfer or real property.



Landscape Architecture was integrated into Sebago Technics' practice in 1988, bringing a creative design focus to the company and complimenting its civil engineering capability. Landscape architects lead the design effort on all projects, working closely with our natural resource scientists and engineers. We listen closely to the needs of our clients, their goals for each project, and strive to accomplish their objectives, accounting for the environmental and regulatory constraints affecting each project.

Having practiced throughout the United States and overseas, observing regional and international design vocabulary, we bring diverse knowledge to each project. Our landscape architects focus on innovative design practices yet remain grounded by a strong technical knowledge that produces cost effective, constructible solutions. A high standard of quality is our trademark.

As LEED Accredited Professionals we are committed to the principles of sustainable design practices. Embracing technology, we believe people understand design in a visual context and continue to reflect our designs with quality graphic communication.

LL Bean Flagship Campus Freeport, ME

Masterplanning, site design and landscape architecture for three building expansions at the Freeport Campus, including LEED certification and branding of the LL Bean image using native materials and site detailing.

Waterfront City Park Gardiner, ME

Transformation of a former industrial waterfront into an expansive green, riverfront boardwalk, visitor center and natural amphitheatre along the Kennebec River, including park access gateways and connectivity to adjacent historic downtown area.

Portsmouth Public Library Portsmouth, NH

Site design and landscape architecture for civic library building and site within Portsmouth's historic waterfront district; this project features extensive brick and granite site paving, native plant materials and was awarded LEED Silver accreditation.

Maine Medical Center Portland, ME

Masterplanning, site design and landscape architecture for a state of the art birthing center expansion, eight level parking garage, central utility plant, Lifeflight helipad and associated site improvements.

PD Merrill Marine Gateway Portland, ME

Situated at the eastern terminus of the Veteran's Memorial Bridge, this public park will feature two major pieces of sculpture, and is designed within the context of the marine heritage of Portland's working waterfront.



At Sebago Technics; our Environmental Engineers and Technical Staff provide its customers with planning, assessments, designing, project management and permit acquisition for a variety of projects. Our experienced team assists with the design of municipal and private water, wastewater, and stormwater conveyance systems. Sebago Technics has completed miles of sewer separation projects, designed sanitary pump stations and solid waste facilities. We also support both businesses and land owners in the completion of Environmental Site Assessments (ESA's) and remediation prior to land transfers or project development.

Sebago Technics offers Phase I & II site assessment services to characterize and quantify site contamination for future site remediation. Sebago Technics has successfully guided numerous properties through the Maine Department of Environmental Protection's Voluntary Response Action Program (VRAP). This process includes timely and cost effective Phase I & II assessments which are typically completed in conjunction with property redevelopment.

With a well respected Environmental Staff, we are known in the industry for high intensity soil surveys, wetland delineations and vernal pool surveys for development prospects. Our licensed Site Evaluators and Engineers work together to design our client's subsurface wastewater disposal systems; and are able to do so for both small and large engineered systems which include local and state permits.

- **Maine Coast Heritage Trust**
- **Natural Resource Inventories**
- **Islands and Coastal Properties**
- **North Haven to Mount Desert Island**

Natural resource field mapping of a variety of natural resources, particularly vegetation habitat communities, on 11 different preserves owned by Maine Coast Heritage Trust, and publishing the data in ArcGIS

- **City of Portland, ME**

Hydrology and FEMA flood plain analysis, mapping and permitting.

- **Turner Farm Restoration**
- **North Haven, ME**

Inventory of natural resources on 260 acres of land. Delineation, classification, and GPS location of the wetlands was performed. Class 'B' High Intensity Soil Survey was prepared to classify all soils on the property. A wetlands map, a soils map, and natural resources report were final deliverables.

- **Freeport Village Station**
- **Freeport, ME**

Sebago Technics conducted Phase II remediation in conjunction with the site's application to the Maine Department of Environmental Protection (MDEP) Voluntary Response Action Program (VRAP). Working closely with the developer and the MDEP, coordinated the most cost-effective and permanent solutions to remediate the site in concert with the construction schedule.



We approach planning much as we do all opportunities; with pragmatism and creativity. Combining site specific information (such as topography, natural resources, and existing development on site), with regulatory criteria, and local ordinance requirements we work to create conceptual and long term master plans that move our client's vision to reality.

Every great land development project needs a solid plan as the foundation. Without this crucial piece of design, sites never realize their true potential and become victim to an ad-hoc style of development, wedging uses together, creating poor internal site circulation and wasted space within the development as well as reduced income potential for land owners.

During the planning process we meet with local, state and federal regulators to ensure the design not only fits the site and the restrictions but to identify potential red flags from a permitting perspective early in the planning process. This is extremely important to both budget and timeline. Understanding the regulatory obstacles at the outset allows for simplified navigation throughout the permitting and development process.

• Unum Provident Headquarters • Portland, ME

• Masterplanning and landscape architecture for Unum Provident Home Office III, the largest office building in Maine, together with a three level parking structure with 1200 parking spaces and employee amenities including walking pathways constructed with porous paving materials.

• LL Bean Order Fulfillment Center • Freeport, ME

• Site planning and permitting for 1.2 million square feet of warehousing and distribution space, employee parking and site amenities on a 72 acre campus in Freeport. This facility processes and ships every order from LL Bean to customers worldwide.

• Central Maine Medical Center • Lewiston, ME

• Site design to accommodate a major expansion and new emergency department at Central Maine Medical Center, including arrival and visitor drop off areas, ambulance service arrival bays, visitor parking and related site features.

• Edward T. Gignoux Federal Courthouse • Portland, ME

• Streetscape and site planning for the \$20 million renovation of this federal facility, located in Portland's civic district. Site materials selected reflect the institutional nature of the courthouse, instilling a character of authority and permanence.

Site Evaluation & Regulatory Permitting



The site alternatives and selection process is often an evolutionary one that begins with defining the project needs and objectives. Over the past 25 plus years Sebago Technics, Inc. has participated in site selection process and permitting for projects ranging in size and complexity. While there are commonalities in the process, no two projects are exactly the same. As a result, we apply our knowledge and depth of experience to develop specific solutions to each and every project.

We have gained a tremendous amount of experience over the years with permitting projects in many regulatory environments. In the development of a design we strive to anticipate the regulatory issues and address them in the design process so that they do not become obstacles later in the process. When considering alternative sites or alternative site designs we are able to quickly summarize the permitting considerations as well as the cost and performance considerations.

When it comes to permitting we have had a great deal of experience with the Maine Department of Environmental Protection (MDEP) and the Army Corps of Engineers (ACOE). We have developed working relationships with the project analysts at the MDEP and the ACOE and as a result have been able to get projects through the permitting process with successful outcomes for our clients.

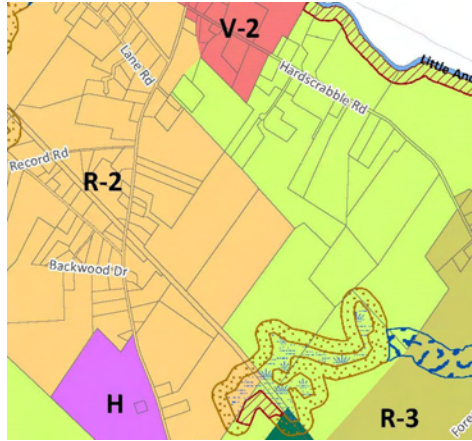
- **Maine Crossing**
- **South Portland, ME**
 - Site evaluations and investigation to develop a 13 acre wetland mitigation area responsive to project impacts including permitting through the Maine DEP, USACE and EPA.
- **Cliff Island and Cushing Barge Landings**
- **City of Portland, ME**
 - Sebago Technics, Inc. assisted the City of Portland with natural resource assessments and permitting for two municipal barge landings.
 - Multiple regulatory permits and coordination were required to include the Harbor Commission, Submerged Lands lease, Maine DEP, USACE, Department of Marine Resources, Inland Fisheries and Wildlife, City of Portland Flood Plain and Shoreland Zoning permits.
- **International Jetport (GA) Facility**
- **Portland, ME**
 - Planning and Design of a 7 acre General Aviation Facility required preparation of comprehensive permit application for the Maine DEP
 - Site Location of Development Act, Federal Aviation Administration (FAA) and City of South Portland for a new major development project.
- **Eastern Fine Paper Redevelopment**
- **Brewer, ME**
 - Engineering and permitting for redevelopment of a 39 acre manufacturing site. Permitting was extensive and fast-tracked to include City of Brewer approvals, Maine DEP Site Location of Development Act and Natural Resources Protection Act permits, Submerged Lands lease USACOE permitting, Maine Department of Transportation coordination, Beneficial Use permit for dredging and coordination with multiple agencies (Historic Preservation Office, Dept. of Marine Resources, Inland Fisheries & Wildlife).



The Design-Build process offers a coordinated team approach to the planning, design and construction of a Project. Sebago Technics, Inc. has successfully participated on a wide variety of Design-Build projects. Our success is a function of an open working relationship committed to customer service, innovation balanced by practicality and the timely delivery of services.

Sebago Technics, Inc. has participated in a wide range of design-build projects throughout Maine and New England. We have partnered with national and local teams for transportation and site development projects focused on government and private/public projects. At the federal level we have successfully completed large scale military housing, infrastructure and facility support projects along with postal services expansions and new facilities. Our broad design-build experience also includes unique private-public partnerships including wind generation and site redevelopment projects. Sebago Technics, Inc. successfully participated in Maine's first large scale Island wind generation project on Vinal Haven Island. We also participated in a fast-tracked private-public partnership of a Brownfield's site in Brewer, Maine. The project included substantial permitting and agency coordination to accommodate a new modular construction facility. Our experienced team of professionals understands the design-build process, importance of strong partnerships and the delivery of quality services focused on the customer.

- 72 Unit Family Housing, Phase I
- Brunswick Naval Air Station, Brunswick, ME
- Bachelor Enlisted Quarters (BEQs)
- Brunswick Naval Air Station, Brunswick, ME
- Brunswick Gardens Sewer Realignment
- Brunswick Naval Air Station, Brunswick, ME
- 50-Unit Navy Lodge, Naval Station
- Newport, RI
- Naval Exchange Addition, Naval Station
- Newport, RI
- Naval Submarine Base
- New London, Groton, CT
- 126 Unit Family Housing, Phase II
- Brunswick Naval Air Station, Brunswick, ME
- U.S.P.S. Flat Sequencing System Expansion
- North Reading, MA
- U.S. Postal Service Distribution Center
- Scarborough, ME
- Picerne Military Housing, Fort Meade
- Fort Meade, MD
- Killock Pond Road
- Hollis, ME
- Fox Island Wind Power Project
- Vinal Haven, ME
- (Partnership with Cianbro Corporation)



GIS is a set of technologies and software tools that enable maps to be made from geospatial data as well as other data sets, such as tabular information in tables and databases. The data is visualized in the form of a map or other graphical expression of location.

The days of approximate GIS mapping is giving way in many quarters to more accurate and formally constructed maps which can be available for use at various scales, through multiple software platforms, and can be utilized on multiple devices. Additionally, the data is coordinated and registered to one another and other critical data layers to create tightly integrated municipal mapping collections. For instance, zoning and shoreland zoning map layers can be created that will accurately agree with parcel data and orthoimagery collected over many years as part of larger state/regional orthoimagery projects. The data can be available locally for town staff use as well as in hosted, public facing web mapping applications for the staff and public to access. Data which is more reliable and accurate can also be more economical in the long run as it is used to support municipal staff decision making. Activities in planning, code enforcement, assessment, public works, and economic development all can benefit from more reliable and accurate data that agrees well.

Our team can work with all of today's mapping technologies to deliver superior spatial services to public and private clients. Through the use of today's spatial data sources like real time GPS (sub-meter and survey-grade), photogrammetry, orthoimagery, LIDAR, remote sensing, web mapping services (WMS), and mobile mapping we have been able to build and maintain geospatial datasets for local and state government throughout Maine and New England. Our staff is also involved with many state/regional projects such as orthoimagery acquisition and can help town staff navigate through what may be of benefit locally to town specific matters.

• Raymond GIS Services

• Raymond, ME

- Annual maintenance of core GIS data such as tax maps, zoning map, shoreland zoning map, pavement management CIP maps, and various other on call GIS related projects in support of Town staff. Additionally we have assisted in the resolution of town boundary related mapping issues.

• Poland Zoning Map Maintenance

• Poland, ME

- Restructuring an existing municipal zoning map to incorporate a higher degree of spatial accuracy along the water's edge for shoreland zoning and modifying the spatial dataset to represent both overlay zones as well as general zone classes.

• South Portland Storm Sewer Inventory Project

• South Portland, ME

- Capture of centimeter level (survey-grade) GPS elevations for a large municipal storm sewer system and the verification of pipe connections from structure to structure. The data was delivered to the client in an edited version of their own geodatabase to update storm sewer mapping and serve as the basis for a storm water modeling exercise.

• Hart Brook Sanitary & Storm Sewer Mapping

• Lewiston, ME

- Capture of centimeter level (survey-grade) GPS elevations for an impaired municipal watershed and the verification of pipe connections from structure to structure. The data was delivered to the client in a geodatabase designed relate to their existing wastewater geodatabase and serve as the basis for updates to their existing mapping in-house.

Kittery Shorezone Mapping Project

Kittery, ME

Used LIDAR collected at low tide to map the intertidal zone for all of Kittery's coastline to assist town staff in shoreland zoning issues and parcel mapping efforts being conduct in-house. Also created multiple high water lines to assist with changing shoreland zoning needs due to annual tidal variations.

Civil Engineering

Site Plans
Grading & Drainage Design
Utility Design (Water, Sewer)
Stormwater Management
Permitting (Local, State & Federal)
Quarry/Gravel Pit Studies & Permitting
Technical Review
Construction Inspection

Environmental Engineering

NRPA/NEPA Studies
Site Assessments (ESAs, VRAPs)
Septic Design & Analysis
Floodplain Studies & Permitting

Transportation Engineering

Signal Analysis, Design & Management
Traffic Analysis & Permitting
Intersection, Road & Highway Design
Alternatives Analysis & Route Design

Landscape Architecture

Conceptual & Site Design
Park & Public Space Design
Urban Design
Master and Campus Planning
Waterfront Planning
Planting Design

Land Surveying

Boundary & Topographic Survey
High Definition 3D Laser Scanning
Subdivisions
GPS Survey & Mapping
Construction Layout
As-Built Survey
Deed Research
GIS Mapping

Soil Sciences

Soil Surveys & Testing
Wetland Assessment & Permitting
Turf Impact Testing
Vernal Pool Mapping



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Landscape Architecture



Steven Sawyer, PE
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Transportation



Chris Branch, P.E.
Regional Manager,
Lewiston



Patrick Somma
Vice President,
Technology



Keith McAlary
Controller



Steve Doe, RLA, LEED-AP
Senior Project Manager



Daniel L. Riley, PE
Senior Project Manager



Shawn M. Frank, PE
Senior Project Manager



Grant Austin
Environmental Practice
Leader



Kylie S. Mason, RLA
Senior Landscape
Architect



Gary Fullerton,
Director,
Natural Resources



Charles L. Brown, PLS
Vice President, Field
Services

GENERAL SERVICES

Civil Engineering

- Infrastructure and Site Development
- Regulatory Permitting
- Roadway Engineering and Design
- Development Planning & Feasibility Studies
- Airport Engineering

Environmental Engineering

- Regulatory Permitting (Local, State & Federal)
- Site Assessments (ESA Phase I, II & III)
- Wastewater & Groundwater Treatment
- Underground Storage Tank Services
- Effluent & Groundwater Modeling/Monitoring
- Wastewater Minimization Studies
- Landfill Closure Plans
- Water Supply & Treatment System Design

Transportation Engineering

- Corridor Studies
- Traffic Impact/Access Mgmt Analysis
- Traffic Modeling and Simulations
- TSM Evaluations and Design
- TDM Evaluations
- Context Sensitive Highway/Urban Street Design
- Pedestrian & Bike Trail Design
- Traffic Signal System Planning
- Traffic Signal Design & Operations
- Intermodal Facility Planning & Design
- Construction Administration

Land Surveying

- Technical Deed Research
- Boundary Survey/Topographic Survey
- Land Title Surveys
- Hydrographic Surveys
- Mortgage Inspections
- Construction Layout
- As-Built Record Documentation
- Control of Aerial Photography
- Land Data Acquisition/Land Information Systems

Landscape Architecture

- Site Selection Studies
- Conceptual & Site Design
- Skate Park Design
- Recreation Facility Design
- Sidewalk & Streetscape Design
- Planting Design
- Irrigation System Design
- Construction Observation & Administration

Natural Resources

- Medium & High Intensity Soil Surveys
- On-Site Wastewater Disposal
- Systems Design
- HHE-200 Preparation
- Sediment & Erosion Control Plans
- Nutrient Loading & Mitigation Analysis
- Soil Testing
- Wetlands Delineation/Vernal Pools

Land Planning

- Zoning Analysis/Ordinance Writing
- Demographic Analysis
- Comprehensive Planning
- Contract Zoning
- Grant Writing
- Planning Board Representation

Artificial Turf Impact Testing

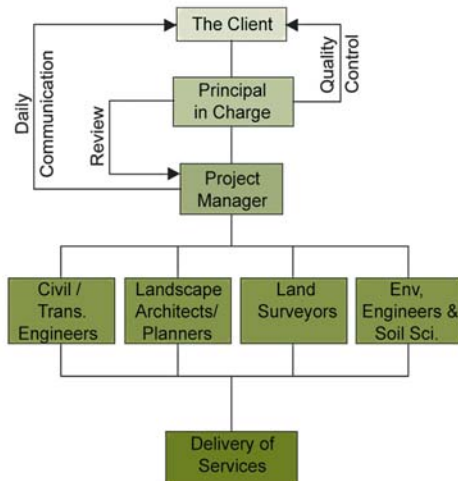
- Municipal Fields
- College Facilities
- Professional Athletic Facilities



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Project Organization

Our diversified professional experience provides each client with the specialized knowledge and abilities required for each project. In accordance with our corporate philosophy, the firm offers integrated professional services in the fields of civil, environmental and transportation engineering, soil science, land surveying, planning and landscape architecture.



Project teams are selected based on our understanding of client objectives, the special technical requirements of the project, and the management skills necessary to coordinate the comprehensive review and approval process. Specific team members are selected for their individual abilities and demonstrated performance on similar projects.

While the firm emphasizes its ability to provide coordinated multi-disciplinary services, each section within the firm practices independently for those clients who may require only certain aspects of our professional service. In some cases, our services may be limited at the outset of a project and more comprehensive as the project progresses. In either case, our multi-disciplinary strength provides a check and balance to each discipline performing services as an independent section of the firm.

A senior member of the firm is assigned responsibility for each client, and fills the position of Principal-in-Charge. A Project Manager is assigned to each project to maintain client communication, and coordinate the diverse technical and administrative aspects of the project. The Project Manager is available daily to meet client needs. With the Principal-in-Charge, the Project Manager selects and assigns technical staff as required by the nature and schedule of the project.

The chart illustrates our corporate structure and details our approach to project organization and management. The professional staff is supported by qualified technicians with the latest in computer technology. Technical software includes AutoCAD, Land Development Desktop and HydroCAD. The ACCI accounting package maintains up to date project costs and detailed reports of time charges and expenses by specific task.

Section 10. Construction Management Plan

Construction Management Plan

The project will be managed throughout construction by Colson & Colson General Contractors, Inc. of Salem, OR. They will relocate one of their full time project manager who will reside in the Portland area during the entire construction period. This project manager will oversee all trades and will be responsible for SWPPP management, interface with neighboring residents, coordinate permitting and inspections with the City and ensure that site access is maintained during construction.

Section 11. Statement of Traffic Generation

Statement of Traffic Generation

The proposed project will have a single access point off from Ocean Avenue. The nature of the project is that it is a low traffic generator both in overall trips and peak hours. In addition, the project will provide transportation services for its residences for shopping, doctor appointments, volunteer activities and other trips from the facility. Furthermore, the peak hour trips do not typically coincide with the peak hour traffic of the abutting roadways as these constitute the times of meals and social activities of the residence.

Depending on how the project is classified, the traffic generation is as follows:

PROPOSED 150 SUITE ASSISTED LIVING LAND USE 254							
BY NUMBER OF BEDS	BEDS	RATE (Trips/Bed)	TOTAL	ENTER (%)	EXIT (%)	ENTER#	EXIT#
Weekday	165	2.66	438.9	50.00%	50.00%	219.5	219.5
Weekday Morning Peak Hour of Roadway	165	0.14	23.1	65.00%	35.00%	15.0	8.1
Weekday Afternoon Peak Hour of Roadway	165	0.22	36.3	44.00%	56.00%	16.0	20.3
Saturday	165	2.20	363.0	50.00%	50.00%	181.5	181.5
Saturday Peak Hour	165	0.33	54.5	46.00%	54.00%	25.0	29.4
Reference - ITE Trip Generation Manual, 7th Edition.							
PROPOSED 150 SUITE CONGREGATE CARE FACILITY LAND USE 253							
BY NUMBER OF DWELLING UNITS	UNITS	RATE (Trips/Bed)	TOTAL	ENTER (%)	EXIT (%)	ENTER#	EXIT#
Weekday	150	2.02	303.0	50.00%	50.00%	151.5	151.5
Weekday Morning Peak Hour of Roadway	150	0.06	9.0	59.00%	41.00%	5.3	3.7
Weekday Afternoon Peak Hour of Roadway	150	0.02	2.6	55.00%	45.00%	1.4	1.1
Saturday	150	NA	NA	NA	NA	NA	NA
Saturday Peak Hour	150	NA	NA	NA	NA	NA	NA
Reference - ITE Trip Generation Manual, 7th Edition.							

The resulting traffic is not expected to have a significant impact on the surrounding thoroughfares.

Section 12. Summary of Significant Natural Features

Summary of Significant Natural Features

Per the coordination with the Maine Departments of Conservation and inland Fisheries and Wildlife, no specific habitat and natural features were noted.

The entire property consists of approximately 18.33 acres. Of this area, approximately 8.16 acres will remain as zoned, R-OS, and consists of wetland and forested uplands. This land is being preserved by the applicant for public for use of the existing trails that the transverse the parcel. These trails include trails through the Central Maine Power transmission main easement that connect to trails to the north in the Quarry Run Dog Park.

The proposed project will be developed on the remaining 10.17 acres which is within the R-5A Zoning District. The project will “develop” approximately 4.93 acres, impervious and non-forested re-vegetated area, with the remaining 5.46 acres being maintained in a natural state. Within this undeveloped area, the applicant has executed an easement document with Portland Trails that will allow public access from Ocean Avenue to the trails within the R-OS portion of the property.

Along the boundary of the R-5A and R-OS zones and adjacent to the existing and proposed new access trail is a ridge which contains the highest point of Portland along the coast; it is marked by a National Geodetic Survey Marker, designation of West Graves, and is situate at approximately elevation 170 NAVD.

Section 13. Stormwater Management Plan



STORMWATER MANAGEMENT PLAN

For

**Portland Retirement Residence
Portland, Maine**

Prepared for

Hawthorn Development Group, LLC
9310 NE Vancouver Mall Drive, Suite 200
Vancouver, WA 98662

September 2015

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Attachments

Attachment A: Stormwater Quality Calculations

Attachment B: HydroCAD Output-Pre-Development / Post Development TR-20 Model

Attachment C: Inspection, Maintenance, and Housekeeping Plan

STORMWATER MANAGEMENT PLAN**Portland Retirement Residence
802-828 Ocean Avenue
Portland, Maine****Executive Summary**

Hawthorne Development Group, LLC is submitted plans to develop within a 10.17 acre portion of 18.32 acres of undeveloped land off Ocean Avenue into a 150-unit retirement residence. The property is shown as Lot A-7 on City of Portland Tax Map 411 and Lots A-6, A-7, and A-21 on City of Portland Tax Map 416.

The development will create approximately 2.86 acres of new non-vegetated surface and 4.93 acres of new developed area as defined by the Maine Department of Environmental Protection (MDEP).

A majority of the site, roughly 90%, is tributary to Casco Bay via unnamed drainage ways. The remaining 10% of the site, located in the southwest portion of the site adjacent to Wildwood Circle appears to be tributary to Fallbrook. As the proposed development is classified by the City of Portland as a Level III development, the site is required to comply with MaineDEP chapter 500 Standards, per Chapter 5 of City of Portland Technical Manual.

The project has been designed to provide treatment for 90.1% of the new non-vegetated area and 85.4% of the new developed area, which exceeds the required treatment level of Table 1 contained in MaineDEP Chapter 500, Section 4.C.(2)(a)(iii) amended date August 12, 2015. Treatment is achieved utilizing an underdrained subsurface sand filter located within the development parking field and a grassed underdrained soil filter. Best Management Practices (BMPs) have been designed and sized in accordance with criteria published in Chapter 500 BMP's Technical Design Manual.

As the project results in an overall reduction in tributary area draining to Fallbrook and has no development within the Fallbrook watershed, the Urban Impaired Stream Standard does not need to be addressed.

STORMWATER MANAGEMENT PLAN**Portland Retirement Residence
802-828 Ocean Avenue
Portland, Maine****I. Introduction**

This Stormwater Management Plan has been prepared to address the potential impacts associated with this project due to the proposed modification in stormwater runoff characteristics. The stormwater management controls that are outlined in this plan have been designed to best suit the proposed development and to comply with applicable regulatory requirements.

II. Existing Conditions

The project site is currently undeveloped land with woods land cover comprising of 18.32 acres in Portland.

Land Cover: The site is undeveloped land consisting of wooded land cover. The development site abuts Ocean Ridge to the north, Ocean Avenue and single family residential structures to the east, undeveloped land to the south, and Pheasant Hill Drive development to the west.

Site Topography: The majority of the site (75%) drains in a southeasterly direction towards the existing pipe outlets in Ocean Avenue, with the drainage break located just east of the existing Central Maine Power easement at the rear of the site. The remainder of site drains in a westerly direction away from the proposed development.

Slopes on site range from 5 to 10% in the central portion of the site, within and adjacent to wetland areas, to steeper 15 to 25% slopes along Ocean Avenue and the rear of the site.

Surface Water Features: The majority of the site drains to an existing closed drainage system within Ocean Avenue and a cross culvert across Ocean Avenue. These culverts outlet to an existing drainage way along the northerly side of Eben Hill Road (Ocean's East), continuing to travel in a northeasterly direction, crossing Briarwood, Ocean Woods, Presumpscot Street, on its way to Casco Bay.

Soils: Soil characteristics were obtained from the Soil Conservation Service (SCS) Medium Intensity Soil Survey of Cumberland County. Soils identified on the site (or

within close proximity) are identified below in Table 1. These soil boundaries are identified on the attached watershed maps.

Table 1 – Proximity Soil Types and Characteristics			
Soil Type	Symbol	HSG	K Factor
Hollis fine sandy loam	HrB/HrC	D	0.32
Hollis very rock fine sandy loam	HsB/HsE	C	0.32
Scantic Silt Loam	Sn	D	0.49

The K factor is an erodibility index that relates each soil family based on a slight erosion potential of 0.10 to a high erosion potential of 0.64. An index number, greater than 0.32, indicates that a high level of erosion control measures must be taken in order to control erosion of this soil. The Hydrologic Soil Group (HSG) designation is based on a rating of the relative permeability of a soil, with Group “A” being extremely permeable such as coarse sand, to Group “D” having low permeability such as clay.

Historic Flooding: The Federal Emergency Management Agency (FEMA) lists the project site as Zone X, “Areas of 500 year flood based on the published Flood Insurance Rate Map (FEMA Community Panel Number 230051 0007C, dated December 8, 1998).

III. Proposed Development

The Applicant is proposing to a 150 unit retirement residence, consisting of 135 single units and 15 duplex units.

Alterations to Land Cover: Completion of the proposed project will result in the creation of 2.86 acres of non-vegetated area and 4.93 acres of developed area.

IV. Downstream Ponds and Waterbodies

The majority project site is tributary to Casco Bay, which is not listed by the Maine Department of Environmental Protection as impaired or threatened. A small portion of the site, located within the southwest portion of the site, is tributary to Fall Brook which is listed by Maine DEP as an Urban Impaired Stream within Chapter 502.

V. Regulatory Requirements

A. City of Portland, Maine

The proposed development is classified as a Level III development and must comply with Section 5 of the City of Portland’s Technical Manual stating that this

development “shall be required to submit a Stormwater Management Plan pursuant to the regulations of the MDEP Chapter 500 Stormwater Management Rules, including Basic, General and Flooding Standards. The MDEP Chapter 500 rules describe stormwater management requirements for new development projects.

The following sections describe how this project will address these stormwater management performance standards.

Basic Standards: These standards include various erosion and sedimentation controls, inspection and maintenance procedures, and general housekeeping requirements. These performance standards are addressed in the Erosion and Sedimentation Control Plan on Plan Sheet 6 of 13 and in the Inspection, Maintenance, and Housekeeping Plan attached in Attachment 3. Please refer to these documents for more detailed information.

General Standards: This standard presents minimum treatment thresholds for new non-vegetated areas and new developed areas to be treated by stormwater Best Management Practices (BMPs). General Standard BMPs have been defined by the MDEP and are described thoroughly in their publication “Stormwater Management for Maine: Best Management Practices Manual”. Volume III of this manual contains additional information and sizing requirements for the treatment measures proposed for the proposed development.

Urban Impaired Stream Standard: This standard requires a payment of a compensation fee or mitigation of a project’s impact by treating, reducing, or eliminating an off-site or on-site pre-development imperious stormwater source.

Flooding Standards: The MDEP requires that projects creating impervious areas greater than three (3) acres, or developed areas greater than twenty (20) acres address various flooding standards. The proposed project will not exceed the MDEP thresholds, but is required to meet the flooding standards for the City of Portland. The development will be designed to “detain, retain or result in the infiltration of stormwater from 24-hour storms of the 2-year, 10-year, and 25-year frequencies such that the peak flows of stormwater from the project site do not exceed the peak flows of stormwater prior to undertaking the project.” A detailed stormwater model has been provided to demonstrate compliance with these standards.

VI. Stormwater Management BMPs

In order to meet the applicable regulations, the project will utilize an underdrained subsurface sand filter located within the development parking field and a grassed underdrained soil filter located adjacent to the access roadway. The BMP locations are indicated on the attached plans.

A. Underdrained Subsurface Sand Filter

An underdrained subsurface sand filter must detail a runoff volume equal to 1" times the tributary impervious area and 0.4" times the tributary landscaped areas. The surface area of the system must be at least equal to 5% the impervious area and 2% of the landscaped area. Pre-treatment of the runoff must be provided by Storm-Tech Isolator Row sized based on the runoff from a 1-year, 24 hour storm event. The runoff volume shall be discharged over a period of time not less than 24 hours and not greater than 48 hours.

The areas treated by this BMP are summarized in the stormwater treatment calculations attached in Attachment 1: *Stormwater Quality Calculations*.

B. Grassed Underdrained Soil Filter

A grassed underdrained soil filter must detail a runoff volume equal to 1" times the tributary impervious area and 0.4" times the tributary landscaped areas. The surface area of the system must be at least equal to 5% the impervious area and 2% of the landscaped area. Pre-treatment of the runoff must be provided by a sediment forebay, adequately sized to retain the anticipated winter sanding load. The runoff volume shall be discharged over a period of time not less than 24 hours and not greater than 48 hours.

The areas treated by this BMP are summarized in the stormwater treatment calculations attached in Attachment 1: *Stormwater Quality Calculations*.

VII. Peak Flow Analysis

This section has been prepared to discuss the proposed modifications to peak flow rates as a result of the development.

A. Modeling Technique

In order to evaluate drainage characteristics in pre and post-development conditions, a quantitative analysis was performed to determine peak rates of runoff for the 2, 10, and 25-year storm events. Runoff calculations were

performed following the methodology outlined in the USDA Soil Conservation Service's "Urban Hydrology for Small Watersheds, Technical Release #55" and HydroCAD Stormwater Modeling System Software. A 24-hour, SCS Type III storm distribution for the 2, 10, and 25-year storm frequencies were used for analysis.

The 24-hour rainfall values utilized in the hydrologic model for Southeast Cumberland County are as follows:

Table 2 - Storm Frequency Precipitation (in./24 hr)	
2-year	3.1
10-year	4.6
25-year	5.8

*Appendix H, MDEP Chapter 500, amended date Aug 12, 2015

B. Drainage Characteristics (Pre and Post-Development Watershed Delineation)

Two watershed study points (SP1 and SP2) were established to evaluate the pre-development and post-development peak runoff conditions for compliance with the Flooding Standard.

SP1 is located at the confluence of two outlet pipes which discharge on the east side of Ocean Avenue and just north of Eden Hill Road. Runoff from this study point continues through un-named drainage ways, before crossing Presumpscot Street and I-295, before entering Casco Bay.

SP2 is a representative study point located in the southwest quadrant of the development site, adjacent to the existing utility corridor. This study point is where runoff leaves the site and drains to an adjacent lot, before entering Fallbrook.

C. Pre-Development

SP1: SP1 has a total of twelve (12) drainage areas tributary to it, which includes four (4) drainage areas located on the development site and the remaining being offsite drainage areas, such as the east side of Ocean Avenue, Ocean Ridge development, and residential house lots along Ocean Avenue.

SP2: SP2 has a single drainage area (Subarea 4) tributary to it; this study point is located at the property line where drainage crosses the property line in the southwest portion of the site, adjacent to Wildwood Circle.

Subareas 1, 101, 301, 302, and 303 represent the portions of Ocean Ridge condominium development that is tributary to SP1. These areas remain unchanged from pre-development to post-development condition.

Subareas 100 and 300 represent the east side of Ocean Avenue which enter the closed drainage system within Ocean Avenue prior to discharging to SP1. These areas remain unchanged from pre-development to post-development.

Subarea 3 and Subarea 6 are several house lots along the west side of Ocean Avenue, with the development site located at the rear of these house lots. Subarea 3 enters the closed drainage system within Ocean Avenue. Subarea 6 enters two driveway culverts before reaching the 24" Ocean Avenue cross culvert. Both areas discharge to SP1 and remain unchanged from pre-development to post-development.

Subarea 1 is approximately 3.2 acres in area located at the northeast corner of the development site along Ocean Avenue. This area also includes a portion of Ocean Avenue, a portion of two house lots along Ocean Avenue, and a small portion of the abutting Ocean Ridge development site where runoff from developed portions of the site flows through a stormwater buffer easement prior to entering the subject site. Runoff continues along Ocean Avenue gutter/shoulder before entering the closed drainage system at a catch basin located on the west side of Ocean Avenue, roughly opposite Ashley Lane (Ocean Woods development).

Subarea 2 represents a majority of the site to be developed; it's roughly 11.5 acres in size which includes portions of Ocean Ridge, Ocean Avenue, and two resident house lots. Roughly 10.6 acres of the total area is the development site, which is 60% of the total site area. Runoff from Subarea 2 drains to an existing 15-inch driveway culvert prior to reaching and ultimately flowing across Ocean Avenue at the 24-inch cross culvert.

Subarea 4 is roughly 1.2 acres in area located at the southwest portion of the lot where runoff exits the site at the utility corridor adjunct to Wildwood Circle and is ultimately tributary to Fallbrook.

Subarea 5 represents the southeast portion of the site, a single house lot and a portion of Ocean Avenue. Subarea 5 is roughly 1.8 acres in size and drains to the existing Ocean Avenue cross culvert.

D. Post-Development

Pre-development subarea 1 has been divided into four subareas (11, 12, 15A and 15) in the post-development condition. Subareas 11 and 12 have limited

development within the drainage boundaries and respectively represent the south side and north sides of the proposed access. Subarea 15A represents a portion of the access road which will not receive any treatment and will discharge to the wooded area south of the access road. Subarea 15 represents the lower portion of the access which is tributary to the closed drainage system along the site frontage. The total area of these catchments is 4.84 acres, which is greater than the pre-development area of Subarea 1 in the predevelopment, 3.16 acres. The increase in area is a result of the site grading and drainage ditch along the access road.

Pre-development subarea 2 has been divided into 4 subareas in the post-development condition, subarea 20, 21, 22, and 23. Subarea 20 represents the upper and lower portion of the site which will remain undeveloped. A 3-sided box culvert is proposed along the access road so as not to alter the drainage characteristics of existing drainage way which traverses the site. Subarea 21 is the majority of the development footprint and impervious surface which will be collected in the storm drain collection system and outlet to the proposed subsurface sand filter. Subarea 22 represents the upper parking lot and associated access way which will be collected and treated by the grassed underdrain soil filter. Subarea 23 represents the grassed underdrain soil filter.

Subarea 4 in pre-development has been reduced in area by approximately 0.10 acres and is now represented by subarea 40 in the post-development model.

Subarea 50 (subarea 5 in pre-development) has been reduced in area by 0.6 acres but has a minor increase in overall curve number (80 pre vs 82 post).

E. Comparison

The watershed areas and times of concentration of the post-development watersheds vary from the existing conditions based on the proposed site development and grading. Table 3 summarizes the results of the hydrologic analysis of the project under pre-development and post-development conditions.

Table 3 – Stormwater Runoff Summary Table Pre-Development vs. Post-Development										
Study Point	Total Watershed Area (Ac)		Percent Impervious		Peak Rates of Runoff (cfs)					
					2-year		10-year		25-year	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
SP1	23.01	23.10	16.15%	28.68%	17.1	15.9	31.5	31.1	44.2	44.6
SP2	1.21	1.12	0%	0%	1.4	1.3	2.9	2.7	4.1	3.9

As depicted in the above table, post-development peak runoff rates at the two study points will be below pre-development levels for the 2-year and 10 year storm event. The peak runoff rate for the 25-year storm event, at Study Point 1, is anticipated to be 0.40 cfs greater than the pre-development rate, which is a 1% increase. The downstream receiving channel, based on visual field observations, is adequately sized to accommodate the pre-development peak-runoff rate as well as the anticipated 0.4 cfs increase without overtopping existing channel embankments.

VIII. Water Quality Analysis

To achieve the required water quality treatment, an Underdrained Subsurface Sand Filter is proposed to treat the majority of the development with a grassed underdrained soil filter providing treatment of for the upper parking lot and associated access way. Each treatment measure has been designed and sized in accordance with the current Maine DEP Stormwater Best Management Practices handbook.

The development has been designed to provide water quality treatment through implementation of approved BMP's which provide for an impervious area treatment percentage of 90.1% and a developed area treatment percentage of 85.4%, which exceeds the required treatment levels of 90% and 75%, respectively, in accordance with MaineDEP Chapter 500, Section 4.C.(2)(a)(iii) amended date August 12, 2015.

Water Quality Volumes, BMP sizing volume calculations, and other supporting calculations are attached to this report.

IX. Urban Impaired Stream Standard

As mentioned in Section VII.C of this report, Subarea 4 is tributary to Fallbrook which is listed in Chapter 502 as an Urban Impaired Stream, which requires payment of a compensation fee or mitigation of a project's impact by treating, reducing, or eliminating an off-site or on-site pre-development impervious stormwater source. As a result of the proposed development and project grading, the total drainage area tributary to Fallbrook is reduced by 8% from 1.21 acres to 1.12 acres. No developed area is anticipated within Subarea 4, so no mitigation or compensation fee is proposed.

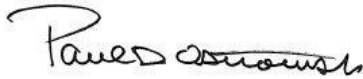
X. Conclusions

The proposed development has been designed to meet the requirements of the City of Portland's Stormwater Technical Standards. The stormwater management system will treat 90.1% of the created impervious surface and 85.4% of the total developed area. The peak flow rates have been controlled to the greatest extent practical to be at pre-

development levels. An anticipated increase of 0.4 cfs at Study Point 1 during the 25-year storm event is expected, but will not cause an unreasonable adverse effect on downstream development. Additionally, erosion and sedimentation controls have been outlined to prevent unreasonable impacts on the site and to the surrounding environment.

Prepared by,

SEBAGO TECHNICS, INC.



Paul D. Ostrowski, P.E.
Project Engineer



Robert A. McSorley, P.E.
Senior Project Manager

PDO/RAM:pdo/jf
September 9, 2015

Date: 9/17/15

Attachment A

Stormwater Quality Calculations

MDEP GENERAL STANDARD CALCULATIONS
PORTLAND RETIREMENT RESIDENCE
JOB #14432

SUBAREA #	SUBAREA TOTAL AREA (AC.)	NEW ONSITE IMPERVIOUS AREA (AC.)	NEW ONSITE LANDSCAPED AREA (AC.)	NEW DEVELOPED AREA (AC.)	UNDEVELOPED AREA (AC.)	TREATMENT METHOD			IMPERVIOUS (AC.) WP1	LANDSCAPED (AC.) WP1
						ID (PRIMARY)	% IMP	% LAND		
11	1.880	0.053	0.011	0.065	1.815	None				
12	2.607	0.000	0.175	0.175	2.431	None				
15A	0.086	0.059	0.027	0.086	0.000	None				
15	0.273	0.170	0.103	0.273	0.000	None				
20	6.364	0.000	0.118	0.118	6.245	None				
21	3.316	2.113	1.203	3.316	0.000	Sub. Sand Filter (210)	100%	100%	2.113	1.203
22	0.696	0.460	0.237	0.696	0.000	UDF-1 (220)	100%	100%	0.460	0.237
23	0.200	0.000	0.200	0.200	0.000	UDF-1 (220)	100%	100%	0.000	0.200
TOTAL LOTS (AC.)	15.421	2.856	2.074	4.930	10.492				2.573	1.639

*TREATED VALUES ONLY INCLUDE AREAS ASSOCIATED WITH THE DEVELOPMENT. OFFSITE AREA NOT INCLUDED IN SITE TREATMENT CALCULATION

TOTAL NEW IMPERVIOUS AREA (SF)	124,410	TOTAL NEW DEVELOPED AREA (SF)	214,740
TOTAL IMPERVIOUS AREA RECEIVING TREATMENT (SF)	112,084	TOTAL DEV. AREA RECEIVING TREATMENT (SF)	183,495
TOTAL IMPERVIOUS AREA NOT RECEIVING TREATMENT (SF)	12,326	TOTAL DEV. AREA NOT RECEIVING TREATMENT (SF)	31,245
% OF IMPERVIOUS AREA RECEIVING TREATMENT	90.1%	% OF DEV. AREA RECEIVING TREATMENT	85.4%

75 John Roberts Road Suite 1A
South Portland, Maine 04106
Tel. (207) 200-2100

JOB	14432 - Portland Retirement Community		
SHEET NO.	1	OF	1
CALCULATED BY	PDO	DATE	10/23/2014
FILE NAME		PRINT DATE	9/17/2015

[illegible]

SEBAGO TECHNICS, INC.

75 John Roberts Road Suite 1A

South Portland, Maine 04106

Tel. (207) 200-2100

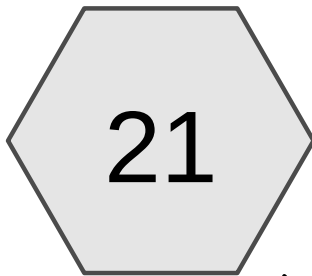
JOB 14432 - Portland Retirement Community

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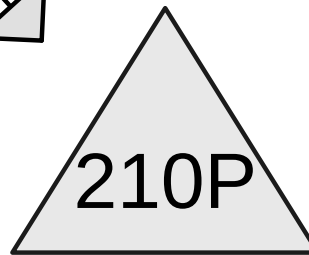
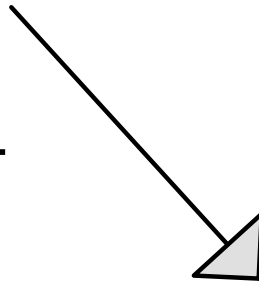
CALCULATED BY PDO DATE 7/9/2015

FILE NAME 14432.Subsurface Sand Filter BMP.xls PRINT DATE 9/9/2015

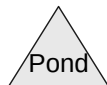
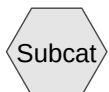
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Sub 21



Sand Filter mc3500



Routing Diagram for 14432_Postdevelopment_AS BUILT_rev09-15

Prepared by Sebago Technics, Printed 9/9/2015

HydroCAD® 10.00-15 s/n 01856 © 2015 HydroCAD Software Solutions LLC

Summary for Subcatchment 21: Sub 21

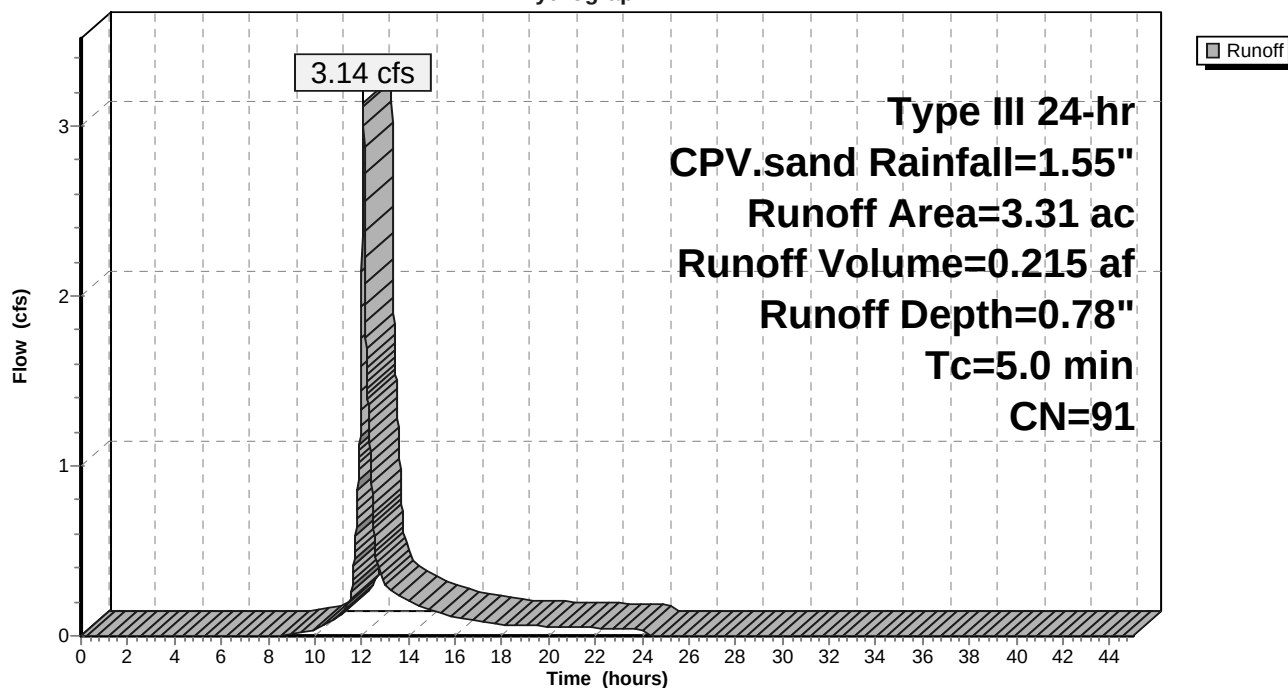
Runoff = 3.14 cfs @ 12.08 hrs, Volume= 0.215 af, Depth= 0.78"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr CPV.sand Rainfall=1.55"

Area (ac)	CN	Description
1.20	80	>75% Grass cover, Good, HSG D
* 2.11	98	Site Development
3.31	91	Weighted Average
1.20		36.25% Pervious Area
2.11		63.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 21: Sub 21**Hydrograph**

Summary for Pond 210P: Sand Filter mc3500

Inflow Area = 3.31 ac, 63.75% Impervious, Inflow Depth = 0.78" for CPV.sand event
 Inflow = 3.14 cfs @ 12.08 hrs, Volume= 0.215 af
 Outflow = 0.12 cfs @ 15.84 hrs, Volume= 0.215 af, Atten= 96%, Lag= 225.8 min
 Primary = 0.12 cfs @ 15.84 hrs, Volume= 0.215 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
 Peak Elev= 126.04' @ 15.84 hrs Surf.Area= 6,773 sf Storage= 5,412 cf

Plug-Flow detention time= 486.2 min calculated for 0.215 af (100% of inflow)
 Center-of-Mass det. time= 486.3 min (1,318.1 - 831.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	124.70'	9,447 cf	80.08'W x 84.57'L x 5.50'H Field A 37,250 cf Overall - 13,632 cf Embedded = 23,618 cf x 40.0% Voids
#2A	125.45'	13,632 cf	ADS_StormTech MC-3500 d +Cap x 121 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 11 Rows of 11 Chambers Cap Storage= +14.9 cf x 2 x 11 rows = 327.8 cf
		23,079 cf	Total Available Storage

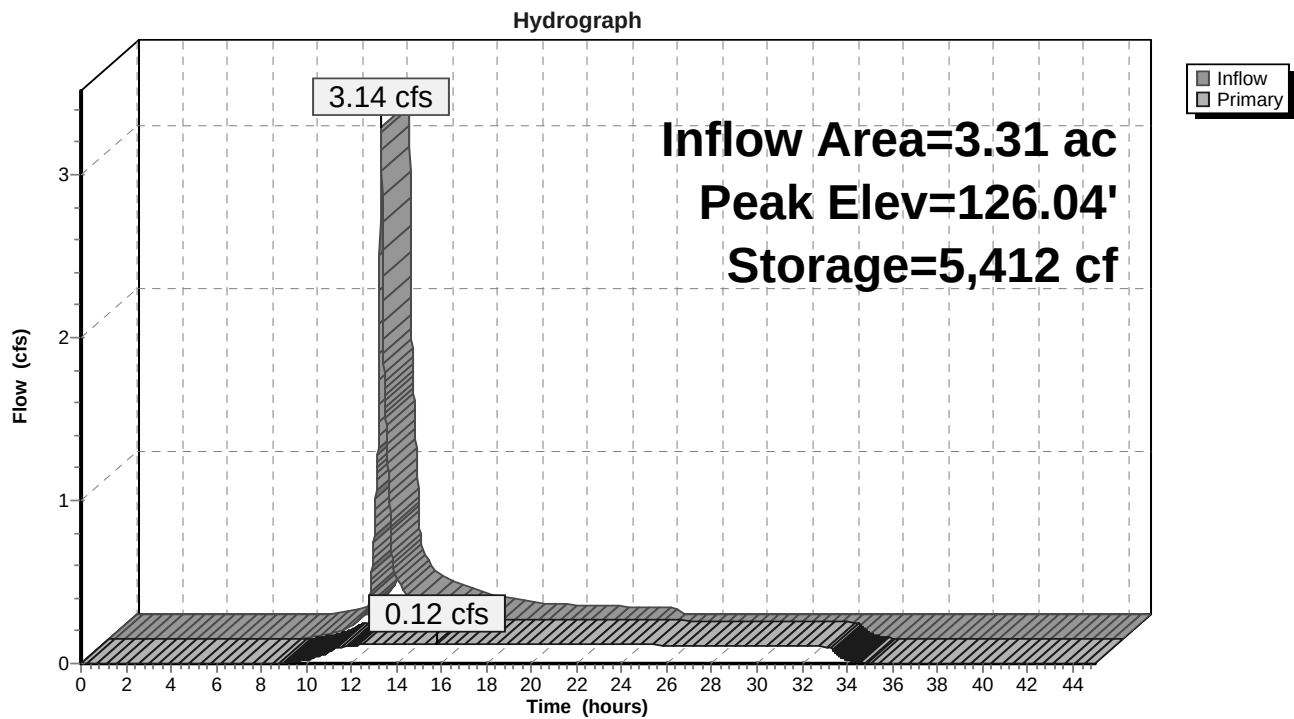
Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	121.00'	15.0" Round Culvert L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 121.00' / 117.00' S= 0.0800 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	121.00'	1.0" Vert. Orifice/Grate X 2.00 C= 0.600
#3	Device 1	126.80'	7.0" Vert. Orifice/Grate X 2.00 C= 0.600
#4	Device 1	129.87'	6.0' long x 1.50' rise Sharp-Crested Vee/Trap Weir Cv= 2.62 (C= 3.28)

Primary OutFlow Max=0.12 cfs @ 15.84 hrs HW=126.04' (Free Discharge)

- 1=Culvert (Passes 0.12 cfs of 12.41 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.12 cfs @ 10.76 fps)
- 3=Orifice/Grate (Controls 0.00 cfs)
- 4=Sharp-Crested Vee/Trap Weir (Controls 0.00 cfs)

Pond 210P: Sand Filter mc3500



Stage-Area-Storage for Pond 210P: Sand Filter mc3500

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
124.70	0	125.76	3,832	126.82	9,793	127.88	15,254
124.72	54	125.78	3,948	126.84	9,902	127.90	15,350
124.74	108	125.80	4,063	126.86	10,011	127.92	15,445
124.76	163	125.82	4,178	126.88	10,119	127.94	15,540
124.78	217	125.84	4,293	126.90	10,227	127.96	15,635
124.80	271	125.86	4,408	126.92	10,335	127.98	15,729
124.82	325	125.88	4,523	126.94	10,443	128.00	15,823
124.84	379	125.90	4,638	126.96	10,550	128.02	15,916
124.86	433	125.92	4,753	126.98	10,658	128.04	16,009
124.88	488	125.94	4,867	127.00	10,765	128.06	16,102
124.90	542	125.96	4,982	127.02	10,872	128.08	16,195
124.92	596	125.98	5,096	127.04	10,979	128.10	16,287
124.94	650	126.00	5,211	127.06	11,085	128.12	16,378
124.96	704	126.02	5,325	127.08	11,192	128.14	16,469
124.98	759	126.04	5,439	127.10	11,298	128.16	16,560
125.00	813	126.06	5,553	127.12	11,404	128.18	16,651
125.02	867	126.08	5,667	127.14	11,510	128.20	16,740
125.04	921	126.10	5,781	127.16	11,615	128.22	16,830
125.06	975	126.12	5,895	127.18	11,721	128.24	16,919
125.08	1,029	126.14	6,008	127.20	11,826	128.26	17,007
125.10	1,084	126.16	6,122	127.22	11,931	128.28	17,096
125.12	1,138	126.18	6,235	127.24	12,036	128.30	17,183
125.14	1,192	126.20	6,349	127.26	12,140	128.32	17,270
125.16	1,246	126.22	6,462	127.28	12,244	128.34	17,357
125.18	1,300	126.24	6,575	127.30	12,349	128.36	17,443
125.20	1,355	126.26	6,688	127.32	12,452	128.38	17,529
125.22	1,409	126.28	6,800	127.34	12,556	128.40	17,614
125.24	1,463	126.30	6,913	127.36	12,659	128.42	17,698
125.26	1,517	126.32	7,025	127.38	12,763	128.44	17,782
125.28	1,571	126.34	7,138	127.40	12,866	128.46	17,866
125.30	1,625	126.36	7,250	127.42	12,968	128.48	17,949
125.32	1,680	126.38	7,362	127.44	13,071	128.50	18,031
125.34	1,734	126.40	7,474	127.46	13,173	128.52	18,113
125.36	1,788	126.42	7,586	127.48	13,275	128.54	18,194
125.38	1,842	126.44	7,698	127.50	13,376	128.56	18,274
125.40	1,896	126.46	7,809	127.52	13,478	128.58	18,354
125.42	1,951	126.48	7,921	127.54	13,579	128.60	18,433
125.44	2,005	126.50	8,032	127.56	13,680	128.62	18,511
125.46	2,090	126.52	8,143	127.58	13,780	128.64	18,588
125.48	2,207	126.54	8,254	127.60	13,881	128.66	18,665
125.50	2,324	126.56	8,365	127.62	13,981	128.68	18,741
125.52	2,440	126.58	8,476	127.64	14,080	128.70	18,816
125.54	2,557	126.60	8,587	127.66	14,180	128.72	18,889
125.56	2,673	126.62	8,697	127.68	14,279	128.74	18,962
125.58	2,789	126.64	8,808	127.70	14,378	128.76	19,034
125.60	2,906	126.66	8,918	127.72	14,477	128.78	19,104
125.62	3,022	126.68	9,028	127.74	14,575	128.80	19,173
125.64	3,138	126.70	9,138	127.76	14,673	128.82	19,241
125.66	3,254	126.72	9,247	127.78	14,770	128.84	19,307
125.68	3,370	126.74	9,357	127.80	14,868	128.86	19,372
125.70	3,485	126.76	9,466	127.82	14,965	128.88	19,436
125.72	3,601	126.78	9,576	127.84	15,061	128.90	19,499
125.74	3,717	126.80	9,685	127.86	15,158	128.92	19,561

Stage-Area-Storage for Pond 210P: Sand Filter mc3500 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
128.94	19,622	130.00	22,537	131.06	23,079
128.96	19,682	130.02	22,591	131.08	23,079
128.98	19,742	130.04	22,646	131.10	23,079
129.00	19,802	130.06	22,700	131.12	23,079
129.02	19,861	130.08	22,754	131.14	23,079
129.04	19,920	130.10	22,808	131.16	23,079
129.06	19,978	130.12	22,862	131.18	23,079
129.08	20,035	130.14	22,916	131.20	23,079
129.10	20,092	130.16	22,971	131.22	23,079
129.12	20,149	130.18	23,025	131.24	23,079
129.14	20,205	130.20	23,079	131.26	23,079
129.16	20,261	130.22	23,079	131.28	23,079
129.18	20,316	130.24	23,079	131.30	23,079
129.20	20,370	130.26	23,079	131.32	23,079
129.22	20,424	130.28	23,079	131.34	23,079
129.24	20,478	130.30	23,079	131.36	23,079
129.26	20,533	130.32	23,079		
129.28	20,587	130.34	23,079		
129.30	20,641	130.36	23,079		
129.32	20,695	130.38	23,079		
129.34	20,749	130.40	23,079		
129.36	20,803	130.42	23,079		
129.38	20,858	130.44	23,079		
129.40	20,912	130.46	23,079		
129.42	20,966	130.48	23,079		
129.44	21,020	130.50	23,079		
129.46	21,074	130.52	23,079		
129.48	21,128	130.54	23,079		
129.50	21,183	130.56	23,079		
129.52	21,237	130.58	23,079		
129.54	21,291	130.60	23,079		
129.56	21,345	130.62	23,079		
129.58	21,399	130.64	23,079		
129.60	21,454	130.66	23,079		
129.62	21,508	130.68	23,079		
129.64	21,562	130.70	23,079		
129.66	21,616	130.72	23,079		
129.68	21,670	130.74	23,079		
129.70	21,724	130.76	23,079		
129.72	21,779	130.78	23,079		
129.74	21,833	130.80	23,079		
129.76	21,887	130.82	23,079		
129.78	21,941	130.84	23,079		
129.80	21,995	130.86	23,079		
129.82	22,050	130.88	23,079		
129.84	22,104	130.90	23,079		
129.86	22,158	130.92	23,079		
129.88	22,212	130.94	23,079		
129.90	22,266	130.96	23,079		
129.92	22,320	130.98	23,079		
129.94	22,375	131.00	23,079		
129.96	22,429	131.02	23,079		
129.98	22,483	131.04	23,079		

Summary for Subcatchment 21: Sub 21

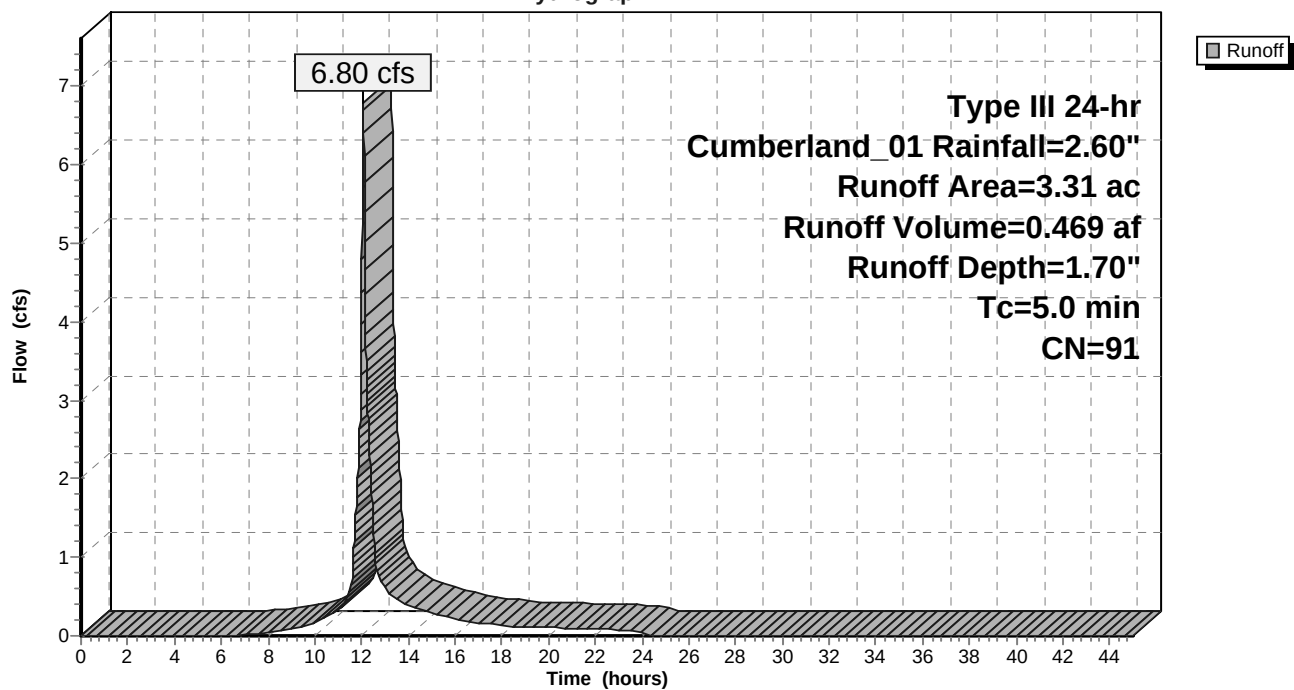
Runoff = 6.80 cfs @ 12.07 hrs, Volume= 0.469 af, Depth= 1.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_01 Rainfall=2.60"

Area (ac)	CN	Description
1.20	80	>75% Grass cover, Good, HSG D
* 2.11	98	Site Development
3.31	91	Weighted Average
1.20		36.25% Pervious Area
2.11		63.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 21: Sub 21**Hydrograph**

Summary for Pond 210P: Sand Filter mc3500

Inflow Area = 3.31 ac, 63.75% Impervious, Inflow Depth = 1.70" for Cumberland_01 event
 Inflow = 6.80 cfs @ 12.07 hrs, Volume= 0.469 af
 Outflow = 0.53 cfs @ 13.21 hrs, Volume= 0.457 af, Atten= 92%, Lag= 68.2 min
 Primary = 0.53 cfs @ 13.21 hrs, Volume= 0.457 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
 Peak Elev= 127.06' @ 13.21 hrs Surf.Area= 6,773 sf Storage= 11,078 cf

Plug-Flow detention time= 639.1 min calculated for 0.457 af (97% of inflow)
 Center-of-Mass det. time= 623.4 min (1,432.9 - 809.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	124.70'	9,447 cf	80.08'W x 84.57'L x 5.50'H Field A 37,250 cf Overall - 13,632 cf Embedded = 23,618 cf x 40.0% Voids
#2A	125.45'	13,632 cf	ADS_StormTech MC-3500 d +Cap x 121 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 11 Rows of 11 Chambers Cap Storage= +14.9 cf x 2 x 11 rows = 327.8 cf
		23,079 cf	Total Available Storage

Storage Group A created with Chamber Wizard

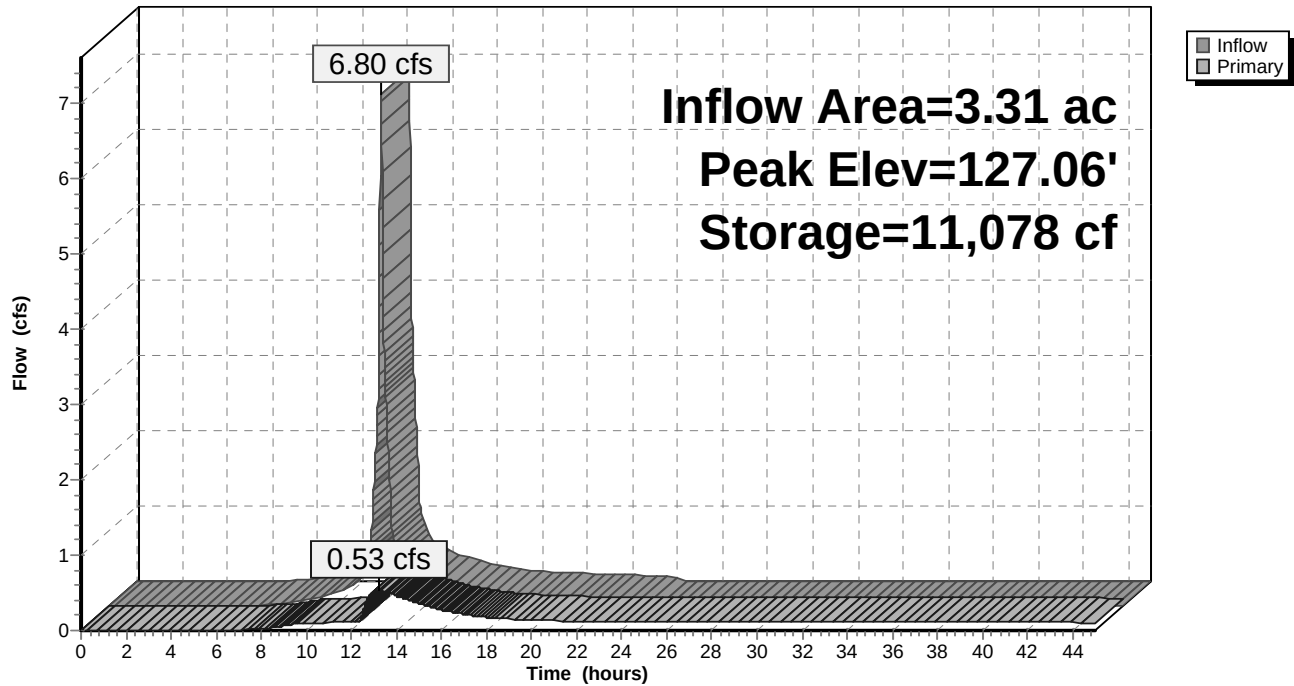
Device	Routing	Invert	Outlet Devices
#1	Primary	121.00'	15.0" Round Culvert L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 121.00' / 117.00' S= 0.0800 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	121.00'	1.0" Vert. Orifice/Grate X 2.00 C= 0.600
#3	Device 1	126.80'	7.0" Vert. Orifice/Grate X 2.00 C= 0.600
#4	Device 1	129.87'	6.0' long x 1.50' rise Sharp-Crested Vee/Trap Weir Cv= 2.62 (C= 3.28)

Primary OutFlow Max=0.52 cfs @ 13.21 hrs HW=127.06' (Free Discharge)

- 1=Culvert (Passes 0.52 cfs of 13.77 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.13 cfs @ 11.81 fps)
- 3=Orifice/Grate (Orifice Controls 0.40 cfs @ 1.73 fps)
- 4=Sharp-Crested Vee/Trap Weir (Controls 0.00 cfs)

Pond 210P: Sand Filter mc3500

Hydrograph



Stage-Area-Storage for Pond 210P: Sand Filter mc3500

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
124.70	0	125.76	3,832	126.82	9,793	127.88	15,254
124.72	54	125.78	3,948	126.84	9,902	127.90	15,350
124.74	108	125.80	4,063	126.86	10,011	127.92	15,445
124.76	163	125.82	4,178	126.88	10,119	127.94	15,540
124.78	217	125.84	4,293	126.90	10,227	127.96	15,635
124.80	271	125.86	4,408	126.92	10,335	127.98	15,729
124.82	325	125.88	4,523	126.94	10,443	128.00	15,823
124.84	379	125.90	4,638	126.96	10,550	128.02	15,916
124.86	433	125.92	4,753	126.98	10,658	128.04	16,009
124.88	488	125.94	4,867	127.00	10,765	128.06	16,102
124.90	542	125.96	4,982	127.02	10,872	128.08	16,195
124.92	596	125.98	5,096	127.04	10,979	128.10	16,287
124.94	650	126.00	5,211	127.06	11,085	128.12	16,378
124.96	704	126.02	5,325	127.08	11,192	128.14	16,469
124.98	759	126.04	5,439	127.10	11,298	128.16	16,560
125.00	813	126.06	5,553	127.12	11,404	128.18	16,651
125.02	867	126.08	5,667	127.14	11,510	128.20	16,740
125.04	921	126.10	5,781	127.16	11,615	128.22	16,830
125.06	975	126.12	5,895	127.18	11,721	128.24	16,919
125.08	1,029	126.14	6,008	127.20	11,826	128.26	17,007
125.10	1,084	126.16	6,122	127.22	11,931	128.28	17,096
125.12	1,138	126.18	6,235	127.24	12,036	128.30	17,183
125.14	1,192	126.20	6,349	127.26	12,140	128.32	17,270
125.16	1,246	126.22	6,462	127.28	12,244	128.34	17,357
125.18	1,300	126.24	6,575	127.30	12,349	128.36	17,443
125.20	1,355	126.26	6,688	127.32	12,452	128.38	17,529
125.22	1,409	126.28	6,800	127.34	12,556	128.40	17,614
125.24	1,463	126.30	6,913	127.36	12,659	128.42	17,698
125.26	1,517	126.32	7,025	127.38	12,763	128.44	17,782
125.28	1,571	126.34	7,138	127.40	12,866	128.46	17,866
125.30	1,625	126.36	7,250	127.42	12,968	128.48	17,949
125.32	1,680	126.38	7,362	127.44	13,071	128.50	18,031
125.34	1,734	126.40	7,474	127.46	13,173	128.52	18,113
125.36	1,788	126.42	7,586	127.48	13,275	128.54	18,194
125.38	1,842	126.44	7,698	127.50	13,376	128.56	18,274
125.40	1,896	126.46	7,809	127.52	13,478	128.58	18,354
125.42	1,951	126.48	7,921	127.54	13,579	128.60	18,433
125.44	2,005	126.50	8,032	127.56	13,680	128.62	18,511
125.46	2,090	126.52	8,143	127.58	13,780	128.64	18,588
125.48	2,207	126.54	8,254	127.60	13,881	128.66	18,665
125.50	2,324	126.56	8,365	127.62	13,981	128.68	18,741
125.52	2,440	126.58	8,476	127.64	14,080	128.70	18,816
125.54	2,557	126.60	8,587	127.66	14,180	128.72	18,889
125.56	2,673	126.62	8,697	127.68	14,279	128.74	18,962
125.58	2,789	126.64	8,808	127.70	14,378	128.76	19,034
125.60	2,906	126.66	8,918	127.72	14,477	128.78	19,104
125.62	3,022	126.68	9,028	127.74	14,575	128.80	19,173
125.64	3,138	126.70	9,138	127.76	14,673	128.82	19,241
125.66	3,254	126.72	9,247	127.78	14,770	128.84	19,307
125.68	3,370	126.74	9,357	127.80	14,868	128.86	19,372
125.70	3,485	126.76	9,466	127.82	14,965	128.88	19,436
125.72	3,601	126.78	9,576	127.84	15,061	128.90	19,499
125.74	3,717	126.80	9,685	127.86	15,158	128.92	19,561

Stage-Area-Storage for Pond 210P: Sand Filter mc3500 (continued)

Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)	Elevation (feet)	Storage (cubic-feet)
128.94	19,622	130.00	22,537	131.06	23,079
128.96	19,682	130.02	22,591	131.08	23,079
128.98	19,742	130.04	22,646	131.10	23,079
129.00	19,802	130.06	22,700	131.12	23,079
129.02	19,861	130.08	22,754	131.14	23,079
129.04	19,920	130.10	22,808	131.16	23,079
129.06	19,978	130.12	22,862	131.18	23,079
129.08	20,035	130.14	22,916	131.20	23,079
129.10	20,092	130.16	22,971	131.22	23,079
129.12	20,149	130.18	23,025	131.24	23,079
129.14	20,205	130.20	23,079	131.26	23,079
129.16	20,261	130.22	23,079	131.28	23,079
129.18	20,316	130.24	23,079	131.30	23,079
129.20	20,370	130.26	23,079	131.32	23,079
129.22	20,424	130.28	23,079	131.34	23,079
129.24	20,478	130.30	23,079	131.36	23,079
129.26	20,533	130.32	23,079		
129.28	20,587	130.34	23,079		
129.30	20,641	130.36	23,079		
129.32	20,695	130.38	23,079		
129.34	20,749	130.40	23,079		
129.36	20,803	130.42	23,079		
129.38	20,858	130.44	23,079		
129.40	20,912	130.46	23,079		
129.42	20,966	130.48	23,079		
129.44	21,020	130.50	23,079		
129.46	21,074	130.52	23,079		
129.48	21,128	130.54	23,079		
129.50	21,183	130.56	23,079		
129.52	21,237	130.58	23,079		
129.54	21,291	130.60	23,079		
129.56	21,345	130.62	23,079		
129.58	21,399	130.64	23,079		
129.60	21,454	130.66	23,079		
129.62	21,508	130.68	23,079		
129.64	21,562	130.70	23,079		
129.66	21,616	130.72	23,079		
129.68	21,670	130.74	23,079		
129.70	21,724	130.76	23,079		
129.72	21,779	130.78	23,079		
129.74	21,833	130.80	23,079		
129.76	21,887	130.82	23,079		
129.78	21,941	130.84	23,079		
129.80	21,995	130.86	23,079		
129.82	22,050	130.88	23,079		
129.84	22,104	130.90	23,079		
129.86	22,158	130.92	23,079		
129.88	22,212	130.94	23,079		
129.90	22,266	130.96	23,079		
129.92	22,320	130.98	23,079		
129.94	22,375	131.00	23,079		
129.96	22,429	131.02	23,079		
129.98	22,483	131.04	23,079		

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JOB 14432 - Portland Retirement Residence

SHEET NO. 1 OF 1

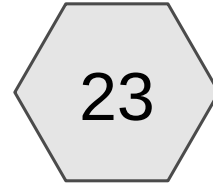
CALCULATED BY PDO DATE 8/7/2015

FILE NAME PRINT DATE 9/9/2015

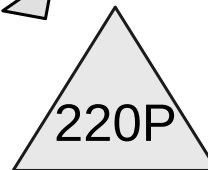
UNDERDRAINED SOIL FILTER									
Task:	Calculate water quality volume per MDEP chapter 500 regulations								
References	1. Maine DEP Chapter 500, Section 4.B.(2)(b)								
	a. "must detain a runoff volume equal to 1.0 inch times the subcatchment's impervious area plus 0.4 inch times the subcatchment's landscaped area"								
	2. Maine DEP Best Management Practices Stormwater Manual, Section 7.1								
	a. "surface should represent 5% of impervious area and 2% of landscaped area"								
Tributary to Underdrained Filter	#1								
Landscaped Area	19,020.00	SF							
Impervious Area	20,026.00	SF							
Minimum Surface Area									
Required	(2% X Landscaped + 5% X Impervious)								
Total Landscaped Area	19,020.00	SF	Area	380.4	SF				
Total Impervious Area	20,026.00	SF	Area	1,001.3	SF				
	Required Minimum Surface Area			1,381.7	SF				
	Provided Surface Area			2,326.0	SF				
Channel Protection Volume (CPV)									
Required	(0.4" X Landscaped + 1.0" X Impervious)								
Landscaped Area	19,020.00	SF	Volume	634.0					
Impervious Area	20,026.00	SF	Volume	1,668.8					
	CPV Required			2,302.8	CF	0.053	AF		
	Provided CPV			2,900.0	CF	(Elevation 125.00 to 126.00)			
Sediment Pre-Treatment									
Per Reference 2, Chapter 7.13	"Pretreatment devices shall be provided to minimize discharge of sediment to the soil filter"								
Annual Sediment Load:	50 cubic feet per acre per year of sanded area								
Area to be sanded:	20,026.00	SF							
Sediment Volume	23	CF							
Provided	52	CF	6 Inch Deep Forebay	with area of	104	sf			



Sub 22

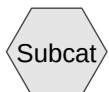


Sub 23



220P

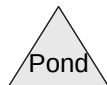
UDF



Subcat



Reach



Pond



Link

Routing Diagram for 14432_Postdevelopment_AS BUILT_rev09-15

Prepared by Sebago Technics, Printed 9/9/2015

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Summary for Subcatchment 22: Sub 22

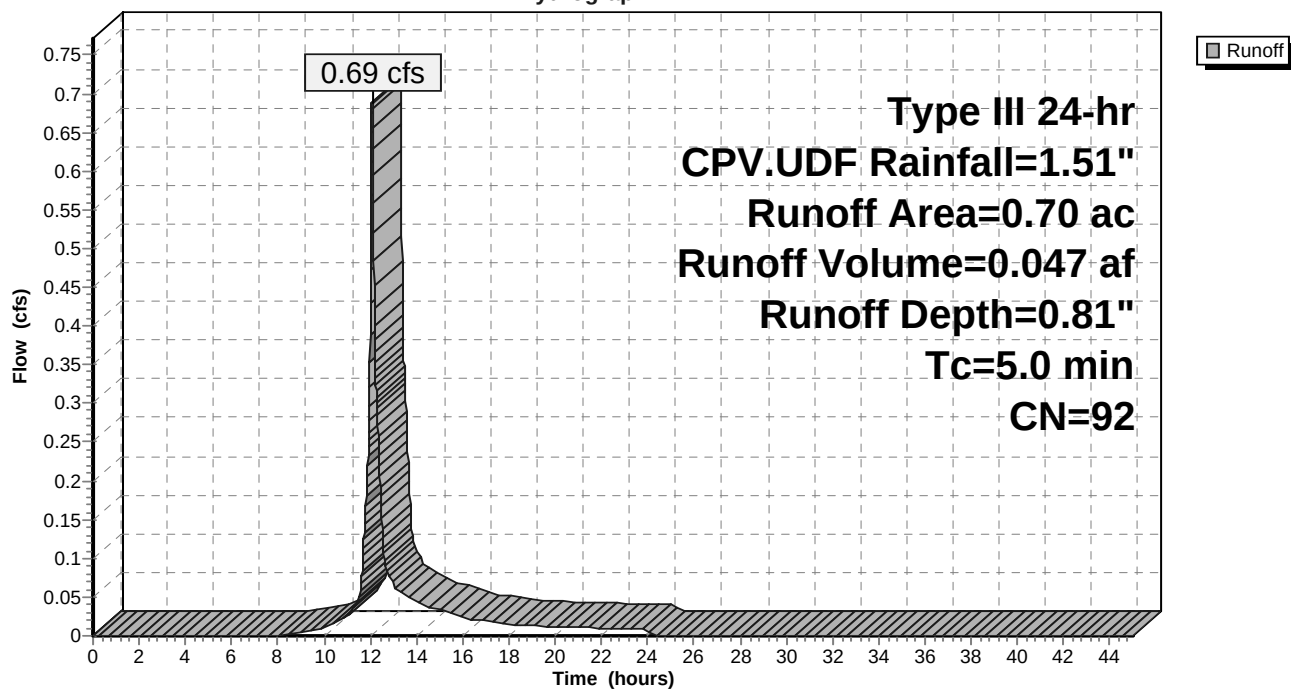
Runoff = 0.69 cfs @ 12.08 hrs, Volume= 0.047 af, Depth= 0.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr CPV.UDF Rainfall=1.51"

Area (ac)	CN	Description
* 0.45	98	Site Development
0.25	80	>75% Grass cover, Good, HSG D
0.70	92	Weighted Average
0.25		35.71% Pervious Area
0.45		64.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 22: Sub 22**Hydrograph**

Summary for Subcatchment 23: Sub 23

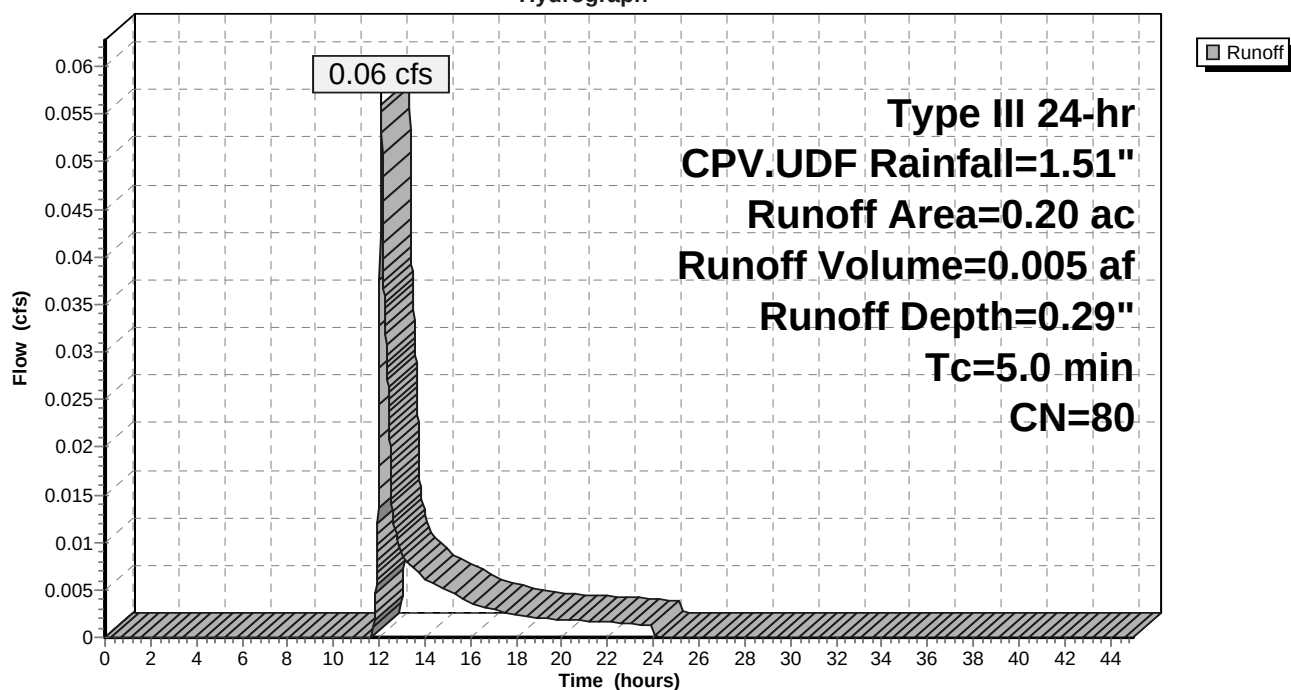
Runoff = 0.06 cfs @ 12.09 hrs, Volume= 0.005 af, Depth= 0.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr CPV.UDF Rainfall=1.51"

Area (ac)	CN	Description
0.20	80	>75% Grass cover, Good, HSG D
0.20		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 23: Sub 23**Hydrograph**

Summary for Pond 220P: UDF

Inflow Area = 0.90 ac, 50.00% Impervious, Inflow Depth = 0.69" for CPV.UDF event
 Inflow = 0.74 cfs @ 12.08 hrs, Volume= 0.052 af
 Outflow = 0.03 cfs @ 15.33 hrs, Volume= 0.052 af, Atten= 95%, Lag= 194.9 min
 Primary = 0.03 cfs @ 15.33 hrs, Volume= 0.052 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
 Peak Elev= 125.49' @ 15.33 hrs Surf.Area= 2,643 sf Storage= 1,215 cf

Plug-Flow detention time= 375.9 min calculated for 0.052 af (100% of inflow)
 Center-of-Mass det. time= 376.0 min (1,209.2 - 833.2)

Volume	Invert	Avail.Storage	Storage Description
#1	125.00'	10,527 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
125.00	2,326	0	0
126.00	2,974	2,650	2,650
127.00	4,000	3,487	6,137
128.00	4,780	4,390	10,527

Device	Routing	Invert	Outlet Devices
#1	Primary	122.83'	12.0" Round Culvert L= 78.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 122.83' / 122.28' S= 0.0071 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	122.83'	0.9" Vert. Orifice/Grate C= 0.600
#3	Device 2	125.00'	2.400 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 0.00'
#4	Device 1	126.00'	4.0" Vert. Orifice/Grate X 4.00 C= 0.600
#5	Device 1	127.00'	20.0" Vert. Orifice/Grate C= 0.600
#6	Secondary	127.50'	10.0' long x 8.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=0.03 cfs @ 15.33 hrs HW=125.49' (Free Discharge)

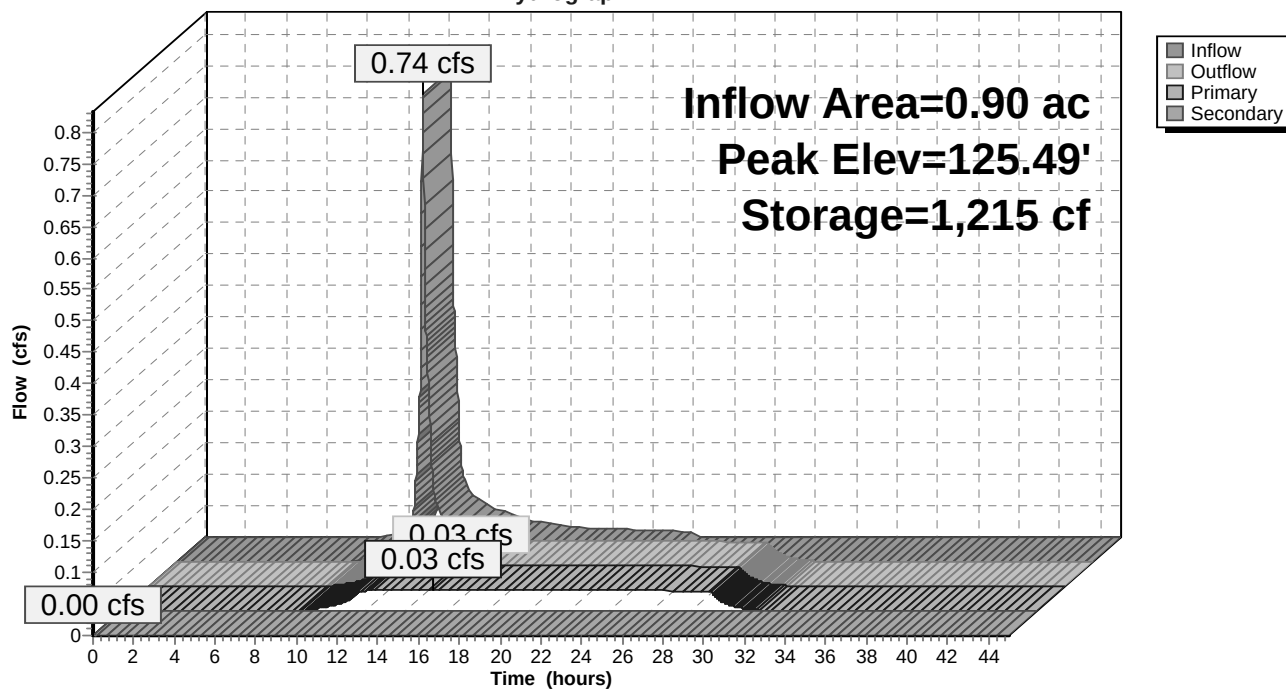
↑ **1=Culvert** (Passes 0.03 cfs of 4.95 cfs potential flow)
 ↑ **2=Orifice/Grate** (Orifice Controls 0.03 cfs @ 7.80 fps)
 ↑ **3=Exfiltration** (Passes 0.03 cfs of 0.15 cfs potential flow)
 ↑ **4=Orifice/Grate** (Controls 0.00 cfs)
 ↑ **5=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=125.00' (Free Discharge)

↑ **6=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 220P: UDF

Hydrograph



Stage-Area-Storage for Pond 220P: UDF

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
125.00	2,326	0	125.53	2,669	1,324
125.01	2,332	23	125.54	2,676	1,351
125.02	2,339	47	125.55	2,682	1,377
125.03	2,345	70	125.56	2,689	1,404
125.04	2,352	94	125.57	2,695	1,431
125.05	2,358	117	125.58	2,702	1,458
125.06	2,365	141	125.59	2,708	1,485
125.07	2,371	164	125.60	2,715	1,512
125.08	2,378	188	125.61	2,721	1,539
125.09	2,384	212	125.62	2,728	1,567
125.10	2,391	236	125.63	2,734	1,594
125.11	2,397	260	125.64	2,741	1,621
125.12	2,404	284	125.65	2,747	1,649
125.13	2,410	308	125.66	2,754	1,676
125.14	2,417	332	125.67	2,760	1,704
125.15	2,423	356	125.68	2,767	1,731
125.16	2,430	380	125.69	2,773	1,759
125.17	2,436	405	125.70	2,780	1,787
125.18	2,443	429	125.71	2,786	1,815
125.19	2,449	454	125.72	2,793	1,843
125.20	2,456	478	125.73	2,799	1,871
125.21	2,462	503	125.74	2,806	1,899
125.22	2,469	527	125.75	2,812	1,927
125.23	2,475	552	125.76	2,818	1,955
125.24	2,482	577	125.77	2,825	1,983
125.25	2,488	602	125.78	2,831	2,011
125.26	2,494	627	125.79	2,838	2,040
125.27	2,501	652	125.80	2,844	2,068
125.28	2,507	677	125.81	2,851	2,097
125.29	2,514	702	125.82	2,857	2,125
125.30	2,520	727	125.83	2,864	2,154
125.31	2,527	752	125.84	2,870	2,182
125.32	2,533	777	125.85	2,877	2,211
125.33	2,540	803	125.86	2,883	2,240
125.34	2,546	828	125.87	2,890	2,269
125.35	2,553	854	125.88	2,896	2,298
125.36	2,559	879	125.89	2,903	2,327
125.37	2,566	905	125.90	2,909	2,356
125.38	2,572	931	125.91	2,916	2,385
125.39	2,579	956	125.92	2,922	2,414
125.40	2,585	982	125.93	2,929	2,443
125.41	2,592	1,008	125.94	2,935	2,473
125.42	2,598	1,034	125.95	2,942	2,502
125.43	2,605	1,060	125.96	2,948	2,532
125.44	2,611	1,086	125.97	2,955	2,561
125.45	2,618	1,112	125.98	2,961	2,591
125.46	2,624	1,139	125.99	2,968	2,620
125.47	2,631	1,165	126.00	2,974	2,650
125.48	2,637	1,191	126.01	2,984	2,680
125.49	2,644	1,218	126.02	2,995	2,710
125.50	2,650	1,244	126.03	3,005	2,740
125.51	2,656	1,271	126.04	3,015	2,770
125.52	2,663	1,297	126.05	3,025	2,800

Stage-Area-Storage for Pond 220P: UDF (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
126.06	3,036	2,830	126.59	3,579	4,583
126.07	3,046	2,861	126.60	3,590	4,619
126.08	3,056	2,891	126.61	3,600	4,655
126.09	3,066	2,922	126.62	3,610	4,691
126.10	3,077	2,953	126.63	3,620	4,727
126.11	3,087	2,983	126.64	3,631	4,763
126.12	3,097	3,014	126.65	3,641	4,800
126.13	3,107	3,045	126.66	3,651	4,836
126.14	3,118	3,076	126.67	3,661	4,873
126.15	3,128	3,108	126.68	3,672	4,910
126.16	3,138	3,139	126.69	3,682	4,946
126.17	3,148	3,170	126.70	3,692	4,983
126.18	3,159	3,202	126.71	3,702	5,020
126.19	3,169	3,234	126.72	3,713	5,057
126.20	3,179	3,265	126.73	3,723	5,094
126.21	3,189	3,297	126.74	3,733	5,132
126.22	3,200	3,329	126.75	3,744	5,169
126.23	3,210	3,361	126.76	3,754	5,207
126.24	3,220	3,393	126.77	3,764	5,244
126.25	3,231	3,426	126.78	3,774	5,282
126.26	3,241	3,458	126.79	3,785	5,320
126.27	3,251	3,490	126.80	3,795	5,358
126.28	3,261	3,523	126.81	3,805	5,396
126.29	3,272	3,556	126.82	3,815	5,434
126.30	3,282	3,588	126.83	3,826	5,472
126.31	3,292	3,621	126.84	3,836	5,510
126.32	3,302	3,654	126.85	3,846	5,549
126.33	3,313	3,687	126.86	3,856	5,587
126.34	3,323	3,720	126.87	3,867	5,626
126.35	3,333	3,754	126.88	3,877	5,664
126.36	3,343	3,787	126.89	3,887	5,703
126.37	3,354	3,821	126.90	3,897	5,742
126.38	3,364	3,854	126.91	3,908	5,781
126.39	3,374	3,888	126.92	3,918	5,820
126.40	3,384	3,922	126.93	3,928	5,860
126.41	3,395	3,956	126.94	3,938	5,899
126.42	3,405	3,990	126.95	3,949	5,938
126.43	3,415	4,024	126.96	3,959	5,978
126.44	3,425	4,058	126.97	3,969	6,017
126.45	3,436	4,092	126.98	3,979	6,057
126.46	3,446	4,127	126.99	3,990	6,097
126.47	3,456	4,161	127.00	4,000	6,137
126.48	3,466	4,196	127.01	4,008	6,177
126.49	3,477	4,230	127.02	4,016	6,217
126.50	3,487	4,265	127.03	4,023	6,257
126.51	3,497	4,300	127.04	4,031	6,298
126.52	3,508	4,335	127.05	4,039	6,338
126.53	3,518	4,370	127.06	4,047	6,378
126.54	3,528	4,406	127.07	4,055	6,419
126.55	3,538	4,441	127.08	4,062	6,459
126.56	3,549	4,476	127.09	4,070	6,500
126.57	3,559	4,512	127.10	4,078	6,541
126.58	3,569	4,547	127.11	4,086	6,582

Stage-Area-Storage for Pond 220P: UDF (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
127.12	4,094	6,623	127.65	4,507	8,902
127.13	4,101	6,664	127.66	4,515	8,947
127.14	4,109	6,705	127.67	4,523	8,992
127.15	4,117	6,746	127.68	4,530	9,037
127.16	4,125	6,787	127.69	4,538	9,083
127.17	4,133	6,828	127.70	4,546	9,128
127.18	4,140	6,870	127.71	4,554	9,174
127.19	4,148	6,911	127.72	4,562	9,219
127.20	4,156	6,953	127.73	4,569	9,265
127.21	4,164	6,994	127.74	4,577	9,311
127.22	4,172	7,036	127.75	4,585	9,356
127.23	4,179	7,078	127.76	4,593	9,402
127.24	4,187	7,119	127.77	4,601	9,448
127.25	4,195	7,161	127.78	4,608	9,494
127.26	4,203	7,203	127.79	4,616	9,540
127.27	4,211	7,245	127.80	4,624	9,587
127.28	4,218	7,288	127.81	4,632	9,633
127.29	4,226	7,330	127.82	4,640	9,679
127.30	4,234	7,372	127.83	4,647	9,726
127.31	4,242	7,414	127.84	4,655	9,772
127.32	4,250	7,457	127.85	4,663	9,819
127.33	4,257	7,499	127.86	4,671	9,865
127.34	4,265	7,542	127.87	4,679	9,912
127.35	4,273	7,585	127.88	4,686	9,959
127.36	4,281	7,628	127.89	4,694	10,006
127.37	4,289	7,670	127.90	4,702	10,053
127.38	4,296	7,713	127.91	4,710	10,100
127.39	4,304	7,756	127.92	4,718	10,147
127.40	4,312	7,799	127.93	4,725	10,194
127.41	4,320	7,843	127.94	4,733	10,242
127.42	4,328	7,886	127.95	4,741	10,289
127.43	4,335	7,929	127.96	4,749	10,336
127.44	4,343	7,973	127.97	4,757	10,384
127.45	4,351	8,016	127.98	4,764	10,432
127.46	4,359	8,060	127.99	4,772	10,479
127.47	4,367	8,103	128.00	4,780	10,527
127.48	4,374	8,147	128.01	4,780	10,527
127.49	4,382	8,191	128.02	4,780	10,527
127.50	4,390	8,235	128.03	4,780	10,527
127.51	4,398	8,278	128.04	4,780	10,527
127.52	4,406	8,322	128.05	4,780	10,527
127.53	4,413	8,367	128.06	4,780	10,527
127.54	4,421	8,411	128.07	4,780	10,527
127.55	4,429	8,455	128.08	4,780	10,527
127.56	4,437	8,499	128.09	4,780	10,527
127.57	4,445	8,544	128.10	4,780	10,527
127.58	4,452	8,588	128.11	4,780	10,527
127.59	4,460	8,633	128.12	4,780	10,527
127.60	4,468	8,677	128.13	4,780	10,527
127.61	4,476	8,722	128.14	4,780	10,527
127.62	4,484	8,767	128.15	4,780	10,527
127.63	4,491	8,812	128.16	4,780	10,527
127.64	4,499	8,857	128.17	4,780	10,527

Stage-Area-Storage for Pond 220P: UDF (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
128.18	4,780	10,527
128.19	4,780	10,527
128.20	4,780	10,527
128.21	4,780	10,527
128.22	4,780	10,527
128.23	4,780	10,527
128.24	4,780	10,527
128.25	4,780	10,527
128.26	4,780	10,527
128.27	4,780	10,527
128.28	4,780	10,527
128.29	4,780	10,527
128.30	4,780	10,527
128.31	4,780	10,527
128.32	4,780	10,527
128.33	4,780	10,527
128.34	4,780	10,527
128.35	4,780	10,527
128.36	4,780	10,527
128.37	4,780	10,527
128.38	4,780	10,527
128.39	4,780	10,527
128.40	4,780	10,527
128.41	4,780	10,527
128.42	4,780	10,527
128.43	4,780	10,527
128.44	4,780	10,527
128.45	4,780	10,527
128.46	4,780	10,527
128.47	4,780	10,527
128.48	4,780	10,527
128.49	4,780	10,527
128.50	4,780	10,527
128.51	4,780	10,527
128.52	4,780	10,527
128.53	4,780	10,527
128.54	4,780	10,527
128.55	4,780	10,527
128.56	4,780	10,527
128.57	4,780	10,527
128.58	4,780	10,527
128.59	4,780	10,527
128.60	4,780	10,527
128.61	4,780	10,527
128.62	4,780	10,527
128.63	4,780	10,527
128.64	4,780	10,527
128.65	4,780	10,527
128.66	4,780	10,527
128.67	4,780	10,527

Summary for Subcatchment 22: Sub 22

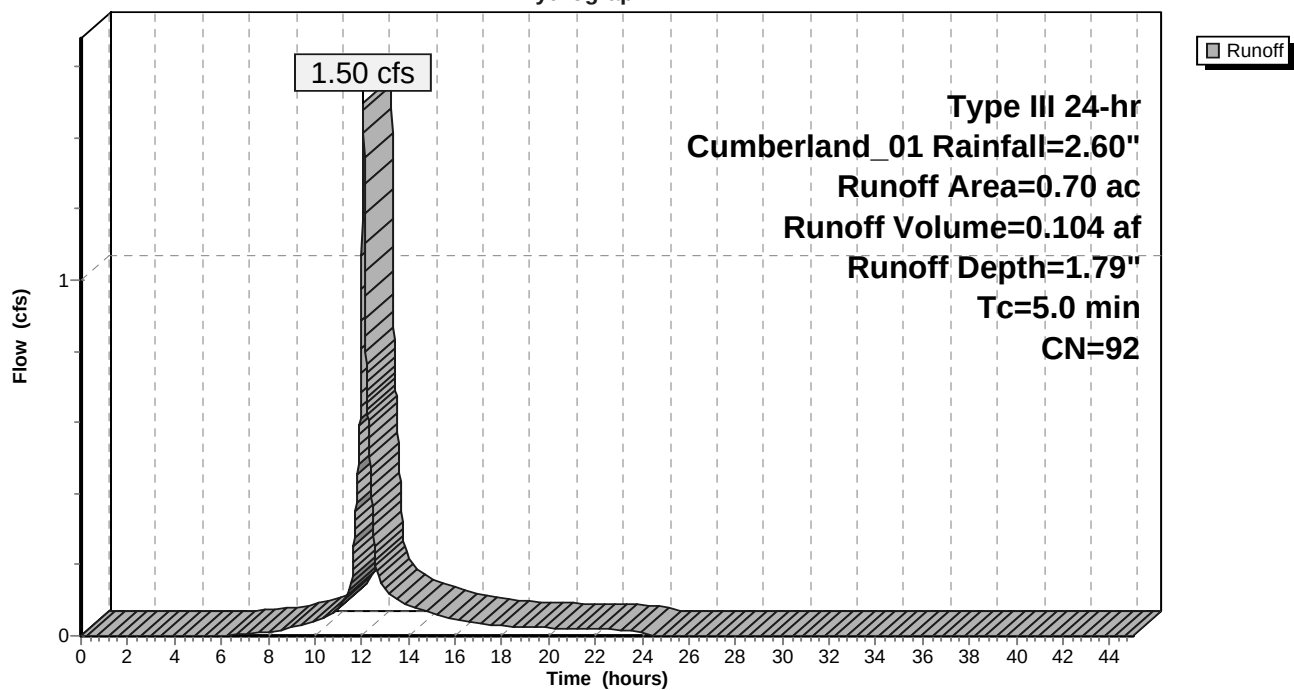
Runoff = 1.50 cfs @ 12.07 hrs, Volume= 0.104 af, Depth= 1.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_01 Rainfall=2.60"

Area (ac)	CN	Description
* 0.45	98	Site Development
0.25	80	>75% Grass cover, Good, HSG D
0.70	92	Weighted Average
0.25		35.71% Pervious Area
0.45		64.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 22: Sub 22**Hydrograph**

Summary for Subcatchment 23: Sub 23

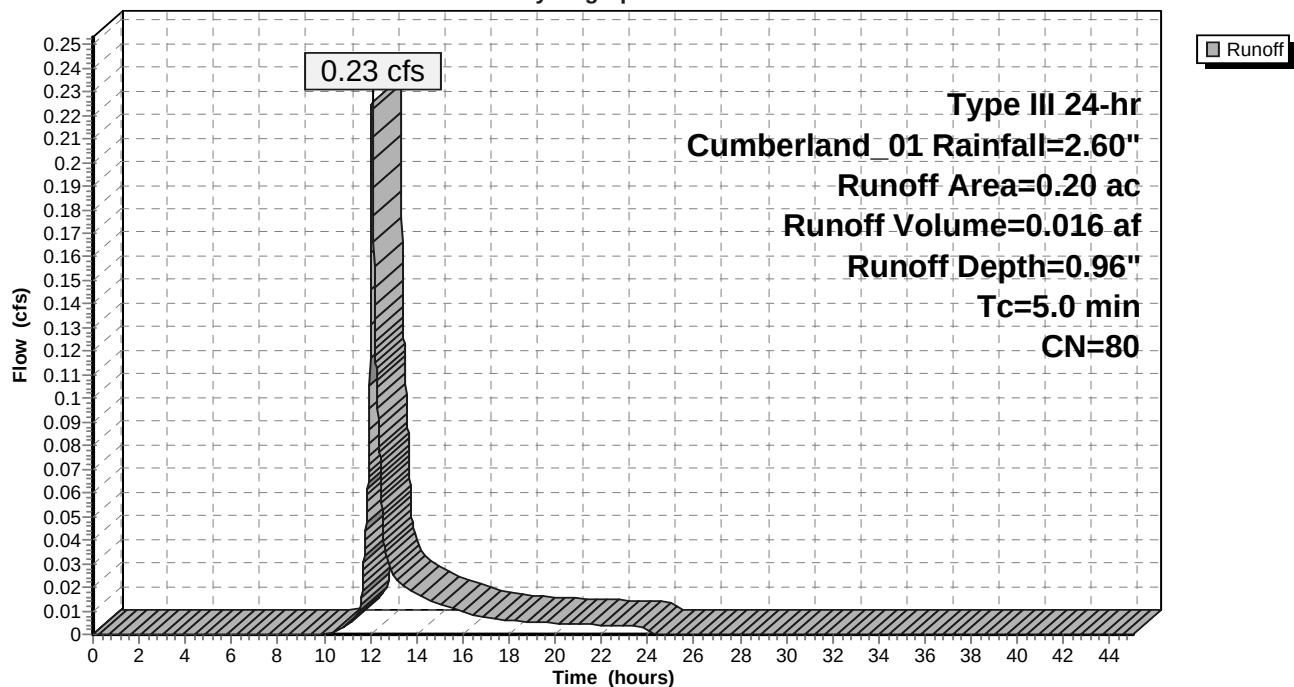
Runoff = 0.23 cfs @ 12.08 hrs, Volume= 0.016 af, Depth= 0.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_01 Rainfall=2.60"

Area (ac)	CN	Description
0.20	80	>75% Grass cover, Good, HSG D
0.20		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 23: Sub 23**Hydrograph**

Summary for Pond 220P: UDF

Inflow Area = 0.90 ac, 50.00% Impervious, Inflow Depth = 1.60" for Cumberland_01 event
 Inflow = 1.73 cfs @ 12.07 hrs, Volume= 0.120 af
 Outflow = 0.12 cfs @ 13.69 hrs, Volume= 0.120 af, Atten= 93%, Lag= 97.1 min
 Primary = 0.12 cfs @ 13.69 hrs, Volume= 0.120 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
 Peak Elev= 126.09' @ 13.69 hrs Surf.Area= 3,064 sf Storage= 2,916 cf

Plug-Flow detention time= 641.7 min calculated for 0.120 af (100% of inflow)
 Center-of-Mass det. time= 641.1 min (1,452.1 - 811.0)

Volume	Invert	Avail.Storage	Storage Description
#1	125.00'	10,527 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
125.00	2,326	0	0
126.00	2,974	2,650	2,650
127.00	4,000	3,487	6,137
128.00	4,780	4,390	10,527

Device	Routing	Invert	Outlet Devices
#1	Primary	122.83'	12.0" Round Culvert L= 78.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 122.83' / 122.28' S= 0.0071 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	122.83'	0.9" Vert. Orifice/Grate C= 0.600
#3	Device 2	125.00'	2.400 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 0.00'
#4	Device 1	126.00'	4.0" Vert. Orifice/Grate X 4.00 C= 0.600
#5	Device 1	127.00'	20.0" Vert. Orifice/Grate C= 0.600
#6	Secondary	127.50'	10.0' long x 8.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

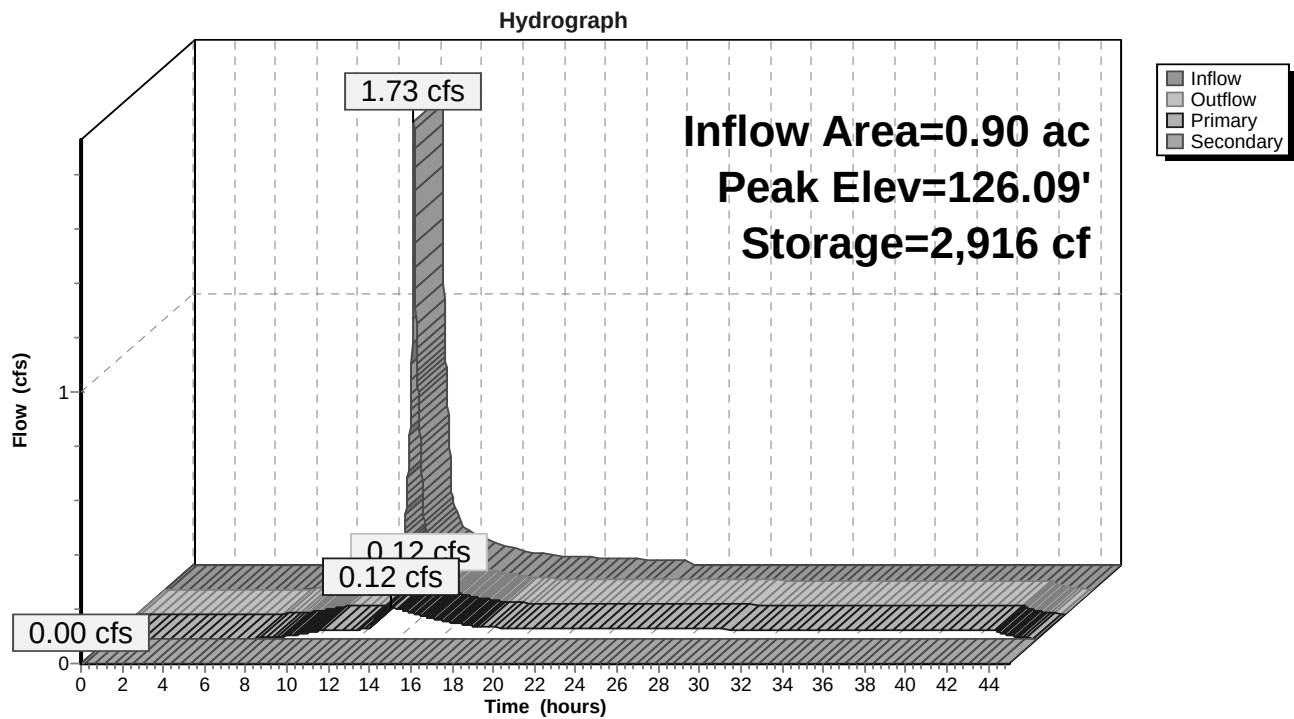
Primary OutFlow Max=0.11 cfs @ 13.69 hrs HW=126.09' (Free Discharge)

1=Culvert (Passes 0.11 cfs of 5.58 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 0.04 cfs @ 8.64 fps)
 3=Exfiltration (Passes 0.04 cfs of 0.17 cfs potential flow)
 4=Orifice/Grate (Orifice Controls 0.07 cfs @ 1.01 fps)
 5=Orifice/Grate (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=125.00' (Free Discharge)

6=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 220P: UDF



Stage-Area-Storage for Pond 220P: UDF

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
125.00	2,326	0	125.53	2,669	1,324
125.01	2,332	23	125.54	2,676	1,351
125.02	2,339	47	125.55	2,682	1,377
125.03	2,345	70	125.56	2,689	1,404
125.04	2,352	94	125.57	2,695	1,431
125.05	2,358	117	125.58	2,702	1,458
125.06	2,365	141	125.59	2,708	1,485
125.07	2,371	164	125.60	2,715	1,512
125.08	2,378	188	125.61	2,721	1,539
125.09	2,384	212	125.62	2,728	1,567
125.10	2,391	236	125.63	2,734	1,594
125.11	2,397	260	125.64	2,741	1,621
125.12	2,404	284	125.65	2,747	1,649
125.13	2,410	308	125.66	2,754	1,676
125.14	2,417	332	125.67	2,760	1,704
125.15	2,423	356	125.68	2,767	1,731
125.16	2,430	380	125.69	2,773	1,759
125.17	2,436	405	125.70	2,780	1,787
125.18	2,443	429	125.71	2,786	1,815
125.19	2,449	454	125.72	2,793	1,843
125.20	2,456	478	125.73	2,799	1,871
125.21	2,462	503	125.74	2,806	1,899
125.22	2,469	527	125.75	2,812	1,927
125.23	2,475	552	125.76	2,818	1,955
125.24	2,482	577	125.77	2,825	1,983
125.25	2,488	602	125.78	2,831	2,011
125.26	2,494	627	125.79	2,838	2,040
125.27	2,501	652	125.80	2,844	2,068
125.28	2,507	677	125.81	2,851	2,097
125.29	2,514	702	125.82	2,857	2,125
125.30	2,520	727	125.83	2,864	2,154
125.31	2,527	752	125.84	2,870	2,182
125.32	2,533	777	125.85	2,877	2,211
125.33	2,540	803	125.86	2,883	2,240
125.34	2,546	828	125.87	2,890	2,269
125.35	2,553	854	125.88	2,896	2,298
125.36	2,559	879	125.89	2,903	2,327
125.37	2,566	905	125.90	2,909	2,356
125.38	2,572	931	125.91	2,916	2,385
125.39	2,579	956	125.92	2,922	2,414
125.40	2,585	982	125.93	2,929	2,443
125.41	2,592	1,008	125.94	2,935	2,473
125.42	2,598	1,034	125.95	2,942	2,502
125.43	2,605	1,060	125.96	2,948	2,532
125.44	2,611	1,086	125.97	2,955	2,561
125.45	2,618	1,112	125.98	2,961	2,591
125.46	2,624	1,139	125.99	2,968	2,620
125.47	2,631	1,165	126.00	2,974	2,650
125.48	2,637	1,191	126.01	2,984	2,680
125.49	2,644	1,218	126.02	2,995	2,710
125.50	2,650	1,244	126.03	3,005	2,740
125.51	2,656	1,271	126.04	3,015	2,770
125.52	2,663	1,297	126.05	3,025	2,800

Stage-Area-Storage for Pond 220P: UDF (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
126.06	3,036	2,830	126.59	3,579	4,583
126.07	3,046	2,861	126.60	3,590	4,619
126.08	3,056	2,891	126.61	3,600	4,655
126.09	3,066	2,922	126.62	3,610	4,691
126.10	3,077	2,953	126.63	3,620	4,727
126.11	3,087	2,983	126.64	3,631	4,763
126.12	3,097	3,014	126.65	3,641	4,800
126.13	3,107	3,045	126.66	3,651	4,836
126.14	3,118	3,076	126.67	3,661	4,873
126.15	3,128	3,108	126.68	3,672	4,910
126.16	3,138	3,139	126.69	3,682	4,946
126.17	3,148	3,170	126.70	3,692	4,983
126.18	3,159	3,202	126.71	3,702	5,020
126.19	3,169	3,234	126.72	3,713	5,057
126.20	3,179	3,265	126.73	3,723	5,094
126.21	3,189	3,297	126.74	3,733	5,132
126.22	3,200	3,329	126.75	3,744	5,169
126.23	3,210	3,361	126.76	3,754	5,207
126.24	3,220	3,393	126.77	3,764	5,244
126.25	3,231	3,426	126.78	3,774	5,282
126.26	3,241	3,458	126.79	3,785	5,320
126.27	3,251	3,490	126.80	3,795	5,358
126.28	3,261	3,523	126.81	3,805	5,396
126.29	3,272	3,556	126.82	3,815	5,434
126.30	3,282	3,588	126.83	3,826	5,472
126.31	3,292	3,621	126.84	3,836	5,510
126.32	3,302	3,654	126.85	3,846	5,549
126.33	3,313	3,687	126.86	3,856	5,587
126.34	3,323	3,720	126.87	3,867	5,626
126.35	3,333	3,754	126.88	3,877	5,664
126.36	3,343	3,787	126.89	3,887	5,703
126.37	3,354	3,821	126.90	3,897	5,742
126.38	3,364	3,854	126.91	3,908	5,781
126.39	3,374	3,888	126.92	3,918	5,820
126.40	3,384	3,922	126.93	3,928	5,860
126.41	3,395	3,956	126.94	3,938	5,899
126.42	3,405	3,990	126.95	3,949	5,938
126.43	3,415	4,024	126.96	3,959	5,978
126.44	3,425	4,058	126.97	3,969	6,017
126.45	3,436	4,092	126.98	3,979	6,057
126.46	3,446	4,127	126.99	3,990	6,097
126.47	3,456	4,161	127.00	4,000	6,137
126.48	3,466	4,196	127.01	4,008	6,177
126.49	3,477	4,230	127.02	4,016	6,217
126.50	3,487	4,265	127.03	4,023	6,257
126.51	3,497	4,300	127.04	4,031	6,298
126.52	3,508	4,335	127.05	4,039	6,338
126.53	3,518	4,370	127.06	4,047	6,378
126.54	3,528	4,406	127.07	4,055	6,419
126.55	3,538	4,441	127.08	4,062	6,459
126.56	3,549	4,476	127.09	4,070	6,500
126.57	3,559	4,512	127.10	4,078	6,541
126.58	3,569	4,547	127.11	4,086	6,582

Stage-Area-Storage for Pond 220P: UDF (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
127.12	4,094	6,623	127.65	4,507	8,902
127.13	4,101	6,664	127.66	4,515	8,947
127.14	4,109	6,705	127.67	4,523	8,992
127.15	4,117	6,746	127.68	4,530	9,037
127.16	4,125	6,787	127.69	4,538	9,083
127.17	4,133	6,828	127.70	4,546	9,128
127.18	4,140	6,870	127.71	4,554	9,174
127.19	4,148	6,911	127.72	4,562	9,219
127.20	4,156	6,953	127.73	4,569	9,265
127.21	4,164	6,994	127.74	4,577	9,311
127.22	4,172	7,036	127.75	4,585	9,356
127.23	4,179	7,078	127.76	4,593	9,402
127.24	4,187	7,119	127.77	4,601	9,448
127.25	4,195	7,161	127.78	4,608	9,494
127.26	4,203	7,203	127.79	4,616	9,540
127.27	4,211	7,245	127.80	4,624	9,587
127.28	4,218	7,288	127.81	4,632	9,633
127.29	4,226	7,330	127.82	4,640	9,679
127.30	4,234	7,372	127.83	4,647	9,726
127.31	4,242	7,414	127.84	4,655	9,772
127.32	4,250	7,457	127.85	4,663	9,819
127.33	4,257	7,499	127.86	4,671	9,865
127.34	4,265	7,542	127.87	4,679	9,912
127.35	4,273	7,585	127.88	4,686	9,959
127.36	4,281	7,628	127.89	4,694	10,006
127.37	4,289	7,670	127.90	4,702	10,053
127.38	4,296	7,713	127.91	4,710	10,100
127.39	4,304	7,756	127.92	4,718	10,147
127.40	4,312	7,799	127.93	4,725	10,194
127.41	4,320	7,843	127.94	4,733	10,242
127.42	4,328	7,886	127.95	4,741	10,289
127.43	4,335	7,929	127.96	4,749	10,336
127.44	4,343	7,973	127.97	4,757	10,384
127.45	4,351	8,016	127.98	4,764	10,432
127.46	4,359	8,060	127.99	4,772	10,479
127.47	4,367	8,103	128.00	4,780	10,527
127.48	4,374	8,147	128.01	4,780	10,527
127.49	4,382	8,191	128.02	4,780	10,527
127.50	4,390	8,235	128.03	4,780	10,527
127.51	4,398	8,278	128.04	4,780	10,527
127.52	4,406	8,322	128.05	4,780	10,527
127.53	4,413	8,367	128.06	4,780	10,527
127.54	4,421	8,411	128.07	4,780	10,527
127.55	4,429	8,455	128.08	4,780	10,527
127.56	4,437	8,499	128.09	4,780	10,527
127.57	4,445	8,544	128.10	4,780	10,527
127.58	4,452	8,588	128.11	4,780	10,527
127.59	4,460	8,633	128.12	4,780	10,527
127.60	4,468	8,677	128.13	4,780	10,527
127.61	4,476	8,722	128.14	4,780	10,527
127.62	4,484	8,767	128.15	4,780	10,527
127.63	4,491	8,812	128.16	4,780	10,527
127.64	4,499	8,857	128.17	4,780	10,527

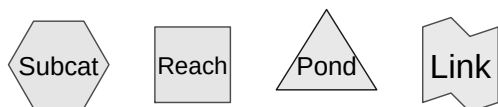
Stage-Area-Storage for Pond 220P: UDF (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
128.18	4,780	10,527
128.19	4,780	10,527
128.20	4,780	10,527
128.21	4,780	10,527
128.22	4,780	10,527
128.23	4,780	10,527
128.24	4,780	10,527
128.25	4,780	10,527
128.26	4,780	10,527
128.27	4,780	10,527
128.28	4,780	10,527
128.29	4,780	10,527
128.30	4,780	10,527
128.31	4,780	10,527
128.32	4,780	10,527
128.33	4,780	10,527
128.34	4,780	10,527
128.35	4,780	10,527
128.36	4,780	10,527
128.37	4,780	10,527
128.38	4,780	10,527
128.39	4,780	10,527
128.40	4,780	10,527
128.41	4,780	10,527
128.42	4,780	10,527
128.43	4,780	10,527
128.44	4,780	10,527
128.45	4,780	10,527
128.46	4,780	10,527
128.47	4,780	10,527
128.48	4,780	10,527
128.49	4,780	10,527
128.50	4,780	10,527
128.51	4,780	10,527
128.52	4,780	10,527
128.53	4,780	10,527
128.54	4,780	10,527
128.55	4,780	10,527
128.56	4,780	10,527
128.57	4,780	10,527
128.58	4,780	10,527
128.59	4,780	10,527
128.60	4,780	10,527
128.61	4,780	10,527
128.62	4,780	10,527
128.63	4,780	10,527
128.64	4,780	10,527
128.65	4,780	10,527
128.66	4,780	10,527
128.67	4,780	10,527

Attachment B

**HydroCAD Output- Pre-Development/Post
Development TR-2- Model**

Predevelopment



Routing Diagram for 14432_Predevelopment_ASBUILT
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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.630	84	1 acre lots, 20% imp, HSG D (1, 3, 5, 6)
1.000	87	1/4 acre lots, 38% imp, HSG D (1, 2, 6)
0.090	80	>75% Grass cover, Good, HSG D (Ocean Ridge) (1)
0.140	80	>75% Grass cover, Good, HSG D, Ocean Ridge (2)
0.070	98	Building, Ocean Ridge (1, 2)
2.240	98	IMPERVIOUS (1S, 101S, 301S, 302S, 303S)
2.710	80	LAWN D (1S, 101S, 301S, 302S, 303S)
0.040	98	Paved roads Ocean Ave (3)
0.050	98	Road, Ocean Ridge (2)
0.610	98	Roadway (1, 2, 5, 100, 300)
0.510	77	WOODS D (1S, 302S, 303S)
15.100	77	Woods, Good, HSG D (1, 2, 4, 5)
0.030	77	Woods, Good, HSG D, Ocean Ridge (2)
24.220	81	TOTAL AREA

Time span=0.00-100.00 hrs, dt=0.01 hrs, 10001 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: Subarea 1	Runoff Area=3.160 ac 13.23% Impervious Runoff Depth=1.33" Flow Length=660' Tc=9.5 min CN=80 Runoff=4.29 cfs 0.349 af
Subcatchment 1S: BASIN 1 (Ocean Ridge)	Runoff Area=2.600 ac 34.62% Impervious Runoff Depth=1.75" Flow Length=660' Tc=9.9 min CN=86 Runoff=4.67 cfs 0.379 af
Subcatchment 2: Subarea 2	Runoff Area=11.540 ac 3.32% Impervious Runoff Depth=1.20" Flow Length=1,435' Tc=32.5 min CN=78 Runoff=8.62 cfs 1.155 af
Subcatchment 3: Sub 3	Runoff Area=0.300 ac 30.67% Impervious Runoff Depth=1.75" Flow Length=300' Tc=9.4 min CN=86 Runoff=0.55 cfs 0.044 af
Subcatchment 4: Subarea 4	Runoff Area=1.210 ac 0.00% Impervious Runoff Depth=1.14" Flow Length=250' Tc=9.8 min CN=77 Runoff=1.37 cfs 0.115 af
Subcatchment 5: Subarea 5	Runoff Area=1.820 ac 9.67% Impervious Runoff Depth=1.33" Flow Length=660' Tc=11.0 min CN=80 Runoff=2.36 cfs 0.201 af
Subcatchment 6: Sub 6	Runoff Area=0.420 ac 23.00% Impervious Runoff Depth=1.60" Flow Length=235' Tc=4.1 min CN=84 Runoff=0.84 cfs 0.056 af
Subcatchment 100: Subarea 100	Runoff Area=0.220 ac 100.00% Impervious Runoff Depth=2.87" Flow Length=572' Tc=6.6 min CN=98 Runoff=0.65 cfs 0.053 af
Subcatchment 101S: BASIN 101 (Ocean Ridge)	Runoff Area=0.190 ac 57.89% Impervious Runoff Depth=2.08" Flow Length=155' Tc=6.4 min CN=90 Runoff=0.45 cfs 0.033 af
Subcatchment 300: Subarea 300	Runoff Area=0.090 ac 100.00% Impervious Runoff Depth=2.87" Flow Length=162' Tc=5.0 min CN=98 Runoff=0.28 cfs 0.022 af
Subcatchment 301S: BASIN 301 (Ocean Ridge)	Runoff Area=0.820 ac 45.12% Impervious Runoff Depth=1.91" Flow Length=190' Tc=9.3 min CN=88 Runoff=1.63 cfs 0.130 af
Subcatchment 302S: BASIN 302 (Ocean Ridge)	Runoff Area=1.270 ac 58.27% Impervious Runoff Depth=2.08" Flow Length=130' Slope=0.0200 '/' Tc=9.1 min CN=90 Runoff=2.76 cfs 0.220 af
Subcatchment 303S: BASIN 3 (Ocean Ridge)	Runoff Area=0.580 ac 20.69% Impervious Runoff Depth=1.53" Flow Length=150' Tc=8.1 min CN=83 Runoff=0.96 cfs 0.074 af
Reach 3R: VEGETATED SWALE 1 (Ocean Ridge)	Avg. Flow Depth=0.53' Max Vel=0.62 fps Inflow=2.76 cfs 0.220 af n=0.150 L=170.0' S=0.0120 '/' Capacity=30.82 cfs Outflow=2.49 cfs 0.220 af
Reach 4R: SP#2	Inflow=1.37 cfs 0.115 af Outflow=1.37 cfs 0.115 af
Reach 31R: CULVERT 3 (Ocean Ridge)	Avg. Flow Depth=0.40' Max Vel=4.38 fps Inflow=1.22 cfs 0.130 af 11.0" Round Pipe n=0.012 L=50.0' S=0.0100 '/' Capacity=3.06 cfs Outflow=1.22 cfs 0.130 af

Reach 32R: VEGETATED SWALE 2 (Ocean Ridge)	Avg. Flow Depth=0.39' Max Vel=0.54 fps Inflow=1.63 cfs 0.130 af n=0.150 L=115.0' S=0.0130 '/ Outflow=1.53 cfs 0.130 af
Reach 33R: Wetland Flow	Avg. Flow Depth=0.15' Max Vel=0.61 fps Inflow=1.24 cfs 0.424 af n=0.035 L=150.0' S=0.0033 '/ Capacity=52.28 cfs Outflow=1.24 cfs 0.424 af
Reach 34R: Woodland Flow	Avg. Flow Depth=0.10' Max Vel=2.01 fps Inflow=1.24 cfs 0.424 af n=0.035 L=1,180.0' S=0.0581 '/ Capacity=108.87 cfs Outflow=1.23 cfs 0.424 af
Reach 106R: SP#1 (Eben Hill Road)	Inflow=17.08 cfs 2.714 af Outflow=17.08 cfs 2.714 af
Pond 3P: POND 3 (Ocean Ridge)	Peak Elev=159.97' Storage=6,326 cf Inflow=4.17 cfs 0.424 af Outflow=1.24 cfs 0.424 af
Pond 30P: POND 30 (Ocean Ridge)	Peak Elev=160.52' Storage=815 cf Inflow=1.53 cfs 0.130 af 18.0" Round Culvert n=0.012 L=30.0' S=0.0100 '/ Outflow=1.22 cfs 0.130 af
Pond 60R: FIELD CB	Peak Elev=90.47' Inflow=0.84 cfs 0.056 af 12.0" Round Culvert n=0.012 L=110.0' S=0.0091 '/ Outflow=0.84 cfs 0.056 af
Pond 62P: Driveway Culvert	Peak Elev=89.59' Storage=986 cf Inflow=9.36 cfs 1.634 af Primary=7.78 cfs 1.604 af Secondary=1.56 cfs 0.030 af Outflow=9.33 cfs 1.634 af
Pond 66P: 24" Cross culvert	Peak Elev=86.27' Storage=82 cf Inflow=10.30 cfs 1.835 af Primary=10.29 cfs 1.835 af Secondary=0.00 cfs 0.000 af Outflow=10.29 cfs 1.835 af
Pond 100R: Vortech-DMH2	Peak Elev=108.12' Inflow=5.07 cfs 0.412 af 18.0" Round Culvert n=0.012 L=318.0' S=0.0267 '/ Outflow=5.07 cfs 0.412 af
Pond 101R: DMH2-DMH1(DMH1606)	Peak Elev=99.50' Inflow=5.07 cfs 0.412 af 18.0" Round Culvert n=0.012 L=177.0' S=0.0391 '/ Outflow=5.07 cfs 0.412 af
Pond 102R: DMH1606-DMH9	Peak Elev=92.42' Inflow=5.07 cfs 0.412 af 18.0" Round Culvert n=0.012 L=110.0' S=0.0185 '/ Outflow=5.07 cfs 0.412 af
Pond 103R: DMH9-DMH8	Peak Elev=91.19' Inflow=9.94 cfs 0.813 af 18.0" Round Culvert n=0.012 L=132.0' S=0.0099 '/ Outflow=9.94 cfs 0.813 af
Pond 104R: DMH8-DMH200	Peak Elev=91.38' Inflow=10.70 cfs 0.879 af 18.0" Round Culvert n=0.012 L=273.0' S=0.0039 '/ Outflow=10.70 cfs 0.879 af
Pond 105R: DMH200-OUTLET	Peak Elev=88.86' Inflow=10.70 cfs 0.879 af 18.0" Round Culvert n=0.012 L=60.0' S=0.0400 '/ Outflow=10.70 cfs 0.879 af

Total Runoff Area = 24.220 ac Runoff Volume = 2.829 af Average Runoff Depth = 1.40"
84.66% Pervious = 20.504 ac 15.34% Impervious = 3.716 ac

Summary for Subcatchment 1: Subarea 1

Runoff = 4.29 cfs @ 12.14 hrs, Volume= 0.349 af, Depth= 1.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

Area (ac)	CN	Description
0.290	84	1 acre lots, 20% imp, HSG D
0.290	87	1/4 acre lots, 38% imp, HSG D
* 0.220	98	Roadway
2.240	77	Woods, Good, HSG D
* 0.090	80	>75% Grass cover, Good, HSG D (Ocean Ridge)
* 0.030	98	Building, Ocean Ridge
3.160	80	Weighted Average
2.742		86.77% Pervious Area
0.418		13.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	20	0.1500	0.12		Sheet Flow, Overland Woods Woods: Light underbrush n= 0.400 P2= 3.00"
1.4	160	0.1500	1.94		Shallow Concentrated Flow, Overland Woods Woodland Kv= 5.0 fps
4.9	400	0.0380	1.36		Shallow Concentrated Flow, Shallow Rd Ditch Short Grass Pasture Kv= 7.0 fps
0.5	80	0.0200	2.87		Shallow Concentrated Flow, ROAD GUTTER Paved Kv= 20.3 fps
9.5	660	Total			

Summary for Subcatchment 1S: BASIN 1 (Ocean Ridge)

Runoff = 4.67 cfs @ 12.14 hrs, Volume= 0.379 af, Depth= 1.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

Area (ac)	CN	Description
* 0.900	98	IMPERVIOUS
* 0.380	77	WOODS D
* 1.320	80	LAWN D
2.600	86	Weighted Average
1.700		65.38% Pervious Area
0.900		34.62% Impervious Area

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Type III 24-hr Cumberland_02 Rainfall=3.10"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0200	0.10		Sheet Flow, OVERLAND FLOW Grass: Dense n= 0.240 P2= 3.00"
0.4	140	0.0430	5.46	65.53	Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.060
0.2	90	0.0550	6.18	74.11	Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.060
0.8	380	0.0900	7.45	64.10	Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch Bot.W=2.00' D=2.00' Z= 2.0 & 0.3 '/' Top.W=6.60' n= 0.060
9.9	660	Total			

Summary for Subcatchment 2: Subarea 2

Runoff = 8.62 cfs @ 12.46 hrs, Volume= 1.155 af, Depth= 1.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_02 Rainfall=3.10"

Area (ac)	CN	Description
0.640	87	1/4 acre lots, 38% imp, HSG D
* 0.050	98	Roadway
10.590	77	Woods, Good, HSG D
* 0.040	98	Building, Ocean Ridge
* 0.050	98	Road, Ocean Ridge
* 0.030	77	Woods, Good, HSG D, Ocean Ridge
* 0.140	80	>75% Grass cover, Good, HSG D, Ocean Ridge
11.540	78	Weighted Average
11.157		96.68% Pervious Area
0.383		3.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	110	0.0800	0.13		Sheet Flow, Overland Woods Woods: Light underbrush n= 0.400 P2= 3.00"
18.8	1,325	0.0550	1.17		Shallow Concentrated Flow, Overland Woods Woodland Kv= 5.0 fps
32.5	1,435	Total			

Summary for Subcatchment 3: Sub 3

Runoff = 0.55 cfs @ 12.13 hrs, Volume= 0.044 af, Depth= 1.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_02 Rainfall=3.10"

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Type III 24-hr Cumberland_02 Rainfall=3.10"

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Area (ac)	CN	Description
* 0.040	98	Paved roads Ocean Ave
0.260	84	1 acre lots, 20% imp, HSG D
0.300	86	Weighted Average
0.208		69.33% Pervious Area
0.092		30.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	60	0.1000	0.13		Sheet Flow, A-B Woods: Light underbrush n= 0.400 P2= 3.00"
1.2	160	0.1000	2.21		Shallow Concentrated Flow, B-C Short Grass Pasture Kv= 7.0 fps
0.5	80	0.0150	2.49		Shallow Concentrated Flow, C-D Paved Kv= 20.3 fps
9.4	300	Total			

Summary for Subcatchment 4: Subarea 4

Runoff = 1.37 cfs @ 12.14 hrs, Volume= 0.115 af, Depth= 1.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

Area (ac)	CN	Description
1.210	77	Woods, Good, HSG D
1.210		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	60	0.1200	0.14		Sheet Flow, Overland Woods Woods: Light underbrush n= 0.400 P2= 3.00"
2.6	190	0.0600	1.22		Shallow Concentrated Flow, Overland Woods Woodland Kv= 5.0 fps
9.8	250	Total			

Summary for Subcatchment 5: Subarea 5

Runoff = 2.36 cfs @ 12.16 hrs, Volume= 0.201 af, Depth= 1.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

Area (ac)	CN	Description
0.730	84	1 acre lots, 20% imp, HSG D
* 0.030	98	Roadway
1.060	77	Woods, Good, HSG D
1.820	80	Weighted Average
1.644		90.33% Pervious Area
0.176		9.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	30	0.1500	0.13		Sheet Flow, Overland Woods Woods: Light underbrush n= 0.400 P2= 3.00"
7.2	630	0.0850	1.46		Shallow Concentrated Flow, Overland Woods Woodland Kv= 5.0 fps
11.0	660	Total			

Summary for Subcatchment 6: Sub 6

Runoff = 0.84 cfs @ 12.06 hrs, Volume= 0.056 af, Depth= 1.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

Area (ac)	CN	Description
0.350	84	1 acre lots, 20% imp, HSG D
0.070	87	1/4 acre lots, 38% imp, HSG D
0.420	84	Weighted Average
0.323		77.00% Pervious Area
0.097		23.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	25	0.1500	0.13		Sheet Flow, A-B Woods: Light underbrush n= 0.400 P2= 3.00"
0.4	60	0.2300	2.40		Shallow Concentrated Flow, B-C Woodland Kv= 5.0 fps
0.4	150	0.0400	5.86	41.05	Trap/Vee/Rect Channel Flow, C-D Bot.W=2.00' D=1.00' Z= 5.0 '/' Top.W=12.00' n= 0.035 Earth, dense weeds
4.1	235	Total			

Summary for Subcatchment 100: Subarea 100

Runoff = 0.65 cfs @ 12.09 hrs, Volume= 0.053 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

Area (ac)	CN	Description
* 0.220	98	Roadway
0.220		100.00% Impervious Area

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Type III 24-hr Cumberland_02 Rainfall=3.10"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		Sheet Flow, Road Crown Smooth surfaces n= 0.011 P2= 3.00"
5.9	480	0.0380	1.36		Shallow Concentrated Flow, SHALLOW RD DITCH Short Grass Pasture Kv= 7.0 fps
0.5	80	0.0200	2.87		Shallow Concentrated Flow, ROAD GUTTER Paved Kv= 20.3 fps
6.6	572	Total			

Summary for Subcatchment 101S: BASIN 101 (Ocean Ridge)

Runoff = 0.45 cfs @ 12.09 hrs, Volume= 0.033 af, Depth= 2.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
 Type III 24-hr Cumberland_02 Rainfall=3.10"

Area (ac)	CN	Description
* 0.110	98	IMPERVIOUS
* 0.080	80	LAWN D
0.190	90	Weighted Average
0.080		42.11% Pervious Area
0.110		57.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	30	0.0200	0.09		Sheet Flow, Segment ID: AB, Lawn Grass: Dense n= 0.240 P2= 3.00"
0.1	25	0.0200	2.87		Shallow Concentrated Flow, Segment ID: BC, Driveway Paved Kv= 20.3 fps
0.7	100	0.1200	2.42		Shallow Concentrated Flow, Segment ID: grass slope Short Grass Pasture Kv= 7.0 fps
6.4	155	Total			

Summary for Subcatchment 300: Subarea 300

Runoff = 0.28 cfs @ 12.07 hrs, Volume= 0.022 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
 Type III 24-hr Cumberland_02 Rainfall=3.10"

Area (ac)	CN	Description
* 0.090	98	Roadway
0.090		100.00% Impervious Area

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Type III 24-hr Cumberland_02 Rainfall=3.10"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		Sheet Flow, Road Crown Smooth surfaces n= 0.011 P2= 3.00"
1.1	150	0.0130	2.31		Shallow Concentrated Flow, Gutter flow Paved Kv= 20.3 fps
3.7					Direct Entry,
5.0	162	Total			

Summary for Subcatchment 301S: BASIN 301 (Ocean Ridge)

Runoff = 1.63 cfs @ 12.13 hrs, Volume= 0.130 af, Depth= 1.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_02 Rainfall=3.10"

Area (ac)	CN	Description
* 0.370	98	IMPERVIOUS
* 0.450	80	LAWN D
0.820	88	Weighted Average
0.450		54.88% Pervious Area
0.370		45.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	60	0.0300	0.12		Sheet Flow, Segment ID: AB Grass: Dense n= 0.240 P2= 3.00"
0.4	50	0.0200	2.12		Shallow Concentrated Flow, Segment ID: BC Grassed Waterway Kv= 15.0 fps
0.6	80	0.0200	2.12		Shallow Concentrated Flow, Segment ID: CD Grassed Waterway Kv= 15.0 fps
9.3	190	Total			

Summary for Subcatchment 302S: BASIN 302 (Ocean Ridge)

Runoff = 2.76 cfs @ 12.13 hrs, Volume= 0.220 af, Depth= 2.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_02 Rainfall=3.10"

Area (ac)	CN	Description
* 0.740	98	IMPERVIOUS
* 0.050	77	WOODS D
* 0.480	80	LAWN D
1.270	90	Weighted Average
0.530		41.73% Pervious Area
0.740		58.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0200	0.10		Sheet Flow, Segment ID: AB Grass: Dense n= 0.240 P2= 3.00"
0.2	30	0.0200	2.87		Shallow Concentrated Flow, Segment ID: BC Paved Kv= 20.3 fps
0.4	50	0.0200	2.12		Shallow Concentrated Flow, Segment ID: Grassed Waterway Kv= 15.0 fps
9.1	130	Total			

Summary for Subcatchment 303S: BASIN 3 (Ocean Ridge)

Runoff = 0.96 cfs @ 12.12 hrs, Volume= 0.074 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

Area (ac)	CN	Description
* 0.120	98	IMPERVIOUS
* 0.080	77	WOODS D
* 0.380	80	LAWN D
0.580	83	Weighted Average
0.460		79.31% Pervious Area
0.120		20.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	30	0.0300	0.07		Sheet Flow, Segment ID: AB Woods: Light underbrush n= 0.400 P2= 3.00"
0.9	120	0.0200	2.12		Shallow Concentrated Flow, Segment ID: BC Grassed Waterway Kv= 15.0 fps
8.1	150	Total			

Summary for Reach 3R: VEGETATED SWALE 1 (Ocean Ridge)

Inflow Area = 1.270 ac, 58.27% Impervious, Inflow Depth = 2.08" for Cumberland_02 event
Inflow = 2.76 cfs @ 12.13 hrs, Volume= 0.220 af
Outflow = 2.49 cfs @ 12.25 hrs, Volume= 0.220 af, Atten= 10%, Lag= 7.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 0.62 fps, Min. Travel Time= 4.6 min
Avg. Velocity= 0.17 fps, Avg. Travel Time= 17.1 min

Peak Storage= 685 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.53'
Bank-Full Depth= 2.00' Flow Area= 24.0 sf, Capacity= 30.82 cfs

6.00' x 2.00' deep channel, $n = 0.150$
 Side Slope Z-value= 3.0 '/' Top Width= 18.00'
 Length= 170.0' Slope= 0.0120 '/'
 Inlet Invert= 0.00', Outlet Invert= -2.04'



Summary for Reach 4R: SP#2

Inflow Area = 1.210 ac, 0.00% Impervious, Inflow Depth = 1.14" for Cumberland_02 event
 Inflow = 1.37 cfs @ 12.14 hrs, Volume= 0.115 af
 Outflow = 1.37 cfs @ 12.14 hrs, Volume= 0.115 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Reach 31R: CULVERT 3 (Ocean Ridge)

Inflow Area = 0.820 ac, 45.12% Impervious, Inflow Depth = 1.91" for Cumberland_02 event
 Inflow = 1.22 cfs @ 12.32 hrs, Volume= 0.130 af
 Outflow = 1.22 cfs @ 12.33 hrs, Volume= 0.130 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs / 2

Max. Velocity= 4.38 fps, Min. Travel Time= 0.2 min

Avg. Velocity= 1.03 fps, Avg. Travel Time= 0.8 min

Peak Storage= 14 cf @ 12.32 hrs

Average Depth at Peak Storage= 0.40'

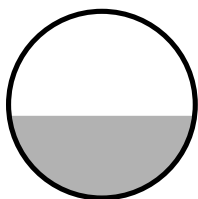
Bank-Full Depth= 0.92' Flow Area= 0.7 sf, Capacity= 3.06 cfs

11.0" Round Pipe

$n = 0.012$

Length= 50.0' Slope= 0.0100 '/'

Inlet Invert= 0.00', Outlet Invert= -0.50'



Summary for Reach 32R: VEGETATED SWALE 2 (Ocean Ridge)

Inflow Area = 0.820 ac, 45.12% Impervious, Inflow Depth = 1.91" for Cumberland_02 event
 Inflow = 1.63 cfs @ 12.13 hrs, Volume= 0.130 af
 Outflow = 1.53 cfs @ 12.23 hrs, Volume= 0.130 af, Atten= 6%, Lag= 5.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Max. Velocity= 0.54 fps, Min. Travel Time= 3.5 min

Avg. Velocity = 0.15 fps, Avg. Travel Time= 12.7 min

Peak Storage= 325 cf @ 12.17 hrs

Average Depth at Peak Storage= 0.39'

Bank-Full Depth= 2.00' Flow Area= 24.0 sf, Capacity= 32.02 cfs

6.00' x 2.00' deep channel, n= 0.150

Side Slope Z-value= 3.0 '/' Top Width= 18.00'

Length= 115.0' Slope= 0.0130 '/'

Inlet Invert= 0.00', Outlet Invert= -1.49'

**Summary for Reach 33R: Wetland Flow**

Inflow Area = 2.670 ac, 46.07% Impervious, Inflow Depth = 1.91" for Cumberland_02 event
 Inflow = 1.24 cfs @ 12.75 hrs, Volume= 0.424 af
 Outflow = 1.24 cfs @ 12.87 hrs, Volume= 0.424 af, Atten= 0%, Lag= 7.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Max. Velocity= 0.61 fps, Min. Travel Time= 4.1 min

Avg. Velocity = 0.17 fps, Avg. Travel Time= 14.9 min

Peak Storage= 303 cf @ 12.81 hrs

Average Depth at Peak Storage= 0.15'

Bank-Full Depth= 1.00' Flow Area= 30.0 sf, Capacity= 52.28 cfs

10.00' x 1.00' deep channel, n= 0.035 High grass

Side Slope Z-value= 20.0 '/' Top Width= 50.00'

Length= 150.0' Slope= 0.0033 '/'

Inlet Invert= 158.00', Outlet Invert= 157.50'



Summary for Reach 34R: Woodland Flow

Inflow Area = 2.670 ac, 46.07% Impervious, Inflow Depth = 1.91" for Cumberland_02 event
 Inflow = 1.24 cfs @ 12.87 hrs, Volume= 0.424 af
 Outflow = 1.23 cfs @ 13.19 hrs, Volume= 0.424 af, Atten= 1%, Lag= 18.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Max. Velocity= 2.01 fps, Min. Travel Time= 9.8 min

Avg. Velocity = 0.64 fps, Avg. Travel Time= 30.6 min

Peak Storage= 722 cf @ 13.02 hrs

Average Depth at Peak Storage= 0.10'

Bank-Full Depth= 1.00' Flow Area= 15.0 sf, Capacity= 108.87 cfs

5.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds

Side Slope Z-value= 10.0 '/' Top Width= 25.00'

Length= 1,180.0' Slope= 0.0581 '/'

Inlet Invert= 157.50', Outlet Invert= 89.00'

**Summary for Reach 106R: SP#1 (Eben Hill Road)**

Inflow Area = 23.010 ac, 16.15% Impervious, Inflow Depth = 1.42" for Cumberland_02 event
 Inflow = 17.08 cfs @ 12.15 hrs, Volume= 2.714 af
 Outflow = 17.08 cfs @ 12.15 hrs, Volume= 2.714 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Pond 3P: POND 3 (Ocean Ridge)

Inflow Area = 2.670 ac, 46.07% Impervious, Inflow Depth = 1.91" for Cumberland_02 event
 Inflow = 4.17 cfs @ 12.26 hrs, Volume= 0.424 af
 Outflow = 1.24 cfs @ 12.75 hrs, Volume= 0.424 af, Atten= 70%, Lag= 29.7 min
 Primary = 1.24 cfs @ 12.75 hrs, Volume= 0.424 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Peak Elev= 159.97' @ 12.75 hrs Surf.Area= 4,273 sf Storage= 6,326 cf

Plug-Flow detention time= 81.6 min calculated for 0.424 af (100% of inflow)

Center-of-Mass det. time= 81.6 min (921.2 - 839.7)

Volume	Invert	Avail.Storage	Storage Description
#1	158.00'	21,813 cf	Custom Stage Data (Prismatic) Listed below

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Type III 24-hr Cumberland_02 Rainfall=3.10"

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
158.00	2,113	0	0
160.00	4,304	6,417	6,417
162.00	6,739	11,043	17,460
162.60	7,772	4,353	21,813

Device	Routing	Invert	Outlet Devices
#1	Primary	158.00'	6.0" Vert. Orifice/Grate C= 0.600
#2	Primary	160.00'	9.0" Vert. Orifice/Grate C= 0.600
#3	Primary	161.00'	4.5" Vert. Orifice/Grate C= 0.600
#4	Primary	161.50'	20.0' long Broad-Crested Rectangular Weir X 1.81
			Head (feet) 0.50 1.00 1.50
			Coef. (English) 1.60 1.80 1.90

Primary OutFlow Max=1.24 cfs @ 12.75 hrs HW=159.97' (Free Discharge)

- 1=Orifice/Grate (Orifice Controls 1.24 cfs @ 6.32 fps)
- 2=Orifice/Grate (Controls 0.00 cfs)
- 3=Orifice/Grate (Controls 0.00 cfs)
- 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 30P: POND 30 (Ocean Ridge)

Inflow Area = 0.820 ac, 45.12% Impervious, Inflow Depth = 1.91" for Cumberland_02 event
 Inflow = 1.53 cfs @ 12.23 hrs, Volume= 0.130 af
 Outflow = 1.22 cfs @ 12.32 hrs, Volume= 0.130 af, Atten= 20%, Lag= 5.7 min
 Primary = 1.22 cfs @ 12.32 hrs, Volume= 0.130 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
 Peak Elev= 160.52' @ 12.32 hrs Surf.Area= 1,371 sf Storage= 815 cf

Plug-Flow detention time= 33.6 min calculated for 0.130 af (100% of inflow)
 Center-of-Mass det. time= 33.5 min (864.4 - 831.0)

Volume	Invert	Avail.Storage	Storage Description
#1	160.00'	3,156 cf	Custom Stage Data (Prismatic) Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
160.00	1,150	0	0
162.00	2,006	3,156	3,156

Device	Routing	Invert	Outlet Devices
#1	Primary	160.00'	18.0" Round Culvert L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 160.00' / 159.70' S= 0.0100 '/ Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=1.22 cfs @ 12.32 hrs HW=160.52' (Free Discharge)

- 1=Culvert (Barrel Controls 1.22 cfs @ 3.38 fps)

Summary for Pond 60R: FIELD CB

Inflow Area = 0.420 ac, 23.00% Impervious, Inflow Depth = 1.60" for Cumberland_02 event
 Inflow = 0.84 cfs @ 12.06 hrs, Volume= 0.056 af
 Outflow = 0.84 cfs @ 12.06 hrs, Volume= 0.056 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.84 cfs @ 12.06 hrs, Volume= 0.056 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
 Peak Elev= 90.47' @ 12.06 hrs
 Flood Elev= 91.81'

Device	Routing	Invert	Outlet Devices
#1	Primary	90.00'	12.0" Round Culvert L= 110.0' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 90.00' / 89.00' S= 0.0091 '/ Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.84 cfs @ 12.06 hrs HW=90.47' (Free Discharge)
 ↑ **1=Culvert** (Inlet Controls 0.84 cfs @ 2.33 fps)

Summary for Pond 62P: Driveway Culvert

Inflow Area = 14.630 ac, 11.69% Impervious, Inflow Depth = 1.34" for Cumberland_02 event
 Inflow = 9.36 cfs @ 12.49 hrs, Volume= 1.634 af
 Outflow = 9.33 cfs @ 12.51 hrs, Volume= 1.634 af, Atten= 0%, Lag= 1.4 min
 Primary = 7.78 cfs @ 12.51 hrs, Volume= 1.604 af
 Secondary = 1.56 cfs @ 12.51 hrs, Volume= 0.030 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
 Peak Elev= 89.59' @ 12.51 hrs Surf.Area= 2,134 sf Storage= 986 cf

Plug-Flow detention time= 0.6 min calculated for 1.634 af (100% of inflow)
 Center-of-Mass det. time= 0.6 min (895.3 - 894.8)

Volume	Invert	Avail.Storage	Storage Description
#1	88.00'	2,197 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
88.00	47	50.0	0	0	47
89.00	540	284.0	249	249	6,269
90.00	3,860	500.0	1,948	2,197	19,750

Device	Routing	Invert	Outlet Devices
#1	Primary	87.50'	18.0" Round Culvert L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 87.50' / 87.00' S= 0.0143 '/ Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Secondary	89.50'	22.0' long x 13.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.60 2.64 2.70 2.66 2.65 2.66 2.65 2.63

Primary OutFlow Max=7.78 cfs @ 12.51 hrs HW=89.59' (Free Discharge)

↑ **1=Culvert** (Inlet Controls 7.78 cfs @ 4.40 fps)

Secondary OutFlow Max=1.55 cfs @ 12.51 hrs HW=89.59' (Free Discharge)

↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 1.55 cfs @ 0.78 fps)

Summary for Pond 66P: 24" Cross culvert

Inflow Area = 16.450 ac, 11.46% Impervious, Inflow Depth = 1.34" for Cumberland_02 event
 Inflow = 10.30 cfs @ 12.49 hrs, Volume= 1.835 af
 Outflow = 10.29 cfs @ 12.49 hrs, Volume= 1.835 af, Atten= 0%, Lag= 0.3 min
 Primary = 10.29 cfs @ 12.49 hrs, Volume= 1.835 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs / 4

Peak Elev= 86.27' @ 12.49 hrs Surf.Area= 129 sf Storage= 82 cf

Plug-Flow detention time= 0.3 min calculated for 1.835 af (100% of inflow)

Center-of-Mass det. time= 0.1 min (890.4 - 890.3)

Volume	Invert	Avail.Storage	Storage Description		
#1	84.00'	1,817 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
84.00	5	5.0	0	0	5
85.00	25	25.0	14	14	55
86.00	63	40.0	43	56	139
87.00	425	195.0	217	273	3,040
88.00	1,210	305.0	784	1,058	7,424
88.50	1,850	330.0	759	1,817	8,697

Device	Routing	Invert	Outlet Devices
#1	Primary	84.45'	24.0" Round Culvert L= 65.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 84.45' / 84.13' S= 0.0049 '/ Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Secondary	88.50'	12.0' long x 12.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=10.29 cfs @ 12.49 hrs HW=86.27' (Free Discharge)

↑ **1=Culvert** (Barrel Controls 10.29 cfs @ 4.51 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=84.00' (Free Discharge)

↑ **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 100R: Vortech-DMH2

Inflow Area = 2.790 ac, 36.20% Impervious, Inflow Depth = 1.77" for Cumberland_02 event
 Inflow = 5.07 cfs @ 12.13 hrs, Volume= 0.412 af
 Outflow = 5.07 cfs @ 12.13 hrs, Volume= 0.412 af, Atten= 0%, Lag= 0.0 min
 Primary = 5.07 cfs @ 12.13 hrs, Volume= 0.412 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
 Peak Elev= 108.12' @ 12.13 hrs
 Flood Elev= 112.16'

Device	Routing	Invert	Outlet Devices
#1	Primary	107.00'	18.0" Round Culvert L= 318.0' Ke= 0.500 Inlet / Outlet Invert= 107.00' / 98.52' S= 0.0267 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=5.06 cfs @ 12.13 hrs HW=108.12' (Free Discharge)
 ↑ **1=Culvert** (Inlet Controls 5.06 cfs @ 3.60 fps)

Summary for Pond 101R: DMH2-DMH1(DMH1606)

Inflow Area = 2.790 ac, 36.20% Impervious, Inflow Depth = 1.77" for Cumberland_02 event
 Inflow = 5.07 cfs @ 12.13 hrs, Volume= 0.412 af
 Outflow = 5.07 cfs @ 12.13 hrs, Volume= 0.412 af, Atten= 0%, Lag= 0.0 min
 Primary = 5.07 cfs @ 12.13 hrs, Volume= 0.412 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
 Peak Elev= 99.50' @ 12.13 hrs
 Flood Elev= 103.21'

Device	Routing	Invert	Outlet Devices
#1	Primary	98.38'	18.0" Round Culvert L= 177.0' Ke= 0.500 Inlet / Outlet Invert= 98.38' / 91.46' S= 0.0391 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=5.06 cfs @ 12.13 hrs HW=99.50' (Free Discharge)
 ↑ **1=Culvert** (Inlet Controls 5.06 cfs @ 3.60 fps)

Summary for Pond 102R: DMH1606-DMH9

Inflow Area = 2.790 ac, 36.20% Impervious, Inflow Depth = 1.77" for Cumberland_02 event
 Inflow = 5.07 cfs @ 12.13 hrs, Volume= 0.412 af
 Outflow = 5.07 cfs @ 12.13 hrs, Volume= 0.412 af, Atten= 0%, Lag= 0.0 min
 Primary = 5.07 cfs @ 12.13 hrs, Volume= 0.412 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
 Peak Elev= 92.42' @ 12.13 hrs
 Flood Elev= 96.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	91.30'	18.0" Round Culvert L= 110.0' RCP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 91.30' / 89.27' S= 0.0185 '/ Cc= 0.900
n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=5.06 cfs @ 12.13 hrs HW=92.42' (Free Discharge)

↑**1=Culvert** (Inlet Controls 5.06 cfs @ 3.60 fps)

Summary for Pond 103R: DMH9-DMH8

Inflow Area = 6.170 ac, 26.71% Impervious, Inflow Depth = 1.58" for Cumberland_02 event
Inflow = 9.94 cfs @ 12.13 hrs, Volume= 0.813 af
Outflow = 9.94 cfs @ 12.13 hrs, Volume= 0.813 af, Atten= 0%, Lag= 0.0 min
Primary = 9.94 cfs @ 12.13 hrs, Volume= 0.813 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Peak Elev= 91.19' @ 12.13 hrs

Flood Elev= 94.51'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.07'	18.0" Round Culvert L= 132.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 89.07' / 87.76' S= 0.0099 '/ Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=9.93 cfs @ 12.13 hrs HW=91.18' (Free Discharge)

↑**1=Culvert** (Inlet Controls 9.93 cfs @ 5.62 fps)

Summary for Pond 104R: DMH8-DMH200

Inflow Area = 6.560 ac, 27.90% Impervious, Inflow Depth = 1.61" for Cumberland_02 event
Inflow = 10.70 cfs @ 12.13 hrs, Volume= 0.879 af
Outflow = 10.70 cfs @ 12.13 hrs, Volume= 0.879 af, Atten= 0%, Lag= 0.0 min
Primary = 10.70 cfs @ 12.13 hrs, Volume= 0.879 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Peak Elev= 91.38' @ 12.13 hrs

Flood Elev= 92.36'

Device	Routing	Invert	Outlet Devices
#1	Primary	87.66'	18.0" Round Culvert L= 273.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 87.66' / 86.60' S= 0.0039 '/ Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=10.70 cfs @ 12.13 hrs HW=91.37' (Free Discharge)

↑**1=Culvert** (Barrel Controls 10.70 cfs @ 6.05 fps)

Summary for Pond 105R: DMH200-OUTLET

Inflow Area = 6.560 ac, 27.90% Impervious, Inflow Depth = 1.61" for Cumberland_02 event
Inflow = 10.70 cfs @ 12.13 hrs, Volume= 0.879 af
Outflow = 10.70 cfs @ 12.13 hrs, Volume= 0.879 af, Atten= 0%, Lag= 0.0 min
Primary = 10.70 cfs @ 12.13 hrs, Volume= 0.879 af

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Type III 24-hr Cumberland_02 Rainfall=3.10"

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Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Peak Elev= 88.86' @ 12.13 hrs

Flood Elev= 89.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	86.53'	18.0" Round Culvert L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 86.53' / 84.13' S= 0.0400 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=10.70 cfs @ 12.13 hrs HW=88.86' (Free Discharge)↑ **1=Culvert** (Inlet Controls 10.70 cfs @ 6.05 fps)

Time span=0.00-100.00 hrs, dt=0.01 hrs, 10001 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: Subarea 1	Runoff Area=3.160 ac 13.23% Impervious Runoff Depth=2.55" Flow Length=660' Tc=9.5 min CN=80 Runoff=8.38 cfs 0.671 af
Subcatchment 1S: BASIN 1 (Ocean Ridge)	Runoff Area=2.600 ac 34.62% Impervious Runoff Depth=3.10" Flow Length=660' Tc=9.9 min CN=86 Runoff=8.20 cfs 0.671 af
Subcatchment 2: Subarea 2	Runoff Area=11.540 ac 3.32% Impervious Runoff Depth=2.38" Flow Length=1,435' Tc=32.5 min CN=78 Runoff=17.52 cfs 2.285 af
Subcatchment 3: Sub 3	Runoff Area=0.300 ac 30.67% Impervious Runoff Depth=3.10" Flow Length=300' Tc=9.4 min CN=86 Runoff=0.96 cfs 0.077 af
Subcatchment 4: Subarea 4	Runoff Area=1.210 ac 0.00% Impervious Runoff Depth=2.29" Flow Length=250' Tc=9.8 min CN=77 Runoff=2.85 cfs 0.231 af
Subcatchment 5: Subarea 5	Runoff Area=1.820 ac 9.67% Impervious Runoff Depth=2.55" Flow Length=660' Tc=11.0 min CN=80 Runoff=4.60 cfs 0.386 af
Subcatchment 6: Sub 6	Runoff Area=0.420 ac 23.00% Impervious Runoff Depth=2.91" Flow Length=235' Tc=4.1 min CN=84 Runoff=1.53 cfs 0.102 af
Subcatchment 100: Subarea 100	Runoff Area=0.220 ac 100.00% Impervious Runoff Depth=4.36" Flow Length=572' Tc=6.6 min CN=98 Runoff=0.97 cfs 0.080 af
Subcatchment 101S: BASIN 101 (Ocean Ridge)	Runoff Area=0.190 ac 57.89% Impervious Runoff Depth=3.49" Flow Length=155' Tc=6.4 min CN=90 Runoff=0.74 cfs 0.055 af
Subcatchment 300: Subarea 300	Runoff Area=0.090 ac 100.00% Impervious Runoff Depth=4.36" Flow Length=162' Tc=5.0 min CN=98 Runoff=0.42 cfs 0.033 af
Subcatchment 301S: BASIN 301 (Ocean Ridge)	Runoff Area=0.820 ac 45.12% Impervious Runoff Depth=3.29" Flow Length=190' Tc=9.3 min CN=88 Runoff=2.78 cfs 0.225 af
Subcatchment 302S: BASIN 302 (Ocean Ridge)	Runoff Area=1.270 ac 58.27% Impervious Runoff Depth=3.49" Flow Length=130' Slope=0.0200 '/' Tc=9.1 min CN=90 Runoff=4.55 cfs 0.370 af
Subcatchment 303S: BASIN 3 (Ocean Ridge)	Runoff Area=0.580 ac 20.69% Impervious Runoff Depth=2.81" Flow Length=150' Tc=8.1 min CN=83 Runoff=1.78 cfs 0.136 af
Reach 3R: VEGETATED SWALE 1 (Ocean Ridge)	Avg. Flow Depth=0.71' Max Vel=0.73 fps Inflow=4.55 cfs 0.370 af n=0.150 L=170.0' S=0.0120 '/' Capacity=30.82 cfs Outflow=4.19 cfs 0.370 af
Reach 4R: SP#2	Inflow=2.85 cfs 0.231 af Outflow=2.85 cfs 0.231 af
Reach 31R: CULVERT 3 (Ocean Ridge)	Avg. Flow Depth=0.58' Max Vel=5.06 fps Inflow=2.22 cfs 0.225 af 11.0" Round Pipe n=0.012 L=50.0' S=0.0100 '/' Capacity=3.06 cfs Outflow=2.22 cfs 0.225 af

Reach 32R: VEGETATED SWALE 2 (Ocean Ridge)	Avg. Flow Depth=0.54' Max Vel=0.65 fps Inflow=2.78 cfs 0.225 af n=0.150 L=115.0' S=0.0130 '/' Capacity=32.02 cfs Outflow=2.64 cfs 0.225 af
Reach 33R: Wetland Flow	Avg. Flow Depth=0.24' Max Vel=0.78 fps Inflow=2.79 cfs 0.730 af n=0.035 L=150.0' S=0.0033 '/' Capacity=52.28 cfs Outflow=2.78 cfs 0.730 af
Reach 34R: Woodland Flow	Avg. Flow Depth=0.16' Max Vel=2.60 fps Inflow=2.78 cfs 0.730 af n=0.035 L=1,180.0' S=0.0581 '/' Capacity=108.87 cfs Outflow=2.72 cfs 0.730 af
Reach 106R: SP#1 (Eben Hill Road)	Inflow=31.51 cfs 5.090 af Outflow=31.51 cfs 5.090 af
Pond 3P: POND 3 (Ocean Ridge)	Peak Elev=160.74' Storage=10,521 cf Inflow=7.37 cfs 0.730 af Outflow=2.79 cfs 0.730 af
Pond 30P: POND 30 (Ocean Ridge)	Peak Elev=160.73' Storage=1,151 cf Inflow=2.64 cfs 0.225 af 18.0" Round Culvert n=0.012 L=30.0' S=0.0100 '/' Outflow=2.22 cfs 0.225 af
Pond 60R: FIELD CB	Peak Elev=90.66' Inflow=1.53 cfs 0.102 af 12.0" Round Culvert n=0.012 L=110.0' S=0.0091 '/' Outflow=1.53 cfs 0.102 af
Pond 62P: Driveway Culvert	Peak Elev=89.82' Storage=1,576 cf Inflow=18.90 cfs 3.117 af Primary=8.42 cfs 2.615 af Secondary=10.43 cfs 0.502 af Outflow=18.85 cfs 3.117 af
Pond 66P: 24" Cross culvert	Peak Elev=88.29' Storage=1,462 cf Inflow=20.77 cfs 3.503 af Primary=20.13 cfs 3.503 af Secondary=0.00 cfs 0.000 af Outflow=20.13 cfs 3.503 af
Pond 100R: Vortech-DMH2	Peak Elev=108.83' Inflow=8.86 cfs 0.726 af 18.0" Round Culvert n=0.012 L=318.0' S=0.0267 '/' Outflow=8.86 cfs 0.726 af
Pond 101R: DMH2-DMH1(DMH1606)	Peak Elev=100.21' Inflow=8.86 cfs 0.726 af 18.0" Round Culvert n=0.012 L=177.0' S=0.0391 '/' Outflow=8.86 cfs 0.726 af
Pond 102R: DMH1606-DMH9	Peak Elev=93.13' Inflow=8.86 cfs 0.726 af 18.0" Round Culvert n=0.012 L=110.0' S=0.0185 '/' Outflow=8.86 cfs 0.726 af
Pond 103R: DMH9-DMH8	Peak Elev=95.06' Inflow=18.11 cfs 1.477 af 18.0" Round Culvert n=0.012 L=132.0' S=0.0099 '/' Outflow=18.11 cfs 1.477 af
Pond 104R: DMH8-DMH200	Peak Elev=98.87' Inflow=19.40 cfs 1.587 af 18.0" Round Culvert n=0.012 L=273.0' S=0.0039 '/' Outflow=19.40 cfs 1.587 af
Pond 105R: DMH200-OUTLET	Peak Elev=92.48' Inflow=19.40 cfs 1.587 af 18.0" Round Culvert n=0.012 L=60.0' S=0.0400 '/' Outflow=19.40 cfs 1.587 af

Total Runoff Area = 24.220 ac Runoff Volume = 5.321 af Average Runoff Depth = 2.64"
84.66% Pervious = 20.504 ac 15.34% Impervious = 3.716 ac

Summary for Subcatchment 1: Subarea 1

Runoff = 8.38 cfs @ 12.13 hrs, Volume= 0.671 af, Depth= 2.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

Area (ac)	CN	Description
0.290	84	1 acre lots, 20% imp, HSG D
0.290	87	1/4 acre lots, 38% imp, HSG D
* 0.220	98	Roadway
2.240	77	Woods, Good, HSG D
* 0.090	80	>75% Grass cover, Good, HSG D (Ocean Ridge)
* 0.030	98	Building, Ocean Ridge
3.160	80	Weighted Average
2.742		86.77% Pervious Area
0.418		13.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	20	0.1500	0.12		Sheet Flow, Overland Woods Woods: Light underbrush n= 0.400 P2= 3.00"
1.4	160	0.1500	1.94		Shallow Concentrated Flow, Overland Woods Woodland Kv= 5.0 fps
4.9	400	0.0380	1.36		Shallow Concentrated Flow, Shallow Rd Ditch Short Grass Pasture Kv= 7.0 fps
0.5	80	0.0200	2.87		Shallow Concentrated Flow, ROAD GUTTER Paved Kv= 20.3 fps
9.5	660	Total			

Summary for Subcatchment 1S: BASIN 1 (Ocean Ridge)

Runoff = 8.20 cfs @ 12.14 hrs, Volume= 0.671 af, Depth= 3.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

Area (ac)	CN	Description
* 0.900	98	IMPERVIOUS
* 0.380	77	WOODS D
* 1.320	80	LAWN D
2.600	86	Weighted Average
1.700		65.38% Pervious Area
0.900		34.62% Impervious Area

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Type III 24-hr Cumberland_10 Rainfall=4.60"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0200	0.10		Sheet Flow, OVERLAND FLOW Grass: Dense n= 0.240 P2= 3.00"
0.4	140	0.0430	5.46	65.53	Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.060
0.2	90	0.0550	6.18	74.11	Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.060
0.8	380	0.0900	7.45	64.10	Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch Bot.W=2.00' D=2.00' Z= 2.0 & 0.3 '/' Top.W=6.60' n= 0.060
9.9	660	Total			

Summary for Subcatchment 2: Subarea 2

Runoff = 17.52 cfs @ 12.46 hrs, Volume= 2.285 af, Depth= 2.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

Area (ac)	CN	Description
0.640	87	1/4 acre lots, 38% imp, HSG D
* 0.050	98	Roadway
10.590	77	Woods, Good, HSG D
* 0.040	98	Building, Ocean Ridge
* 0.050	98	Road, Ocean Ridge
* 0.030	77	Woods, Good, HSG D, Ocean Ridge
* 0.140	80	>75% Grass cover, Good, HSG D, Ocean Ridge
11.540	78	Weighted Average
11.157		96.68% Pervious Area
0.383		3.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	110	0.0800	0.13		Sheet Flow, Overland Woods Woods: Light underbrush n= 0.400 P2= 3.00"
18.8	1,325	0.0550	1.17		Shallow Concentrated Flow, Overland Woods Woodland Kv= 5.0 fps
32.5	1,435	Total			

Summary for Subcatchment 3: Sub 3

Runoff = 0.96 cfs @ 12.13 hrs, Volume= 0.077 af, Depth= 3.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

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Type III 24-hr Cumberland_10 Rainfall=4.60"

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Area (ac)	CN	Description
* 0.040	98	Paved roads Ocean Ave
0.260	84	1 acre lots, 20% imp, HSG D
0.300	86	Weighted Average
0.208		69.33% Pervious Area
0.092		30.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	60	0.1000	0.13		Sheet Flow, A-B Woods: Light underbrush n= 0.400 P2= 3.00"
1.2	160	0.1000	2.21		Shallow Concentrated Flow, B-C Short Grass Pasture Kv= 7.0 fps
0.5	80	0.0150	2.49		Shallow Concentrated Flow, C-D Paved Kv= 20.3 fps
9.4	300	Total			

Summary for Subcatchment 4: Subarea 4

Runoff = 2.85 cfs @ 12.14 hrs, Volume= 0.231 af, Depth= 2.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

Area (ac)	CN	Description
1.210	77	Woods, Good, HSG D
1.210		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	60	0.1200	0.14		Sheet Flow, Overland Woods Woods: Light underbrush n= 0.400 P2= 3.00"
2.6	190	0.0600	1.22		Shallow Concentrated Flow, Overland Woods Woodland Kv= 5.0 fps
9.8	250	Total			

Summary for Subcatchment 5: Subarea 5

Runoff = 4.60 cfs @ 12.15 hrs, Volume= 0.386 af, Depth= 2.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

Area (ac)	CN	Description
0.730	84	1 acre lots, 20% imp, HSG D
* 0.030	98	Roadway
1.060	77	Woods, Good, HSG D
1.820	80	Weighted Average
1.644		90.33% Pervious Area
0.176		9.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	30	0.1500	0.13		Sheet Flow, Overland Woods Woods: Light underbrush n= 0.400 P2= 3.00"
7.2	630	0.0850	1.46		Shallow Concentrated Flow, Overland Woods Woodland Kv= 5.0 fps
11.0	660	Total			

Summary for Subcatchment 6: Sub 6

Runoff = 1.53 cfs @ 12.06 hrs, Volume= 0.102 af, Depth= 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_10 Rainfall=4.60"

Area (ac)	CN	Description
0.350	84	1 acre lots, 20% imp, HSG D
0.070	87	1/4 acre lots, 38% imp, HSG D
0.420	84	Weighted Average
0.323		77.00% Pervious Area
0.097		23.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	25	0.1500	0.13		Sheet Flow, A-B Woods: Light underbrush n= 0.400 P2= 3.00"
0.4	60	0.2300	2.40		Shallow Concentrated Flow, B-C Woodland Kv= 5.0 fps
0.4	150	0.0400	5.86	41.05	Trap/Vee/Rect Channel Flow, C-D Bot.W=2.00' D=1.00' Z= 5.0 '/' Top.W=12.00' n= 0.035 Earth, dense weeds
4.1	235	Total			

Summary for Subcatchment 100: Subarea 100

Runoff = 0.97 cfs @ 12.09 hrs, Volume= 0.080 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_10 Rainfall=4.60"

Area (ac)	CN	Description
* 0.220	98	Roadway
0.220		100.00% Impervious Area

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Type III 24-hr Cumberland_10 Rainfall=4.60"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		Sheet Flow, Road Crown Smooth surfaces n= 0.011 P2= 3.00"
5.9	480	0.0380	1.36		Shallow Concentrated Flow, SHALLOW RD DITCH Short Grass Pasture Kv= 7.0 fps
0.5	80	0.0200	2.87		Shallow Concentrated Flow, ROAD GUTTER Paved Kv= 20.3 fps
6.6	572	Total			

Summary for Subcatchment 101S: BASIN 101 (Ocean Ridge)

Runoff = 0.74 cfs @ 12.09 hrs, Volume= 0.055 af, Depth= 3.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

Area (ac)	CN	Description
* 0.110	98	IMPERVIOUS
* 0.080	80	LAWN D
0.190	90	Weighted Average
0.080		42.11% Pervious Area
0.110		57.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	30	0.0200	0.09		Sheet Flow, Segment ID: AB, Lawn Grass: Dense n= 0.240 P2= 3.00"
0.1	25	0.0200	2.87		Shallow Concentrated Flow, Segment ID: BC, Driveway Paved Kv= 20.3 fps
0.7	100	0.1200	2.42		Shallow Concentrated Flow, Segment ID: grass slope Short Grass Pasture Kv= 7.0 fps
6.4	155	Total			

Summary for Subcatchment 300: Subarea 300

Runoff = 0.42 cfs @ 12.07 hrs, Volume= 0.033 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

Area (ac)	CN	Description
* 0.090	98	Roadway
0.090		100.00% Impervious Area

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Type III 24-hr Cumberland_10 Rainfall=4.60"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		Sheet Flow, Road Crown Smooth surfaces n= 0.011 P2= 3.00"
1.1	150	0.0130	2.31		Shallow Concentrated Flow, Gutter flow Paved Kv= 20.3 fps
3.7					Direct Entry,
5.0	162	Total			

Summary for Subcatchment 301S: BASIN 301 (Ocean Ridge)

Runoff = 2.78 cfs @ 12.13 hrs, Volume= 0.225 af, Depth= 3.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_10 Rainfall=4.60"

Area (ac)	CN	Description
* 0.370	98	IMPERVIOUS
* 0.450	80	LAWN D
0.820	88	Weighted Average
0.450		54.88% Pervious Area
0.370		45.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	60	0.0300	0.12		Sheet Flow, Segment ID: AB Grass: Dense n= 0.240 P2= 3.00"
0.4	50	0.0200	2.12		Shallow Concentrated Flow, Segment ID: BC Grassed Waterway Kv= 15.0 fps
0.6	80	0.0200	2.12		Shallow Concentrated Flow, Segment ID: CD Grassed Waterway Kv= 15.0 fps
9.3	190	Total			

Summary for Subcatchment 302S: BASIN 302 (Ocean Ridge)

Runoff = 4.55 cfs @ 12.12 hrs, Volume= 0.370 af, Depth= 3.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_10 Rainfall=4.60"

Area (ac)	CN	Description
* 0.740	98	IMPERVIOUS
* 0.050	77	WOODS D
* 0.480	80	LAWN D
1.270	90	Weighted Average
0.530		41.73% Pervious Area
0.740		58.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0200	0.10		Sheet Flow, Segment ID: AB Grass: Dense n= 0.240 P2= 3.00"
0.2	30	0.0200	2.87		Shallow Concentrated Flow, Segment ID: BC Paved Kv= 20.3 fps
0.4	50	0.0200	2.12		Shallow Concentrated Flow, Segment ID: Grassed Waterway Kv= 15.0 fps
9.1	130	Total			

Summary for Subcatchment 303S: BASIN 3 (Ocean Ridge)

Runoff = 1.78 cfs @ 12.11 hrs, Volume= 0.136 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

Area (ac)	CN	Description
* 0.120	98	IMPERVIOUS
* 0.080	77	WOODS D
* 0.380	80	LAWN D
0.580	83	Weighted Average
0.460		79.31% Pervious Area
0.120		20.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	30	0.0300	0.07		Sheet Flow, Segment ID: AB Woods: Light underbrush n= 0.400 P2= 3.00"
0.9	120	0.0200	2.12		Shallow Concentrated Flow, Segment ID: BC Grassed Waterway Kv= 15.0 fps
8.1	150	Total			

Summary for Reach 3R: VEGETATED SWALE 1 (Ocean Ridge)

Inflow Area = 1.270 ac, 58.27% Impervious, Inflow Depth = 3.49" for Cumberland_10 event
Inflow = 4.55 cfs @ 12.12 hrs, Volume= 0.370 af
Outflow = 4.19 cfs @ 12.23 hrs, Volume= 0.370 af, Atten= 8%, Lag= 6.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 0.73 fps, Min. Travel Time= 3.9 min
Avg. Velocity = 0.19 fps, Avg. Travel Time= 14.8 min

Peak Storage= 979 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.71'
Bank-Full Depth= 2.00' Flow Area= 24.0 sf, Capacity= 30.82 cfs

6.00' x 2.00' deep channel, $n = 0.150$
 Side Slope Z-value= 3.0 '/' Top Width= 18.00'
 Length= 170.0' Slope= 0.0120 '/'
 Inlet Invert= 0.00', Outlet Invert= -2.04'



Summary for Reach 4R: SP#2

Inflow Area = 1.210 ac, 0.00% Impervious, Inflow Depth = 2.29" for Cumberland_10 event
 Inflow = 2.85 cfs @ 12.14 hrs, Volume= 0.231 af
 Outflow = 2.85 cfs @ 12.14 hrs, Volume= 0.231 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Reach 31R: CULVERT 3 (Ocean Ridge)

Inflow Area = 0.820 ac, 45.12% Impervious, Inflow Depth = 3.29" for Cumberland_10 event
 Inflow = 2.22 cfs @ 12.28 hrs, Volume= 0.225 af
 Outflow = 2.22 cfs @ 12.29 hrs, Volume= 0.225 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs / 2

Max. Velocity= 5.06 fps, Min. Travel Time= 0.2 min

Avg. Velocity= 1.16 fps, Avg. Travel Time= 0.7 min

Peak Storage= 22 cf @ 12.29 hrs

Average Depth at Peak Storage= 0.58'

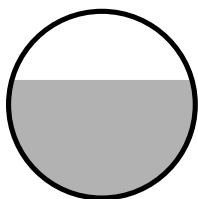
Bank-Full Depth= 0.92' Flow Area= 0.7 sf, Capacity= 3.06 cfs

11.0" Round Pipe

$n = 0.012$

Length= 50.0' Slope= 0.0100 '/'

Inlet Invert= 0.00', Outlet Invert= -0.50'



Summary for Reach 32R: VEGETATED SWALE 2 (Ocean Ridge)

Inflow Area = 0.820 ac, 45.12% Impervious, Inflow Depth = 3.29" for Cumberland_10 event
 Inflow = 2.78 cfs @ 12.13 hrs, Volume= 0.225 af
 Outflow = 2.64 cfs @ 12.21 hrs, Volume= 0.225 af, Atten= 5%, Lag= 5.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Max. Velocity= 0.65 fps, Min. Travel Time= 3.0 min

Avg. Velocity = 0.17 fps, Avg. Travel Time= 11.0 min

Peak Storage= 470 cf @ 12.16 hrs

Average Depth at Peak Storage= 0.54'

Bank-Full Depth= 2.00' Flow Area= 24.0 sf, Capacity= 32.02 cfs

6.00' x 2.00' deep channel, n= 0.150

Side Slope Z-value= 3.0 '/' Top Width= 18.00'

Length= 115.0' Slope= 0.0130 '/'

Inlet Invert= 0.00', Outlet Invert= -1.49'

**Summary for Reach 33R: Wetland Flow**

Inflow Area = 2.670 ac, 46.07% Impervious, Inflow Depth = 3.28" for Cumberland_10 event
 Inflow = 2.79 cfs @ 12.62 hrs, Volume= 0.730 af
 Outflow = 2.78 cfs @ 12.71 hrs, Volume= 0.730 af, Atten= 0%, Lag= 5.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Max. Velocity= 0.78 fps, Min. Travel Time= 3.2 min

Avg. Velocity = 0.19 fps, Avg. Travel Time= 13.5 min

Peak Storage= 532 cf @ 12.66 hrs

Average Depth at Peak Storage= 0.24'

Bank-Full Depth= 1.00' Flow Area= 30.0 sf, Capacity= 52.28 cfs

10.00' x 1.00' deep channel, n= 0.035 High grass

Side Slope Z-value= 20.0 '/' Top Width= 50.00'

Length= 150.0' Slope= 0.0033 '/'

Inlet Invert= 158.00', Outlet Invert= 157.50'



Summary for Reach 34R: Woodland Flow

Inflow Area = 2.670 ac, 46.07% Impervious, Inflow Depth = 3.28" for Cumberland_10 event
 Inflow = 2.78 cfs @ 12.71 hrs, Volume= 0.730 af
 Outflow = 2.72 cfs @ 12.95 hrs, Volume= 0.730 af, Atten= 2%, Lag= 14.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Max. Velocity= 2.60 fps, Min. Travel Time= 7.6 min

Avg. Velocity = 0.71 fps, Avg. Travel Time= 27.8 min

Peak Storage= 1,236 cf @ 12.82 hrs

Average Depth at Peak Storage= 0.16'

Bank-Full Depth= 1.00' Flow Area= 15.0 sf, Capacity= 108.87 cfs

5.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds

Side Slope Z-value= 10.0 '/' Top Width= 25.00'

Length= 1,180.0' Slope= 0.0581 '/'

Inlet Invert= 157.50', Outlet Invert= 89.00'

**Summary for Reach 106R: SP#1 (Eben Hill Road)**

Inflow Area = 23.010 ac, 16.15% Impervious, Inflow Depth = 2.65" for Cumberland_10 event
 Inflow = 31.51 cfs @ 12.16 hrs, Volume= 5.090 af
 Outflow = 31.51 cfs @ 12.16 hrs, Volume= 5.090 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Pond 3P: POND 3 (Ocean Ridge)

Inflow Area = 2.670 ac, 46.07% Impervious, Inflow Depth = 3.28" for Cumberland_10 event
 Inflow = 7.37 cfs @ 12.24 hrs, Volume= 0.730 af
 Outflow = 2.79 cfs @ 12.62 hrs, Volume= 0.730 af, Atten= 62%, Lag= 22.9 min
 Primary = 2.79 cfs @ 12.62 hrs, Volume= 0.730 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Peak Elev= 160.74' @ 12.62 hrs Surf.Area= 5,209 sf Storage= 10,521 cf

Plug-Flow detention time= 75.9 min calculated for 0.730 af (100% of inflow)

Center-of-Mass det. time= 76.0 min (896.4 - 820.4)

Volume	Invert	Avail.Storage	Storage Description
#1	158.00'	21,813 cf	Custom Stage Data (Prismatic) Listed below

14432_Predevelopment_ASBUILT

Type III 24-hr Cumberland_10 Rainfall=4.60"

Prepared by Sebago Technics

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
158.00	2,113	0	0
160.00	4,304	6,417	6,417
162.00	6,739	11,043	17,460
162.60	7,772	4,353	21,813

Device	Routing	Invert	Outlet Devices
#1	Primary	158.00'	6.0" Vert. Orifice/Grate C= 0.600
#2	Primary	160.00'	9.0" Vert. Orifice/Grate C= 0.600
#3	Primary	161.00'	4.5" Vert. Orifice/Grate C= 0.600
#4	Primary	161.50'	20.0' long Broad-Crested Rectangular Weir X 1.81
			Head (feet) 0.50 1.00 1.50
			Coef. (English) 1.60 1.80 1.90

Primary OutFlow Max=2.79 cfs @ 12.62 hrs HW=160.74' (Free Discharge)

- 1=Orifice/Grate (Orifice Controls 1.49 cfs @ 7.60 fps)
- 2=Orifice/Grate (Orifice Controls 1.29 cfs @ 2.94 fps)
- 3=Orifice/Grate (Controls 0.00 cfs)
- 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 30P: POND 30 (Ocean Ridge)

Inflow Area = 0.820 ac, 45.12% Impervious, Inflow Depth = 3.29" for Cumberland_10 event
 Inflow = 2.64 cfs @ 12.21 hrs, Volume= 0.225 af
 Outflow = 2.22 cfs @ 12.28 hrs, Volume= 0.225 af, Atten= 16%, Lag= 4.5 min
 Primary = 2.22 cfs @ 12.28 hrs, Volume= 0.225 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
 Peak Elev= 160.73' @ 12.28 hrs Surf.Area= 1,462 sf Storage= 1,151 cf

Plug-Flow detention time= 25.9 min calculated for 0.225 af (100% of inflow)
 Center-of-Mass det. time= 26.0 min (839.7 - 813.7)

Volume	Invert	Avail.Storage	Storage Description
#1	160.00'	3,156 cf	Custom Stage Data (Prismatic) Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
160.00	1,150	0	0
162.00	2,006	3,156	3,156

Device	Routing	Invert	Outlet Devices
#1	Primary	160.00'	18.0" Round Culvert L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 160.00' / 159.70' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=2.22 cfs @ 12.28 hrs HW=160.73' (Free Discharge)

- 1=Culvert (Barrel Controls 2.22 cfs @ 3.82 fps)

Summary for Pond 60R: FIELD CB

Inflow Area = 0.420 ac, 23.00% Impervious, Inflow Depth = 2.91" for Cumberland_10 event
 Inflow = 1.53 cfs @ 12.06 hrs, Volume= 0.102 af
 Outflow = 1.53 cfs @ 12.06 hrs, Volume= 0.102 af, Atten= 0%, Lag= 0.0 min
 Primary = 1.53 cfs @ 12.06 hrs, Volume= 0.102 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
 Peak Elev= 90.66' @ 12.06 hrs
 Flood Elev= 91.81'

Device	Routing	Invert	Outlet Devices
#1	Primary	90.00'	12.0" Round Culvert L= 110.0' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 90.00' / 89.00' S= 0.0091 '/ Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.52 cfs @ 12.06 hrs HW=90.66' (Free Discharge)
 ↑ **1=Culvert** (Inlet Controls 1.52 cfs @ 2.77 fps)

Summary for Pond 62P: Driveway Culvert

Inflow Area = 14.630 ac, 11.69% Impervious, Inflow Depth = 2.56" for Cumberland_10 event
 Inflow = 18.90 cfs @ 12.46 hrs, Volume= 3.117 af
 Outflow = 18.85 cfs @ 12.48 hrs, Volume= 3.117 af, Atten= 0%, Lag= 1.0 min
 Primary = 8.42 cfs @ 12.48 hrs, Volume= 2.615 af
 Secondary = 10.43 cfs @ 12.48 hrs, Volume= 0.502 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
 Peak Elev= 89.82' @ 12.48 hrs Surf.Area= 3,038 sf Storage= 1,576 cf

Plug-Flow detention time= 0.8 min calculated for 3.116 af (100% of inflow)
 Center-of-Mass det. time= 0.8 min (871.1 - 870.3)

Volume	Invert	Avail.Storage	Storage Description
#1	88.00'	2,197 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
88.00	47	50.0	0	0	47
89.00	540	284.0	249	249	6,269
90.00	3,860	500.0	1,948	2,197	19,750

Device	Routing	Invert	Outlet Devices
#1	Primary	87.50'	18.0" Round Culvert L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 87.50' / 87.00' S= 0.0143 '/ Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Secondary	89.50'	22.0' long x 13.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.60 2.64 2.70 2.66 2.65 2.66 2.65 2.63

Primary OutFlow Max=8.42 cfs @ 12.48 hrs HW=89.82' (Free Discharge)

↑ **1=Culvert** (Inlet Controls 8.42 cfs @ 4.76 fps)

Secondary OutFlow Max=10.43 cfs @ 12.48 hrs HW=89.82' (Free Discharge)

↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 10.43 cfs @ 1.48 fps)

Summary for Pond 66P: 24" Cross culvert

Inflow Area = 16.450 ac, 11.46% Impervious, Inflow Depth = 2.56" for Cumberland_10 event

Inflow = 20.77 cfs @ 12.46 hrs, Volume= 3.503 af

Outflow = 20.13 cfs @ 12.54 hrs, Volume= 3.503 af, Atten= 3%, Lag= 4.7 min

Primary = 20.13 cfs @ 12.54 hrs, Volume= 3.503 af

Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs / 4

Peak Elev= 88.29' @ 12.54 hrs Surf.Area= 1,567 sf Storage= 1,462 cf

Plug-Flow detention time= 0.5 min calculated for 3.503 af (100% of inflow)

Center-of-Mass det. time= 0.3 min (866.9 - 866.5)

Volume	Invert	Avail.Storage	Storage Description		
#1	84.00'	1,817 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
84.00	5	5.0	0	0	5
85.00	25	25.0	14	14	55
86.00	63	40.0	43	56	139
87.00	425	195.0	217	273	3,040
88.00	1,210	305.0	784	1,058	7,424
88.50	1,850	330.0	759	1,817	8,697

Device	Routing	Invert	Outlet Devices
#1	Primary	84.45'	24.0" Round Culvert L= 65.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 84.45' / 84.13' S= 0.0049 '/ Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Secondary	88.50'	12.0' long x 12.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=20.13 cfs @ 12.54 hrs HW=88.29' (Free Discharge)

↑ **1=Culvert** (Inlet Controls 20.13 cfs @ 6.41 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=84.00' (Free Discharge)

↑ **2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 100R: Vortech-DMH2

Inflow Area = 2.790 ac, 36.20% Impervious, Inflow Depth = 3.12" for Cumberland_10 event
 Inflow = 8.86 cfs @ 12.13 hrs, Volume= 0.726 af
 Outflow = 8.86 cfs @ 12.13 hrs, Volume= 0.726 af, Atten= 0%, Lag= 0.0 min
 Primary = 8.86 cfs @ 12.13 hrs, Volume= 0.726 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
 Peak Elev= 108.83' @ 12.13 hrs
 Flood Elev= 112.16'

Device	Routing	Invert	Outlet Devices
#1	Primary	107.00'	18.0" Round Culvert L= 318.0' Ke= 0.500 Inlet / Outlet Invert= 107.00' / 98.52' S= 0.0267 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=8.85 cfs @ 12.13 hrs HW=108.83' (Free Discharge)
 ↑ **1=Culvert** (Inlet Controls 8.85 cfs @ 5.01 fps)

Summary for Pond 101R: DMH2-DMH1(DMH1606)

Inflow Area = 2.790 ac, 36.20% Impervious, Inflow Depth = 3.12" for Cumberland_10 event
 Inflow = 8.86 cfs @ 12.13 hrs, Volume= 0.726 af
 Outflow = 8.86 cfs @ 12.13 hrs, Volume= 0.726 af, Atten= 0%, Lag= 0.0 min
 Primary = 8.86 cfs @ 12.13 hrs, Volume= 0.726 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
 Peak Elev= 100.21' @ 12.13 hrs
 Flood Elev= 103.21'

Device	Routing	Invert	Outlet Devices
#1	Primary	98.38'	18.0" Round Culvert L= 177.0' Ke= 0.500 Inlet / Outlet Invert= 98.38' / 91.46' S= 0.0391 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=8.85 cfs @ 12.13 hrs HW=100.21' (Free Discharge)
 ↑ **1=Culvert** (Inlet Controls 8.85 cfs @ 5.01 fps)

Summary for Pond 102R: DMH1606-DMH9

Inflow Area = 2.790 ac, 36.20% Impervious, Inflow Depth = 3.12" for Cumberland_10 event
 Inflow = 8.86 cfs @ 12.13 hrs, Volume= 0.726 af
 Outflow = 8.86 cfs @ 12.13 hrs, Volume= 0.726 af, Atten= 0%, Lag= 0.0 min
 Primary = 8.86 cfs @ 12.13 hrs, Volume= 0.726 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
 Peak Elev= 93.13' @ 12.13 hrs
 Flood Elev= 96.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	91.30'	18.0" Round Culvert L= 110.0' RCP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 91.30' / 89.27' S= 0.0185 '/ Cc= 0.900
n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=8.85 cfs @ 12.13 hrs HW=93.13' (Free Discharge)

↑**1=Culvert** (Inlet Controls 8.85 cfs @ 5.01 fps)

Summary for Pond 103R: DMH9-DMH8

Inflow Area = 6.170 ac, 26.71% Impervious, Inflow Depth = 2.87" for Cumberland_10 event
Inflow = 18.11 cfs @ 12.13 hrs, Volume= 1.477 af
Outflow = 18.11 cfs @ 12.13 hrs, Volume= 1.477 af, Atten= 0%, Lag= 0.0 min
Primary = 18.11 cfs @ 12.13 hrs, Volume= 1.477 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Peak Elev= 95.06' @ 12.13 hrs

Flood Elev= 94.51'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.07'	18.0" Round Culvert L= 132.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 89.07' / 87.76' S= 0.0099 '/ Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=18.11 cfs @ 12.13 hrs HW=95.06' (Free Discharge)

↑**1=Culvert** (Barrel Controls 18.11 cfs @ 10.25 fps)

Summary for Pond 104R: DMH8-DMH200

Inflow Area = 6.560 ac, 27.90% Impervious, Inflow Depth = 2.90" for Cumberland_10 event
Inflow = 19.40 cfs @ 12.13 hrs, Volume= 1.587 af
Outflow = 19.40 cfs @ 12.13 hrs, Volume= 1.587 af, Atten= 0%, Lag= 0.0 min
Primary = 19.40 cfs @ 12.13 hrs, Volume= 1.587 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Peak Elev= 98.87' @ 12.13 hrs

Flood Elev= 92.36'

Device	Routing	Invert	Outlet Devices
#1	Primary	87.66'	18.0" Round Culvert L= 273.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 87.66' / 86.60' S= 0.0039 '/ Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=19.39 cfs @ 12.13 hrs HW=98.86' (Free Discharge)

↑**1=Culvert** (Barrel Controls 19.39 cfs @ 10.97 fps)

Summary for Pond 105R: DMH200-OUTLET

Inflow Area = 6.560 ac, 27.90% Impervious, Inflow Depth = 2.90" for Cumberland_10 event
Inflow = 19.40 cfs @ 12.13 hrs, Volume= 1.587 af
Outflow = 19.40 cfs @ 12.13 hrs, Volume= 1.587 af, Atten= 0%, Lag= 0.0 min
Primary = 19.40 cfs @ 12.13 hrs, Volume= 1.587 af

14432_Predevelopment_ASBUILT*Type III 24-hr Cumberland_10 Rainfall=4.60"*

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Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Peak Elev= 92.48' @ 12.13 hrs

Flood Elev= 89.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	86.53'	18.0" Round Culvert L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 86.53' / 84.13' S= 0.0400 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=19.39 cfs @ 12.13 hrs HW=92.47' (Free Discharge)↑ **1=Culvert** (Inlet Controls 19.39 cfs @ 10.97 fps)

Time span=0.00-100.00 hrs, dt=0.01 hrs, 10001 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1: Subarea 1	Runoff Area=3.160 ac 13.23% Impervious Runoff Depth=3.60" Flow Length=660' Tc=9.5 min CN=80 Runoff=11.82 cfs 0.948 af
Subcatchment 1S: BASIN 1 (Ocean Ridge)	Runoff Area=2.600 ac 34.62% Impervious Runoff Depth=4.22" Flow Length=660' Tc=9.9 min CN=86 Runoff=11.06 cfs 0.914 af
Subcatchment 2: Subarea 2	Runoff Area=11.540 ac 3.32% Impervious Runoff Depth=3.40" Flow Length=1,435' Tc=32.5 min CN=78 Runoff=25.13 cfs 3.272 af
Subcatchment 3: Sub 3	Runoff Area=0.300 ac 30.67% Impervious Runoff Depth=4.22" Flow Length=300' Tc=9.4 min CN=86 Runoff=1.30 cfs 0.105 af
Subcatchment 4: Subarea 4	Runoff Area=1.210 ac 0.00% Impervious Runoff Depth=3.31" Flow Length=250' Tc=9.8 min CN=77 Runoff=4.12 cfs 0.333 af
Subcatchment 5: Subarea 5	Runoff Area=1.820 ac 9.67% Impervious Runoff Depth=3.60" Flow Length=660' Tc=11.0 min CN=80 Runoff=6.49 cfs 0.546 af
Subcatchment 6: Sub 6	Runoff Area=0.420 ac 23.00% Impervious Runoff Depth=4.01" Flow Length=235' Tc=4.1 min CN=84 Runoff=2.09 cfs 0.140 af
Subcatchment 100: Subarea 100	Runoff Area=0.220 ac 100.00% Impervious Runoff Depth=5.56" Flow Length=572' Tc=6.6 min CN=98 Runoff=1.23 cfs 0.102 af
Subcatchment 101S: BASIN 101 (Ocean Ridge)	Runoff Area=0.190 ac 57.89% Impervious Runoff Depth=4.65" Flow Length=155' Tc=6.4 min CN=90 Runoff=0.98 cfs 0.074 af
Subcatchment 300: Subarea 300	Runoff Area=0.090 ac 100.00% Impervious Runoff Depth=5.56" Flow Length=162' Tc=5.0 min CN=98 Runoff=0.53 cfs 0.042 af
Subcatchment 301S: BASIN 301 (Ocean Ridge)	Runoff Area=0.820 ac 45.12% Impervious Runoff Depth=4.43" Flow Length=190' Tc=9.3 min CN=88 Runoff=3.69 cfs 0.303 af
Subcatchment 302S: BASIN 302 (Ocean Ridge)	Runoff Area=1.270 ac 58.27% Impervious Runoff Depth=4.65" Flow Length=130' Slope=0.0200 '/' Tc=9.1 min CN=90 Runoff=5.97 cfs 0.492 af
Subcatchment 303S: BASIN 3 (Ocean Ridge)	Runoff Area=0.580 ac 20.69% Impervious Runoff Depth=3.91" Flow Length=150' Tc=8.1 min CN=83 Runoff=2.45 cfs 0.189 af
Reach 3R: VEGETATED SWALE 1 (Ocean Ridge)	Avg. Flow Depth=0.83' Max Vel=0.79 fps Inflow=5.97 cfs 0.492 af n=0.150 L=170.0' S=0.0120 '/' Capacity=30.82 cfs Outflow=5.56 cfs 0.492 af
Reach 4R: SP#2	Inflow=4.12 cfs 0.333 af Outflow=4.12 cfs 0.333 af
Reach 31R: CULVERT 3 (Ocean Ridge)	Avg. Flow Depth=0.75' Max Vel=5.29 fps Inflow=3.04 cfs 0.303 af 11.0" Round Pipe n=0.012 L=50.0' S=0.0100 '/' Capacity=3.06 cfs Outflow=3.04 cfs 0.303 af

Reach 32R: VEGETATED SWALE 2 (Ocean Ridge)	Avg. Flow Depth=0.63' Max Vel=0.71 fps Inflow=3.69 cfs 0.303 af n=0.150 L=115.0' S=0.0130 '/' Capacity=32.02 cfs Outflow=3.54 cfs 0.303 af
Reach 33R: Wetland Flow	Avg. Flow Depth=0.29' Max Vel=0.87 fps Inflow=3.95 cfs 0.984 af n=0.035 L=150.0' S=0.0033 '/' Capacity=52.28 cfs Outflow=3.93 cfs 0.984 af
Reach 34R: Woodland Flow	Avg. Flow Depth=0.19' Max Vel=2.90 fps Inflow=3.93 cfs 0.984 af n=0.035 L=1,180.0' S=0.0581 '/' Capacity=108.87 cfs Outflow=3.87 cfs 0.984 af
Reach 106R: SP#1 (Eben Hill Road)	Inflow=44.16 cfs 6.887 af Outflow=44.16 cfs 6.887 af
Pond 3P: POND 3 (Ocean Ridge)	Peak Elev=161.33' Storage=13,782 cf Inflow=9.99 cfs 0.984 af Outflow=3.95 cfs 0.984 af
Pond 30P: POND 30 (Ocean Ridge)	Peak Elev=160.88' Storage=1,387 cf Inflow=3.54 cfs 0.303 af 18.0" Round Culvert n=0.012 L=30.0' S=0.0100 '/' Outflow=3.04 cfs 0.303 af
Pond 60R: FIELD CB	Peak Elev=90.81' Inflow=2.09 cfs 0.140 af 12.0" Round Culvert n=0.012 L=110.0' S=0.0091 '/' Outflow=2.09 cfs 0.140 af
Pond 62P: Driveway Culvert	Peak Elev=89.96' Storage=2,063 cf Inflow=27.39 cfs 4.397 af Primary=8.80 cfs 3.332 af Secondary=18.54 cfs 1.065 af Outflow=27.33 cfs 4.397 af
Pond 66P: 24" Cross culvert	Peak Elev=88.82' Storage=1,817 cf Inflow=29.90 cfs 4.943 af Primary=21.93 cfs 4.701 af Secondary=5.72 cfs 0.146 af Outflow=27.65 cfs 4.847 af
Pond 100R: Vortech-DMH2	Peak Elev=109.71' Inflow=11.92 cfs 0.988 af 18.0" Round Culvert n=0.012 L=318.0' S=0.0267 '/' Outflow=11.92 cfs 0.988 af
Pond 101R: DMH2-DMH1(DMH1606)	Peak Elev=101.09' Inflow=11.92 cfs 0.988 af 18.0" Round Culvert n=0.012 L=177.0' S=0.0391 '/' Outflow=11.92 cfs 0.988 af
Pond 102R: DMH1606-DMH9	Peak Elev=94.01' Inflow=11.92 cfs 0.988 af 18.0" Round Culvert n=0.012 L=110.0' S=0.0185 '/' Outflow=11.92 cfs 0.988 af
Pond 103R: DMH9-DMH8	Peak Elev=100.19' Inflow=24.85 cfs 2.038 af 18.0" Round Culvert n=0.012 L=132.0' S=0.0099 '/' Outflow=24.85 cfs 2.038 af
Pond 104R: DMH8-DMH200	Peak Elev=108.29' Inflow=26.56 cfs 2.185 af 18.0" Round Culvert n=0.012 L=273.0' S=0.0039 '/' Outflow=26.56 cfs 2.185 af
Pond 105R: DMH200-OUTLET	Peak Elev=97.03' Inflow=26.56 cfs 2.185 af 18.0" Round Culvert n=0.012 L=60.0' S=0.0400 '/' Outflow=26.56 cfs 2.185 af

Total Runoff Area = 24.220 ac Runoff Volume = 7.462 af Average Runoff Depth = 3.70"
84.66% Pervious = 20.504 ac 15.34% Impervious = 3.716 ac

Summary for Subcatchment 1: Subarea 1

Runoff = 11.82 cfs @ 12.13 hrs, Volume= 0.948 af, Depth= 3.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
0.290	84	1 acre lots, 20% imp, HSG D
0.290	87	1/4 acre lots, 38% imp, HSG D
* 0.220	98	Roadway
2.240	77	Woods, Good, HSG D
* 0.090	80	>75% Grass cover, Good, HSG D (Ocean Ridge)
* 0.030	98	Building, Ocean Ridge
3.160	80	Weighted Average
2.742		86.77% Pervious Area
0.418		13.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	20	0.1500	0.12		Sheet Flow, Overland Woods Woods: Light underbrush n= 0.400 P2= 3.00"
1.4	160	0.1500	1.94		Shallow Concentrated Flow, Overland Woods Woodland Kv= 5.0 fps
4.9	400	0.0380	1.36		Shallow Concentrated Flow, Shallow Rd Ditch Short Grass Pasture Kv= 7.0 fps
0.5	80	0.0200	2.87		Shallow Concentrated Flow, ROAD GUTTER Paved Kv= 20.3 fps
9.5	660	Total			

Summary for Subcatchment 1S: BASIN 1 (Ocean Ridge)

Runoff = 11.06 cfs @ 12.13 hrs, Volume= 0.914 af, Depth= 4.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
* 0.900	98	IMPERVIOUS
* 0.380	77	WOODS D
* 1.320	80	LAWN D
2.600	86	Weighted Average
1.700		65.38% Pervious Area
0.900		34.62% Impervious Area

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Type III 24-hr Cumberland_25 Rainfall=5.80"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0200	0.10		Sheet Flow, OVERLAND FLOW Grass: Dense n= 0.240 P2= 3.00"
0.4	140	0.0430	5.46	65.53	Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.060
0.2	90	0.0550	6.18	74.11	Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.060
0.8	380	0.0900	7.45	64.10	Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch Bot.W=2.00' D=2.00' Z= 2.0 & 0.3 '/' Top.W=6.60' n= 0.060
9.9	660	Total			

Summary for Subcatchment 2: Subarea 2

Runoff = 25.13 cfs @ 12.46 hrs, Volume= 3.272 af, Depth= 3.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
0.640	87	1/4 acre lots, 38% imp, HSG D
* 0.050	98	Roadway
10.590	77	Woods, Good, HSG D
* 0.040	98	Building, Ocean Ridge
* 0.050	98	Road, Ocean Ridge
* 0.030	77	Woods, Good, HSG D, Ocean Ridge
* 0.140	80	>75% Grass cover, Good, HSG D, Ocean Ridge
11.540	78	Weighted Average
11.157		96.68% Pervious Area
0.383		3.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	110	0.0800	0.13		Sheet Flow, Overland Woods Woods: Light underbrush n= 0.400 P2= 3.00"
18.8	1,325	0.0550	1.17		Shallow Concentrated Flow, Overland Woods Woodland Kv= 5.0 fps
32.5	1,435	Total			

Summary for Subcatchment 3: Sub 3

Runoff = 1.30 cfs @ 12.13 hrs, Volume= 0.105 af, Depth= 4.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_25 Rainfall=5.80"

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Type III 24-hr Cumberland_25 Rainfall=5.80"

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Area (ac)	CN	Description
* 0.040	98	Paved roads Ocean Ave
0.260	84	1 acre lots, 20% imp, HSG D
0.300	86	Weighted Average
0.208		69.33% Pervious Area
0.092		30.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	60	0.1000	0.13		Sheet Flow, A-B Woods: Light underbrush n= 0.400 P2= 3.00"
1.2	160	0.1000	2.21		Shallow Concentrated Flow, B-C Short Grass Pasture Kv= 7.0 fps
0.5	80	0.0150	2.49		Shallow Concentrated Flow, C-D Paved Kv= 20.3 fps
9.4	300	Total			

Summary for Subcatchment 4: Subarea 4

Runoff = 4.12 cfs @ 12.14 hrs, Volume= 0.333 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
1.210	77	Woods, Good, HSG D
1.210		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	60	0.1200	0.14		Sheet Flow, Overland Woods Woods: Light underbrush n= 0.400 P2= 3.00"
2.6	190	0.0600	1.22		Shallow Concentrated Flow, Overland Woods Woodland Kv= 5.0 fps
9.8	250	Total			

Summary for Subcatchment 5: Subarea 5

Runoff = 6.49 cfs @ 12.15 hrs, Volume= 0.546 af, Depth= 3.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
0.730	84	1 acre lots, 20% imp, HSG D
* 0.030	98	Roadway
1.060	77	Woods, Good, HSG D
1.820	80	Weighted Average
1.644		90.33% Pervious Area
0.176		9.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.8	30	0.1500	0.13		Sheet Flow, Overland Woods Woods: Light underbrush n= 0.400 P2= 3.00"
7.2	630	0.0850	1.46		Shallow Concentrated Flow, Overland Woods Woodland Kv= 5.0 fps
11.0	660	Total			

Summary for Subcatchment 6: Sub 6

Runoff = 2.09 cfs @ 12.06 hrs, Volume= 0.140 af, Depth= 4.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
0.350	84	1 acre lots, 20% imp, HSG D
0.070	87	1/4 acre lots, 38% imp, HSG D
0.420	84	Weighted Average
0.323		77.00% Pervious Area
0.097		23.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	25	0.1500	0.13		Sheet Flow, A-B Woods: Light underbrush n= 0.400 P2= 3.00"
0.4	60	0.2300	2.40		Shallow Concentrated Flow, B-C Woodland Kv= 5.0 fps
0.4	150	0.0400	5.86	41.05	Trap/Vee/Rect Channel Flow, C-D Bot.W=2.00' D=1.00' Z= 5.0 '/' Top.W=12.00' n= 0.035 Earth, dense weeds
4.1	235	Total			

Summary for Subcatchment 100: Subarea 100

Runoff = 1.23 cfs @ 12.09 hrs, Volume= 0.102 af, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
* 0.220	98	Roadway
0.220		100.00% Impervious Area

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Type III 24-hr Cumberland_25 Rainfall=5.80"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		Sheet Flow, Road Crown Smooth surfaces n= 0.011 P2= 3.00"
5.9	480	0.0380	1.36		Shallow Concentrated Flow, SHALLOW RD DITCH Short Grass Pasture Kv= 7.0 fps
0.5	80	0.0200	2.87		Shallow Concentrated Flow, ROAD GUTTER Paved Kv= 20.3 fps
6.6	572	Total			

Summary for Subcatchment 101S: BASIN 101 (Ocean Ridge)

Runoff = 0.98 cfs @ 12.09 hrs, Volume= 0.074 af, Depth= 4.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
* 0.110	98	IMPERVIOUS
* 0.080	80	LAWN D
0.190	90	Weighted Average
0.080		42.11% Pervious Area
0.110		57.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	30	0.0200	0.09		Sheet Flow, Segment ID: AB, Lawn Grass: Dense n= 0.240 P2= 3.00"
0.1	25	0.0200	2.87		Shallow Concentrated Flow, Segment ID: BC, Driveway Paved Kv= 20.3 fps
0.7	100	0.1200	2.42		Shallow Concentrated Flow, Segment ID: grass slope Short Grass Pasture Kv= 7.0 fps
6.4	155	Total			

Summary for Subcatchment 300: Subarea 300

Runoff = 0.53 cfs @ 12.07 hrs, Volume= 0.042 af, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
* 0.090	98	Roadway
0.090		100.00% Impervious Area

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Type III 24-hr Cumberland_25 Rainfall=5.80"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		Sheet Flow, Road Crown Smooth surfaces n= 0.011 P2= 3.00"
1.1	150	0.0130	2.31		Shallow Concentrated Flow, Gutter flow Paved Kv= 20.3 fps
3.7					Direct Entry,
5.0	162	Total			

Summary for Subcatchment 301S: BASIN 301 (Ocean Ridge)

Runoff = 3.69 cfs @ 12.13 hrs, Volume= 0.303 af, Depth= 4.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
* 0.370	98	IMPERVIOUS
* 0.450	80	LAWN D
0.820	88	Weighted Average
0.450		54.88% Pervious Area
0.370		45.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	60	0.0300	0.12		Sheet Flow, Segment ID: AB Grass: Dense n= 0.240 P2= 3.00"
0.4	50	0.0200	2.12		Shallow Concentrated Flow, Segment ID: BC Grassed Waterway Kv= 15.0 fps
0.6	80	0.0200	2.12		Shallow Concentrated Flow, Segment ID: CD Grassed Waterway Kv= 15.0 fps
9.3	190	Total			

Summary for Subcatchment 302S: BASIN 302 (Ocean Ridge)

Runoff = 5.97 cfs @ 12.12 hrs, Volume= 0.492 af, Depth= 4.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
* 0.740	98	IMPERVIOUS
* 0.050	77	WOODS D
* 0.480	80	LAWN D
1.270	90	Weighted Average
0.530		41.73% Pervious Area
0.740		58.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0200	0.10		Sheet Flow, Segment ID: AB Grass: Dense n= 0.240 P2= 3.00"
0.2	30	0.0200	2.87		Shallow Concentrated Flow, Segment ID: BC Paved Kv= 20.3 fps
0.4	50	0.0200	2.12		Shallow Concentrated Flow, Segment ID: Grassed Waterway Kv= 15.0 fps
9.1	130	Total			

Summary for Subcatchment 303S: BASIN 3 (Ocean Ridge)

Runoff = 2.45 cfs @ 12.11 hrs, Volume= 0.189 af, Depth= 3.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
* 0.120	98	IMPERVIOUS
* 0.080	77	WOODS D
* 0.380	80	LAWN D
0.580	83	Weighted Average
0.460		79.31% Pervious Area
0.120		20.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	30	0.0300	0.07		Sheet Flow, Segment ID: AB Woods: Light underbrush n= 0.400 P2= 3.00"
0.9	120	0.0200	2.12		Shallow Concentrated Flow, Segment ID: BC Grassed Waterway Kv= 15.0 fps
8.1	150	Total			

Summary for Reach 3R: VEGETATED SWALE 1 (Ocean Ridge)

Inflow Area = 1.270 ac, 58.27% Impervious, Inflow Depth = 4.65" for Cumberland_25 event
Inflow = 5.97 cfs @ 12.12 hrs, Volume= 0.492 af
Outflow = 5.56 cfs @ 12.22 hrs, Volume= 0.492 af, Atten= 7%, Lag= 5.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 0.79 fps, Min. Travel Time= 3.6 min
Avg. Velocity= 0.21 fps, Avg. Travel Time= 13.6 min

Peak Storage= 1,192 cf @ 12.16 hrs
Average Depth at Peak Storage= 0.83'
Bank-Full Depth= 2.00' Flow Area= 24.0 sf, Capacity= 30.82 cfs

6.00' x 2.00' deep channel, n= 0.150
 Side Slope Z-value= 3.0 '/' Top Width= 18.00'
 Length= 170.0' Slope= 0.0120 '/'
 Inlet Invert= 0.00', Outlet Invert= -2.04'



Summary for Reach 4R: SP#2

Inflow Area = 1.210 ac, 0.00% Impervious, Inflow Depth = 3.31" for Cumberland_25 event
 Inflow = 4.12 cfs @ 12.14 hrs, Volume= 0.333 af
 Outflow = 4.12 cfs @ 12.14 hrs, Volume= 0.333 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Reach 31R: CULVERT 3 (Ocean Ridge)

Inflow Area = 0.820 ac, 45.12% Impervious, Inflow Depth = 4.43" for Cumberland_25 event
 Inflow = 3.04 cfs @ 12.27 hrs, Volume= 0.303 af
 Outflow = 3.04 cfs @ 12.28 hrs, Volume= 0.303 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs / 2

Max. Velocity= 5.29 fps, Min. Travel Time= 0.2 min

Avg. Velocity= 1.24 fps, Avg. Travel Time= 0.7 min

Peak Storage= 29 cf @ 12.27 hrs

Average Depth at Peak Storage= 0.75'

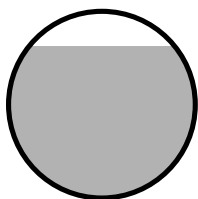
Bank-Full Depth= 0.92' Flow Area= 0.7 sf, Capacity= 3.06 cfs

11.0" Round Pipe

n= 0.012

Length= 50.0' Slope= 0.0100 '/'

Inlet Invert= 0.00', Outlet Invert= -0.50'



Summary for Reach 32R: VEGETATED SWALE 2 (Ocean Ridge)

Inflow Area = 0.820 ac, 45.12% Impervious, Inflow Depth = 4.43" for Cumberland_25 event
 Inflow = 3.69 cfs @ 12.13 hrs, Volume= 0.303 af
 Outflow = 3.54 cfs @ 12.20 hrs, Volume= 0.303 af, Atten= 4%, Lag= 4.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Max. Velocity= 0.71 fps, Min. Travel Time= 2.7 min

Avg. Velocity = 0.19 fps, Avg. Travel Time= 10.1 min

Peak Storage= 574 cf @ 12.16 hrs

Average Depth at Peak Storage= 0.63'

Bank-Full Depth= 2.00' Flow Area= 24.0 sf, Capacity= 32.02 cfs

6.00' x 2.00' deep channel, n= 0.150

Side Slope Z-value= 3.0 '/' Top Width= 18.00'

Length= 115.0' Slope= 0.0130 '/'

Inlet Invert= 0.00', Outlet Invert= -1.49'

**Summary for Reach 33R: Wetland Flow**

Inflow Area = 2.670 ac, 46.07% Impervious, Inflow Depth = 4.42" for Cumberland_25 event
 Inflow = 3.95 cfs @ 12.58 hrs, Volume= 0.984 af
 Outflow = 3.93 cfs @ 12.67 hrs, Volume= 0.984 af, Atten= 0%, Lag= 5.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Max. Velocity= 0.87 fps, Min. Travel Time= 2.9 min

Avg. Velocity = 0.20 fps, Avg. Travel Time= 12.7 min

Peak Storage= 680 cf @ 12.62 hrs

Average Depth at Peak Storage= 0.29'

Bank-Full Depth= 1.00' Flow Area= 30.0 sf, Capacity= 52.28 cfs

10.00' x 1.00' deep channel, n= 0.035 High grass

Side Slope Z-value= 20.0 '/' Top Width= 50.00'

Length= 150.0' Slope= 0.0033 '/'

Inlet Invert= 158.00', Outlet Invert= 157.50'



Summary for Reach 34R: Woodland Flow

Inflow Area = 2.670 ac, 46.07% Impervious, Inflow Depth = 4.42" for Cumberland_25 event
 Inflow = 3.93 cfs @ 12.67 hrs, Volume= 0.984 af
 Outflow = 3.87 cfs @ 12.87 hrs, Volume= 0.984 af, Atten= 2%, Lag= 12.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Max. Velocity= 2.90 fps, Min. Travel Time= 6.8 min

Avg. Velocity = 0.75 fps, Avg. Travel Time= 26.3 min

Peak Storage= 1,576 cf @ 12.76 hrs

Average Depth at Peak Storage= 0.19'

Bank-Full Depth= 1.00' Flow Area= 15.0 sf, Capacity= 108.87 cfs

5.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds

Side Slope Z-value= 10.0 '/' Top Width= 25.00'

Length= 1,180.0' Slope= 0.0581 '/'

Inlet Invert= 157.50', Outlet Invert= 89.00'

**Summary for Reach 106R: SP#1 (Eben Hill Road)**

Inflow Area = 23.010 ac, 16.15% Impervious, Inflow Depth = 3.59" for Cumberland_25 event
 Inflow = 44.16 cfs @ 12.14 hrs, Volume= 6.887 af
 Outflow = 44.16 cfs @ 12.14 hrs, Volume= 6.887 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Summary for Pond 3P: POND 3 (Ocean Ridge)

Inflow Area = 2.670 ac, 46.07% Impervious, Inflow Depth = 4.42" for Cumberland_25 event
 Inflow = 9.99 cfs @ 12.22 hrs, Volume= 0.984 af
 Outflow = 3.95 cfs @ 12.58 hrs, Volume= 0.984 af, Atten= 60%, Lag= 21.4 min
 Primary = 3.95 cfs @ 12.58 hrs, Volume= 0.984 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Peak Elev= 161.33' @ 12.58 hrs Surf.Area= 5,928 sf Storage= 13,782 cf

Plug-Flow detention time= 71.5 min calculated for 0.984 af (100% of inflow)

Center-of-Mass det. time= 71.5 min (881.9 - 810.4)

Volume	Invert	Avail.Storage	Storage Description
#1	158.00'	21,813 cf	Custom Stage Data (Prismatic) Listed below

14432_Predevelopment_ASBUILT

Type III 24-hr Cumberland_25 Rainfall=5.80"

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
158.00	2,113	0	0
160.00	4,304	6,417	6,417
162.00	6,739	11,043	17,460
162.60	7,772	4,353	21,813

Device	Routing	Invert	Outlet Devices
#1	Primary	158.00'	6.0" Vert. Orifice/Grate C= 0.600
#2	Primary	160.00'	9.0" Vert. Orifice/Grate C= 0.600
#3	Primary	161.00'	4.5" Vert. Orifice/Grate C= 0.600
#4	Primary	161.50'	20.0' long Broad-Crested Rectangular Weir X 1.81
			Head (feet) 0.50 1.00 1.50
			Coef. (English) 1.60 1.80 1.90

Primary OutFlow Max=3.95 cfs @ 12.58 hrs HW=161.33' (Free Discharge)

- 1=Orifice/Grate (Orifice Controls 1.66 cfs @ 8.46 fps)
- 2=Orifice/Grate (Orifice Controls 2.08 cfs @ 4.71 fps)
- 3=Orifice/Grate (Orifice Controls 0.20 cfs @ 1.97 fps)
- 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 30P: POND 30 (Ocean Ridge)

Inflow Area = 0.820 ac, 45.12% Impervious, Inflow Depth = 4.43" for Cumberland_25 event
 Inflow = 3.54 cfs @ 12.20 hrs, Volume= 0.303 af
 Outflow = 3.04 cfs @ 12.27 hrs, Volume= 0.303 af, Atten= 14%, Lag= 4.1 min
 Primary = 3.04 cfs @ 12.27 hrs, Volume= 0.303 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
 Peak Elev= 160.88' @ 12.27 hrs Surf.Area= 1,526 sf Storage= 1,387 cf

Plug-Flow detention time= 22.7 min calculated for 0.303 af (100% of inflow)
 Center-of-Mass det. time= 22.8 min (827.3 - 804.5)

Volume	Invert	Avail.Storage	Storage Description
#1	160.00'	3,156 cf	Custom Stage Data (Prismatic) Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
160.00	1,150	0	0
162.00	2,006	3,156	3,156

Device	Routing	Invert	Outlet Devices
#1	Primary	160.00'	18.0" Round Culvert L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 160.00' / 159.70' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=3.04 cfs @ 12.27 hrs HW=160.88' (Free Discharge)

- 1=Culvert (Barrel Controls 3.04 cfs @ 4.07 fps)

Summary for Pond 60R: FIELD CB

Inflow Area = 0.420 ac, 23.00% Impervious, Inflow Depth = 4.01" for Cumberland_25 event
 Inflow = 2.09 cfs @ 12.06 hrs, Volume= 0.140 af
 Outflow = 2.09 cfs @ 12.06 hrs, Volume= 0.140 af, Atten= 0%, Lag= 0.0 min
 Primary = 2.09 cfs @ 12.06 hrs, Volume= 0.140 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
 Peak Elev= 90.81' @ 12.06 hrs
 Flood Elev= 91.81'

Device	Routing	Invert	Outlet Devices
#1	Primary	90.00'	12.0" Round Culvert L= 110.0' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 90.00' / 89.00' S= 0.0091 '/ Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=2.09 cfs @ 12.06 hrs HW=90.81' (Free Discharge)
 ↑**1=Culvert** (Inlet Controls 2.09 cfs @ 3.06 fps)

Summary for Pond 62P: Driveway Culvert

Inflow Area = 14.630 ac, 11.69% Impervious, Inflow Depth = 3.61" for Cumberland_25 event
 Inflow = 27.39 cfs @ 12.46 hrs, Volume= 4.397 af
 Outflow = 27.33 cfs @ 12.49 hrs, Volume= 4.397 af, Atten= 0%, Lag= 1.5 min
 Primary = 8.80 cfs @ 12.49 hrs, Volume= 3.332 af
 Secondary = 18.54 cfs @ 12.49 hrs, Volume= 1.065 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
 Peak Elev= 89.96' @ 12.49 hrs Surf.Area= 3,691 sf Storage= 2,063 cf

Plug-Flow detention time= 0.9 min calculated for 4.397 af (100% of inflow)
 Center-of-Mass det. time= 0.9 min (858.6 - 857.8)

Volume	Invert	Avail.Storage	Storage Description
#1	88.00'	2,197 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
88.00	47	50.0	0	0	47
89.00	540	284.0	249	249	6,269
90.00	3,860	500.0	1,948	2,197	19,750

Device	Routing	Invert	Outlet Devices
#1	Primary	87.50'	18.0" Round Culvert L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 87.50' / 87.00' S= 0.0143 '/ Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Secondary	89.50'	22.0' long x 13.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.60 2.64 2.70 2.66 2.65 2.66 2.65 2.63

Primary OutFlow Max=8.80 cfs @ 12.49 hrs HW=89.96' (Free Discharge)

↑ **1=Culvert** (Inlet Controls 8.80 cfs @ 4.98 fps)

Secondary OutFlow Max=18.53 cfs @ 12.49 hrs HW=89.96' (Free Discharge)

↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 18.53 cfs @ 1.81 fps)

Summary for Pond 66P: 24" Cross culvert

Inflow Area = 16.450 ac, 11.46% Impervious, Inflow Depth = 3.61" for Cumberland_25 event
 Inflow = 29.90 cfs @ 12.46 hrs, Volume= 4.943 af
 Outflow = 27.65 cfs @ 12.46 hrs, Volume= 4.847 af, Atten= 8%, Lag= 0.0 min
 Primary = 21.93 cfs @ 12.46 hrs, Volume= 4.701 af
 Secondary = 5.72 cfs @ 12.46 hrs, Volume= 0.146 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs / 4

Peak Elev= 88.82' @ 12.46 hrs Surf.Area= 1,850 sf Storage= 1,817 cf

Plug-Flow detention time= 15.5 min calculated for 4.847 af (98% of inflow)

Center-of-Mass det. time= 2.5 min (856.9 - 854.4)

Volume	Invert	Avail.Storage	Storage Description		
#1	84.00'	1,817 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
84.00	5	5.0	0	0	5
85.00	25	25.0	14	14	55
86.00	63	40.0	43	56	139
87.00	425	195.0	217	273	3,040
88.00	1,210	305.0	784	1,058	7,424
88.50	1,850	330.0	759	1,817	8,697

Device	Routing	Invert	Outlet Devices
#1	Primary	84.45'	24.0" Round Culvert L= 65.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 84.45' / 84.13' S= 0.0049 '/ Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Secondary	88.50'	12.0' long x 12.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=21.93 cfs @ 12.46 hrs HW=88.82' (Free Discharge)

↑ **1=Culvert** (Inlet Controls 21.93 cfs @ 6.98 fps)

Secondary OutFlow Max=5.71 cfs @ 12.46 hrs HW=88.82' (Free Discharge)

↑ **2=Broad-Crested Rectangular Weir** (Weir Controls 5.71 cfs @ 1.48 fps)

Summary for Pond 100R: Vortech-DMH2

Inflow Area = 2.790 ac, 36.20% Impervious, Inflow Depth = 4.25" for Cumberland_25 event
 Inflow = 11.92 cfs @ 12.13 hrs, Volume= 0.988 af
 Outflow = 11.92 cfs @ 12.13 hrs, Volume= 0.988 af, Atten= 0%, Lag= 0.0 min
 Primary = 11.92 cfs @ 12.13 hrs, Volume= 0.988 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
 Peak Elev= 109.71' @ 12.13 hrs
 Flood Elev= 112.16'

Device	Routing	Invert	Outlet Devices
#1	Primary	107.00'	18.0" Round Culvert L= 318.0' Ke= 0.500 Inlet / Outlet Invert= 107.00' / 98.52' S= 0.0267 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=11.92 cfs @ 12.13 hrs HW=109.71' (Free Discharge)
 ↑ **1=Culvert** (Inlet Controls 11.92 cfs @ 6.74 fps)

Summary for Pond 101R: DMH2-DMH1(DMH1606)

Inflow Area = 2.790 ac, 36.20% Impervious, Inflow Depth = 4.25" for Cumberland_25 event
 Inflow = 11.92 cfs @ 12.13 hrs, Volume= 0.988 af
 Outflow = 11.92 cfs @ 12.13 hrs, Volume= 0.988 af, Atten= 0%, Lag= 0.0 min
 Primary = 11.92 cfs @ 12.13 hrs, Volume= 0.988 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
 Peak Elev= 101.09' @ 12.13 hrs
 Flood Elev= 103.21'

Device	Routing	Invert	Outlet Devices
#1	Primary	98.38'	18.0" Round Culvert L= 177.0' Ke= 0.500 Inlet / Outlet Invert= 98.38' / 91.46' S= 0.0391 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=11.92 cfs @ 12.13 hrs HW=101.09' (Free Discharge)
 ↑ **1=Culvert** (Inlet Controls 11.92 cfs @ 6.74 fps)

Summary for Pond 102R: DMH1606-DMH9

Inflow Area = 2.790 ac, 36.20% Impervious, Inflow Depth = 4.25" for Cumberland_25 event
 Inflow = 11.92 cfs @ 12.13 hrs, Volume= 0.988 af
 Outflow = 11.92 cfs @ 12.13 hrs, Volume= 0.988 af, Atten= 0%, Lag= 0.0 min
 Primary = 11.92 cfs @ 12.13 hrs, Volume= 0.988 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs
 Peak Elev= 94.01' @ 12.13 hrs
 Flood Elev= 96.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	91.30'	18.0" Round Culvert L= 110.0' RCP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 91.30' / 89.27' S= 0.0185 '/ Cc= 0.900
n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=11.92 cfs @ 12.13 hrs HW=94.01' (Free Discharge)

↑**1=Culvert** (Inlet Controls 11.92 cfs @ 6.74 fps)

Summary for Pond 103R: DMH9-DMH8

Inflow Area = 6.170 ac, 26.71% Impervious, Inflow Depth = 3.96" for Cumberland_25 event
Inflow = 24.85 cfs @ 12.13 hrs, Volume= 2.038 af
Outflow = 24.85 cfs @ 12.13 hrs, Volume= 2.038 af, Atten= 0%, Lag= 0.0 min
Primary = 24.85 cfs @ 12.13 hrs, Volume= 2.038 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Peak Elev= 100.19' @ 12.13 hrs

Flood Elev= 94.51'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.07'	18.0" Round Culvert L= 132.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 89.07' / 87.76' S= 0.0099 '/ Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=24.85 cfs @ 12.13 hrs HW=100.18' (Free Discharge)

↑**1=Culvert** (Barrel Controls 24.85 cfs @ 14.06 fps)

Summary for Pond 104R: DMH8-DMH200

Inflow Area = 6.560 ac, 27.90% Impervious, Inflow Depth = 4.00" for Cumberland_25 event
Inflow = 26.56 cfs @ 12.13 hrs, Volume= 2.185 af
Outflow = 26.56 cfs @ 12.13 hrs, Volume= 2.185 af, Atten= 0%, Lag= 0.0 min
Primary = 26.56 cfs @ 12.13 hrs, Volume= 2.185 af

Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

Peak Elev= 108.29' @ 12.13 hrs

Flood Elev= 92.36'

Device	Routing	Invert	Outlet Devices
#1	Primary	87.66'	18.0" Round Culvert L= 273.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 87.66' / 86.60' S= 0.0039 '/ Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=26.54 cfs @ 12.13 hrs HW=108.26' (Free Discharge)

↑**1=Culvert** (Barrel Controls 26.54 cfs @ 15.02 fps)

Summary for Pond 105R: DMH200-OUTLET

Inflow Area = 6.560 ac, 27.90% Impervious, Inflow Depth = 4.00" for Cumberland_25 event
Inflow = 26.56 cfs @ 12.13 hrs, Volume= 2.185 af
Outflow = 26.56 cfs @ 12.13 hrs, Volume= 2.185 af, Atten= 0%, Lag= 0.0 min
Primary = 26.56 cfs @ 12.13 hrs, Volume= 2.185 af

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Routing by Stor-Ind method, Time Span= 0.00-100.00 hrs, dt= 0.01 hrs

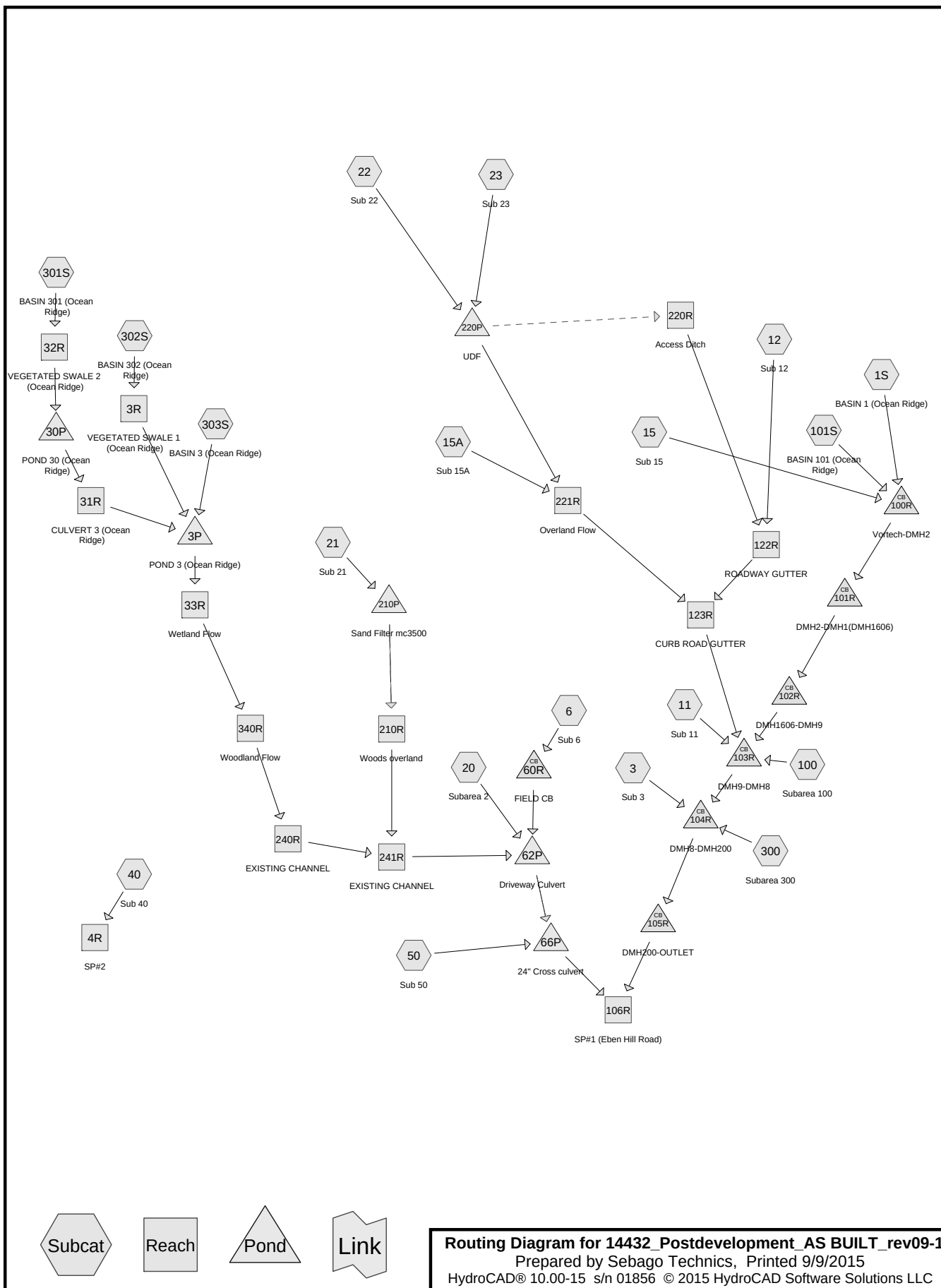
Peak Elev= 97.03' @ 12.13 hrs

Flood Elev= 89.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	86.53'	18.0" Round Culvert L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 86.53' / 84.13' S= 0.0400 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=26.54 cfs @ 12.13 hrs HW=97.01' (Free Discharge)↑ **1=Culvert** (Inlet Controls 26.54 cfs @ 15.02 fps)

Postdevelopment



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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.63	84	1 acre lots, 20% imp, HSG D (3, 6, 11, 50)
1.00	87	1/4 acre lots, 38% imp, HSG D (6, 11, 20)
2.18	80	>75% Grass cover, Good, HSG D (11, 12, 15, 15A, 20, 21, 22, 23, 50)
0.23	80	>75% Grass cover, Good, HSG D Ocean Ridge (12)
2.24	98	IMPERVIOUS (1S, 101S, 301S, 302S, 303S)
2.71	80	LAWN D (1S, 101S, 301S, 302S, 303S)
0.04	98	Paved roads OCEAN AVE (12)
0.26	98	Paved roads Ocean Ave (3, 11, 50)
0.05	98	Paved roads Ocean Ridge (12)
0.24	98	Paved roads Site Drive (15, 15A)
0.05	98	Paved roads, Site Drive (11)
0.31	98	Roadway (100, 300)
0.05	98	Roadway, Ocean Ave (20)
0.07	98	Roofs, OCEAN RIDGE (12)
2.56	98	Site Development (21, 22)
0.51	77	WOODS D (1S, 302S, 303S)
10.06	77	Woods, Good, HSG D (11, 12, 20, 40, 50)
0.03	77	Woods, Good, HSG D Ocean Ridge (12)
24.22	84	TOTAL AREA

Time span=0.00-45.00 hrs, dt=0.01 hrs, 4501 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: BASIN 1 (Ocean Ridge)	Runoff Area=2.60 ac 34.62% Impervious Runoff Depth=1.75" Flow Length=660' Tc=9.9 min CN=86 Runoff=4.67 cfs 0.379 af
Subcatchment 3: Sub 3	Runoff Area=0.30 ac 30.67% Impervious Runoff Depth=1.75" Flow Length=300' Tc=9.4 min CN=86 Runoff=0.55 cfs 0.044 af
Subcatchment 6: Sub 6	Runoff Area=0.42 ac 23.00% Impervious Runoff Depth=1.60" Flow Length=235' Tc=5.0 min CN=84 Runoff=0.82 cfs 0.056 af
Subcatchment 11: Sub 11	Runoff Area=1.88 ac 21.71% Impervious Runoff Depth=1.46" Flow Length=375' Tc=7.3 min CN=82 Runoff=3.06 cfs 0.228 af
Subcatchment 12: Sub 12	Runoff Area=2.61 ac 6.13% Impervious Runoff Depth=1.26" Flow Length=710' Tc=21.5 min CN=79 Runoff=2.47 cfs 0.275 af
Subcatchment 15: Sub 15	Runoff Area=0.27 ac 66.67% Impervious Runoff Depth=2.26" Flow Length=342' Tc=5.0 min CN=92 Runoff=0.72 cfs 0.051 af
Subcatchment 15A: Sub 15A	Runoff Area=0.09 ac 66.67% Impervious Runoff Depth=2.26" Flow Length=87' Tc=5.0 min CN=92 Runoff=0.24 cfs 0.017 af
Subcatchment 20: Subarea 2	Runoff Area=6.36 ac 4.61% Impervious Runoff Depth=1.20" Flow Length=1,435' Tc=32.5 min CN=78 Runoff=4.75 cfs 0.636 af
Subcatchment 21: Sub 21	Runoff Area=3.31 ac 63.75% Impervious Runoff Depth=2.16" Tc=5.0 min CN=91 Runoff=8.58 cfs 0.597 af
Subcatchment 22: Sub 22	Runoff Area=0.70 ac 64.29% Impervious Runoff Depth=2.26" Tc=5.0 min CN=92 Runoff=1.88 cfs 0.132 af
Subcatchment 23: Sub 23	Runoff Area=0.20 ac 0.00% Impervious Runoff Depth=1.33" Tc=5.0 min CN=80 Runoff=0.32 cfs 0.022 af
Subcatchment 40: Sub 40	Runoff Area=1.12 ac 0.00% Impervious Runoff Depth=1.14" Flow Length=250' Tc=9.1 min CN=77 Runoff=1.30 cfs 0.106 af
Subcatchment 50: Sub 50	Runoff Area=1.19 ac 14.79% Impervious Runoff Depth=1.46" Flow Length=360' Tc=9.9 min CN=82 Runoff=1.77 cfs 0.145 af
Subcatchment 100: Subarea 100	Runoff Area=0.22 ac 100.00% Impervious Runoff Depth=2.87" Flow Length=572' Tc=6.6 min CN=98 Runoff=0.65 cfs 0.053 af
Subcatchment 101S: BASIN 101 (Ocean Ridge)	Runoff Area=0.19 ac 57.89% Impervious Runoff Depth=2.08" Flow Length=155' Tc=6.4 min CN=90 Runoff=0.45 cfs 0.033 af
Subcatchment 300: Subarea 300	Runoff Area=0.09 ac 100.00% Impervious Runoff Depth=2.87" Flow Length=162' Tc=5.0 min CN=98 Runoff=0.28 cfs 0.022 af

Subcatchment 301S: BASIN 301 (Ocean Ridge)	Runoff Area=0.82 ac 45.12% Impervious Runoff Depth=1.91" Flow Length=190' Tc=9.3 min CN=88 Runoff=1.63 cfs 0.130 af
Subcatchment 302S: BASIN 302 (Ocean Ridge)	Runoff Area=1.27 ac 58.27% Impervious Runoff Depth=2.08" Flow Length=130' Slope=0.0200 '/' Tc=9.1 min CN=90 Runoff=2.76 cfs 0.220 af
Subcatchment 303S: BASIN 3 (Ocean Ridge)	Runoff Area=0.58 ac 20.69% Impervious Runoff Depth=1.53" Flow Length=150' Tc=8.1 min CN=83 Runoff=0.96 cfs 0.074 af
Reach 3R: VEGETATED SWALE 1 (Ocean Ridge)	Avg. Flow Depth=0.53' Max Vel=0.62 fps Inflow=2.76 cfs 0.220 af n=0.150 L=170.0' S=0.0120 '/' Capacity=30.82 cfs Outflow=2.49 cfs 0.220 af
Reach 4R: SP#2	Inflow=1.30 cfs 0.106 af Outflow=1.30 cfs 0.106 af
Reach 31R: CULVERT 3 (Ocean Ridge)	Avg. Flow Depth=0.40' Max Vel=4.38 fps Inflow=1.22 cfs 0.130 af 11.0" Round Pipe n=0.012 L=50.0' S=0.0100 '/' Capacity=3.06 cfs Outflow=1.22 cfs 0.130 af
Reach 32R: VEGETATED SWALE 2 (Ocean Ridge)	Avg. Flow Depth=0.39' Max Vel=0.54 fps Inflow=1.63 cfs 0.130 af n=0.150 L=115.0' S=0.0130 '/' Capacity=32.02 cfs Outflow=1.53 cfs 0.130 af
Reach 33R: Wetland Flow	Avg. Flow Depth=0.15' Max Vel=0.61 fps Inflow=1.24 cfs 0.423 af n=0.035 L=150.0' S=0.0033 '/' Capacity=52.28 cfs Outflow=1.24 cfs 0.423 af
Reach 106R: SP#1 (Eben Hill Road)	Inflow=15.83 cfs 3.091 af Outflow=15.83 cfs 3.091 af
Reach 122R: ROADWAY GUTTER	Avg. Flow Depth=0.23' Max Vel=3.61 fps Inflow=2.47 cfs 0.275 af n=0.025 L=290.0' S=0.0379 '/' Capacity=10.97 cfs Outflow=2.46 cfs 0.275 af
Reach 123R: CURB ROAD GUTTER	Avg. Flow Depth=0.15' Max Vel=3.20 fps Inflow=2.69 cfs 0.445 af n=0.013 L=80.0' S=0.0200 '/' Capacity=48.18 cfs Outflow=2.68 cfs 0.445 af
Reach 210R: Woods overland	Avg. Flow Depth=0.08' Max Vel=1.49 fps Inflow=1.47 cfs 0.579 af n=0.035 L=50.0' S=0.0400 '/' Capacity=40.80 cfs Outflow=1.47 cfs 0.578 af
Reach 220R: Access Ditch	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.025 L=310.0' S=0.0500 '/' Capacity=47.31 cfs Outflow=0.00 cfs 0.000 af
Reach 221R: Overland Flow	Avg. Flow Depth=0.03' Max Vel=1.19 fps Inflow=0.40 cfs 0.170 af n=0.040 L=180.0' S=0.1111 '/' Capacity=59.50 cfs Outflow=0.40 cfs 0.170 af
Reach 240R: EXISTING CHANNEL	Avg. Flow Depth=0.15' Max Vel=3.28 fps Inflow=1.23 cfs 0.423 af n=0.025 L=340.0' S=0.0529 '/' Capacity=57.44 cfs Outflow=1.23 cfs 0.423 af
Reach 241R: EXISTING CHANNEL	Avg. Flow Depth=0.19' Max Vel=4.57 fps Inflow=2.44 cfs 1.002 af n=0.025 L=300.0' S=0.0750 '/' Capacity=68.36 cfs Outflow=2.44 cfs 1.001 af
Reach 340R: Woodland Flow	Avg. Flow Depth=0.11' Max Vel=1.81 fps Inflow=1.24 cfs 0.423 af n=0.035 L=700.0' S=0.0421 '/' Capacity=92.76 cfs Outflow=1.23 cfs 0.423 af

Pond 3P: POND 3 (Ocean Ridge)	Peak Elev=159.97' Storage=6,326 cf Inflow=4.17 cfs 0.424 af Outflow=1.24 cfs 0.423 af
Pond 30P: POND 30 (Ocean Ridge)	Peak Elev=160.52' Storage=815 cf Inflow=1.53 cfs 0.130 af 18.0" Round Culvert n=0.012 L=30.0' S=0.0100 '/' Outflow=1.22 cfs 0.130 af
Pond 60R: FIELD CB	Peak Elev=90.46' Inflow=0.82 cfs 0.056 af 12.0" Round Culvert n=0.012 L=110.0' S=0.0091 '/' Outflow=0.82 cfs 0.056 af
Pond 62P: Driveway Culvert	Peak Elev=89.27' Storage=476 cf Inflow=6.96 cfs 1.693 af Primary=6.80 cfs 1.693 af Secondary=0.00 cfs 0.000 af Outflow=6.80 cfs 1.693 af
Pond 66P: 24" Cross culvert	Peak Elev=85.91' Storage=51 cf Inflow=7.30 cfs 1.838 af Primary=7.30 cfs 1.838 af Secondary=0.00 cfs 0.000 af Outflow=7.30 cfs 1.838 af
Pond 100R: Vortech-DMH2	Peak Elev=108.20' Inflow=5.64 cfs 0.462 af 18.0" Round Culvert n=0.012 L=318.0' S=0.0267 '/' Outflow=5.64 cfs 0.462 af
Pond 101R: DMH2-DMH1(DMH1606)	Peak Elev=99.58' Inflow=5.64 cfs 0.462 af 18.0" Round Culvert n=0.012 L=177.0' S=0.0391 '/' Outflow=5.64 cfs 0.462 af
Pond 102R: DMH1606-DMH9	Peak Elev=92.50' Inflow=5.64 cfs 0.462 af 18.0" Round Culvert n=0.012 L=110.0' S=0.0185 '/' Outflow=5.64 cfs 0.462 af
Pond 103R: DMH9-DMH8	Peak Elev=91.36' Inflow=10.55 cfs 1.188 af 18.0" Round Culvert n=0.012 L=132.0' S=0.0099 '/' Outflow=10.55 cfs 1.188 af
Pond 104R: DMH8-DMH200	Peak Elev=91.77' Inflow=11.32 cfs 1.253 af 18.0" Round Culvert n=0.012 L=273.0' S=0.0039 '/' Outflow=11.32 cfs 1.253 af
Pond 105R: DMH200-OUTLET	Peak Elev=89.05' Inflow=11.32 cfs 1.253 af 18.0" Round Culvert n=0.012 L=60.0' S=0.0400 '/' Outflow=11.32 cfs 1.253 af
Pond 210P: Sand Filter mc3500	Peak Elev=127.36' Storage=12,652 cf Inflow=8.58 cfs 0.597 af Outflow=1.47 cfs 0.579 af
Pond 220P: UDF	Peak Elev=126.19' Storage=3,249 cf Inflow=2.19 cfs 0.154 af Primary=0.36 cfs 0.153 af Secondary=0.00 cfs 0.000 af Outflow=0.36 cfs 0.153 af
Total Runoff Area = 24.22 ac Runoff Volume = 3.218 af Average Runoff Depth = 1.59"	
72.85% Pervious = 17.64 ac 27.15% Impervious = 6.58 ac	

Summary for Subcatchment 1S: BASIN 1 (Ocean Ridge)

Runoff = 4.67 cfs @ 12.14 hrs, Volume= 0.379 af, Depth= 1.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_02 Rainfall=3.10"

Area (ac)	CN	Description
* 0.90	98	IMPERVIOUS
* 0.38	77	WOODS D
* 1.32	80	LAWN D
2.60	86	Weighted Average
1.70		65.38% Pervious Area
0.90		34.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0200	0.10		Sheet Flow, OVERLAND FLOW Grass: Dense n= 0.240 P2= 3.00"
0.4	140	0.0430	5.46	65.53	Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.060
0.2	90	0.0550	6.18	74.11	Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.060
0.8	380	0.0900	7.45	64.10	Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch Bot.W=2.00' D=2.00' Z= 2.0 & 0.3 '/' Top.W=6.60' n= 0.060
9.9	660	Total			

Summary for Subcatchment 3: Sub 3

Runoff = 0.55 cfs @ 12.13 hrs, Volume= 0.044 af, Depth= 1.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_02 Rainfall=3.10"

Area (ac)	CN	Description
* 0.04	98	Paved roads Ocean Ave
0.26	84	1 acre lots, 20% imp, HSG D
0.30	86	Weighted Average
0.21		69.33% Pervious Area
0.09		30.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	60	0.1000	0.13		Sheet Flow, A-B Woods: Light underbrush n= 0.400 P2= 3.00"
1.2	160	0.1000	2.21		Shallow Concentrated Flow, B-C Short Grass Pasture Kv= 7.0 fps
0.5	80	0.0150	2.49		Shallow Concentrated Flow, C-D Paved Kv= 20.3 fps
9.4	300	Total			

Summary for Subcatchment 6: Sub 6

Runoff = 0.82 cfs @ 12.08 hrs, Volume= 0.056 af, Depth= 1.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

Area (ac)	CN	Description
0.35	84	1 acre lots, 20% imp, HSG D
0.07	87	1/4 acre lots, 38% imp, HSG D
0.42	84	Weighted Average
0.32		77.00% Pervious Area
0.10		23.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	25	0.1500	0.13		Sheet Flow, A-B Woods: Light underbrush n= 0.400 P2= 3.00"
0.4	60	0.2300	2.40		Shallow Concentrated Flow, B-C Woodland Kv= 5.0 fps
0.4	150	0.0400	5.86	41.05	Trap/Vee/Rect Channel Flow, C-D Bot.W=2.00' D=1.00' Z= 5.0 '/' Top.W=12.00' n= 0.035
4.1	235	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 11: Sub 11

Runoff = 3.06 cfs @ 12.11 hrs, Volume= 0.228 af, Depth= 1.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

Area (ac)	CN	Description
1.04	77	Woods, Good, HSG D
* 0.19	98	Paved roads Ocean Ave
* 0.05	98	Paved roads, Site Drive
0.02	80	>75% Grass cover, Good, HSG D
0.29	84	1 acre lots, 20% imp, HSG D
0.29	87	1/4 acre lots, 38% imp, HSG D
1.88	82	Weighted Average
1.47		78.29% Pervious Area
0.41		21.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	40	0.1000	0.12		Sheet Flow, A-B Woods: Light underbrush n= 0.400 P2= 3.00"
0.7	95	0.2000	2.24		Shallow Concentrated Flow, B-C Woodland Kv= 5.0 fps
1.0	240	0.0400	4.06		Shallow Concentrated Flow, C-D Paved Kv= 20.3 fps
7.3	375	Total			

Summary for Subcatchment 12: Sub 12

Runoff = 2.47 cfs @ 12.31 hrs, Volume= 0.275 af, Depth= 1.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_02 Rainfall=3.10"

Area (ac)	CN	Description
2.01	77	Woods, Good, HSG D
0.18	80	>75% Grass cover, Good, HSG D
* 0.04	98	Paved roads OCEAN AVE
* 0.07	98	Roofs, OCEAN RIDGE
* 0.05	98	Paved roads Ocean Ridge
* 0.03	77	Woods, Good, HSG D Ocean Ridge
* 0.23	80	>75% Grass cover, Good, HSG D Ocean Ridge
2.61	79	Weighted Average
2.45		93.87% Pervious Area
0.16		6.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.1	110	0.0400	0.10		Sheet Flow, A-B Woods: Light underbrush n= 0.400 P2= 3.00"
2.8	270	0.1000	1.58		Shallow Concentrated Flow, B-C Woodland Kv= 5.0 fps
0.6	330	0.0500	9.46	47.31	Trap/Vee/Rect Channel Flow, C-D Bot.W=2.00' D=1.00' Z= 3.0 '/' Top.W=8.00' n= 0.025 Earth, clean & winding
21.5	710	Total			

Summary for Subcatchment 15: Sub 15

Runoff = 0.72 cfs @ 12.07 hrs, Volume= 0.051 af, Depth= 2.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_02 Rainfall=3.10"

Area (ac)	CN	Description
* 0.18	98	Paved roads Site Drive
0.09	80	>75% Grass cover, Good, HSG D
0.27	92	Weighted Average
0.09		33.33% Pervious Area
0.18		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		Sheet Flow, A-B
					Smooth surfaces n= 0.011 P2= 3.00"
1.2	330	0.0500	4.54		Shallow Concentrated Flow, B-C
					Paved Kv= 20.3 fps
3.6					Direct Entry, C-D
5.0	342	Total			

Summary for Subcatchment 15A: Sub 15A

Runoff = 0.24 cfs @ 12.07 hrs, Volume= 0.017 af, Depth= 2.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_02 Rainfall=3.10"

Area (ac)	CN	Description
* 0.06	98	Paved roads Site Drive
0.03	80	>75% Grass cover, Good, HSG D
0.09	92	Weighted Average
0.03		33.33% Pervious Area
0.06		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		Sheet Flow, A-B
					Smooth surfaces n= 0.011 P2= 3.00"
0.3	75	0.0500	4.54		Shallow Concentrated Flow, B-C
					Paved Kv= 20.3 fps
4.5					Direct Entry, C-D
5.0	87	Total			

Summary for Subcatchment 20: Subarea 2

Runoff = 4.75 cfs @ 12.46 hrs, Volume= 0.636 af, Depth= 1.20"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_02 Rainfall=3.10"

Area (ac)	CN	Description
0.64	87	1/4 acre lots, 38% imp, HSG D
0.12	80	>75% Grass cover, Good, HSG D
* 0.05	98	Roadway, Ocean Ave
5.55	77	Woods, Good, HSG D
6.36	78	Weighted Average
6.07		95.39% Pervious Area
0.29		4.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	110	0.0800	0.13		Sheet Flow, Overland Woods
					Woods: Light underbrush n= 0.400 P2= 3.00"
18.8	1,325	0.0550	1.17		Shallow Concentrated Flow, Overland Woods
					Woodland Kv= 5.0 fps
32.5	1,435	Total			

Summary for Subcatchment 21: Sub 21

Runoff = 8.58 cfs @ 12.07 hrs, Volume= 0.597 af, Depth= 2.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_02 Rainfall=3.10"

Area (ac)	CN	Description
1.20	80	>75% Grass cover, Good, HSG D
* 2.11	98	Site Development
3.31	91	Weighted Average
1.20		36.25% Pervious Area
2.11		63.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment 22: Sub 22

Runoff = 1.88 cfs @ 12.07 hrs, Volume= 0.132 af, Depth= 2.26"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_02 Rainfall=3.10"

Area (ac)	CN	Description
* 0.45	98	Site Development
0.25	80	>75% Grass cover, Good, HSG D
0.70	92	Weighted Average
0.25		35.71% Pervious Area
0.45		64.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment 23: Sub 23

Runoff = 0.32 cfs @ 12.08 hrs, Volume= 0.022 af, Depth= 1.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

Area (ac)	CN	Description
0.20	80	>75% Grass cover, Good, HSG D
0.20		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment 40: Sub 40

Runoff = 1.30 cfs @ 12.14 hrs, Volume= 0.106 af, Depth= 1.14"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_02 Rainfall=3.10"

Area (ac)	CN	Description
1.12	77	Woods, Good, HSG D
1.12		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	50	0.1000	0.12		Sheet Flow, A-B
					Woods: Light underbrush n= 0.400 P2= 3.00"
2.4	200	0.0750	1.37		Shallow Concentrated Flow, B-C
					Woodland Kv= 5.0 fps
9.1	250	Total			

Summary for Subcatchment 50: Sub 50

Runoff = 1.77 cfs @ 12.14 hrs, Volume= 0.145 af, Depth= 1.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_02 Rainfall=3.10"

Area (ac)	CN	Description
0.34	77	Woods, Good, HSG D
0.09	80	>75% Grass cover, Good, HSG D
* 0.03	98	Paved roads Ocean Ave
0.73	84	1 acre lots, 20% imp, HSG D
1.19	82	Weighted Average
1.01		85.21% Pervious Area
0.18		14.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.1200	0.13		Sheet Flow, A-B
					Woods: Light underbrush n= 0.400 P2= 3.00"
3.7	310	0.0800	1.41		Shallow Concentrated Flow, B-C
					Woodland Kv= 5.0 fps
9.9	360	Total			

Summary for Subcatchment 100: Subarea 100

Runoff = 0.65 cfs @ 12.09 hrs, Volume= 0.053 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_02 Rainfall=3.10"

Area (ac)	CN	Description
* 0.22	98	Roadway
0.22		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		Sheet Flow, Road Crown
					Smooth surfaces n= 0.011 P2= 3.00"
5.9	480	0.0380	1.36		Shallow Concentrated Flow, SHALLOW RD DITCH
					Short Grass Pasture Kv= 7.0 fps
0.5	80	0.0200	2.87		Shallow Concentrated Flow, ROAD GUTTER
					Paved Kv= 20.3 fps
6.6	572	Total			

Summary for Subcatchment 101S: BASIN 101 (Ocean Ridge)

Runoff = 0.45 cfs @ 12.09 hrs, Volume= 0.033 af, Depth= 2.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_02 Rainfall=3.10"

Area (ac)	CN	Description
* 0.11	98	IMPERVIOUS
* 0.08	80	LAWN D
0.19	90	Weighted Average
0.08		42.11% Pervious Area
0.11		57.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	30	0.0200	0.09		Sheet Flow, Segment ID: AB, Lawn Grass: Dense n= 0.240 P2= 3.00"
0.1	25	0.0200	2.87		Shallow Concentrated Flow, Segment ID: BC, Driveway Paved Kv= 20.3 fps
0.7	100	0.1200	2.42		Shallow Concentrated Flow, Segment ID: grass slope Short Grass Pasture Kv= 7.0 fps
6.4	155	Total			

Summary for Subcatchment 300: Subarea 300

Runoff = 0.28 cfs @ 12.07 hrs, Volume= 0.022 af, Depth= 2.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_02 Rainfall=3.10"

Area (ac)	CN	Description
* 0.09	98	Roadway
0.09		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		Sheet Flow, Road Crown Smooth surfaces n= 0.011 P2= 3.00"
1.1	150	0.0130	2.31		Shallow Concentrated Flow, Gutter flow Paved Kv= 20.3 fps
3.7					Direct Entry,
5.0	162	Total			

Summary for Subcatchment 301S: BASIN 301 (Ocean Ridge)

Runoff = 1.63 cfs @ 12.13 hrs, Volume= 0.130 af, Depth= 1.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_02 Rainfall=3.10"

Area (ac)	CN	Description
* 0.37	98	IMPERVIOUS
* 0.45	80	LAWN D
0.82	88	Weighted Average
0.45		54.88% Pervious Area
0.37		45.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	60	0.0300	0.12		Sheet Flow, Segment ID: AB Grass: Dense n= 0.240 P2= 3.00"
0.4	50	0.0200	2.12		Shallow Concentrated Flow, Segment ID: BC Grassed Waterway Kv= 15.0 fps
0.6	80	0.0200	2.12		Shallow Concentrated Flow, Segment ID: CD Grassed Waterway Kv= 15.0 fps
9.3	190	Total			

Summary for Subcatchment 302S: BASIN 302 (Ocean Ridge)

Runoff = 2.76 cfs @ 12.13 hrs, Volume= 0.220 af, Depth= 2.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_02 Rainfall=3.10"

Area (ac)	CN	Description
* 0.74	98	IMPERVIOUS
* 0.05	77	WOODS D
* 0.48	80	LAWN D
1.27	90	Weighted Average
0.53		41.73% Pervious Area
0.74		58.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0200	0.10		Sheet Flow, Segment ID: AB Grass: Dense n= 0.240 P2= 3.00"
0.2	30	0.0200	2.87		Shallow Concentrated Flow, Segment ID: BC Paved Kv= 20.3 fps
0.4	50	0.0200	2.12		Shallow Concentrated Flow, Segment ID: Grassed Waterway Kv= 15.0 fps
9.1	130	Total			

Summary for Subcatchment 303S: BASIN 3 (Ocean Ridge)

Runoff = 0.96 cfs @ 12.12 hrs, Volume= 0.074 af, Depth= 1.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_02 Rainfall=3.10"

Area (ac)	CN	Description
* 0.12	98	IMPERVIOUS
* 0.08	77	WOODS D
* 0.38	80	LAWN D
0.58	83	Weighted Average
0.46		79.31% Pervious Area
0.12		20.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	30	0.0300	0.07		Sheet Flow, Segment ID: AB
					Woods: Light underbrush n= 0.400 P2= 3.00"
0.9	120	0.0200	2.12		Shallow Concentrated Flow, Segment ID: BC
					Grassed Waterway Kv= 15.0 fps
8.1	150	Total			

Summary for Reach 3R: VEGETATED SWALE 1 (Ocean Ridge)

Inflow Area = 1.27 ac, 58.27% Impervious, Inflow Depth = 2.08" for Cumberland_02 event

Inflow = 2.76 cfs @ 12.13 hrs, Volume= 0.220 af

Outflow = 2.49 cfs @ 12.25 hrs, Volume= 0.220 af, Atten= 10%, Lag= 7.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Max. Velocity= 0.62 fps, Min. Travel Time= 4.6 min

Avg. Velocity= 0.17 fps, Avg. Travel Time= 17.1 min

Peak Storage= 685 cf @ 12.17 hrs

Average Depth at Peak Storage= 0.53'

Bank-Full Depth= 2.00' Flow Area= 24.0 sf, Capacity= 30.82 cfs

6.00' x 2.00' deep channel, n= 0.150

Side Slope Z-value= 3.0 '/' Top Width= 18.00'

Length= 170.0' Slope= 0.0120 '/'

Inlet Invert= 0.00', Outlet Invert= -2.04'



Summary for Reach 4R: SP#2

Inflow Area = 1.12 ac, 0.00% Impervious, Inflow Depth = 1.14" for Cumberland_02 event
 Inflow = 1.30 cfs @ 12.14 hrs, Volume= 0.106 af
 Outflow = 1.30 cfs @ 12.14 hrs, Volume= 0.106 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Summary for Reach 31R: CULVERT 3 (Ocean Ridge)

Inflow Area = 0.82 ac, 45.12% Impervious, Inflow Depth = 1.91" for Cumberland_02 event
 Inflow = 1.22 cfs @ 12.32 hrs, Volume= 0.130 af
 Outflow = 1.22 cfs @ 12.33 hrs, Volume= 0.130 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs / 2

Max. Velocity= 4.38 fps, Min. Travel Time= 0.2 min

Avg. Velocity = 1.06 fps, Avg. Travel Time= 0.8 min

Peak Storage= 14 cf @ 12.32 hrs

Average Depth at Peak Storage= 0.40'

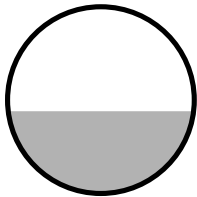
Bank-Full Depth= 0.92' Flow Area= 0.7 sf, Capacity= 3.06 cfs

11.0" Round Pipe

n= 0.012

Length= 50.0' Slope= 0.0100 '/'

Inlet Invert= 0.00', Outlet Invert= -0.50'

**Summary for Reach 32R: VEGETATED SWALE 2 (Ocean Ridge)**

Inflow Area = 0.82 ac, 45.12% Impervious, Inflow Depth = 1.91" for Cumberland_02 event
 Inflow = 1.63 cfs @ 12.13 hrs, Volume= 0.130 af
 Outflow = 1.53 cfs @ 12.23 hrs, Volume= 0.130 af, Atten= 6%, Lag= 5.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Max. Velocity= 0.54 fps, Min. Travel Time= 3.5 min

Avg. Velocity = 0.15 fps, Avg. Travel Time= 12.7 min

Peak Storage= 325 cf @ 12.17 hrs

Average Depth at Peak Storage= 0.39'

Bank-Full Depth= 2.00' Flow Area= 24.0 sf, Capacity= 32.02 cfs

6.00' x 2.00' deep channel, n= 0.150
Side Slope Z-value= 3.0 '/' Top Width= 18.00'
Length= 115.0' Slope= 0.0130 '/'
Inlet Invert= 0.00', Outlet Invert= -1.49'



Summary for Reach 33R: Wetland Flow

Inflow Area = 2.67 ac, 46.07% Impervious, Inflow Depth > 1.90" for Cumberland_02 event
Inflow = 1.24 cfs @ 12.75 hrs, Volume= 0.423 af
Outflow = 1.24 cfs @ 12.87 hrs, Volume= 0.423 af, Atten= 0%, Lag= 7.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Max. Velocity= 0.61 fps, Min. Travel Time= 4.1 min
Avg. Velocity= 0.21 fps, Avg. Travel Time= 12.0 min

Peak Storage= 303 cf @ 12.81 hrs
Average Depth at Peak Storage= 0.15'
Bank-Full Depth= 1.00' Flow Area= 30.0 sf, Capacity= 52.28 cfs

10.00' x 1.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 20.0 '/' Top Width= 50.00'
Length= 150.0' Slope= 0.0033 '/'
Inlet Invert= 158.00', Outlet Invert= 157.50'



Summary for Reach 106R: SP#1 (Eben Hill Road)

Inflow Area = 23.10 ac, 28.47% Impervious, Inflow Depth > 1.61" for Cumberland_02 event
Inflow = 15.83 cfs @ 12.13 hrs, Volume= 3.091 af
Outflow = 15.83 cfs @ 12.13 hrs, Volume= 3.091 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Summary for Reach 122R: ROADWAY GUTTER

Inflow Area = 2.61 ac, 6.13% Impervious, Inflow Depth = 1.26" for Cumberland_02 event
 Inflow = 2.47 cfs @ 12.31 hrs, Volume= 0.275 af
 Outflow = 2.46 cfs @ 12.35 hrs, Volume= 0.275 af, Atten= 0%, Lag= 2.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Max. Velocity= 3.61 fps, Min. Travel Time= 1.3 min

Avg. Velocity = 1.30 fps, Avg. Travel Time= 3.7 min

Peak Storage= 198 cf @ 12.33 hrs

Average Depth at Peak Storage= 0.23'

Bank-Full Depth= 0.50' Flow Area= 2.0 sf, Capacity= 10.97 cfs

2.00' x 0.50' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 3.0 5.0 '/' Top Width= 6.00'

Length= 290.0' Slope= 0.0379 '/'

Inlet Invert= 106.50', Outlet Invert= 95.50'

**Summary for Reach 123R: CURB ROAD GUTTER**

Inflow Area = 3.60 ac, 18.61% Impervious, Inflow Depth > 1.48" for Cumberland_02 event
 Inflow = 2.69 cfs @ 12.37 hrs, Volume= 0.445 af
 Outflow = 2.68 cfs @ 12.39 hrs, Volume= 0.445 af, Atten= 0%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Max. Velocity= 3.20 fps, Min. Travel Time= 0.4 min

Avg. Velocity = 1.13 fps, Avg. Travel Time= 1.2 min

Peak Storage= 67 cf @ 12.38 hrs

Average Depth at Peak Storage= 0.15'

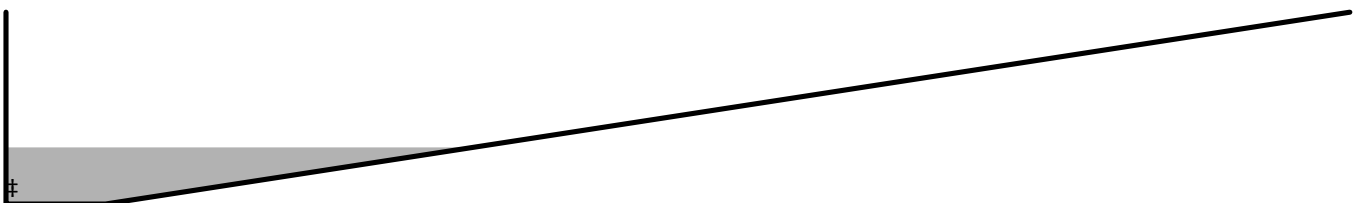
Bank-Full Depth= 0.50' Flow Area= 7.3 sf, Capacity= 48.18 cfs

2.00' x 0.50' deep channel, n= 0.013 Asphalt, smooth

Side Slope Z-value= 0.0 50.0 '/' Top Width= 27.00'

Length= 80.0' Slope= 0.0200 '/'

Inlet Invert= 95.50', Outlet Invert= 93.90'



Summary for Reach 210R: Woods overland

Inflow Area = 3.31 ac, 63.75% Impervious, Inflow Depth > 2.10" for Cumberland_02 event
 Inflow = 1.47 cfs @ 12.53 hrs, Volume= 0.579 af
 Outflow = 1.47 cfs @ 12.55 hrs, Volume= 0.578 af, Atten= 0%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Max. Velocity= 1.49 fps, Min. Travel Time= 0.6 min

Avg. Velocity = 0.64 fps, Avg. Travel Time= 1.3 min

Peak Storage= 49 cf @ 12.54 hrs

Average Depth at Peak Storage= 0.08'

Bank-Full Depth= 0.50' Flow Area= 10.0 sf, Capacity= 40.80 cfs

10.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds

Side Slope Z-value= 20.0 '/' Top Width= 30.00'

Length= 50.0' Slope= 0.0400 '/'

Inlet Invert= 112.00', Outlet Invert= 110.00'

**Summary for Reach 220R: Access Ditch**

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min

Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs

Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 1.00' Flow Area= 5.0 sf, Capacity= 47.31 cfs

2.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 3.0 '/' Top Width= 8.00'

Length= 310.0' Slope= 0.0500 '/'

Inlet Invert= 126.00', Outlet Invert= 110.50'



Summary for Reach 221R: Overland Flow

Inflow Area = 0.99 ac, 51.52% Impervious, Inflow Depth > 2.06" for Cumberland_02 event
 Inflow = 0.40 cfs @ 12.51 hrs, Volume= 0.170 af
 Outflow = 0.40 cfs @ 12.58 hrs, Volume= 0.170 af, Atten= 1%, Lag= 4.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Max. Velocity= 1.19 fps, Min. Travel Time= 2.5 min

Avg. Velocity = 0.52 fps, Avg. Travel Time= 5.7 min

Peak Storage= 60 cf @ 12.54 hrs

Average Depth at Peak Storage= 0.03'

Bank-Full Depth= 0.50' Flow Area= 10.0 sf, Capacity= 59.50 cfs

10.00' x 0.50' deep channel, n= 0.040 Woods Overland flow

Side Slope Z-value= 20.0 '/' Top Width= 30.00'

Length= 180.0' Slope= 0.1111 '/'

Inlet Invert= 120.00', Outlet Invert= 100.00'

**Summary for Reach 240R: EXISTING CHANNEL**

Inflow Area = 2.67 ac, 46.07% Impervious, Inflow Depth > 1.90" for Cumberland_02 event
 Inflow = 1.23 cfs @ 13.07 hrs, Volume= 0.423 af
 Outflow = 1.23 cfs @ 13.12 hrs, Volume= 0.423 af, Atten= 0%, Lag= 3.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Max. Velocity= 3.28 fps, Min. Travel Time= 1.7 min

Avg. Velocity = 1.14 fps, Avg. Travel Time= 5.0 min

Peak Storage= 128 cf @ 13.09 hrs

Average Depth at Peak Storage= 0.15'

Bank-Full Depth= 1.00' Flow Area= 6.0 sf, Capacity= 57.44 cfs

2.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 4.0 '/' Top Width= 10.00'

Length= 340.0' Slope= 0.0529 '/'

Inlet Invert= 128.00', Outlet Invert= 110.00'



Summary for Reach 241R: EXISTING CHANNEL

Inflow Area = 5.98 ac, 55.85% Impervious, Inflow Depth > 2.01" for Cumberland_02 event
Inflow = 2.44 cfs @ 12.81 hrs, Volume= 1.002 af
Outflow = 2.44 cfs @ 12.84 hrs, Volume= 1.001 af, Atten= 0%, Lag= 1.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Max. Velocity= 4.57 fps, Min. Travel Time= 1.1 min

Avg. Velocity = 1.99 fps, Avg. Travel Time= 2.5 min

Peak Storage= 160 cf @ 12.82 hrs

Average Depth at Peak Storage= 0.19'

Bank-Full Depth= 1.00' Flow Area= 6.0 sf, Capacity= 68.36 cfs

2.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 4.0 '/' Top Width= 10.00'

Length= 300.0' Slope= 0.0750 '/'

Inlet Invert= 110.00', Outlet Invert= 87.50'

**Summary for Reach 340R: Woodland Flow**

Inflow Area = 2.67 ac, 46.07% Impervious, Inflow Depth > 1.90" for Cumberland_02 event
Inflow = 1.24 cfs @ 12.87 hrs, Volume= 0.423 af
Outflow = 1.23 cfs @ 13.07 hrs, Volume= 0.423 af, Atten= 0%, Lag= 11.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Max. Velocity= 1.81 fps, Min. Travel Time= 6.5 min

Avg. Velocity = 0.65 fps, Avg. Travel Time= 18.0 min

Peak Storage= 478 cf @ 12.96 hrs

Average Depth at Peak Storage= 0.11'

Bank-Full Depth= 1.00' Flow Area= 15.0 sf, Capacity= 92.76 cfs

5.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds

Side Slope Z-value= 10.0 '/' Top Width= 25.00'

Length= 700.0' Slope= 0.0421 '/'

Inlet Invert= 157.50', Outlet Invert= 128.00'



Summary for Pond 3P: POND 3 (Ocean Ridge)

Inflow Area = 2.67 ac, 46.07% Impervious, Inflow Depth = 1.91" for Cumberland_02 event
 Inflow = 4.17 cfs @ 12.26 hrs, Volume= 0.424 af
 Outflow = 1.24 cfs @ 12.75 hrs, Volume= 0.423 af, Atten= 70%, Lag= 29.7 min
 Primary = 1.24 cfs @ 12.75 hrs, Volume= 0.423 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
 Peak Elev= 159.97' @ 12.75 hrs Surf.Area= 4,273 sf Storage= 6,326 cf

Plug-Flow detention time= 80.6 min calculated for 0.423 af (100% of inflow)
 Center-of-Mass det. time= 79.6 min (919.1 - 839.5)

Volume	Invert	Avail.Storage	Storage Description
#1	158.00'	21,813 cf	Custom Stage Data (Prismatic) Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
158.00	2,113	0	0
160.00	4,304	6,417	6,417
162.00	6,739	11,043	17,460
162.60	7,772	4,353	21,813

Device	Routing	Invert	Outlet Devices
#1	Primary	158.00'	6.0" Vert. Orifice/Grate C= 0.600
#2	Primary	160.00'	9.0" Vert. Orifice/Grate C= 0.600
#3	Primary	161.00'	4.5" Vert. Orifice/Grate C= 0.600
#4	Primary	161.50'	20.0' long Broad-Crested Rectangular Weir X 1.81
			Head (feet) 0.50 1.00 1.50
			Coef. (English) 1.60 1.80 1.90

Primary OutFlow Max=1.24 cfs @ 12.75 hrs HW=159.97' (Free Discharge)

1=Orifice/Grate (Orifice Controls 1.24 cfs @ 6.32 fps)
 2=Orifice/Grate (Controls 0.00 cfs)
 3=Orifice/Grate (Controls 0.00 cfs)
 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 30P: POND 30 (Ocean Ridge)

Inflow Area = 0.82 ac, 45.12% Impervious, Inflow Depth = 1.91" for Cumberland_02 event
 Inflow = 1.53 cfs @ 12.23 hrs, Volume= 0.130 af
 Outflow = 1.22 cfs @ 12.32 hrs, Volume= 0.130 af, Atten= 20%, Lag= 5.7 min
 Primary = 1.22 cfs @ 12.32 hrs, Volume= 0.130 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
 Peak Elev= 160.52' @ 12.32 hrs Surf.Area= 1,371 sf Storage= 815 cf

Plug-Flow detention time= 33.0 min calculated for 0.130 af (100% of inflow)
 Center-of-Mass det. time= 33.1 min (864.0 - 831.0)

Volume	Invert	Avail.Storage	Storage Description
#1	160.00'	3,156 cf	Custom Stage Data (Prismatic) Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
160.00	1,150	0	0
162.00	2,006	3,156	3,156

Device	Routing	Invert	Outlet Devices
#1	Primary	160.00'	18.0" Round Culvert L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 160.00' / 159.70' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=1.22 cfs @ 12.32 hrs HW=160.52' (Free Discharge)

↑**1=Culvert** (Barrel Controls 1.22 cfs @ 3.38 fps)

Summary for Pond 60R: FIELD CB

Inflow Area = 0.42 ac, 23.00% Impervious, Inflow Depth = 1.60" for Cumberland_02 event
 Inflow = 0.82 cfs @ 12.08 hrs, Volume= 0.056 af
 Outflow = 0.82 cfs @ 12.08 hrs, Volume= 0.056 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.82 cfs @ 12.08 hrs, Volume= 0.056 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Peak Elev= 90.46' @ 12.08 hrs

Flood Elev= 91.81'

Device	Routing	Invert	Outlet Devices
#1	Primary	90.00'	12.0" Round Culvert L= 110.0' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 90.00' / 89.00' S= 0.0091 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=0.81 cfs @ 12.08 hrs HW=90.46' (Free Discharge)

↑**1=Culvert** (Inlet Controls 0.81 cfs @ 2.31 fps)

Summary for Pond 62P: Driveway Culvert

Inflow Area = 12.76 ac, 29.23% Impervious, Inflow Depth > 1.59" for Cumberland_02 event
 Inflow = 6.96 cfs @ 12.53 hrs, Volume= 1.693 af
 Outflow = 6.80 cfs @ 12.59 hrs, Volume= 1.693 af, Atten= 2%, Lag= 4.0 min
 Primary = 6.80 cfs @ 12.59 hrs, Volume= 1.693 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Peak Elev= 89.27' @ 12.59 hrs Surf.Area= 1,151 sf Storage= 476 cf

Plug-Flow detention time= 0.3 min calculated for 1.693 af (100% of inflow)

Center-of-Mass det. time= 0.3 min (1,040.4 - 1,040.1)

Volume	Invert	Avail.Storage	Storage Description
#1	88.00'	2,197 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
88.00	47	50.0	0	0	47
89.00	540	284.0	249	249	6,269
90.00	3,860	500.0	1,948	2,197	19,750

Device	Routing	Invert	Outlet Devices
#1	Primary	87.50'	18.0" Round Culvert L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 87.50' / 87.00' S= 0.0143 '/ Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Secondary	89.50'	22.0' long x 13.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.60 2.64 2.70 2.66 2.65 2.66 2.65 2.63

Primary OutFlow Max=6.80 cfs @ 12.59 hrs HW=89.27' (Free Discharge)

↑**1=Culvert** (Inlet Controls 6.80 cfs @ 3.85 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=88.00' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 66P: 24" Cross culvert

Inflow Area = 13.95 ac, 28.00% Impervious, Inflow Depth > 1.58" for Cumberland_02 event
 Inflow = 7.30 cfs @ 12.54 hrs, Volume= 1.838 af
 Outflow = 7.30 cfs @ 12.54 hrs, Volume= 1.838 af, Atten= 0%, Lag= 0.1 min
 Primary = 7.30 cfs @ 12.54 hrs, Volume= 1.838 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs / 6
 Peak Elev= 85.91' @ 12.54 hrs Surf.Area= 59 sf Storage= 51 cf

Plug-Flow detention time= 0.3 min calculated for 1.837 af (100% of inflow)

Center-of-Mass det. time= 0.1 min (1,024.9 - 1,024.7)

Volume	Invert	Avail.Storage	Storage Description
#1	84.00'	1,817 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
84.00	5	5.0	0	0	5
85.00	25	25.0	14	14	55
86.00	63	40.0	43	56	139
87.00	425	195.0	217	273	3,040
88.00	1,210	305.0	784	1,058	7,424
88.50	1,850	330.0	759	1,817	8,697

Device	Routing	Invert	Outlet Devices
#1	Primary	84.45'	24.0" Round Culvert L= 65.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 84.45' / 84.13' S= 0.0049 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Secondary	88.50'	12.0' long x 12.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=7.30 cfs @ 12.54 hrs HW=85.91' (Free Discharge)

↑**1=Culvert** (Barrel Controls 7.30 cfs @ 4.16 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=84.00' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 100R: Vortech-DMH2

Inflow Area = 3.06 ac, 38.89% Impervious, Inflow Depth = 1.81" for Cumberland_02 event
 Inflow = 5.64 cfs @ 12.13 hrs, Volume= 0.462 af
 Outflow = 5.64 cfs @ 12.13 hrs, Volume= 0.462 af, Atten= 0%, Lag= 0.0 min
 Primary = 5.64 cfs @ 12.13 hrs, Volume= 0.462 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Peak Elev= 108.20' @ 12.13 hrs

Flood Elev= 112.16'

Device	Routing	Invert	Outlet Devices
#1	Primary	107.00'	18.0" Round Culvert L= 318.0' Ke= 0.500 Inlet / Outlet Invert= 107.00' / 98.52' S= 0.0267 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=5.64 cfs @ 12.13 hrs HW=108.20' (Free Discharge)

↑**1=Culvert** (Inlet Controls 5.64 cfs @ 3.73 fps)

Summary for Pond 101R: DMH2-DMH1(DMH1606)

Inflow Area = 3.06 ac, 38.89% Impervious, Inflow Depth = 1.81" for Cumberland_02 event
 Inflow = 5.64 cfs @ 12.13 hrs, Volume= 0.462 af
 Outflow = 5.64 cfs @ 12.13 hrs, Volume= 0.462 af, Atten= 0%, Lag= 0.0 min
 Primary = 5.64 cfs @ 12.13 hrs, Volume= 0.462 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Peak Elev= 99.58' @ 12.13 hrs

Flood Elev= 103.21'

Device	Routing	Invert	Outlet Devices
#1	Primary	98.38'	18.0" Round Culvert L= 177.0' Ke= 0.500 Inlet / Outlet Invert= 98.38' / 91.46' S= 0.0391 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=5.64 cfs @ 12.13 hrs HW=99.58' (Free Discharge)

↑**1=Culvert** (Inlet Controls 5.64 cfs @ 3.73 fps)

Summary for Pond 102R: DMH1606-DMH9

Inflow Area = 3.06 ac, 38.89% Impervious, Inflow Depth = 1.81" for Cumberland_02 event
 Inflow = 5.64 cfs @ 12.13 hrs, Volume= 0.462 af
 Outflow = 5.64 cfs @ 12.13 hrs, Volume= 0.462 af, Atten= 0%, Lag= 0.0 min
 Primary = 5.64 cfs @ 12.13 hrs, Volume= 0.462 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
 Peak Elev= 92.50' @ 12.13 hrs
 Flood Elev= 96.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	91.30'	18.0" Round Culvert L= 110.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 91.30' / 89.27' S= 0.0185 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=5.64 cfs @ 12.13 hrs HW=92.50' (Free Discharge)
 ↑**1=Culvert** (Inlet Controls 5.64 cfs @ 3.73 fps)

Summary for Pond 103R: DMH9-DMH8

Inflow Area = 8.76 ac, 28.40% Impervious, Inflow Depth > 1.63" for Cumberland_02 event
 Inflow = 10.55 cfs @ 12.12 hrs, Volume= 1.188 af
 Outflow = 10.55 cfs @ 12.12 hrs, Volume= 1.188 af, Atten= 0%, Lag= 0.0 min
 Primary = 10.55 cfs @ 12.12 hrs, Volume= 1.188 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
 Peak Elev= 91.36' @ 12.12 hrs
 Flood Elev= 94.51'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.07'	18.0" Round Culvert L= 132.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 89.07' / 87.76' S= 0.0099 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=10.54 cfs @ 12.12 hrs HW=91.35' (Free Discharge)
 ↑**1=Culvert** (Inlet Controls 10.54 cfs @ 5.96 fps)

Summary for Pond 104R: DMH8-DMH200

Inflow Area = 9.15 ac, 29.18% Impervious, Inflow Depth > 1.64" for Cumberland_02 event
 Inflow = 11.32 cfs @ 12.12 hrs, Volume= 1.253 af
 Outflow = 11.32 cfs @ 12.12 hrs, Volume= 1.253 af, Atten= 0%, Lag= 0.0 min
 Primary = 11.32 cfs @ 12.12 hrs, Volume= 1.253 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
 Peak Elev= 91.77' @ 12.12 hrs
 Flood Elev= 92.36'

Device	Routing	Invert	Outlet Devices
#1	Primary	87.66'	18.0" Round Culvert L= 273.0' RCP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 87.66' / 86.60' S= 0.0039 '/' Cc= 0.900
n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=11.31 cfs @ 12.12 hrs HW=91.76' (Free Discharge)

↑ **1=Culvert** (Barrel Controls 11.31 cfs @ 6.40 fps)

Summary for Pond 105R: DMH200-OUTLET

Inflow Area = 9.15 ac, 29.18% Impervious, Inflow Depth > 1.64" for Cumberland_02 event
Inflow = 11.32 cfs @ 12.12 hrs, Volume= 1.253 af
Outflow = 11.32 cfs @ 12.12 hrs, Volume= 1.253 af, Atten= 0%, Lag= 0.0 min
Primary = 11.32 cfs @ 12.12 hrs, Volume= 1.253 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Peak Elev= 89.05' @ 12.12 hrs

Flood Elev= 89.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	86.53'	18.0" Round Culvert L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 86.53' / 84.13' S= 0.0400 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=11.31 cfs @ 12.12 hrs HW=89.05' (Free Discharge)

↑ **1=Culvert** (Inlet Controls 11.31 cfs @ 6.40 fps)

Summary for Pond 210P: Sand Filter mc3500

Inflow Area = 3.31 ac, 63.75% Impervious, Inflow Depth = 2.16" for Cumberland_02 event
Inflow = 8.58 cfs @ 12.07 hrs, Volume= 0.597 af
Outflow = 1.47 cfs @ 12.53 hrs, Volume= 0.579 af, Atten= 83%, Lag= 27.5 min
Primary = 1.47 cfs @ 12.53 hrs, Volume= 0.579 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Peak Elev= 127.36' @ 12.53 hrs Surf.Area= 6,773 sf Storage= 12,652 cf

Plug-Flow detention time= 519.2 min calculated for 0.579 af (97% of inflow)

Center-of-Mass det. time= 501.0 min (1,303.7 - 802.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	124.70'	9,447 cf	80.08'W x 84.57'L x 5.50'H Field A 37,250 cf Overall - 13,632 cf Embedded = 23,618 cf x 40.0% Voids
#2A	125.45'	13,632 cf	ADS_StormTech MC-3500 d +Cap x 121 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 11 Rows of 11 Chambers Cap Storage= +14.9 cf x 2 x 11 rows = 327.8 cf
		23,079 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	121.00'	15.0" Round Culvert L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 121.00' / 117.00' S= 0.0800 '/ Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	121.00'	1.0" Vert. Orifice/Grate X 2.00 C= 0.600
#3	Device 1	126.80'	7.0" Vert. Orifice/Grate X 2.00 C= 0.600
#4	Device 1	129.87'	6.0' long x 1.50' rise Sharp-Crested Vee/Trap Weir Cv= 2.62 (C= 3.28)

Primary OutFlow Max=1.47 cfs @ 12.53 hrs HW=127.36' (Free Discharge)

- 1=Culvert (Passes 1.47 cfs of 14.15 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 0.13 cfs @ 12.10 fps)
 3=Orifice/Grate (Orifice Controls 1.34 cfs @ 2.54 fps)
 4=Sharp-Crested Vee/Trap Weir (Controls 0.00 cfs)

Summary for Pond 220P: UDF

Inflow Area = 0.90 ac, 50.00% Impervious, Inflow Depth = 2.05" for Cumberland_02 event
 Inflow = 2.19 cfs @ 12.07 hrs, Volume= 0.154 af
 Outflow = 0.36 cfs @ 12.54 hrs, Volume= 0.153 af, Atten= 84%, Lag= 28.2 min
 Primary = 0.36 cfs @ 12.54 hrs, Volume= 0.153 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
 Peak Elev= 126.19' @ 12.54 hrs Surf.Area= 3,174 sf Storage= 3,249 cf

Plug-Flow detention time= 533.0 min calculated for 0.153 af (100% of inflow)
 Center-of-Mass det. time= 531.5 min (1,336.0 - 804.5)

Volume	Invert	Avail.Storage	Storage Description
#1	125.00'	10,527 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
125.00	2,326	0	0
126.00	2,974	2,650	2,650
127.00	4,000	3,487	6,137
128.00	4,780	4,390	10,527

Device	Routing	Invert	Outlet Devices
#1	Primary	122.83'	12.0" Round Culvert L= 78.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 122.83' / 122.28' S= 0.0071 '/ Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	122.83'	0.9" Vert. Orifice/Grate C= 0.600
#3	Device 2	125.00'	2.400 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 0.00'
#4	Device 1	126.00'	4.0" Vert. Orifice/Grate X 4.00 C= 0.600
#5	Device 1	127.00'	20.0" Vert. Orifice/Grate C= 0.600
#6	Secondary	127.50'	10.0' long x 8.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=0.36 cfs @ 12.54 hrs HW=126.19' (Free Discharge)

- ↑ **1=Culvert** (Passes 0.36 cfs of 5.68 cfs potential flow)
- ↑ **2=Orifice/Grate** (Orifice Controls 0.04 cfs @ 8.78 fps)
- ↑ **3=Exfiltration** (Passes 0.04 cfs of 0.18 cfs potential flow)
- ↑ **4=Orifice/Grate** (Orifice Controls 0.32 cfs @ 1.50 fps)
- ↑ **5=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=125.00' (Free Discharge)

- ↑ **6=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Time span=0.00-45.00 hrs, dt=0.01 hrs, 4501 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: BASIN 1 (Ocean Ridge)	Runoff Area=2.60 ac 34.62% Impervious Runoff Depth=3.10" Flow Length=660' Tc=9.9 min CN=86 Runoff=8.20 cfs 0.671 af
Subcatchment 3: Sub 3	Runoff Area=0.30 ac 30.67% Impervious Runoff Depth=3.10" Flow Length=300' Tc=9.4 min CN=86 Runoff=0.96 cfs 0.077 af
Subcatchment 6: Sub 6	Runoff Area=0.42 ac 23.00% Impervious Runoff Depth=2.91" Flow Length=235' Tc=5.0 min CN=84 Runoff=1.48 cfs 0.102 af
Subcatchment 11: Sub 11	Runoff Area=1.88 ac 21.71% Impervious Runoff Depth=2.72" Flow Length=375' Tc=7.3 min CN=82 Runoff=5.73 cfs 0.427 af
Subcatchment 12: Sub 12	Runoff Area=2.61 ac 6.13% Impervious Runoff Depth=2.46" Flow Length=710' Tc=21.5 min CN=79 Runoff=4.93 cfs 0.535 af
Subcatchment 15: Sub 15	Runoff Area=0.27 ac 66.67% Impervious Runoff Depth=3.70" Flow Length=342' Tc=5.0 min CN=92 Runoff=1.16 cfs 0.083 af
Subcatchment 15A: Sub 15A	Runoff Area=0.09 ac 66.67% Impervious Runoff Depth=3.70" Flow Length=87' Tc=5.0 min CN=92 Runoff=0.39 cfs 0.028 af
Subcatchment 20: Subarea 2	Runoff Area=6.36 ac 4.61% Impervious Runoff Depth=2.38" Flow Length=1,435' Tc=32.5 min CN=78 Runoff=9.65 cfs 1.259 af
Subcatchment 21: Sub 21	Runoff Area=3.31 ac 63.75% Impervious Runoff Depth=3.59" Tc=5.0 min CN=91 Runoff=13.91 cfs 0.992 af
Subcatchment 22: Sub 22	Runoff Area=0.70 ac 64.29% Impervious Runoff Depth=3.70" Tc=5.0 min CN=92 Runoff=3.00 cfs 0.216 af
Subcatchment 23: Sub 23	Runoff Area=0.20 ac 0.00% Impervious Runoff Depth=2.55" Tc=5.0 min CN=80 Runoff=0.62 cfs 0.042 af
Subcatchment 40: Sub 40	Runoff Area=1.12 ac 0.00% Impervious Runoff Depth=2.29" Flow Length=250' Tc=9.1 min CN=77 Runoff=2.70 cfs 0.214 af
Subcatchment 50: Sub 50	Runoff Area=1.19 ac 14.79% Impervious Runoff Depth=2.72" Flow Length=360' Tc=9.9 min CN=82 Runoff=3.33 cfs 0.270 af
Subcatchment 100: Subarea 100	Runoff Area=0.22 ac 100.00% Impervious Runoff Depth=4.36" Flow Length=572' Tc=6.6 min CN=98 Runoff=0.97 cfs 0.080 af
Subcatchment 101S: BASIN 101 (Ocean Ridge)	Runoff Area=0.19 ac 57.89% Impervious Runoff Depth=3.49" Flow Length=155' Tc=6.4 min CN=90 Runoff=0.74 cfs 0.055 af
Subcatchment 300: Subarea 300	Runoff Area=0.09 ac 100.00% Impervious Runoff Depth=4.36" Flow Length=162' Tc=5.0 min CN=98 Runoff=0.42 cfs 0.033 af

Subcatchment 301S: BASIN 301 (Ocean Ridge)	Runoff Area=0.82 ac 45.12% Impervious Runoff Depth=3.29" Flow Length=190' Tc=9.3 min CN=88 Runoff=2.78 cfs 0.225 af
Subcatchment 302S: BASIN 302 (Ocean Ridge)	Runoff Area=1.27 ac 58.27% Impervious Runoff Depth=3.49" Flow Length=130' Slope=0.0200 '/' Tc=9.1 min CN=90 Runoff=4.55 cfs 0.370 af
Subcatchment 303S: BASIN 3 (Ocean Ridge)	Runoff Area=0.58 ac 20.69% Impervious Runoff Depth=2.81" Flow Length=150' Tc=8.1 min CN=83 Runoff=1.78 cfs 0.136 af
Reach 3R: VEGETATED SWALE 1 (Ocean Ridge)	Avg. Flow Depth=0.71' Max Vel=0.73 fps Inflow=4.55 cfs 0.370 af n=0.150 L=170.0' S=0.0120 '/' Capacity=30.82 cfs Outflow=4.19 cfs 0.370 af
Reach 4R: SP#2	Inflow=2.70 cfs 0.214 af Outflow=2.70 cfs 0.214 af
Reach 31R: CULVERT 3 (Ocean Ridge)	Avg. Flow Depth=0.58' Max Vel=5.06 fps Inflow=2.22 cfs 0.225 af 11.0" Round Pipe n=0.012 L=50.0' S=0.0100 '/' Capacity=3.06 cfs Outflow=2.22 cfs 0.225 af
Reach 32R: VEGETATED SWALE 2 (Ocean Ridge)	Avg. Flow Depth=0.54' Max Vel=0.65 fps Inflow=2.78 cfs 0.225 af n=0.150 L=115.0' S=0.0130 '/' Capacity=32.02 cfs Outflow=2.64 cfs 0.225 af
Reach 33R: Wetland Flow	Avg. Flow Depth=0.24' Max Vel=0.78 fps Inflow=2.79 cfs 0.730 af n=0.035 L=150.0' S=0.0033 '/' Capacity=52.28 cfs Outflow=2.78 cfs 0.730 af
Reach 106R: SP#1 (Eben Hill Road)	Inflow=31.13 cfs 5.570 af Outflow=31.13 cfs 5.570 af
Reach 122R: ROADWAY GUTTER	Avg. Flow Depth=0.33' Max Vel=4.40 fps Inflow=4.93 cfs 0.535 af n=0.025 L=290.0' S=0.0379 '/' Capacity=10.97 cfs Outflow=4.91 cfs 0.535 af
Reach 123R: CURB ROAD GUTTER	Avg. Flow Depth=0.21' Max Vel=3.96 fps Inflow=6.20 cfs 0.819 af n=0.013 L=80.0' S=0.0200 '/' Capacity=48.18 cfs Outflow=6.19 cfs 0.819 af
Reach 210R: Woods overland	Avg. Flow Depth=0.14' Max Vel=1.99 fps Inflow=3.53 cfs 0.965 af n=0.035 L=50.0' S=0.0400 '/' Capacity=40.80 cfs Outflow=3.53 cfs 0.965 af
Reach 220R: Access Ditch	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.025 L=310.0' S=0.0500 '/' Capacity=47.31 cfs Outflow=0.00 cfs 0.000 af
Reach 221R: Overland Flow	Avg. Flow Depth=0.06' Max Vel=1.82 fps Inflow=1.28 cfs 0.284 af n=0.040 L=180.0' S=0.1111 '/' Capacity=59.50 cfs Outflow=1.28 cfs 0.284 af
Reach 240R: EXISTING CHANNEL	Avg. Flow Depth=0.23' Max Vel=4.20 fps Inflow=2.75 cfs 0.730 af n=0.025 L=340.0' S=0.0529 '/' Capacity=57.44 cfs Outflow=2.75 cfs 0.730 af
Reach 241R: EXISTING CHANNEL	Avg. Flow Depth=0.30' Max Vel=5.88 fps Inflow=5.75 cfs 1.695 af n=0.025 L=300.0' S=0.0750 '/' Capacity=68.36 cfs Outflow=5.75 cfs 1.694 af
Reach 340R: Woodland Flow	Avg. Flow Depth=0.17' Max Vel=2.33 fps Inflow=2.78 cfs 0.730 af n=0.035 L=700.0' S=0.0421 '/' Capacity=92.76 cfs Outflow=2.75 cfs 0.730 af

Pond 3P: POND 3 (Ocean Ridge)	Peak Elev=160.74' Storage=10,521 cf Inflow=7.37 cfs 0.730 af Outflow=2.79 cfs 0.730 af
Pond 30P: POND 30 (Ocean Ridge)	Peak Elev=160.73' Storage=1,151 cf Inflow=2.64 cfs 0.225 af 18.0" Round Culvert n=0.012 L=30.0' S=0.0100 '/' Outflow=2.22 cfs 0.225 af
Pond 60R: FIELD CB	Peak Elev=90.65' Inflow=1.48 cfs 0.102 af 12.0" Round Culvert n=0.012 L=110.0' S=0.0091 '/' Outflow=1.48 cfs 0.102 af
Pond 62P: Driveway Culvert	Peak Elev=89.73' Storage=1,325 cf Inflow=14.61 cfs 3.055 af Primary=8.18 cfs 2.731 af Secondary=6.40 cfs 0.324 af Outflow=14.58 cfs 3.055 af
Pond 66P: 24" Cross culvert	Peak Elev=87.19' Storage=365 cf Inflow=15.81 cfs 3.325 af Primary=15.75 cfs 3.325 af Secondary=0.00 cfs 0.000 af Outflow=15.75 cfs 3.325 af
Pond 100R: Vortech-DMH2	Peak Elev=109.07' Inflow=9.78 cfs 0.809 af 18.0" Round Culvert n=0.012 L=318.0' S=0.0267 '/' Outflow=9.78 cfs 0.809 af
Pond 101R: DMH2-DMH1(DMH1606)	Peak Elev=100.45' Inflow=9.78 cfs 0.809 af 18.0" Round Culvert n=0.012 L=177.0' S=0.0391 '/' Outflow=9.78 cfs 0.809 af
Pond 102R: DMH1606-DMH9	Peak Elev=93.37' Inflow=9.78 cfs 0.809 af 18.0" Round Culvert n=0.012 L=110.0' S=0.0185 '/' Outflow=9.78 cfs 0.809 af
Pond 103R: DMH9-DMH8	Peak Elev=96.14' Inflow=19.72 cfs 2.135 af 18.0" Round Culvert n=0.012 L=132.0' S=0.0099 '/' Outflow=19.72 cfs 2.135 af
Pond 104R: DMH8-DMH200	Peak Elev=100.74' Inflow=21.02 cfs 2.245 af 18.0" Round Culvert n=0.012 L=273.0' S=0.0039 '/' Outflow=21.02 cfs 2.245 af
Pond 105R: DMH200-OUTLET	Peak Elev=93.38' Inflow=21.02 cfs 2.245 af 18.0" Round Culvert n=0.012 L=60.0' S=0.0400 '/' Outflow=21.02 cfs 2.245 af
Pond 210P: Sand Filter mc3500	Peak Elev=128.82' Storage=19,250 cf Inflow=13.91 cfs 0.992 af Outflow=3.53 cfs 0.965 af
Pond 220P: UDF	Peak Elev=126.60' Storage=4,625 cf Inflow=3.62 cfs 0.258 af Primary=1.15 cfs 0.256 af Secondary=0.00 cfs 0.000 af Outflow=1.15 cfs 0.256 af
Total Runoff Area = 24.22 ac Runoff Volume = 5.814 af Average Runoff Depth = 2.88"	
72.85% Pervious = 17.64 ac 27.15% Impervious = 6.58 ac	

Summary for Subcatchment 1S: BASIN 1 (Ocean Ridge)

Runoff = 8.20 cfs @ 12.14 hrs, Volume= 0.671 af, Depth= 3.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_10 Rainfall=4.60"

Area (ac)	CN	Description
* 0.90	98	IMPERVIOUS
* 0.38	77	WOODS D
* 1.32	80	LAWN D
2.60	86	Weighted Average
1.70		65.38% Pervious Area
0.90		34.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0200	0.10		Sheet Flow, OVERLAND FLOW Grass: Dense n= 0.240 P2= 3.00"
0.4	140	0.0430	5.46	65.53	Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.060
0.2	90	0.0550	6.18	74.11	Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.060
0.8	380	0.0900	7.45	64.10	Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch Bot.W=2.00' D=2.00' Z= 2.0 & 0.3 '/' Top.W=6.60' n= 0.060
9.9	660	Total			

Summary for Subcatchment 3: Sub 3

Runoff = 0.96 cfs @ 12.13 hrs, Volume= 0.077 af, Depth= 3.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_10 Rainfall=4.60"

Area (ac)	CN	Description
* 0.04	98	Paved roads Ocean Ave
0.26	84	1 acre lots, 20% imp, HSG D
0.30	86	Weighted Average
0.21		69.33% Pervious Area
0.09		30.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	60	0.1000	0.13		Sheet Flow, A-B Woods: Light underbrush n= 0.400 P2= 3.00"
1.2	160	0.1000	2.21		Shallow Concentrated Flow, B-C Short Grass Pasture Kv= 7.0 fps
0.5	80	0.0150	2.49		Shallow Concentrated Flow, C-D Paved Kv= 20.3 fps
9.4	300	Total			

Summary for Subcatchment 6: Sub 6

Runoff = 1.48 cfs @ 12.07 hrs, Volume= 0.102 af, Depth= 2.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

Area (ac)	CN	Description
0.35	84	1 acre lots, 20% imp, HSG D
0.07	87	1/4 acre lots, 38% imp, HSG D
0.42	84	Weighted Average
0.32		77.00% Pervious Area
0.10		23.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	25	0.1500	0.13		Sheet Flow, A-B Woods: Light underbrush n= 0.400 P2= 3.00"
0.4	60	0.2300	2.40		Shallow Concentrated Flow, B-C Woodland Kv= 5.0 fps
0.4	150	0.0400	5.86	41.05	Trap/Vee/Rect Channel Flow, C-D Bot.W=2.00' D=1.00' Z= 5.0 '/' Top.W=12.00' n= 0.035
4.1	235	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 11: Sub 11

Runoff = 5.73 cfs @ 12.11 hrs, Volume= 0.427 af, Depth= 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

Area (ac)	CN	Description
1.04	77	Woods, Good, HSG D
* 0.19	98	Paved roads Ocean Ave
* 0.05	98	Paved roads, Site Drive
0.02	80	>75% Grass cover, Good, HSG D
0.29	84	1 acre lots, 20% imp, HSG D
0.29	87	1/4 acre lots, 38% imp, HSG D
1.88	82	Weighted Average
1.47		78.29% Pervious Area
0.41		21.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	40	0.1000	0.12		Sheet Flow, A-B Woods: Light underbrush n= 0.400 P2= 3.00"
0.7	95	0.2000	2.24		Shallow Concentrated Flow, B-C Woodland Kv= 5.0 fps
1.0	240	0.0400	4.06		Shallow Concentrated Flow, C-D Paved Kv= 20.3 fps
7.3	375	Total			

Summary for Subcatchment 12: Sub 12

Runoff = 4.93 cfs @ 12.30 hrs, Volume= 0.535 af, Depth= 2.46"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_10 Rainfall=4.60"

Area (ac)	CN	Description
2.01	77	Woods, Good, HSG D
0.18	80	>75% Grass cover, Good, HSG D
* 0.04	98	Paved roads OCEAN AVE
* 0.07	98	Roofs, OCEAN RIDGE
* 0.05	98	Paved roads Ocean Ridge
* 0.03	77	Woods, Good, HSG D Ocean Ridge
* 0.23	80	>75% Grass cover, Good, HSG D Ocean Ridge
2.61	79	Weighted Average
2.45		93.87% Pervious Area
0.16		6.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.1	110	0.0400	0.10		Sheet Flow, A-B Woods: Light underbrush n= 0.400 P2= 3.00"
2.8	270	0.1000	1.58		Shallow Concentrated Flow, B-C Woodland Kv= 5.0 fps
0.6	330	0.0500	9.46	47.31	Trap/Vee/Rect Channel Flow, C-D Bot.W=2.00' D=1.00' Z= 3.0 '/' Top.W=8.00' n= 0.025 Earth, clean & winding
21.5	710	Total			

Summary for Subcatchment 15: Sub 15

Runoff = 1.16 cfs @ 12.07 hrs, Volume= 0.083 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_10 Rainfall=4.60"

Area (ac)	CN	Description
* 0.18	98	Paved roads Site Drive
0.09	80	>75% Grass cover, Good, HSG D
0.27	92	Weighted Average
0.09		33.33% Pervious Area
0.18		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		Sheet Flow, A-B
					Smooth surfaces n= 0.011 P2= 3.00"
1.2	330	0.0500	4.54		Shallow Concentrated Flow, B-C
					Paved Kv= 20.3 fps
3.6					Direct Entry, C-D
5.0	342	Total			

Summary for Subcatchment 15A: Sub 15A

Runoff = 0.39 cfs @ 12.07 hrs, Volume= 0.028 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_10 Rainfall=4.60"

Area (ac)	CN	Description
* 0.06	98	Paved roads Site Drive
0.03	80	>75% Grass cover, Good, HSG D
0.09	92	Weighted Average
0.03		33.33% Pervious Area
0.06		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		Sheet Flow, A-B
					Smooth surfaces n= 0.011 P2= 3.00"
0.3	75	0.0500	4.54		Shallow Concentrated Flow, B-C
					Paved Kv= 20.3 fps
4.5					Direct Entry, C-D
5.0	87	Total			

Summary for Subcatchment 20: Subarea 2

Runoff = 9.65 cfs @ 12.46 hrs, Volume= 1.259 af, Depth= 2.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_10 Rainfall=4.60"

Area (ac)	CN	Description
0.64	87	1/4 acre lots, 38% imp, HSG D
0.12	80	>75% Grass cover, Good, HSG D
* 0.05	98	Roadway, Ocean Ave
5.55	77	Woods, Good, HSG D
6.36	78	Weighted Average
6.07		95.39% Pervious Area
0.29		4.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	110	0.0800	0.13		Sheet Flow, Overland Woods
					Woods: Light underbrush n= 0.400 P2= 3.00"
18.8	1,325	0.0550	1.17		Shallow Concentrated Flow, Overland Woods
					Woodland Kv= 5.0 fps
32.5	1,435	Total			

Summary for Subcatchment 21: Sub 21

Runoff = 13.91 cfs @ 12.07 hrs, Volume= 0.992 af, Depth= 3.59"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_10 Rainfall=4.60"

Area (ac)	CN	Description
1.20	80	>75% Grass cover, Good, HSG D
* 2.11	98	Site Development
3.31	91	Weighted Average
1.20		36.25% Pervious Area
2.11		63.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment 22: Sub 22

Runoff = 3.00 cfs @ 12.07 hrs, Volume= 0.216 af, Depth= 3.70"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_10 Rainfall=4.60"

Area (ac)	CN	Description
* 0.45	98	Site Development
0.25	80	>75% Grass cover, Good, HSG D
0.70	92	Weighted Average
0.25		35.71% Pervious Area
0.45		64.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment 23: Sub 23

Runoff = 0.62 cfs @ 12.07 hrs, Volume= 0.042 af, Depth= 2.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

Area (ac)	CN	Description
0.20	80	>75% Grass cover, Good, HSG D
0.20		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment 40: Sub 40

Runoff = 2.70 cfs @ 12.13 hrs, Volume= 0.214 af, Depth= 2.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_10 Rainfall=4.60"

Area (ac)	CN	Description
1.12	77	Woods, Good, HSG D
1.12		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	50	0.1000	0.12		Sheet Flow, A-B
					Woods: Light underbrush n= 0.400 P2= 3.00"
2.4	200	0.0750	1.37		Shallow Concentrated Flow, B-C
					Woodland Kv= 5.0 fps
9.1	250	Total			

Summary for Subcatchment 50: Sub 50

Runoff = 3.33 cfs @ 12.14 hrs, Volume= 0.270 af, Depth= 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_10 Rainfall=4.60"

Area (ac)	CN	Description
0.34	77	Woods, Good, HSG D
0.09	80	>75% Grass cover, Good, HSG D
* 0.03	98	Paved roads Ocean Ave
0.73	84	1 acre lots, 20% imp, HSG D
1.19	82	Weighted Average
1.01		85.21% Pervious Area
0.18		14.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.1200	0.13		Sheet Flow, A-B
					Woods: Light underbrush n= 0.400 P2= 3.00"
3.7	310	0.0800	1.41		Shallow Concentrated Flow, B-C
					Woodland Kv= 5.0 fps
9.9	360	Total			

Summary for Subcatchment 100: Subarea 100

Runoff = 0.97 cfs @ 12.09 hrs, Volume= 0.080 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_10 Rainfall=4.60"

Area (ac)	CN	Description
* 0.22	98	Roadway
0.22		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		Sheet Flow, Road Crown
					Smooth surfaces n= 0.011 P2= 3.00"
5.9	480	0.0380	1.36		Shallow Concentrated Flow, SHALLOW RD DITCH
					Short Grass Pasture Kv= 7.0 fps
0.5	80	0.0200	2.87		Shallow Concentrated Flow, ROAD GUTTER
					Paved Kv= 20.3 fps
6.6	572	Total			

Summary for Subcatchment 101S: BASIN 101 (Ocean Ridge)

Runoff = 0.74 cfs @ 12.09 hrs, Volume= 0.055 af, Depth= 3.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_10 Rainfall=4.60"

Area (ac)	CN	Description
* 0.11	98	IMPERVIOUS
* 0.08	80	LAWN D
0.19	90	Weighted Average
0.08		42.11% Pervious Area
0.11		57.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	30	0.0200	0.09		Sheet Flow, Segment ID: AB, Lawn Grass: Dense n= 0.240 P2= 3.00"
0.1	25	0.0200	2.87		Shallow Concentrated Flow, Segment ID: BC, Driveway Paved Kv= 20.3 fps
0.7	100	0.1200	2.42		Shallow Concentrated Flow, Segment ID: grass slope Short Grass Pasture Kv= 7.0 fps
6.4	155	Total			

Summary for Subcatchment 300: Subarea 300

Runoff = 0.42 cfs @ 12.07 hrs, Volume= 0.033 af, Depth= 4.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_10 Rainfall=4.60"

Area (ac)	CN	Description
* 0.09	98	Roadway
0.09		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		Sheet Flow, Road Crown Smooth surfaces n= 0.011 P2= 3.00"
1.1	150	0.0130	2.31		Shallow Concentrated Flow, Gutter flow Paved Kv= 20.3 fps
3.7					Direct Entry,
5.0	162	Total			

Summary for Subcatchment 301S: BASIN 301 (Ocean Ridge)

Runoff = 2.78 cfs @ 12.13 hrs, Volume= 0.225 af, Depth= 3.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_10 Rainfall=4.60"

Area (ac)	CN	Description
* 0.37	98	IMPERVIOUS
* 0.45	80	LAWN D
0.82	88	Weighted Average
0.45		54.88% Pervious Area
0.37		45.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	60	0.0300	0.12		Sheet Flow, Segment ID: AB Grass: Dense n= 0.240 P2= 3.00"
0.4	50	0.0200	2.12		Shallow Concentrated Flow, Segment ID: BC Grassed Waterway Kv= 15.0 fps
0.6	80	0.0200	2.12		Shallow Concentrated Flow, Segment ID: CD Grassed Waterway Kv= 15.0 fps
9.3	190	Total			

Summary for Subcatchment 302S: BASIN 302 (Ocean Ridge)

Runoff = 4.55 cfs @ 12.12 hrs, Volume= 0.370 af, Depth= 3.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_10 Rainfall=4.60"

Area (ac)	CN	Description
* 0.74	98	IMPERVIOUS
* 0.05	77	WOODS D
* 0.48	80	LAWN D
1.27	90	Weighted Average
0.53		41.73% Pervious Area
0.74		58.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0200	0.10		Sheet Flow, Segment ID: AB Grass: Dense n= 0.240 P2= 3.00"
0.2	30	0.0200	2.87		Shallow Concentrated Flow, Segment ID: BC Paved Kv= 20.3 fps
0.4	50	0.0200	2.12		Shallow Concentrated Flow, Segment ID: Grassed Waterway Kv= 15.0 fps
9.1	130	Total			

Summary for Subcatchment 303S: BASIN 3 (Ocean Ridge)

Runoff = 1.78 cfs @ 12.11 hrs, Volume= 0.136 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_10 Rainfall=4.60"

Area (ac)	CN	Description
* 0.12	98	IMPERVIOUS
* 0.08	77	WOODS D
* 0.38	80	LAWN D
0.58	83	Weighted Average
0.46		79.31% Pervious Area
0.12		20.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	30	0.0300	0.07		Sheet Flow, Segment ID: AB
					Woods: Light underbrush n= 0.400 P2= 3.00"
0.9	120	0.0200	2.12		Shallow Concentrated Flow, Segment ID: BC
					Grassed Waterway Kv= 15.0 fps
8.1	150	Total			

Summary for Reach 3R: VEGETATED SWALE 1 (Ocean Ridge)

Inflow Area = 1.27 ac, 58.27% Impervious, Inflow Depth = 3.49" for Cumberland_10 event

Inflow = 4.55 cfs @ 12.12 hrs, Volume= 0.370 af

Outflow = 4.19 cfs @ 12.23 hrs, Volume= 0.370 af, Atten= 8%, Lag= 6.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Max. Velocity= 0.73 fps, Min. Travel Time= 3.9 min

Avg. Velocity= 0.19 fps, Avg. Travel Time= 14.8 min

Peak Storage= 980 cf @ 12.17 hrs

Average Depth at Peak Storage= 0.71'

Bank-Full Depth= 2.00' Flow Area= 24.0 sf, Capacity= 30.82 cfs

6.00' x 2.00' deep channel, n= 0.150

Side Slope Z-value= 3.0 '/' Top Width= 18.00'

Length= 170.0' Slope= 0.0120 '/'

Inlet Invert= 0.00', Outlet Invert= -2.04'



Summary for Reach 4R: SP#2

Inflow Area = 1.12 ac, 0.00% Impervious, Inflow Depth = 2.29" for Cumberland_10 event
 Inflow = 2.70 cfs @ 12.13 hrs, Volume= 0.214 af
 Outflow = 2.70 cfs @ 12.13 hrs, Volume= 0.214 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Summary for Reach 31R: CULVERT 3 (Ocean Ridge)

Inflow Area = 0.82 ac, 45.12% Impervious, Inflow Depth = 3.29" for Cumberland_10 event
 Inflow = 2.22 cfs @ 12.28 hrs, Volume= 0.225 af
 Outflow = 2.22 cfs @ 12.29 hrs, Volume= 0.225 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs / 2

Max. Velocity= 5.06 fps, Min. Travel Time= 0.2 min

Avg. Velocity= 1.20 fps, Avg. Travel Time= 0.7 min

Peak Storage= 22 cf @ 12.29 hrs

Average Depth at Peak Storage= 0.58'

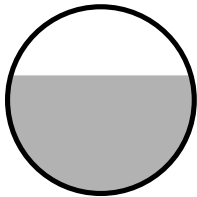
Bank-Full Depth= 0.92' Flow Area= 0.7 sf, Capacity= 3.06 cfs

11.0" Round Pipe

n= 0.012

Length= 50.0' Slope= 0.0100 '/'

Inlet Invert= 0.00', Outlet Invert= -0.50'

**Summary for Reach 32R: VEGETATED SWALE 2 (Ocean Ridge)**

Inflow Area = 0.82 ac, 45.12% Impervious, Inflow Depth = 3.29" for Cumberland_10 event
 Inflow = 2.78 cfs @ 12.13 hrs, Volume= 0.225 af
 Outflow = 2.64 cfs @ 12.21 hrs, Volume= 0.225 af, Atten= 5%, Lag= 5.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Max. Velocity= 0.65 fps, Min. Travel Time= 3.0 min

Avg. Velocity= 0.17 fps, Avg. Travel Time= 11.0 min

Peak Storage= 470 cf @ 12.16 hrs

Average Depth at Peak Storage= 0.54'

Bank-Full Depth= 2.00' Flow Area= 24.0 sf, Capacity= 32.02 cfs

6.00' x 2.00' deep channel, n= 0.150
 Side Slope Z-value= 3.0 '/' Top Width= 18.00'
 Length= 115.0' Slope= 0.0130 '/'
 Inlet Invert= 0.00', Outlet Invert= -1.49'



Summary for Reach 33R: Wetland Flow

Inflow Area = 2.67 ac, 46.07% Impervious, Inflow Depth > 3.28" for Cumberland_10 event
 Inflow = 2.79 cfs @ 12.62 hrs, Volume= 0.730 af
 Outflow = 2.78 cfs @ 12.71 hrs, Volume= 0.730 af, Atten= 0%, Lag= 5.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
 Max. Velocity= 0.78 fps, Min. Travel Time= 3.2 min
 Avg. Velocity= 0.24 fps, Avg. Travel Time= 10.5 min

Peak Storage= 532 cf @ 12.66 hrs
 Average Depth at Peak Storage= 0.24'
 Bank-Full Depth= 1.00' Flow Area= 30.0 sf, Capacity= 52.28 cfs

10.00' x 1.00' deep channel, n= 0.035 High grass
 Side Slope Z-value= 20.0 '/' Top Width= 50.00'
 Length= 150.0' Slope= 0.0033 '/'
 Inlet Invert= 158.00', Outlet Invert= 157.50'



Summary for Reach 106R: SP#1 (Eben Hill Road)

Inflow Area = 23.10 ac, 28.47% Impervious, Inflow Depth > 2.89" for Cumberland_10 event
 Inflow = 31.13 cfs @ 12.14 hrs, Volume= 5.570 af
 Outflow = 31.13 cfs @ 12.14 hrs, Volume= 5.570 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Summary for Reach 122R: ROADWAY GUTTER

Inflow Area = 2.61 ac, 6.13% Impervious, Inflow Depth = 2.46" for Cumberland_10 event
 Inflow = 4.93 cfs @ 12.30 hrs, Volume= 0.535 af
 Outflow = 4.91 cfs @ 12.33 hrs, Volume= 0.535 af, Atten= 0%, Lag= 1.8 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Max. Velocity= 4.40 fps, Min. Travel Time= 1.1 min

Avg. Velocity = 1.55 fps, Avg. Travel Time= 3.1 min

Peak Storage= 324 cf @ 12.31 hrs

Average Depth at Peak Storage= 0.33'

Bank-Full Depth= 0.50' Flow Area= 2.0 sf, Capacity= 10.97 cfs

2.00' x 0.50' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 3.0 5.0 '/' Top Width= 6.00'

Length= 290.0' Slope= 0.0379 '/'

Inlet Invert= 106.50', Outlet Invert= 95.50'

**Summary for Reach 123R: CURB ROAD GUTTER**

Inflow Area = 3.60 ac, 18.61% Impervious, Inflow Depth > 2.73" for Cumberland_10 event
 Inflow = 6.20 cfs @ 12.33 hrs, Volume= 0.819 af
 Outflow = 6.19 cfs @ 12.34 hrs, Volume= 0.819 af, Atten= 0%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Max. Velocity= 3.96 fps, Min. Travel Time= 0.3 min

Avg. Velocity = 1.25 fps, Avg. Travel Time= 1.1 min

Peak Storage= 125 cf @ 12.33 hrs

Average Depth at Peak Storage= 0.21'

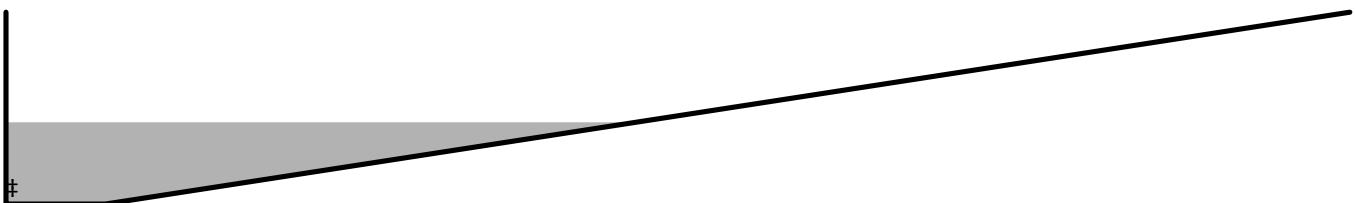
Bank-Full Depth= 0.50' Flow Area= 7.3 sf, Capacity= 48.18 cfs

2.00' x 0.50' deep channel, n= 0.013 Asphalt, smooth

Side Slope Z-value= 0.0 50.0 '/' Top Width= 27.00'

Length= 80.0' Slope= 0.0200 '/'

Inlet Invert= 95.50', Outlet Invert= 93.90'



Summary for Reach 210R: Woods overland

Inflow Area = 3.31 ac, 63.75% Impervious, Inflow Depth > 3.50" for Cumberland_10 event
 Inflow = 3.53 cfs @ 12.43 hrs, Volume= 0.965 af
 Outflow = 3.53 cfs @ 12.44 hrs, Volume= 0.965 af, Atten= 0%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Max. Velocity= 1.99 fps, Min. Travel Time= 0.4 min

Avg. Velocity = 0.70 fps, Avg. Travel Time= 1.2 min

Peak Storage= 89 cf @ 12.44 hrs

Average Depth at Peak Storage= 0.14'

Bank-Full Depth= 0.50' Flow Area= 10.0 sf, Capacity= 40.80 cfs

10.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds

Side Slope Z-value= 20.0 '/' Top Width= 30.00'

Length= 50.0' Slope= 0.0400 '/'

Inlet Invert= 112.00', Outlet Invert= 110.00'

**Summary for Reach 220R: Access Ditch**

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min

Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs

Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 1.00' Flow Area= 5.0 sf, Capacity= 47.31 cfs

2.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 3.0 '/' Top Width= 8.00'

Length= 310.0' Slope= 0.0500 '/'

Inlet Invert= 126.00', Outlet Invert= 110.50'



Summary for Reach 221R: Overland Flow

Inflow Area = 0.99 ac, 51.52% Impervious, Inflow Depth > 3.44" for Cumberland_10 event
 Inflow = 1.28 cfs @ 12.28 hrs, Volume= 0.284 af
 Outflow = 1.28 cfs @ 12.33 hrs, Volume= 0.284 af, Atten= 0%, Lag= 2.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
 Max. Velocity= 1.82 fps, Min. Travel Time= 1.6 min
 Avg. Velocity = 0.57 fps, Avg. Travel Time= 5.2 min

Peak Storage= 127 cf @ 12.30 hrs
 Average Depth at Peak Storage= 0.06'
 Bank-Full Depth= 0.50' Flow Area= 10.0 sf, Capacity= 59.50 cfs

10.00' x 0.50' deep channel, n= 0.040 Woods Overland flow
 Side Slope Z-value= 20.0 '/' Top Width= 30.00'
 Length= 180.0' Slope= 0.1111 '/'
 Inlet Invert= 120.00', Outlet Invert= 100.00'

**Summary for Reach 240R: EXISTING CHANNEL**

Inflow Area = 2.67 ac, 46.07% Impervious, Inflow Depth > 3.28" for Cumberland_10 event
 Inflow = 2.75 cfs @ 12.87 hrs, Volume= 0.730 af
 Outflow = 2.75 cfs @ 12.91 hrs, Volume= 0.730 af, Atten= 0%, Lag= 2.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
 Max. Velocity= 4.20 fps, Min. Travel Time= 1.4 min
 Avg. Velocity = 1.30 fps, Avg. Travel Time= 4.4 min

Peak Storage= 223 cf @ 12.88 hrs
 Average Depth at Peak Storage= 0.23'
 Bank-Full Depth= 1.00' Flow Area= 6.0 sf, Capacity= 57.44 cfs

2.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding
 Side Slope Z-value= 4.0 '/' Top Width= 10.00'
 Length= 340.0' Slope= 0.0529 '/'
 Inlet Invert= 128.00', Outlet Invert= 110.00'



Summary for Reach 241R: EXISTING CHANNEL

Inflow Area = 5.98 ac, 55.85% Impervious, Inflow Depth > 3.40" for Cumberland_10 event
 Inflow = 5.75 cfs @ 12.80 hrs, Volume= 1.695 af
 Outflow = 5.75 cfs @ 12.83 hrs, Volume= 1.694 af, Atten= 0%, Lag= 1.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
 Max. Velocity= 5.88 fps, Min. Travel Time= 0.9 min
 Avg. Velocity = 2.19 fps, Avg. Travel Time= 2.3 min

Peak Storage= 293 cf @ 12.81 hrs
 Average Depth at Peak Storage= 0.30'
 Bank-Full Depth= 1.00' Flow Area= 6.0 sf, Capacity= 68.36 cfs

2.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding
 Side Slope Z-value= 4.0 '/' Top Width= 10.00'
 Length= 300.0' Slope= 0.0750 '/'
 Inlet Invert= 110.00', Outlet Invert= 87.50'

**Summary for Reach 340R: Woodland Flow**

Inflow Area = 2.67 ac, 46.07% Impervious, Inflow Depth > 3.28" for Cumberland_10 event
 Inflow = 2.78 cfs @ 12.71 hrs, Volume= 0.730 af
 Outflow = 2.75 cfs @ 12.87 hrs, Volume= 0.730 af, Atten= 1%, Lag= 9.2 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
 Max. Velocity= 2.33 fps, Min. Travel Time= 5.0 min
 Avg. Velocity = 0.73 fps, Avg. Travel Time= 15.9 min

Peak Storage= 826 cf @ 12.78 hrs
 Average Depth at Peak Storage= 0.17'
 Bank-Full Depth= 1.00' Flow Area= 15.0 sf, Capacity= 92.76 cfs

5.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds
 Side Slope Z-value= 10.0 '/' Top Width= 25.00'
 Length= 700.0' Slope= 0.0421 '/'
 Inlet Invert= 157.50', Outlet Invert= 128.00'



Summary for Pond 3P: POND 3 (Ocean Ridge)

Inflow Area = 2.67 ac, 46.07% Impervious, Inflow Depth = 3.28" for Cumberland_10 event
 Inflow = 7.37 cfs @ 12.24 hrs, Volume= 0.730 af
 Outflow = 2.79 cfs @ 12.62 hrs, Volume= 0.730 af, Atten= 62%, Lag= 22.9 min
 Primary = 2.79 cfs @ 12.62 hrs, Volume= 0.730 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
 Peak Elev= 160.74' @ 12.62 hrs Surf.Area= 5,209 sf Storage= 10,521 cf

Plug-Flow detention time= 75.3 min calculated for 0.730 af (100% of inflow)
 Center-of-Mass det. time= 74.8 min (895.1 - 820.3)

Volume	Invert	Avail.Storage	Storage Description
#1	158.00'	21,813 cf	Custom Stage Data (Prismatic) Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
158.00	2,113	0	0
160.00	4,304	6,417	6,417
162.00	6,739	11,043	17,460
162.60	7,772	4,353	21,813

Device	Routing	Invert	Outlet Devices
#1	Primary	158.00'	6.0" Vert. Orifice/Grate C= 0.600
#2	Primary	160.00'	9.0" Vert. Orifice/Grate C= 0.600
#3	Primary	161.00'	4.5" Vert. Orifice/Grate C= 0.600
#4	Primary	161.50'	20.0' long Broad-Crested Rectangular Weir X 1.81
			Head (feet) 0.50 1.00 1.50
			Coef. (English) 1.60 1.80 1.90

Primary OutFlow Max=2.79 cfs @ 12.62 hrs HW=160.74' (Free Discharge)

1=Orifice/Grate (Orifice Controls 1.49 cfs @ 7.60 fps)

2=Orifice/Grate (Orifice Controls 1.29 cfs @ 2.94 fps)

3=Orifice/Grate (Controls 0.00 cfs)

4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 30P: POND 30 (Ocean Ridge)

Inflow Area = 0.82 ac, 45.12% Impervious, Inflow Depth = 3.29" for Cumberland_10 event
 Inflow = 2.64 cfs @ 12.21 hrs, Volume= 0.225 af
 Outflow = 2.22 cfs @ 12.28 hrs, Volume= 0.225 af, Atten= 16%, Lag= 4.5 min
 Primary = 2.22 cfs @ 12.28 hrs, Volume= 0.225 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
 Peak Elev= 160.73' @ 12.28 hrs Surf.Area= 1,462 sf Storage= 1,151 cf

Plug-Flow detention time= 25.7 min calculated for 0.225 af (100% of inflow)
 Center-of-Mass det. time= 25.8 min (839.5 - 813.7)

Volume	Invert	Avail.Storage	Storage Description
#1	160.00'	3,156 cf	Custom Stage Data (Prismatic) Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
160.00	1,150	0	0
162.00	2,006	3,156	3,156

Device	Routing	Invert	Outlet Devices
#1	Primary	160.00'	18.0" Round Culvert L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 160.00' / 159.70' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=2.22 cfs @ 12.28 hrs HW=160.73' (Free Discharge)

↑**1=Culvert** (Barrel Controls 2.22 cfs @ 3.82 fps)

Summary for Pond 60R: FIELD CB

Inflow Area = 0.42 ac, 23.00% Impervious, Inflow Depth = 2.91" for Cumberland_10 event
 Inflow = 1.48 cfs @ 12.07 hrs, Volume= 0.102 af
 Outflow = 1.48 cfs @ 12.07 hrs, Volume= 0.102 af, Atten= 0%, Lag= 0.0 min
 Primary = 1.48 cfs @ 12.07 hrs, Volume= 0.102 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Peak Elev= 90.65' @ 12.07 hrs

Flood Elev= 91.81'

Device	Routing	Invert	Outlet Devices
#1	Primary	90.00'	12.0" Round Culvert L= 110.0' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 90.00' / 89.00' S= 0.0091 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=1.47 cfs @ 12.07 hrs HW=90.65' (Free Discharge)

↑**1=Culvert** (Inlet Controls 1.47 cfs @ 2.74 fps)

Summary for Pond 62P: Driveway Culvert

Inflow Area = 12.76 ac, 29.23% Impervious, Inflow Depth > 2.87" for Cumberland_10 event
 Inflow = 14.61 cfs @ 12.46 hrs, Volume= 3.055 af
 Outflow = 14.58 cfs @ 12.48 hrs, Volume= 3.055 af, Atten= 0%, Lag= 1.3 min
 Primary = 8.18 cfs @ 12.48 hrs, Volume= 2.731 af
 Secondary = 6.40 cfs @ 12.48 hrs, Volume= 0.324 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Peak Elev= 89.73' @ 12.48 hrs Surf.Area= 2,672 sf Storage= 1,325 cf

Plug-Flow detention time= 0.8 min calculated for 3.055 af (100% of inflow)

Center-of-Mass det. time= 0.8 min (952.3 - 951.5)

Volume	Invert	Avail.Storage	Storage Description
#1	88.00'	2,197 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
88.00	47	50.0	0	0	47
89.00	540	284.0	249	249	6,269
90.00	3,860	500.0	1,948	2,197	19,750

Device	Routing	Invert	Outlet Devices
#1	Primary	87.50'	18.0" Round Culvert L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 87.50' / 87.00' S= 0.0143 '/ Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Secondary	89.50'	22.0' long x 13.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.60 2.64 2.70 2.66 2.65 2.66 2.65 2.63

Primary OutFlow Max=8.18 cfs @ 12.48 hrs HW=89.73' (Free Discharge)

↑**1=Culvert** (Inlet Controls 8.18 cfs @ 4.63 fps)

Secondary OutFlow Max=6.40 cfs @ 12.48 hrs HW=89.73' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** (Weir Controls 6.40 cfs @ 1.25 fps)

Summary for Pond 66P: 24" Cross culvert

Inflow Area = 13.95 ac, 28.00% Impervious, Inflow Depth > 2.86" for Cumberland_10 event
 Inflow = 15.81 cfs @ 12.46 hrs, Volume= 3.325 af
 Outflow = 15.75 cfs @ 12.49 hrs, Volume= 3.325 af, Atten= 0%, Lag= 1.6 min
 Primary = 15.75 cfs @ 12.49 hrs, Volume= 3.325 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs / 6
 Peak Elev= 87.19' @ 12.49 hrs Surf.Area= 544 sf Storage= 365 cf

Plug-Flow detention time= 0.2 min calculated for 3.324 af (100% of inflow)

Center-of-Mass det. time= 0.2 min (942.0 - 941.8)

Volume	Invert	Avail.Storage	Storage Description
#1	84.00'	1,817 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
84.00	5	5.0	0	0	5
85.00	25	25.0	14	14	55
86.00	63	40.0	43	56	139
87.00	425	195.0	217	273	3,040
88.00	1,210	305.0	784	1,058	7,424
88.50	1,850	330.0	759	1,817	8,697

Device	Routing	Invert	Outlet Devices
#1	Primary	84.45'	24.0" Round Culvert L= 65.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 84.45' / 84.13' S= 0.0049 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Secondary	88.50'	12.0' long x 12.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=15.75 cfs @ 12.49 hrs HW=87.19' (Free Discharge)

↑**1=Culvert** (Inlet Controls 15.75 cfs @ 5.01 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=84.00' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 100R: Vortech-DMH2

Inflow Area = 3.06 ac, 38.89% Impervious, Inflow Depth = 3.17" for Cumberland_10 event
 Inflow = 9.78 cfs @ 12.13 hrs, Volume= 0.809 af
 Outflow = 9.78 cfs @ 12.13 hrs, Volume= 0.809 af, Atten= 0%, Lag= 0.0 min
 Primary = 9.78 cfs @ 12.13 hrs, Volume= 0.809 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Peak Elev= 109.07' @ 12.13 hrs

Flood Elev= 112.16'

Device	Routing	Invert	Outlet Devices
#1	Primary	107.00'	18.0" Round Culvert L= 318.0' Ke= 0.500 Inlet / Outlet Invert= 107.00' / 98.52' S= 0.0267 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=9.76 cfs @ 12.13 hrs HW=109.07' (Free Discharge)

↑**1=Culvert** (Inlet Controls 9.76 cfs @ 5.52 fps)

Summary for Pond 101R: DMH2-DMH1(DMH1606)

Inflow Area = 3.06 ac, 38.89% Impervious, Inflow Depth = 3.17" for Cumberland_10 event
 Inflow = 9.78 cfs @ 12.13 hrs, Volume= 0.809 af
 Outflow = 9.78 cfs @ 12.13 hrs, Volume= 0.809 af, Atten= 0%, Lag= 0.0 min
 Primary = 9.78 cfs @ 12.13 hrs, Volume= 0.809 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Peak Elev= 100.45' @ 12.13 hrs

Flood Elev= 103.21'

Device	Routing	Invert	Outlet Devices
#1	Primary	98.38'	18.0" Round Culvert L= 177.0' Ke= 0.500 Inlet / Outlet Invert= 98.38' / 91.46' S= 0.0391 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=9.76 cfs @ 12.13 hrs HW=100.45' (Free Discharge)

↑**1=Culvert** (Inlet Controls 9.76 cfs @ 5.53 fps)

Summary for Pond 102R: DMH1606-DMH9

Inflow Area = 3.06 ac, 38.89% Impervious, Inflow Depth = 3.17" for Cumberland_10 event
 Inflow = 9.78 cfs @ 12.13 hrs, Volume= 0.809 af
 Outflow = 9.78 cfs @ 12.13 hrs, Volume= 0.809 af, Atten= 0%, Lag= 0.0 min
 Primary = 9.78 cfs @ 12.13 hrs, Volume= 0.809 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
 Peak Elev= 93.37' @ 12.13 hrs
 Flood Elev= 96.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	91.30'	18.0" Round Culvert L= 110.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 91.30' / 89.27' S= 0.0185 '/ Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=9.76 cfs @ 12.13 hrs HW=93.37' (Free Discharge)
 ↑ **1=Culvert** (Inlet Controls 9.76 cfs @ 5.53 fps)

Summary for Pond 103R: DMH9-DMH8

Inflow Area = 8.76 ac, 28.40% Impervious, Inflow Depth > 2.92" for Cumberland_10 event
 Inflow = 19.72 cfs @ 12.13 hrs, Volume= 2.135 af
 Outflow = 19.72 cfs @ 12.13 hrs, Volume= 2.135 af, Atten= 0%, Lag= 0.0 min
 Primary = 19.72 cfs @ 12.13 hrs, Volume= 2.135 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
 Peak Elev= 96.14' @ 12.13 hrs
 Flood Elev= 94.51'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.07'	18.0" Round Culvert L= 132.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 89.07' / 87.76' S= 0.0099 '/ Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=19.71 cfs @ 12.13 hrs HW=96.13' (Free Discharge)
 ↑ **1=Culvert** (Barrel Controls 19.71 cfs @ 11.15 fps)

Summary for Pond 104R: DMH8-DMH200

Inflow Area = 9.15 ac, 29.18% Impervious, Inflow Depth > 2.94" for Cumberland_10 event
 Inflow = 21.02 cfs @ 12.13 hrs, Volume= 2.245 af
 Outflow = 21.02 cfs @ 12.13 hrs, Volume= 2.245 af, Atten= 0%, Lag= 0.0 min
 Primary = 21.02 cfs @ 12.13 hrs, Volume= 2.245 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
 Peak Elev= 100.74' @ 12.13 hrs
 Flood Elev= 92.36'

Device	Routing	Invert	Outlet Devices
#1	Primary	87.66'	18.0" Round Culvert L= 273.0' RCP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 87.66' / 86.60' S= 0.0039 '/' Cc= 0.900
n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=21.00 cfs @ 12.13 hrs HW=100.71' (Free Discharge)

↑**1=Culvert** (Barrel Controls 21.00 cfs @ 11.88 fps)

Summary for Pond 105R: DMH200-OUTLET

Inflow Area = 9.15 ac, 29.18% Impervious, Inflow Depth > 2.94" for Cumberland_10 event
Inflow = 21.02 cfs @ 12.13 hrs, Volume= 2.245 af
Outflow = 21.02 cfs @ 12.13 hrs, Volume= 2.245 af, Atten= 0%, Lag= 0.0 min
Primary = 21.02 cfs @ 12.13 hrs, Volume= 2.245 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Peak Elev= 93.38' @ 12.13 hrs

Flood Elev= 89.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	86.53'	18.0" Round Culvert L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 86.53' / 84.13' S= 0.0400 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=21.00 cfs @ 12.13 hrs HW=93.37' (Free Discharge)

↑**1=Culvert** (Inlet Controls 21.00 cfs @ 11.88 fps)

Summary for Pond 210P: Sand Filter mc3500

Inflow Area = 3.31 ac, 63.75% Impervious, Inflow Depth = 3.59" for Cumberland_10 event
Inflow = 13.91 cfs @ 12.07 hrs, Volume= 0.992 af
Outflow = 3.53 cfs @ 12.43 hrs, Volume= 0.965 af, Atten= 75%, Lag= 21.7 min
Primary = 3.53 cfs @ 12.43 hrs, Volume= 0.965 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Peak Elev= 128.82' @ 12.43 hrs Surf.Area= 6,773 sf Storage= 19,250 cf

Plug-Flow detention time= 339.0 min calculated for 0.965 af (97% of inflow)

Center-of-Mass det. time= 322.9 min (1,111.6 - 788.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	124.70'	9,447 cf	80.08'W x 84.57'L x 5.50'H Field A 37,250 cf Overall - 13,632 cf Embedded = 23,618 cf x 40.0% Voids
#2A	125.45'	13,632 cf	ADS_StormTech MC-3500 d +Cap x 121 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 11 Rows of 11 Chambers Cap Storage= +14.9 cf x 2 x 11 rows = 327.8 cf
		23,079 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	121.00'	15.0" Round Culvert L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 121.00' / 117.00' S= 0.0800 '/ Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	121.00'	1.0" Vert. Orifice/Grate X 2.00 C= 0.600
#3	Device 1	126.80'	7.0" Vert. Orifice/Grate X 2.00 C= 0.600
#4	Device 1	129.87'	6.0' long x 1.50' rise Sharp-Crested Vee/Trap Weir Cv= 2.62 (C= 3.28)

Primary OutFlow Max=3.53 cfs @ 12.43 hrs HW=128.82' (Free Discharge)

- 1=Culvert (Passes 3.53 cfs of 15.85 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 0.15 cfs @ 13.43 fps)
 3=Orifice/Grate (Orifice Controls 3.39 cfs @ 6.33 fps)
 4=Sharp-Crested Vee/Trap Weir (Controls 0.00 cfs)

Summary for Pond 220P: UDF

Inflow Area = 0.90 ac, 50.00% Impervious, Inflow Depth = 3.44" for Cumberland_10 event
 Inflow = 3.62 cfs @ 12.07 hrs, Volume= 0.258 af
 Outflow = 1.15 cfs @ 12.37 hrs, Volume= 0.256 af, Atten= 68%, Lag= 17.6 min
 Primary = 1.15 cfs @ 12.37 hrs, Volume= 0.256 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
 Peak Elev= 126.60' @ 12.37 hrs Surf.Area= 3,591 sf Storage= 4,625 cf

Plug-Flow detention time= 348.8 min calculated for 0.256 af (99% of inflow)
 Center-of-Mass det. time= 344.4 min (1,135.5 - 791.0)

Volume	Invert	Avail.Storage	Storage Description
#1	125.00'	10,527 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
125.00	2,326	0	0
126.00	2,974	2,650	2,650
127.00	4,000	3,487	6,137
128.00	4,780	4,390	10,527

Device	Routing	Invert	Outlet Devices
#1	Primary	122.83'	12.0" Round Culvert L= 78.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 122.83' / 122.28' S= 0.0071 '/ Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	122.83'	0.9" Vert. Orifice/Grate C= 0.600
#3	Device 2	125.00'	2.400 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 0.00'
#4	Device 1	126.00'	4.0" Vert. Orifice/Grate X 4.00 C= 0.600
#5	Device 1	127.00'	20.0" Vert. Orifice/Grate C= 0.600
#6	Secondary	127.50'	10.0' long x 8.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=1.15 cfs @ 12.37 hrs HW=126.60' (Free Discharge)

- ↑ **1=Culvert** (Passes 1.15 cfs of 6.07 cfs potential flow)
- ↑ **2=Orifice/Grate** (Orifice Controls 0.04 cfs @ 9.30 fps)
- ↑ **3=Exfiltration** (Passes 0.04 cfs of 0.20 cfs potential flow)
- ↑ **4=Orifice/Grate** (Orifice Controls 1.11 cfs @ 3.18 fps)
- ↑ **5=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=125.00' (Free Discharge)

- ↑ **6=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Time span=0.00-45.00 hrs, dt=0.01 hrs, 4501 points
 Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
 Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: BASIN 1 (Ocean Ridge)	Runoff Area=2.60 ac 34.62% Impervious Runoff Depth=4.22" Flow Length=660' Tc=9.9 min CN=86 Runoff=11.06 cfs 0.914 af
Subcatchment 3: Sub 3	Runoff Area=0.30 ac 30.67% Impervious Runoff Depth=4.22" Flow Length=300' Tc=9.4 min CN=86 Runoff=1.30 cfs 0.105 af
Subcatchment 6: Sub 6	Runoff Area=0.42 ac 23.00% Impervious Runoff Depth=4.01" Flow Length=235' Tc=5.0 min CN=84 Runoff=2.02 cfs 0.140 af
Subcatchment 11: Sub 11	Runoff Area=1.88 ac 21.71% Impervious Runoff Depth=3.80" Flow Length=375' Tc=7.3 min CN=82 Runoff=7.96 cfs 0.596 af
Subcatchment 12: Sub 12	Runoff Area=2.61 ac 6.13% Impervious Runoff Depth=3.50" Flow Length=710' Tc=21.5 min CN=79 Runoff=7.01 cfs 0.762 af
Subcatchment 15: Sub 15	Runoff Area=0.27 ac 66.67% Impervious Runoff Depth=4.87" Flow Length=342' Tc=5.0 min CN=92 Runoff=1.50 cfs 0.110 af
Subcatchment 15A: Sub 15A	Runoff Area=0.09 ac 66.67% Impervious Runoff Depth=4.87" Flow Length=87' Tc=5.0 min CN=92 Runoff=0.50 cfs 0.037 af
Subcatchment 20: Subarea 2	Runoff Area=6.36 ac 4.61% Impervious Runoff Depth=3.40" Flow Length=1,435' Tc=32.5 min CN=78 Runoff=13.85 cfs 1.804 af
Subcatchment 21: Sub 21	Runoff Area=3.31 ac 63.75% Impervious Runoff Depth=4.76" Tc=5.0 min CN=91 Runoff=18.15 cfs 1.313 af
Subcatchment 22: Sub 22	Runoff Area=0.70 ac 64.29% Impervious Runoff Depth=4.87" Tc=5.0 min CN=92 Runoff=3.89 cfs 0.284 af
Subcatchment 23: Sub 23	Runoff Area=0.20 ac 0.00% Impervious Runoff Depth=3.60" Tc=5.0 min CN=80 Runoff=0.87 cfs 0.060 af
Subcatchment 40: Sub 40	Runoff Area=1.12 ac 0.00% Impervious Runoff Depth=3.31" Flow Length=250' Tc=9.1 min CN=77 Runoff=3.90 cfs 0.308 af
Subcatchment 50: Sub 50	Runoff Area=1.19 ac 14.79% Impervious Runoff Depth=3.80" Flow Length=360' Tc=9.9 min CN=82 Runoff=4.62 cfs 0.377 af
Subcatchment 100: Subarea 100	Runoff Area=0.22 ac 100.00% Impervious Runoff Depth=5.56" Flow Length=572' Tc=6.6 min CN=98 Runoff=1.23 cfs 0.102 af
Subcatchment 101S: BASIN 101 (Ocean Ridge)	Runoff Area=0.19 ac 57.89% Impervious Runoff Depth=4.65" Flow Length=155' Tc=6.4 min CN=90 Runoff=0.98 cfs 0.074 af
Subcatchment 300: Subarea 300	Runoff Area=0.09 ac 100.00% Impervious Runoff Depth=5.56" Flow Length=162' Tc=5.0 min CN=98 Runoff=0.53 cfs 0.042 af

Subcatchment 301S: BASIN 301 (Ocean Ridge)	Runoff Area=0.82 ac 45.12% Impervious Runoff Depth=4.43" Flow Length=190' Tc=9.3 min CN=88 Runoff=3.69 cfs 0.303 af
Subcatchment 302S: BASIN 302 (Ocean Ridge)	Runoff Area=1.27 ac 58.27% Impervious Runoff Depth=4.65" Flow Length=130' Slope=0.0200 '/' Tc=9.1 min CN=90 Runoff=5.97 cfs 0.492 af
Subcatchment 303S: BASIN 3 (Ocean Ridge)	Runoff Area=0.58 ac 20.69% Impervious Runoff Depth=3.91" Flow Length=150' Tc=8.1 min CN=83 Runoff=2.45 cfs 0.189 af
Reach 3R: VEGETATED SWALE 1 (Ocean Ridge)	Avg. Flow Depth=0.83' Max Vel=0.79 fps Inflow=5.97 cfs 0.492 af n=0.150 L=170.0' S=0.0120 '/' Capacity=30.82 cfs Outflow=5.56 cfs 0.492 af
Reach 4R: SP#2	Inflow=3.90 cfs 0.308 af Outflow=3.90 cfs 0.308 af
Reach 31R: CULVERT 3 (Ocean Ridge)	Avg. Flow Depth=0.75' Max Vel=5.29 fps Inflow=3.04 cfs 0.303 af 11.0" Round Pipe n=0.012 L=50.0' S=0.0100 '/' Capacity=3.06 cfs Outflow=3.04 cfs 0.303 af
Reach 32R: VEGETATED SWALE 2 (Ocean Ridge)	Avg. Flow Depth=0.63' Max Vel=0.71 fps Inflow=3.69 cfs 0.303 af n=0.150 L=115.0' S=0.0130 '/' Capacity=32.02 cfs Outflow=3.54 cfs 0.303 af
Reach 33R: Wetland Flow	Avg. Flow Depth=0.29' Max Vel=0.87 fps Inflow=3.95 cfs 0.984 af n=0.035 L=150.0' S=0.0033 '/' Capacity=52.28 cfs Outflow=3.93 cfs 0.984 af
Reach 106R: SP#1 (Eben Hill Road)	Inflow=44.57 cfs 7.626 af Outflow=44.57 cfs 7.626 af
Reach 122R: ROADWAY GUTTER	Avg. Flow Depth=0.40' Max Vel=4.86 fps Inflow=7.01 cfs 0.762 af n=0.025 L=290.0' S=0.0379 '/' Capacity=10.97 cfs Outflow=6.99 cfs 0.762 af
Reach 123R: CURB ROAD GUTTER	Avg. Flow Depth=0.25' Max Vel=4.32 fps Inflow=8.71 cfs 1.139 af n=0.013 L=80.0' S=0.0200 '/' Capacity=48.18 cfs Outflow=8.71 cfs 1.139 af
Reach 210R: Woods overland	Avg. Flow Depth=0.22' Max Vel=2.57 fps Inflow=8.03 cfs 1.284 af n=0.035 L=50.0' S=0.0400 '/' Capacity=40.80 cfs Outflow=8.02 cfs 1.284 af
Reach 220R: Access Ditch	Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af n=0.025 L=310.0' S=0.0500 '/' Capacity=47.31 cfs Outflow=0.00 cfs 0.000 af
Reach 221R: Overland Flow	Avg. Flow Depth=0.08' Max Vel=2.04 fps Inflow=1.77 cfs 0.378 af n=0.040 L=180.0' S=0.1111 '/' Capacity=59.50 cfs Outflow=1.77 cfs 0.378 af
Reach 240R: EXISTING CHANNEL	Avg. Flow Depth=0.27' Max Vel=4.65 fps Inflow=3.91 cfs 0.983 af n=0.025 L=340.0' S=0.0529 '/' Capacity=57.44 cfs Outflow=3.90 cfs 0.983 af
Reach 241R: EXISTING CHANNEL	Avg. Flow Depth=0.38' Max Vel=6.65 fps Inflow=8.98 cfs 2.268 af n=0.025 L=300.0' S=0.0750 '/' Capacity=68.36 cfs Outflow=8.95 cfs 2.267 af
Reach 340R: Woodland Flow	Avg. Flow Depth=0.21' Max Vel=2.60 fps Inflow=3.93 cfs 0.984 af n=0.035 L=700.0' S=0.0421 '/' Capacity=92.76 cfs Outflow=3.91 cfs 0.983 af

Pond 3P: POND 3 (Ocean Ridge)	Peak Elev=161.33' Storage=13,782 cf Inflow=9.99 cfs 0.984 af Outflow=3.95 cfs 0.984 af
Pond 30P: POND 30 (Ocean Ridge)	Peak Elev=160.88' Storage=1,387 cf Inflow=3.54 cfs 0.303 af 18.0" Round Culvert n=0.012 L=30.0' S=0.0100 '/' Outflow=3.04 cfs 0.303 af
Pond 60R: FIELD CB	Peak Elev=90.79' Inflow=2.02 cfs 0.140 af 12.0" Round Culvert n=0.012 L=110.0' S=0.0091 '/' Outflow=2.02 cfs 0.140 af
Pond 62P: Driveway Culvert	Peak Elev=89.88' Storage=1,753 cf Inflow=21.95 cfs 4.211 af Primary=8.56 cfs 3.382 af Secondary=13.35 cfs 0.829 af Outflow=21.92 cfs 4.211 af
Pond 66P: 24" Cross culvert	Peak Elev=88.68' Storage=1,817 cf Inflow=24.07 cfs 4.588 af Primary=21.46 cfs 4.544 af Secondary=2.33 cfs 0.037 af Outflow=23.78 cfs 4.581 af
Pond 100R: Vortech-DMH2	Peak Elev=110.12' Inflow=13.11 cfs 1.098 af 18.0" Round Culvert n=0.012 L=318.0' S=0.0267 '/' Outflow=13.11 cfs 1.098 af
Pond 101R: DMH2-DMH1(DMH1606)	Peak Elev=101.50' Inflow=13.11 cfs 1.098 af 18.0" Round Culvert n=0.012 L=177.0' S=0.0391 '/' Outflow=13.11 cfs 1.098 af
Pond 102R: DMH1606-DMH9	Peak Elev=94.42' Inflow=13.11 cfs 1.098 af 18.0" Round Culvert n=0.012 L=110.0' S=0.0185 '/' Outflow=13.11 cfs 1.098 af
Pond 103R: DMH9-DMH8	Peak Elev=102.54' Inflow=27.40 cfs 2.935 af 18.0" Round Culvert n=0.012 L=132.0' S=0.0099 '/' Outflow=27.40 cfs 2.935 af
Pond 104R: DMH8-DMH200	Peak Elev=112.37' Inflow=29.13 cfs 3.082 af 18.0" Round Culvert n=0.012 L=273.0' S=0.0039 '/' Outflow=29.13 cfs 3.082 af
Pond 105R: DMH200-OUTLET	Peak Elev=99.00' Inflow=29.13 cfs 3.082 af 18.0" Round Culvert n=0.012 L=60.0' S=0.0400 '/' Outflow=29.13 cfs 3.082 af
Pond 210P: Sand Filter mc3500	Peak Elev=130.18' Storage=23,017 cf Inflow=18.15 cfs 1.313 af Outflow=8.03 cfs 1.284 af
Pond 220P: UDF	Peak Elev=126.96' Storage=5,960 cf Inflow=4.77 cfs 0.344 af Primary=1.54 cfs 0.342 af Secondary=0.00 cfs 0.000 af Outflow=1.54 cfs 0.342 af
Total Runoff Area = 24.22 ac Runoff Volume = 8.012 af Average Runoff Depth = 3.97"	
72.85% Pervious = 17.64 ac 27.15% Impervious = 6.58 ac	

Summary for Subcatchment 1S: BASIN 1 (Ocean Ridge)

Runoff = 11.06 cfs @ 12.13 hrs, Volume= 0.914 af, Depth= 4.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
* 0.90	98	IMPERVIOUS
* 0.38	77	WOODS D
* 1.32	80	LAWN D
2.60	86	Weighted Average
1.70		65.38% Pervious Area
0.90		34.62% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0200	0.10		Sheet Flow, OVERLAND FLOW Grass: Dense n= 0.240 P2= 3.00"
0.4	140	0.0430	5.46	65.53	Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.060
0.2	90	0.0550	6.18	74.11	Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch Bot.W=2.00' D=2.00' Z= 2.0 '/' Top.W=10.00' n= 0.060
0.8	380	0.0900	7.45	64.10	Trap/Vee/Rect Channel Flow, Segment ID: riprap road ditch Bot.W=2.00' D=2.00' Z= 2.0 & 0.3 '/' Top.W=6.60' n= 0.060
9.9	660	Total			

Summary for Subcatchment 3: Sub 3

Runoff = 1.30 cfs @ 12.13 hrs, Volume= 0.105 af, Depth= 4.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
* 0.04	98	Paved roads Ocean Ave
0.26	84	1 acre lots, 20% imp, HSG D
0.30	86	Weighted Average
0.21		69.33% Pervious Area
0.09		30.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.7	60	0.1000	0.13		Sheet Flow, A-B Woods: Light underbrush n= 0.400 P2= 3.00"
1.2	160	0.1000	2.21		Shallow Concentrated Flow, B-C Short Grass Pasture Kv= 7.0 fps
0.5	80	0.0150	2.49		Shallow Concentrated Flow, C-D Paved Kv= 20.3 fps
9.4	300	Total			

Summary for Subcatchment 6: Sub 6

Runoff = 2.02 cfs @ 12.07 hrs, Volume= 0.140 af, Depth= 4.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
0.35	84	1 acre lots, 20% imp, HSG D
0.07	87	1/4 acre lots, 38% imp, HSG D
0.42	84	Weighted Average
0.32		77.00% Pervious Area
0.10		23.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
3.3	25	0.1500	0.13		Sheet Flow, A-B Woods: Light underbrush n= 0.400 P2= 3.00"
0.4	60	0.2300	2.40		Shallow Concentrated Flow, B-C Woodland Kv= 5.0 fps
0.4	150	0.0400	5.86	41.05	Trap/Vee/Rect Channel Flow, C-D Bot.W=2.00' D=1.00' Z= 5.0 '/' Top.W=12.00' n= 0.035
4.1	235	Total, Increased to minimum Tc = 5.0 min			

Summary for Subcatchment 11: Sub 11

Runoff = 7.96 cfs @ 12.10 hrs, Volume= 0.596 af, Depth= 3.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
1.04	77	Woods, Good, HSG D
* 0.19	98	Paved roads Ocean Ave
* 0.05	98	Paved roads, Site Drive
0.02	80	>75% Grass cover, Good, HSG D
0.29	84	1 acre lots, 20% imp, HSG D
0.29	87	1/4 acre lots, 38% imp, HSG D
1.88	82	Weighted Average
1.47		78.29% Pervious Area
0.41		21.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	40	0.1000	0.12		Sheet Flow, A-B Woods: Light underbrush n= 0.400 P2= 3.00"
0.7	95	0.2000	2.24		Shallow Concentrated Flow, B-C Woodland Kv= 5.0 fps
1.0	240	0.0400	4.06		Shallow Concentrated Flow, C-D Paved Kv= 20.3 fps
7.3	375	Total			

Summary for Subcatchment 12: Sub 12

Runoff = 7.01 cfs @ 12.30 hrs, Volume= 0.762 af, Depth= 3.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
2.01	77	Woods, Good, HSG D
0.18	80	>75% Grass cover, Good, HSG D
* 0.04	98	Paved roads OCEAN AVE
* 0.07	98	Roofs, OCEAN RIDGE
* 0.05	98	Paved roads Ocean Ridge
* 0.03	77	Woods, Good, HSG D Ocean Ridge
* 0.23	80	>75% Grass cover, Good, HSG D Ocean Ridge
2.61	79	Weighted Average
2.45		93.87% Pervious Area
0.16		6.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.1	110	0.0400	0.10		Sheet Flow, A-B Woods: Light underbrush n= 0.400 P2= 3.00"
2.8	270	0.1000	1.58		Shallow Concentrated Flow, B-C Woodland Kv= 5.0 fps
0.6	330	0.0500	9.46	47.31	Trap/Vee/Rect Channel Flow, C-D Bot.W=2.00' D=1.00' Z= 3.0 '/' Top.W=8.00' n= 0.025 Earth, clean & winding
21.5	710	Total			

Summary for Subcatchment 15: Sub 15

Runoff = 1.50 cfs @ 12.07 hrs, Volume= 0.110 af, Depth= 4.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
* 0.18	98	Paved roads Site Drive
0.09	80	>75% Grass cover, Good, HSG D
0.27	92	Weighted Average
0.09		33.33% Pervious Area
0.18		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		Sheet Flow, A-B
					Smooth surfaces n= 0.011 P2= 3.00"
1.2	330	0.0500	4.54		Shallow Concentrated Flow, B-C
					Paved Kv= 20.3 fps
3.6					Direct Entry, C-D
5.0	342	Total			

Summary for Subcatchment 15A: Sub 15A

Runoff = 0.50 cfs @ 12.07 hrs, Volume= 0.037 af, Depth= 4.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
* 0.06	98	Paved roads Site Drive
0.03	80	>75% Grass cover, Good, HSG D
0.09	92	Weighted Average
0.03		33.33% Pervious Area
0.06		66.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		Sheet Flow, A-B
					Smooth surfaces n= 0.011 P2= 3.00"
0.3	75	0.0500	4.54		Shallow Concentrated Flow, B-C
					Paved Kv= 20.3 fps
4.5					Direct Entry, C-D
5.0	87	Total			

Summary for Subcatchment 20: Subarea 2

Runoff = 13.85 cfs @ 12.46 hrs, Volume= 1.804 af, Depth= 3.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
0.64	87	1/4 acre lots, 38% imp, HSG D
0.12	80	>75% Grass cover, Good, HSG D
* 0.05	98	Roadway, Ocean Ave
5.55	77	Woods, Good, HSG D
6.36	78	Weighted Average
6.07		95.39% Pervious Area
0.29		4.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	110	0.0800	0.13		Sheet Flow, Overland Woods
					Woods: Light underbrush n= 0.400 P2= 3.00"
18.8	1,325	0.0550	1.17		Shallow Concentrated Flow, Overland Woods
					Woodland Kv= 5.0 fps
32.5	1,435	Total			

Summary for Subcatchment 21: Sub 21

Runoff = 18.15 cfs @ 12.07 hrs, Volume= 1.313 af, Depth= 4.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
1.20	80	>75% Grass cover, Good, HSG D
* 2.11	98	Site Development
3.31	91	Weighted Average
1.20		36.25% Pervious Area
2.11		63.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment 22: Sub 22

Runoff = 3.89 cfs @ 12.07 hrs, Volume= 0.284 af, Depth= 4.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
* 0.45	98	Site Development
0.25	80	>75% Grass cover, Good, HSG D
0.70	92	Weighted Average
0.25		35.71% Pervious Area
0.45		64.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment 23: Sub 23

Runoff = 0.87 cfs @ 12.07 hrs, Volume= 0.060 af, Depth= 3.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
0.20	80	>75% Grass cover, Good, HSG D
0.20		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Summary for Subcatchment 40: Sub 40

Runoff = 3.90 cfs @ 12.13 hrs, Volume= 0.308 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
1.12	77	Woods, Good, HSG D
1.12		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.7	50	0.1000	0.12		Sheet Flow, A-B
					Woods: Light underbrush n= 0.400 P2= 3.00"
2.4	200	0.0750	1.37		Shallow Concentrated Flow, B-C
					Woodland Kv= 5.0 fps
9.1	250	Total			

Summary for Subcatchment 50: Sub 50

Runoff = 4.62 cfs @ 12.14 hrs, Volume= 0.377 af, Depth= 3.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
0.34	77	Woods, Good, HSG D
0.09	80	>75% Grass cover, Good, HSG D
* 0.03	98	Paved roads Ocean Ave
0.73	84	1 acre lots, 20% imp, HSG D
1.19	82	Weighted Average
1.01		85.21% Pervious Area
0.18		14.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	50	0.1200	0.13		Sheet Flow, A-B
					Woods: Light underbrush n= 0.400 P2= 3.00"
3.7	310	0.0800	1.41		Shallow Concentrated Flow, B-C
					Woodland Kv= 5.0 fps
9.9	360	Total			

Summary for Subcatchment 100: Subarea 100

Runoff = 1.23 cfs @ 12.09 hrs, Volume= 0.102 af, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
* 0.22	98	Roadway
0.22		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		Sheet Flow, Road Crown
					Smooth surfaces n= 0.011 P2= 3.00"
5.9	480	0.0380	1.36		Shallow Concentrated Flow, SHALLOW RD DITCH
					Short Grass Pasture Kv= 7.0 fps
0.5	80	0.0200	2.87		Shallow Concentrated Flow, ROAD GUTTER
					Paved Kv= 20.3 fps
6.6	572	Total			

Summary for Subcatchment 101S: BASIN 101 (Ocean Ridge)

Runoff = 0.98 cfs @ 12.09 hrs, Volume= 0.074 af, Depth= 4.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
* 0.11	98	IMPERVIOUS
* 0.08	80	LAWN D
0.19	90	Weighted Average
0.08		42.11% Pervious Area
0.11		57.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.6	30	0.0200	0.09		Sheet Flow, Segment ID: AB, Lawn Grass: Dense n= 0.240 P2= 3.00"
0.1	25	0.0200	2.87		Shallow Concentrated Flow, Segment ID: BC, Driveway Paved Kv= 20.3 fps
0.7	100	0.1200	2.42		Shallow Concentrated Flow, Segment ID: grass slope Short Grass Pasture Kv= 7.0 fps
6.4	155	Total			

Summary for Subcatchment 300: Subarea 300

Runoff = 0.53 cfs @ 12.07 hrs, Volume= 0.042 af, Depth= 5.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
* 0.09	98	Roadway
0.09		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	12	0.0200	0.87		Sheet Flow, Road Crown Smooth surfaces n= 0.011 P2= 3.00"
1.1	150	0.0130	2.31		Shallow Concentrated Flow, Gutter flow Paved Kv= 20.3 fps
3.7					Direct Entry,
5.0	162	Total			

Summary for Subcatchment 301S: BASIN 301 (Ocean Ridge)

Runoff = 3.69 cfs @ 12.13 hrs, Volume= 0.303 af, Depth= 4.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
* 0.37	98	IMPERVIOUS
* 0.45	80	LAWN D
0.82	88	Weighted Average
0.45		54.88% Pervious Area
0.37		45.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.3	60	0.0300	0.12		Sheet Flow, Segment ID: AB Grass: Dense n= 0.240 P2= 3.00"
0.4	50	0.0200	2.12		Shallow Concentrated Flow, Segment ID: BC Grassed Waterway Kv= 15.0 fps
0.6	80	0.0200	2.12		Shallow Concentrated Flow, Segment ID: CD Grassed Waterway Kv= 15.0 fps
9.3	190	Total			

Summary for Subcatchment 302S: BASIN 302 (Ocean Ridge)

Runoff = 5.97 cfs @ 12.12 hrs, Volume= 0.492 af, Depth= 4.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
* 0.74	98	IMPERVIOUS
* 0.05	77	WOODS D
* 0.48	80	LAWN D
1.27	90	Weighted Average
0.53		41.73% Pervious Area
0.74		58.27% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	50	0.0200	0.10		Sheet Flow, Segment ID: AB Grass: Dense n= 0.240 P2= 3.00"
0.2	30	0.0200	2.87		Shallow Concentrated Flow, Segment ID: BC Paved Kv= 20.3 fps
0.4	50	0.0200	2.12		Shallow Concentrated Flow, Segment ID: Grassed Waterway Kv= 15.0 fps
9.1	130	Total			

Summary for Subcatchment 303S: BASIN 3 (Ocean Ridge)

Runoff = 2.45 cfs @ 12.11 hrs, Volume= 0.189 af, Depth= 3.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Type III 24-hr Cumberland_25 Rainfall=5.80"

Area (ac)	CN	Description
* 0.12	98	IMPERVIOUS
* 0.08	77	WOODS D
* 0.38	80	LAWN D
0.58	83	Weighted Average
0.46		79.31% Pervious Area
0.12		20.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.2	30	0.0300	0.07		Sheet Flow, Segment ID: AB
					Woods: Light underbrush n= 0.400 P2= 3.00"
0.9	120	0.0200	2.12		Shallow Concentrated Flow, Segment ID: BC
					Grassed Waterway Kv= 15.0 fps
8.1	150	Total			

Summary for Reach 3R: VEGETATED SWALE 1 (Ocean Ridge)

Inflow Area = 1.27 ac, 58.27% Impervious, Inflow Depth = 4.65" for Cumberland_25 event

Inflow = 5.97 cfs @ 12.12 hrs, Volume= 0.492 af

Outflow = 5.56 cfs @ 12.22 hrs, Volume= 0.492 af, Atten= 7%, Lag= 5.9 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Max. Velocity= 0.79 fps, Min. Travel Time= 3.6 min

Avg. Velocity= 0.21 fps, Avg. Travel Time= 13.6 min

Peak Storage= 1,192 cf @ 12.16 hrs

Average Depth at Peak Storage= 0.83'

Bank-Full Depth= 2.00' Flow Area= 24.0 sf, Capacity= 30.82 cfs

6.00' x 2.00' deep channel, n= 0.150

Side Slope Z-value= 3.0 '/' Top Width= 18.00'

Length= 170.0' Slope= 0.0120 '/'

Inlet Invert= 0.00', Outlet Invert= -2.04'



Summary for Reach 4R: SP#2

Inflow Area = 1.12 ac, 0.00% Impervious, Inflow Depth = 3.31" for Cumberland_25 event
 Inflow = 3.90 cfs @ 12.13 hrs, Volume= 0.308 af
 Outflow = 3.90 cfs @ 12.13 hrs, Volume= 0.308 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Summary for Reach 31R: CULVERT 3 (Ocean Ridge)

Inflow Area = 0.82 ac, 45.12% Impervious, Inflow Depth = 4.43" for Cumberland_25 event
 Inflow = 3.04 cfs @ 12.27 hrs, Volume= 0.303 af
 Outflow = 3.04 cfs @ 12.28 hrs, Volume= 0.303 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs / 2

Max. Velocity= 5.29 fps, Min. Travel Time= 0.2 min

Avg. Velocity = 1.29 fps, Avg. Travel Time= 0.6 min

Peak Storage= 29 cf @ 12.27 hrs

Average Depth at Peak Storage= 0.75'

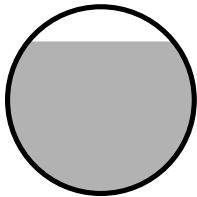
Bank-Full Depth= 0.92' Flow Area= 0.7 sf, Capacity= 3.06 cfs

11.0" Round Pipe

n= 0.012

Length= 50.0' Slope= 0.0100 '/'

Inlet Invert= 0.00', Outlet Invert= -0.50'

**Summary for Reach 32R: VEGETATED SWALE 2 (Ocean Ridge)**

Inflow Area = 0.82 ac, 45.12% Impervious, Inflow Depth = 4.43" for Cumberland_25 event
 Inflow = 3.69 cfs @ 12.13 hrs, Volume= 0.303 af
 Outflow = 3.54 cfs @ 12.20 hrs, Volume= 0.303 af, Atten= 4%, Lag= 4.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Max. Velocity= 0.71 fps, Min. Travel Time= 2.7 min

Avg. Velocity = 0.19 fps, Avg. Travel Time= 10.1 min

Peak Storage= 574 cf @ 12.16 hrs

Average Depth at Peak Storage= 0.63'

Bank-Full Depth= 2.00' Flow Area= 24.0 sf, Capacity= 32.02 cfs

6.00' x 2.00' deep channel, n= 0.150
 Side Slope Z-value= 3.0 '/' Top Width= 18.00'
 Length= 115.0' Slope= 0.0130 '/'
 Inlet Invert= 0.00', Outlet Invert= -1.49'



Summary for Reach 33R: Wetland Flow

Inflow Area = 2.67 ac, 46.07% Impervious, Inflow Depth > 4.42" for Cumberland_25 event
 Inflow = 3.95 cfs @ 12.58 hrs, Volume= 0.984 af
 Outflow = 3.93 cfs @ 12.67 hrs, Volume= 0.984 af, Atten= 0%, Lag= 5.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
 Max. Velocity= 0.87 fps, Min. Travel Time= 2.9 min
 Avg. Velocity = 0.26 fps, Avg. Travel Time= 9.8 min

Peak Storage= 680 cf @ 12.62 hrs
 Average Depth at Peak Storage= 0.29'
 Bank-Full Depth= 1.00' Flow Area= 30.0 sf, Capacity= 52.28 cfs

10.00' x 1.00' deep channel, n= 0.035 High grass
 Side Slope Z-value= 20.0 '/' Top Width= 50.00'
 Length= 150.0' Slope= 0.0033 '/'
 Inlet Invert= 158.00', Outlet Invert= 157.50'



Summary for Reach 106R: SP#1 (Eben Hill Road)

Inflow Area = 23.10 ac, 28.47% Impervious, Inflow Depth > 3.96" for Cumberland_25 event
 Inflow = 44.57 cfs @ 12.14 hrs, Volume= 7.626 af
 Outflow = 44.57 cfs @ 12.14 hrs, Volume= 7.626 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Summary for Reach 122R: ROADWAY GUTTER

Inflow Area = 2.61 ac, 6.13% Impervious, Inflow Depth = 3.50" for Cumberland_25 event
 Inflow = 7.01 cfs @ 12.30 hrs, Volume= 0.762 af
 Outflow = 6.99 cfs @ 12.32 hrs, Volume= 0.762 af, Atten= 0%, Lag= 1.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Max. Velocity= 4.86 fps, Min. Travel Time= 1.0 min

Avg. Velocity = 1.70 fps, Avg. Travel Time= 2.8 min

Peak Storage= 418 cf @ 12.31 hrs

Average Depth at Peak Storage= 0.40'

Bank-Full Depth= 0.50' Flow Area= 2.0 sf, Capacity= 10.97 cfs

2.00' x 0.50' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 3.0 5.0 '/' Top Width= 6.00'

Length= 290.0' Slope= 0.0379 '/'

Inlet Invert= 106.50', Outlet Invert= 95.50'

**Summary for Reach 123R: CURB ROAD GUTTER**

Inflow Area = 3.60 ac, 18.61% Impervious, Inflow Depth > 3.80" for Cumberland_25 event
 Inflow = 8.71 cfs @ 12.32 hrs, Volume= 1.139 af
 Outflow = 8.71 cfs @ 12.33 hrs, Volume= 1.139 af, Atten= 0%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Max. Velocity= 4.32 fps, Min. Travel Time= 0.3 min

Avg. Velocity = 1.32 fps, Avg. Travel Time= 1.0 min

Peak Storage= 161 cf @ 12.33 hrs

Average Depth at Peak Storage= 0.25'

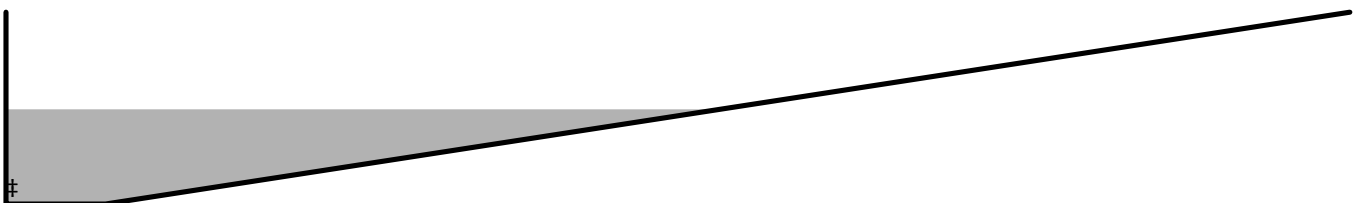
Bank-Full Depth= 0.50' Flow Area= 7.3 sf, Capacity= 48.18 cfs

2.00' x 0.50' deep channel, n= 0.013 Asphalt, smooth

Side Slope Z-value= 0.0 50.0 '/' Top Width= 27.00'

Length= 80.0' Slope= 0.0200 '/'

Inlet Invert= 95.50', Outlet Invert= 93.90'



Summary for Reach 210R: Woods overland

Inflow Area = 3.31 ac, 63.75% Impervious, Inflow Depth > 4.66" for Cumberland_25 event
 Inflow = 8.03 cfs @ 12.23 hrs, Volume= 1.284 af
 Outflow = 8.02 cfs @ 12.24 hrs, Volume= 1.284 af, Atten= 0%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Max. Velocity= 2.57 fps, Min. Travel Time= 0.3 min

Avg. Velocity = 0.73 fps, Avg. Travel Time= 1.1 min

Peak Storage= 156 cf @ 12.24 hrs

Average Depth at Peak Storage= 0.22'

Bank-Full Depth= 0.50' Flow Area= 10.0 sf, Capacity= 40.80 cfs

10.00' x 0.50' deep channel, n= 0.035 Earth, dense weeds

Side Slope Z-value= 20.0 '/' Top Width= 30.00'

Length= 50.0' Slope= 0.0400 '/'

Inlet Invert= 112.00', Outlet Invert= 110.00'

**Summary for Reach 220R: Access Ditch**

Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min

Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 0.00 hrs

Average Depth at Peak Storage= 0.00'

Bank-Full Depth= 1.00' Flow Area= 5.0 sf, Capacity= 47.31 cfs

2.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 3.0 '/' Top Width= 8.00'

Length= 310.0' Slope= 0.0500 '/'

Inlet Invert= 126.00', Outlet Invert= 110.50'



Summary for Reach 221R: Overland Flow

Inflow Area = 0.99 ac, 51.52% Impervious, Inflow Depth > 4.58" for Cumberland_25 event
 Inflow = 1.77 cfs @ 12.12 hrs, Volume= 0.378 af
 Outflow = 1.77 cfs @ 12.17 hrs, Volume= 0.378 af, Atten= 1%, Lag= 2.7 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
 Max. Velocity= 2.04 fps, Min. Travel Time= 1.5 min
 Avg. Velocity = 0.60 fps, Avg. Travel Time= 5.0 min

Peak Storage= 156 cf @ 12.14 hrs
 Average Depth at Peak Storage= 0.08'
 Bank-Full Depth= 0.50' Flow Area= 10.0 sf, Capacity= 59.50 cfs

10.00' x 0.50' deep channel, n= 0.040 Woods Overland flow
 Side Slope Z-value= 20.0 '/' Top Width= 30.00'
 Length= 180.0' Slope= 0.1111 '/'
 Inlet Invert= 120.00', Outlet Invert= 100.00'

**Summary for Reach 240R: EXISTING CHANNEL**

Inflow Area = 2.67 ac, 46.07% Impervious, Inflow Depth > 4.42" for Cumberland_25 event
 Inflow = 3.91 cfs @ 12.80 hrs, Volume= 0.983 af
 Outflow = 3.90 cfs @ 12.84 hrs, Volume= 0.983 af, Atten= 0%, Lag= 2.1 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
 Max. Velocity= 4.65 fps, Min. Travel Time= 1.2 min
 Avg. Velocity = 1.40 fps, Avg. Travel Time= 4.1 min

Peak Storage= 286 cf @ 12.81 hrs
 Average Depth at Peak Storage= 0.27'
 Bank-Full Depth= 1.00' Flow Area= 6.0 sf, Capacity= 57.44 cfs

2.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding
 Side Slope Z-value= 4.0 '/' Top Width= 10.00'
 Length= 340.0' Slope= 0.0529 '/'
 Inlet Invert= 128.00', Outlet Invert= 110.00'



Summary for Reach 241R: EXISTING CHANNEL

Inflow Area = 5.98 ac, 55.85% Impervious, Inflow Depth > 4.55" for Cumberland_25 event
Inflow = 8.98 cfs @ 12.25 hrs, Volume= 2.268 af
Outflow = 8.95 cfs @ 12.27 hrs, Volume= 2.267 af, Atten= 0%, Lag= 1.4 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Max. Velocity= 6.65 fps, Min. Travel Time= 0.8 min

Avg. Velocity = 2.31 fps, Avg. Travel Time= 2.2 min

Peak Storage= 404 cf @ 12.26 hrs

Average Depth at Peak Storage= 0.38'

Bank-Full Depth= 1.00' Flow Area= 6.0 sf, Capacity= 68.36 cfs

2.00' x 1.00' deep channel, n= 0.025 Earth, clean & winding

Side Slope Z-value= 4.0 '/' Top Width= 10.00'

Length= 300.0' Slope= 0.0750 '/'

Inlet Invert= 110.00', Outlet Invert= 87.50'

**Summary for Reach 340R: Woodland Flow**

Inflow Area = 2.67 ac, 46.07% Impervious, Inflow Depth > 4.42" for Cumberland_25 event
Inflow = 3.93 cfs @ 12.67 hrs, Volume= 0.984 af
Outflow = 3.91 cfs @ 12.80 hrs, Volume= 0.983 af, Atten= 1%, Lag= 8.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Max. Velocity= 2.60 fps, Min. Travel Time= 4.5 min

Avg. Velocity = 0.79 fps, Avg. Travel Time= 14.8 min

Peak Storage= 1,053 cf @ 12.72 hrs

Average Depth at Peak Storage= 0.21'

Bank-Full Depth= 1.00' Flow Area= 15.0 sf, Capacity= 92.76 cfs

5.00' x 1.00' deep channel, n= 0.035 Earth, dense weeds

Side Slope Z-value= 10.0 '/' Top Width= 25.00'

Length= 700.0' Slope= 0.0421 '/'

Inlet Invert= 157.50', Outlet Invert= 128.00'



Summary for Pond 3P: POND 3 (Ocean Ridge)

Inflow Area = 2.67 ac, 46.07% Impervious, Inflow Depth = 4.42" for Cumberland_25 event
 Inflow = 9.99 cfs @ 12.22 hrs, Volume= 0.984 af
 Outflow = 3.95 cfs @ 12.58 hrs, Volume= 0.984 af, Atten= 61%, Lag= 21.4 min
 Primary = 3.95 cfs @ 12.58 hrs, Volume= 0.984 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
 Peak Elev= 161.33' @ 12.58 hrs Surf.Area= 5,928 sf Storage= 13,782 cf

Plug-Flow detention time= 71.1 min calculated for 0.984 af (100% of inflow)
 Center-of-Mass det. time= 70.6 min (880.9 - 810.4)

Volume	Invert	Avail.Storage	Storage Description
#1	158.00'	21,813 cf	Custom Stage Data (Prismatic) Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
158.00	2,113	0	0
160.00	4,304	6,417	6,417
162.00	6,739	11,043	17,460
162.60	7,772	4,353	21,813

Device	Routing	Invert	Outlet Devices
#1	Primary	158.00'	6.0" Vert. Orifice/Grate C= 0.600
#2	Primary	160.00'	9.0" Vert. Orifice/Grate C= 0.600
#3	Primary	161.00'	4.5" Vert. Orifice/Grate C= 0.600
#4	Primary	161.50'	20.0' long Broad-Crested Rectangular Weir X 1.81
			Head (feet) 0.50 1.00 1.50
			Coef. (English) 1.60 1.80 1.90

Primary OutFlow Max=3.95 cfs @ 12.58 hrs HW=161.33' (Free Discharge)

1=Orifice/Grate (Orifice Controls 1.66 cfs @ 8.46 fps)
 2=Orifice/Grate (Orifice Controls 2.08 cfs @ 4.71 fps)
 3=Orifice/Grate (Orifice Controls 0.20 cfs @ 1.97 fps)
 4=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 30P: POND 30 (Ocean Ridge)

Inflow Area = 0.82 ac, 45.12% Impervious, Inflow Depth = 4.43" for Cumberland_25 event
 Inflow = 3.54 cfs @ 12.20 hrs, Volume= 0.303 af
 Outflow = 3.04 cfs @ 12.27 hrs, Volume= 0.303 af, Atten= 14%, Lag= 4.1 min
 Primary = 3.04 cfs @ 12.27 hrs, Volume= 0.303 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
 Peak Elev= 160.88' @ 12.27 hrs Surf.Area= 1,526 sf Storage= 1,387 cf

Plug-Flow detention time= 22.7 min calculated for 0.303 af (100% of inflow)
 Center-of-Mass det. time= 22.6 min (827.1 - 804.5)

Volume	Invert	Avail.Storage	Storage Description
#1	160.00'	3,156 cf	Custom Stage Data (Prismatic) Listed below

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
160.00	1,150	0	0
162.00	2,006	3,156	3,156

Device	Routing	Invert	Outlet Devices
#1	Primary	160.00'	18.0" Round Culvert L= 30.0' Ke= 0.500 Inlet / Outlet Invert= 160.00' / 159.70' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=3.04 cfs @ 12.27 hrs HW=160.88' (Free Discharge)

↑**1=Culvert** (Barrel Controls 3.04 cfs @ 4.07 fps)

Summary for Pond 60R: FIELD CB

Inflow Area = 0.42 ac, 23.00% Impervious, Inflow Depth = 4.01" for Cumberland_25 event
 Inflow = 2.02 cfs @ 12.07 hrs, Volume= 0.140 af
 Outflow = 2.02 cfs @ 12.07 hrs, Volume= 0.140 af, Atten= 0%, Lag= 0.0 min
 Primary = 2.02 cfs @ 12.07 hrs, Volume= 0.140 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Peak Elev= 90.79' @ 12.07 hrs

Flood Elev= 91.81'

Device	Routing	Invert	Outlet Devices
#1	Primary	90.00'	12.0" Round Culvert L= 110.0' Square-edged headwall, Ke= 0.500 Inlet / Outlet Invert= 90.00' / 89.00' S= 0.0091 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Primary OutFlow Max=2.02 cfs @ 12.07 hrs HW=90.79' (Free Discharge)

↑**1=Culvert** (Inlet Controls 2.02 cfs @ 3.03 fps)

Summary for Pond 62P: Driveway Culvert

Inflow Area = 12.76 ac, 29.23% Impervious, Inflow Depth > 3.96" for Cumberland_25 event
 Inflow = 21.95 cfs @ 12.39 hrs, Volume= 4.211 af
 Outflow = 21.92 cfs @ 12.40 hrs, Volume= 4.211 af, Atten= 0%, Lag= 0.8 min
 Primary = 8.56 cfs @ 12.40 hrs, Volume= 3.382 af
 Secondary = 13.35 cfs @ 12.40 hrs, Volume= 0.829 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Peak Elev= 89.88' @ 12.40 hrs Surf.Area= 3,283 sf Storage= 1,753 cf

Plug-Flow detention time= 0.8 min calculated for 4.210 af (100% of inflow)

Center-of-Mass det. time= 0.8 min (918.3 - 917.5)

Volume	Invert	Avail.Storage	Storage Description
#1	88.00'	2,197 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
88.00	47	50.0	0	0	47
89.00	540	284.0	249	249	6,269
90.00	3,860	500.0	1,948	2,197	19,750

Device	Routing	Invert	Outlet Devices
#1	Primary	87.50'	18.0" Round Culvert L= 35.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 87.50' / 87.00' S= 0.0143 '/ Cc= 0.900 n= 0.012, Flow Area= 1.77 sf
#2	Secondary	89.50'	22.0' long x 13.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.60 2.64 2.70 2.66 2.65 2.66 2.65 2.63

Primary OutFlow Max=8.56 cfs @ 12.40 hrs HW=89.88' (Free Discharge)

↑**1=Culvert** (Inlet Controls 8.56 cfs @ 4.85 fps)

Secondary OutFlow Max=13.35 cfs @ 12.40 hrs HW=89.88' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** (Weir Controls 13.35 cfs @ 1.62 fps)

Summary for Pond 66P: 24" Cross culvert

Inflow Area = 13.95 ac, 28.00% Impervious, Inflow Depth > 3.95" for Cumberland_25 event
 Inflow = 24.07 cfs @ 12.36 hrs, Volume= 4.588 af
 Outflow = 23.78 cfs @ 12.36 hrs, Volume= 4.581 af, Atten= 1%, Lag= 0.0 min
 Primary = 21.46 cfs @ 12.36 hrs, Volume= 4.544 af
 Secondary = 2.33 cfs @ 12.36 hrs, Volume= 0.037 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs / 6

Peak Elev= 88.68' @ 12.36 hrs Surf.Area= 1,850 sf Storage= 1,817 cf

Plug-Flow detention time= 3.3 min calculated for 4.581 af (100% of inflow)

Center-of-Mass det. time= 0.7 min (910.4 - 909.7)

Volume	Invert	Avail.Storage	Storage Description
#1	84.00'	1,817 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
84.00	5	5.0	0	0	5
85.00	25	25.0	14	14	55
86.00	63	40.0	43	56	139
87.00	425	195.0	217	273	3,040
88.00	1,210	305.0	784	1,058	7,424
88.50	1,850	330.0	759	1,817	8,697

Device	Routing	Invert	Outlet Devices
#1	Primary	84.45'	24.0" Round Culvert L= 65.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 84.45' / 84.13' S= 0.0049 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf
#2	Secondary	88.50'	12.0' long x 12.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.57 2.62 2.70 2.67 2.66 2.67 2.66 2.64

Primary OutFlow Max=21.46 cfs @ 12.36 hrs HW=88.68' (Free Discharge)

↑**1=Culvert** (Inlet Controls 21.46 cfs @ 6.83 fps)

Secondary OutFlow Max=2.32 cfs @ 12.36 hrs HW=88.68' (Free Discharge)

↑**2=Broad-Crested Rectangular Weir** (Weir Controls 2.32 cfs @ 1.09 fps)

Summary for Pond 100R: Vortech-DMH2

Inflow Area = 3.06 ac, 38.89% Impervious, Inflow Depth = 4.30" for Cumberland_25 event
 Inflow = 13.11 cfs @ 12.12 hrs, Volume= 1.098 af
 Outflow = 13.11 cfs @ 12.12 hrs, Volume= 1.098 af, Atten= 0%, Lag= 0.0 min
 Primary = 13.11 cfs @ 12.12 hrs, Volume= 1.098 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Peak Elev= 110.12' @ 12.12 hrs

Flood Elev= 112.16'

Device	Routing	Invert	Outlet Devices
#1	Primary	107.00'	18.0" Round Culvert L= 318.0' Ke= 0.500 Inlet / Outlet Invert= 107.00' / 98.52' S= 0.0267 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=13.10 cfs @ 12.12 hrs HW=110.12' (Free Discharge)

↑**1=Culvert** (Inlet Controls 13.10 cfs @ 7.41 fps)

Summary for Pond 101R: DMH2-DMH1(DMH1606)

Inflow Area = 3.06 ac, 38.89% Impervious, Inflow Depth = 4.30" for Cumberland_25 event
 Inflow = 13.11 cfs @ 12.12 hrs, Volume= 1.098 af
 Outflow = 13.11 cfs @ 12.12 hrs, Volume= 1.098 af, Atten= 0%, Lag= 0.0 min
 Primary = 13.11 cfs @ 12.12 hrs, Volume= 1.098 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Peak Elev= 101.50' @ 12.12 hrs

Flood Elev= 103.21'

Device	Routing	Invert	Outlet Devices
#1	Primary	98.38'	18.0" Round Culvert L= 177.0' Ke= 0.500 Inlet / Outlet Invert= 98.38' / 91.46' S= 0.0391 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=13.10 cfs @ 12.12 hrs HW=101.50' (Free Discharge)

↑**1=Culvert** (Inlet Controls 13.10 cfs @ 7.41 fps)

Summary for Pond 102R: DMH1606-DMH9

Inflow Area = 3.06 ac, 38.89% Impervious, Inflow Depth = 4.30" for Cumberland_25 event
 Inflow = 13.11 cfs @ 12.12 hrs, Volume= 1.098 af
 Outflow = 13.11 cfs @ 12.12 hrs, Volume= 1.098 af, Atten= 0%, Lag= 0.0 min
 Primary = 13.11 cfs @ 12.12 hrs, Volume= 1.098 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
 Peak Elev= 94.42' @ 12.12 hrs
 Flood Elev= 96.40'

Device	Routing	Invert	Outlet Devices
#1	Primary	91.30'	18.0" Round Culvert L= 110.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 91.30' / 89.27' S= 0.0185 '/ Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=13.10 cfs @ 12.12 hrs HW=94.42' (Free Discharge)
 ↑**1=Culvert** (Inlet Controls 13.10 cfs @ 7.41 fps)

Summary for Pond 103R: DMH9-DMH8

Inflow Area = 8.76 ac, 28.40% Impervious, Inflow Depth > 4.02" for Cumberland_25 event
 Inflow = 27.40 cfs @ 12.12 hrs, Volume= 2.935 af
 Outflow = 27.40 cfs @ 12.12 hrs, Volume= 2.935 af, Atten= 0%, Lag= 0.0 min
 Primary = 27.40 cfs @ 12.12 hrs, Volume= 2.935 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
 Peak Elev= 102.54' @ 12.12 hrs
 Flood Elev= 94.51'

Device	Routing	Invert	Outlet Devices
#1	Primary	89.07'	18.0" Round Culvert L= 132.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 89.07' / 87.76' S= 0.0099 '/ Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=27.38 cfs @ 12.12 hrs HW=102.52' (Free Discharge)
 ↑**1=Culvert** (Barrel Controls 27.38 cfs @ 15.49 fps)

Summary for Pond 104R: DMH8-DMH200

Inflow Area = 9.15 ac, 29.18% Impervious, Inflow Depth > 4.04" for Cumberland_25 event
 Inflow = 29.13 cfs @ 12.12 hrs, Volume= 3.082 af
 Outflow = 29.13 cfs @ 12.12 hrs, Volume= 3.082 af, Atten= 0%, Lag= 0.0 min
 Primary = 29.13 cfs @ 12.12 hrs, Volume= 3.082 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
 Peak Elev= 112.37' @ 12.12 hrs
 Flood Elev= 92.36'

Device	Routing	Invert	Outlet Devices
#1	Primary	87.66'	18.0" Round Culvert L= 273.0' RCP, square edge headwall, Ke= 0.500

Inlet / Outlet Invert= 87.66' / 86.60' S= 0.0039 '/' Cc= 0.900
n= 0.012 Concrete pipe, finished, Flow Area= 1.77 sf

Primary OutFlow Max=29.11 cfs @ 12.12 hrs HW=112.34' (Free Discharge)

↑ **1=Culvert** (Barrel Controls 29.11 cfs @ 16.47 fps)

Summary for Pond 105R: DMH200-OUTLET

Inflow Area = 9.15 ac, 29.18% Impervious, Inflow Depth > 4.04" for Cumberland_25 event
Inflow = 29.13 cfs @ 12.12 hrs, Volume= 3.082 af
Outflow = 29.13 cfs @ 12.12 hrs, Volume= 3.082 af, Atten= 0%, Lag= 0.0 min
Primary = 29.13 cfs @ 12.12 hrs, Volume= 3.082 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Peak Elev= 99.00' @ 12.12 hrs

Flood Elev= 89.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	86.53'	18.0" Round Culvert L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 86.53' / 84.13' S= 0.0400 '/' Cc= 0.900 n= 0.012, Flow Area= 1.77 sf

Primary OutFlow Max=29.11 cfs @ 12.12 hrs HW=98.98' (Free Discharge)

↑ **1=Culvert** (Inlet Controls 29.11 cfs @ 16.47 fps)

Summary for Pond 210P: Sand Filter mc3500

Inflow Area = 3.31 ac, 63.75% Impervious, Inflow Depth = 4.76" for Cumberland_25 event
Inflow = 18.15 cfs @ 12.07 hrs, Volume= 1.313 af
Outflow = 8.03 cfs @ 12.23 hrs, Volume= 1.284 af, Atten= 56%, Lag= 9.8 min
Primary = 8.03 cfs @ 12.23 hrs, Volume= 1.284 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs

Peak Elev= 130.18' @ 12.23 hrs Surf.Area= 6,773 sf Storage= 23,017 cf

Plug-Flow detention time= 270.8 min calculated for 1.284 af (98% of inflow)

Center-of-Mass det. time= 257.4 min (1,038.6 - 781.2)

Volume	Invert	Avail.Storage	Storage Description
#1A	124.70'	9,447 cf	80.08'W x 84.57'L x 5.50'H Field A 37,250 cf Overall - 13,632 cf Embedded = 23,618 cf x 40.0% Voids
#2A	125.45'	13,632 cf	ADS_StormTech MC-3500 d +Cap x 121 Inside #1 Effective Size= 70.4"W x 45.0"H => 15.33 sf x 7.17'L = 110.0 cf Overall Size= 77.0"W x 45.0"H x 7.50'L with 0.33' Overlap 11 Rows of 11 Chambers Cap Storage= +14.9 cf x 2 x 11 rows = 327.8 cf
		23,079 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	121.00'	15.0" Round Culvert L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 121.00' / 117.00' S= 0.0800 '/ Cc= 0.900 n= 0.012, Flow Area= 1.23 sf
#2	Device 1	121.00'	1.0" Vert. Orifice/Grate X 2.00 C= 0.600
#3	Device 1	126.80'	7.0" Vert. Orifice/Grate X 2.00 C= 0.600
#4	Device 1	129.87'	6.0' long x 1.50' rise Sharp-Crested Vee/Trap Weir Cv= 2.62 (C= 3.28)

Primary OutFlow Max=8.02 cfs @ 12.23 hrs HW=130.18' (Free Discharge)

- 1=Culvert (Passes 8.02 cfs of 17.28 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 0.16 cfs @ 14.55 fps)
 3=Orifice/Grate (Orifice Controls 4.52 cfs @ 8.46 fps)
 4=Sharp-Crested Vee/Trap Weir (Weir Controls 3.34 cfs @ 1.81 fps)

Summary for Pond 220P: UDF

Inflow Area = 0.90 ac, 50.00% Impervious, Inflow Depth = 4.59" for Cumberland_25 event
 Inflow = 4.77 cfs @ 12.07 hrs, Volume= 0.344 af
 Outflow = 1.54 cfs @ 12.36 hrs, Volume= 0.342 af, Atten= 68%, Lag= 17.1 min
 Primary = 1.54 cfs @ 12.36 hrs, Volume= 0.342 af
 Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-45.00 hrs, dt= 0.01 hrs
 Peak Elev= 126.96' @ 12.36 hrs Surf.Area= 3,954 sf Storage= 5,960 cf

Plug-Flow detention time= 277.3 min calculated for 0.342 af (99% of inflow)
 Center-of-Mass det. time= 272.4 min (1,056.2 - 783.7)

Volume	Invert	Avail.Storage	Storage Description
#1	125.00'	10,527 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
125.00	2,326	0	0
126.00	2,974	2,650	2,650
127.00	4,000	3,487	6,137
128.00	4,780	4,390	10,527

Device	Routing	Invert	Outlet Devices
#1	Primary	122.83'	12.0" Round Culvert L= 78.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 122.83' / 122.28' S= 0.0071 '/ Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	122.83'	0.9" Vert. Orifice/Grate C= 0.600
#3	Device 2	125.00'	2.400 in/hr Exfiltration over Surface area Conductivity to Groundwater Elevation = 0.00'
#4	Device 1	126.00'	4.0" Vert. Orifice/Grate X 4.00 C= 0.600
#5	Device 1	127.00'	20.0" Vert. Orifice/Grate C= 0.600
#6	Secondary	127.50'	10.0' long x 8.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=1.54 cfs @ 12.36 hrs HW=126.96' (Free Discharge)

- ↑ **1=Culvert** (Passes 1.54 cfs of 6.38 cfs potential flow)
- ↑ **2=Orifice/Grate** (Orifice Controls 0.04 cfs @ 9.74 fps)
- ↑ **3=Exfiltration** (Passes 0.04 cfs of 0.22 cfs potential flow)
- ↑ **4=Orifice/Grate** (Orifice Controls 1.49 cfs @ 4.28 fps)
- ↑ **5=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=125.00' (Free Discharge)

- ↑ **6=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Attachment C

Inspection, Maintenance and Housekeeping Plan

INSPECTION, MAINTENANCE, AND HOUSEKEEPING PLAN

Portland Retirement Residence Portland, ME

Introduction

Upon completion of the proposed development, Hawthorne Development Group, LLC (or a subsidiary of) will be the responsible party for maintaining the stormwater management system. Until such time as the condominium association is established, such as during construction, the developer (Hawthorne Development Group, LLC) shall be responsible for maintaining the stormwater management system. The responsible party shall schedule maintenance of all stormwater management structures, the establishment of any contract services required to implement the program, and the keeping of records and maintenance logbook.

Records of all inspections and maintenance work accomplished must be kept on file and retained for a minimum 5-year time span. The maintenance logbook will be made available to the Maine Department of Environmental Protection (MDEP) and the City of Portland upon request. At a minimum, the appropriate and relevant activities for each of the stormwater management systems will be performed on the prescribed schedule.

The following plan outlines the anticipated inspection, maintenance, and housekeeping procedures for the erosion and sedimentation controls as well as stormwater management devices for the project site. Also, this plan outlines several housekeeping requirements that shall be followed during and after construction. These procedures should be followed in order to ensure the intended function of the designed measures and to prevent unreasonable adverse impacts to the surrounding environment.

The procedures outlined in the Inspection, Maintenance, and Housekeeping Plan is provided as an overview of the anticipated practices to be used on this site. In some instances, additional measures may be required due to unexpected conditions. For additional details on any of the erosion and sedimentation control measures or stormwater management devices to be utilized on this project, refer to the most recently revised edition of the "Maine Erosion and Sedimentation Control BMP" manual and/or the "Stormwater Management for Maine: Best Management Practices" manual as published by the MDEP.

During Construction

1. **Inspection:** During the construction process, it is the Contractor's responsibility to comply with

the inspection and maintenance procedures outlined in this section. These responsibilities include inspecting disturbed and impervious areas, erosion control measures, materials storage areas that are exposed to precipitation, and locations where vehicles enter or exit the site. These areas shall be inspected at least once a week as well as before and after a storm event, and prior to completing permanent stabilization measures. A person with knowledge of erosion and stormwater control, including the standards and conditions in any applicable permits, shall conduct the inspections.

2. **Maintenance:** All measures shall be maintained in an effective operating condition until areas are permanently stabilized. If Best Management Practices (BMPs) need to be maintained or modified, additional BMPs are necessary, or other corrective action is needed, implementation must be completed within seven (7) calendar days and prior to any storm event (rainfall).
3. **Documentation:** A log summarizing the inspections and any corrective action taken must be maintained on-site. The log must include the name(s) and qualifications of the person making the inspections, the date(s) of the inspections, and major observations about the operation and maintenance of erosion and sedimentation controls, material storage areas, and vehicle access points to the site. Major observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and locations where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken.

The log must be made accessible to the appropriate regulatory agency upon request. The permittee shall retain a copy of the log for a period of at least three (3) years from the completion of permanent stabilization.

4. **Specific Inspection and Maintenance Tasks:** The following is a list of erosion control and stormwater management measures and the specific inspection and maintenance tasks to be performed during construction.

A. Sediment Barriers:

- Hay bale barriers, silt fences, and filter berms shall be inspected immediately after each rainfall and at least daily during prolonged rainfall.
- If the fabric on silt fence or filter barrier should decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, it shall be replaced.
- Sediment deposits should be removed after each storm event. They must be removed before deposits reach approximately one-half the height of the barrier.
- Filter berms shall be reshaped as needed.
- Any sediment deposits remaining in place after the silt fence or filter barrier is no longer

required should be dressed to conform to the existing grade, prepared, and seeded.

B. Riprap Materials:

- Once a riprap installation has been completed, it should require very little maintenance. It shall, however, be inspected periodically to determine if high flows have caused scour beneath the riprap or dislodged any of the stone.

C. Erosion Control Blankets:

- Inspect these reinforced areas semi-annually and after significant rainfall events for slumping, sliding, seepage, and scour. Pay close attention to unreinforced areas adjacent to the erosion control blankets, which may experience accelerated erosion.
- Review all applicable inspection and maintenance procedures recommended by the specific blanket manufacturer. These tasks shall be included in addition to this plan.

D. Temporary Storm Drain Inlet Protection:

- The inlet protection structure shall be inspected before each rain event and repaired as necessary.
- Sediment shall be removed and the storm drain sediment barrier restored to its original dimensions when the sediment has accumulated to half of the design depth of the trap.
- Structures shall be removed upon permanent stabilization of the tributary area.
- Upon removal of the structure, all accumulated sediments downstream of the structure shall be cleaned from the storm drain system.

E. Stabilized Construction Entrances/Exits:

- The exit shall be maintained in a condition that will prevent tracking of sediment onto public rights-of-way.
- When the control pad becomes ineffective, the stone shall be removed along with the collected soil material. The entrance should then be reconstructed.
- Areas that have received mud-tracking or sediment deposits shall be swept or washed. Washing shall be done on an area stabilized with aggregate, which drains into an approved sediment-trapping device (not into storm drains, ditches, or waterways).

F. Temporary Seed and Mulch:

- Mulched areas should be inspected after rain events to check for rill erosion.
- If less than 90% of the soil surface is covered by mulch, additional mulch shall be applied in bare areas.

- In applications where seeding and mulch have been applied in conjunction with erosion control blankets, the blankets must be inspected after rain events for dislocation or undercutting.
- Mulch shall continue to be reapplied until 95% of the soil surface has established temporary vegetative cover.

G. Stabilized Drainage Swales:

- Sediment accumulation in the swale shall be removed once the cross section of the swale is reduced by 25%.
- The swales shall be inspected after rainfall events. Any evidence of sloughing of the side slopes or channel erosion shall be repaired and corrective action should be taken to prevent reoccurrence of the problem.
- In addition to the stabilized lining of the channel (i.e. erosion control blankets), stone check dams may be needed to further reduce channel velocity.

5. **Housekeeping:** The following general performance standards apply to the proposed project.

- A. Spill Prevention: Controls must be used to prevent pollutants from being discharged from materials on-site, including storage practices to minimize exposure of the materials to stormwater, and appropriate spill prevention, containment, and response planning and implementation.
- B. Groundwater Protection: During construction, liquid petroleum products and other hazardous materials with the potential to contaminate groundwater may not be stored or handled in areas of the site draining to an infiltration area. An "infiltration area" is any area of the site that by design or as a result of soils, topography and other relevant factors, accumulates runoff that infiltrates into the soil. Dikes, berms, sumps, and other forms of secondary containment that prevent discharge to groundwater may be used to isolate portions of the site for the purposes of storage and handling of these materials.
- C. Fugitive Sediment and Dust: Actions must be taken to insure that activities do not result in noticeable erosion of soils or fugitive dust emissions during or after construction. Oil may not be used for dust control.
- D. Debris and Other Materials: Litter, construction debris, and chemicals exposed to stormwater must be prevented from becoming a pollutant source.
- E. Trench or Foundation Dewatering: Trench dewatering is the removal of water from trenches, foundations, cofferdams, ponds, and other areas within the construction area that retain water after excavation. In most cases, the collected water is heavily silted and hinders correct and safe construction practices. The collected water must be removed from the ponded area, either through gravity or pumping, and must be spread through natural wooded buffers or removed to areas that are specifically designed to collect the maximum amount of sediment

possible, like a cofferdam sedimentation basin. Avoid allowing the water to flow over disturbed areas of the site. Equivalent measures may be taken if approved.

After Construction

1. **Inspection:** After construction, the owner or operator shall hire a qualified post-construction stormwater inspector to at least annually, inspect the BMPs, in accordance with all municipal and state inspection, cleaning and maintenance requirements of the approved post-construction stormwater management plan.
2. **Maintenance, and repair:** If a BMP requires maintenance, repair or replacement to function as intended by the approved post-construction stormwater management plan, the owner or operator shall take corrective actions to address the deficiency or deficiencies as soon as possible after the deficiency is discovered and shall provide a record of the deficiency and corrective actions to the Department of Public Services (DPS). The following is a list of permanent erosion control and stormwater management measures and the inspection, maintenance, and housekeeping tasks to be performed after construction.
 - A. **Vegetated Areas:**
 - Inspect vegetated areas, particularly slopes and embankments, early in the growing season or after heavy rains to identify active or potential erosion problems.
 - Replant bare areas or areas with sparse growth. Where rill erosion is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows.
 - B. **Ditches, Swales and Other Open Channels:**
 - Inspect ditches, swales, and other open stormwater channels in the spring, in the late fall, and after heavy rains to remove any obstructions to the flow. Remove accumulated sediments and debris, remove woody vegetative growth that could obstruct flow and repair any erosion of the ditch lining.
 - Vegetated ditches must be mowed at least annually or otherwise maintained to control the growth of woody vegetation and maintain flow capacity.
 - Any woody vegetation growing through riprap linings must also be removed. Repair any slumping side slopes as soon as practicable.
 - Replace riprap in areas where any underlying filter fabric or underlying gravel is showing through the stone or where stones have dislodged.
 - C. **Level Lip Spreaders/Ditch Turnouts:**
 - The level lip spreader pool shall be inspected after significant rainfall events for sediment accumulation and debris that may reduce its capacity. Sediment and debris buildup shall be removed once the volume of the pool has been reduced by 25%.

- The level lip must be constructed so that runoff flows slowly over the lip to a sheet flow condition through the receiving area. Repair or reconstruction of the level lip is required when the flow from the spreader becomes channelized.
- Do not store snow removed from the street/parking lot within the area of the level spreader.

D. Winter Sanding:

- Clear accumulations of winter sand in parking lots and along roadways at least once a year, preferably in the spring.
- Accumulations on pavement may be removed by pavement sweeping.
- Accumulations of sand along road shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader or other acceptable method.

E. Underdrained Grass Filter

- The inlet and outlet of the BMP shall be checked periodically to ensure that flow structures are not blocked by debris. Inspections should be conducted monthly during wet weather conditions from March to November.
- Debris and sediment buildup shall be removed from the forebay and basin upon reaching a 6-inch accumulation within the forebay and 2 inches within the basin, but not less than annually.
- Mowing of grass may be conducted semiannually to a height of no less than 6-inches, with hand held trimmers or push mowers
- Grass filters shall be inspected annually for erosion, destabilization of sideslopes, embankment settling and other signs of structural failure. Corrective action should be taken immediately upon identification of problems.
- Rototill top of filter bed when ponding exceeds 48 hours
- Replace top several inches of filter material when ponding exceeds 72 hours

F. Underdrained Subsurface Sand Filter

- Inspect the site monthly for the first few months after construction. Then inspections can occur on an annual basis, preferably after rain events when clogging will be obvious.
- Make any repairs necessary to ensure the measure is operating properly.
- Regular maintenance is necessary to remove surface sediment, trash, debris, and leaf litter.
- Outlets and chambers need to be cleaned/repared when drawdown times in the filter exceed 36 hours.
- In certain cases, layers of sand may need to be replaced every 3 to 5 years.

G. Stormtech Chambers/Isolator Row:

- Stormtech Chambers shall be inspected and maintained according to manufacturer's recommendations.
- Recommended maintenance includes, but not limited to, visual inspection of accumulated sediment within isolator row and jet-vac flushing when required.

H. Catch Basins:

- Inspect and, if required, clean-out catch basins at least once a year, preferably in early spring.
- Clean out must include the removal and legal disposal of accumulated sediments and debris at the bottom of the basin, at any inlet grates, at any inflow channels to the basin, and at any pipes between basins.

I. Culverts:

- Inspect culverts in the spring, in the late fall, and after heavy rains to remove any obstructions to flow.
- Remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit.
- Inspect and repair any erosion damage at the culvert's inlet and outlet.
- Inspect embankment for erosion, settling, and structural failure.

3. **Annual Report:** The owner or operator or a qualified post-construction stormwater inspector hired by that person, shall, on or by June 30 of each year, provide a completed and signed certification that the person has inspected the BMPs and that they are adequately maintained and functioning as intended by the approved post-construction stormwater management plan, or that they require maintenance or repair, including the record of the deficiency and corrective actions taken.
4. **Duration of Maintenance:** Perform maintenance as described and required for any associated permits unless and until the system is formally accepted by a municipality or quasi-municipal district, or is placed under the jurisdiction of a legally created association that will be responsible for the maintenance of the system. If a municipality or quasi-municipal district chooses to accept a stormwater management system, or a component of a stormwater system, it must provide a letter to the MDEP stating that it assumes responsibility for the system. The letter must specify the components of the system for which the municipality or district will assume responsibility, and that the municipality or district agrees to maintain those components of the system in compliance with MDEP standards. Upon such assumption of responsibility, and approval by the MDEP, the municipality, quasi-municipal district, or association becomes a co-permittee for this purpose only and must comply with all terms and conditions of the permit.

Attachments

Attachment 1 – Sample Stormwater Inspection and Maintenance Form

Sample Stormwater Inspection and Maintenance Form

Portland Retirement Residence; Portland, ME Attachment 1

This log is intended to accompany the stormwater Inspection, Maintenance and Housekeeping Plan for the Portland Retirement Residence. The following items shall be checked, cleaned and maintained on a regular basis as specified in the Maintenance Plan and as described in the table below. This log shall be kept on file for a minimum of five (5) years and shall be available for review. Qualified personnel familiar with drainage systems and soils shall perform all inspections. Attached is a copy of the construction and post-construction maintenance logs.

Item	Maintenance Required & Frequency	Date Completed	Maintenance Personnel	Comments
Ditches and Swales	Inspect after major rainfall event producing greater than 3" of rain in 2 hours.			
	Repair erosion or damage immediately.			
Catch Basins and Culverts	Remove accumulated sediment and debris			
	Sump depth			
Vegetated Areas	Inspect Slopes			
	Replant Bare Areas			
	Check after Major Storms			
Winter Sanding	Clean annually (Spring)			
	Remove sand and sediment from roadway shoulders			
Level Lip Spreaders	Inspect after significant rainfall			
	Remove sediment if pool volume reduced by 25%			
	Repair the riprap if flow become s channelized			
Subsurface Sand Filter	Inspect system thru inspection ports following major storm event			
	Remove sediment/debris from inlet structure annually			
Underdrained Grass Filter	Inspect inlets/outlets to ensure no blockage from debris			
	Inspect sideslopes annually for erosion, destabilization, and embankment settling.			

Item	Maintenance Required & Frequency	Date Completed	Maintenance Personnel	Comments
Stormtech	Follow manufacturer's recommendations			

Section 14. Statement of Project's Consistency with City Master Plans

Statement of Project's Consistency with City Master Plans

There are no City of Portland Master Plans for the subject area. Nevertheless, the Portland Retirement Residence is in harmony with the Portland's Comprehensive Plan. Our proposed development addresses the planning goals of the Portland Comprehensive Plan (November 2002, updated 2005) as follows:

Goal "A" – Encourage Orderly Growth

This Development will contribute to the inventory of Senior Housing in the Greater Portland Area. The growing senior demographic both nationally and in Portland and the surrounding area is increasing demand for this and other senior housing options. The proposed site design carefully considers the most efficient layout, emphasizing minimal impact to environmentally sensitive areas.

Goal "B" – Accommodate Anticipated Growth

Senior Housing, as stated in Goal "A", is a critical segment of future housing inventory options for Portland. Our proposed Congregate Care Facility allows for lower impact on traffic, utilities, schools, and other public infrastructures compared with other possible uses for this site.

Goal "C" – Promote Economic Development

Short Term: The development and construction budget for the proposed Portland Retirement Residence is approximately \$18,000,000. A large amount of these funds will be spent locally- hiring local trades and consultants as well as purchasing building materials and services.

Long Term: Upon completion, the Portland Retirement Residence will provide:

18 - Full time employees

17 - Part time employees

Estimated local contributions annually:

Wages, taxes and benefits costs of approximately \$675,000

Expenditures for energy and utility cost of approximately \$175,000

Local contracts for services and supplies estimated at \$36,000.

Property Tax contribution \$280,000

Goal "D" –Encourage Decent Housing

The Portland Retirement Residence will meet the "wide variety of new housing" recommendation as called out in Goal "D". It also addresses the policy objective of "insuring a diverse mix of housing types that offers a continuum of options" and the goal to Identify vacant and redevelopment land opportunities throughout the city to facilitate the construction of new housing".

More specifically, this site will address a portion of item viii: "Housing with a range of services and medical support for the elderly and special needs population, including assisted living, congregate care, group homes and nursing homes".

Goal “E” – Protect Water Resources

The design of the onsite stormwater facilities will serve to protect water resource areas from increased or negative impact. Sanitary Sewer outflow volumes are much less than other possible development on this site, creating less overall impact than other allowed uses.

Goal “F” – Protect Critical Natural Resources

The site design protects the onsite natural resources, by:

- A) Setting aside over 8 acres under a ROS, Residential Open Space zoning designation
- B) Minimizing the building footprint and hard surfaces to avoid wetlands and other sensitive areas
- C) Site design allows for approximately 84% of the site to stand as landscaped and open spaces, providing ample opportunity and protection for flourishing wetlands, wildlife and natural resources.

Goal “G” – Protect Marine Resources

The location of this site does not create any direct impact on local marine resources. The onsite stormwater facilities will include pretreatment features to stormwater discharge lessening any downstream impact on Casco Bay.

Goal “H” – Safeguard Agricultural and Forest Resources

The ROS zoning designation as well as the substantial amount of open and landscape areas of the overall site contributes to further safeguarding the forest resources on the site.

Goal “I” – Protect Historic and Archeological Resources

As a part of the early development process we have contacted the Maine Historical Commission and confirmed that this site does not have any historical or archeological significance. Note: Near the north central portion of the site a USGS Reference Disk and two additional reference markers are located. These are identified as the “West Graves” USGS marker. The site design will leave this area untouched but accessible.

Goal “J” – Promote Outdoor Recreation

The ROS zoned portion of the site (8.16 acres) establishes over 45% of the Portland Retirement Residence site as undisturbed open space for future recreational opportunities.

Compatibility with the Portland Comprehensive- Summary:

Our Congregate Care Facility will be an important part of future housing in the Greater Portland area. The Portland Retirement Residence uses careful site placement to complement the surrounding community and to co-exist with the natural environment. Additionally, it meets housing needs for local seniors and contributes to the local economy.

Statement of Solid Waste Generation

Upon completion of construction, the project will have a trash compactor and recycling program including waste oils and greases from meal preparations.

A. Estimated Quantities of Solid Waste

The proposed 150-suite facility is expected to generate average quantities of waste as follows:

Construction Phase: The site is primarily wooded and construction of the proposed development will require clearing that will generate stumps and grubblings. Stumps and grubblings will be ground on site and the grindings will be incorporated into erosion control mix if possible. Any material not deemed to be inert by the Solid Waste Management Regulations will be source separated and disposed at a local construction material recycling facility.

Type	Estimated Quantity
Stumps/Grubblings (assume 4.93 ac @ 400 CY/ac.)	1,972 CY
Construction debris (assume 20 CY/wk for 16 months1 year)	1,400 CY

Municipal Solid Waste:

Type	Estimated Quantity
Normal residential waste (assume 2 ½ CY/month/unit)	375 CY/month

B. Off-Site Disposal of Construction/Demolition Debris

Any material not suitable for on-site disposal will be source separated and transferred by a licensed non-hazardous waste transporter to a local construction material recycling facility.

Local waste management providers include:

- *Casella Waste Systems*, 87 Pleasant Hill Road, Scarborough
- *Troiano Waste*, 10 Filmike Way, South Portland

Local disposal sites include:

- Riverside Recycling Facility, Portland
- Community Recycling Center (CPRC Group), Scarborough

C. On-Site Disposal of Wood Waste/Land Clearing Debris

Stumps and grubblings will be chipped or ground on site. The grindings will be used for erosion control mulch whenever possible.

D. **Special or Hazardous Waste**

Oils used in cooking are separated and stored for recycling by a commercial recycling company. Furthermore, kitchen waste lines will be treated through the use of an on-site grease trap.

No Hazardous Waste will used or generated by this facility.

Section 15. Ability to Serve Letters

- Portland Water District
- City of Portland Public Services – Sewer Division



Portland Water District

FROM SEBAGO LAKE TO CASCO BAY

December 9, 2014

Sebago Technics
75 John Roberts Road – Suite 1A
South Portland, ME 04106-6963

Attn: Robert A. McSorley, P.E.
Re: Casco Heights; Ocean Avenue, Portland
Ability to Serve with PWD Water

RECEIVED
DEC 11 2014
SEBAGO TECHNICS

Dear Mr. McSorley:

The Portland Water District has received your request for an Ability to Serve Determination for the noted site submitted on November 20, 2014. Based on the information provided, we can confirm that the District will be able to serve the proposed project as further described in this letter.

Please note that this letter does not constitute approval of this project from the District. Review and approval of final plans will be required. Please review this letter for any special conditions specified by the District and to determine the appropriate next steps to take to move your project through the submittal and approval process.

Existing Site Service

According to District records, the project site does not currently have existing water service.

Water System Characteristics

According to District records, there is a 12-inch diameter cast iron water main on the west side of Ocean Avenue and a public fire hydrant located 305-feet from the site.

The current data from the nearest hydrant with flow test information is as follows:

Hydrant Location: Ocean Avenue 1000' northeast of Ashley Lane
Hydrant Number: POD-HYD01222
Last Tested: 9/30/2003
Static Pressure: 68 psi
Residual Pressure: 64
Flow: 1,221 GPM

Public Fire Protection

You have not indicated whether this project will include the installation of new public hydrants to be accepted into the District water system. It is your responsibility to contact the Portland Fire Department to ensure that this project is adequately served by existing and/or proposed hydrants.



Domestic Water Needs

The ability to serve request indicated that the anticipated water usage for the 142 unit condominium subdivision is 9,540 gallons per day. The data noted above indicates there should be adequate pressure and volume of water to serve the domestic water needs of your proposed project.

Private Fire Protection Water Needs

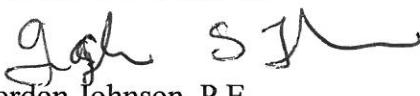
You have indicated that this project will require water service to provide private fire protection to the site. Please note that the District does not guarantee any quantity of water or pressure through a fire protection service. Please share these results with your sprinkler system designer so that they can design the fire protection system to best fit the noted conditions. If the data is insufficient for their needs, please contact the MEANS group to request a hydrant flow test and we will work with you to get more complete data.

Conditions of Service

We have reviewed the Overall Site Plan dated March 24, 2014 for the Casco Heights project. Since each of the 142 units is located within a single parcel, the District would prefer not to own and maintain water mains, hydrants and a water pump station serving a private development. We suggest a water service configuration consisting of either separate fire and domestic services or a single combined fire and domestic service with a fire line meter. Either of these scenarios would only have one meter and one District account. The condo/homeowner association may choose to install private meters for each unit in order to split the bill proportionately.

As your project progresses, we advise that you submit any design plans to the MEANS group for review of the water service line configuration. We will work with you to ensure that the design meets our current standards. If the District can be of further assistance in this matter, please let us know.

Sincerely,
Portland Water District


Gordon Johnson, P.E..
Engineering Services Manager



Michael J. Bobinsky
Director of Public Services

25 November 2014

Robert A. McSorley, P.E.,
Sebago Technics Inc.,
95 John Roberts Road, Suite 1A,
South Portland, Maine 04106

**RE: The Capacity to Handle Wastewater Flows, from a Proposed
One Hundred and Forty Two Retirement Residences at a Congregate Care Facility**

Dear Mr. McSorley:

The existing eight inch diameter, reinforced concrete, sewer pipe, located in Ocean Avenue, has adequate capacity to **transport**, while The Portland Water District sewage treatment facility, located off Marginal Way, has adequate capacity to **treat**, the total net increase in anticipated wastewater flows of **9,540 GPD**, from this proposed project.

Anticipated Wastewater Flows from the Proposed Commercial Units:

128 One Bedroom Suites x 60 GPD	= 7,680 GPD
14 Two Bedroom Suites x 120 GPD	= 1,680 GPD
2 Full-time Manager Units x 90 GPD	= 180 GPD
Total Net Increase in Proposed Wastewater Flows for this Project	= 9,540 GPD

In order to offset any increase in sanitary flows, the City combined sewer overflow (C.S.O.) abatement consent agreement (with the U.S.E.P.A., and with the Maine D.E.P.) requires C.S.O. abatement, as well as storm water mitigation, from all projects. If the City can be of further assistance, please call 874-8832.

Sincerely,

CITY OF PORTLAND

David Margolis-Pineo
Deputy City Engineer

DMP

CC: Jeffrey Levine, Director, Department of Planning, and Urban Development, City of Portland
Barbara Barhydt, Development Review Services Mgr., Dep't. of Planning, and Urban Development, City of Portland
Jean Fraser, Planner, Department of Planning, and Urban Development, City of Portland
Frank Brancely, Senior Wastewater Technician, City of Portland
Michael Farmer, P.E., Project Engineer, City of Portland
Bradley A. Roland, P.E., Environmental Projects Engineer, City of Portland
Benjamin N. Pearson, E.I., Industrial Pretreatment Coordinator, City of Portland
John Emerson, Wastewater Coordinator, City of Portland
Rhonda Zazzara, Field Inspection Coordinator, City of Portland
Jane Ward, Administrative Assistant, City of Portland

Section 16. Statement of Solid Waste Generation

Statement of Solid Waste Generation

Upon completion of construction, the project will have a trash compactor and recycling program including waste oils and greases from meal preparations.

A. Estimated Quantities of Solid Waste

The proposed 150-suite facility is expected to generate average quantities of waste as follows:

Construction Phase: The site is primarily wooded and construction of the proposed development will require clearing that will generate stumps and grubblings. Stumps and grubblings will be ground on site and the grindings will be incorporated into erosion control mix if possible. Any material not deemed to be inert by the Solid Waste Management Regulations will be source separated and disposed at a local construction material recycling facility.

Type	Estimated Quantity
Stumps/Grubblings (assume 4.93 ac @ 400 CY/ac.)	1,972 CY
Construction debris (assume 20 CY/wk for 16 months1 year)	1,400 CY

Municipal Solid Waste:

Type	Estimated Quantity
Normal residential waste (assume 2 ½ CY/month/unit)	375 CY/month

B. Off-Site Disposal of Construction/Demolition Debris

Any material not suitable for on-site disposal will be source separated and transferred by a licensed non-hazardous waste transporter to a local construction material recycling facility.

Local waste management providers include:

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- *Troiano Waste*, 10 Filmike Way, South Portland

Local disposal sites include:

- Riverside Recycling Facility, Portland
- Community Recycling Center (CPRC Group), Scarborough

C. On-Site Disposal of Wood Waste/Land Clearing Debris

Stumps and grubblings will be chipped or ground on site. The grindings will be used for erosion control mulch whenever possible.

D. **Special or Hazardous Waste**

Oils used in cooking are separated and stored for recycling by a commercial recycling company. Furthermore, kitchen waste lines will be treated through the use of an on-site grease trap.

No Hazardous Waste will used or generated by this facility.

Section 17. NFPA 1/Fire Department Standards

NFPA 1/Fire Department Standards

The proposed building will be sprinkled in accordance with NFPA guidelines. Furthermore, the site has been designed to meet the requirements of NFPA 1, Chapter 18 more specifically:

Section 18.2 Fire Department Access

The site provides a minimum of 20' wide of clear paved accessed access to entire developed portion of the property with most of the accesses being 24' wide including the main access road. T-turnarounds have been provided at the parking area access off the main access road and the delivery area/dumpster area to the rear of the building. With radii of 30' and 35', these locations provide ample room for maneuvers of the City's fire fighting apparatus.

The porte-cochere at the entrance to the building will provide clear vertical clearance in excess of 13' 6".

Section 18.3 Water Supplies

The project will connect to the existing 12" water main on Ocean Avenue and extend an 8" main to the building for fire protection and domestic flows. Because of the height differential of the site and the exiting capacity of the 12" water main, a booster pump system will be constructed at the project's to provide the necessary flows/pressures during the higher flows necessary for fire protection.

Section 18.4 Fire Flow Requirements for Buildings

The proposed booster pump system will provide 1,900 gpm at adequate pressure which equates to the required fire flow for a sprinkled, IBC Type V-A building construction and the peak domestic flow for the project.

Section 18.5 Fire Hydrants

A fire hydrant is provided off the northeast corner of building along the front access road. A fire department connection will be provided within 50' of the fire hydrant as shown on the proposed Utility Plan.

Section 18. Assessment of Consistency with Design Standards

Assessment of Consistency with Design Standards

The following is an assessment of the conformance with the design standards of Section 14-526:

(a) Transportation Standards

1. Impact on Surrounding Street Systems

The segment of Ocean Avenue to which the project accesses is currently not operating at over capacity. Based upon the generation of traffic from the proposed project and the peak traffic generated off the time of the roadway peaks, the project is not expected to have a significant impact on the adjacent streets and public ways.

2. Access and Circulation

The project provides adequate access and internal circulation. The location of the driveway has been chosen to minimize the slope of the access road, 3.5% at the connection and approximately 5.0% up to the building/parking areas of the site. The site access is located approximately at the crest of Ocean Avenue on the outside of a slight curve in the roadway to the east. The design speed of Ocean Avenue in this location is 35 mph. Sight distance from this access location to the south is well over the 305 feet listed for this speed in the Maine Department of Transportation Entrance Rules. Sight distance to the north extends down to the entrance to Summer Place which is approximately 600' from the proposed entrance.

The traffic from this project is not expected to have an impact on adjacent driveways or street connections as the peak trips would be at a different time from these other access locations.

3. Public Transit Access

The project is not located on a local or minor arterial roadway as shown n the City's Federal Street Classification Map. Nevertheless, the project will provide bus shuttle serviced for its residents to shopping, doctor appointments, volunteer activities, etc.

4. Parking

The project provides more than adequate parking as shown in the zoning Assessment Section. Because of the elderly nature of the project's resends, the applicant is requesting a waiver for required bicycle parking.

(b) Environmental Quality Standards

1. Preservation of Significant Natural Features

No specific habitats or natural features were noted in our coordination with the Departments of Conservation and Inland Fisheries. Nonetheless, there is substantial portion of the property (8.16 acres) that is being maintained in the R-OS zoning in its current nature state.

2. Landscaping and Landscape Preservation

Of the 10.17 acres of the development property, only 4.93 acres will be impacted with the creation 2.86 acres of impervious area. The remaining property will remain in its current nature state. This preservation includes significant buffers including understory vegetation from neighboring properties.

The project proposes a substantial site landscaping plan to enhance the developed portion of the site and to blend the development with the natural surroundings. This includes interior islands within the parking areas, street trees along the entrance roadway and numerous canopy and evergreen trees throughout the developed portion of the property.

3. Water Quality, Stormwater Management and Erosion Control

The project is designed to meet the current Chapter 500 Standards of Maine Stormwater Law as recently updated by the Maine Department of Environmental Protection. Please refer to the Stormwater Section of this submission.

(c) Public Infrastructure and Community Safety Standards

1. Consistency with City Master Plans

There are no known master plans for this area. Project is consistent with the Comprehensive Plan, see section on Statement of Project's Consistency with City Master Plans.

2. Public Safety and Fire Prevention

The site is proposed with limited access and for areas to be observable from the central building of the site. The site proposes accesses that meet the requirements for emergency vehicles including access way width, minimum height clearance and adequate maneuvering. The project will connect to the existing 12" water main on Ocean Avenue, provide a booster pump system to provide adequate fire flow, and hydrant and fire development connections for fire protection systems.

3. Availability and Adequate Capacity of Public Utilities

The project will connect to the existing public water and sanitary systems. Adequate public utilities exist for the project, please see enclosed letters from the Portland Water District and the City's Public Services Department relative to sewer. The applicant has also coordinated with Central Maine Power, Unitil and telcomm/cable providers.

(d) Site Design Standards

1. Massing, Ventilation and Wind Impact

The proposed building is sufficiently setback from property lines and adjacent neighboring buildings such that the building will have minimum adverse effects on these adjacent facilities. The project uses individual heating/cooling systems for the suites that do not produce emissions. Other mechanical equipment will be located away from property lines and meet the applicable state and federal emission standards.

2. Shadows

The proposed building is such that the highest elevations will; be at approximately the same elevations as the nature canopies on the site at the proposed location of the building . Based upon the nature of the sun position in Maine, it is expected that the greatest impacts from shadows would be to the west, north and east of the building. In each of the these directions, because of the proposed height being at about the height of the natural canopies and the placement of the building, the building will not cast significant shadows onto to neighboring properties.

3. Snow and Ice Loading

Snow storage areas are shown of the proposed site plan. As the project will retain the services of a commercial landscaping maintenance company, it is anticipated that snow management will be provided by the same company. If snow amount exceeds the ability of the site to retain it, the maintenance company will be engaged to remove excess snow from the property.

4. View corridors

Based upon the proposed height of the building and the amount of natural vegetation that exists, the project will not affect any existing view corridors.

5. Historic Resources

Coordination with the Maine State Historical Preservation Office did not note any adjacent or on-site historical resources will be impacted by the development.

6. Exterior Lighting

All site lighting will be energy efficient LED fixtures. All general lighting for the site areas will be cut off type fixtures. All up-lighting of architectural features and landscaping will comply with Section 12 of the Technical Manual.

7. Noise and Vibration

The individual nature of the heating/cooling elements for the suite are chosen based upon the minimum noise/sounds from vibration that they produce. Because of the individual units of the suites, the mechanical facilities for the common areas are smaller than for a similar sized building and are isolated away from the adjacent property lines.

8. Signage and Wayfinding

The project will provide identification sign along the Ocean Avenue frontage at the project's entrance. Signage will meet the requirements of the City's code relative to size, scale, proportions, design, materials, placements and lighting.

9. Zoning Related Design Standards

There are no other known zoning related design standards that affect the property.

Section 19. Manufacturer's Verification on Mechanical Equipment

Manufacturer's Verification on Mechanical Equipment

The applicant proposes to utilize energy efficient products throughout the building design. The individual suites have independent heating/cooling units that produce no emissions. Other mechanical equipment for common areas and the site emergency generator are smaller systems relative to the size of the building, located in isolated areas and will meet the applicable emission standards. Document has been requested from the manufacturer(s) and will be provided under separate cover to the City.

Section 20. Soils Report

R E P O R T

January 16, 2015
14-1188 S

Geotechnical Engineering Services

Proposed Retirement Residence
802 Ocean Avenue
Portland, Maine

PREPARED FOR:
Hawthorn Development, LLC
c/o Lenity Architecture
Attention: Mark Lowen
3150 Kettle Court SE
Salem, Oregon 97301

PREPARED BY:
S. W. Cole Engineering, Inc.
286 Portland Road
Gray, Maine 04039
207-657-2866



S.W.COLE
ENGINEERING, INC.

- *Geotechnical Engineering*
- *Construction Materials Testing*
- *GeoEnvironmental Services*
- *Ecological Services*

www.swcole.com

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Sheet 1	Exploration Location Plan
Sheets 2 to 14	Boring Logs
Sheet 15	Key to the Notes and Symbols
Sheet 16	Underdrain Detail
Appendix A	Previous Exploration Logs

14-1188 S

January 16, 2015

Hawthorn Development, LLC
c/o Lenity Architecture
Attention: Mark Lowen
3150 Kettle Court SE
Salem, Oregon 97301

Subject: Geotechnical Engineering Services
Proposed Retirement Residence
802 Ocean Avenue
Portland, Maine

Dear Mark:

In accordance with our Revised Proposal dated November 11, 2014, we have performed subsurface explorations for the subject project in Portland, Maine. This report presents our findings and geotechnical recommendations and its contents are subject to the limitations set forth in Attachment A.

1.0 INTRODUCTION

1.1 Scope and Purpose

The purpose of our services was to obtain subsurface information at the site in order to develop geotechnical recommendations relative to foundations, earthwork and pavement associated with the proposed construction. Our scope of services included review of existing subsurface information, drilling test boring and auger probe explorations, a geotechnical analysis of the subsurface findings and preparation of this report.

1.2 Proposed Construction

Based on the site plan dated October 28, 2014 and the RFP dated October 29, 014, we understand development plans call for construction of a new retirement residence with associated paved access drive and parking areas on an undeveloped parcel located at

802 Ocean Avenue in Portland, Maine. We understand the residence will be four-story with 142 suites and will consist of wood-framed construction.

The building will have a finish floor elevation of 145 feet (project datum) requiring cuts in the west side of the footprint and fills in the east side of the footprint approaching 10 to 12 feet. Additionally, cuts and fills approaching about 15 feet will be required to achieve proposed site grades in paved parking and access drive areas. Two detached garages are proposed south and southeast of the main building.

Proposed and existing site features are shown on the "Exploration Location Plan" attached as Sheet 1.

2.0 EXPLORATION AND TESTING

2.1 Explorations

We performed thirteen explorations for the subject project as well as a review of explorations performed at the site for a previous development proposal. The approximate exploration locations are shown on the "Exploration Location Plan" attached as Sheet 1. Logs of the recent explorations are attached as Sheets 2 through 14. A key to the notes and symbols used on the log is attached as Sheet 15. Logs of the previous explorations are attached as Appendix A.

2.1.1 Recent Explorations

Five test borings (B-101 through B-105) and eight auger probes (P-201 through P-208) were made at the site on November 22, 2014, by Northern Test Boring, Inc of Gorham, Maine working under subcontract to S. W. Cole Engineering, Inc. (S.W.COLE). Bedrock was encountered at the ground surface at B-103 and P-208. The exploration locations were selected and established in the field using a Trimble GPS by S.W.COLE.

2.1.2 Previous Explorations

Seventeen test borings (B-1 through B-17) and eight auger probes (P-1 through P-8) were made at the site in 2004 for a previous development proposal.

2.2 Testing

The explorations were made using cased wash-boring, rock coring, solid stem auger, and air hammer drilling techniques. The soils were sampled at the test borings using a split spoon sampler and Standard Penetration Test (SPT) methods. SPT blow counts are shown on the logs. Soil and bedrock samples obtained from the explorations were returned to our laboratory for visual classification.

3.0 SITE AND SUBSURFACE CONDITIONS

3.1 Surficial Conditions

The site is located at 802 Ocean Avenue in Portland, Maine. The site consists of an undeveloped wood parcel located on the west side of Ocean Avenue. Bedrock outcrops are present across the site. The site generally slopes down to the east with existing topography varying from about elevation 160 to 125 feet within the footprint of proposed construction and elevation 140 to 115 feet along the proposed access drive. Some shallow drainage channels and lower laying areas of ponded water are present at the site, with flow generally draining to the east and southeast. A wetland is present in the northwestern limits of the site, which appears to feed shallow drainage channels. Existing site features and topography are shown on Sheet 1.

3.2 Subsurface Conditions

Underlying a surficial layer of forest duff and topsoil, the explorations generally encountered a thin layer of silty sand and/or silty glacial till overlying shallow bedrock. Bedrock was encountered at the explorations at depths varying from about ½ to 5 feet. The drilling equipment penetrated into an upper zone of weathered bedrock at some exploration locations. Based on rock coring performed as part of the 2004 exploration program, the bedrock is classified as migmatite and biotite-muscovite schist of varying quality. Refer to the attached logs for more detailed subsurface information.

3.3 Groundwater Conditions

The overburden soils encountered at the explorations were generally moist to saturated. Groundwater monitoring wells were installed in several borings made for the 2004 exploration program. Details of these monitoring wells are shown on the borings logs attached in Appendix A. Groundwater measurements obtained at the wells in January, 2005 are as follows:

Boring	Water Depth From Existing Ground Surface (ft)
B-2	4.1 Below
B-4	1.7 Above (Possible Artesian Condition)
B-8	0.5 Above (Possible Artesian Condition)
B-12	0.1 Above (Possible Artesian Condition)
B-16	3.0 Below
B-17 (Shallow)	2.7 Below
B-17 (Deep)	1.1 Above (Possible Artesian Condition)

An attempt was made to locate the monitoring wells at the site during the recent exploration program; however the wells had either been destroyed or were frozen, hindering measurement. Groundwater likely becomes perched on top of the shallow bedrock at the site. It should be anticipated that seasonal groundwater levels will fluctuate, especially during periods of snowmelt and precipitation.

3.4 Seismic and Frost Considerations

The 100-year Air Freezing Index for the Portland, Maine area is about 1,410-Fahrenheit degree-days, which corresponds to a frost penetration depth on the order of 4.5 feet. Based on the findings at the explorations, we interpret the site soils and bedrock to correspond to Seismic Site Class C in accordance with 2009 IBC/ASCE-7.

4.0 EVALUATION AND RECOMMENDATIONS

4.1 General Findings

Based on the subsurface findings, the proposed construction appears feasible from a geotechnical standpoint. Specifically, conventional spread footings and on-grade floor slabs appear suitable for the proposed buildings. The principle geotechnical considerations are as follows:

- Shallow bedrock is present across the site. The bedrock will require blasting to achieve proposed site grades. Blasting and subsequent preparation of blasted bedrock subgrades must be performed in a controlled manner to provide adequate support of the proposed buildings and pavements. Subgrades should be observed by the geotechnical engineer and may need to be overexcavated and replaced as

deemed necessary. Blasted bedrock subgrades must be thoroughly choked with Crushed Stone or blasted bedrock fines.

- Possible artesian groundwater conditions were observed in the monitoring wells. Groundwater seepage is anticipated from cut slopes. A continuous Crushed Stone Drainage blanket with perimeter underdrains is recommended below the entire building.
- Blasted bedrock may be processed on-site to reuse for compacted fills as well as pavement gravels and foundation backfill. The contractor should be prepared to break down larger rock particles as needed to meet the requirements of Rock Borrow, Structural Fill, Pavement Gravel and Crushed Stone. Some imported materials will be needed for construction.
- A sub-slab radon venting system must be installed beneath building. The radon system should be designed by a qualified indoor air quality consultant.

4.2 Site and Subgrade Preparation

We recommend that site preparation begin with the construction of an erosion control system to protect adjacent drainage ways and areas outside the construction limits. As much vegetation as possible should remain outside the construction areas to lessen the potential for erosion.

Following stripping and grubbing of the site, blasting will be required to achieve proposed grades. Blasting and subsequent preparation of blasted bedrock subgrades must be performed in a controlled manner to provide adequate support of the proposed buildings and pavement. Care must be taken to control overblasting below buildings and paved areas. We recommend vertical overblasting be limited to 1-foot below footings and 2-feet below slabs and paved areas.

S.W.COLE should observe blasted bedrock subgrades prior to placing any new fill or concrete. Depending how the rock fractures, some overblasted rock may be able to remain in place; however, the contractor should be prepared to overexcavate and remove loose and overblasted bedrock as deemed necessary by the geotechnical engineer's field observations. We recommend the contract documents contain unit rate provisions for

removal and replacement of overblasted bedrock. Blast rock fines or Crushed Stone should be thoroughly worked into the bedrock surface to choke any voids or fractures in the bedrock.

4.3 Excavation and Dewatering

Excavation work will generally encounter topsoil, a relatively thin layer of silty sand and silty glacial till and shallow bedrock. Final cuts to subgrade elevation in soil, if encountered, should be performed with a smooth-edged bucket to help minimize soil disturbance.

The bedrock encountered at the site is hard and sound and will require blasting for excavation. Blasting can adversely affect adjacent structures, water-wells, septic systems, up-gradient wetlands, and buried utilities. We recommend that blasting be performed by a licensed and qualified contractor and that a blasting plan be prepared sufficiently in advance of blasting activities to coordinate efforts with abutting properties and to serve notice to the general public. Pre-blast surveys of structures, wells, septic systems, pipelines, and protected natural resources within 500 feet of the blast area should be completed prior to blasting.

Groundwater seepage is anticipated in excavations. Sumping and pumping dewatering techniques should be adequate to control groundwater in shallower excavations. The layer of Crushed Stone recommended below foundations will provide a media from which to dewater. Controlling the water levels to below planned excavation depths will help stabilize subgrades during construction.

Excavations must be properly shored and/or sloped to prevent sloughing and caving of the sidewalls during construction. Temporary excavations should be sloped or shored in accordance with OSHA regulations.

4.4 Foundations

We recommend the proposed buildings be supported on spread footing foundations bearing on at least 12-inches of Crushed Stone overlying properly prepared subgrades. Building subgrades are anticipated to consist of blasted bedrock in the western portion of the footprint, transitioning to compacted Rock Borrow fill in the east.

For spread footings bearing on properly prepared subgrades, we recommend the following geotechnical parameters for design consideration:

Geotechnical Parameters for Spread Footings and Foundation Walls	
Design Frost Depth	4.5 feet
Net Allowable Bearing Pressure	4.0 ksf or less
Base Friction Factor	0.4
At-Rest Lateral Earth Pressure Coeff.	0.5
Total Unit Weight of Backfill	130 pcf
Internal Friction Angle of Backfill	30 degrees
Seismic Soil Site Class	C (2009 IBC/ASCE 7)

For the anticipated foundation bearing conditions, we anticipate less than 1-inch of post-construction settlement with differential settlement approaching ½-inch.

4.5 Foundation Drainage

We recommend a perimeter foundation underdrain system be installed beneath the building. The underdrain pipe should consist of 4-inch diameter, perforated SDR-35 foundation drain pipe enveloped within the exterior side of the Crushed Stone provided below the footings. Non-woven geotextile, such as Mirafi 140N or equivalent, should be provided around the exterior side of the Crushed Stone layer prior to placing foundation backfill soils. The underdrain pipe must be connected to a positive gravity outlet protected from freezing, clogging and backflow. The Crushed Stone layer provided below the building footings and floor slabs should be continuous and hydraulically connected to the underdrains. General underdrain details are shown on Sheet 16.

4.6 Slab-On-Grade Floors and Soil-Gas Venting

We recommend on-grade concrete floors be supported on a minimum of 12 inches of compacted Crushed Stone overlying properly prepared subgrades. On-grade floor slabs founded on properly prepared subgrades may be designed considering a modulus of subgrade reaction of 100 pci. The structural engineer or concrete consultant must design steel reinforcing and joint spacing appropriate to slab thickness and function.

The presence of shallow bedrock beneath the proposed building increases the risk of radon intrusion in the building. Consequently, building design must include a sub-slab

radon venting system and positive building pressurization. The venting system should be designed by a qualified indoor air quality consultant.

We recommend a sub-slab vapor retarder overlying at least 1-inch of rigid insulation overlying the 12 inch thick Crushed Stone venting and drainage layer below on-grade floor slabs. The vapor retarder must have a permeance that is less than the floor cover or surface treatment that is applied to the slab. The vapor retarder must have sufficient durability to withstand puncture from construction activity. The vapor retarder material shall be placed according to the manufacturer's recommended method, including the taping and lapping of all joints and wall connections. The architect and/or flooring consultant should select the vapor retarder products compatible with flooring and adhesive materials.

The floor slab should be appropriately cured using moisture retention methods after casting. Typical floor slab curing methods should be used for at least 7 days. The architect or flooring consultant should assign curing methods consistent with current applicable American Concrete Institute (ACI) procedures with consideration of curing method compatibility to proposed surface treatments, flooring and adhesive materials.

4.7 Entrance Slabs and Sidewalks

Entrance slabs and sidewalks adjacent to buildings must be designed to reduce the effects of differential frost action between adjacent pavement, doorways, and entrances. We recommend that clean, non-frost susceptible Structural Fill be provided to a depth of 4.5 feet (or until sound bedrock is encountered) below the top of entrance slabs. This thickness of Structural Fill should extend the full width of the entrance slabs and outward at least 4.5 feet, thereafter transitioning up to the bottom of the adjacent sidewalk or pavement subbase gravel at a 3H:1V or flatter slope. General frost transition zone details for entrance slabs are illustrated on Sheet 16.

4.8 Backfill and Compaction

Based on the subsurface findings, the existing site soils are unsuitable for reuse as fill within building areas, but may be reused in paved areas during dry, non-freezing weather conditions. We recommend the following fill and backfill materials.

Granular Borrow: Imported compacted fill to raise site grades in paved areas should be sand, silty sand or sand and gravel meeting the requirements of MDOT Standard Specification 703.19 “Granular Borrow”.

Rock Borrow: Blasted bedrock fill to raise site grades in building and paved areas should be processed to meet the requirements of MDOT Standard Specification 703.21 “Rock Borrow” with a maximum particle size of 3 feet in greatest dimension. The maximum particle size of Rock Borrow should be limited to 4-inches in the top 5 feet below the building.

Structural Fill: Fill to raise site grades in the top 5 feet below the building, over wet subgrades, backfill for foundations and retaining walls, and backfill below exterior slabs and patios should be non-frost susceptible sand and gravel meeting the gradation requirements for Structural Fill as given below.

Structural Fill	
Sieve Size	Percent Finer by Weight
4 inch	100
3 inch	90 to 100
¾ inch	25 to 90
#40	0 to 30
#200	0 to 5

Structural Fill is recommended for use as:

- Fill to raise site grades over wet subgrades
- Backfill for foundations
- Fill and backfill below exterior patios and slabs to at least 4.5 feet below finish grade, or until sound bedrock is encountered

Crushed Stone: Crushed Stone, used below building footings and floor slabs should meet the gradation requirements of MDOT Standard Specifications 703.22 “Underdrain Backfill Type C”. A nominally sized 3/4-inch crushed stone will meet this requirement.

Reuse of Existing Soils and Bedrock: The existing site overburden soils are moisture and frost susceptible and are unsuitable for reuse in the building area, but may be

reused to raise grades in landscape and paved areas during dry and non-freezing conditions.

Blasted bedrock may be reused to raise site grades provided it is processed to meet the requirements of Rock Borrow. Additionally, blasted bedrock may be processed on-site and blended with sand to create Structural Fill and pavement gravels.

Placement and Compaction: Fill should be placed in horizontal lifts and compacted such that the desired density is achieved throughout the lift thickness with 3 to 5 passes of the compaction equipment. Loose soil lift thicknesses for grading, fill and backfill activities should not exceed 12 inches. We recommend that soil fill and backfill in building and paved areas be compacted to at least 95 percent of its maximum dry density as determined by ASTM D-1557.

Rock Borrow should be placed in lifts not exceeding 3 feet and compacted and choked with Crushed Stone or blast fines such that voids are filled within the Rock Borrow mass prior to placing the next lift. Rock borrow lifts should be compacted with at least 3 passes each way of a vibratory roller having a static weight of at least 12-tons.

4.9 Weather Considerations

Considering the site is principally shallow rock, blasting and site grading with Rock Borrow may occur in variable weather conditions. Site grading with soil fills should ideally be performed in drier, non-freezing weather. The contractor should anticipate the need for water to temper fills in order to facilitate compaction during dry weather. If construction takes place during cold weather, subgrades, foundations and floor slabs must be protected during freezing conditions. Concrete and fill must not be placed on frozen soil; and once placed, the concrete and soil beneath the structure must be protected from freezing.

4.10 Paved Areas

We anticipate paved areas will be subjected primarily to passenger vehicle and light delivery truck traffic with occasional heavy delivery truck traffic. Considering the site soils, and proposed usage, we offer the following pavement section for consideration. Materials are based on Maine Department of Transportation 2014 Standard Specifications.

Asphalt Pavement Section	
Material	Thickness (Inches)
9.5 mm Hot Mix Asphalt (50 Gyration Design)	1 ¼
19.0 mm Hot Mix Asphalt (50 Gyration Design)	2 ¼
MDOT 703.06 Type A, Crushed Aggregate Base	3
MDOT 703.06 Type D, Crushed Aggregate Subbase	15

The base and subbase materials should be compacted to at least 95 percent of their maximum dry density as determined by ASTM D-1557. Hot mix asphalt pavement should be compacted to 92 to 97 percent of its theoretical maximum density as determined by ASTM D-2041. A tack coat should be used between successive lifts of bituminous pavement.

It should be understood that frost penetration can be on the order of 4.5 feet in this area. In the absence of full depth excavation of frost susceptible soils below paved areas and subsequent replacement with non-frost susceptible compacted fill, frost penetration into the subgrade will occur and some heaving and distress of pavement must be anticipated.

4.11 Fill Slopes and MSE Walls

Fill slopes should be constructed of properly compacted Rock Borrow or Granular Borrow overlying bedrock. The slopes should be constructed as oversized level benches to facilitate proper compaction which are then excavated to grade. Vegetation should be established on the slopes as soon as practicable. Temporary erosion control mesh or other means may be needed to stabilize the slopes during construction.

We understand mechanically stabilized earth walls (MSE Walls) may be needed for site grading. We recommend the following geotechnical parameters for design of MSE Walls:

Geotechnical Parameters for MSE Walls		
Wall Zone	Unit Weight (pcf)	Friction Angle
Reinforced Soil	130	32
Retained Soil	135	30
Foundation Soil	125	28

S.W.COLE should be retained to review MSE Wall designs and perform a global stability analysis of MSE Walls, as well as cut and fill slopes.

4.12 Design Review and Construction Testing

S.W.COLE should be retained to review the final design and specifications to determine that our earthwork, foundation and pavement recommendations have been properly interpreted and implemented.

A construction materials testing and special inspection program should also be implemented during construction to observe compliance with the design concepts, plans, and specifications. S.W.COLE is available to provide pre-blast surveys, subgrade observations for foundations as well as testing and special inspection services for soils, concrete, asphalt, steel, and spray-applied fireproofing construction materials.

5.0 CLOSURE

It has been a pleasure to be of assistance to you with this phase of your project. We look forward to working with you during the construction phase of the project.

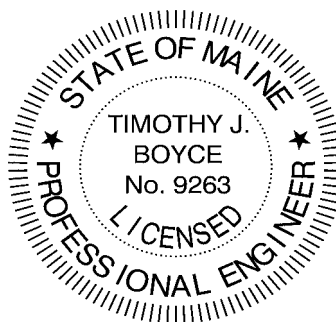
Sincerely,

S. W. Cole Engineering, Inc.

Evan M. Walker, P.E.
Geotechnical Engineer



Timothy J. Boyce, P.E.
Senior Geotechnical Engineer



EMW:tjb-mas

Attachment A Limitations

This report has been prepared for the exclusive use Hawthorn Development, LLC and Lenity Architecture for specific application to the proposed Retirement Residence at 802 Ocean Avenue in Portland, Maine. S. W. Cole Engineering, Inc. has endeavored to conduct the work in accordance with generally accepted soil and foundation engineering practices. No warranty, expressed or implied, is made.

The soil profiles described in the report are intended to convey general trends in subsurface conditions. The boundaries between strata are approximate and are based upon interpretation of exploration data and samples.

The analyses performed during this investigation and recommendations presented in this report are based in part upon the data obtained from subsurface explorations made at the site. Variations in subsurface conditions may occur between explorations and may not become evident until construction. If variations in subsurface conditions become evident after submission of this report, it will be necessary to evaluate their nature and to review the recommendations of this report.

Observations have been made during exploration work to assess site groundwater levels. Fluctuations in water levels will occur due to variations in rainfall, temperature, and other factors.

S. W. Cole Engineering, Inc.'s scope of work has not included the investigation, detection, or prevention of any Biological Pollutants at the project site or in any existing or proposed structure at the site. The term "Biological Pollutants" includes, but is not limited to, molds, fungi, spores, bacteria, and viruses, and the byproducts of any such biological organisms.

Recommendations contained in this report are based substantially upon information provided by others regarding the proposed project. In the event that any changes are made in the design, nature, or location of the proposed project, S. W. Cole Engineering, Inc. should review such changes as they relate to analyses associated with this report. Recommendations contained in this report shall not be considered valid unless the changes are reviewed by S. W. Cole Engineering, Inc.



S.W.COLE
ENGINEERING, INC.

BORING LOG

PROJECT: PROPOSED RETIREMENT RESIDENCE
CLIENT : HAWTHORNE DEVELOPMENT, LLC
LOCATION: 802 OCEAN AVENUE, PORTLAND, MAINE
DRILLING FIRM: NORTHERN TEST BORING, INC. DRILLER: MIKE NADEAU
TYPE SIZE I.D. HAMMER WT. HAMMER FALL
CASING: SSA 4" O.D.
SAMPLER: SS 1 3/8" 140 LBS. 30"
CORE BARREL:

BORING NO.: **B-101**
SHEET: 1 OF 1
PROJECT NO.: 14-1188
DATE START: 11/22/2014
DATE FINISH: 11/22/2014
ELEVATION:
SWC REP.: E. WALKER

WATER LEVEL INFORMATION

ALL SOILS MOIST

CASING BLOWS PER FOOT	SAMPLE				SAMPLER BLOWS PER 6"				DEPTH	STRATA & TEST DATA
	NO.	PEN.	REC.	DEPTH @ BOT	0-6	6-12	12-18	18-24		
	1D	8"	4"	0.6'	1	50-2"			0.6'	FOREST DUFF
									0.9'	WEATHERED BEDROCK - ADVANCE BY AUGER
										REFUSAL @ 0.9' BEDROCK

SAMPLES: SOIL CLASSIFIED BY:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE
DRILLER - VISUALLY
SOIL TECH. - VISUALLY
LABORATORY TEST

REMARKS:
STRATIFICATION LINES REPRESENT THE
APPROXIMATE BOUNDARY BETWEEN SOIL TYPES
AND THE TRANSITION MAY BE GRADUAL.



S.W. COLE
ENGINEERING, INC.

BORING LOG

PROJECT: PROPOSED RETIREMENT RESIDENCE
CLIENT : HAWTHORNE DEVELOPMENT, LLC
LOCATION: 802 OCEAN AVENUE, PORTLAND, MAINE
DRILLING FIRM: NORTHERN TEST BORING, INC. DRILLER: MIKE NADEAU
TYPE SIZE I.D. HAMMER WT. HAMMER FALL
CASING: SSA 4" O.D.
SAMPLER: SS 1 3/8" 140 LBS. 30"
CORE BARREL:

BORING NO.: **B-102**
SHEET: 1 OF 1
PROJECT NO.: 14-1188
DATE START: 11/22/2014
DATE FINISH: 11/22/2014
ELEVATION:
SWC REP.: E. WALKER

WATER LEVEL INFORMATION

CASING BLOWS PER FOOT	SAMPLE				SAMPLER BLOWS PER 6"				DEPTH	STRATA & TEST DATA				
	NO.	PEN.	REC.	DEPTH @ BOT	0-6	6-12	12-18	18-24						
									0.4'	FOREST DUFF				
	1D	14"	14"	1.2'	1	2	50-2"		1.0'	DARK BROWN SILTY SAND WITH ORGANICS				
									1.2'	WEATHERED BEDROCK - ADVANCE BY AUGER				
										REFUSAL @ 1.2' BEDROCK				
SAMPLES:					SOIL CLASSIFIED BY:					REMARKS: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.				
D = SPLIT SPOON					DRILLER - VISUALLY									
C = 3" SHELBY TUBE					SOIL TECH. - VISUALLY									
U = 3.5" SHELBY TUBE					LABORATORY TEST					BORING NO.: B-102				



S.W. COLE
ENGINEERING, INC.

BORING LOG

PROJECT: PROPOSED RETIREMENT RESIDENCE
CLIENT : HAWTHORNE DEVELOPMENT, LLC
LOCATION: 802 OCEAN AVENUE, PORTLAND, MAINE
DRILLING FIRM: NORTHERN TEST BORING, INC. DRILLER: MIKE NADEAU
TYPE SIZE I.D. HAMMER WT. HAMMER FALL
CASING: _____
SAMPLER: _____
CORE BARREL: _____

BORING NO.: **B-103**
SHEET: 1 OF 1
PROJECT NO.: 14-1188
DATE START: 11/22/2014
DATE FINISH: 11/22/2014
ELEVATION: _____
SWC REP.: E. WALKER

WATER LEVEL INFORMATION

CASING BLOWS PER FOOT	SAMPLE				SAMPLER BLOWS PER 6"				DEPTH	STRATA & TEST DATA
	NO.	PEN.	REC.	DEPTH @ BOT	0-6	6-12	12-18	18-24		
										BEDROCK AT GROUND SURFACE

SAMPLES:	SOIL CLASSIFIED BY:	REMARKS:
D = SPLIT SPOON C = 3" SHELBY TUBE U = 3.5" SHELBY TUBE	X DRILLER - VISUALLY SOIL TECH. - VISUALLY LABORATORY TEST	STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.



BORING NO.:	B-104
SHEET:	1 OF 1
PROJECT NO.:	14-1188
DATE START:	11/22/2014
DATE FINISH:	11/22/2014
ELEVATION:	
SWC REP.:	E. WALKER
ER LEVEL INFORMATION	
ALL SOILS MOIST	

PROJECT:	PROPOSED RETIREMENT RESIDENCE			
CLIENT :	HAWTHORNE DEVELOPMENT, LLC			
LOCATION:	802 OCEAN AVENUE, PORTLAND, MAINE			
DRILLING FIRM:	NORTHERN TEST BORING, INC.		DRILLER:	MIKE NADEAU
	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	SSA	4" O.D.		
SAMPLER:	SS	1 3/8"	140 LBS.	30"
CORE BARREL:				

CASING BLOWS PER FOOT	SAMPLE				SAMPLER BLOWS PER 6"				DEPTH	STRATA & TEST DATA	
	NO.	PEN.	REC.	DEPTH @ BOT	0-6	6-12	12-18	18-24			
	1D	8"	8"	1.6'	13	50-2"			0.2'	FOREST DUFF / DARK BROWN SILTY SAND WITH ORGANICS	
									1.1'	WEATHERED BEDROCK - ADVANCE BY AUGER	
										REFUSAL @ 1.1' BEDROCK	
SAMPLES:					SOIL CLASSIFIED BY:				REMARKS:		
D = SPLIT SPOON C = 3" SHELBY TUBE U = 3.5" SHELBY TUBE					X DRILLER - VISUALLY SOIL TECH. - VISUALLY LABORATORY TEST				STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.		
									BORING NO.: B-104		



BORING NO.:	B-105
SHEET:	1 OF 1
PROJECT NO.:	14-1188
DATE START:	11/22/2014
DATE FINISH:	11/22/2014
ELEVATION:	
SWC REP.:	E. WALKER

PROJECT:	PROPOSED RETIREMENT RESIDENCE			
CLIENT :	HAWTHORNE DEVELOPMENT, LLC			
LOCATION:	802 OCEAN AVENUE, PORTLAND, MAINE			
DRILLING FIRM:	NORTHERN TEST BORING, INC.		DRILLER:	MIKE NADEAU
	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	SSA	4" O.D.		
SAMPLER:	SS	1 3/8"	140 LBS.	30"
CORE BARREL:				

ALL SOILS MOIST

[illegible]



BORING NO.:	P-201
SHEET:	1 OF 1
PROJECT NO.:	14-1188
DATE START:	11/22/2014
DATE FINISH:	11/22/2014
ELEVATION:	
SWC REP.:	E. WALKER

WATER LEVEL INFORMATION

SAMPLES: SOIL CLASSIFIED BY:		REMARKS:	
D = SPLIT SPOON C = 3" SHELBY TUBE U = 3.5" SHELBY TUBE	X DRILLER - VISUALLY SOIL TECH. - VISUALLY LABORATORY TEST	STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.	7
		BORING NO.:	P-201



BORING NO.:	P-202
SHEET:	1 OF 1
PROJECT NO.:	14-1188
DATE START:	11/22/2014
DATE FINISH:	11/22/2014
ELEVATION:	
SWC REP.:	E. WALKER

WATER LEVEL INFORMATION

[illegible]



BORING NO.:	P-203
SHEET:	1 OF 1
PROJECT NO.:	14-1188
DATE START:	11/22/2014
DATE FINISH:	11/22/2014
ELEVATION:	
SWC REP.:	E. WALKER

PROJECT:	PROPOSED RETIREMENT RESIDENCE			
CLIENT :	HAWTHORNE DEVELOPMENT, LLC			
LOCATION:	802 OCEAN AVENUE, PORTLAND, MAINE			
DRILLING FIRM:	NORTHERN TEST BORING, INC.		DRILLER:	MIKE NADEAU
	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	SSA	4" O.D.		
SAMPLER:				
CORE BARREL:				

[illegible]

SAMPLES:	SOIL CLASSIFIED BY:	
D = SPLIT SPOON		DRILLER - VISUALLY
C = 3" SHELBY TUBE	X	SOIL TECH. - VISUALLY
U = 3.5" SHELBY TUBE		LABORATORY TEST

REMARKS:

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: P-203



BORING NO.:	P-204
SHEET:	1 OF 1
PROJECT NO.:	14-1188
DATE START:	11/22/2014
DATE FINISH:	11/22/2014
ELEVATION:	
SWC REP.:	E. WALKER

PROJECT:	PROPOSED RETIREMENT RESIDENCE			
CLIENT :	HAWTHORNE DEVELOPMENT, LLC			
LOCATION:	802 OCEAN AVENUE, PORTLAND, MAINE			
DRILLING FIRM:	NORTHERN TEST BORING, INC.		DRILLER:	MIKE NADEAU
	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	SSA	4" O.D.		
SAMPLER:				
CORE BARREL:				

[illegible]

SAMPLES:	SOIL CLASSIFIED BY:	
D = SPLIT SPOON		DRILLER - VISUALLY
C = 3" SHELBY TUBE	X	SOIL TECH. - VISUALLY
U = 3.5" SHELBY TUBE		LABORATORY TEST

REMARKS:

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: P-204



BORING NO.:	P-205
SHEET:	1 OF 1
PROJECT NO.:	14-1188
DATE START:	11/22/2014
DATE FINISH:	11/22/2014
ELEVATION:	
SWC REP.:	E. WALKER

WATER LEVEL INFORMATION

11

BORING NO.: P-205



BORING NO.:	P-206
SHEET:	1 OF 1
PROJECT NO.:	14-1188
DATE START:	11/22/2014
DATE FINISH:	11/22/2014
ELEVATION:	
SWC REP.:	E. WALKER

WATER LEVEL INFORMATION

[illegible]



BORING NO.:	P-207
SHEET:	1 OF 1
PROJECT NO.:	14-1188
DATE START:	11/22/2014
DATE FINISH:	11/22/2014
ELEVATION:	
SWC REP.:	E. WALKER

WATER LEVEL INFORMATION

CASING BLOWS PER FOOT	SAMPLE				SAMPLER BLOWS PER 6"				DEPTH	STRATA & TEST DATA
	NO.	PEN.	REC.	DEPTH @ BOT	0-6	6-12	12-18	18-24		
									1.9'	FOREST DUFF BROWN SILTY SAND, TRACE GRAVEL
										REFUSAL @ 1.9' BEDROCK NOTE: NO SAMPLING - AUGER PROBE
SAMPLES:					SOIL CLASSIFIED BY:				REMARKS:	
D = SPLIT SPOON C = 3" SHELBY TUBE U = 3.5" SHELBY TUBE					X DRILLER - VISUALLY SOIL TECH. - VISUALLY LABORATORY TEST				STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.	
									BORING NO.: P-207	

13



S.W. COLE
ENGINEERING, INC.

BORING LOG

PROJECT: PROPOSED RETIREMENT RESIDENCE
CLIENT : HAWTHORNE DEVELOPMENT, LLC
LOCATION: 802 OCEAN AVENUE, PORTLAND, MAINE
DRILLING FIRM: NORTHERN TEST BORING, INC. DRILLER: MIKE NADEAU
TYPE SIZE I.D. HAMMER WT. HAMMER FALL
CASING: SSA 4" O.D.
SAMPLER:
CORE BARREL:

BORING NO.: **P-208**
SHEET: 1 OF 1
PROJECT NO.: 14-1188
DATE START: 11/22/2014
DATE FINISH: 11/22/2014
ELEVATION:
SWC REP.: E. WALKER

WATER LEVEL INFORMATION

CASING BLOWS PER FOOT	SAMPLE				SAMPLER BLOWS PER 6"				DEPTH	STRATA & TEST DATA
	NO.	PEN.	REC.	DEPTH @ BOT	0-6	6-12	12-18	18-24		
										BEDROCK AT GROUND SURFACE

SAMPLES: SOIL CLASSIFIED BY: DRILLER - VISUALLY
D = SPLIT SPOON ☐ SOIL TECH. - VISUALLY
C = 3" SHELBY TUBE ☒ LABORATORY TEST
U = 3.5" SHELBY TUBE ☐

REMARKS: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **P-208**

KEY TO THE NOTES & SYMBOLS

Test Boring and Test Pit Explorations

All stratification lines represent the approximate boundary between soil types and the transition may be gradual.

Key to Symbols Used:

w	-	water content, percent (dry weight basis)
q _u	-	unconfined compressive strength, kips/sq. ft. - laboratory test
S _v	-	field vane shear strength, kips/sq. ft.
L _v	-	lab vane shear strength, kips/sq. ft.
q _p	-	unconfined compressive strength, kips/sq. ft. – pocket penetrometer test
O	-	organic content, percent (dry weight basis)
W _L	-	liquid limit - Atterberg test
W _P	-	plastic limit - Atterberg test
WOH	-	advance by weight of hammer
WOM	-	advance by weight of man
WOR	-	advance by weight of rods
HYD	-	advance by force of hydraulic piston on drill
RQD	-	Rock Quality Designator - an index of the quality of a rock mass.
γ _T	-	total soil weight
γ _B	-	buoyant soil weight

Description of Proportions:

Trace:	0 to 5%
Some:	5 to 12%
"Y"	12 to 35%
And	35+%

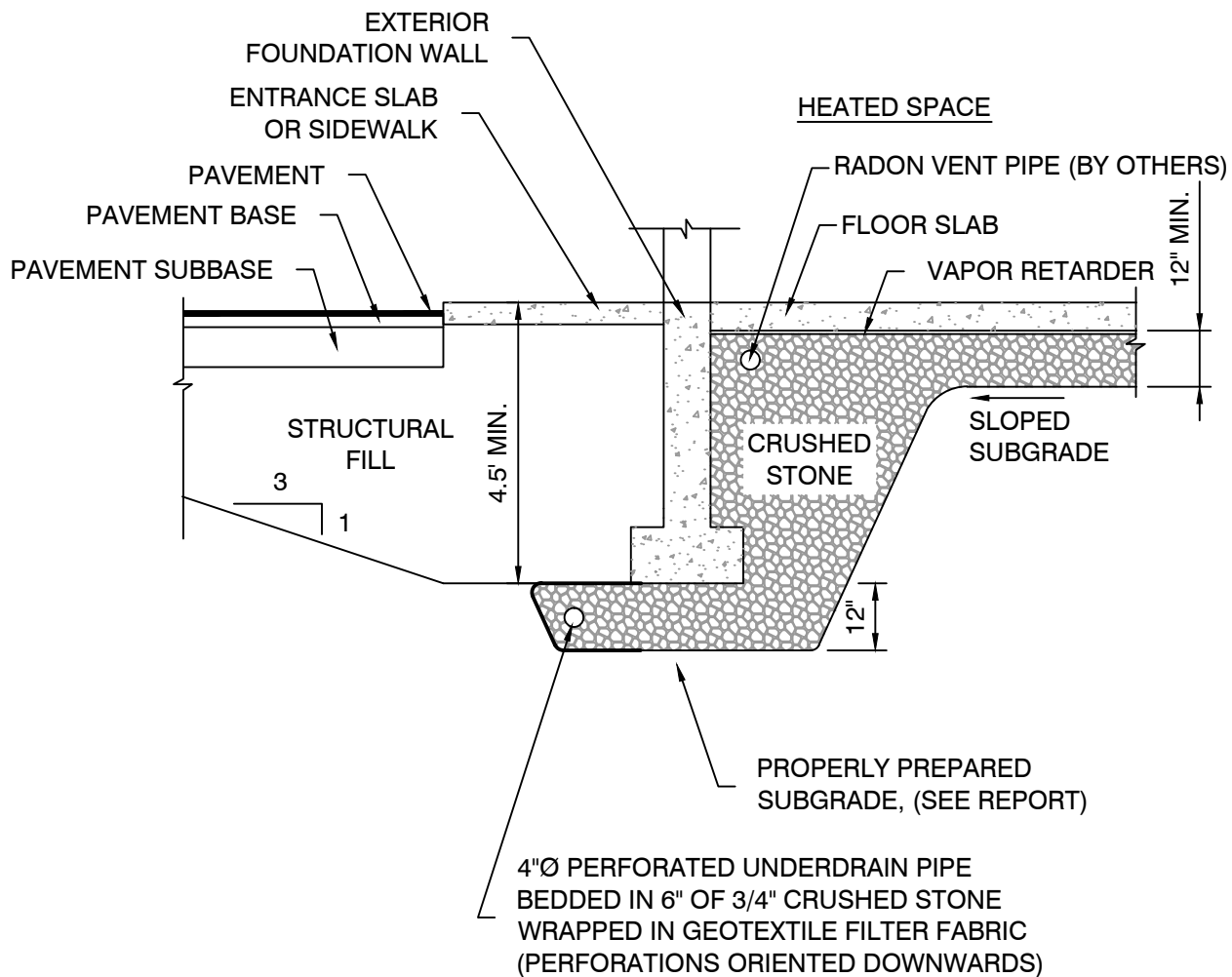
Description of Stratified Soils

Parting:	0 to 1/16" thickness
Seam:	1/16" to 1/2" thickness
Layer:	1/2" to 12" thickness
Varved:	Alternating seams or layers
Occasional:	one or less per foot of thickness
Frequent:	more than one per foot of thickness

REFUSAL: Test Boring Explorations - Refusal depth indicates that depth at which, in the drill foreman's opinion, sufficient resistance to the advance of the casing, auger, probe rod or sampler was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

REFUSAL: Test Pit Explorations - Refusal depth indicates that depth at which sufficient resistance to the advance of the backhoe bucket was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

Although refusal may indicate the encountering of the bedrock surface, it may indicate the striking of large cobbles, boulders, very dense or cemented soil, or other buried natural or man-made objects or it may indicate the encountering of a harder zone after penetrating a considerable depth through a weathered or disintegrated zone of the bedrock.



NOTE:

1. UNDERDRAIN INSTALLATION AND MATERIAL GRADATION RECOMMENDATIONS ARE CONTAINED WITHIN THIS REPORT.
2. DETAIL IS PROVIDED FOR ILLUSTRATIVE PURPOSES ONLY, NOT FOR CONSTRUCTION.



S.W. COLE
ENGINEERING, INC.

HAWTHORN DEVELOPMENT, LLC

UNDERDRAIN DETAIL

PROPOSED RETIREMENT RESIDENCE
802 OCEAN AVENUE
PORTLAND, MAINE

Job No.: 14-1188
Date : 12/05/2014

Scale: Not to Scale
Sheet: 16

APPENDIX A



BORING LOG

BORING NO.: B-1

SHEET: 1 OF 1

PROJECT NO.: 04-1228

DATE START: 12/9/2004

DATE FINISH: 12/9/2004

ELEVATION: 140.8

SWC REP.: PFK

WATER LEVEL INFORMATION

OVERBURDEN SOILS SATURATED

PROJECT / CLIENT:

LOCATION: OCEAN AVENUE, PORTLAND, MAINE

DRILLING CO. : GREAT WORKS TEST BORING INC. DRILLER: JEFF LEE

CASING: TYPE HW SIZE I.D. 4" HAMMER WT. 300 lb HAMMER FALL 18"

SAMPLER:

CORE BARREL: NQ2 2"

CASING BLOWS PER FOOT	SAMPLE				SAMPLER BLOWS PER 6"				DEPTH	STRATA & TEST DATA	
	NO.	PEN.	REC.	DEPTH @ BOT	0-6	6-12	12-18	18-24			
									5.0'	FOREST DUFF / TOPSOIL OVERLYING BROWN SILTY SAND WITH ORGANICS AND COBBLES GLACIAL TILL	
									15.0'	BEDROCK INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST RQD = 37%	
	1R	60"	53"	10.0'							
	2R	60"	59"	15.0'						RQD = 60%	
									BOTTOM OF EXPLORATION AT 15.0'		
SAMPLES:					SOIL CLASSIFIED BY:				REMARKS:		
D = SPLIT SPOON					X DRILLER - VISUALLY SOIL TECH. - VISUALLY LABORATORY TEST				STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.		2
C = 3" SHELBY TUBE											
U = 3.5" SHELBY TUBE											
										BORING NO.: B-1	



BORING NO.:	B-2 / MW
SHEET:	1 OF 1
PROJECT NO.:	04-1228
DATE START:	12/9/2004
DATE FINISH:	12/9/2004
ELEVATION:	158.7
SWC REP.:	PFK
ER LEVEL INFORMATION	
IEZOMETER INSTALLED	

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"	300 lb	18"
SAMPLER:				
CORE BARREL:	NQ2	2"		

3



BORING NO.:	B-3
SHEET:	1 OF 1
PROJECT NO.:	04-1228
DATE START:	12/9/2004
DATE FINISH:	12/9/2004
ELEVATION:	144.4
SWC REP.:	PFK
ER LEVEL INFORMATION	
URDEN SOILS SATURATED	

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"	300 lb	18"
SAMPLER:				
CORE BARREL:	NQ2	2"		

CASING BLOWS PER FOOT	SAMPLE				SAMPLER BLOWS PER 6"				DEPTH	STRATA & TEST DATA		
	NO.	PEN.	REC.	DEPTH @ BOT	0-6	6-12	12-18	18-24				
									2.5'	FOREST DUFF / TOPSOIL OVERLYING BROWN SILTY SAND WITH ORGANICS AND COBBLES GLACIAL TILL		
										4.5'	PROBABLE WEATHERED BEDROCK	
											BEDROCK	
									7.0'	[ADVANCED BORING BY ROLLER CONE TO 7.0']		
									17.0'	INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST RQD = 62 %		
	1R	60"	60"	12.0'								
	2R	60"	59"	17.0'					RQD = 72 %			
									BOTTOM OF EXPLORATION AT 17.0'			

SAMPLES:		SOIL CLASSIFIED BY:		REMARKS:	
D = SPLIT SPOON	X	DRILLER - VISUALLY		STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.	
C = 3" SHELBY TUBE		SOIL TECH. - VISUALLY			
U = 3.5" SHELBY TUBE		LABORATORY TEST			
				BORING NO.: B-3	

4



BORING LOG

BORING NO.: **B-4 / MW**
SHEET: 1 OF 1
PROJECT NO.: 04-1228
DATE START: 12/9/2004
DATE FINISH: 12/10/2004
ELEVATION: 137

PROJECT / CLIENT: _____
LOCATION: OCEAN AVENUE, PORTLAND, MAINE
DRILLING CO.: GREAT WORKS TEST BORING INC. DRILLER: JEFF LEE

CASING: TYPE HW SIZE I.D. 4" HAMMER WT. 300 lb HAMMER FALL 18"
SAMPLER: SS 1 3/8"
CORE BARREL: NQ2 2"

SWC REP.: PFK / KBG
WATER LEVEL INFORMATION
1" PIEZOMETER INSTALLED

CASING BLOWS PER FOOT	SAMPLE				SAMPLER BLOWS PER 6"				DEPTH	STRATA & TEST DATA
	NO.	PEN.	REC.	DEPTH @ BOT	0-6	6-12	12-18	18-24		
									1.0'	FOREST DUFF / TOPSOIL
	1D	24"	12"	2.0'	WOH/12"	2	3		3.0'	RUST BROWN SILTY SAND WITH COBBLES - GLACIAL TILL ~LOOSE~
	2D	3"	3"	5.2'	50/3"					PROBABLE WEATHERED BEDROCK [ADVANCED BORING BY ROLLER CONE TO 12.0']
	3D	3"	3"	10.2'	50/3"					
									12.0'	BEDROCK INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST RQD = 40 %
	1R	60"	59"	17.0'						
	2R	63"	58"	22.3'					22.3'	
										RQD = 83 %
										BOTTOM OF EXPLORATION AT 22.3' PIEZOMETER DETAILS: SCREEN 17.5' - 22.5' FILTER SAND 15' - 22.5' BENTONITE 13' - 15' SAND TO SURFACE

SAMPLES: SOIL CLASSIFIED BY:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE
DRILLER - VISUALLY
SOIL TECH. - VISUALLY
LABORATORY TEST

REMARKS: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.
BORING NO.: **B-4 / MW**



BORING NO.:	B-5
SHEET:	1 OF 1
PROJECT NO.:	04-1228
DATE START:	12/10/2004
DATE FINISH:	12/10/2004
ELEVATION:	153.2
SWC REP.:	KBG
ER LEVEL INFORMATION	
URDEN SOILS SATURATED	

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"	300 lb	18"
SAMPLER:				
CORE BARREL:	NQ2	2"		

(6



BORING NO.:	B-6
SHEET:	1 OF 1
PROJECT NO.:	04-1228
DATE START:	12/13/2004
DATE FINISH:	12/13/2004
ELEVATION:	153 +/-
SWC REP.:	KBG
ER LEVEL INFORMATION	
REE WATER OBSERVED	

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"	300 lb	18"
SAMPLER:				
CORE BARREL:	NQ2	2"		

7



BORING LOG

BORING NO.: **B-7**
SHEET: 1 OF 1
PROJECT NO.: 04-1228
DATE START: 12/10/2004
DATE FINISH: 12/10/2004
ELEVATION: 156.7
SWC REP.: KBG
WATER LEVEL INFORMATION
NO FREE WATER OBSERVED

PROJECT / CLIENT: _____
LOCATION: OCEAN AVENUE, PORTLAND, MAINE
DRILLING CO.: GREAT WORKS TEST BORING INC. DRILLER: DONNY BOLSTRIDGE

CASING: TYPE HW SIZE I.D. 4" HAMMER WT. 300 lb HAMMER FALL 18"
SAMPLER: _____
CORE BARREL: NQ2 2"

CASING BLOWS PER FOOT	SAMPLE				SAMPLER BLOWS PER 6"				DEPTH	STRATA & TEST DATA
	NO.	PEN.	REC.	DEPTH @ BOT	0-6	6-12	12-18	18-24		
										PROBABLE WEATHERED BEDROCK [ADVANCED BORING BY AIR HAMMER TO 20']
									10.0'	BEDROCK
									20.0'	INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST RQD = 87 %
	1R	60"	59"	25.0'						
										RQD = 78 %
	2R	60"	52"	30.0'					30.0'	
										BOTTOM OF EXPLORATION AT 30.0'

SAMPLES: SOIL CLASSIFIED BY: REMARKS:

D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

X

DRILLER - VISUALLY
SOIL TECH. - VISUALLY
LABORATORY TEST

STRATIFICATION LINES REPRESENT THE
APPROXIMATE BOUNDARY BETWEEN SOIL TYPES
AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-7**



BORING LOG

BORING NO.: **B-8 / MW**
SHEET: 1 OF 1
PROJECT NO.: 04-1228
DATE START: 12/13/2004
DATE FINISH: 12/13/2004
ELEVATION: 140.8
SWC REP.: KBG
WATER LEVEL INFORMATION
1" PIEZOMETER INSTALLED

PROJECT / CLIENT: _____
LOCATION: OCEAN AVENUE, PORTLAND, MAINE
DRILLING CO.: GREAT WORKS TEST BORING INC. DRILLER: DONNY BOLSTRIDGE

CASING: TYPE HW SIZE I.D. 4" HAMMER WT. 300 lb HAMMER FALL 18"
SAMPLER: _____
CORE BARREL: NQ2 2"

CASING BLOWS PER FOOT	SAMPLE				SAMPLER BLOWS PER 6"				DEPTH	STRATA & TEST DATA
	NO.	PEN.	REC.	DEPTH @ BOT	0-6	6-12	12-18	18-24		
									2.0'	FOREST DUFF / TOPSOIL OVERLYING BROWN SILTY SAND WITH ORGANICS
										BEDROCK [ADVANCED BORING BY AIR HAMMER TO 15.0']
									15.0'	
										INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST RQD = 78 %
	1R	60"	59"	20.0'						
										RQD = 82 %
	2R	60"	58"	25.0'					25.0'	
										BOTTOM OF EXPLORATION AT 25.0' PIEZOMETER DETAILS: SCREEN 20' - 25' FILTER SAND 16' - 25' BENTONITE 14' - 16' SAND TO SURFACE

SAMPLES: SOIL CLASSIFIED BY: DRILLER - VISUALLY
C = 3" SHELBY TUBE X SOIL TECH. - VISUALLY
U = 3.5" SHELBY TUBE LABORATORY TEST

REMARKS: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-8 / MW**

9



BORING LOG

BORING NO.: **B-9**

SHEET: 1 OF 1

PROJECT NO.: 04-1228

DATE START: 12/10/2004

DATE FINISH: 12/10/2004

ELEVATION: 136.6

SWC REP.: KBG

WATER LEVEL INFORMATION

OVERBURDEN SATURATED

ARTESIAN WATER FLOW AFTER 1R OBTAINED

PROJECT / CLIENT:

LOCATION: OCEAN AVENUE, PORTLAND, MAINE

DRILLING CO. : GREAT WORKS TEST BORING INC. DRILLER: JEFF LEE

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"	300 lb	18"

SAMPLER: SS 1 3/8"

CORE BARREL: NQ2 2"

CASING BLOWS PER FOOT	SAMPLE				SAMPLER BLOWS PER 6"				DEPTH	STRATA & TEST DATA
	NO.	PEN.	REC.	DEPTH @ BOT	0-6	6-12	12-18	18-24		
									1.0'	FOREST DUFF / TOPSOIL
	1D	24"	15"	2.0'	2	3	2	2	4.0'	BROWN TO ORANGE SILTY SAND WITH ORGANICS OCCASIONAL COBBLES - GLACIAL TILL ~LOOSE~
	2D	0"	0"	5.0'	50/0"					
									6.0'	PROBABLE WEATHERED BEDROCK [ADVANCED BORING BY ROLLER CONE TO 6'] ----- BEDROCK INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST RQD = 63 %
	1R	60"	59"	11.0'					16.0'	RQD = 98 %
	2R	60"	59"	16.0'						BOTTOM OF EXPLORATION AT 16.0'

SAMPLES:

D = SPLIT SPOON

C = 3" SHELBY TUBE

U = 3.5" SHELBY TUBE

X

DRILLER - VISUALLY

SOIL TECH. - VISUALLY

LABORATORY TEST

SOIL CLASSIFIED BY:

REMARKS:

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.:

10



BORING LOG

BORING NO.: **B-10**
SHEET: 1 OF 1
PROJECT NO.: 04-1228
DATE START: 12/13/2004
DATE FINISH: 12/14/2004
ELEVATION: 151.2
SWC REP.: KBG
WATER LEVEL INFORMATION
NO FREE WATER OBSERVED

PROJECT / CLIENT: _____
LOCATION: OCEAN AVENUE, PORTLAND, MAINE
DRILLING CO.: GREAT WORKS TEST BORING INC. DRILLER: DONNY BOLSTRIDGE

CASING: TYPE HW SIZE I.D. 4" HAMMER WT. 300 lb HAMMER FALL 18"
SAMPLER: _____
CORE BARREL: NQ2 2"

CASING BLOWS PER FOOT	SAMPLE				SAMPLER BLOWS PER 6"				DEPTH	STRATA & TEST DATA
	NO.	PEN.	REC.	DEPTH @ BOT	0-6	6-12	12-18	18-24		
									2.0'	FOREST DUFF / TOPSOIL OVERLYING BROWN SILTY SAND WITH ORGANICS
										BEDROCK [ADVANCED BORING BY AIR HAMMER TO 20.0']
									20.0'	INTERBEDDED WHITE TO LIGHT GRAY TO LIGHT GREEN MIGMATITE AND BIOTITE-MUSCOVITE-CHLORITE SCHIST RQD = 68 % INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST RQD = 92 %
	1R	60"	58"	25.0'						
									30.0'	BOTTOM OF EXPLORATION AT 30.0'
	2R	60"	60"	30.0'						

SAMPLES: D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:

X

DRILLER - VISUALLY
SOIL TECH. - VISUALLY
LABORATORY TEST

REMARKS: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: **B-10**

11



BORING NO.:	B-11
SHEET:	1 OF 1
PROJECT NO.:	04-1228
DATE START:	12/14/2004
DATE FINISH:	12/14/2004
ELEVATION:	149.9
SWC REP.:	KBG
ER LEVEL INFORMATION	
REE WATER OBSERVED	

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"	300 lb	18"
SAMPLER:				
CORE BARREL:	NQ2	2"		

12



BORING NO.:	B-12 / MW
SHEET:	1 OF 1
PROJECT NO.:	04-1228
DATE START:	12/10/2004
DATE FINISH:	12/10/2004
ELEVATION:	138.4
SWC REP.:	KBG
ER LEVEL INFORMATION	
IEZOMETER INSTALLED	

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"	300 lb	18"
SAMPLER:	SS	1 3/8"		
CORE BARREL:	NQ2	2"		

[illegible]

SAMPLES:	SOIL CLASSIFIED BY:	
D = SPLIT SPOON		DRILLER - VISUALLY
C = 3" SHELBY TUBE	X	SOIL TECH. - VISUALLY
U = 3.5" SHELBY TUBE		LABORATORY TEST

REMARKS:

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.



BORING NO.:	B-13
SHEET:	1 OF 1
PROJECT NO.:	04-1228
DATE START:	12/14/2004
DATE FINISH:	12/15/2004
ELEVATION:	152.9
SWC REP.:	KBG
ER LEVEL INFORMATION	
REE WATER OBSERVED	

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"	300 lb	18"
SAMPLER:				
CORE BARREL:	NQ2	2"		

[illegible]



BORING NO.:	B-14
SHEET:	1 OF 1
PROJECT NO.:	04-1228
DATE START:	12/13/2004
DATE FINISH:	12/13/2004
ELEVATION:	147.8
SWC REP.:	KBG
ER LEVEL INFORMATION	
OVERBURDEN SATURATED	

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HW	4"	300 lb	18"
SAMPLER:				
CORE BARREL:	NQ2	2"		

15

BORING NO.: **B-14**



BORING LOG

BORING NO.: **B-15**

SHEET: 1 OF 1

PROJECT NO.: 04-1228

DATE START: 12/13/2004

DATE FINISH: 12/13/2004

ELEVATION: 142.3

SWC REP.: KBG

WATER LEVEL INFORMATION

OVERBURDEN SOILS SATURATED

PROJECT / CLIENT:

LOCATION: OCEAN AVENUE, PORTLAND, MAINE

DRILLING CO. : GREAT WORKS TEST BORING INC. DRILLER: JEFF LEE

TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
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CASING: HW 4" 300 lb 18"

SAMPLER: SS 1 3/8"

CORE BARREL: NQ2 2"

[illegible]



S.W.COLE
ENGINEERING, INC.

BORING LOG

BORING NO.: **B-16 / MW**

SHEET: 1 OF 1

PROJECT NO.: 04-1228

DATE START: 12/15/2004

DATE FINISH: 12/15/2004

ELEVATION: 155.2

SWC REP.: KBG

WATER LEVEL INFORMATION

1" PIEZOMETER INSTALLED

PROJECT / CLIENT:

LOCATION: OCEAN AVENUE, PORTLAND, MAINE

DRILLING CO. : GREAT WORKS TEST BORING INC. DRILLER: JEFF LEE

TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
------	-----------	------------	-------------

CASING: HW 4" 300 lb 18"

SAMPLER: _____

CORE BARREL: NQ2 2"

CASING BLOWS PER FOOT	SAMPLE				SAMPLER BLOWS PER 6"				DEPTH	STRATA & TEST DATA	
	NO.	PEN.	REC.	DEPTH @ BOT	0-6	6-12	12-18	18-24			
										FOREST DUFF / TOPSOIL OVERLYING BROWN SILTY SAND WITH ORGANICS	
									3.0'		
									3.5'	PROBABLE WEATHERED BEDROCK	
									18.0'	BEDROCK	
										[ADVANCED BORING BY AIR HAMMER TO 18.0']	
									28.0'	WHITE TO LIGHT GRAY MIGMATITE WITH GRAY BIOTITE-MUSCOVITE SCHIST LAYERS	
	1R	60"	58"	23.0'						RQD = 78 %	
									28.0'	RQD = 65 %	
	2R	60"	59"	28.0'							
										BOTTOM OF EXPLORATION AT 28.0'	
SAMPLES:					SOIL CLASSIFIED BY:				REMARKS:		
D = SPLIT SPOON C = 3" SHELBY TUBE U = 3.5" SHELBY TUBE					X DRILLER - VISUALLY SOIL TECH. - VISUALLY LABORATORY TEST				STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.		
									BORING NO.: B-16 / MW		



BORING LOG

BORING NO.: **B-17 / MW**
SHEET: 1 OF 1
PROJECT NO.: 04-1228
DATE START: 12/14/2004
DATE FINISH: 12/14/2004
ELEVATION: 114.5
SWC REP.: KBG

PROJECT / CLIENT: _____
LOCATION: OCEAN AVENUE, PORTLAND, MAINE
DRILLING CO.: GREAT WORKS TEST BORING INC. DRILLER: JEFF LEE

CASING: TYPE HW SIZE I.D. 4" HAMMER WT. 300 lb HAMMER FALL 18"
SAMPLER: SS 1 3/8"
CORE BARREL: NQ2 2"

WATER LEVEL INFORMATION
NESTED 1" PIEZOMETERS INSTALLED

CASING BLOWS PER FOOT	SAMPLE				SAMPLER BLOWS PER 6"				DEPTH	STRATA & TEST DATA
	NO.	PEN.	REC.	DEPTH @ BOT	0-6	6-12	12-18	18-24		
									2.0'	FOREST DUFF / TOPSOIL OVERLYING BROWN SILTY SAND WITH ORGANICS
										BEDROCK [ADVANCED BORING BY ROLLER CONE TO 10.0']
									10.0'	INTERBEDDED GRAY GRANITIC GNEISS AND SCHIST RQD = 45 %
	1R	60"	60"	15.0'						
										INTERBEDDED GRAY GRANITIC GNEISS AND SCHIST RQD = 65 %
	2R	60"	57"	20.0'					20.0'	
										BOTTOM OF EXPLORATION AT 20.0' PIEZOMETER DETAILS: SCREEN 15' - 20' FILTER SAND 14' - 20' BENTONITE 11' - 14' SCREEN 5' - 10' FILTER SAND 4' - 11' BENTONITE TO SURFACE

SAMPLES: SOIL CLASSIFIED BY:
D = SPLIT SPOON
C = 3" SHELBY TUBE
U = 3.5" SHELBY TUBE

X

 DRILLER - VISUALLY
SOIL TECH. - VISUALLY
LABORATORY TEST

REMARKS: PROPOSED POND

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

18

BORING NO.: **B-17 / MW**

PROJECT: _____

BORING NO.: B-1

CLIENT: _____

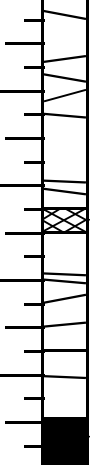
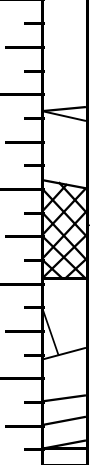
PROJECT NO.: 04-1228

LOGGED BY: MTT DATE: 1/10/2005

SHEET NO.: 1 OF 1

CHECKED BY: GWB DATE: 1/13/2005

CORE SIZE: NQ2

DEPTH BELOW SURFACE (FT)	CORE RUN	CORE INTERVAL (IN)	CORE RECOVERY (IN)	RQD (%)	ROCK QUALITY	GRAPHIC LOG	ROCK DESCRIPTION AND IDENTIFICATION
5.0'	R1	60"	53"	22"/60" 37%	POOR		INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST, HARD, MODERATELY WEATHERED, FRACTURES @ 15 TO 40 DEGREES FROM HORIZONTAL.
10.0'							
15.0'	R2	60"	59"	36"/60" 60%	FAIR		INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST, HARD, MODERATELY WEATHERED, FRACTURES @ 15 TO 40 DEGREES FROM HORIZONTAL.
							BOTTOM OF EXPLORATION @ 15.0'

PROJECT: _____

BORING NO.: B-2

CLIENT: _____

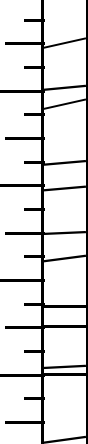
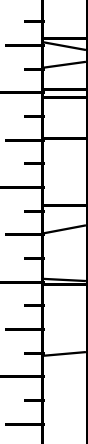
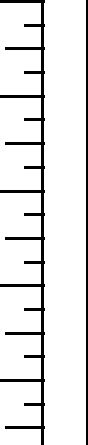
PROJECT NO.: 04-1228

LOGGED BY: MTT DATE: 1/10/2005

SHEET NO.: 1 OF 1

CHECKED BY: GWB DATE: 1/13/2005

CORE SIZE: NQ2

DEPTH BELOW SURFACE (FT)	CORE RUN	CORE INTERVAL (FT)	CORE RECOVERY (FT)	RQD (%)	ROCK QUALITY	GRAPHIC LOG	ROCK DESCRIPTION AND IDENTIFICATION
21.5'	R1	60"	58"	46"/60"	GOOD		INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST, HARD, SLIGHTLY WEATHERED, FRACTURES @ 10 TO 40 DEGREES FROM HORIZONTAL
				77%			
26.5'							
	R2	58"	58"	37"/58"	FAIR		INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST, HARD, SLIGHTLY WEATHERED, FRACTURES @ 10 TO 40 DEGREES FROM HORIZONTAL
				63%			
31.3'							
							BOTTOM OF EXPLORATION @ 31.3'

PROJECT: _____

BORING NO.: B-3

CLIENT: _____

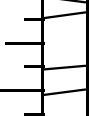
PROJECT NO.: 04-1228

LOGGED BY: MTT DATE: 1/10/2005

SHEET NO.: 1 OF 1

CHECKED BY: GWB DATE: 1/13/2005

CORE SIZE: NQ2

DEPTH BELOW SURFACE (FT)	CORE RUN	CORE INTERVAL (IN)	CORE RECOVERY (IN)	RQD (%)	ROCK QUALITY	GRAPHIC LOG	ROCK DESCRIPTION AND IDENTIFICATION
7.0'	R1	60"	60"	37"/60" 62%	F A I R		INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST, HARD, MODERATELY WEATHERED, FRACTURES @ 25 TO 50 DEGREES FROM HORIZONTAL.
12.0'	R2	60"	59"	46"/60" 72%	F A I R		INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST, HARD, MODERATELY WEATHERED, FRACTURES @ 25 TO 50 DEGREES FROM HORIZONTAL.
17.0'							ZONE OF CORE LOSS BOTTOM OF EXPLORATION @ 17.0'

PROJECT: _____

BORING NO.: B-4

CLIENT: _____

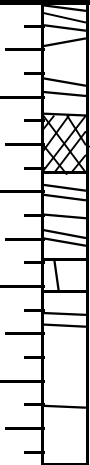
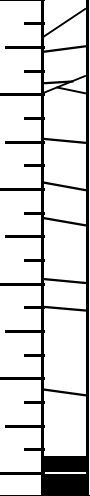
PROJECT NO.: 04-1228

LOGGED BY: MTT DATE: 1/10/2005

SHEET NO.: 1 OF 1

CHECKED BY: GWB DATE: 1/13/2005

CORE SIZE: NQ2

DEPTH BELOW SURFACE (FT)	CORE RUN	CORE INTERVAL (IN)	CORE RECOVERY (IN)	RQD (%)	ROCK QUALITY	GRAPHIC LOG	ROCK DESCRIPTION AND IDENTIFICATION
12.0'	R1	60"	59"	24"/60" 40%	POOR		HIGHLY FRACTURED ZONE INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST, HARD, VERY WEATHERED TO MODERATELY WEATHERED, FRACTURES @ 20 TO 60 DEGREES FROM HORIZONTAL
17.0'							
22.3'	R2	63"	58"	52"/63" 83%	GOOD		INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST, HARD SLIGHTLY WEATHERED, FRACTURES @ 20 TO 60 DEGREES FROM HORIZONTAL
							BOTTOM OF EXPLORATION @ 22.3'

PROJECT: _____

BORING NO.: B-5

CLIENT: _____

PROJECT NO.: 04-1228

LOGGED BY: MTT DATE: 1/10/2005

SHEET NO.: 1 OF 1

CHECKED BY: GWB DATE: 1/13/2005

CORE SIZE: NQ2

DEPTH BELOW SURFACE (FT)	CORE RUN	CORE INTERVAL (IN)	CORE RECOVERY (IN)	RQD (%)	ROCK QUALITY	GRAPHIC LOG	ROCK DESCRIPTION AND IDENTIFICATION
15.0'	R1	60"	53"	83%	GOOD		INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST, HARD, SLIGHTLY WEATHERED, FRACTURES @ 20 TO 40 DEGREES FROM HORIZONTAL
20.0'	R2	60"	58"	63%	FAIR		INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST, HARD, SLIGHTLY WEATHERED, FRACTURES @ 20 TO 40 DEGREES FROM HORIZONTAL
25.0'							BOTTOM OF EXPLORATION @ 25.0'

ZONE OF CORE LOSS

ZONE OF CORE LOSS

PROJECT: _____

BORING NO.: B-6

CLIENT: _____

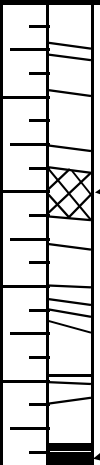
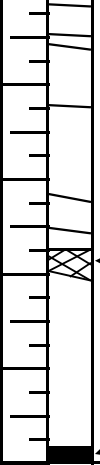
PROJECT NO.: 04-1228

LOGGED BY: MTT DATE: 1/10/2005

SHEET NO.: 1 OF 1

CHECKED BY: GWB DATE: 1/13/2005

CORE SIZE: NQ2

DEPTH BELOW SURFACE (FT)	CORE RUN	CORE INTERVAL (IN)	CORE RECOVERY (IN)	RQD (%)	ROCK QUALITY	GRAPHIC LOG	ROCK DESCRIPTION AND IDENTIFICATION
15.0'	R1	60"	56"	28"/60"	POOR		INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST, HARD, MODERATELY WEATHERED, FRACTURES @ 10 TO 35 DEGREES FROM HORIZONTAL
				47%			
20.0'	R2	60"	58"	50"/60"	GOOD		INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST, HARD, SLIGHTLY WEATHERED, FRACTURES @ 10 TO 35 DEGREES FROM HORIZONTAL
				83%			
25.0'							BOTTOM OF EXPLORATION @ 25.0'

PROJECT: _____

BORING NO.: B-7

CLIENT: _____

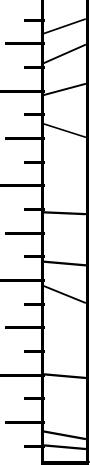
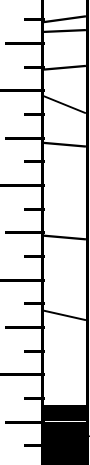
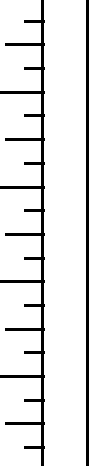
PROJECT NO.: 04-1228

LOGGED BY: MTT DATE: 1/10/2005

SHEET NO.: 1 OF 1

CHECKED BY: GWB DATE: 1/13/2005

CORE SIZE: NQ2

DEPTH BELOW SURFACE (FT)	CORE RUN	CORE INTERVAL (IN)	CORE RECOVERY (IN)	RQD (%)	ROCK QUALITY	GRAPHIC LOG	ROCK DESCRIPTION AND IDENTIFICATION
20.0'	R1	60"	59"	87%	GOOD		INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST, HARD, SLIGHTLY WEATHERED, FRACTURES @ 10 TO 35 DEGREES FROM HORIZONTAL
25.0'	R2	60"	52"	78%	GOOD		INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST, HARD, SLIGHTLY WEATHERED, FRACTURES @ 10 TO 35 DEGREES FROM HORIZONTAL
30.0'							BOTTOM OF EXPLORATION @ 30.0'

PROJECT: _____

BORING NO.: B-8

CLIENT: _____

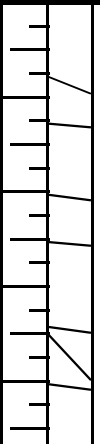
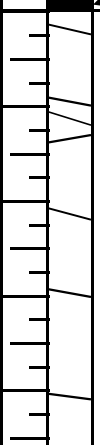
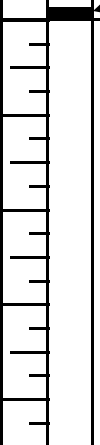
PROJECT NO.: 04-1228

LOGGED BY: GWB DATE: 12/21/2004

SHEET NO.: 1 OF 1

CHECKED BY: GWB DATE: 1/13/2005

CORE SIZE: NQ2

DEPTH BELOW SURFACE (FT)	CORE RUN	CORE INTERVAL (IN)	CORE RECOVERY (IN)	RQD (%)	ROCK QUALITY	GRAPHIC LOG	ROCK DESCRIPTION AND IDENTIFICATION
15.0'	R1	60"	59"	47"/60" 78%	GOOD		INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST, HARD, MODERATELY WEATHERED BECOMING SLIGHTLY WEATHERED, FRACTURES @ 0 TO 55 DEGREES FROM HORIZONTAL.
20.0'	R2	60"	58"	49"/60" 82%	GOOD		INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST, HARD, SLIGHTLY WEATHERED, FRACTURES @ 10 TO 35 DEGREES FROM HORIZONTAL.
25.0'							BOTTOM OF EXPLORATION @ 25.0'

PROJECT: _____

BORING NO.: B-9

CLIENT: _____

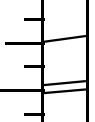
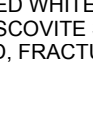
PROJECT NO.: 04-1228

LOGGED BY: MTT DATE: 1/10/2005

SHEET NO.: 1 OF 1

CHECKED BY: GWB DATE: 1/13/2005

CORE SIZE: NQ2

DEPTH BELOW SURFACE (FT)	CORE RUN	CORE INTERVAL (IN)	CORE RECOVERY (IN)	RQD (%)	ROCK QUALITY	GRAPHIC LOG	ROCK DESCRIPTION AND IDENTIFICATION
6.0'	R1	60"	59"	38"/60"	FAIR		INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST, HARD, MODERATELY TO MODERATELY WEATHERED, FRACTURES @ 15 TO 35 DEGREES FROM HORIZONTAL HIGHLY FRACTURED ZONE ZONE OF CORE LOSS
11.0'				63%			
16.0'	R2	60"	59"	59"/60"	EXCELLENT		INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST, HARD, MODERATELY TO MODERATELY WEATHERED, FRACTURES @ 15 TO 35 DEGREES FROM HORIZONTAL ZONE OF CORE LOSS
				98%			
							BOTTOM OF EXPLORATION @ 16.0'

PROJECT: _____

BORING NO.: B-10

CLIENT: _____

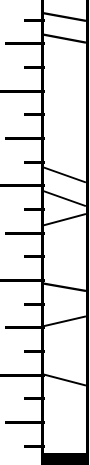
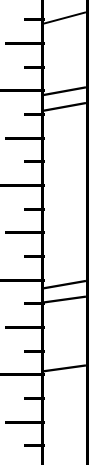
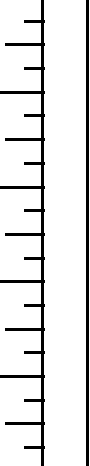
PROJECT NO.: 04-1228

LOGGED BY: GWB DATE: 12/21/2004

SHEET NO.: 1 OF 1

CHECKED BY: GWB DATE: 1/13/2005

CORE SIZE: NQ2

DEPTH BELOW SURFACE (FT)	CORE RUN	CORE INTERVAL (IN)	CORE RECOVERY (IN)	RQD (%)	ROCK QUALITY	GRAPHIC LOG	ROCK DESCRIPTION AND IDENTIFICATION
20.0'	R1	60"	58"	41"/60"	FAIR		INTERBEDDED WHITE TO LIGHT GRAY TO LIGHT GREEN MIGMATITE AND BIOTITE-MUSCOVITE-CHLORITE SCHIST, HARD, SLIGHTLY WEATHERED, FRACTURES @ 10 TO 25 DEGREES FROM HORIZONTAL
				68%			
25.0'	R2	60"	60"	55"/60"	EXCELLENT		INTERBEDDED WHITE TO LIGHT GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST, HARD, SLIGHTLY WEATHERED, FRACTURES @ 5 TO 25 DEGREES FROM HORIZONTAL
				92%			
30.0'							BOTTOM OF EXPLORATION @ 30.0'

PROJECT: _____

BORING NO.: B-11

CLIENT: _____

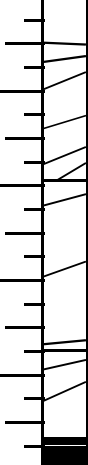
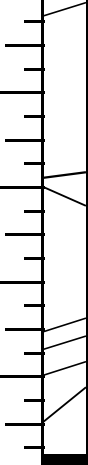
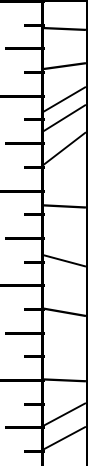
PROJECT NO.: 04-1228

LOGGED BY: GWB DATE: 12/20/2004

SHEET NO.: 1 OF 1

CHECKED BY: GWB DATE: 1/13/2005

CORE SIZE: NQ2

DEPTH BELOW SURFACE (FT)	CORE RUN	CORE INTERVAL (IN)	CORE RECOVERY (IN)	RQD (%)	ROCK QUALITY	GRAPHIC LOG	ROCK DESCRIPTION AND IDENTIFICATION
9.0'	R1	60"	56"	41"/60" 68%	F A I R		WHITE TO LIGHT GRAY MIGMATITE WITH GRAY BIOTITE-MUSCOVITE SCHIST LAYERS, VERY HARD (MIGMATITE) TO MODERATELY HARD (SCHIST), SLIGHTLY WEATHERED, FRACTURES @ 10 TO 45 DEGREES FROM HORIZONTAL
14.0'	R2	60"	58"	44"/60" 73%	F A I R		INTERBEDDED WHITE TO GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST, HARD, SLIGHTLY WEATHERED, FRACTURES @ 20 TO 45 DEGREES FROM HORIZONTAL
19.0'	R3	60"	59"	39"/60" 65%	F A I R		INTERBEDDED WHITE TO GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST, HARD, SLIGHTLY WEATHERED, FRACTURES @ 0 TO 35 DEGREES FROM HORIZONTAL
24.0'							ZONE OF CORE LOSS BOTTOM OF EXPLORATION @ 24.0'

PROJECT: _____

BORING NO.: B-12

CLIENT: _____

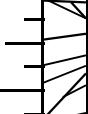
PROJECT NO.: 04-1228

LOGGED BY: GWB DATE: 12/21/2004

SHEET NO.: 1 OF 1

CHECKED BY: GWB DATE: 1/13/2005

CORE SIZE: NQ2

DEPTH BELOW SURFACE (FT)	CORE RUN	CORE INTERVAL (IN)	CORE RECOVERY (IN)	RQD (%)	ROCK QUALITY	GRAPHIC LOG	ROCK DESCRIPTION AND IDENTIFICATION
6.0'	R1	60"	60"	18"/60" 30%	P O O R		GRAY BIOTITE-MUSCOVITE, MODERATELY HARD, MODERATELY WEATHERED, HIGHLY FRACTURED, FRACTURES @ 5 TO 40 DEGREES FROM HORIZONTAL
11.0'	R2	60"	59"	44"/60" 73%	F A I R		INTERBEDDED WHITE TO GRAY MIGMATITE AND BIOTITE-MUSCOVITE SCHIST, HARD, SLIGHTLY WEATHERED, FRACTURES @ 0 TO 35 DEGREES FROM HORIZONTAL
16.0'							BOTTOM OF EXPLORATION @ 16.0'

PROJECT: _____

BORING NO.: B-13

CLIENT: _____

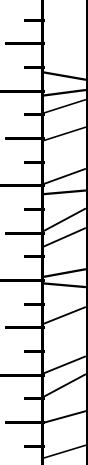
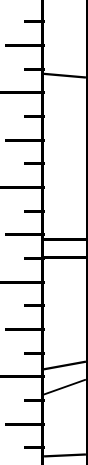
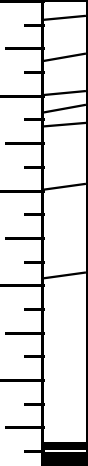
PROJECT NO.: 04-1228

LOGGED BY: GWB DATE: 12/20/2004

SHEET NO.: 1 OF 2

CHECKED BY: GWB DATE: 1/13/2005

CORE SIZE: NQ2

DEPTH BELOW SURFACE (FT)	CORE RUN	CORE INTERVAL (IN)	CORE RECOVERY (IN)	RQD (%)	ROCK QUALITY	GRAPHIC LOG	ROCK DESCRIPTION AND IDENTIFICATION
3.0'	R1	60"	60"	52%	FAIR		WHITE TO LIGHT GRAY MIGMATITE AND GRAY BIOTITE- MUSCOVITE SCHIST, VERY HARD TO MODERATELY HARD, MODERATELY TO SLIGHTLY WEATHERED, FRACTURES @ 10 TO 35 DEGREES FROM HORIZONTAL
8.0'	R2	60"	60"	89%	GOOD		WHITE TO LIGHT GRAY MIGMATITE, VERY HARD, SLIGHTLY WEATHERED, FRACTURES @ 5 TO 25 DEGREES FROM HORIZONTAL
13.0'	R3	60"	56"	82%	GOOD		WHITE TO LIGHT GRAY MIGMATITE, VERY HARD, SLIGHTLY WEATHERED, FRACTURES @ 5 TO 20 DEGREES FROM HORIZONTAL
18.0'							 ZONE OF CORE LOSS 35

PROJECT: _____

BORING NO.: B-13

CLIENT: _____

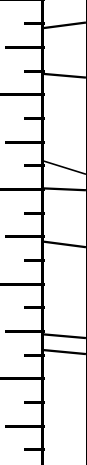
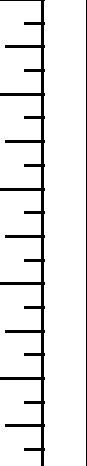
PROJECT NO.: 04-1228

LOGGED BY: GWB DATE: 12/20/2004

SHEET NO.: 2 OF 2

CHECKED BY: GWB DATE: 1/13/2005

CORE SIZE: NQ2

DEPTH BELOW SURFACE (FT)	CORE RUN	CORE INTERVAL (IN)	CORE RECOVERY (IN)	RQD (%)	ROCK QUALITY	GRAPHIC LOG	ROCK DESCRIPTION AND IDENTIFICATION
18.0'	R4	60"	54"	72%	FAIR		WHITE TO LIGHT GRAY MIGMATITE, VERY HARD, SLIGHTLY WEATHERED, FRACTURES @ 0 TO 25 DEGREES FROM HORIZONTAL
23.0'	R5	60"	60"	82%	GOOD		WHITE TO LIGHT GRAY MIGMATITE, VERY HARD, SLIGHTLY WEATHERED, FRACTURES @ 0 TO 40 DEGREES FROM HORIZONTAL
28.0'							BOTTOM OF EXPLORATION @ 28.0'

PROJECT: _____

BORING NO.: B-14

CLIENT: _____

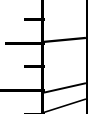
PROJECT NO.: 04-1228

LOGGED BY: GWB DATE: 12/20/2004

SHEET NO.: 1 OF 1

CHECKED BY: GWB DATE: 1/13/2005

CORE SIZE: NQ2

DEPTH BELOW SURFACE (FT)	CORE RUN	CORE INTERVAL (IN)	CORE RECOVERY (IN)	RQD (%)	ROCK QUALITY	GRAPHIC LOG	ROCK DESCRIPTION AND IDENTIFICATION
9.0'	R1	60"	60"	45%	POOR		GRAY BIOTITE-MUSCOVITE SCHIST WITH WHITE TO LIGHT GRAY MIGMATITE LAYERS, VERY HARD (MIGMATITE) TO MODERATELY HARD (SCHIST), MODERATELY TO SLIGHTLY WEATHERED, FRACTURES @ 0 TO 80 DEGREES FROM HORIZONTAL.
14.0'	R2	60"	60"	80%	GOOD		WHITE TO LIGHT GRAY MIGMATITE WITH GRAY BIOTITE-MUSCOVITE SCHIST LAYERS, VERY HARD (MIGMATITE) TO MODERATELY HARD (SCHIST), SLIGHTLY WEATHERED, FRACTURES @ 0 TO 40 DEGREES FROM HORIZONTAL.
19.0'	R3	60"	60"	75%	GOOD		WHITE TO LIGHT GRAY MIGMATITE WITH GRAY BIOTITE-MUSCOVITE SCHIST LAYERS, VERY HARD (MIGMATITE) TO MODERATELY HARD (SCHIST), SLIGHTLY WEATHERED, FRACTURES @ 10 TO 45 DEGREES FROM HORIZONTAL.
24.0'							BOTTOM OF EXPLORATION @ 24.0' 37

PROJECT: _____

BORING NO.: B-15

CLIENT: _____

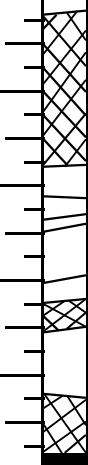
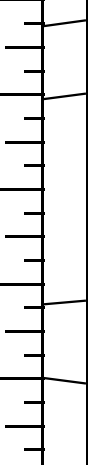
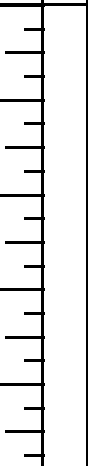
PROJECT NO.: 04-1228

LOGGED BY: GWB DATE: 12/21/2004

SHEET NO.: 1 OF 1

CHECKED BY: GWB DATE: 1/13/2005

CORE SIZE: NQ2

DEPTH BELOW SURFACE (FT)	CORE RUN	CORE INTERVAL (IN)	CORE RECOVERY (IN)	RQD (%)	ROCK QUALITY	GRAPHIC LOG	ROCK DESCRIPTION AND IDENTIFICATION
11.0'	R1	60"	58"	14"/60" 23%	VERY POOR		BROWN SULFIDIC SCHIST (11.0' TO 12.8') AND GRAY BIOTITE-MUSCOVITE SCHIST (12.8' TO 16.0'), SOFT BECOMING MODERATELY HARD, MODERATELY WEATHERED, HIGHLY FRACTURED, FRACTURES @ 0 TO 50 DEGREES FROM HORIZONTAL. HIGHLY FRACTURED ZONE ZONE OF CORE LOSS
16.0'	R2	60"	60"	56"/60" 93%	EXCELLENT		GRAY BIOTITE-MUSCOVITE SCHIST (16.0' TO 17.3') AND WHITE TO LIGHT GRAY MIGMATITE (17.3' TO 21.0'), MODERATELY HARD BECOMING VERY HARD, SLIGHTLY WEATHERED, FRACTURES @ 5 TO 15 DEGREES FROM HORIZONTAL.
21.0'							BOTTOM OF EXPLORATION @ 21.0'

PROJECT: _____

BORING NO.: B-16

CLIENT: _____

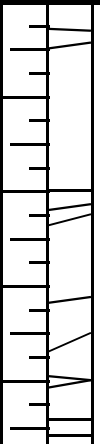
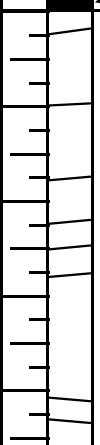
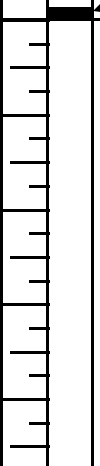
PROJECT NO.: 04-1228

LOGGED BY: GWB DATE: 12/20/2004

SHEET NO.: 1 OF 1

CHECKED BY: GWB DATE: 1/13/2005

CORE SIZE: NQ2

DEPTH BELOW SURFACE (FT)	CORE RUN	CORE INTERVAL (IN)	CORE RECOVERY (IN)	RQD (%)	ROCK QUALITY	GRAPHIC LOG	ROCK DESCRIPTION AND IDENTIFICATION
18.0'	R1	60"	58"	78%	GOOD		WHITE TO LIGHT GRAY MIGMATITE WITH GRAY BIOTITE-MUSCOVITE SCHIST LAYERS, VERY HARD (MIGMATITE) TO MODERATELY HARD (SCHIST), SLIGHTLY WEATHERED, FRACTURES @ 5 TO 25 DEGREES FROM HORIZONTAL
23.0'	R2	60"	59"	65%	FAIR		WHITE TO LIGHT GRAY MIGMATITE WITH GRAY BIOTITE-MUSCOVITE SCHIST LAYERS, VERY HARD (MIGMATITE) TO MODERATELY HARD (SCHIST), SLIGHTLY WEATHERED, FRACTURES @ 0 TO 35 DEGREES FROM HORIZONTAL
28.0'							BOTTOM OF EXPLORATION @ 28.0'

ZONE OF CORE LOSS

ZONE OF CORE LOSS

PROJECT: _____

BORING NO.: B-17

CLIENT: _____

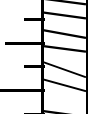
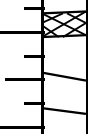
PROJECT NO.: 04-1228

LOGGED BY: GWB DATE: 12/21/2004

SHEET NO.: 1 OF 1

CHECKED BY: GWB DATE: 1/13/2005

CORE SIZE: NQ2

DEPTH BELOW SURFACE (FT)	CORE RUN	CORE INTERVAL (IN)	CORE RECOVERY (IN)	RQD (%)	ROCK QUALITY	GRAPHIC LOG	ROCK DESCRIPTION AND IDENTIFICATION
10.0'	R1	60"	60"	45%	POOR		INTERBEDDED GRAY GRANITIC GNEISS AND SCHIST, HARD, SLIGHTLY WEATHERED, FRACTURES @ 5 TO 40 DEGREES FROM HORIZONTAL
15.0'	R2	60"	57"	65%	FAIR		INTERBEDDED GRAY GRANITIC GNEISS AND SCHIST, HARD, SLIGHTLY WEATHERED, FRACTURES @ 5 TO 35 DEGREES FROM HORIZONTAL. ← HIGHLY FRACTURED ZONE ← ZONE OF CORE LOSS
20.0'							BOTTOM OF EXPLORATION @ 20.0'

AUGER PROBE LOG

PROJECT/CLIENT: _____
 CLIENT: _____
 LOCATION: OCEAN AVENUE, PORTLAND, MAINE
 DRILLING FIRM: GREAT WORKS TEST BORING, INC.

PROJECT NUMBER 04-1228
AUGER PROBE SIZE O.D. SOLID STEM

[illegible]

SOIL CLASSIFIED BY:

	DRILLER - VISUALLY
X	SOIL TECHNICIAN - VISUALLY
	LABORATORY TESTS

AUGER PROBE LOG

PROJECT NUMBER 04-1228
AUGER PROBE SIZE O.D. SOLID STEM

[illegible]

SOIL CLASSIFIED BY:

	DRILLER - VISUALLY
X	SOIL TECHNICIAN - VISUALLY
	LABORATORY TESTS

S. W. COLE ENGINEERING, INC.
AUGER PROBE LOG

PROJECT/CLIENT: _____
 CLIENT: _____
 LOCATION: OCEAN AVENUE, PORTLAND, MAINE
 DRILLING FIRM: GREAT WORKS TEST BORING, INC.

PROJECT NUMBER 04-1228
AUGER PROBE SIZE O.D. SOLID STEM

[illegible]

SOIL CLASSIFIED BY:

	DRILLER - VISUALLY
X	SOIL TECHNICIAN - VISUALLY
	LABORATORY TESTS

AUGER PROBE LOG

PROJECT/CLIENT: _____
 CLIENT: _____
 LOCATION: OCEAN AVENUE, PORTLAND, MAINE
 DRILLING FIRM: GREAT WORKS TEST BORING, INC.

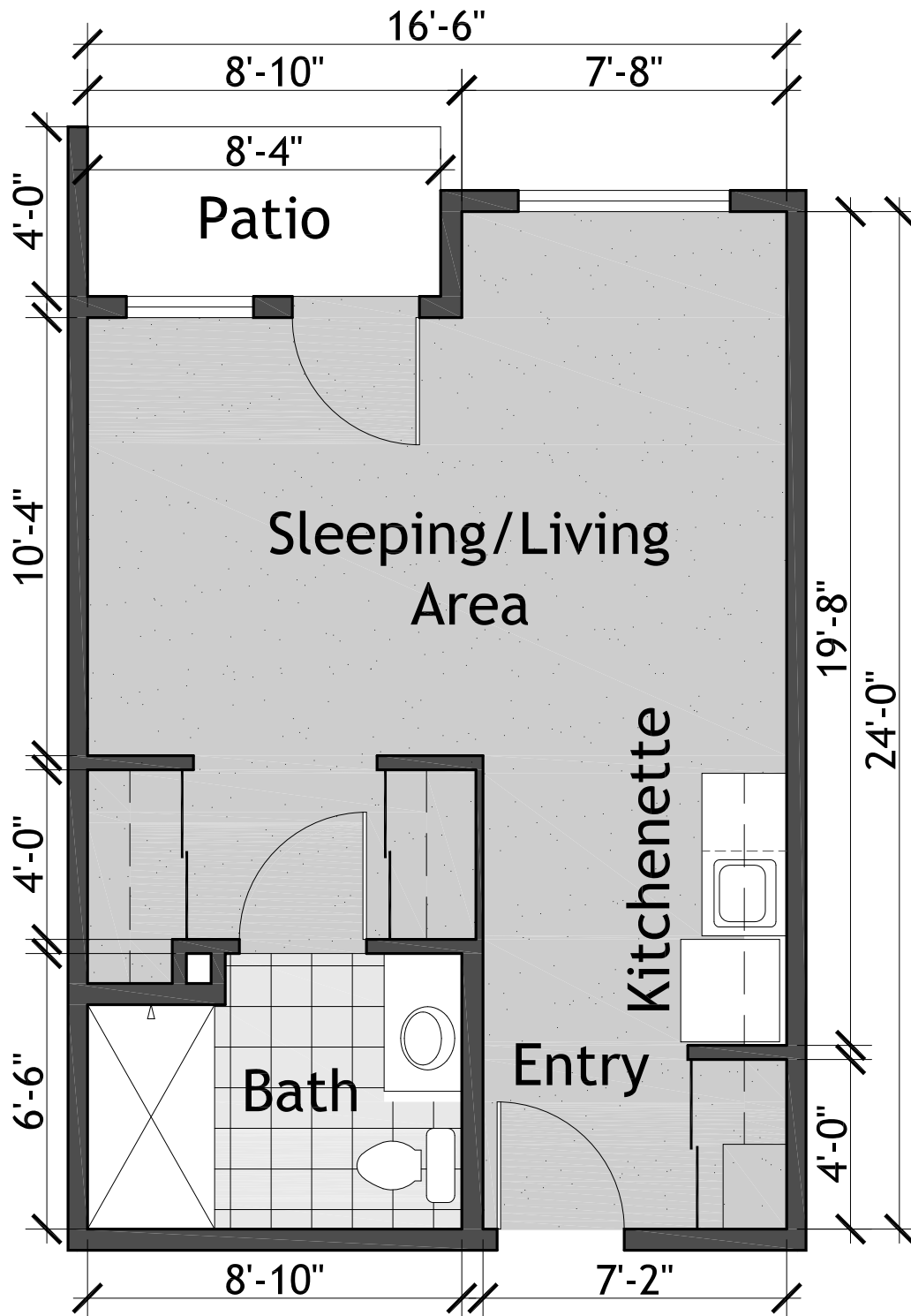
PROJECT NUMBER 04-1228
AUGER PROBE SIZE O.D. SOLID STEM

[illegible]

SOIL CLASSIFIED BY:

	DRILLER - VISUALLY
X	SOIL TECHNICIAN - VISUALLY
	LABORATORY TESTS

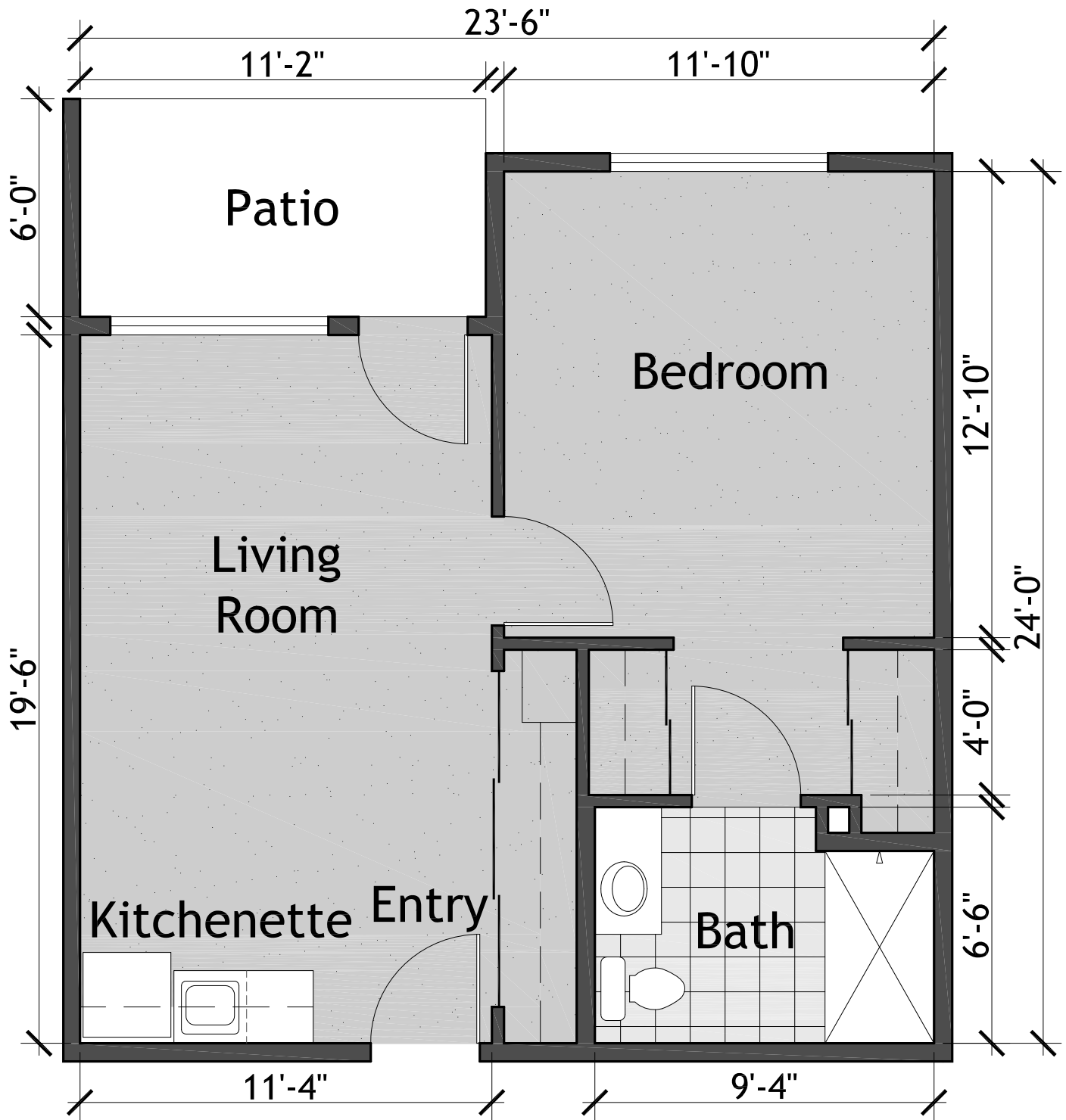
Section 21. Typical Unit Plans/Floor Plans



TYPICAL SUITE A
SCALE: 1/4" = 1'-0"

Portland Retirement Residence

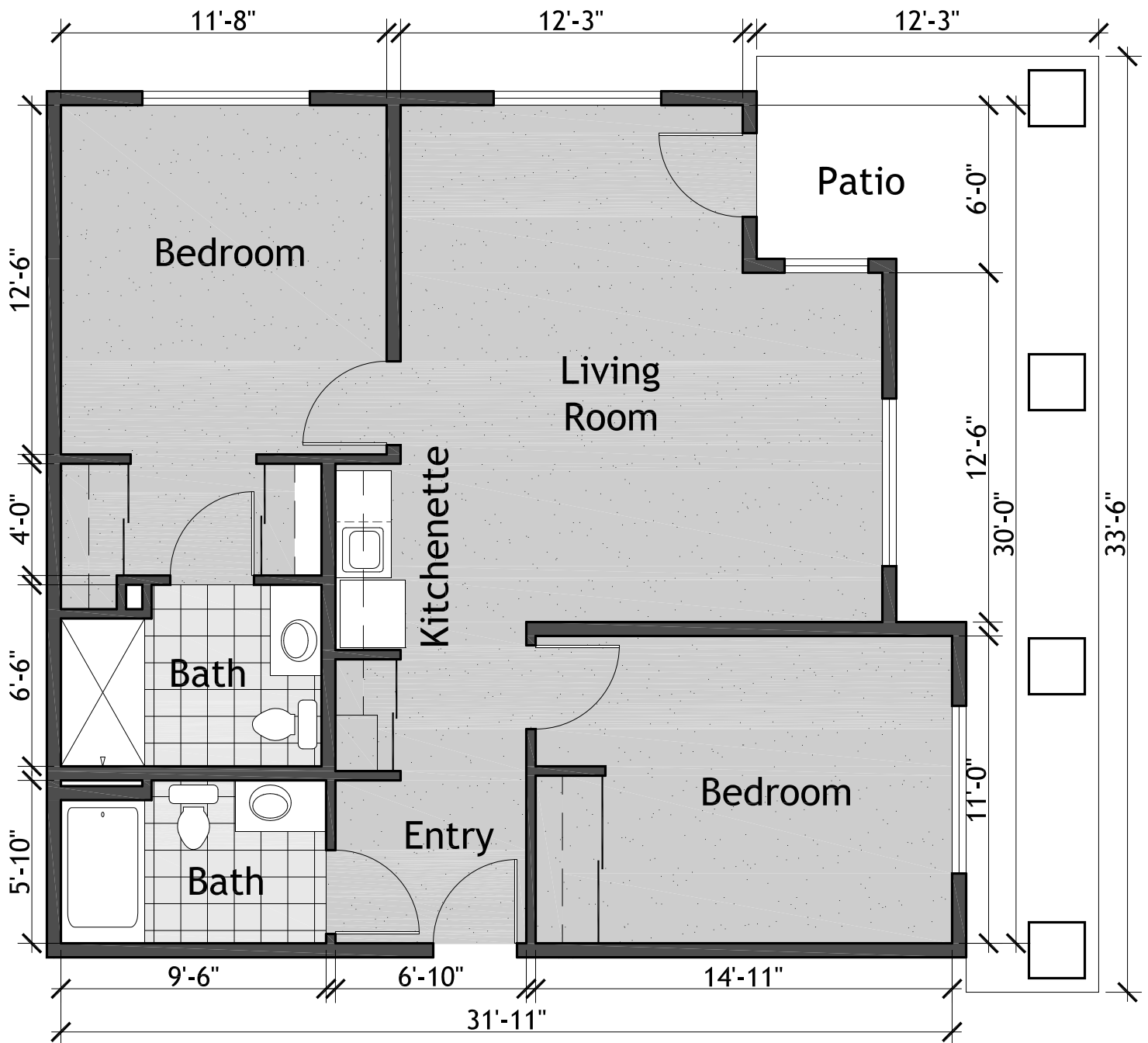
Portland, ME



TYPICAL SUITE B
SCALE: 1/4" = 1'-0"

Portland Retirement Residence

Portland, ME



TYPICAL SUITE C
SCALE: 3/16" = 1'-0"

Portland Retirement Residence

Portland, ME

Section 22. Site Plan/Site Elevations/Color Board



EXTERIOR MATERIALS:

Roof- GAF Timberline:

Weathered Wood

Trim- James Hardie: Arctic White

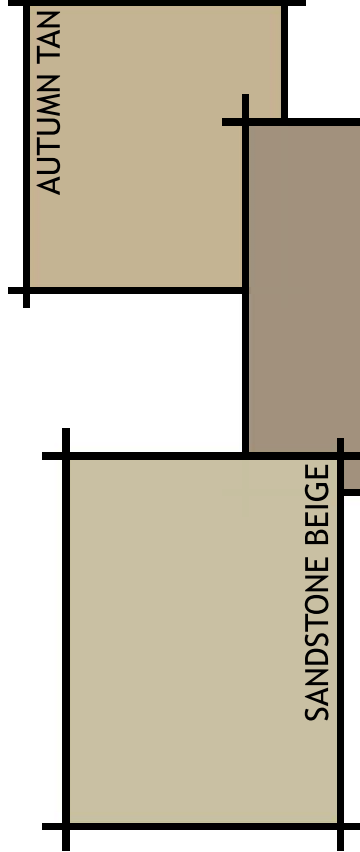
Siding 1- James Hardie: Khaki Brown

Siding 2- James Hardie: Sandstone Beige

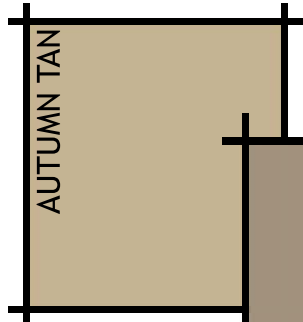
Shingles- James Hardie: Autumn Tan

Awnings- MS Metal: Antique Bronze

Stone- Coronado French Country Villa: Verona



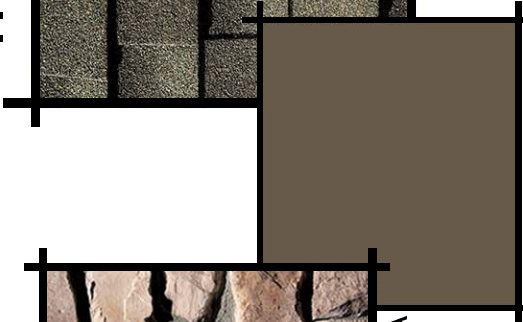
SANDSTONE BEIGE



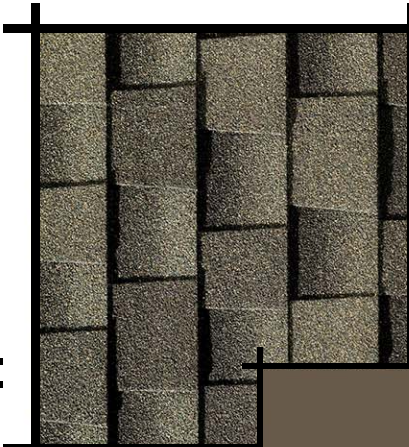
AUTUMN TAN



VERONA



ANTIQUE BRONZE



WEATHERED WOOD

Section 23. Site Construction Plans/Landscaping Plans

Section 24. Lighting Cut Sheets/Lighting Plan

Portland Retirement Residence

Portland, ME

Exterior Lighting

Cut Sheets

9/11/2015



Catalog Number	
Notes	Type

FEATURES & SPECIFICATIONS

Intended Use

For use in indoor or outdoor wet locations, such as patios and pathways.

Construction

Aluminum, white die-cast frame-in.

Louvered, slotted, and opal faceplates available.

Die-cast powder coat painted faceplates are available in white or black.

Faceplates are shipped separately.

Electrical system

9DTT – encased-and-potted, high power factor (HPF) electromagnetic ballast standard (120V only).

13DTTE – high power factor (HPF), -20°F to 158°F, instant start electronic ballast standard (120V or 277V).

Maximum of 4 No. 12 AWG through branch circuit connectors suitable for 75°C or higher permitted in box.

One electrical conduit fitting and one plug provided.

Electrical fittings are suitable for wet locations in wood construction, masonry and poured concrete applications.

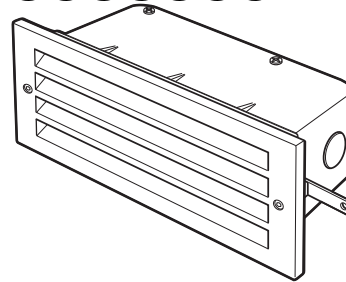
Listing

Wet location listed.

UL listed to U.S. and Canadian safety standards.

INSTALLED AT PATIO
IN SEAT WALL.

TYPE D



Compact Fluorescent Lighting

WSL1F

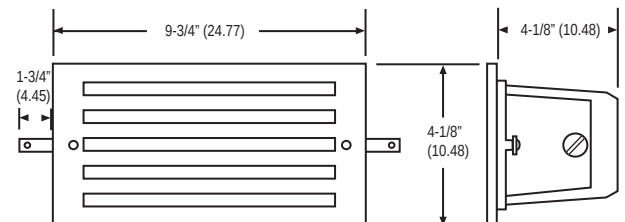
WET LOCATION STEPLIGHT
Non-IC

Specifications

Cutout: 9-1/4" x 3-5/8"

Suitable depth for concrete 4.25"

Mounting nipples make cutout 10.25" clearance.



All dimensions are inches (centimeters).

ORDERING INFORMATION

Choose the boldface catalog nomenclature that best suits your needs and write it on the appropriate line.

Example: **WSL1F 9DTT FPLBL 120 FPLBL**

WSL1F				
Series		Wattage/Lamp	Faceplate	Voltage
WSL1F		9DTT ¹	FPL White Louvered	120
		13DTTE ²	FPLBL Black Louvered	277
			FPS White Slotted	
			FPSBL Black Slotted	
			FPO White Opal	
			FPOBL Black Opal	

NOTES:

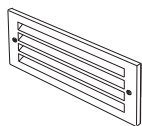
1 120V only.

2 Electronic ballast standard.

Faceplates

Louvered Faceplate

FPL White
FPLBL Black

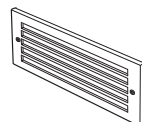


9DTT
13DTT 4-PIN

Non-IC

Slotted

FPS White
FPSBL Black

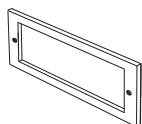


9DTT
13DTT 4-PIN

Non-IC

Opal

FPO White
FPOBL Black



9DTT
13DTT 4-PIN

Non-IC



TYPE F1

SMALL LED FLOODLIGHT 7 WATT LED (E-GL3L SERIES)

Applications – Security, building facades, displays, signs, and other residential uses.

Typical Mounting Height: 8 to 15 feet



ARCHITECTURAL
FEATURES AND
LANDSCAPE
ELEMENTS.

4"H x 4"W x 4-5/8"D

Catalog #	Description	Input Voltage	Delivered Lumen Output	CCT	CRI	Lifetime	Weight	Comparable To:
→ E-GL3L01N2K (black) E-GL3L01N2W (white)	7W LED, Neutral white	120V-277V	600 Lumens	4100K	80	50,000 Hours	0.8 lbs	50W Halogen

Features

- 50,000 hours of maintenance-free operation
- Non-dimmable
- 7W LED
- 600 lumens, comparable to 50W halogen
- Neutral white (4100K) color temperature at 80 CRI
- Low-copper, die-cast aluminum housing and lens frame
- Polyester powder-coat finish (textured black or smooth white)
- Tempered glass lens, thermal shock and impact resistant
- 1/2-inch NPS aluminum die-cast swivel fitter attaches to standard J-box
- Universal voltage (120V through 277V)
- Minimum starting temperature: -22° F
- UL Listed for wet locations
- 1-year warranty

Accessories

None Available



PREMIUM LED DIRECTIONAL SPOT LIGHT 38-WATT LED (E-GL1S SERIES)

Applications – For accenting architecture or lighting landscape areas
Typical Mounting Height: 8 to 15 feet

TYPE F2

ARCHITECTURAL
FEATURES AND
LANDSCAPE
ELEMENTS.



8-1/2"H x 6-1/4"W x 7-3/4"D (Height dimension includes fitter)

Catalog #	Description	Input Voltage	Delivered Lumen Output	Beam Angle/ Photometric Distribution	CCT	CRI	Lifetime (L ₇₀ at 15°C)	Weight	Comparable To:
E-GL1S03C2W (white) E-GL1S03C2K (black)	38W LED Cool white	120V-277V	2000 Lumens	20° Spot	5700K	73	50,000 Hours	5 lbs	70W PSMH
E-GL1S03N2W (white) E-GL1S03N2K (black)	38W LED Neutral white	120V-277V	2000 Lumens	20° Spot	4100K	74	50,000 Hours	5 lbs	70W PSMH

Features

- 50,000 hours of maintenance-free operation to L₇₀ at 15°C
- Non-dimmable
- Low copper, die-cast aluminum housing and lens frame
- Textured black or smooth white polyester powder-coat finish
- Tempered glass lens, thermal shock and impact resistant
- 1/2" NPS adjustable fitter included
- Universal voltage (120V through 277V)
- RoHS compliant
- Suitable for ground mounting, uplighting & downlighting
- Precise optical reflector
- Heat dissipating fins
- Minimum starting temperature: -40° F
- UL Listed for wet locations
- Cree® LEDs inside
- 3-year warranty

Accessories

None Available



PREMIUM LED DIRECTIONAL FLOODLIGHT 38-WATT LED (E-GL1F SERIES)

Applications – For accenting architecture or lighting landscape areas
Typical Mounting Height: 8 to 15 feet

TYPE F3



**ARCHITECTURAL
FEATURES AND
LANDSCAPE
ELEMENTS.**



8-1/2"H x 6-1/4"W x 7-3/4"D (Height dimension includes fitter)

Catalog #	Description	Input Voltage	Delivered Lumen Output	Beam Angle/ Photometric Distribution	CCT	CRI	Lifetime (L70 at 15°C)	Weight	Comparable To:
E-GL1F03C2W (white) E-GL1F03C2K (black)	38W LED Cool white	120V-277V	2000 Lumens	40° Flood	5700K	73	50,000 Hours	5 lbs	70W PSMH
E-GL1F03N2W (white) E-GL1F03N2K (black)	38W LED Neutral white	120V-277V	2000 Lumens	40° Flood	4100K	74	50,000 Hours	5 lbs	70W PSMH

Features

- 50,000 hours of maintenance-free operation to L70 at 15°C
- Non-dimmable
- Low copper, die-cast aluminum housing and lens frame
- Textured black or smooth white polyester powder-coat finish
- Tempered glass lens, thermal shock and impact resistant
- 1/2" NPS adjustable fitter included
- Universal voltage (120V through 277V)
- RoHS compliant
- Suitable for ground mounting, uplighting & downlighting
- Precise optical reflector
- Heat dissipating fins
- Minimum starting temperature: -40° F
- UL Listed for wet locations
- Cree® LEDs inside
- 3-year warranty

Accessories

None Available

TYPE G

PREMIUM LED WALL PACK - SMALL 36-WATT LED (E-WP6L SERIES)

Applications: Security, pathway and perimeter lighting; ideal for entryways and other applications where control of spill light is important.

Typical Mounting Height: 8 to 15 feet **Typical Spacing:** 1 to 2 times the mounting height

INSTALLED ON AT
BUILDING AT EXITS
AND GARAGES.



9.5"D x 8.75"W x 4.5"H
Weight: 7.0 lbs.



Catalog #	Description	Input Voltage	Initial Delivered Lumens	CCT	CRI	50K Hours Projected Lumen Maintenance Factor at 25°C ¹	Comparable To:
E-WP6L03CZ	36W LED Cool white	120V-277V	3350	5000K	70	50,000 Hours	100W PSMH
E-WP6L03NZ	36W LED Neutral white	120V-277V	3350	4000K	70	50,000 Hours	100W PSMH

¹ Calculated L₇₀ based on 6,048 hours of LM-80 testing: >36,000 hours

Performance

- Estimated 50,000 hours of maintenance-free operation to L₇₀
- Minimum starting temperature: -40°F
- 5-year limited warranty

Construction & Materials

- Low copper, die-cast aluminum housing and lens frame
- Dark bronze polyester powder-coat finish
- Fixed cutoff glare shield to reduce light pollution
- Tempered glass lens, thermal shock and impact resistant
- Patented lens design delivers true IES Type III distribution
- Mounts over recessed junction box or with conduit
- Die-cast detachable back box for easy mounting
- Heat dissipating fins
- Conduit entries on all sides of the fixture
- Two knockouts provided on back for conduit or J-box mounting
- Cree® LEDs inside

Electrical

- Non-dimmable
- 75°C minimum supply wire required
- Universal voltage (120V through 277V)

Regulatory

- UL Listed for wet locations
- RoHS compliant

Accessories



CAT.# E-ACP1 (120 volts)

CAT.# E-ACP2 (208/240/277 volts)

Photocell is field installed.
For use with adjustable slip fitter only.



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1501 96th Street, Sturtevant, WI 53177 | Phone (888)243-9445 | Fax (262)504-5409 | www.e-conolight.com

TYPE G1

LED DECORATIVE WALL SCONE - UP OR DOWN
16-WATT LED
(E-S12 SERIES)

Applications: Ideal for illumination along steps, walkways and entry ways

Typical Mounting Height: 8 to 15 feet **Typical Spacing:** 1 to 2 times the mounting height



CREE 
LEDs

6.1875" L x 4.875" W x 5.1875" H
 Weight: 3.2 lbs.

**INSTALLED ON
 BUILDING**

Catalog #	Description	Input Voltage	Initial Delivered Lumens	CCT	CRI	50K Hours Projected Lumen Maintenance Factor at 25°C ¹
E-S12L013U(*)	16W LED Warm White	120-277V	950	3000K	80	100,000+ Hours
E-S12L014U(*)	16W LED Neutral White	120-277V	95	4000K	80	100,000+ Hours

(*) Specify finish color. K=Black, W=White

¹ Calculated L₇₀ based on 6,048 hours of LM-80 testing: >36,000 hours

Performance

- Estimated 100,000+ hours of maintenance-free operation to L₇₀
- 3-year limited warranty

Construction & Materials

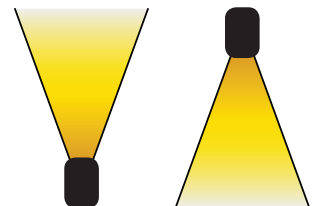
- Use as an uplight or downlight
- Die-cast aluminum mounting box with extruded aluminum housing; mounting box measures 5" square (5-3/8" square with gasket)
- Supplied with back mounting plate to mount over a 4" square or 4" octagonal junction box
- 25-degree beam spread
- Silicon gasket provides a water tight seal
- Polyester powder-coat black or white finish
- Tempered glass lens, thermal shock and impact resistant
- Cree® LEDs inside

Electrical

- Dimmable with most 0-10V dimmers
- Universal voltage (120V through 277V)

Regulatory

- ETL Listed for wet locations



E-S12 Series fixture mounted at 12 feet with 0° tilt.



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TYPE G2

**LED WALL MOUNT
14- & 22-WATT LED
(E-WW1L SERIES)**

Applications: Security, entryways, stairways, storage and perimeter areas, as well as residential exteriors.

Typical Mounting Height: 8 to 12 feet **Typical Spacing:** 12 feet

INSTALLED AT TRASH
ENCLOSURE



CREE LEDs

9"D x 5.75"W x 4"H
Weight: 2.0 lbs.

Catalog #	Description	Input Voltage	Initial Delivered Lumens	CCT	CRI	50K Hours Projected Lumen Maintenance Factor at 25°C ¹	Comparable To
E-WW1L11N(*)P	14W Neutral White	120V	1017	4000K	70+	91%	100W Incandescent
E-WW1L21N(*)P	22W Neutral White	120V	1228	4000K	70+	86%	120W Incandescent

(*) Specify finish color. M=Medium Bronze, W=White

¹ Calculated L₇₀ based on 6,048 hours of LM-80 testing: >36,000 hours

Performance

- Estimated 172,000 (22W) 118,000 (14W) hours of maintenance-free operation to L₇₀ at 25°C
- Minimum starting temperature: -40°C (-40°F)
- 5-year limited warranty

Construction & Materials

- Polycarbonate housing in bronze or white with heavy-duty aluminum mounting plate
- 1/2" NPT tapped back and bottom for conduit entrances
- UV-stabilized polycarbonate prismatic refractor
- Cree® LEDs inside

Electrical

- Non-dimmable
- 120V operation with built-in photocell

Regulatory

- UL Listed for wet locations



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TYPE G3

LED DECORATIVE WALL SCONE - UP AND DOWN 30-WATT LED (E-S22 SERIES)

Applications: Ideal for illumination along steps, walkways and entry ways

Typical Mounting Height: 8 to 15 feet **Typical Spacing:** 1 to 2 times the mounting height

INSTALLED ON
BUILDING



CREE 
LEDs

6.1875" L x 4.875" W x 7.1875" H
Weight: 4.2 lbs.

Catalog #	Description	Input Voltage	Initial Delivered Lumens	CCT	CRI	50K Hours Projected Lumen Maintenance Factor at 25°C ¹
E-S22L033U(*)	30W (total) LED Warm White	120-277V	1850 (total)	3000K	80	100,000+ Hours
E-S22L034U(*)	30W (total) LED Neutral White	120-277V	1850 (total)	4000K	80	100,000+ Hours

(*) Specify finish color. K=Black, W=White

¹ Calculated L₇₀ based on 6,048 hours of LM-80 testing: >36,000 hours

Performance

- Estimated 100,000+ hours of maintenance-free operation to L₇₀
- 3-year limited warranty

Construction & Materials

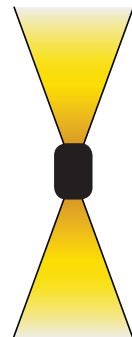
- Up and down fixture creates gorgeous hourglass lighting effect
- Die-cast aluminum mounting box with extruded aluminum housing; mounting box measures 5" square (5-3/8" square with gasket)
- Supplied with back mounting plate to mount over a 4" square or 4" octagonal junction box
- 25-degree beam spread
- Silicon gasket provides a water tight seal
- Polyester powder-coat black or white finish
- Tempered glass lens, thermal shock and impact resistant
- Cree® LEDs inside

Electrical

- Dimmable with most 0-10V dimmers
- Universal voltage (120V through 277V)

Regulatory

- ETL Listed for wet locations



E-S22 Series fixture mounted at 12 feet with 0° tilt.



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TYPE G4

**LED GOOSENECK
15-WATT LED
(E-DG1L SERIES)**

Applications: Business storefronts, restaurants, and building perimeters that need an architectural touch of style

Typical Mounting Height: 8 to 15 feet

Straight Shroud



31.5"L x 15.3"W x 18.8"H
Weight: 5.0 lbs.

CREE LEDs

Angled Shroud



35"L x 15.3"W x 25.8"H
Weight: 5.0 lbs.

INSTALLED ON
BUILDING AT ENTRY
CANOPY.

Catalog #	Description	Input Voltage	Initial Delivered Lumens	CCT	CRI	50K Hours Projected Lumen Maintenance Factor at 25°C ¹	Comparable To:
E-DG1L13UAK	15W LED Warm White Angled Shroud	120V-277V	1100	3000K	≥70	88%	90W Incandescent
E-DG1L13USK	15W LED Warm White Straight Shroud	120V-277V	1260	3000K	≥70	88%	90W Incandescent

¹ Calculated L₇₀ based on 6,048 hours of LM-80 testing: >36,000 hours

Performance

- Estimated 150,000+ hours of maintenance-free operation to L₇₀
- -30°C (-22°F) minimum starting temp
- 5-year limited warranty

Construction & Materials

- Die-cast aluminum mounting box and housing
- Supplied with back mounting plate to mount over a 4" square or octagonal j-box
- Black polyester powder-coat finish for extra corrosion protection and long-lasting color
- Tempered glass lens, thermal, shock and impact resistant
- Cree® LEDs inside

Electrical

- Non-dimmable
- Universal voltage (120V through 277V)

Regulatory

- ETL Listed for wet locations



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TYPE M

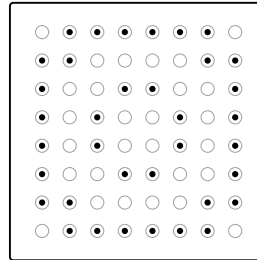
RECESSED LED CANOPY LIGHT - WIDE DISTRIBUTION 42-WATT LED (E-RC2L04CW)

Applications: Security, entryway and perimeter lighting. Also recommended for walkways and exterior canopies
Typical Mounting Height: 8 to 15 feet **Typical Spacing:** 1 to 2 times the mounting height

INSTALLED ON
UNDERSIDE OF
ENTRY CANOPY



16"D x 16"W x 3.75"H
Weight: 6.2 lbs.



LED PATTERN

CREE LEDs



This fixture is listed on the DesignLights Consortium® Qualified Products List.

Catalog #	Description	Input Voltage	Initial Delivered Lumens	CCT	CRI	50K Hours Projected Lumen Maintenance Factor at 25°C ¹	Comparable To:
E-RC2L04CW	42W LED Cool White	120V-277V	4100	5000K	75	50,000 Hours	100W PSMH

¹ Calculated L₇₀ based on 6,048 hours of LM-80 testing: >36,000 hours

Performance

- 50,000 hours of maintenance-free operation to L₇₀
- Minimum starting temperature: -22° F
- 5-year limited warranty

Construction & Materials

- Rugged and durable aluminum housing
- UV-stabilized acrylic lens with molded precision optics
- Two 1/2" conduit entries on top for through wiring
- Hanging cable supports fixture while wiring connections are made
- Secures to mounting surface with four screws (provided by others)
- Cree® LEDs inside

Electrical

- 0-10 Dimmer (See below for recommended dimmers)
- Universal voltage (120V through 277V)

Regulatory

- ETL Listed for wet locations
- Non-IC rated
- RoHS compliant

Recommended Dimmers

- Lutron CTCL-153PDH-WH
- Lutron TGCL-153PH-WH
- Lutron MA-600MR-WH
- Leviton R50-IPL06-10M

NOTE: The presence of a dimmer on this chart is not a guarantee or warranty of the compatibility of the fixture in any particular installation. The absence of a dimmer from this chart does not necessarily imply incompatibility.



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TYPE N

DESCRIPTION

The Halo Surface LED Downlight (SLD) incorporates WaveStream™ technology to create an ultra-low profile surface mounting luminaire with the performance and look of a traditional downlight. SLD6 is designed for installation in many 3-1/2" and 4" square, octagon or round junction boxes. And may also retrofit in 5" and 6" IC and Non-IC recessed housings.* Suitable for residential or commercial installations. Ideal for closets, storage areas, attics and basements. Compliant with NFPA® 70, NEC® Section 410.16 (A)(3) and 410.16 (C)(5).

SPECIFICATION FEATURES

CONSTRUCTION

- Die cast aluminum trim ring, and die formed aluminum frame

OPTICS

- WaveStream™ technology provides uniform luminance from a low profile flat lens
- AccuAim™ optics provide directional control for the "cone-of-light" beam distribution of a traditional downlight.
- Precision molded lens features high transmission polymer with UV stabilized protecting film

DESIGNER TRIMS

Accessories (sold separately)

SLD designer trims are accessory rings that attach to the SLD for a permanent finish.* Refer to SLD accessories specification sheet for details.

- White (Paintable)
- Satin Nickel
- Tuscan Bronze

*SLD accessory trims attach with permanent adhesion and are not interchangeable after installation.

ELECTRICAL JUNCTION BOX MOUNTING

- SLD may be used in compatible electrical junction boxes in direct contact with insulation including spray foam insulation
- Suitable for installation in many 3-1/2" and 4" square, octagon, and round electrical junction boxes
- Note:** Driver consumes 3 cubic inches of junction box
- Surface mounting in a fire-rated ceiling using an appropriate electrical box offers a cost-effective alternative to fire-rated recessed housings
- Note:** Fire-rating is per the rating of the ceiling and applicable junction box, not the SLD.
- Installer must ensure compatibility of fit, wiring and

proper mounting in the electrical junction box. This includes all applicable national and local electrical and building codes.

- Proprietary Slot-N-Lock quick installation system for junction box installation
- T-bracket with Slot-N-Lock mounting tabs included

RECESSED HOUSING MOUNTING

- May be installed in IC recessed housings in direct contact with insulation

* **Note:** Not for use in recessed housings in direct contact with spray foam insulation. Refer to NEMA LSD 57-2013

Torsion Spring 5" & 6"

- Optional precision formed torsion spring bracket kit is included
- The torsion springs adjust on the frame to fit 5" or 6" compatible housings

Friction Blade 5" & 6"

- Optional precision formed friction blades included
- For retrofit in 5" and 6" housings without torsion spring mounting tabs
- Friction blade design allows the SLD to be installed in any position within the housing aperture (360 degrees)

LED

- Linear LED arrays are integrated in trim perimeter
- Color Temperature: 2700K, 3000K, 3500K, 4000K
- CRI options: 80 and 90
 - 90 CRI can be used for California Title 24 compliance/certified to Title 20
 - 80 CRI can be used to comply with California Title 24 Non-Residential Lighting Controls as a LED luminaire.

WARRANTY

Cooper Lighting provides a five year limited warranty on the SLD LED

LED CHROMATICITY

- A tight chromaticity specification ensures LED color uniformity, sustainable Color Rendering Index (CRI) and Correlated Color Temperature (CCT) over the useful life of the LED
- LED chromaticity of 3 SDCM exceeds ENERGY STAR® color standards per ANSI.
- 90 CRI model features high color performance with R9 greater than 50
- Every Halo LED is quality tested, measured, and serialized in a permanent record to register lumens, wattage, CRI and CCT.
- Halo LED serialized testing and measurement ensures color and lumen consistency on a per-unit basis, and validates long-term product consistency over time

ELECTRICAL CONNECTIONS Junction Box

- Compatible with 3-1/2" x 2" and 4" x 1-1/2" deep round, square and octagon boxes (2-1/8" deep boxes recommended)
- Supply Wire Adapter with LED quick connector included

Recessed Housings

- LED connector is compatible with Halo 5" H550 Series and 6" H750 Series LED Housings
- LED Connector meets California Title-24 high-efficacy luminaire standard as a non-screw base
- The included E26 Edison screw-base adapter provides capability for retrofit
- LED connector is a non-screwbase luminaire disconnect for tool-less installation

INSTALLED ON
UNDERSIDE OF
BUILDING AT EXITS



SLD 1200 Series

SLD6128xxWH

80CRI
2700K, 3000K, 3500K,
and 4000K

SLD6129xxWH

90CRI
2700K, 3000K, 3500K,
and 4000K

6" Surface LED Downlight

High Lumen 1200 Series

Suitable for
ceiling or wall
electrical junction boxes

Suitable for
5" & 6" recessed
housing retrofit
(IC, Non-IC & AIR-TITE™)

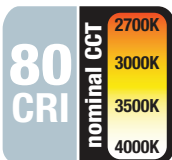
ENERGY DATA

	80 CRI	90 CRI
Lumens (4000K models)	1215	1000
Input Voltage	120V	120V
Frequency	50/60 Hz	50/60 Hz
Input Current	0.12 A	0.12 A
Input Power	14.8 W	14.8 W
Efficiency (4000K models)	82 lm/W	68 lm/W
THD	≤ 20%	
Power Factor	≥ 0.90	
T Ambient	-30 - +40°C	
Sound Rating	Class A	

NOMENCLATURE

SLD 612 8 30 WH

612 = 6" SLD 1200 Series
8 = >80 CRI
30 = 3000K
WH = Matte White



Refer to ENERGY STAR® Certified Products List.
Can be used to comply with California Title 24 Non-Residential Lighting Controls requirements as a LED Luminaire.



Refer to ENERGY STAR® Certified Products List.
Can be used to comply with California Title 24 High Efficacy requirements.
Certified to California Title 20 Appliance Efficiency Database.

LED DRIVER

- Driver is a 120V input, high efficiency, dimmable electronic power supply providing DC power to the LED arrays
- Driver features high power factor, low THD, and has integral thermal protection in the event of over temperature or internal failure
- Driver is replaceable if it should be required

DIMMING

- Designed for continuous dimming capability to nominally 5% with many 120V Leading Edge (LE) and Trailing Edge (TE) phase control dimmers. Dimming to 5% is best assured using dimmers with low end trim adjustment. Consult dimmer manufacturer for compatibility and conditions of use. (Note some dimmers require a neutral in the wallbox.)

COMPLIANCE

- cULus Listed ceiling and wall
- cULus Damp Location listed ceiling and wall
- cULus Wet Location Listed, ceiling only (shower rated)
- Suitable for use in closets, compliant with NFPA® 70, NEC® Section 410.16 (A)(3) and 410.16 (C)(5)
- SLD may be used in compatible electrical junction boxes in direct contact with insulation including spray foam insulation
- May be installed in IC recessed housings in direct contact with insulation (Not for use in recessed housings in direct contact with spray foam insulation. Refer to NEMA LSD 57-2013)
- UL Classified when used in retrofit with listed housings (See Housing Compatibility)
- EMI/RFI: meets FCC 47CFR Part 15 Class B limits, and is suitable for use in residential and commercial installations
- Airtight certified per ASTM E283 (not exceeding 2.0 CFM under 57 Pascals pressure difference)
- 90 CRI: Can be used to comply with California Title 24 High Efficacy requirements. Certified to California Title 20 Appliance Efficiency Database.
- 80 CRI: Can be used to comply with California Title 24 Non-Residential Lighting Controls requirements as a LED luminaire.
- Can be used for International Energy Conservation Code (IECC) and Washington State Energy Code high efficiency luminaire compliance
- ENERGY STAR® certified luminaire - consult ENERGY STAR® Certified Product List
- Contains no mercury or lead and RoHS compliant.
- Photometric testing in accordance with IES LM-79
- Lumen maintenance projections in accordance with IES LM-80 and TM-21



SLD 1200 Series

SLD6128xxWH

80CRI

2700K, 3000K, 3500K,
and 4000K

SLD6129xxWH

90CRI

2700K, 3000K, 3500K,
and 4000K

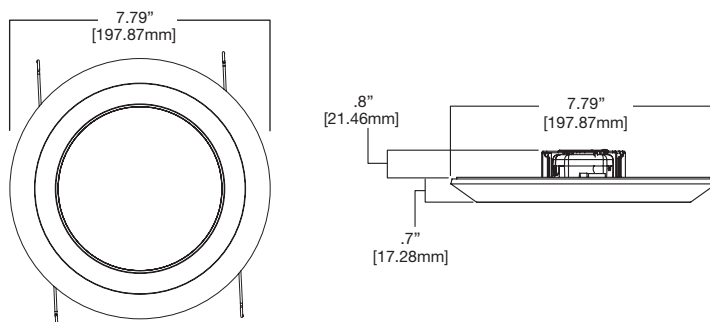
6" Surface LED
Downlight

High Lumen 1200 Series

Suitable for
ceiling or wall
electrical junction boxes

Suitable for
5" & 6" recessed
housing retrofit
(IC, Non-IC & AIR-TITE™)

DIMENSIONS



ORDERING INFORMATION

SAMPLE NUMBER: SLD612927WH SLD6TRMSN

Junction Box Installation: Order junction box separately, as supplied by others, to complete installation.

Recessed Installation: Order Halo recessed housing separately to complete installation.

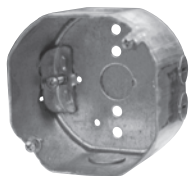
Models	Color Rendering Index	Color Temperature (CCT)	Finish	Accessories
SLD612= 6" Surface LED Downlight, 120V 1200 Series	8=80 CRI 9=90 CRI	27=2700K 30=3000K 35=3500K 40=4000K	WH=White	Designer Trims Fit over the SLD for a designer finish SLD6TRMSN=6" SLD Satin Nickel SLD6TRMTBZ=6" SLD Tuscan Bronze SLD6TRMWH=6" SLD White (paintable) *SLD accessory trims attach with permanent adhesion and are not interchangeable after installation J-Box Spacer Extension Ring Add 15/16" depth when SLD driver cannot fit into installed junction box SLD6EXT=6" Surface LED J-Box Extender, 9.5" O.D. RAD Adapters When junction box is mounted flat on a ceiling or beam surface (not recessed in ceiling) SLD6RAD=6" SLD Round Surface J-Box Adapter, 7.92" O.D. (for 4-inch round or octagon junction boxes.) SLD6SADPLT=6" SLD Square Surface J-Box Adapter Plate (For 4-inch square junction boxes, use with SLD6RAD.) Spare Parts SLD6ACCKIT=6" Accessory Parts Replacement Kit (Screwbase adapter, torsion springs, friction blades) SLD6BRKT=6" Junction Box Bracket & Screws Refer to SLD Accessories specification sheet for further information.

HOUSING COMPATIBILITY

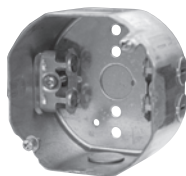
The SLD6 is UL Listed in Halo and All-Pro recessed housings, and is UL Classified for use with any 5 or 6 inch diameter recessed housing constructed of steel or aluminum with an internal volume that exceeds 107.9 in³ in addition to those noted below.
Note: Some other's housings require installation with included friction clips.

Compatible Halo LED Housings with LED luminaire connector (high-efficacy compliant)		
HALO LED	Recessed Can Size	Catalog Number
	5"	H550ICAT, H550RICAT
	6"	H750ICAT, H750RICAT, H750T, H750TCP, H2750ICAT
Halo LED Retrofit Enclosures		
HALO	6"	ML7BXRFK, ML7E26RFK
Compatible Halo Incandescent E26 Screwbase Housings		
HALO	5"	H5ICAT, H5RICAT, H5T, H5RT, H5TM, H25ICAT
	6"	H7ICAT, H7RICAT, H7ICT, H7RICT, H7ICATNB, H7ICTNB, H7T, H7RT, H7TNB, H7TCP, H7UICAT, H7UICAT, H27ICAT, H27RICAT, H27ICT, H27RICT, H27T, H27RT
Compatible All-Pro Incandescent E26 Screwbase Housings		
ALL-PRO	5"	EI500AT, EI500RAT, ET500, ET500R
	6"	EI700AT, EI700RAT, EI700, EI700R, EI700ATNB, EI700NB, EI700U, EI700UAT, ET700, ET700R, EI2700AT, EI2700, EI2700R, ET2700, ET2700R

COMPATIBLE WITH EATON'S CROUSE-HINDS JUNCTION BOXES



TP316
for non-metallic cable
4" x 4" x 2-1/8"
(102mm x 102mm x 54mm)



TP317
for metal clad cable
4" x 4" x 2-1/8"
(102mm x 102mm x 54mm)

- **TP316** - for non-metallic cable
- **TP317** - for metal clad cable
- UL Listed
- Suitable for two-hour fire-rated ANSI/UL 263 when properly installed in a fire-rated ceiling or wall
- Refer to www.crouse-hinds.com

COMPATIBLE WITH MANY OTHER JUNCTION BOXES*



4" octagon light fixture/fan steel box
4" x 4" x 2-1/8"
(102mm x 102mm x 54mm)



4" octagon steel box
4" x 4" x 1-1/2"
(102mm x 102mm x 38mm)



4" square deep steel box
4" x 4" x 2-1/8"
(102mm x 102mm x 54mm)



4" square standard steel box
4" x 4" x 1-1/2"
(102mm x 102mm x 38mm)



4" round new work non-metallic light fixture/fan box
4" diameter x 2-3/16"
(102mm x 56mm)



3-1/2" round new work non-metallic ceiling box
3-1/2" diameter x 2-3/4"
(89mm x 70mm)



3-1/2" round old work non-metallic box
4-1/4" O.D. flange, 3-1/2" I.D. x 2-5/8"
(108mm O.D., 89mm I.D. x 67mm)



4" round surface mount box
4" diameter x 1-1/2"
(102mm x 38mm)
Requires SLD6RAD adapter



4" round new work non-metallic box with hanger bar assembly
4" diameter x 2-3/16" (102mm x 56mm)

Surface mounting in a fire-rated ceiling using an appropriate electrical box offers a cost-effective alternative to fire-rated recessed housings.

Note: Fire-rating is per the rating of the ceiling and applicable junction box, not the SLD.

*This is a representative list of compatible junction boxes only. Information contained in this literature about other manufacturers' products is from published information made available by the manufacturer and is deemed to be reliable, but has not been verified. Eaton makes no specific recommendation on product selection and there are no warranties of performance or compatibility implied. Installer must determine that site conditions are suitable to allow proper installation of the SLD mounting bracket in the box.

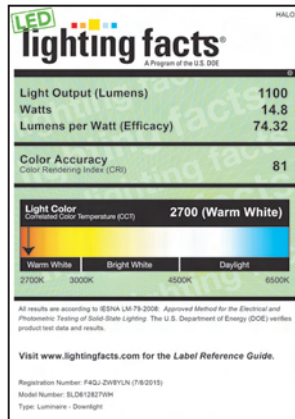
PRODUCT DATA

Cat No.	CRI	CCT	Lumens	Power (W)	LPW
SLD612827WH	80	2700	1100	14.8	74
SLD612830WH	80	3000	1150	14.8	78
SLD612835WH	80	3500	1200	14.8	81
SLD612840WH	80	4000	1215	14.8	82
SLD612927WH	92	2700	880	14.8	59
SLD612930WH	92	3000	925	14.8	63
SLD612935WH	92	3500	965	14.8	65
SLD612940WH	92	4000	1000	14.8	68

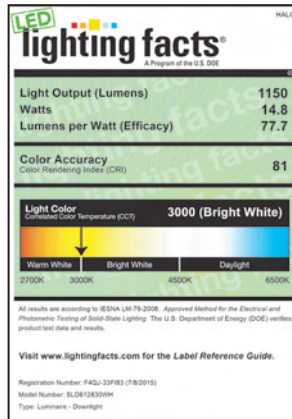
Performance values are presented as typical for the model(s) indicated. Field results may vary.

LIGHTING FACTS®

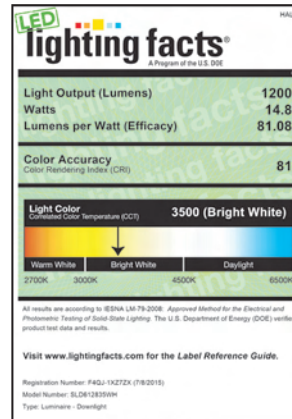
SLD612827WH - 80 CRI



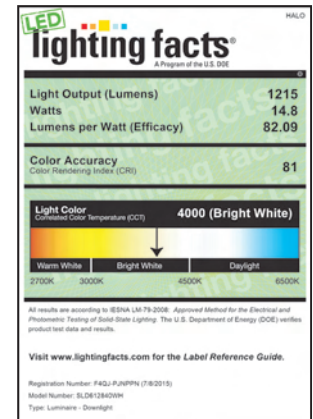
SLD612830WH - 80 CRI



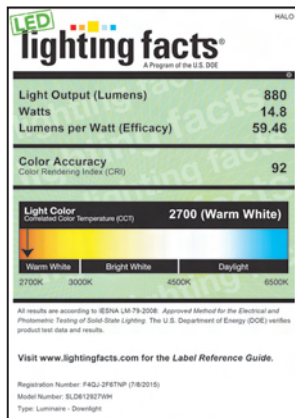
SLD612835WH - 80 CRI



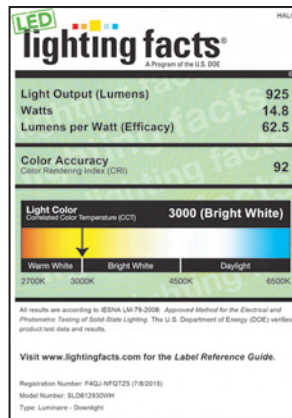
SLD612840WH - 80 CRI



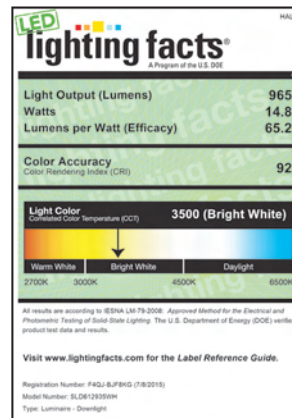
SLD612927WH - 90 CRI



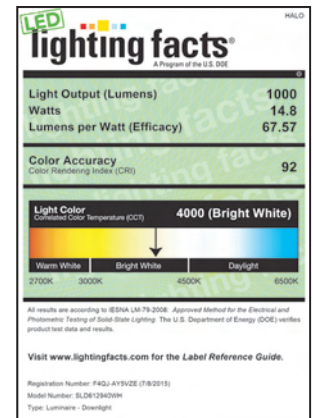
SLD612930WH - 90 CRI



SLD612935WH - 90 CRI



SLD612940WH - 90 CRI



TYPE Q1

INSTALLED AT SUITE
DECKS. NOT SHOWN
ON PLANS.



V8870-5 Black
→ **V8870-6** White
Frosted Ribbed Glass
10" W x 10" H x 5 1/2" E
1(M) 100w max.



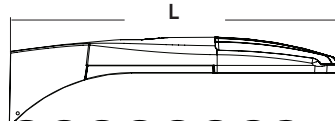
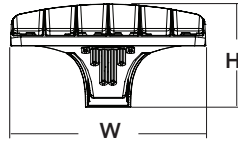
D-Series Size 0 LED Area Luminaire



d#series

Specifications

EPA:	0.8 ft ² (.07 m ²)
Length:	26" (66.0 cm)
Width:	13" (33.0 cm)
Height:	7" (17.8 cm)
Weight (max):	16 lbs (7.25 kg)



MAIN PARKING
LOT LIGHTING

Catalog
Number

Notes

Type

TYPE T1/T1H

Introduction

The modern styling of the D-Series is striking yet unobtrusive - making a bold, progressive statement even as it blends seamlessly with its environment.

The D-Series distills the benefits of the latest in LED technology into a high performance, high efficacy, long-life luminaire. The outstanding photometric performance results in sites with excellent uniformity, greater pole spacing and lower power density. It is ideal for replacing up to 400W metal halide with typical energy savings of 65% and expected service life of over 100,000 hours.

Ordering Information

EXAMPLE: DSX0 LED 40C 1000 40K T3M MVOLT SPA DDBXD

Series	LEDs	Drive current	Color temperature	Distribution	Voltage	Mounting
DSX0 LED	Forward optics 20C 20 LEDs (one engine) 40C 40 LEDs (two engines) Rotated optics¹ 30C 30 LEDs (one engine)	530 530 mA 700 700 mA 1000 1000 mA (1 A) ²	30K 3000 K (80 CRI min.) 40K 4000 K (70 CRI min.) 50K 5000 K (70 CRI) AMBPC Amber phosphor converted	T1S Type I short T2S Type II short T2M Type II medium T3S Type III short T3M Type III medium T4M Type IV medium TFTM Forward throw medium T5VS Type V very short T5S Type V short T5M Type V medium T5W Type V wide	MVOLT ⁴ 120 ⁴ 208 ⁴ 240 ⁴ 277 ⁴ 347 ⁵ 480 ⁵	Shipped included SPA Square pole mounting RPA Round pole mounting WBA Wall bracket SPUMBA Square pole universal mounting adaptor ⁶ RPUMBA Round pole universal mounting adaptor ⁶ Shipped separately⁷ KMA8 DDBXD U Mast arm mounting bracket adaptor (specify finish)

Control options	TYPE T1H ONLY	Other options	Finish (required)
Shipped installed PER NEMA twist-lock receptacle only (no controls) ⁸ PER5 Five-wire receptacle only (no controls) ^{8,9} PER7 Seven-wire receptacle only (no controls) ^{8,9} DMG 0-10V dimming driver (no controls) ¹⁰ DCR Dimmable and controllable via ROAM [®] (no controls) ¹¹ PIR Motion sensor, 8-15' mounting height ¹² PIRH Motion sensor, 15-30' mounting height ¹²	BL30 Bi-level switched dimming, 30% ^{13,14} BL50 Bi-level switched dimming, 50% ^{13,14} PNMTDD3 Part night, dim till dawn ¹⁵ PNMT5D3 Part night, dim 5 hrs ¹⁵ PNMT6D3 Part night, dim 6 hrs ¹⁵ PNMT7D3 Part night, dim 7 hrs ¹⁵	Shipped installed HS House-side shield ¹⁶ SF Single fuse (120, 277, 347V) ¹⁷ DF Double fuse (208, 240, 480V) ¹⁷ L90 Left rotated optics ¹ R90 Right rotated optics ¹ DDL Diffused drop lens ¹⁶	DDBXD Dark bronze DBLXD Black DNAXD Natural aluminum DWHXD White DDBTXD Textured dark bronze DBLBXD Textured black DNATXD Textured natural aluminum DWHGXD Textured white

Controls & Shields

DL127F 1.5 JU	Photocell - SSL twist-lock (120-277V) ¹⁸
DL1347F 1.5 CUL JU	Photocell - SSL twist-lock (347V) ¹⁸
DL1480F 1.5 CUL JU	Photocell - SSL twist-lock (480V) ¹⁸
SC U	Shorting cap ¹⁸
DSX0HS 20C U	House-side shield for 20 LED unit ¹⁶
DSX0HS 30C U	House-side shield for 30 LED unit ¹⁶
DSX0HS 40C U	House-side shield for 40 LED unit ¹⁶
DSX0DDL U	Diffused drop lens (polycarbonate) ¹⁶
PUMBA DDBXD U*	Square and round pole universal mounting bracket adaptor (specify finish)
KMA8 DDBXD U	Mast arm mounting bracket adaptor (specify finish) ⁷

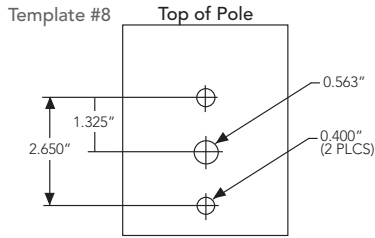
NOTES

- 30 LEDs (30C option) and rotated options (L90 or R90) only available together.
- 1000mA not available with AMBPC.
- AMBPC only available with 530mA or 700mA.
- MVOLT driver operates on any line voltage from 120-277V (50/60 Hz). Specify 120V, 208V, 240V or 277V options only when ordering with fusing (SF, DF options).
- Not available with single board, 530mA product (20C 530 or 30C 530). Not available with BL30, BL50 or PNMT options.
- Available as a separate combination accessory: PUMBA (finish) U; 1.5 G vibration load rating per ANCI C136.31.
- Must be ordered as a separate accessory; see Accessories information. For use with 2-3/8" mast arm (not included).
- Photocell ordered and shipped as a separate line item from Acuity Brands Controls. See accessories.
- If ROAM[®] node required, it must be ordered and shipped as a separate line item from Acuity Brands Controls. Not available with DCR.
- DMG option for 347V or 480V requires 1000mA.

- Specifies a ROAM[®] enabled luminaire with 0-10V dimming capability; PER option required. Additional hardware and services required for ROAM[®] deployment; must be purchased separately. Call 1-800-442-6745 or email: sales@roam-services.net. N/A with PIR, PIRH, PER5, PER7, BL30, BL50 or PNMT options.
- PIR specifies the SensorSwitch SBGR-10-ODP control; PIRH specifies the SensorSwitch SBGR-6-ODP control; see Motion Sensor Guide for details. Dimming driver standard. Not available with PER5 or PER7.
- Requires an additional switched circuit.
- Dimming driver standard. MVOLT only. Not available with 347V, 480V, DCR, PER5, PER7 or PNMT options.
- Dimming driver standard. MVOLT only. Not available with 347V, 480V, DCR, PER5, PER7, BL30 or BL50.
- Also available as a separate accessory; see Accessories information.
- Single fuse (SF) requires 120V, 277V or 347V. Double fuse (DF) requires 208V, 240V or 480V.
- Requires luminaire to be specified with PER option. Ordered and shipped as a separate line item from Acuity Brands Controls.



Drilling



DSX0 shares a unique drilling pattern with the AERIS™ family. Specify this drilling pattern when specifying poles, per the table below.

DM19AS	Single unit	DM29AS	2 at 90° *
DM28AS	2 at 180°	DM39AS	3 at 90° *
DM49AS	4 at 90° *	DM32AS	3 at 120° **

Example: SSA 20 4C DM19AS DDBXD

Visit Lithonia Lighting's [POLES CENTRAL](#) to see our wide selection of poles, accessories and educational tools.

*Round pole top must be 3.25" O.D. minimum.

**For round pole mounting (RPA) only.

Tenon Mounting Slipfitter**

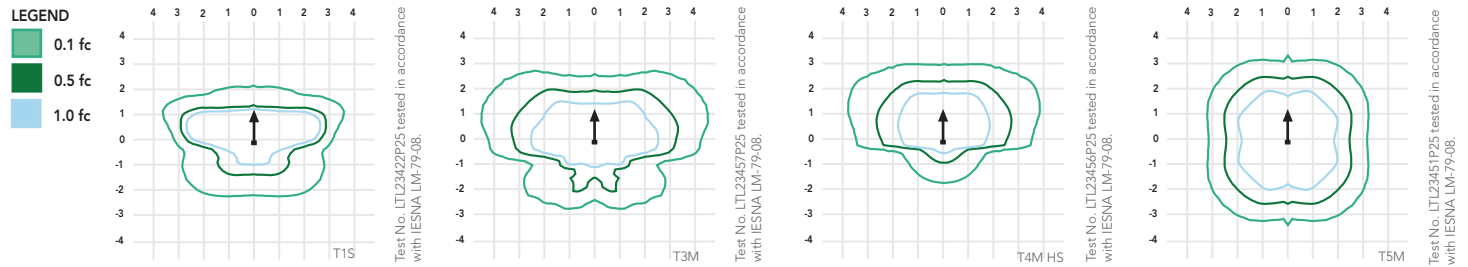
Tenon O.D.	Single Unit	2 at 180°	2 at 90°	3 at 120°	3 at 90°	4 at 90°
2-3/8"	AST20-190	AST20-280	AST20-290	AST20-320	AST20-390	AST20-490
2-7/8"	AST25-190	AST25-280	AST25-290	AST25-320	AST25-390	AST25-490
4"	AST35-190	AST35-280	AST35-290	AST35-320	AST35-390	AST35-490

TYPE T1/T1H

Photometric Diagrams

To see complete photometric reports or download .ies files for this product, visit [Lithonia Lighting's D-Series Area homepage](#).

Isofootcandle plots for the DSX0 LED 40C 1000 40K. Distances are in units of mounting height (20').



Performance Data

Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

Ambient	Lumen Multiplier
0°C	1.02
10°C	1.01
20°C	1.00
25°C	1.00
30°C	1.00
40°C	0.99

Electrical Load

Number of LEDs	Drive Current (mA)	System Watts	Current (A)					
			120	208	240	277	347	480
20C	530	35	0.34	0.22	0.21	0.20	--	--
	700	45	0.47	0.28	0.24	0.22	0.18	0.14
	1000	72	0.76	0.45	0.39	0.36	0.36	0.26
30C	530	52	0.51	0.31	0.28	0.25	--	--
	700	70	0.72	0.43	0.37	0.34	0.25	0.19
	1000	104	1.11	0.64	0.56	0.49	0.47	0.34
40C	530	68	0.71	0.41	0.36	0.33	0.25	0.19
	700	91	0.94	0.55	0.48	0.42	0.33	0.24
	1000	138	1.45	0.84	0.73	0.64	0.69	0.50

Projected LED Lumen Maintenance

Data references the extrapolated performance projections for the platforms noted in a **25°C ambient**, based on 10,000 hours of LED testing (tested per IESNA LM-80-08 and projected per IESNA TM-21-11).

To calculate LLF, use the lumen maintenance factor that corresponds to the desired number of operating hours below. For other lumen maintenance values, contact factory.

Operating Hours	0	25,000	50,000	100,000
Lumen Maintenance Factor		DSX0 LED 20C 1000		
	1	0.97	0.94	0.90
		DSX0 LED 40C 1000		
	1	0.94	0.90	0.84
		DSX0 LED 40C 700		
	1	0.99	0.98	0.96



Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

Forward Optics

LEDs	Drive Current (mA)	System Watts	Dist. Type	30K (3000 K, 70 CRI)					40K (4000 K, 70 CRI)					50K (5000 K, 70 CRI)					AMBPC (Amber Phosphor Converted)				
				Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
20C (20 LEDs)	530 mA	35 W	T1S	3,174	1	0	1	91	3,971	1	0	1	113	4,001	1	0	1	114	2,541	1	0	1	73
			T2S	3,234	1	0	1	92	4,045	1	0	1	116	4,075	1	0	1	116	2,589	1	0	1	74
			T2M	3,171	1	0	1	91	3,967	1	0	1	113	3,997	1	0	1	114	2,539	1	0	1	73
			T3S	3,195	1	0	1	91	3,997	1	0	1	114	4,027	1	0	1	115	2,558	1	0	1	73
			T3M	3,226	1	0	1	92	4,036	1	0	1	115	4,066	1	0	1	116	2,583	1	0	1	74
			T4M	3,210	1	0	1	92	4,015	1	0	1	115	4,045	1	0	1	116	2,570	1	0	1	73
			TFTM	3,173	1	0	1	91	3,969	1	0	2	113	3,999	1	0	2	114	2,540	1	0	1	73
			TSVS	3,310	2	0	0	95	4,140	2	0	0	118	4,172	2	0	0	119	2,650	1	0	0	76
			TSS	3,360	2	0	2	96	4,203	2	0	0	120	4,235	2	0	0	121	2,690	1	0	0	77
			TSM	3,320	2	0	1	95	4,153	3	0	1	119	4,184	3	0	1	120	2,658	2	0	0	76
			TSW	3,327	3	0	1	95	4,161	3	0	1	119	4,193	3	0	1	120	2,663	2	0	1	76
			T1S	3,927	1	0	1	87	4,913	1	0	1	109	4,950	1	0	1	110	3,144	1	0	1	70
	700 mA	45 W	T2S	4,000	1	0	1	89	5,004	1	0	1	111	5,042	1	0	1	112	3,203	1	0	1	71
			T2M	3,924	1	0	1	87	4,908	1	0	1	109	4,945	1	0	1	110	3,141	1	0	1	70
			T3S	3,953	1	0	1	88	4,945	1	0	1	110	4,982	1	0	1	111	3,165	1	0	1	70
			T3M	3,991	1	0	1	89	4,994	1	0	2	111	5,031	1	0	2	112	3,196	1	0	1	71
			T4M	3,971	1	0	1	88	4,967	1	0	2	110	5,005	1	0	2	111	3,179	1	0	1	71
			TFTM	3,925	1	0	2	87	4,910	1	0	2	109	4,947	1	0	2	110	3,143	1	0	1	70
			TSVS	4,095	2	0	0	91	5,122	2	0	0	114	5,161	2	0	0	115	3,278	2	0	0	73
			TSS	4,157	2	0	0	92	5,200	2	0	0	116	5,239	2	0	0	116	3,328	2	0	0	74
			TSM	4,107	3	0	1	91	5,138	3	0	1	114	5,177	3	0	1	115	3,288	2	0	1	73
			TSW	4,116	3	0	1	91	5,148	3	0	1	114	5,187	3	0	1	115	3,295	2	0	1	73
	1000 mA	72 W	T1S	5,387	1	0	1	75	6,739	2	0	2	94	6,790	2	0	2	94					
			T2S	5,488	1	0	1	76	6,865	2	0	2	95	6,917	2	0	2	96					
			T2M	5,382	1	0	2	75	6,733	2	0	2	94	6,784	2	0	2	94					
			T3S	5,423	1	0	1	75	6,784	2	0	2	94	6,835	2	0	2	95					
			T3M	5,475	1	0	2	76	6,850	2	0	2	95	6,901	2	0	2	96					
			T4M	5,447	1	0	2	76	6,814	2	0	2	95	6,866	2	0	2	95					
			TFTM	5,385	1	0	2	75	6,736	1	0	2	94	6,787	1	0	2	94					
			TSVS	5,617	2	0	0	78	7,027	3	0	0	98	7,080	3	0	0	98					
			TSS	5,702	2	0	0	79	7,133	2	0	0	99	7,187	2	0	0	100					
			TSM	5,634	3	0	1	78	7,048	3	0	1	98	7,101	3	0	1	99					
			TSW	5,646	3	0	1	78	7,063	3	0	1	98	7,116	3	0	1	99					
40C (40 LEDs)	530 mA	68 W	T1S	6,093	2	0	2	90	7,622	2	0	2	112	7,679	2	0	2	113	4,878	1	0	1	72
			T2S	6,207	2	0	2	91	7,764	2	0	2	114	7,823	2	0	2	115	4,969	1	0	1	73
			T2M	6,087	2	0	2	90	7,615	2	0	2	112	7,672	2	0	2	113	4,874	1	0	1	72
			T3S	6,133	1	0	2	90	7,672	2	0	2	113	7,730	2	0	2	114	4,910	1	0	1	72
			T3M	6,193	2	0	2	91	7,747	2	0	2	114	7,805	2	0	2	115	4,958	1	0	2	73
			T4M	6,161	1	0	2	91	7,707	2	0	2	113	7,765	2	0	2	114	4,932	1	0	2	73
			TFTM	6,090	1	0	2	90	7,618	2	0	2	112	7,676	2	0	2	113	4,876	1	0	2	72
			TSVS	6,353	2	0	0	93	7,947	3	0	0	117	8,007	3	0	0	118	5,086	2	0	0	75
			TSS	6,449	2	0	0	95	8,068	3	0	1	119	8,128	3	0	1	120	5,163	2	0	0	76
			TSM	6,372	3	0	1	94	7,971	3	0	2	117	8,031	3	0	2	118	5,102	3	0	1	75
			TSW	6,385	3	0	2	94	7,988	3	0	2	117	8,048	3	0	2	118	5,112	3	0	1	75
	700 mA	91 W	T1S	7,752	2	0	2	85	9,697	2	0	2	107	9,770	2	0	2	107	6,206	2	0	2	68
			T2S	7,897	2	0	2	87	9,878	2	0	2	109	9,953	2	0	2	109	6,322	2	0	2	69
			T2M	7,745	2	0	2	85	9,688	2	0	2	106	9,761	2	0	2	107	6,201	2	0	2	68
			T3S	7,803	2	0	2	86	9,761	2	0	2	107	9,834	2	0	2	108	6,247	1	0	2	69
			T3M	7,879	2	0	2	87	9,856	2	0	2	108	9,930	2	0	2	109	6,308	2	0	2	69
			T4M	7,838	2	0	2	86	9,805	2	0	2	108	9,879	2	0	2	109	6,275	1	0	2	69
			TFTM	7,748	2	0	2	85	9,693	2	0	3	107	9,765	2	0	3	107	6,203	1	0	2	68
			TSVS	8,083	3	0	0	89	10,111	3	0	1	111	10,187	3	0	1	112	6,569	2	0	0	72
			TSS	8,205	3	0	1	90	10,264	3	0	1	113	10,341	3	0	1	114	6,569	2	0	0	72
			TSM	8,107	3	0	2	89	10,142	3	0	2	111	10,218	3	0	2	112	6,491	3	0	1	71
			TSW	8,124	3	0	2	89	10,163	4	0	2	112	10,239	4	0	2	113	6,504	3	0	2	71
	1000 mA	138 W	T1S	10,435	2	0	2	76	13,054	3	0	3	95	13,152	3	0	3	95					
			T2S	10,630	2	0	2	77	13,297	3	0	3	96	13,398	3	0	3	97					
			T2M	10,426	2	0	2	76	13,042	3	0	3	95	13,140	3	0	3	95					
			T3S	10,503	2	0	2	76	13,139	2	0	2	95	13,238	2	0	2	96					
			T3M	10,606	2	0	2	77	13,267	3	0	3	96	13,367	3	0	3	97					
			T4M	10,551	2	0	2	76	13,199	3	0	3	96	13,298	3	0	3	96					
			TFTM	10,430	2	0	3	76	13,047	2	0	3	95	13,146	2	0	3	95					
			TSVS	10,881	3	0	1	79	13,611	3	0	1	99	13,714	4	0	1	99					
			TSS	11,045	3	0	1	80	13,817	3	0	1	100	13,921	3	0	1	101					
			TSM	10,914	4	0	2	79	13,652	4	0	2	99	13,755	4	0	2	100					
			TSW	10,936	4	0	2	79	13,680	4	0	2	99	13,783	4	0	2	100					

L90 and R90 Rotated Optics

LEDs	Drive Current (mA)	System Watts	Dist. Type	30K (3000 K, 70 CRI)					40K (4000 K, 70 CRI)					50K (5000 K, 70 CRI)					AMBPC (Amber Phosphor Converted)				
				Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
30C (30 LEDs)	530 mA	52 W	T1S	4,797	2	0	2	92	6,001	2	0	2	115	6,046	2	0	2	116	3,841	2	0	2	74
			T2S	4,887	2	0	2	94	6,113	2	0	2	118	6,159	3	0	3	118	3,912	2	0	2	75
			T2M	4,793	2	0	2	92	5,996	3	0	3	115	6,041	3	0	3	116	3,837	2	0	2	74
			T3S	4,829	2	0	2	93	6,041	3	0	3	116	6,086	3	0	3	117	3,866	2	0	2	74
			T3M	4,876	3	0	3	94	6,099	3	0	3	117	6,145	3	0	3	118	3,904	2	0	2	75
			T4M	4,851	3	0	3	93	6,068	3	0	3	117	6,114	3	0	3	118	3,884	2	0	2	75
			TFTM	4,795	3	0	3	92	5,998	3	0	3	115	6,043	3	0	3	116	3,839	2	0	2	74
			TSVS	5,002	2	0	0	96	6,258	2	0	0	120	6,305	2	0	0	121	4,005	2	0	0	77
			TSS	5,078	2	0	0	98	6,352	2	0	0	122	6,400	2	0	0	123	4,065	2	0	0	78
			TSM	5,017	3	0	1	96	6,276	3	0	1	121	6,324	3	0	1	122	4,017	2	0	1	77
			TSW	5,028	3	0	1	97	6,289	3	0	2	121	6,337	3	0	2	122	4,025	3	0	1	77
			T1S	5,975	2	0	2	85	7,474	3	0	3	107	7,530	3	0	3	108	4,783	2	0	2	68
	700 mA	70 W	T2S	6,086	2	0	2	87	7,614	3	0	3	109	7,671	3	0	3	110	4,873	2	0	2	70
			T2M	5,969	3	0	3	85	7,467	3	0	3	107	7,524	3	0	3	107	4,779	2	0	2	68
			T3S	6,014	3	0	3	86	7,523	3	0	3	107	7,580	3	0	3	108	4,815	2	0	2	69
			T3M	6,072	3	0	3	87	7,596	3	0	3	109	7,654	3	0	3	109	4,862	3	0	3	69
			T4M	6,041	3	0	3	86	7,557	3	0	3	108	7,614	3	0	3	109	4,837	3	0	3	69
			TFTM	5,972	3	0	3	85	7,471	3	0	3	107	7,527	3	0	3	108	4,781	3	0	3	68
			TSVS	6,230	2	0	0	89	7,793	3	0	0	111	7,852	3	0	0	112	4,988	2	0	0	71
			TSS	6,324	2	0	0	90	7,911	3	0	1	113	7,971	3	0	1	114	5,063	2	0	0	72
			TSM	6,249	3	0	1	89	7,817	3	0	2	112	7,876	3	0	2	113	5,003	3	0	1	71
			TSW	6,262	3	0	2	89	7,833	3	0	2	112	7,892	3	0	2	113	5,013	3	0	1	72
	1000 mA	104 W	T1S	7,956	3	0	3	76	9,952	3	0	3	96	10,027	3	0	3	96					
			T2S	8,104	3	0	3	78	10,138	3	0	3	97	10,214	3	0	3	98					
			T2M	7,949	3	0	3	76	9,943	3	0	3	96	10,018	3	0	3	96					
			T3S	8,008	3	0	3	77	10,018	3	0	3	96	10,093	3	0	3	97					
			T3M	8,086	3	0	3	78	10,115	4	0	4	97	10,191	4	0	4	98					
			T4M	8,044	3	0	3	77	10,063	3	0	3	97	10,139	3	0	3	97					
			TFTM	7,952	3	0	3	76	9,948	3	0	3	96	10,022	4	0	4	96					
			TSVS	8,296	3	0	0	80	10,377	3	0	1	100	10,455	3	0	1	101					
			TSS	8,421	3	0	1	81	10,534	3	0	1	101	10,613	3	0	1	102					
			TSM	8,321	3	0	2	80	10,409	4	0	2	100	10,487	4	0	2	101					
			TSW	8,338	4	0	2	80	10,430	4	0	2	100	10,509	4	0	2	101					

FEATURES & SPECIFICATIONS

INTENDED USE

The sleek design of the D-Series Size 0 reflects the embedded high performance LED technology. It is ideal for many commercial and municipal applications, such as parking lots, plazas, campuses, and streetscapes.

CONSTRUCTION

Single-piece die-cast aluminum housing has integral heat sink fins to optimize thermal management through conductive and convective cooling. Modular design allows for ease of maintenance and future light engine upgrades. The LED driver is mounted in direct contact with the casting to promote low operating temperature and long life. Housing is completely sealed against moisture and environmental contaminants (IP65). Low EPA (0.8 ft²) for optimized pole wind loading.

FINISH

Exterior parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering. A tightly controlled multi-stage process ensures a minimum 3 mils thickness for a finish that can withstand extreme climate changes without cracking or peeling. Available in both textured and non-textured finishes.

OPTICS

Precision-molded proprietary acrylic lenses are engineered for superior area lighting distribution, uniformity, and pole spacing. Light engines are available in standard 4000 K (70 minimum CRI) or optional 3000 K (80 minimum CRI) or 5000 K (70 CRI) configurations. The D-Series Size 0 has zero uplight and qualifies as a Nighttime Friendly™ product, meaning it is consistent with the LEED® and Green Globes™ criteria for eliminating wasteful uplight.

ELECTRICAL

Light engine(s) configurations consist of high-efficacy LEDs mounted to metal-core circuit boards to maximize heat dissipation and promote long life (up to L96/100,000 hours at 25°C). Class 1 electronic drivers are designed to have a power factor >90%, THD <20%, and an expected life of

100,000 hours with <1% failure rate. Easily serviceable 10kV or 6kV surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).

INSTALLATION

Included mounting block and integral arm facilitate quick and easy installation. Stainless steel bolts fasten the mounting block securely to poles and walls, enabling the D-Series Size 0 to withstand up to a 3.0 G vibration load rating per ANSI C136.31. The D-Series Size 0 utilizes the AERIS™ series pole drilling pattern. Optional terminal block, tool-less entry, and NEMA photocontrol receptacle are also available.

LISTINGS

UL Listed for wet locations. Light engines are IP66 rated; luminaire is IP65 rated. Rated for -40°C minimum ambient. U.S. Patent No. D672,492 S. International patent pending.

DesignLights Consortium® (DLC) qualified product. Not all versions of this product may be DLC qualified. Please check the DLC Qualified Products List at www.designlights.org to confirm which versions are qualified.

WARRANTY

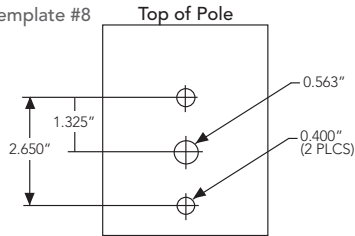
Five-year limited warranty. Full warranty terms located at: www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx

Note: Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.



Drilling

Template #8



DSX0 shares a unique drilling pattern with the AERIS™ family. Specify this drilling pattern when specifying poles, per the table below.

DM19AS	Single unit	DM29AS	2 at 90° *
DM28AS	2 at 180°	DM39AS	3 at 90° *
DM49AS	4 at 90° *	DM32AS	3 at 120° **

Example: SSA 20 4C DM19AS DDBXD

Visit Lithonia Lighting's [POLES CENTRAL](#) to see our wide selection of poles, accessories and educational tools.

*Round pole top must be 3.25" O.D. minimum.

**For round pole mounting (RPA) only.

Tenon Mounting Slipfitter**

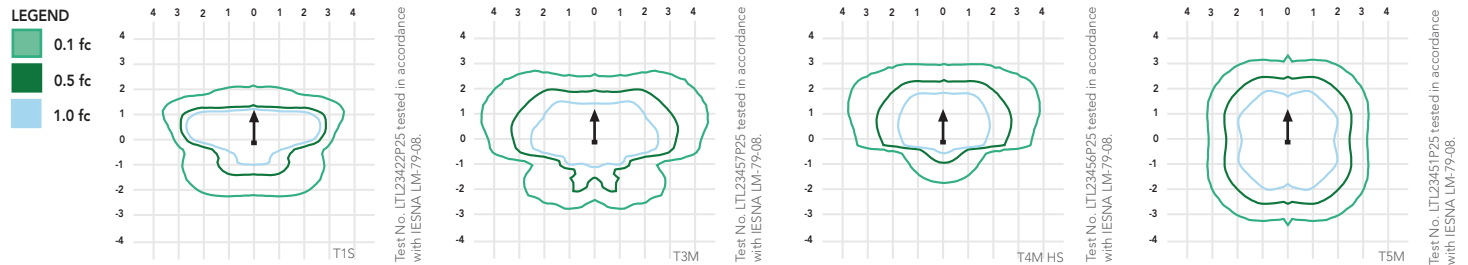
Tenon O.D.	Single Unit	2 at 180°	2 at 90°	3 at 120°	3 at 90°	4 at 90°
2-3/8"	AST20-190	AST20-280	AST20-290	AST20-320	AST20-390	AST20-490
2-7/8"	AST25-190	AST25-280	AST25-290	AST25-320	AST25-390	AST25-490
4"	AST35-190	AST35-280	AST35-290	AST35-320	AST35-390	AST35-490

TYPE T2/T2H

Photometric Diagrams

To see complete photometric reports or download .ies files for this product, visit Lithonia Lighting's [D-Series Area homepage](#).

Isfootcandle plots for the DSX0 LED 40C 1000 40K. Distances are in units of mounting height (20').



Performance Data

Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

Ambient		Lumen Multiplier
0°C	32°F	1.02
10°C	50°F	1.01
20°C	68°F	1.00
25°C	77°F	1.00
30°C	86°F	1.00
40°C	104°F	0.99

Electrical Load

Number of LEDs	Drive Current (mA)	System Watts	Current (A)					
			120	208	240	277	347	480
20C	530	35	0.34	0.22	0.21	0.20	--	--
	700	45	0.47	0.28	0.24	0.22	0.18	0.14
	1000	72	0.76	0.45	0.39	0.36	0.36	0.26
30C	530	52	0.51	0.31	0.28	0.25	--	--
	700	70	0.72	0.43	0.37	0.34	0.25	0.19
	1000	104	1.11	0.64	0.56	0.49	0.47	0.34
40C	530	68	0.71	0.41	0.36	0.33	0.25	0.19
	700	91	0.94	0.55	0.48	0.42	0.33	0.24
	1000	138	1.45	0.84	0.73	0.64	0.69	0.50

Projected LED Lumen Maintenance

Data references the extrapolated performance projections for the platforms noted in a **25°C ambient**, based on 10,000 hours of LED testing (tested per IESNA LM-80-08 and projected per IESNA TM-21-11).

To calculate LLF, use the lumen maintenance factor that corresponds to the desired number of operating hours below. For other lumen maintenance values, contact factory.

Operating Hours	0	25,000	50,000	100,000
Lumen Maintenance Factor	DSX0 LED 20C 1000			
	1	0.97	0.94	0.90
	DSX0 LED 40C 1000			
	1	0.94	0.90	0.84
	DSX0 LED 40C 700			
	1	0.99	0.98	0.96

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

Forward Optics

LEDs	Drive Current (mA)	System Watts	Dist. Type	30K (3000 K, 70 CRI)					40K (4000 K, 70 CRI)					50K (5000 K, 70 CRI)					AMBPC (Amber Phosphor Converted)				
				Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
20C (20 LEDs)	530 mA	35 W	T1S	3,174	1	0	1	91	3,971	1	0	1	113	4,001	1	0	1	114	2,541	1	0	1	73
			T2S	3,234	1	0	1	92	4,045	1	0	1	116	4,075	1	0	1	116	2,589	1	0	1	74
			T2M	3,171	1	0	1	91	3,967	1	0	1	113	3,997	1	0	1	114	2,539	1	0	1	73
			T3S	3,195	1	0	1	91	3,997	1	0	1	114	4,027	1	0	1	115	2,558	1	0	1	73
			T3M	3,226	1	0	1	92	4,036	1	0	1	115	4,066	1	0	1	116	2,583	1	0	1	74
			T4M	3,210	1	0	1	92	4,015	1	0	1	115	4,045	1	0	1	116	2,570	1	0	1	73
			TFTM	3,173	1	0	1	91	3,969	1	0	2	113	3,999	1	0	2	114	2,540	1	0	1	73
			TSVS	3,310	2	0	0	95	4,140	2	0	0	118	4,172	2	0	0	119	2,650	1	0	0	76
			TSS	3,360	2	0	2	96	4,203	2	0	0	120	4,235	2	0	0	121	2,690	1	0	0	77
			TSM	3,320	2	0	1	95	4,153	3	0	1	119	4,184	3	0	1	120	2,658	2	0	0	76
			TSW	3,327	3	0	1	95	4,161	3	0	1	119	4,193	3	0	1	120	2,663	2	0	1	76
			T1S	3,927	1	0	1	87	4,913	1	0	1	109	4,950	1	0	1	110	3,144	1	0	1	70
	T2S	4,000	1	0	1	89	5,004	1	0	1	111	5,042	1	0	1	112	3,203	1	0	1	71		
	T2M	3,924	1	0	1	87	4,908	1	0	1	109	4,945	1	0	1	110	3,141	1	0	1	70		
	T3S	3,953	1	0	1	88	4,945	1	0	1	110	4,982	1	0	1	111	3,165	1	0	1	70		
	T3M	3,991	1	0	1	89	4,994	1	0	2	111	5,031	1	0	2	112	3,196	1	0	1	71		
	T4M	3,971	1	0	1	88	4,967	1	0	2	110	5,005	1	0	2	111	3,179	1	0	1	71		
	TFTM	3,925	1	0	2	87	4,910	1	0	2	109	4,947	1	0	2	110	3,143	1	0	1	70		
	TSVS	4,095	2	0	0	91	5,122	2	0	0	114	5,161	2	0	0	115	3,278	2	0	0	73		
	TSS	4,157	2	0	0	92	5,200	2	0	0	116	5,239	2	0	0	116	3,328	2	0	0	74		
	TSM	4,107	3	0	1	91	5,138	3	0	1	114	5,177	3	0	1	115	3,288	2	0	1	73		
	TSW	4,116	3	0	1	91	5,148	3	0	1	114	5,187	3	0	1	115	3,295	2	0	1	73		
	700 mA	45 W	T1S	5,387	1	0	1	75	6,739	2	0	2	94	6,790	2	0	2	94					
			T2S	5,488	1	0	1	76	6,865	2	0	2	95	6,917	2	0	2	96					
			T2M	5,382	1	0	2	75	6,733	2	0	2	94	6,784	2	0	2	94					
			T3S	5,423	1	0	1	75	6,784	2	0	2	94	6,835	2	0	2	95					
			T3M	5,475	1	0	2	76	6,850	2	0	2	95	6,901	2	0	2	96					
			T4M	5,447	1	0	2	76	6,814	2	0	2	95	6,866	2	0	2	95					
			TFTM	5,385	1	0	2	75	6,736	1	0	2	94	6,787	1	0	2	94					
			TSVS	5,617	2	0	0	78	7,027	3	0	0	98	7,080	3	0	0	98					
			TSS	5,702	2	0	0	79	7,133	2	0	0	99	7,187	2	0	0	100					
			TSM	5,634	3	0	1	78	7,048	3	0	1	98	7,101	3	0	1	99					
			TSW	5,646	3	0	1	78	7,063	3	0	2	98	7,116	3	0	2	99					
T1S			6,093	2	0	2	90	7,622	2	0	2	112	7,679	2	0	2	113	4,878					
T2S	6,207	2	0	2	91	7,764	2	0	2	114	7,823	2	0	2	115	4,969	1	0	1	73			
T2M	6,087	2	0	2	90	7,615	2	0	2	112	7,672	2	0	2	113	4,874	1	0	1	72			
T3S	6,133	1	0	2	90	7,672	2	0	2	113	7,730	2	0	2	114	4,910	1	0	1	72			
T3M	6,193	2	0	2	91	7,747	2	0	2	114	7,805	2	0	2	115	4,958	1	0	2	73			
T4M	6,161	1	0	2	91	7,707	2	0	2	113	7,765	2	0	2	114	4,932	1	0	2	73			
TFTM	6,090	1	0	2	90	7,618	2	0	2	112	7,676	2	0	2	113	4,876	1	0	2	72			
TSVS	6,353	2	0	0	93	7,947	3	0	0	117	8,007	3	0	0	118	5,086	2	0	0	75			
TSS	6,449	2	0	0	95	8,068	3	0	1	119	8,128	3	0	1	120	5,163	2	0	0	76			
TSM	6,372	3	0	1	94	7,971	3	0	2	117	8,031	3	0	2	118	5,102	3	0	1	75			
TSW	6,385	3	0	2	94	7,988	3	0	2	117	8,048	3	0	2	118	5,112	3	0	1	75			
700 mA	91 W	T1S	7,752	2	0	2	85	9,697	2	0	2	107	9,770	2	0	2	107	6,206	2	0	2	68	
		T2S	7,897	2	0	2	87	9,878	2	0	2	109	9,953	2	0	2	109	6,322	2	0	2	69	
		T2M	7,745	2	0	2	85	9,688	2	0	2	106	9,761	2	0	2	107	6,201	2	0	2	68	
		T3S	7,803	2	0	2	86	9,761	2	0	2	107	9,834	2	0	2	108	6,247	1	0	2	69	
		T3M	7,879	2	0	2	87	9,856	2	0	2	108	9,930	2	0	2	109	6,308	2	0	2	69	
		T4M	7,838	2	0	2	86	9,805	2	0	2	108	9,879	2	0	2	109	6,275	1	0	2	69	
		TFTM	7,748	2	0	2	85	9,693	2	0	3	107	9,765	2	0	3	107	6,203	1	0	2	68	
		TSVS	8,083	3	0	0	89	10,111	3	0	1	111	10,187	3	0	1	112	6,569	2	0	0	72	
		TSS	8,205	3	0	1	90	10,264	3	0	1	113	10,341	3	0	1	114	6,569	2	0	0	72	
		TSM	8,107	3	0	2	89	10,142	3	0	2	111	10,218	3	0	2	112	6,491	3	0	1	71	
		TSW	8,124	3	0	2	89	10,163	4	0	2	112	10,239	4	0	2	113	6,504	3	0	2	71	
		T1S	10,435	2	0	2	76	13,054	3	0	3	95	13,152	3	0	3	95						
T2S	10,630	2	0	2	77	13,297	3	0	3	96	13,398	3	0	3	97								
T2M	10,426	2	0	2	76	13,042	3	0	3	95	13,140	3	0	3	95								
T3S	10,503	2	0	2	76	13,139	2	0	2	95	13,238	2	0	2	96								
T3M	10,606	2	0	2	77	13,267	3	0	3	96	13,367	3	0	3	97								
T4M	10,551	2	0	2	76	13,199	3	0	3	96	13,298	3	0	3	96								
TFTM	10,430	2	0	3	76	13,047	2	0	3	95	13,146	2	0	3	95								
TSVS	10,881	3	0	1	79	13,611	3	0	1	99	13,714	4	0	1	99								
TSS	11,045	3	0	1	80	13,817	3	0	1	100	13,921	3	0	1	101								
TSM	10,914	4	0	2	79	13,652	4	0	2	99	13,755	4	0	2	100								
TSW	10,936	4	0	2	79	13,680	4	0	2	99	13,783	4	0	2	100								

L90 and R90 Rotated Optics

LEDs	Drive Current (mA)	System Watts	Dist. Type	30K (3000 K, 70 CRI)					40K (4000 K, 70 CRI)					50K (5000 K, 70 CRI)					AMBPC (Amber Phosphor Converted)				
				Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
30C (30 LEDs)	530 mA	52 W	T1S	4,797	2	0	2	92	6,001	2	0	2	115	6,046	2	0	2	116	3,841	2	0	2	74
			T2S	4,887	2	0	2	94	6,113	2	0	2	118	6,159	3	0	3	118	3,912	2	0	2	75
			T2M	4,793	2	0	2	92	5,996	3	0	3	115	6,041	3	0	3	116	3,837	2	0	2	74
			T3S	4,829	2	0	2	93	6,041	3	0	3	116	6,086	3	0	3	117	3,866	2	0	2	74
			T3M	4,876	3	0	3	94	6,099	3	0	3	117	6,145	3	0	3	118	3,904	2	0	2	75
			T4M	4,851	3	0	3	93	6,068	3	0	3	117	6,114	3	0	3	118	3,884	2	0	2	75
			TFTM	4,795	3	0	3	92	5,998	3	0	3	115	6,043	3	0	3	116	3,839	2	0	2	74
			TSVS	5,002	2	0	0	96	6,258	2	0	0	120	6,305	2	0	0	121	4,005	2	0	0	77
			TSS	5,078	2	0	0	98	6,352	2	0	0	122	6,400	2	0	0	123	4,065	2	0	0	78
			TSM	5,017	3	0	1	96	6,276	3	0	1	121	6,324	3	0	1	122	4,017	2	0	1	77
			TSW	5,028	3	0	1	97	6,289	3	0	2	121	6,337	3	0	2	122	4,025	3	0	1	77
			T1S	5,975	2	0	2	85	7,474	3	0	3	107	7,530	3	0	3	108	4,783	2	0	2	68
	700 mA	70 W	T2S	6,086	2	0	2	87	7,614	3	0	3	109	7,671	3	0	3	110	4,873	2	0	2	70
			T2M	5,969	3	0	3	85	7,467	3	0	3	107	7,524	3	0	3	107	4,779	2	0	2	68
			T3S	6,014	3	0	3	86	7,523	3	0	3	107	7,580	3	0	3	108	4,815	2	0	2	69
			T3M	6,072	3	0	3	87	7,596	3	0	3	109	7,654	3	0	3	109	4,862	3	0	3	69
			T4M	6,041	3	0	3	86	7,557	3	0	3	108	7,614	3	0	3	109	4,837	3	0	3	69
			TFTM	5,972	3	0	3	85	7,471	3	0	3	107	7,527	3	0	3	108	4,781	3	0	3	68
			TSVS	6,230	2	0	0	89	7,793	3	0	0	111	7,852	3	0	0	112	4,988	2	0	0	71
			TSS	6,324	2	0	0	90	7,911	3	0	1	113	7,971	3	0	1	114	5,063	2	0	0	72
			TSM	6,249	3	0	1	89	7,817	3	0	2	112	7,876	3	0	2	113	5,003	3	0	1	71
			TSW	6,262	3	0	2	89	7,833	3	0	2	112	7,892	3	0	2	113	5,013	3	0	1	72
	1000 mA	104 W	T1S	7,956	3	0	3	76	9,952	3	0	3	96	10,027	3	0	3	96					
			T2S	8,104	3	0	3	78	10,138	3	0	3	97	10,214	3	0	3	98					
			T2M	7,949	3	0	3	76	9,943	3	0	3	96	10,018	3	0	3	96					
			T3S	8,008	3	0	3	77	10,018	3	0	3	96	10,093	3	0	3	97					
			T3M	8,086	3	0	3	78	10,115	4	0	4	97	10,191	4	0	4	98					
			T4M	8,044	3	0	3	77	10,063	3	0	3	97	10,139	3	0	3	97					
			TFTM	7,952	3	0	3	76	9,948	3	0	3	96	10,022	4	0	4	96					
			TSVS	8,296	3	0	0	80	10,377	3	0	1	100	10,455	3	0	1	101					
			TSS	8,421	3	0	1	81	10,534	3	0	1	101	10,613	3	0	1	102					
			TSM	8,321	3	0	2	80	10,409	4	0	2	100	10,487	4	0	2	101					
			TSW	8,338	4	0	2	80	10,430	4	0	2	100	10,509	4	0	2	101					

FEATURES & SPECIFICATIONS

INTENDED USE

The sleek design of the D-Series Size 0 reflects the embedded high performance LED technology. It is ideal for many commercial and municipal applications, such as parking lots, plazas, campuses, and streetscapes.

CONSTRUCTION

Single-piece die-cast aluminum housing has integral heat sink fins to optimize thermal management through conductive and convective cooling. Modular design allows for ease of maintenance and future light engine upgrades. The LED driver is mounted in direct contact with the casting to promote low operating temperature and long life. Housing is completely sealed against moisture and environmental contaminants (IP65). Low EPA (0.8 ft³) for optimized pole wind loading.

FINISH

Exterior parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering. A tightly controlled multi-stage process ensures a minimum 3 mils thickness for a finish that can withstand extreme climate changes without cracking or peeling. Available in both textured and non-textured finishes.

OPTICS

Precision-molded proprietary acrylic lenses are engineered for superior area lighting distribution, uniformity, and pole spacing. Light engines are available in standard 4000 K (70 minimum CRI) or optional 3000 K (80 minimum CRI) or 5000 K (70 CRI) configurations. The D-Series Size 0 has zero uplight and qualifies as a Nighttime Friendly™ product, meaning it is consistent with the LEED® and Green Globes™ criteria for eliminating wasteful uplight.

ELECTRICAL

Light engine(s) configurations consist of high-efficacy LEDs mounted to metal-core circuit boards to maximize heat dissipation and promote long life (up to L96/100,000 hours at 25°C). Class 1 electronic drivers are designed to have a power factor >90%, THD <20%, and an expected life of

100,000 hours with <1% failure rate. Easily serviceable 10kV or 6kV surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).

INSTALLATION

Included mounting block and integral arm facilitate quick and easy installation. Stainless steel bolts fasten the mounting block securely to poles and walls, enabling the D-Series Size 0 to withstand up to a 3.0 G vibration load rating per ANSI C136.31. The D-Series Size 0 utilizes the AERIS™ series pole drilling pattern. Optional terminal block, tool-less entry, and NEMA photocontrol receptacle are also available.

LISTINGS

UL Listed for wet locations. Light engines are IP66 rated; luminaire is IP65 rated. Rated for -40°C minimum ambient. U.S. Patent No. D672,492 S. International patent pending.

DesignLights Consortium® (DLC) qualified product. Not all versions of this product may be DLC qualified. Please check the DLC Qualified Products List at www.designlights.org to confirm which versions are qualified.

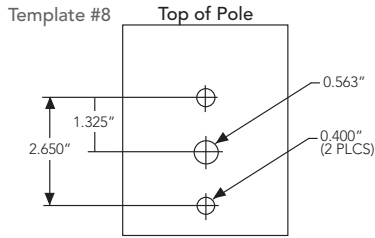
WARRANTY

Five-year limited warranty. Full warranty terms located at: www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx

Note: Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.



Drilling



DSX0 shares a unique drilling pattern with the AERIS™ family. Specify this drilling pattern when specifying poles, per the table below.

DM19AS	Single unit	DM29AS	2 at 90° *
DM28AS	2 at 180°	DM39AS	3 at 90° *
DM49AS	4 at 90° *	DM32AS	3 at 120° **

Example: SSA 20 4C DM19AS DDBXD

Visit Lithonia Lighting's [POLES CENTRAL](#) to see our wide selection of poles, accessories and educational tools.

*Round pole top must be 3.25" O.D. minimum.

**For round pole mounting (RPA) only.

Tenon Mounting Slipfitter**

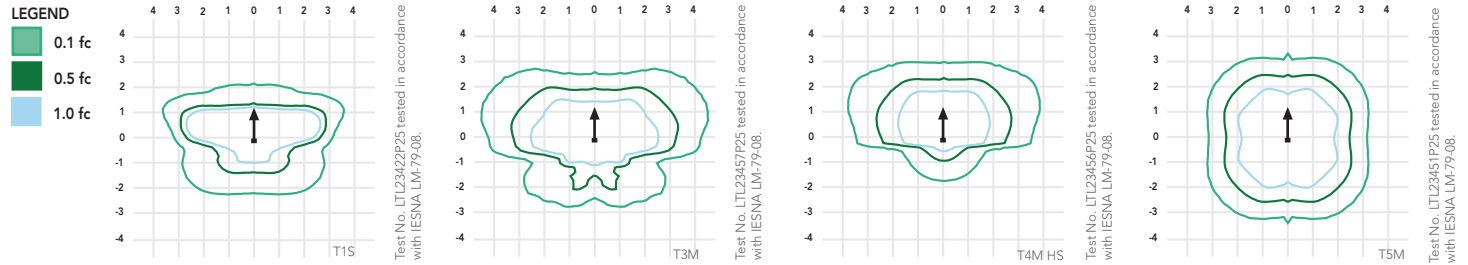
Tenon O.D.	Single Unit	2 at 180°	2 at 90°	3 at 120°	3 at 90°	4 at 90°
2-3/8"	AST20-190	AST20-280	AST20-290	AST20-320	AST20-390	AST20-490
2-7/8"	AST25-190	AST25-280	AST25-290	AST25-320	AST25-390	AST25-490
4"	AST35-190	AST35-280	AST35-290	AST35-320	AST35-390	AST35-490

TYPE T3

Photometric Diagrams

To see complete photometric reports or download .ies files for this product, visit [Lithonia Lighting's D-Series Area homepage](#).

Isfootcandle plots for the DSX0 LED 40C 1000 40K. Distances are in units of mounting height (20').



Performance Data

Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

Ambient	Lumen Multiplier
0°C	1.02
10°C	1.01
20°C	1.00
25°C	1.00
30°C	1.00
40°C	0.99

Electrical Load

Number of LEDs	Drive Current (mA)	System Watts	Current (A)					
			120	208	240	277	347	480
20C	530	35	0.34	0.22	0.21	0.20	--	--
	700	45	0.47	0.28	0.24	0.22	0.18	0.14
	1000	72	0.76	0.45	0.39	0.36	0.36	0.26
30C	530	52	0.51	0.31	0.28	0.25	--	--
	700	70	0.72	0.43	0.37	0.34	0.25	0.19
	1000	104	1.11	0.64	0.56	0.49	0.47	0.34
40C	530	68	0.71	0.41	0.36	0.33	0.25	0.19
	700	91	0.94	0.55	0.48	0.42	0.33	0.24
	1000	138	1.45	0.84	0.73	0.64	0.69	0.50

Projected LED Lumen Maintenance

Data references the extrapolated performance projections for the platforms noted in a 25°C ambient, based on 10,000 hours of LED testing (tested per IESNA LM-80-08 and projected per IESNA TM-21-11).

To calculate LLF, use the lumen maintenance factor that corresponds to the desired number of operating hours below. For other lumen maintenance values, contact factory.

Operating Hours	0	25,000	50,000	100,000
Lumen Maintenance Factor				



Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

Forward Optics

LEDs	Drive Current (mA)	System Watts	Dist. Type	30K (3000 K, 70 CRI)					40K (4000 K, 70 CRI)					50K (5000 K, 70 CRI)					AMBPC (Amber Phosphor Converted)				
				Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
20C (20 LEDs)	530 mA	35 W	T1S	3,174	1	0	1	91	3,971	1	0	1	113	4,001	1	0	1	114	2,541	1	0	1	73
			T2S	3,234	1	0	1	92	4,045	1	0	1	116	4,075	1	0	1	116	2,589	1	0	1	74
			T2M	3,171	1	0	1	91	3,967	1	0	1	113	3,997	1	0	1	114	2,539	1	0	1	73
			T3S	3,195	1	0	1	91	3,997	1	0	1	114	4,027	1	0	1	115	2,558	1	0	1	73
			T3M	3,226	1	0	1	92	4,036	1	0	1	115	4,066	1	0	1	116	2,583	1	0	1	74
			T4M	3,210	1	0	1	92	4,015	1	0	1	115	4,045	1	0	1	116	2,570	1	0	1	73
			TFTM	3,173	1	0	1	91	3,969	1	0	2	113	3,999	1	0	2	114	2,540	1	0	1	73
			TSVS	3,310	2	0	0	95	4,140	2	0	0	118	4,172	2	0	0	119	2,650	1	0	0	76
			TSS	3,360	2	0	2	96	4,203	2	0	0	120	4,235	2	0	0	121	2,690	1	0	0	77
			TSM	3,320	2	0	1	95	4,153	3	0	1	119	4,184	3	0	1	120	2,658	2	0	0	76
			TSW	3,327	3	0	1	95	4,161	3	0	1	119	4,193	3	0	1	120	2,663	2	0	1	76
			T1S	3,927	1	0	1	87	4,913	1	0	1	109	4,950	1	0	1	110	3,144	1	0	1	70
	700 mA	45 W	T2S	4,000	1	0	1	89	5,004	1	0	1	111	5,042	1	0	1	112	3,203	1	0	1	71
			T2M	3,924	1	0	1	87	4,908	1	0	1	109	4,945	1	0	1	110	3,141	1	0	1	70
			T3S	3,953	1	0	1	88	4,945	1	0	1	110	4,982	1	0	1	111	3,165	1	0	1	70
			T3M	3,991	1	0	1	89	4,994	1	0	2	111	5,031	1	0	2	112	3,196	1	0	1	71
			T4M	3,971	1	0	1	88	4,967	1	0	2	110	5,005	1	0	2	111	3,179	1	0	1	71
			TFTM	3,925	1	0	2	87	4,910	1	0	2	109	4,947	1	0	2	110	3,143	1	0	1	70
			TSVS	4,095	2	0	0	91	5,122	2	0	0	114	5,161	2	0	0	115	3,278	2	0	0	73
			TSS	4,157	2	0	0	92	5,200	2	0	0	116	5,239	2	0	0	116	3,328	2	0	0	74
			TSM	4,107	3	0	1	91	5,138	3	0	1	114	5,177	3	0	1	115	3,288	2	0	1	73
			TSW	4,116	3	0	1	91	5,148	3	0	1	114	5,187	3	0	1	115	3,295	2	0	1	73
	1000 mA	72 W	T1S	5,387	1	0	1	75	6,739	2	0	2	94	6,790	2	0	2	94					
			T2S	5,488	1	0	1	76	6,865	2	0	2	95	6,917	2	0	2	96					
			T2M	5,382	1	0	2	75	6,733	2	0	2	94	6,784	2	0	2	94					
			T3S	5,423	1	0	1	75	6,784	2	0	2	94	6,835	2	0	2	95					
			T3M	5,475	1	0	2	76	6,850	2	0	2	95	6,901	2	0	2	96					
			T4M	5,447	1	0	2	76	6,814	2	0	2	95	6,866	2	0	2	95					
			TFTM	5,385	1	0	2	75	6,736	1	0	2	94	6,787	1	0	2	94					
			TSVS	5,617	2	0	0	78	7,027	3	0	0	98	7,080	3	0	0	98					
			TSS	5,702	2	0	0	79	7,133	2	0	0	99	7,187	2	0	0	100					
			TSM	5,634	3	0	1	78	7,048	3	0	1	98	7,101	3	0	1	99					
			TSW	5,646	3	0	1	78	7,063	3	0	1	98	7,116	3	0	1	99					
40C (40 LEDs)	530 mA	68 W	T1S	6,093	2	0	2	90	7,622	2	0	2	112	7,679	2	0	2	113	4,878	1	0	1	72
			T2S	6,207	2	0	2	91	7,764	2	0	2	114	7,823	2	0	2	115	4,969	1	0	1	73
			T2M	6,087	2	0	2	90	7,615	2	0	2	112	7,672	2	0	2	113	4,874	1	0	1	72
			T3S	6,133	1	0	2	90	7,672	2	0	2	113	7,730	2	0	2	114	4,910	1	0	1	72
			T3M	6,193	2	0	2	91	7,747	2	0	2	114	7,805	2	0	2	115	4,958	1	0	2	73
			T4M	6,161	1	0	2	91	7,707	2	0	2	113	7,765	2	0	2	114	4,932	1	0	2	73
			TFTM	6,090	1	0	2	90	7,618	2	0	2	112	7,676	2	0	2	113	4,876	1	0	2	72
			TSVS	6,353	2	0	0	93	7,947	3	0	0	117	8,007	3	0	0	118	5,086	2	0	0	75
			TSS	6,449	2	0	0	95	8,068	3	0	1	119	8,128	3	0	1	120	5,163	2	0	0	76
			TSM	6,372	3	0	1	94	7,971	3	0	2	117	8,031	3	0	2	118	5,102	3	0	1	75
			TSW	6,385	3	0	2	94	7,988	3	0	2	117	8,048	3	0	2	118	5,112	3	0	1	75
	700 mA	91 W	T1S	7,752	2	0	2	85	9,697	2	0	2	107	9,770	2	0	2	107	6,206	2	0	2	68
			T2S	7,897	2	0	2	87	9,878	2	0	2	109	9,953	2	0	2	109	6,322	2	0	2	69
			T2M	7,745	2	0	2	85	9,688	2	0	2	106	9,761	2	0	2	107	6,201	2	0	2	68
			T3S	7,803	2	0	2	86	9,761	2	0	2	107	9,834	2	0	2	108	6,247	1	0	2	69
			T3M	7,879	2	0	2	87	9,856	2	0	2	108	9,930	2	0	2	109	6,308	2	0	2	69
			T4M	7,838	2	0	2	86	9,805	2	0	2	108	9,879	2	0	2	109	6,275	1	0	2	69
			TFTM	7,748	2	0	2	85	9,693	2	0	3	107	9,765	2	0	3	107	6,203	1	0	2	68
			TSVS	8,083	3	0	0	89	10,111	3	0	1	111	10,187	3	0	1	112	6,569	2	0	0	72
			TSS	8,205	3	0	1	90	10,264	3	0	1	113	10,341	3	0	1	114	6,569	2	0	0	72
			TSM	8,107	3	0	2	89	10,142	3	0	2	111	10,218	3	0	2	112	6,491	3	0	1	71
			TSW	8,124	3	0	2	89	10,163	4	0	2	112	10,239	4	0	2	113	6,504	3	0	2	71
	1000 mA	138 W	T1S	10,435	2	0	2	76	13,054	3	0	3	95	13,152	3	0	3	95					
			T2S	10,630	2	0	2	77	13,297	3	0	3	96	13,398	3	0	3	96					
			T2M	10,426	2	0	2	76	13,042	3	0	3	95	13,140	3	0	3	95					
			T3S	10,503	2	0	2	76	13,139	2	0	2	95	13,238	2	0	2	96					
			T3M	10,606	2	0	2	77	13,267	3	0	3	96	13,367	3	0	3	96					
			T4M	10,551	2	0	2	76	13,199	3	0	3	96	13,298	3	0	3	96					
			TFTM	10,430	2	0	3	76	13,047	2	0	3	95	13,146	2	0	3	95					
			TSVS	10,881	3	0	1	79	13,611	3	0	1	99	13,714	4	0	1	99					
			TSS	11,045	3	0	1	80	13,817	3	0	1	100	13,921	3	0	1	101					
			TSM	10,914	4	0	2	79	13,652	4	0	2	99	13,755	4	0	2	100					
			TSW	10,936	4	0	2	79	13,680	4	0	2	99	13,783	4	0	2	100					

L90 and R90 Rotated Optics

LEDs	Drive Current (mA)	System Watts	Dist. Type	30K (3000 K, 70 CRI)					40K (4000 K, 70 CRI)					50K (5000 K, 70 CRI)					AMBPC (Amber Phosphor Converted)				
				Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
30C (30 LEDs)	530 mA	52 W	T1S	4,797	2	0	2	92	6,001	2	0	2	115	6,046	2	0	2	116	3,841	2	0	2	74
			T2S	4,887	2	0	2	94	6,113	2	0	2	118	6,159	3	0	3	118	3,912	2	0	2	75
			T2M	4,793	2	0	2	92	5,996	3	0	3	115	6,041	3	0	3	116	3,837	2	0	2	74
			T3S	4,829	2	0	2	93	6,041	3	0	3	116	6,086	3	0	3	117	3,866	2	0	2	74
			T3M	4,876	3	0	3	94	6,099	3	0	3	117	6,145	3	0	3	118	3,904	2	0	2	75
			T4M	4,851	3	0	3	93	6,068	3	0	3	117	6,114	3	0	3	118	3,884	2	0	2	75
			TFTM	4,795	3	0	3	92	5,998	3	0	3	115	6,043	3	0	3	116	3,839	2	0	2	74
			TSVS	5,002	2	0	0	96	6,258	2	0	0	120	6,305	2	0	0	121	4,005	2	0	0	77
			TSS	5,078	2	0	0	98	6,352	2	0	0	122	6,400	2	0	0	123	4,065	2	0	0	78
			TSM	5,017	3	0	1	96	6,276	3	0	1	121	6,324	3	0	1	122	4,017	2	0	1	77
			TSW	5,028	3	0	1	97	6,289	3	0	2	121	6,337	3	0	2	122	4,025	3	0	1	77
			T1S	5,975	2	0	2	85	7,474	3	0	3	107	7,530	3	0	3	108	4,783	2	0	2	68
	700 mA	70 W	T2S	6,086	2	0	2	87	7,614	3	0	3	109	7,671	3	0	3	110	4,873	2	0	2	70
			T2M	5,969	3	0	3	85	7,467	3	0	3	107	7,524	3	0	3	107	4,779	2	0	2	68
			T3S	6,014	3	0	3	86	7,523	3	0	3	107	7,580	3	0	3	108	4,815	2	0	2	69
			T3M	6,072	3	0	3	87	7,596	3	0	3	109	7,654	3	0	3	109	4,862	3	0	3	69
			T4M	6,041	3	0	3	86	7,557	3	0	3	108	7,614	3	0	3	109	4,837	3	0	3	69
			TFTM	5,972	3	0	3	85	7,471	3	0	3	107	7,527	3	0	3	108	4,781	3	0	3	68
			TSVS	6,230	2	0	0	89	7,793	3	0	0	111	7,852	3	0	0	112	4,988	2	0	0	71
			TSS	6,324	2	0	0	90	7,911	3	0	1	113	7,971	3	0	1	114	5,063	2	0	0	72
			TSM	6,249	3	0	1	89	7,817	3	0	2	112	7,876	3	0	2	113	5,003	3	0	1	71
			TSW	6,262	3	0	2	89	7,833	3	0	2	112	7,892	3	0	2	113	5,013	3	0	1	72
	1000 mA	104 W	T1S	7,956	3	0	3	76	9,952	3	0	3	96	10,027	3	0	3	96					
			T2S	8,104	3	0	3	78	10,138	3	0	3	97	10,214	3	0	3	98					
			T2M	7,949	3	0	3	76	9,943	3	0	3	96	10,018	3	0	3	96					
			T3S	8,008	3	0	3	77	10,018	3	0	3	96	10,093	3	0	3	97					
			T3M	8,086	3	0	3	78	10,115	4	0	4	97	10,191	4	0	4	98					
			T4M	8,044	3	0	3	77	10,063	3	0	3	97	10,139	3	0	3	97					
			TFTM	7,952	3	0	3	76	9,948	3	0	3	96	10,022	4	0	4	96					
			TSVS	8,296	3	0	0	80	10,377	3	0	1	100	10,455	3	0	1	101					
			TSS	8,421	3	0	1	81	10,534	3	0	1	101	10,613	3	0	1	102					
			TSM	8,321	3	0	2	80	10,409	4	0	2	100	10,487	4	0	2	101					
			TSW	8,338	4	0	2	80	10,430	4	0	2	100	10,509	4	0	2	101					

FEATURES & SPECIFICATIONS

INTENDED USE

The sleek design of the D-Series Size 0 reflects the embedded high performance LED technology. It is ideal for many commercial and municipal applications, such as parking lots, plazas, campuses, and streetscapes.

CONSTRUCTION

Single-piece die-cast aluminum housing has integral heat sink fins to optimize thermal management through conductive and convective cooling. Modular design allows for ease of maintenance and future light engine upgrades. The LED driver is mounted in direct contact with the casting to promote low operating temperature and long life. Housing is completely sealed against moisture and environmental contaminants (IP65). Low EPA (0.8 ft²) for optimized pole wind loading.

FINISH

Exterior parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering. A tightly controlled multi-stage process ensures a minimum 3 mils thickness for a finish that can withstand extreme climate changes without cracking or peeling. Available in both textured and non-textured finishes.

OPTICS

Precision-molded proprietary acrylic lenses are engineered for superior area lighting distribution, uniformity, and pole spacing. Light engines are available in standard 4000 K (70 minimum CRI) or optional 3000 K (80 minimum CRI) or 5000 K (70 CRI) configurations. The D-Series Size 0 has zero uplight and qualifies as a Nighttime Friendly™ product, meaning it is consistent with the LEED® and Green Globes™ criteria for eliminating wasteful uplight.

ELECTRICAL

Light engine(s) configurations consist of high-efficacy LEDs mounted to metal-core circuit boards to maximize heat dissipation and promote long life (up to L96/100,000 hours at 25°C). Class 1 electronic drivers are designed to have a power factor >90%, THD <20%, and an expected life of

100,000 hours with <1% failure rate. Easily serviceable 10kV or 6kV surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).

INSTALLATION

Included mounting block and integral arm facilitate quick and easy installation. Stainless steel bolts fasten the mounting block securely to poles and walls, enabling the D-Series Size 0 to withstand up to a 3.0 G vibration load rating per ANSI C136.31. The D-Series Size 0 utilizes the AERIS™ series pole drilling pattern. Optional terminal block, tool-less entry, and NEMA photocontrol receptacle are also available.

LISTINGS

UL Listed for wet locations. Light engines are IP66 rated; luminaire is IP65 rated. Rated for -40°C minimum ambient. U.S. Patent No. D672,492 S. International patent pending.

DesignLights Consortium® (DLC) qualified product. Not all versions of this product may be DLC qualified. Please check the DLC Qualified Products List at www.designlights.org to confirm which versions are qualified.

WARRANTY

Five-year limited warranty. Full warranty terms located at: www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx

Note: Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.





FEATURES & SPECIFICATIONS

CONSTRUCTION

Weldable-grade, hot-rolled, commercial-quality carbon steel tubing with a minimum yield of 55,000 psi (11-gauge), 50,000 psi (7-gauge). Uniform wall thickness of .125" or .188". Shafts are one-piece with a longitudinal electric resistance weld. Uniformly square in cross-section with flat sides, small corner radii and excellent torsion. Available shaft widths are 4", 5" and 6".

Anchor base is fabricated from hot-rolled carbon steel plate that meets or exceeds a minimum yield strength of 36,000 psi. The anchor base is provided with slotted holes. Base cover is finished to match pole.

A handhole having nominal dimensions of 3" x 5" for all shafts. Included is a cover with attachment screws.

Top cap provided with all drill-mount poles.

Fasteners are high-strength galvanized zinc-plated or stainless steel.

FINISH — Dark bronze (DDB) polyester powder standard. Other architectural colors available.

GROUNDING — A nut holder located immediately inside the handhole rim is provided with a 1/2" – 13 UNC ground bolt and nut.

ANCHOR BOLTS — Top portion of anchor bolt is galvanized per ASTM A-153. Made of steel rod having a minimum yield strength of 55,000 psi.

Catalog Number	TYPE T POLE
Notes	

Anchor Base Poles

SSS

SQUARE STRAIGHT STEEL



T1/T2 - 18'
T3 - 12'

ORDERING INFORMATION

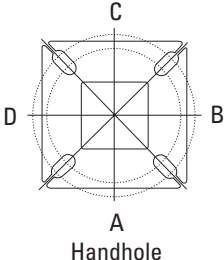
Choose the boldface catalog nomenclature that best suits your needs and write it in the appropriate blank.

Example: **SSS 20 5C DM19 DDB**

SSS

Shaft type	Nominal shaft length	Nominal shaft base size/ wall thickness	Mounting ¹	Options	
SSS	10 – 39 feet (See back page.)	(See back page.)	Tenon Mounting	Shipped Installed	Architectural Colors (powder finish) ⁷
			PT Open top	L/AB Less Anchor Bolts	
			T20 2-3/8" O.D. (2" NPS)	VD Vibration Damper	Standard Colors
			T25 2-7/8" O.D. (2-1/2" NPS)	TP Tamper Proof	DDB Dark bronze
			T30² 3-1/2" O.D. (3" NPS)	Hxx^{4,5} Horizontal Arm Bracket (1 fixture)	DWH White
			T35² 4" O.D. (3-1/2" NPS)	FDLxx⁴ Festoon Outlet less electrical	DBL Black
			Drill Mounting³	FGLxx⁴ Festoon GFI Outlet less electrical	Classic Colors
			DM19 1 at 90°	12CPxx⁴ 1/2" Coupling	DMB Medium bronze
			DM28 2 at 180°	34CPxx⁴ 3/4" Coupling	DNA Natural aluminum
			DM28PL 2 at 180° with one side plugged	1CPxx⁴ 1" Coupling	DSS Sandstone
			DM29 2 at 90°	12NPxx⁴ 1/2" Threaded Nipple	DGC Charcoal gray
			DM39 3 at 90°	34NPxx⁴ 3/4" Threaded Nipple	DTG Tennis green
			DM49 4 at 90°	1NPxx⁴ 1" Threaded Nipple	DBR Bright red
			Aeris Drill Mounting³	HHxx^{4,6} Extra Handhole	DSB Steel blue
			DM19AS 1 at 90°		GALV Galvanized finish
			DM28AS 2 at 180°		
			DM29AS 2 at 90°		
			DM39AS 3 at 90°		
			DM49AS 4 at 90°		

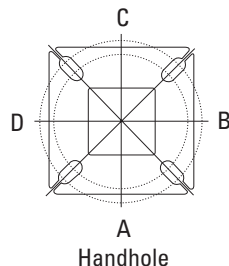
HANDHOLE ORIENTATION



NOTES:

- When ordering tenon mounting and drill mounting for the same pole, follow this example: DM28/T20. The combination requires an extra handhole.
- 3-1/2" and 4" tenons available on 5" and 6" shafts only.

HANDHOLE ORIENTATION



NOTES:

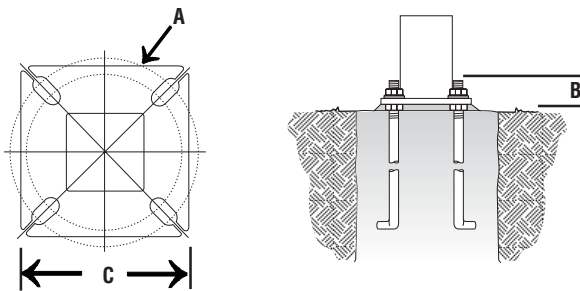
- When ordering tenon mounting and drill mounting for the same pole, follow this example: DM28/T20. The combination requires an extra handhole.
- 3-1/2" and 4" tenons available on 5" and 6" shafts only.
- The drilling template to be used for a particular luminaire depends on the luminaire that is used. Refer to the Technical Data Section of the Outdoor Binder for Drilling Templates.
- Specify location and orientation when ordering option.
For 1st "x": Specify the height in feet above base of pole.
Example: 5ft = 5 and 20ft = 20
For 2nd "x": Specify orientation from handhole (A,B,C,D)
Refer to the Handhole Orientation diagram on this page.
- Horizontal arm is 18" x 2-3/8" O.D. tenon standard.
- Combination of tenon-top and drill mount requires extra handhole.
- Additional colors available; see Architectural Colors brochure, form no. 794.3.

IMPORTANT INSTALLATION NOTES:

- Do not erect poles without having fixtures installed.
- Factory-supplied templates must be used when setting anchor bolts. Lithonia will not accept claim for incorrect anchorage placement due to failure to use factory template.
- If poles are stored outside, all protective wrapping must be removed immediately to prevent finish damage.
- Lithonia is not responsible for the foundation design.
- Installation requires grout to be packed under base to ensure full contact with foundation.

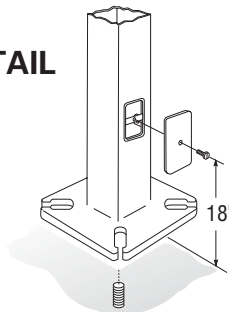
TECHNICAL INFORMATION

Catalog Number	Nominal shaft length (feet)	Pole Shaft Size(in x in x ft)	Wall Thickness (inches)	Gauge	EPA (ft²) with 1.3 gust						Bolt Circle (inches)	Bolt Size (in. x in. x in.)	Approximate ship weight (pounds)
					80 mph	Max. weight	90 mph	Max. weight	100 mph	Max. weight			
SSS 10 4C	10	4.0 x 10.0	0.125	11	30.6	765	23.8	595	18.9	473	8--9	3/4 x 18 x 3	75
SSS 12 4C	12	4.0 x 12.0	0.125	11	24.4	610	18.8	470	14.8	370	8--9	3/4 x 18 x 3	90
SSS 14 4C	14	4.0 x 14.0	0.125	11	19.9	498	15.1	378	11.7	293	8--9	3/4 x 18 x 3	100
SSS 16 4C	16	4.0 x 16.0	0.125	11	15.9	398	11.8	295	8.9	223	8--9	3/4 x 18 x 3	115
SSS 18 4C	18	4.0 x 18.0	0.125	11	12.6	315	9.2	230	6.7	168	8--9	3/4 x 18 x 3	125
SSS 20 4C	20	4.0 x 20.0	0.125	11	9.6	240	6.7	167	4.5	150	8--9	3/4 x 18 x 3	140
SSS 20 4G	20	4.0 x 20.0	0.188	7	16.5	415	12.25	310	9.3	240	8--9	3/4 x 30 x 3	198
SSS 20 5C	20	5.0 x 20.0	0.125	11	17.7	443	12.7	343	9.4	235	10--12	1 x 36 x 4	185
SSS 20 5G	20	5.0 x 20.0	0.188	7	28.1	703	21.4	535	16.2	405	10--12	1 x 36 x 4	265
SSS 25 4C	25	4.0 x 25.0	0.125	11	4.8	150	2.6	100	1.0	50	8--9	3/4 x 18 x 3	170
SSS 25 4G	25	4.0 x 25.0	0.188	7	10.8	270	7.7	188	5.4	135	8--9	3/4 x 30 x 3	245
SSS 25 5C	25	5.0 x 25.0	0.125	11	9.8	245	6.3	157	3.7	150	10--12	1 x 36 x 4	225
SSS 25 5G	25	5.0 x 25.0	0.188	7	18.0	350	12.6	350	9.0	250	10--12	1 x 36 x 4	320
SSS 30 4G	30	4.0 x 30.0	0.188	7	6.4	160	4.0	100	2.3	58	8--9	3/4 x 30 x 3	295
SSS 30 5C	30	5.0 x 30.0	0.125	11	4.7	150	2.0	50	--	--	10--12	1 x 36 x 4	265
SSS 30 5G	30	5.0 x 30.0	0.188	7	10.7	267	6.7	167	3.9	100	10--12	1 x 36 x 4	380
SSS 30 6G	30	6.0 x 30.0	0.188	7	15.7	392	10.2	257	6.4	160	11--13	1 x 36 x 4	520
SSS 35 5G	35	5.0 x 35.0	0.188	7	5.9	150	2.5	100	--	--	10--12	1 x 36 x 4	440
SSS 35 6G	35	6.0 x 35.0	0.188	7	9.5	237	5.0	150	1.8	50	11--13	1 x 36 x 4	540
SSS 39 6G	39	6.0 x 39.0	0.188	7	5.1	128	1.3	33	--	--	11--13	1 x 36 x 4	605



Shaft Base Size	Bolt Circle A	Bolt Projection B	Base Square C	Anchor Bolt Description	Warehouse Anchor Description	Template Bolt Number
4"C	8-1/2"	2-3/4"-4"	8"	ABSSS-4C	AB18-0	PJ50004
4"G	8-1/2"	2-3/4"-4"	8"	ABSSS-4G	AB30-0	PJ50004
5"	10"-12"	3-3/8"-4"	11"	ABSSS-5	AB36-0	PJ50010
6"	11"-13"	3-3/8"-4"	12-1/2"	ABSSS-6	AB36-0	PJ50011

BASE DETAIL



IMPORTANT:

• These specifications are intended for general purposes only. Lithonia reserves the right to change material or design, without prior notice, in a continuing effort to upgrade its products.



**VISTA
PROFESSIONAL
OUTDOOR
LIGHTING**

SIDEWALK BOLLARD

Type:
Model:
Project:

TYPE W

SPECIFICATION SHEET

MODEL: 1447 - 120V Series: Bollards & Beacons

FIXTURE SPECIFICATIONS:

HOUSING:

Die-cast, copper-free aluminum.

POST:

3" diameter, heavy-gauge, extruded aluminum (1/8" wall thickness).

FINISH:

Polyester powder-coat finish available in Black, Verde, Architectural Brick, Architectural Bronze, Light Bronze, Dark Bronze, Granite, Pewter, Terra-cotta, Rust, Hunter Green, Mocha, Weathered Bronze, Weathered Iron, and White.

SOCKET/LAMP HOLDER:

Compact fluorescent thermoplastic socket.

BALLAST:

High-power factor magnetic ballast rated for $\pm 32^{\circ}\text{F}$ starting, 120-volt standard.

LENS:

Clear, frosted or prismatic threaded and gasketed, tempered glass vapor globe.

LAMP TYPE:

PL- Compact Fluorescent. 22W Maximum. Ballast is integrated into fixture. Please specify ballast type from the fixture ordering information chart. Lamp not included with fixture, order separately.

MOUNTING:

Direct-burial post. (Post extended 12" for in-ground or concrete mounting.)

FASTENERS:

All fasteners are stainless steel.

WIRING:

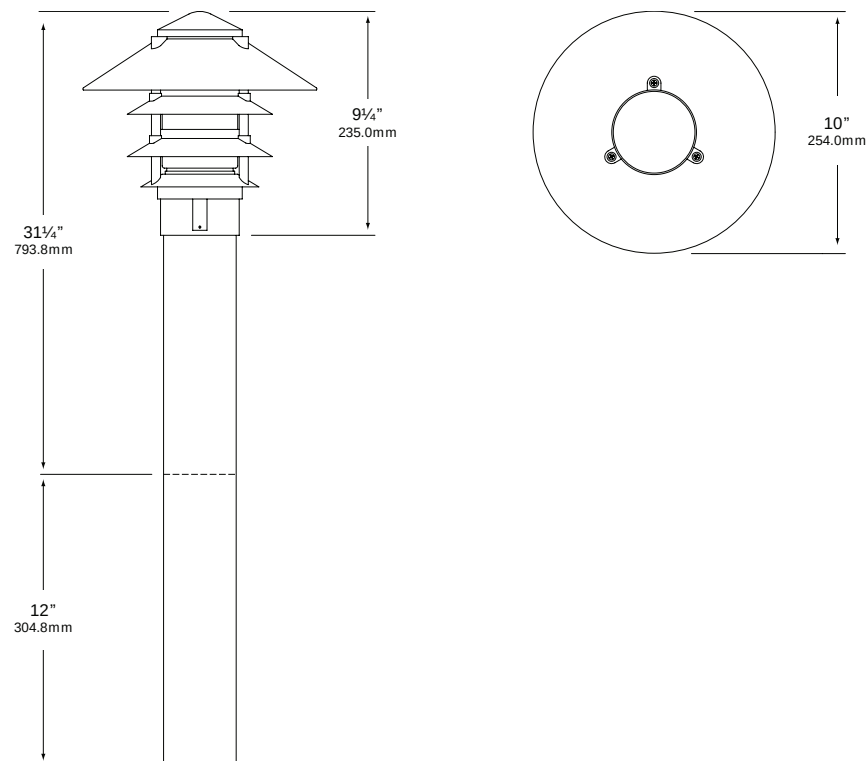
Prewired with 200°C-rated wire along with a grounded lead.

CERTIFICATION:

UL Listed to U.S. and Canadian safety standards for line voltage landscape luminaires (UL 1598). The maximum wattages allowed by Underwriters Laboratories (UL) for the U.S. and Canadian markets may vary. Maximum wattages specified are Underwriters Laboratories U.S. standard. Please contact Vista for any questions about the maximum wattages allowed by UL Canadian standards.

All Vista luminaires are **MADE IN THE U.S.A.**

DIMENSIONS:



Vista Professional Outdoor Lighting reserves the right to modify the design and/or construction of the fixture shown without further notification.

1625 Surveyor Avenue • Simi Valley, CA 93063 • (805) 527-0987 • (800) 766-VISTA (8478)
FAX: (888) 670-VISTA (8478) • email@vistapro.com • www.vistapro.com

SPECIFICATION SHEET

MODEL: 1447 - 120V Series: Bollards & Beacons

FIXTURE ORDERING INFORMATION

TO ORDER FIXTURE: Select appropriate choice from each column as in the following example

EXAMPLE: 1447-B-CR-13-120

MODEL	FINISH	LENS	INTEGRATED FLUORESCENT BALLAST	
			WATTAGE	VOLTAGE
1447	B - Black G - Verde BR - Architectural Brick Z - Architectural Bronze LZ - Light Bronze DZ - Dark Bronze GT - Granite P - Pewter TC - Terra-cotta R - Rust HG - Hunter Green M - Mocha WB - Weathered Bronze WI - Weathered Iron W - White	CR - Clear lens FR - Frosted lens PR - Prismatic lens	5 7 9 13* 22□	120 208 240 277 MT - Multi-tap

Lamp not included with fixture, order separately. For available lamps, see Lamp Guide, Vista catalog.

* - Ballast available in 120 or 277 volts only.

TYPE W1

LED COMPACT FLOODLIGHT
30-WATT LED
(E-CF3L SERIES)

Applications: Building facades, displays, uplighting and signs. Also effective as security lighting, for storage areas and commercial sites.

Typical Mounting Height: 8 to 15 feet

SIGN LIGHTING



CREE LEDs

4.75"D x 7.75"W x 6"H
Weight: 3.0 lbs.

Catalog #	Description	Input Voltage	Initial Delivered Lumens	CCT	CRI	50K Hours Projected Lumen Maintenance Factor at 25°C ¹	Comparable To:
E-CF3L03C2(*)	30W LED Cool White	120V-277V	3000	5000K	70	76,000 Hours	100W PSMH
E-CF3L03N2(*)	30W LED Neutral White	120V-277V	3000	4000K	70	76,000 Hours	100W PSMH

(*) Specify finish color. Z=Dark Bronze, W=White

¹ Calculated L₇₀ based on 6,048 hours of LM-80 testing: >36,000 hours

Performance

- Estimated 76,000 hours of maintenance-free operation to L₇₀
- Minimum starting temperature: -40°F
- 5-year limited warranty

Construction & Materials

- Durable die-cast aluminum housing
- Polyester powder coat white or dark-bronze finish for extra corrosion protection
- 1/2-inch NPS die-cast swivel fitter included
- Tempered glass lens, thermal shock and impact resistant
- Cree® LEDs inside

Electrical

- Non-dimmable
- Universal voltage (120V through 277V)

Regulatory

- UL listed for wet locations



Due to continuous product improvement, information in this document is subject to change. All published photometric testing performed to IESNA LM-79-08 standards by a NVLAP certified laboratory. Fixture photometry was completed on a single representative fixture. Actual production units may vary up to ±10% of initial delivered lumens. Lumen maintenance values at 25°C (77°F) are calculated per TM-21 based on LM-80 data and in-situ fixture testing.

1501 96th Street, Sturtevant, WI 53177 | Phone (888)243-9445 | Fax (262)504-5409 | www.e-conolight.com

TYPE W2

PREMIUM LED FLOODLIGHT - SMALL
72-WATT LED
(E-HL5F/S SERIES)

Applications: Building facades, displays, uplighting and signs. Also effective as security lighting, for storage areas and commercial sites.
Typical Mounting Height: 8 to 20 feet



CREE LEDs



6"D x 10.75"W x 12.25"H
Weight: 8.4 lbs.
 (Dimensions include fitter)

FLAG LIGHT

CHOOSE FROM TWO HIGH-QUALITY OPTICS



40° Flood

Perfect for general illumination applications like parking lots and signs.



20° Spot

Use when you need a precise, focused beam of light like accenting architecture.

Catalog #	Description	Input Voltage	Initial Delivered Lumens	Beam Angle/ Photometric Distribution	CCT	CRI	50K Hours Projected Lumen Maintenance Factor at 25°C ¹	Comparable To:
E-HL5F06C2Z	72W LED Cool white	120V-277V	6150	40° Flood	5000K	70	50,000 Hours	150W PSMH
E-HL5F06N2Z	72W LED Neutral white	120V-277V	6150	40° Flood	4000K	70	50,000 Hours	150W PSMH
E-HL5S06C2Z	72W LED Cool white	120V-277V	6150	20° Spot	5000K	70	50,000 Hours	150W PSMH
E-HL5S06N2Z	72W LED Neutral white	120V-277V	6150	20° Spot	4000K	70	50,000 Hours	150W PSMH

¹ Calculated L₇₀ based on 6,048 hours of LM-80 testing: >36,000 hours

Line Current Data

Voltage	Operating Amperes
120V	0.61
277V	0.28



Due to continuous product improvement, information in this document is subject to change. All published photometric testing performed to IESNA LM-79-08 standards by a NVLAP certified laboratory. Fixture photometry was completed on a single representative fixture. Actual production units may vary up to ±10% of initial delivered lumens. Lumen maintenance values at 25°C (77°F) are calculated per TM-21 based on LM-80 data and in-situ fixture testing.

1501 96th Street, Sturtevant, WI 53177 | Phone (888)243-9445 | Fax (262)504-5409 | www.e-conolight.com

TYPE W2

PREMIUM LED FLOODLIGHT - SMALL 72-WATT LED (E-HL5F/S SERIES)

Performance

- Estimated 50,000 hours of maintenance-free operation to L₇₀
- Minimum starting temperature: -40°F
- 5-year limited warranty

Construction & Materials

- Die-cast aluminum housing and lens frame
- Dark Bronze polyester powder-coat finish
- Tempered glass lens, thermal shock and impact resistant
- Precise optical reflector
- Heat dissipating fins
- Suitable for ground mounting, uplighting & downlighting
- 1/2" NPS adjustable fitter included
- Cree® LEDs inside

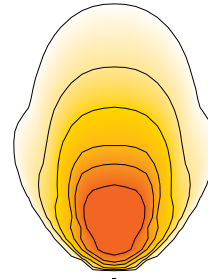
Electrical

- Non-dimmable
- Universal voltage (120V through 277V)

Regulatory

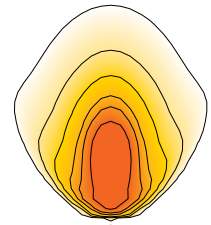
- UL listed for wet locations

Flood



E-HL5F06N2Z fixture mounted
at 15 feet with 60° tilt.

Spot



E-HL5S06C2Z fixture mounted
at 15 feet with 60° tilt.

TRZP Series

Catalog No.

TYPE W4

Job Name:

Features & Specifications

Material

Reflector hat is made from heavy gauge spun aluminum. Yolk is heavy die cast aluminum. Lens jar is clear tempered glass.

Finish

Thermoset TGIC polyester powder coat paint. Underside of reflector hat is white other surfaces are customer selected color.

Ballast

Electronic (CF) - 120v, normal power factor (NPF), optional 120-277 volt, high power factor (HPF)

Electronic (MH) - 120-277 volt, high power factor
Min. starting temp -30 C / -20F

Magnetic (MH) - 120v, normal power factor (NPF),

Mounting

Mounts to a standard 3" round pole. Intended for mounting 8-12 feet above grade with either mounting plate or direct burial.

Warranty

Two year product warranty, exclusive of lamps.

Features

- Contemporary architectural grade outdoor fixture
- UL wet location listed
- Easy re-lamping
- Available with battery backup
- Dark Sky

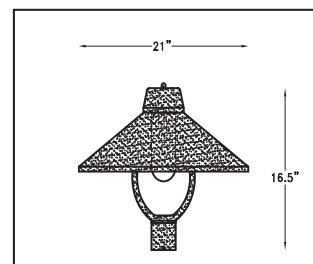
Example: TRZP-21-U-1T42-3-B1

PATIO LIGHTING
AND WALKWAY



TRZP-21

Height - 16 1/2"
Width - 21"
Depth - 21"



Model	Voltage	Lamping	Kelvin	Finish	Diffuser	Options
TRZP-21	A 120V, NPF (Elec) 1 120v (Mag) Optional Voltage See price list for Pricing U 120-277v (Elec)	1Q26 (1) Q-26w Elec 1T32 (1) T-32w Elec 1T42 (1) T-42w Elec M050 50w MH Mag	2 2700K 3 3500K 4 4100K T Clear	B1 Satin Black Optional Finishes See color chart for Pricing		Pole Options See price sheet

28435 Industry Drive., Valencia, CA 91355
 West Coast Sales: 800-325-4448 • fax 800-323-2346
 East Coast Sales: 866-350-0991 • fax 866-490-5754
 www.lightwayind.com • sales@lightwayind.com



Lightway
distinctive fluorescent lighting

POLE Options

Specifications

Pole

Round, steel, seamless, Wall thickness - 14-gauge (.065")

Nominal dimensions:

O.D. - 3.04"

I.D. - 2.88"

Available in 8', 10', 12' and custom lengths

Flange Bases

1/4" steel plate with slots for anchor bolts

Round - 9" diameter (3 anchor bolt attachment)

Square - 9" square (4 anchor bolt attachment)

Decorative Covers

Steel decorative covers attach to flange base (round or square)

Anchor Bolt Set

Consists of hex nut, washer and anchor

bolt (3/8" diameter X 9 1/2" long with 1 1/4" thread)

Hand Hole

For flange base attachment only, hand

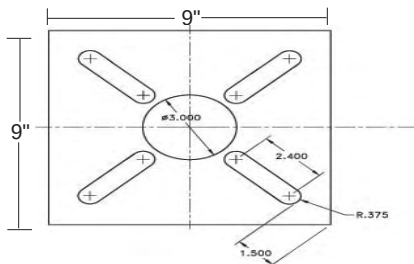
hole is 12" above base with gasket and cover

Installation (consult local building code)

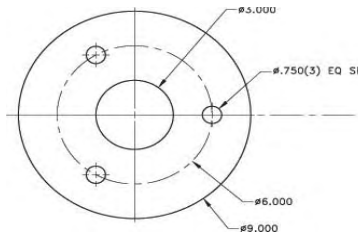
Direct burial - typically 2-feet set in concrete

Flange base - mounts to concrete footing

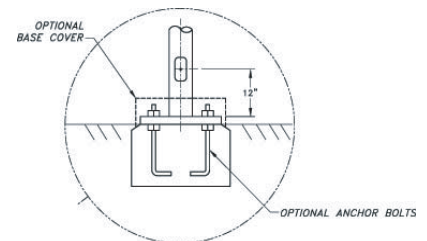
Templates - consult factory



Square Base



Round Base



Typical Flange Installation



Pole Sizes	Discription	Direct Buried	Anchor Bolts	Base Cover	Finish	Options
-81	10 foot pole round, 3 inch OD, steel	Yes		N/A	B1 Satin Black	-88 Base Cover
-82	12 foot pole round, 3 inch OD, steel	Yes		N/A		-89 Set of 3 anchor bolts
-86	8 foot pole round, 3 inch OD, steel with 9" round base		3	RD		-90 Set of 4 anchor bolts
-91	10 foot pole round, 3 inch OD, steel with 9" round base		3			-99 Custom length, diameter or configuration
-93	12 foot pole round, 3 inch OD, steel with 9" round base		3			
-87	8 foot pole round, 3 inch OD, steel with 9" square base		4	SQ		
-92	10 foot pole round, 3 inch OD, steel with 9" square base		4			
-94	12 foot pole round, 3 inch OD, steel with 9" square base		4			

Optional Finishes
See color chart
Consult Factory
for Pricing

Consult factory
for pricing

28435 Industry Drive., Valencia, CA 91355

West Coast Sales: 800-325-4448 • fax 800-323-2346

East Coast Sales: 866-350-0991 • fax 866-490-5754

www.lightwayind.com • sales@lightwayind.com



Lightway
distinctive fluorescent lighting

Barbara Barhydt
Development Review Services Manager
Planning Division
389 Congress Street, 4th Floor
Portland, ME 04101

Thursday, October 22, 2015

Dear Barbara

I, Mark D. Lowen, Lenity Architecture Land Use Manager OBO Hawthorn Development hereby certify that a neighborhood meeting was held on October 8, 2015 at the Presumpscot Elementary School Gymnasium, 69 Presumpscot Street, Portland ME, 04103 at 7:00 PM.

I also certify that on (date at least ten (10) days prior to the neighborhood meeting), invitations were mailed to the following:

1. All addresses on the mailing list provided by the Planning Division which includes property owners within 500 feet of the proposed development or within 1000 feet of a proposed industrial subdivision or industrial zone change.
2. Residents on the "interested parties" list.
3. A digital copy of the notice was also provided to the Planning Division (and) and the assigned planner to be forwarded to those on the interested citizen list who receive e-mail notices.

Signed,

 10/22/15 (date)
Mark D. Lowen
Land Use Manager
Lenity Architecture

Attached to this certification are:

1. Copy of the invitation sent
2. Sign-in sheet
3. Meeting minutes
4. PDF of the PowerPoint

NEIGHBORHOOD MEETING NOTICE

To: Neighbors in the vicinity of 802 Ocean Ave in Portland Maine

From: Lenity Architecture / Hawthorn Development

Regarding: Site Plan Application to allow the development of a 4 story, 150 suite,
Congregate Care Facility (Independent Living Senior Housing)

The City Code requires the property owners within 500 feet of the proposed development and residents on an "interested parties list". Be invited to participate in a neighborhood meeting. A sign-in sheet will be circulated and minutes of the meeting will be taken. Both the sign-in sheet and minutes will be submitted to the Planning Board

The neighborhood meeting will be held at 7:00 PM, Wednesday October 8th, 2015 at the Presumpscot Elementary School Gymnasium, located at 69 Presumpscot Street, Portland ME, 04103

Your participation is encouraged. Please contact us with any questions at (503) 399-1090.



Vicinity Map



We look forward to meeting with you.
Mark Lowen - Land Use Manager
markl@lenityarchitecture.com

Portland Maine Retirement Residence - Neighborhood Meeting

October 8, 2015

Attendance - Sign in Sheet

1) TOM EWEL

2) Wayne Gorman

3) _____

4) _____

5) _____

6) _____

7) _____

8) _____

9) _____

10) _____

11) _____

12) _____

13) _____

14) _____

15) _____

16) _____

17) _____

Portland Retirement Residence

Neighborhood Meeting 10/8/15 – 7:00 PM

A neighborhood meeting was held at the Presumpscot School on Presumpscot Street in Portland relative to the proposed site development submission by Hawthorn Development. Two members of the local neighborhood attended (see attendance sheet) Mark Lowen of Lenity Architecture LLC, did an overview of the project and the recent ZMA approvals by the City Council meeting that was held earlier this year. Robert McSorley PE. From Sebago Technics addressed site design and grading, stormwater design and impact, road, driveway and sidewalk improvements and general issues relating to site preparation and possible blasting.

A list of the attendees is attached. The items that Mr. Lowen and Mr. McSorley reviewed are as follows:

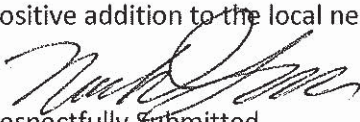
- A brief description of the use and facility
- A brief review of the land use (ZMA) process and the current approvals
- Changes in the site plan post ZMA approval
- Construction Timelines
- As part of the overview, a Power Point presentation was shown that outline Building, Site and Stormwater design features these include:
 1. Building changes, finish floor elevations, adjustments in footprint location to reduce the amount of blasting and materials excavation
 2. Site changes, avoiding wetlands impact, accommodating the Portland Trails access (easement)
 3. Relocation of and reduction of the number of one story garage building, location and purpose for the water booster pump system for the site.
 4. Location and access point(s) for the Portland Trails easement to the rear of the site.
 5. Stormwater Design, avoiding main drainage course for SW discharge, use of a underground subsurface sand filter, the use of a spreader swale so we can eliminate the "wet pond" reducing SW flow to the residents along Ocean Avenue

After the presentation, Mr. Lowen and Mr. McSorley opened up the meeting for questions from the attendees. The following is a generalization of the questions asked during the presentation and the follow question period:

Can you give a brief description of the use and services? A Non-medical senior residence. Typical resident is an active senior in the 80's. Services and amenities include; 3 meals/day 7 days/week - served restaurant style, Housekeeping and linen service, Social and physical activities, 24/7 on site management, Van service, Chapel, beauty salon, exercise room, game room, libraries, coffee lounge, movie theater, private rooms for family gatherings and many smaller gathering areas throughout the building

- What is the construction time line? 12-14 months
- What is the location of the Portland Trials access easement? We reviewed the color coded map provide by Sebago Techincs
- What are the Stromwater outflows points and impacts? Mr. McSorley discussed the overall SW design showing the pertinent design drawings and give details on the onsite dry pond depressions and swale areas, underground sand filter system and discharge points
- What are you going to do relative to blasting? – To date, we have done preliminary soil work and we have determined that some blasting will be necessary. We have talked with the geotechnical engineer in general and will be dealing with their geologist. As of today, we are considering Maine Drilling and Blasting as they are known to be one of the best in New England.
- Will there be a pre-blasting survey for the surrounding area? We will meet all the blasting requirements including the offer of pre-blast surveys, notifications and insurance as required by state law and the ordinance requirements for the City of Portland.
- There was some conversation at the Planning Board meeting relative to units with kitchens/no kitchens. Hope that will not be a stumbling block to the project.
- What is the timeline for the site approval process? We anticipate a Planning Board workshop on October 27th with a possible final hearing and vote on December 8th; depending on how complex the site revisions are as we go through the staff review and workshop process.

The meeting concluded at approximately 7:45 PM with all parties agreeing that this project likely will be a positive addition to the local neighborhood and the greater Portland community.



Respectfully Submitted

Mark D. Lowen

Lenity Architecture

PC1



PORTLAND RETIREMENT RESIDENCE

Lenity Architecture, LLC

Approved Development

2

□ Congregate Care Facility

150 Suite (4 story) Retirement Residence

3 - Garage buildings & accessory buildings (one story)

102 Parking spaces

84%+ Landscape and Open Space

3

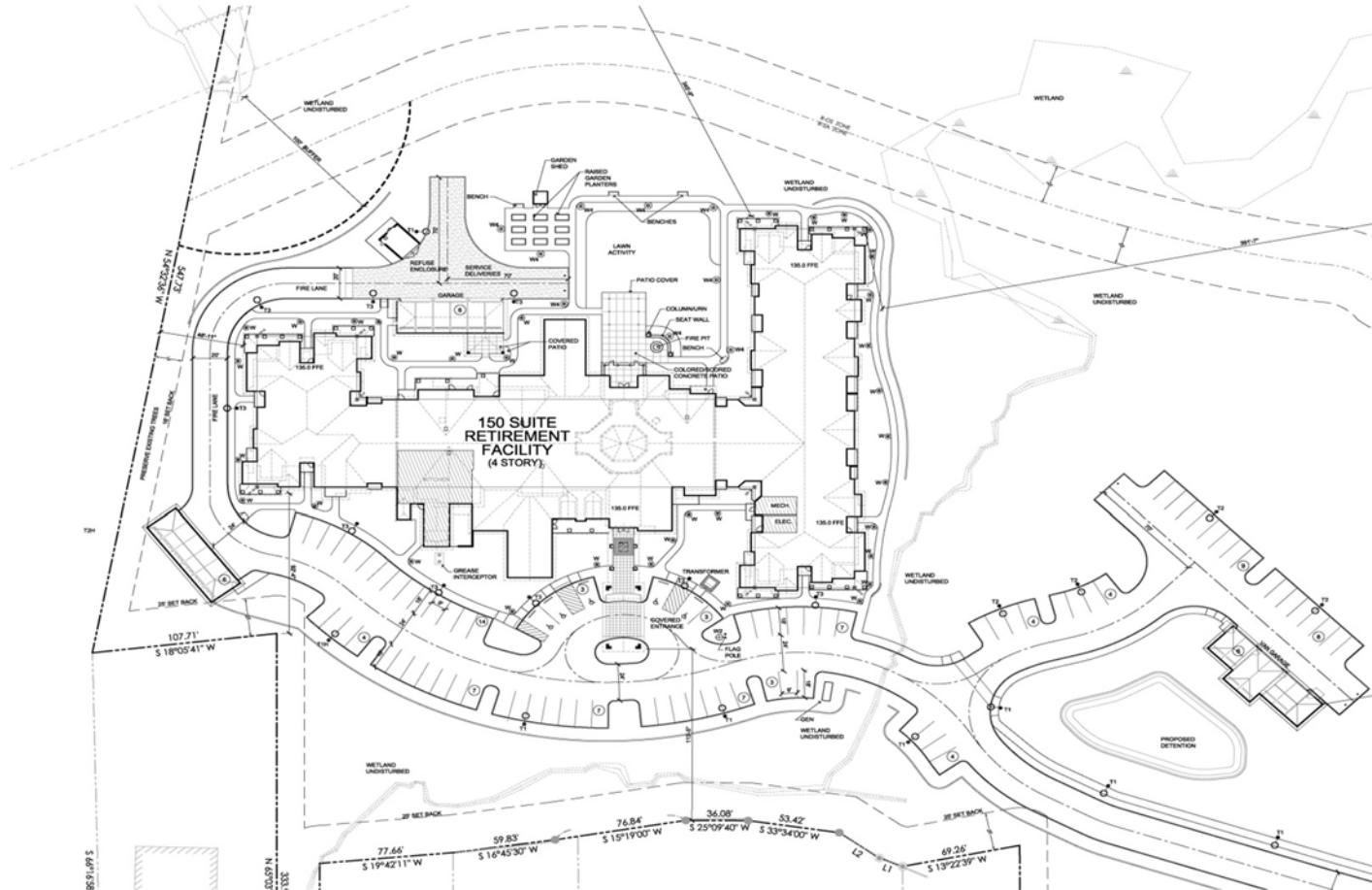


A map of the study area showing the location of the site. The site is marked with a black dot and labeled 'SITE'. It is located near Judge Rd and Ashley Ln. The map also shows several creeks: Washington Cr., Bear Cr., and Reservoir Cr. Other features include a road labeled '29' and a road labeled 'HAYSTACK ST.'.

REFERENCE SITE PLAN

Revised Site Plan

4



Portland Vicinity Map

SCALE: N.T.S.



PROJECT STATISTICS:

PROJECT AREA:
TOTAL AREA 18.33 ACRES NET 798,363 SQ. FT.
TOTAL BUILDING COVERAGE:

AREA CALCULATIONS:

RETIREMENT BUILDING: 39,869 SQ. FT. 5.0%
GARAGES:
ACCESSORY BUILDINGS: 128 SQ. FT. 0.1%

PERVIOUS / IMPERVIOUS AREA

IMPERVIOUS AREA: 15.9% PERVIOUS AREA: 84.1%

PARKING:

RETIREMENT PROJECT:
82 OPEN SPACES
18 COVERED SPACES
5 ACCESSIBLE SPACES
102 TOTAL SPACES

SITE PLAN

DATE: 28 Aug. 2015
SCALE: 1" = 30'-0"



lenity
architecture

3150 Kettle Court SE, Salem, Oregon 97301
#503 399 1090 #503 399 0965 lenityarchitecture.com

Portland Retirement Residence

Portland, Maine

HAWTHORN
RETIREMENT GROUP

6310 NE Vancouver Mall Dr., Suite 200
Vancouver, WA 98662-6210
(206) 213-1500 Fax (206) 213-1540

lenity architecture, inc.

Site Design Features

5

Building Changes

- The building has been located in the flatter portion of the site
- Finished floor elevation has been set so that the highest points of the structure would be roughly about the height of the natural vegetation.
- Building site grade will be cut to this elevation and keeps the height of the structure below the tree canopies to the west.
- Building location was chosen to maximize the separation from the existing surrounding developments and to minimize the amount of material that would need to excavated and potentially blasted on-site.

Site Design Features

6

Site Changes

- Careful consideration was given to the on-site natural resources, minimizing the amount of land necessary for the development to only 4.93 acres of developed area utilized (less than 50% of the R-5A portion of the property)
- Site design also avoids impacts to any of the on-site wetlands leaving a large portion of the undeveloped R-5A zone area contiguous with the preserved area within the R-OS zone.
- The developer has coordinated with Portland Trails to execute an easement allowing public access through the developed part of the property to existing trails with the R-OS area.
- The location of the 3, one story garage structures have been reconfigured with one in the northerly parking lot, the second at the southerly end of the site and the third at the rear of the building on the southwesterly end of the site.
- The project will require a booster pump system to ensure that fire protection flows are met.

Site Design Features

7

Stormwater

- The stormwater design maintains the natural drainage course through the development site, draining the western portion of the property and some areas from the adjacent Ocean Ridge Condominiums.
- This design has avoided using the main section of the drainage course for discharge of the site.
- We have chosen to use an underground sub surface sand filter for the southern portion of the development. This system will discharge closer to the section of the drainage course that flows to the east to Ocean Avenue.
- No wet pond needed, in its place we have proposed an under drained soil filter in lieu of discharges to the natural drainage course through the middle of the site. So, discharge will be managed via a spreader swale down slope of the access roadway. This will reduce the amount of flow that was previously designed to flow in the drainage course upslope and in back of the residences that front of Ocean Avenue.

Site Design Features

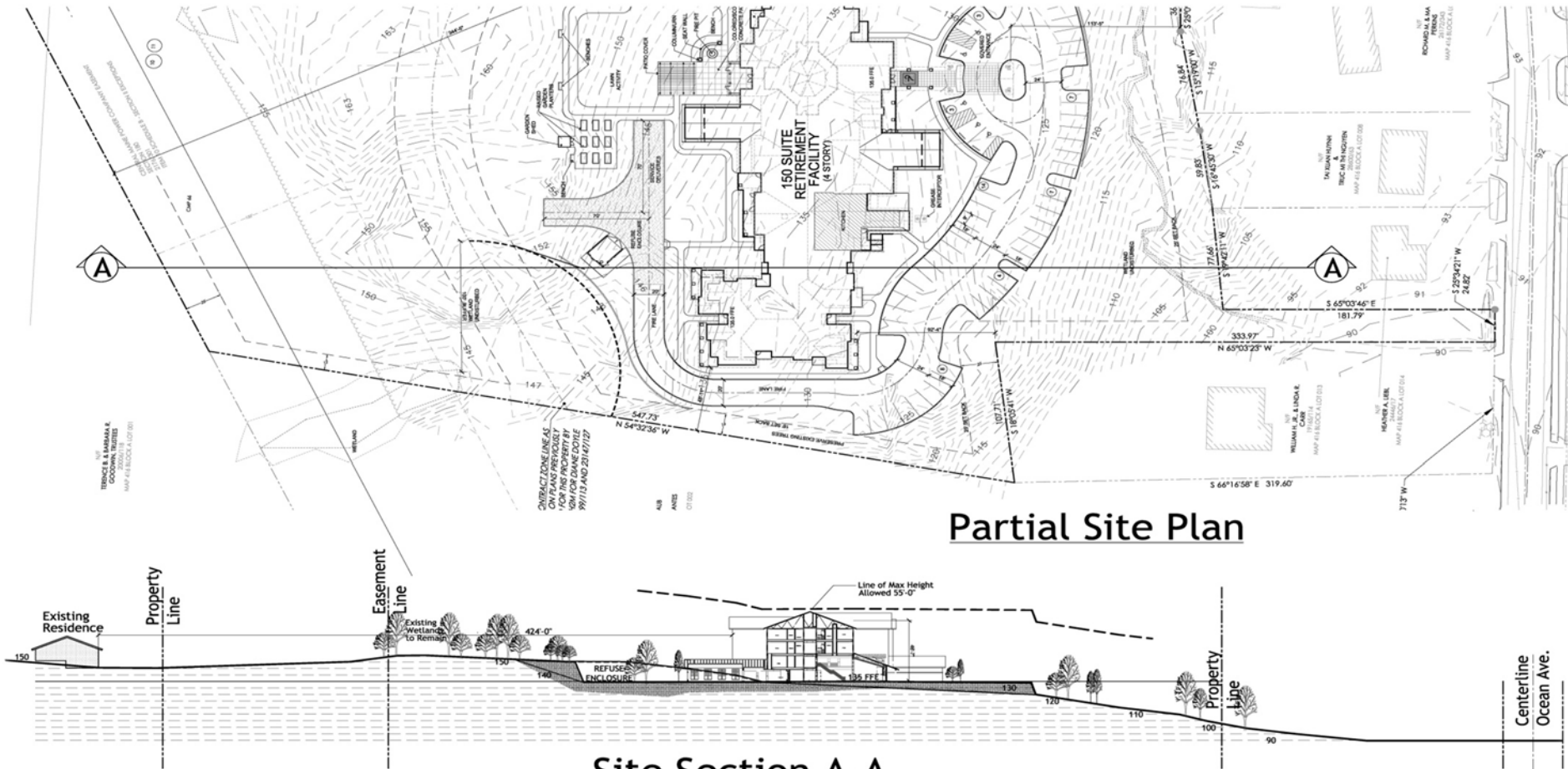
8

Off Site Improvements

- This project will complete the missing link of sidewalk along Ocean Avenue from just north of Ashley Lane to sidewalk opposite the Ocean Ridge Condominiums,
- GAS SERVICE - We have coordinated with Unitil relative to the extension of the gas main that exists to the south on Ocean Avenue to determine the feasibility to extend the main to serve this project. We have also coordinated with some of the neighbors relative to this extension as many of the existing developments would also like the ability to be served by Unitil.

Topographic Site Section

9



Partial Site Plan

Site Section A-A

Portland Retirement Residence

Portland, ME

lenity
architecture

3150 Kettle Court SE, Salem, Oregon 97301
#503.399.1090 #503.399.0565 w lenityarchitecture.com

HAWTHORN
RETIREMENT GROUP

9310 NE Vancouver Mall Dr., Suite 200
Vancouver, WA 98662-8210
(360) 213-1550 Fax (360) 213-1540

Lenity Architecture, Inc.

Entrance View from Ocean Ave

10



View to Entry

11



Front View - Open

12



Front View from Ocean Ave

13



South Side View - Open

14



South Side View

15



North Side View - Open

16



North Side View

17

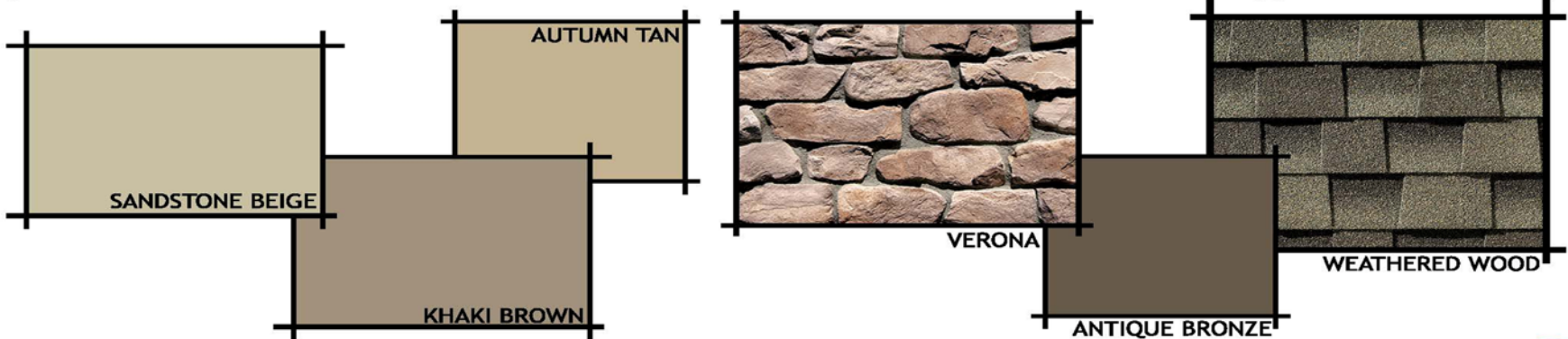


Exterior Colors and Materials

18



EXTERIOR MATERIALS:
 Roof- GAF Timberline:
 Weathered Wood
 Trim- James Hardie: Arctic
 White
 Siding 1- James Hardie:
 Khaki Brown
 Siding 2- James Hardie:
 Sandstone Beige
 Shingles- James Hardie:
 Autumn Tan
 Awnings- MS Metal:
 Antique Bronze
 Stone- Coronado French
 Country Villa: Verona



19

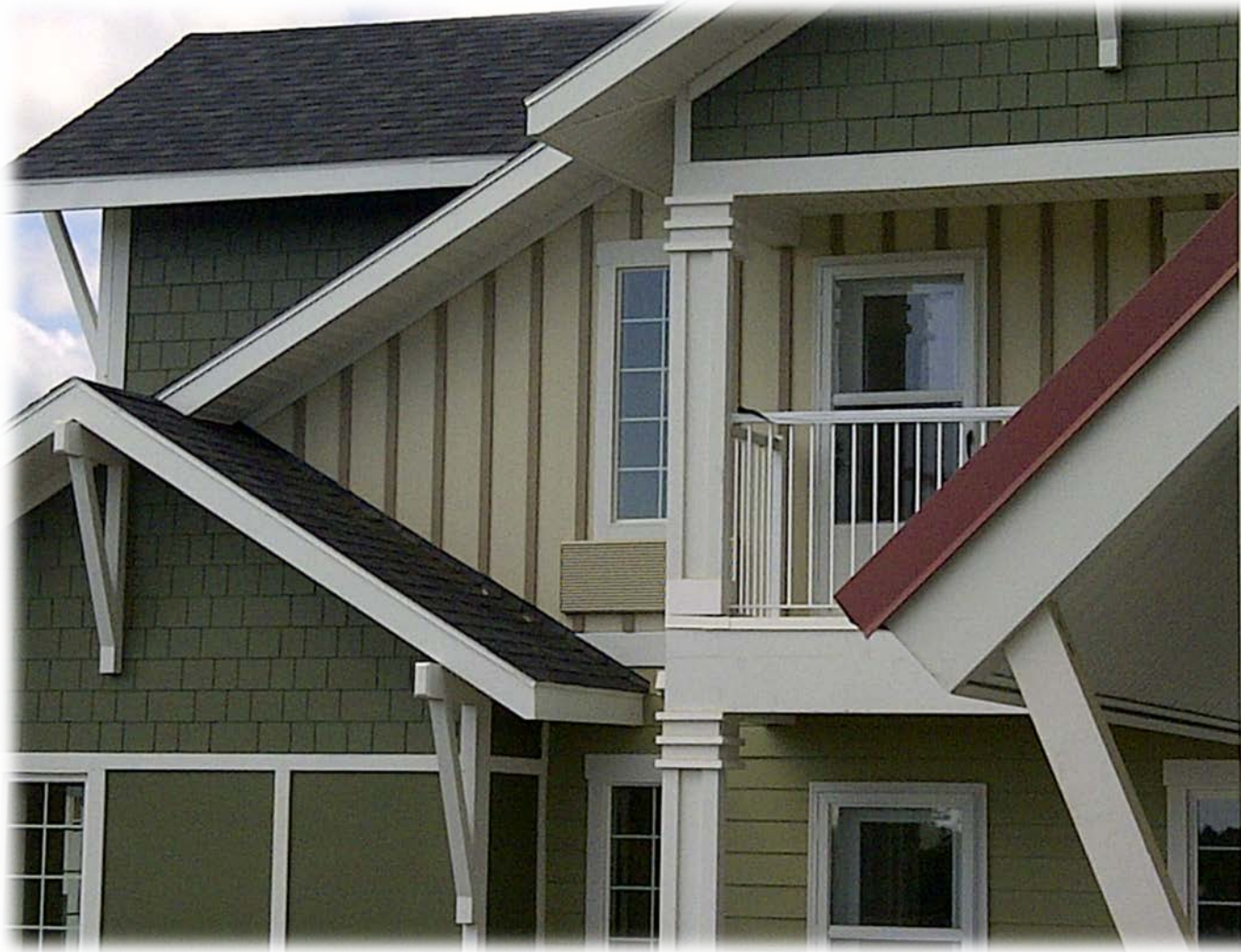


HAWTHORN
RETIREMENT GROUP

Lenny Architecture, LLC

Exterior Details

20



Exterior Details

21



Exterior Details

22



Exterior Details

23



Site Plan Process for 802 Ocean Ave

24

- Site Plan (Building Design) Meetings and Hearings:
 - Staff Review
 - Neighborhood Meeting 10/8/15
 - Planning Board Workshop – 10/27/15
 - Planning Board Public Hearing and Vote – Date TBD



PORTLAND RETIREMENT RESIDENCE

Lenity Architecture, LLC

PORTLAND RETIREMENT RESIDENCE

Plan 1

802 OCEAN AVENUE
PORTLAND, ME

APPLICANT:

HAWTHORN
RETIREMENT GROUP

9310 NE Vancouver Mall Dr., Suite 200
Vancouver, WA 98662-8210
(360) 213-1550 Fax (360) 213-1540

ENGINEER/SURVEYOR:

SEBAGO
TECHNICS

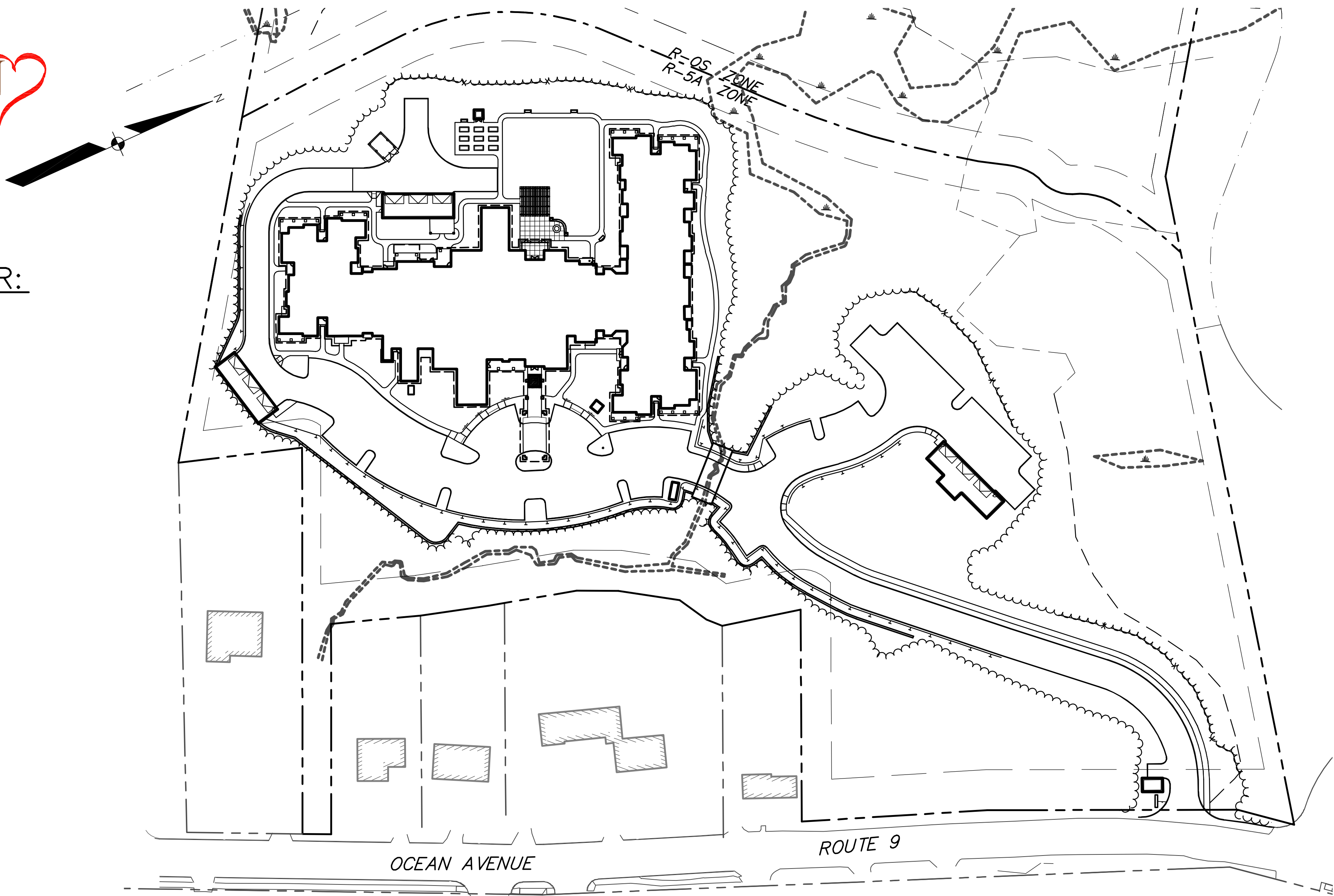
WWW.SEBAGOTECHNICS.COM

75 John Roberts Rd. 250 Goddard Rd.
Suite 1A Suite B
South Portland, ME 04106 Lewiston, ME 04240
Tel. 207-200-2100 Tel. 207-783-5656

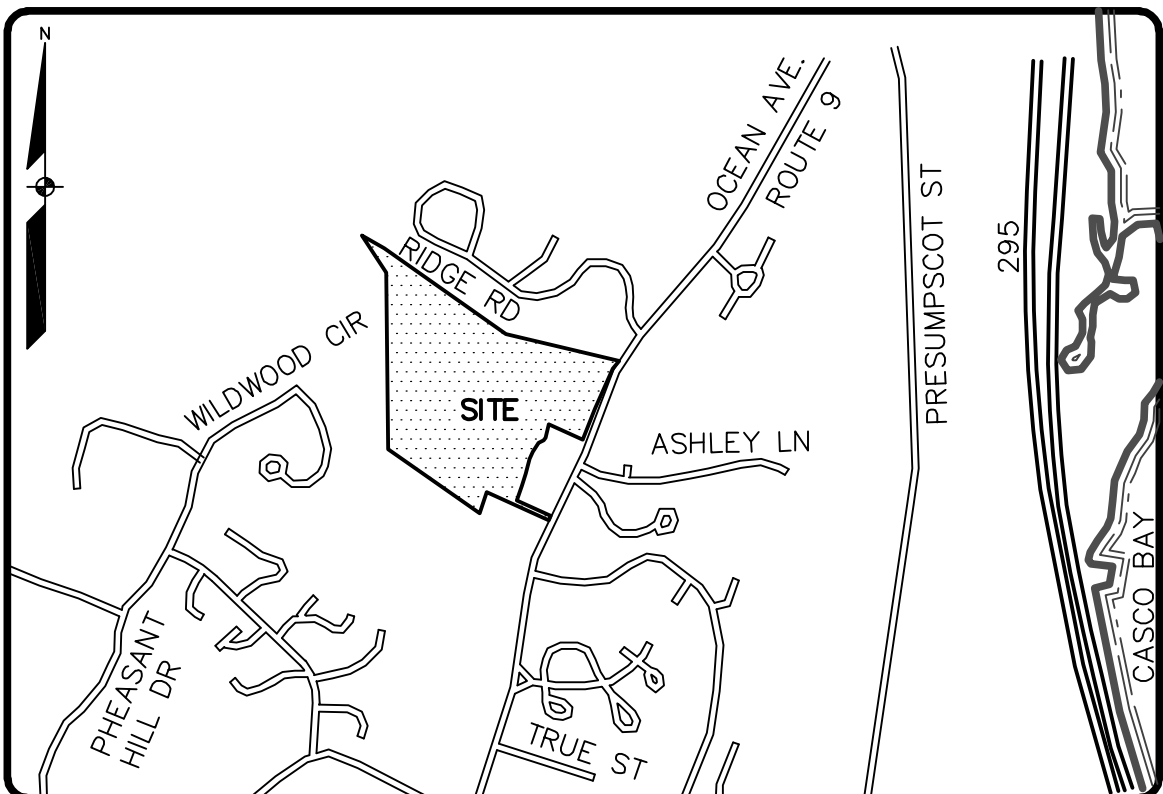
ARCHITECT/AGENT

lenity
architecture

3150 Kettle Court SE, Salem, Oregon 97301
P 503 399 1090 F 503 399 0565 W lenityarchitecture.com



SCALE: 1" = 60'

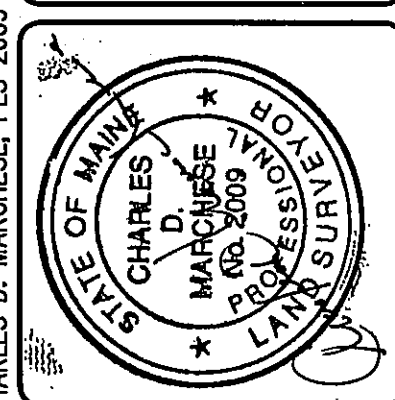


LOCATION MAP

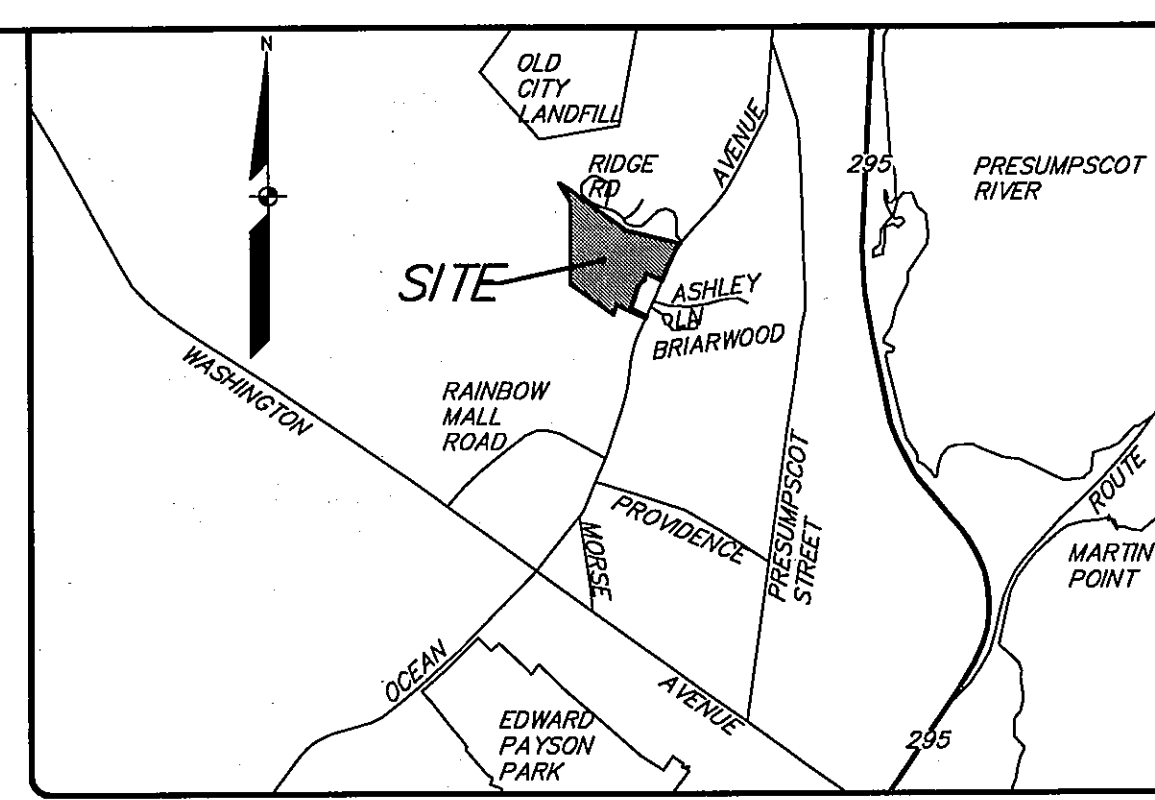
NTS

SHEET INDEX

SHEET TITLE	
1	COVER SHEET
2	ALTA-ACSM LAND TITLE SURVEY
3	ALTA-ACSM LAND TITLE SURVEY
4	OVERALL SITE PLAN
5	SITE PLAN
6	GRADING PLAN
7	UTILITY PLAN
8	BOX CULVERT PLAN AND SECTION
9	DETAILS
10	DETAILS
11	DETAILS
12	DETAILS
13	STORMTECH STORMWATER DETAILS
14	OCEAN AVENUE SIDEWALK PLAN
1 OF 1 PRE DEVELOPMENT WATERSHED PLAN	
2 OF 2 POST DEVELOPMENT WATERSHED PLAN	



CHARLES D. MARCHESE, PLS 2009



N.T.S.

LOCATION MAP

GENERAL NOTES:

- THE RECORD OWNER OF THE PARCEL IS GRAVES HILL LAND COMPANY, LLC BY DEED DATED JULY 1, 2004 AND RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 21500, PAGE 280.
- THE PROPERTY IS SHOWN AS LOTS A006, A007 AND A021 ON TAX MAP 416. 'D' LOT A007 ON TAX MAP 411 OF THE CITY OF PORTLAND TAX MAPS AND IS LOCATED IN THE BOTH THE R-5A RESIDENTIAL ZONE AND R-OS RECREATION AND OPEN SPACE ZONING DISTRICTS.
- SPACE AND BULK CRITERIA FOR THE R5A AND ROS DISTRICTS ARE AS FOLLOWS:

	R5A	ROS
LOCUS AREA WITHIN ZONING DISTRICT:	10.171 ACRES	8.157 ACRES
MINIMUM LOT SIZE:	1,600 S.F. PER DWELLING UNIT	N/A
MINIMUM FRONTAGE:	50 FEET	N/A
MAXIMUM LOT COVERAGE:	30%	25%
MINIMUM LOT WIDTH:	60 FEET	N/A
MINIMUM RECREATION OPEN SPACE:	200 S.F. PER DWELLING UNIT	N/A
MINIMUM FRONT YARD:	35 FEET	25 FEET
MINIMUM SIDE YARD:	16 FEET	12 FEET
MINIMUM REAR YARD:	25 FEET	25 FEET
MAXIMUM BUILDING HEIGHT:	55 FEET	N/A

* SEE BUILDING LENGTH GREATER THAN 100'

- TOTAL AREA OF PARCEL IS APPROXIMATELY 798,387.448 SQUARE FEET OR 18.328 ACRES.
- BOUNDARY AND TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED UPON FIELD WORK PERFORMED BY SEBAGO TECHNIQS, INC. IN DECEMBER 2014 AND JANUARY 2015.
- PLAN REFERENCES:
 - PLAN SHOWING A BOUNDARY SURVEY AND TOPOGRAPHIC SURVEY MADE FOR DIANE DOYLE, (MAILING ADDRESS: 16 TIFFANY LANE, SACO, ME 04072) PARCEL LOCATED AT OCEAN AVENUE, PORTLAND, MAINE DATED JULY 8, 2002 AND REVISED THROUGH FEBRUARY 11, 2005 BY DOW & COULOMBE, INC. SHEETS 1 & 2 OF 2. THIS PLAN IS RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN PLAN BOOK 204, PAGE 293 & PAGE 294.
 - "ASBUILT SURVEY PLAN OF OCEAN RIDGE CONDOMINIUMS, 852 OCEAN AVENUE, PORTLAND, MAINE FOR RECORD OWNER OCEAN RIDGE REALTY, LLC, 91 OLD OCEAN HOUSE ROAD, CAPE ELIZABETH, MAINE 04107" DATED APRIL 3, 2001 AND REVISED THROUGH DECEMBER 3, 2002 BY SEBAGO TECHNIQS, INC., PROJECT NO. 84180, SHEETS 15 & 16 OF 18 SHEETS.
 - "BOUNDARY SURVEY & LOT DIVISION 752 OCEAN AVENUE, PORTLAND, MAINE MADE FOR DONALD ANSPACH, 752 OCEAN AVENUE, PORTLAND, MAINE DATED MAY 25, 2004 AND REVISED THROUGH JUNE 18, 2008 BY TITCOMB ASSOCIATES, JOB NO. 871141.
 - "STANDARD BOUNDARY SURVEY PLAN OF PROPERTY OCEAN AVENUE, PORTLAND, MAINE MADE FOR THE FINCH GROUP, 160 FEDERAL STREET, BOSTON, MA" DATED JULY 30, 1992 BY TITCOMB ASSOCIATES, JOB NO. 87114M.
 - "OCEAN AVENUE STORM DRAIN AND SANITARY SEWER EXTENSION OF OCEAN RIDGE CONDOMINIUMS, 852 OCEAN AVENUE, PORTLAND, MAINE FOR OCEAN RIDGE REALTY, LLC, 91 OLD OCEAN HOUSE ROAD, CAPE ELIZABETH, MAINE 04107" DATED MARCH 6, 2001 AND REVISED THROUGH MARCH 13, 2003 BY SEBAGO TECHNIQS, INC. THIS PLAN IS RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN PLAN BOOK 203, PAGE 284 AND SUPERCEDES A PLAN RECORDED IN PLAN BOOK 202, PAGE 725.
 - PLAN ORIENTATION IS GRID NORTH, MAINE STATE PLANE COORDINATE SYSTEM, WEST ZONE 1802-NAD83, ELEVATIONS DEPICTED HEREON WERE OBSERVED IN NAVD83, BASED ON DUAL FREQUENCY GPS OBSERVATIONS. ELEVATIONS HAVE BEEN CONVERTED TO NGVD29 UTILIZING THE U.S. ARMY CORPS OF ENGINEERS' 8.01 SOFTWARE. THE CONVERSION IN THIS VICINITY IS 0.70 FEET HIGHER THAN NAVD83. ELEVATIONS ARE TIED TO THE CITY OF PORTLAND, MAINE VERTICAL DATUM.
 - UTILITY INFORMATION DEPICTED HEREON IS COMPILED USING PHYSICAL EVIDENCE LOCATED IN THE FIELD. UTILITIES DEPICTED HEREON MAY NOT NECESSARILY REPRESENT ALL EXISTING UTILITIES. CONTRACTORS AND/OR ENGINEERS NEED TO CONTACT DIG-SAFE SYSTEMS, INC. (1-888-DIG-SAFE) AND FIELD VERIFY EXISTING UTILITIES PRIOR TO CONSTRUCTION AND/OR EXCAVATION.
 - THE LOCUS PROPERTY AS DEPICTED HEREON DOES NOT FALL WITHIN A SPECIAL FLOOD HAZARD AREA AS DELINEATED ON THE FLOOD INSURANCE RATE MAP FOR THE CITY OF PORTLAND, MAINE, CUMBERLAND COUNTY, COMMUNITY-PANEL NUMBER 230051 0007 C, HAVING AN EFFECTIVE DATE OF DECEMBER 5, 1998. THE LOCUS FALLS WITHIN AN AREA IDENTIFIED AS AN UNSHADED ZONE X, AREAS DETERMINED TO BE OUTSIDE THE 500-YEAR FLOODPLAIN.
 - A WETLAND DELINEATION WAS PERFORMED ON THIS PROJECT SITE IN NOVEMBER 2001 AND REVISED IN APRIL 2014 BY GARY M. FULLERTON, CERTIFIED SOIL SCIENTIST OF SEBAGO TECHNIQS, INC. THIS DELINEATION CONFORMS TO THE STANDARDS AND METHODS OUTLINED IN THE 1987 WETLANDS DELINEATION MANUAL AND REGIONAL SUPPLEMENT AUTHORED AND PUBLISHED BY THE U.S. ARMY CORPS OF ENGINEERS. WETLAND FLAGS OUTSIDE OF THE PROPOSED DEVELOPMENT AREAS WERE LOCATED BY GROUND SURVEY. WETLAND FLAGS OUTSIDE OF THE PROPOSED DEVELOPMENT AREAS WERE LOCATED USING GLOBAL POSITIONING SYSTEMS (GPS) TECHNOLOGY. ALL GPS LOCATED POINTS HAVE A VARYING DEGREE OF ACCURACY AND MAY NOT REPRESENT THE ACTUAL FIELD LOCATION.
 - WITH REFERENCE TO ITEM 18 OF THE ALTA TABLE A, THE AREA ADJOINING THE NORTHERLY AND WESTERLY SIDELINES OF LAND OF CAIAZZO IS CLUTTERED WITH CONSTRUCTION AND RESIDENTIAL DEBRIS, TWO OLD VEHICLES AND ASSORTED HOUSEHOLD UTILITY. THE AREA IN THE VICINITY OF THE USGS CONTROL DISKS IS ALSO BEING USED AS A DUMP SITE FOR LAWN DEBRIS BY THE ADJOINING CONDOMINIUM PROJECT.
 - EXISTING FOOTPATHS/TRAILS ARE AS DEPICTED HEREON, THEY ARE TYPICALLY ±2 FEET WIDE.

SURVEYOR'S CERTIFICATION

TO HAWTHORN DEVELOPMENT, LLC OR ITS ASSIGNEE AND FIDELITY NATIONAL TITLE INSURANCE COMPANY, INC.
FILE NO. 14030089 (REV. 1-12-15)

THIS IS TO CERTIFY THAT THIS MAP OR PLAN AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2011 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/ACSM LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS, AND INCLUDE ITEMS 1, 2, 3, 4, 5, 6, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, AND 21 OF TABLE A THEREOF. THE FIELD WORK WAS COMPLETED ON JANUARY 7, 2015.

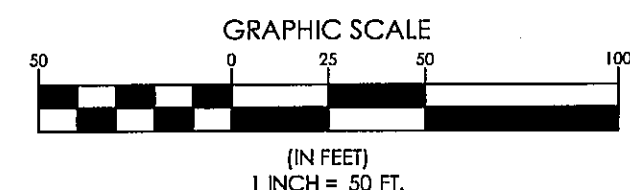
DATE: SEPTEMBER 18, 2015

CHARLES D. MARCHESE, MAINE PLS 2009
SEBAGO TECHNIQS, INC.

SURVEYOR'S STATEMENT

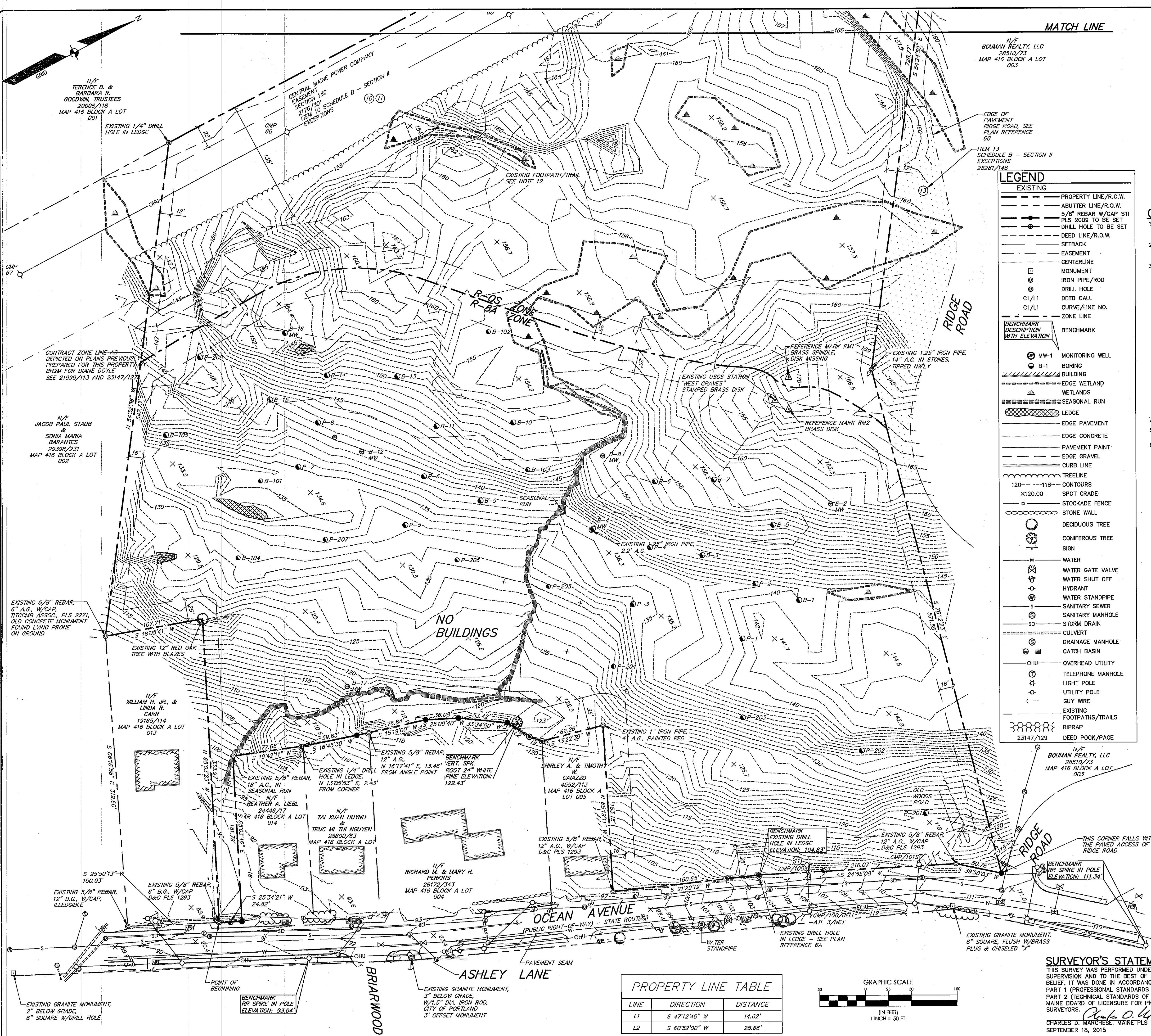
THIS SURVEY WAS PERFORMED UNDER MY DIRECT SUPERVISION AND TO THE BEST OF MY KNOWLEDGE AND BELIEF, IT WAS DONE IN ACCORDANCE WITH CHAPTER 90, PART 1 (PROFESSIONAL STANDARDS OF PRACTICE) AND PART 2 (TECHNICAL STANDARDS OF PRACTICE) OF THE MAINE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS.

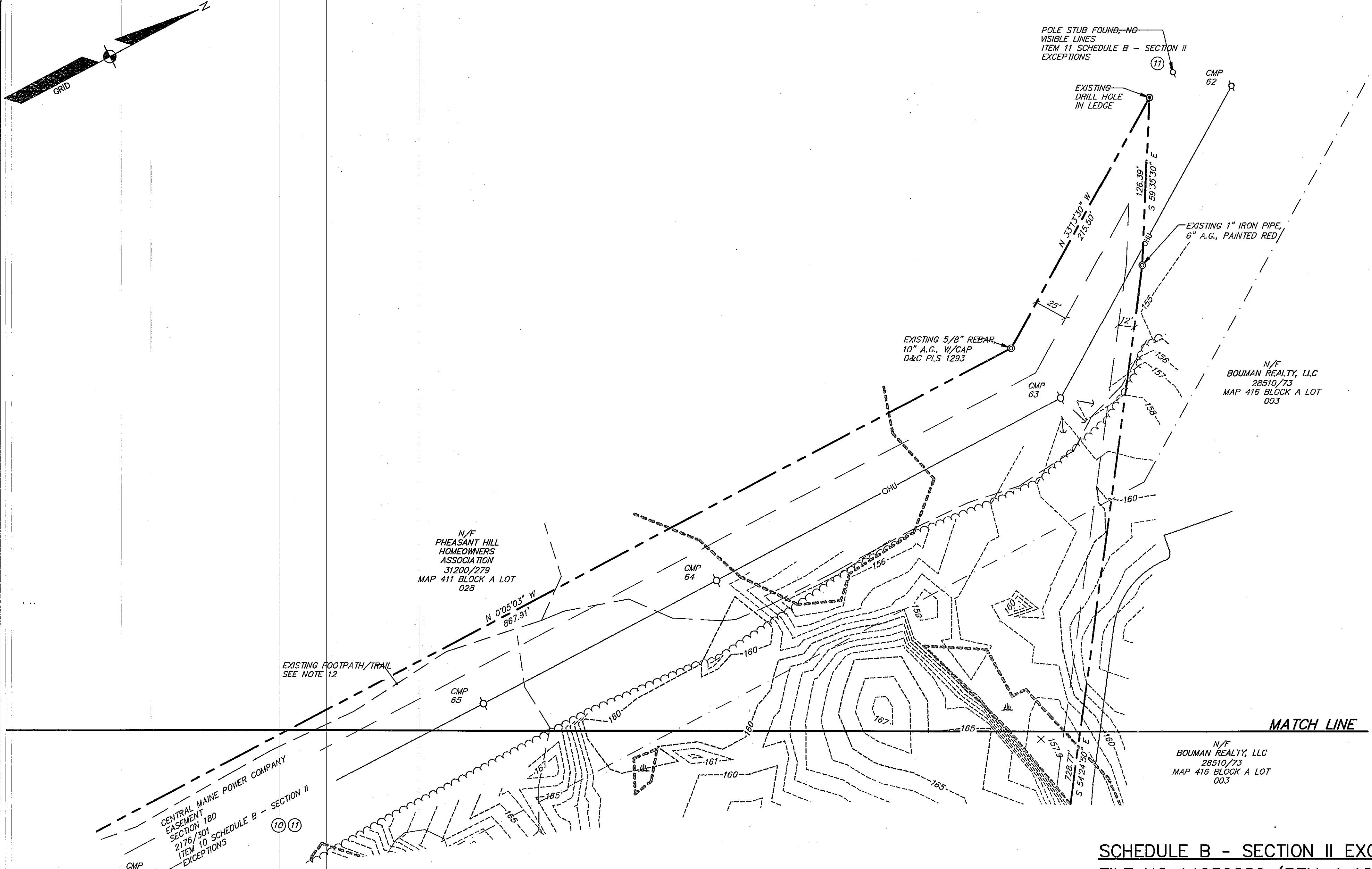
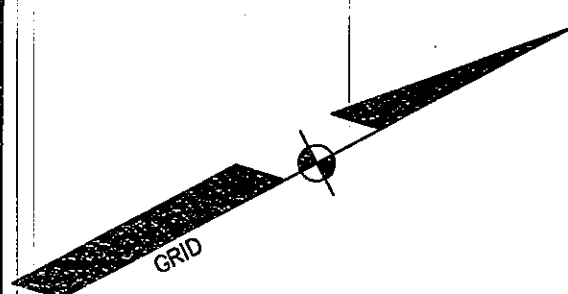
CHARLES D. MARCHESE, MAINE PLS 2009
SEPTEMBER 18, 2015



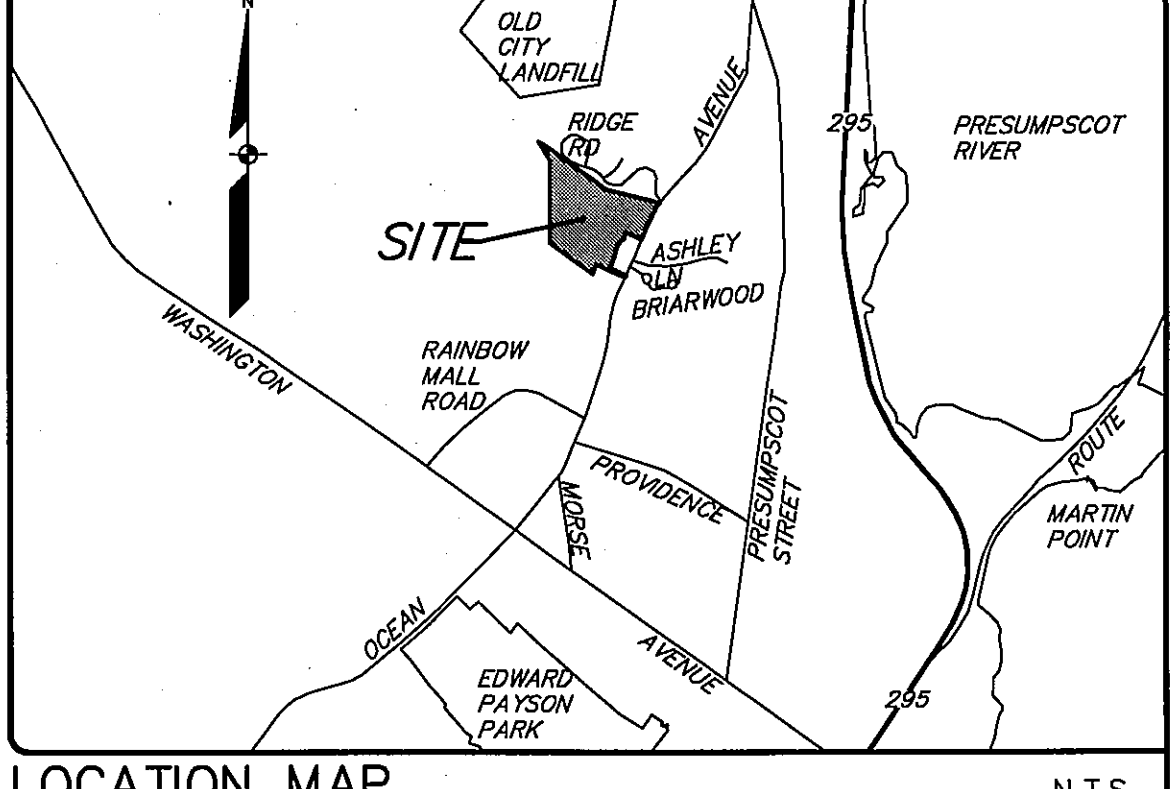
PROPERTY LINE TABLE

LINE	DIRECTION	DISTANCE
L1	S 47°12'40" W	14.62'
L2	S 60°52'00" W	28.66'





LEGEND	
EXISTING	
	PROPERTY LINE/R.O.W.
	ABUTTER LINE/R.O.W.
	5/8\"/>
	DEED LINE/R.O.W.
	SETBACK
	EASEMENT
	CENTERLINE
	MONUMENT
	IRON PIPE/ROD
	DRILL HOLE
	DEED CALL
	CURVE/LINE NO.
	ZONE LINE
	BENCHMARK
	MONITORING WELL
	BORING
	BUILDING
	EDGE WETLAND
	WETLANDS
	SEASONAL RUN
	LEDGE
	EDGE PAVEMENT
	EDGE CONCRETE
	PAVEMENT PAINT
	EDGE GRAVEL
	CURB LINE
	TREELINE
	CONTOURS
	SPOT GRADE
	STOCKADE FENCE
	STONE WALL
	DECIDUOUS TREE
	CONIFEROUS TREE
	SIGN
	WATER
	WATER GATE VALVE
	WATER SHUT OFF
	HYDRANT
	WATER STANDPIPE
	SANITARY SEWER
	SANITARY MANHOLE
	STORM DRAIN
	CULVERT
	DRAINAGE MANHOLE
	CATCH BASIN
	OVERHEAD UTILITY
	TELEPHONE MANHOLE
	LIGHT POLE
	UTILITY POLE
	GUY WIRE
	EXISTING FOOTPATHS/TRAILS
	RIPRAP
	DEED POOK/PAGE



GENERAL NOTES:

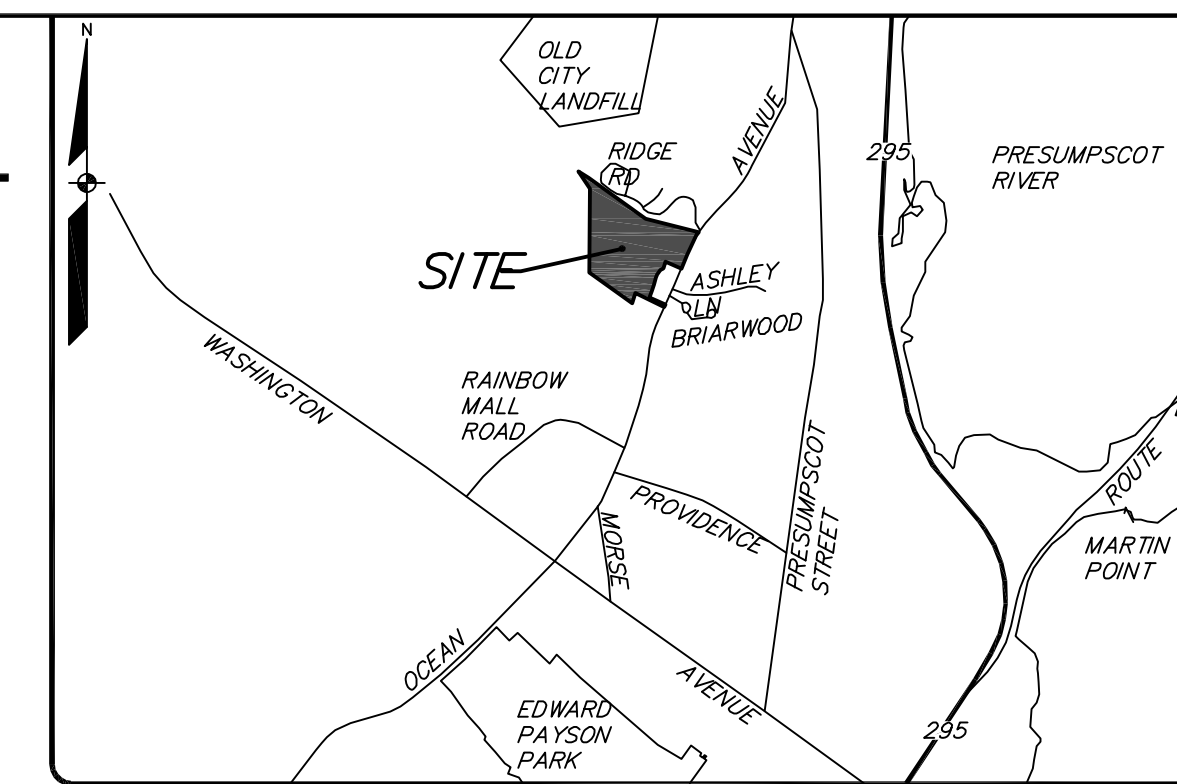
- THE RECORD OWNER OF THE PARCEL IS GRAVES HILL LAND COMPANY, LLC BY DEED DATED JULY 1, 2004 AND RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 31500, PAGE 299.
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- SPACE AND BULK CRITERIA FOR THE RSA AND ROS DISTRICTS ARE AS FOLLOWS:

	OSA	ROS
LOCUS AREA WITHIN ZONING DISTRICT:	10.171 ACRES	8.157 ACRES
MINIMUM LOT SIZE:	1,600 S.F. PER	N/A
	DWELLING UNIT	
MINIMUM FRONTAGE:	50 FEET	N/A
MAXIMUM LOT COVERAGE:	30%	25%
MINIMUM LOT WIDTH:	60 FEET	N/A
MINIMUM RECREATION OPEN SPACE:	200 S.F. PER	N/A
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* SEE BUILDING LENGTH GREATER THAN 100'.
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 - "OCEAN AVENUE RECONSTRUCTION PHASE 3 AND PHASE 4, PLAN AND PROFILE STA. 122+00 TO STA. 127+50" DATED AUGUST 31, 2007 BY CITY OF PORTLAND, MAINE DEPARTMENT OF PUBLIC WORKS ENGINEERING SECTION, PROJECT NO. C04517, SHEETS 6 & 7 OF 23 SHEETS
 - "AMENDED SUBDIVISION PLAN OF OCEAN RIDGE CONDOMINIUMS, 852 OCEAN AVENUE, PORTLAND, MAINE FOR RECORD OWNER OCEAN RIDGE REALTY, LLC, 91 OLD OCEAN HOUSE ROAD, CAPE ELIZABETH, MAINE 04107" DATED MARCH 6, 2001 AND REVISED THROUGH MARCH 13, 2003 BY SEBAGO TECHNIQS, INC. THIS PLAN IS RECORDED AT THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN PLAN BOOK 203, PAGE 264 AND SUPERCEDES A PLAN RECORDED IN PLAN BOOK 202, PAGE 725.
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GENERAL NOTES:

- 
- 9-18-15

Plan 4

	DESIGNED PDO	CHECKED RAM
A	9-18-15	PLAN SUBMISSION TO CITY OF PORTLAND
REV:	BY:	DATE: STATUS:
THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.		

S=BAGO
T E C H N I C S

75 John Roberts Rd.
Suite 1A
South Portland, ME 04106
Tel. 207-200-2100

250 Goddard Rd.
Suite B
Lewiston, ME 04240
Tel. 207-783-5656

WWW.SEBAGOTECHNICS.COM

OVERALL SITE PLAN
 OF: PORTLAND RETIREMENT RESIDENCE
 802 OCEAN AVENUE
 PORTLAND, ME
 FOR: HAWTHORN DEVELOPMENT GROUP, LLC
 9310 NE VANCOUVER MALL DR., STE200
 VANCOUVER, WA 98662-9210

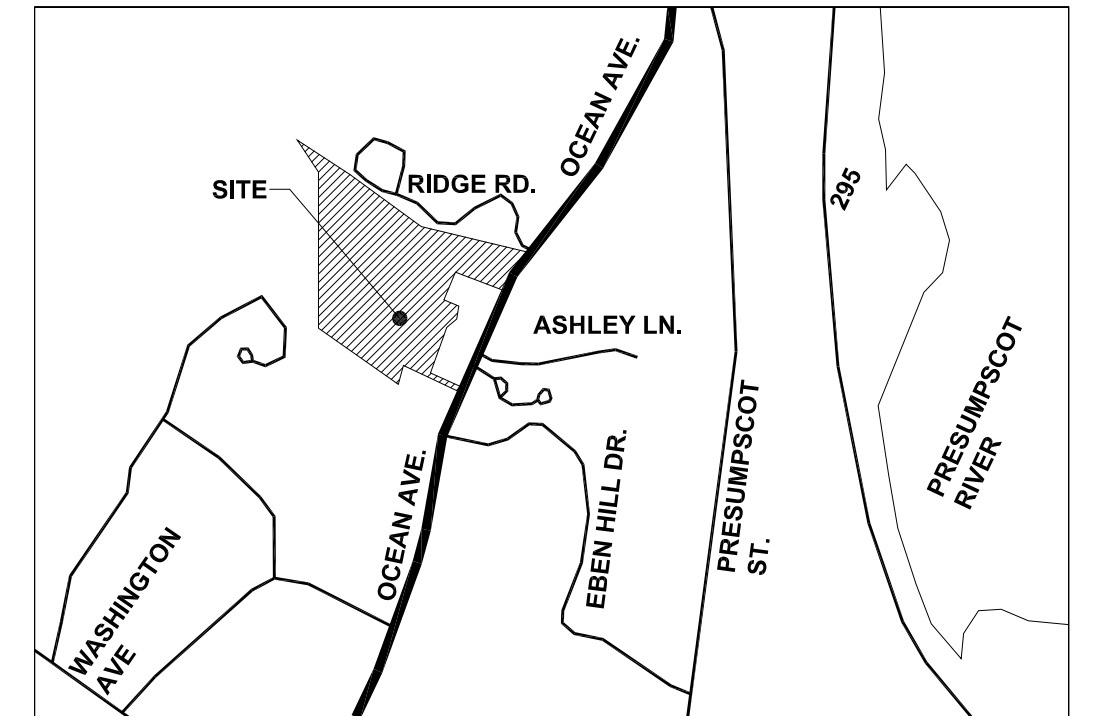
PROJECT NO.	SCALE
14432	1" = 60'

SHEET 4 OF 14

4 14432S dwo TAB.S

Portland Vicinity Map

SCALE: N.T.S.



PROJECT STATISTICS:

PROJECT AREA:

TOTAL AREA 18.33 ACRES NET 798,363 SQ. FT.
TOTAL BUILDING COVERAGE:

AREA CALCULATIONS:

RETIREMENT BUILDING: 39,869 SQ. FT. 5.0%
GARAGES: 128 SQ. FT. 0.1%
ACCESSORY BUILDINGS:

PERVIOUS / IMPERVIOUS AREA

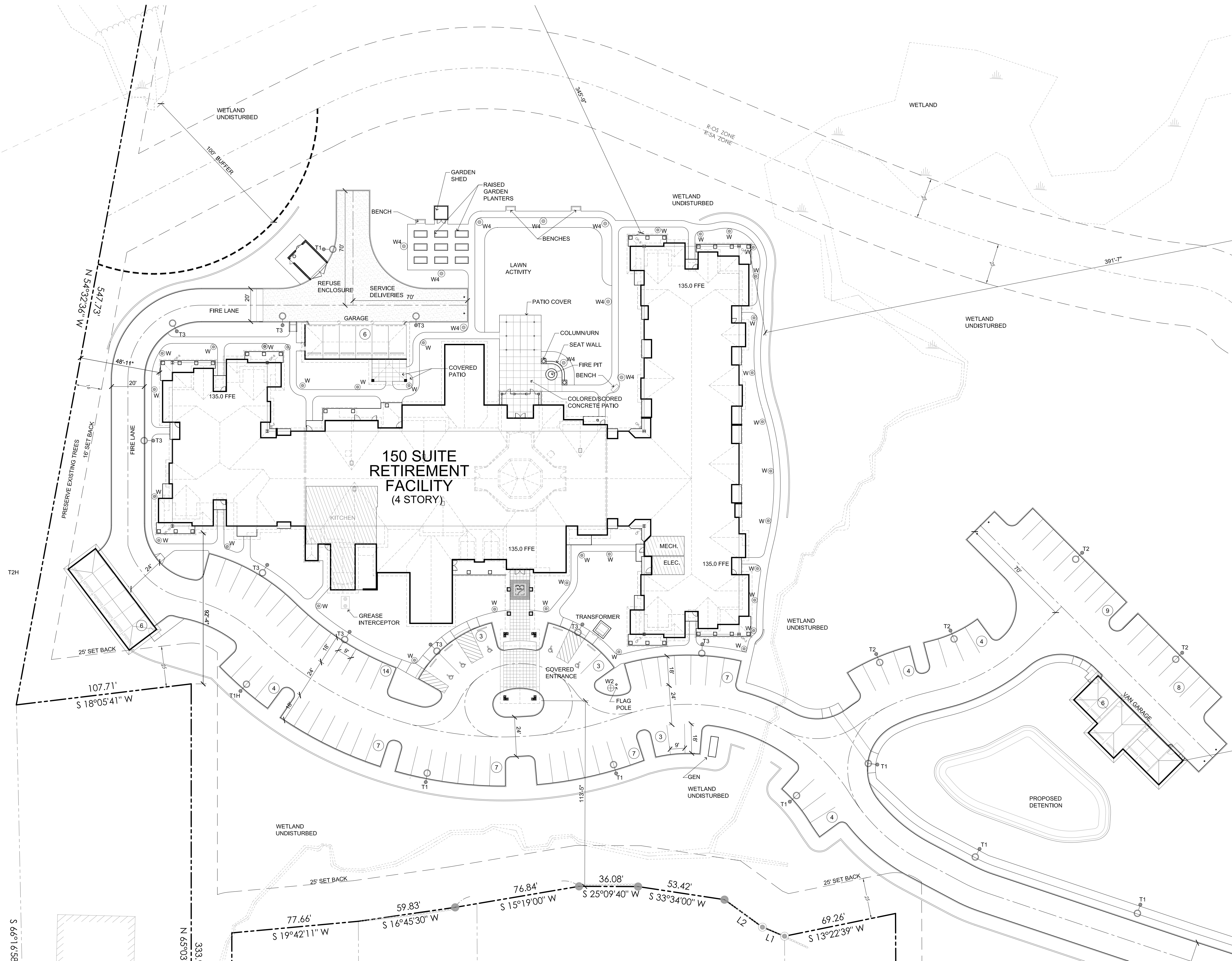
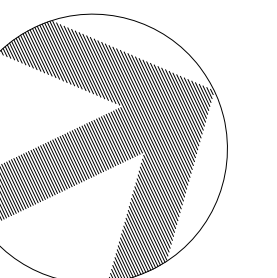
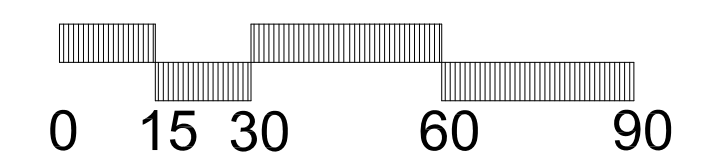
IMPERVIOUS AREA: 15.9% PERVIOUS AREA: 84.1%

PARKING:

RETIREMENT PROJECT:
82 OPEN SPACES
18 COVERED SPACES
5 ACCESSIBLE SPACES
102 TOTAL SPACES

SITE PLAN

DATE: 28 Aug. 2015
SCALE: 1" = 30'-0"



lenity
architecture

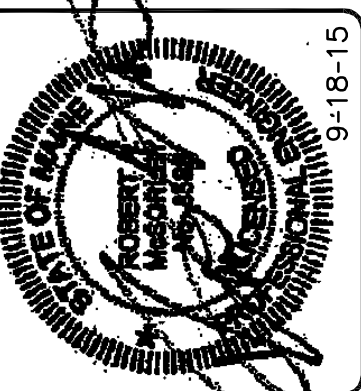
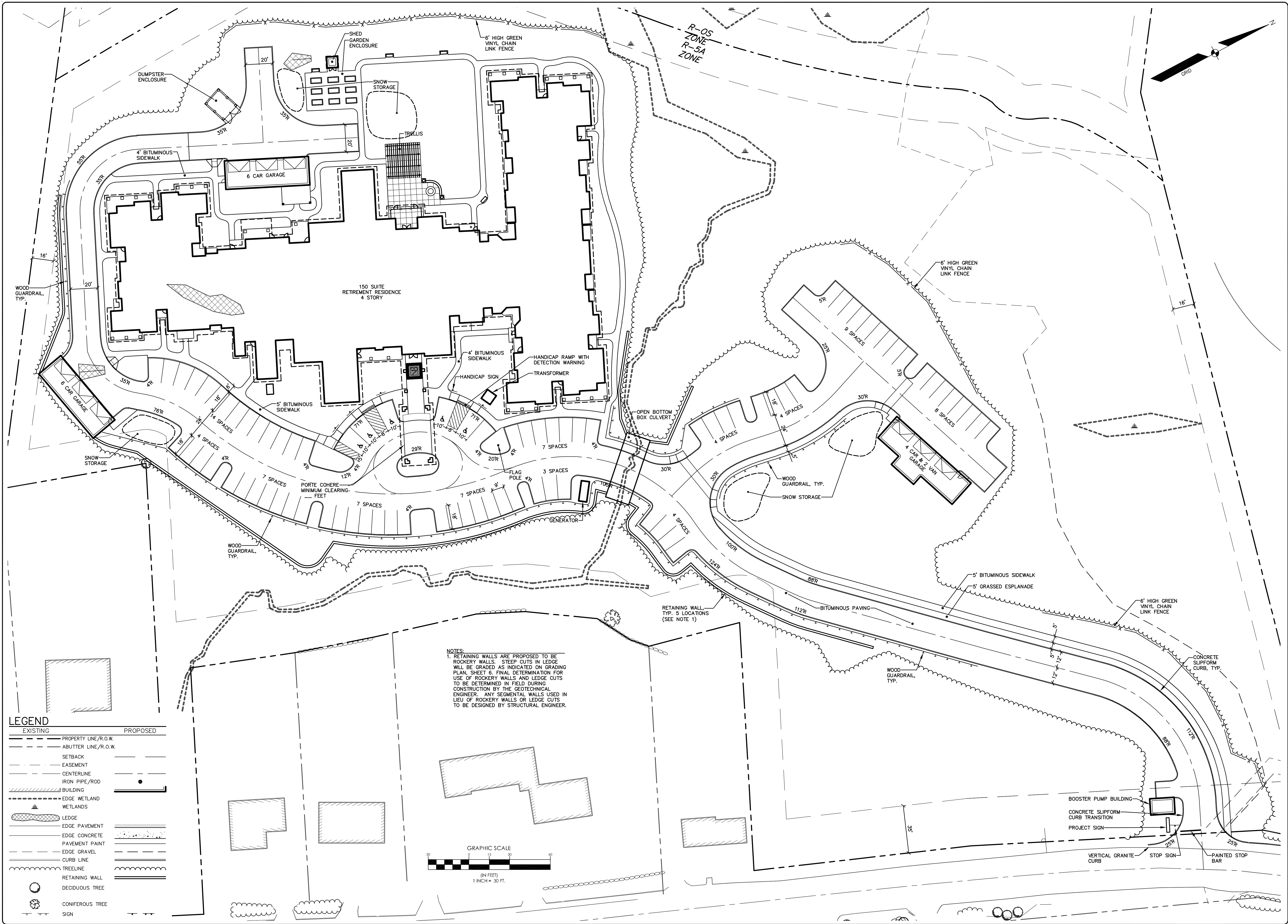
3150 Kettle Court SE, Salem, Oregon 97301
P 503 399 1090 F 503 399 0565 W lenityarchitecture.com

Portland Retirement Residence

Portland, Maine

HAWTHORN
RETIREMENT GROUP

9310 NE Vancouver Mall Dr., Suite 200
Vancouver, WA 98662-8210
(360) 213-1550 Fax (360) 213-1540



Plan 5a

DESIGNED	CHECKED
PDO	RAM
A. RAM 9-18-15 PLAN SUBMISSION TO CITY OF PORTLAND	
REV. BY:	DATE:
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SEBAGO
TECHNIQS

WWW.SEAGOTECHNIQS.COM
75 John Roberts Rd., Suite 1A, South Portland, ME 04106
Tel: 207-200-2100 Tel: 207-783-5656

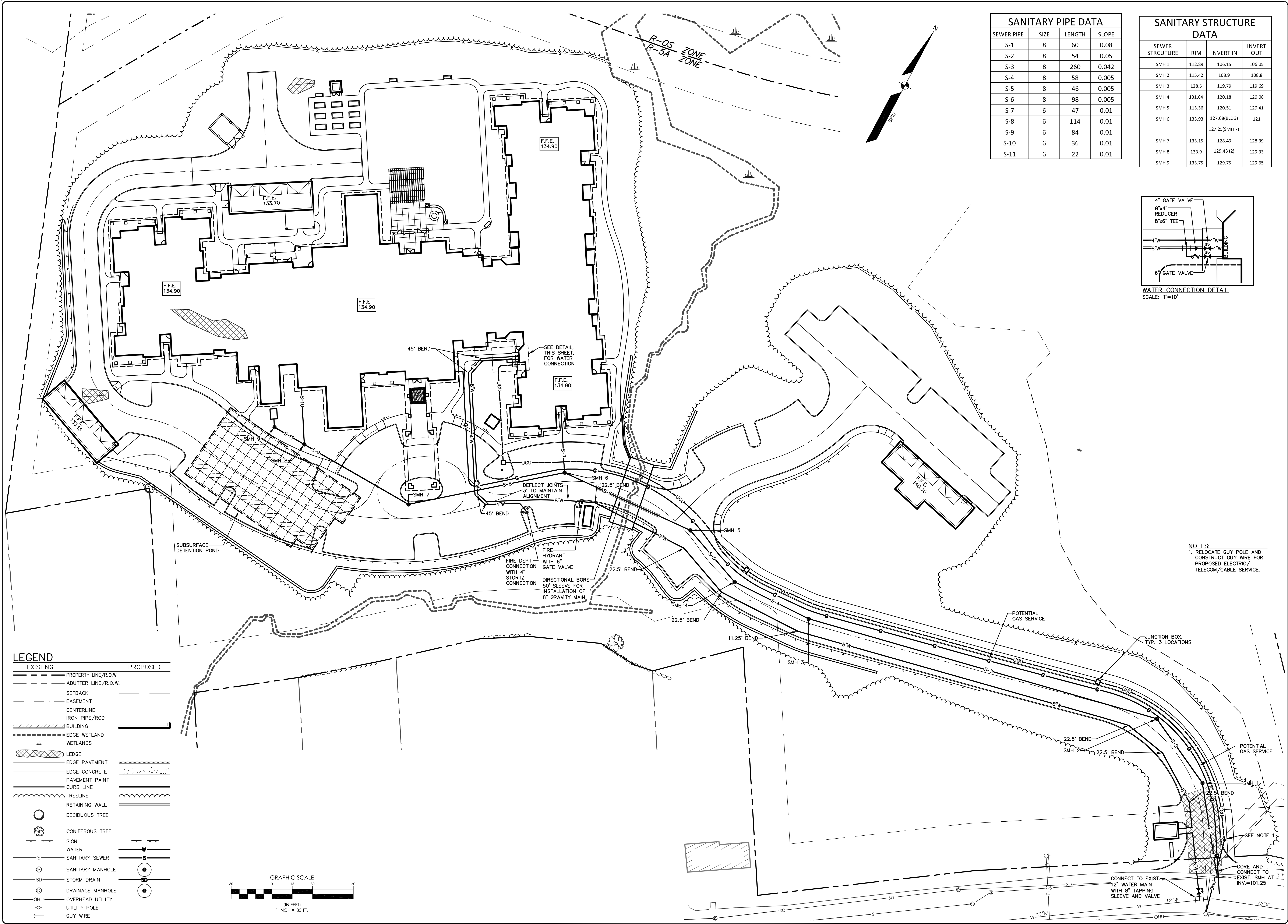
SITE PLAN
OF:
PORTLAND RETIREMENT RESIDENCE
802 OCEAN AVENUE
PORTLAND, ME

FOR:
HAWTHORN DEVELOPMENT GROUP, LLC
9310 NE VANCOUVER WALL DR., STE200
VANCOUVER, WA 98662-8210

PROJECT NO.	SCALE
14432	1" = 30'

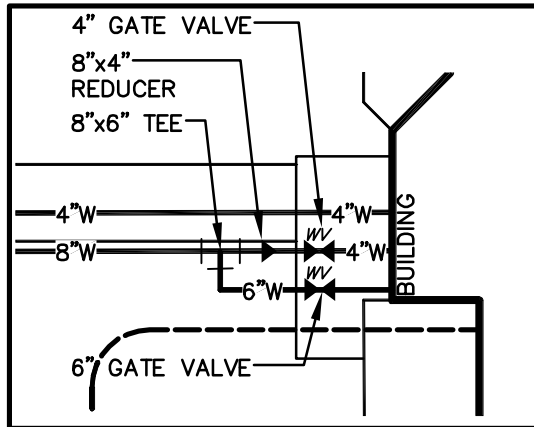
SHEET 5 OF 14

144325.dwg, TAB 51



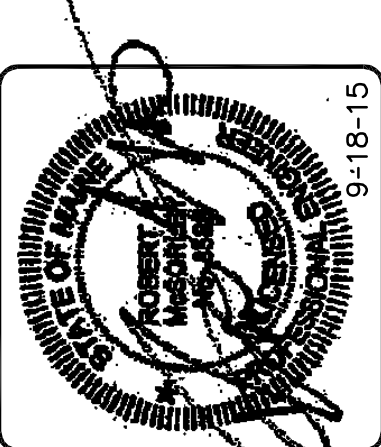
SANITARY PIPE DATA			
SEWER PIPE	SIZE	LENGTH	SLOPE
S-1	8	60	0.08
S-2	8	54	0.05
S-3	8	260	0.042
S-4	8	58	0.005
S-5	8	46	0.005
S-6	8	98	0.005
S-7	6	47	0.01
S-8	6	114	0.01
S-9	6	84	0.01
S-10	6	36	0.01
S-11	6	22	0.01

SANITARY STRUCTURE DATA			
SEWER STRCUTURE	RIM	INVERT IN	INVERT OUT
SMH 1	112.89	106.15	106.05
SMH 2	115.42	108.9	108.8
SMH 3	128.5	119.79	119.69
SMH 4	131.64	120.18	120.08
SMH 5	113.36	120.51	120.41
SMH 6	133.93	127.68(BLDG)	121
		127.25(SMH 7)	
SMH 7	133.15	128.49	128.39
SMH 8	133.9	129.43 (2)	129.33
SMH 9	133.75	129.75	129.65



WATER CONNECTION DETAIL
SCALE: 1"=10'

NOTES:
1. RELOCATE GUY POLE AND CONSTRUCT GUY WIRE FOR PROPOSED ELECTRIC/TELECOM/CABLE SERVICE.



Plan 7

DESIGNED	CHECKED
PDO	RAM
A. RAM 9-18-15 PLAN SUBMISSION TO CITY OF PORTLAND	
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250 Goddard Rd.
Suite B
South Portland, ME 04106
Tel. 207-200-2100 Tel. 207-783-5656

UTILITY PLAN
OF:
PORTLAND RETIREMENT RESIDENCE
802 OCEAN AVENUE
PORTLAND, ME

FOR:
HAWTHORN DEVELOPMENT GROUP, LLC
9310 NE VANCOUVER WALL DR., STE200
VANCOUVER, WA 98662-8210

PROJECT NO. 14432

SCALE 1" = 30'

SHEET 7 OF 14

1443200.dwg TAB:U

GENERAL STRUCTURAL NOTES

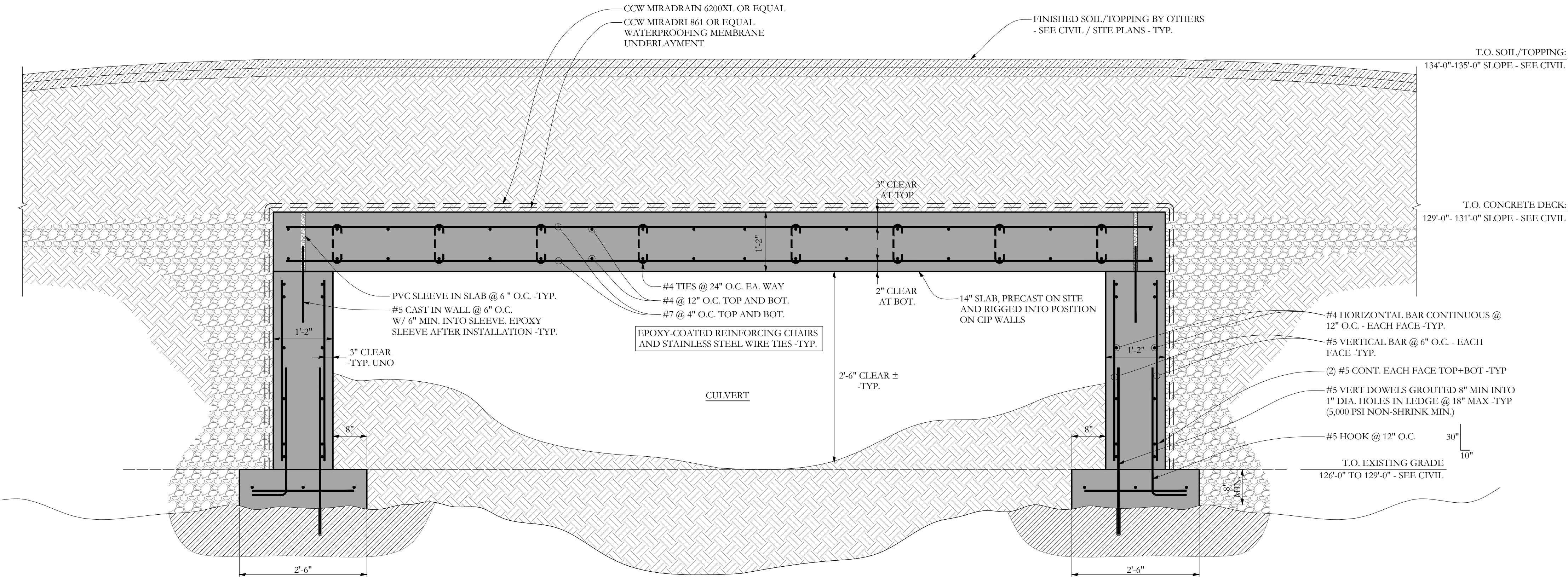
SI Job # 15-0169
Portland Retirement Residence
Box Culvert Design
Portland, ME

DESIGN LIVE LOADS: MUEBC, ACI 318 and AASHTO/HY-25
* Vehicle/Traffic TA400 (56,438 #/ Axle)

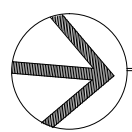
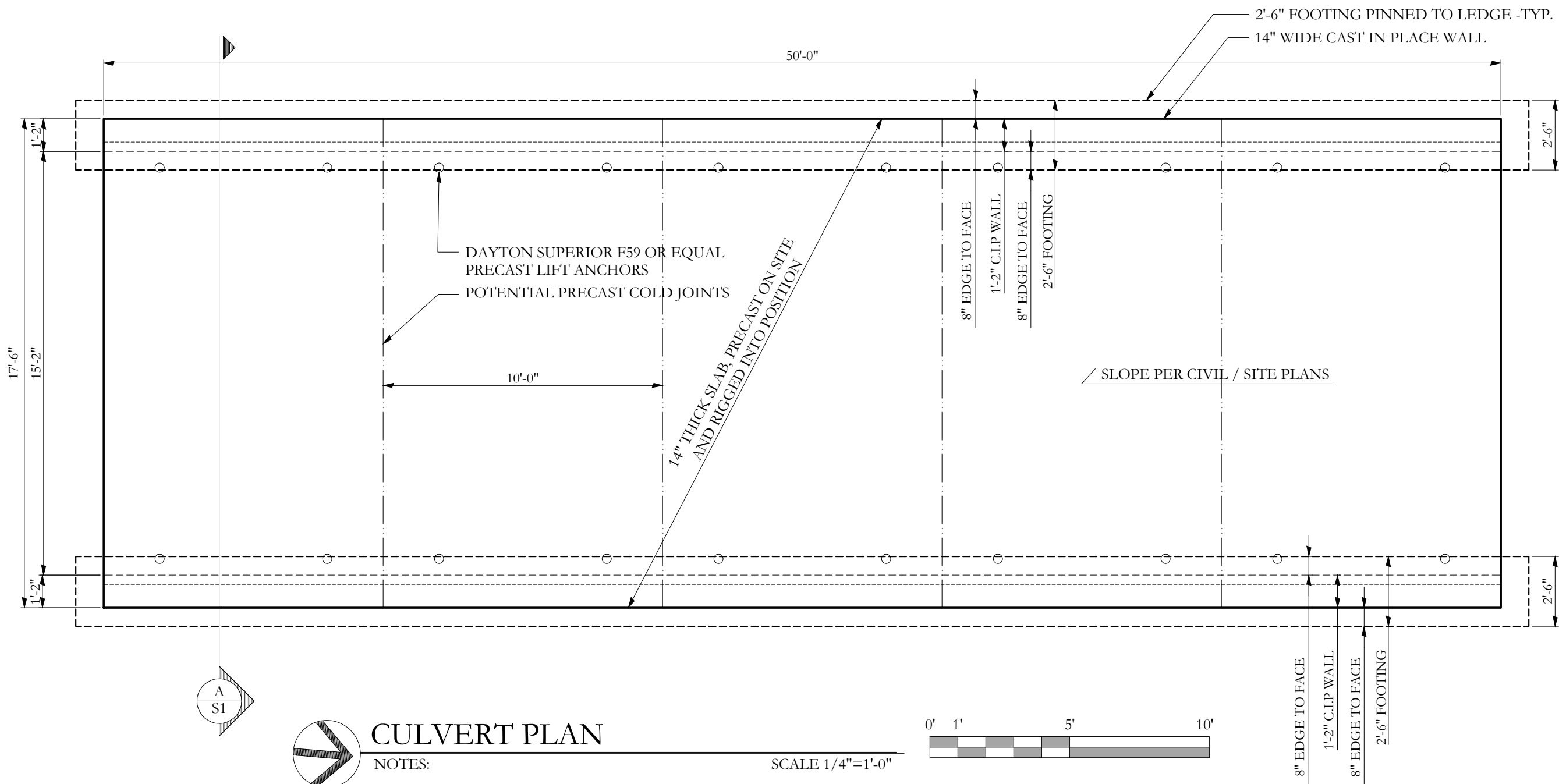
FOUNDATION:
* Based on geotechnical report No. 14-1188 S by S.W. Cole, dated January 16, 2015. See report for earthwork requirements. Soils engineer shall verify soil conditions and types during excavation and prior to concrete placement.
* Footings shall bear on ledge, or otherwise be placed on undisturbed natural soil or compacted fill tested and approved by soils engineer where ledge bearing is not possible.
* Maximum design soil pressure: 4,000 psf on crushed stone on firm virgin soil.

CONCRETE AND REINFORCEMENT:
* Concrete shall conform to applicable provisions of ACI-301 and 318.
Minimum 28 day compressive strength (f'c)
Footings, slab, and walls: 5,000 psi w/ 6% air entrainment, max w/c ratio = .42
* Cement Type: I/II
* Deformed reinforcement: ASTM A615 grade 60, except bars specified to be field-bent, stirrups, and ties which shall be grade 40.
* Reinforcement shall be fabricated and placed per ACI Manual of Standard Practice (ACI-315). At splices, lap bars 50 diameters unless noted otherwise.
* Concrete cover over reinforcing: 1 1/2" for concrete placed against forms; 3" for concrete placed against earth. See also drawings.
* Keep reinforcement clean and free of dirt, oil, and scale. Oil forms prior to placing reinforcement.
* All reinforcing steel to be epoxy coated
* All reinforcing steel **crossing cold joints** shall be stainless steel [when required by DOT].
* Repair damaged epoxy coated bars with approved repair coating.
* Grout: 2500 psi at 28 days. Vibrate to consolidate.

STRUCTURAL ERECTION AND BRACING REQUIREMENTS
* The structural drawings illustrate the completed structure with all elements in their final positions, properly supported and braced. The contractor, in the proper sequence, shall provide proper shoring and bracing as may be required to achieve the final completed structure.
* These plans have been engineered for construction at one specific building site. Builder assumes ALL responsibility for use of these plans at Any Other building site. Plans shall not be used for construction at any other building site without specific review by the engineer.
* Observations of foundation reinforcing as required by the owner, lender, insurer, building department or any other party will be accomplished by the engineer at the owner's expense. At least 24 hours advance notice is requested.

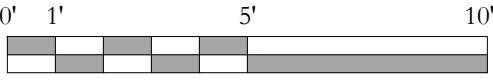


SECTION A-S1 3/4"=1'-0



CULVERT PLAN

NOTES:
1. MAINTAIN 4'-0" MIN. FROST DEPTH TYP. IF NOT BEARING ON LEDGE



FOR PERMIT

STATE OF MAINE
AARON C. JONES
No. 10988
LICENSED PROFESSIONAL ENGINEER
8/25/15

Structural Integrity
Consulting Engineers, Inc.
77 Oak Street
Portland, ME 04101
p. 207-774-4644
f. 866-793-7835
www.structuralintegrity.com

BUILD WITH CONFIDENCE
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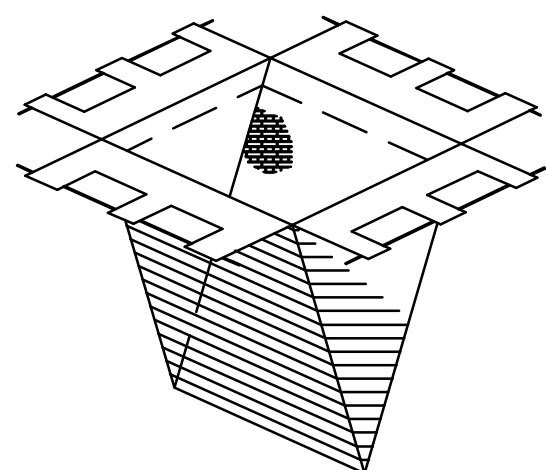
SI# 15-0169

DESIGNED	CHECKED
CDM	CLB
CDM 05-04-2015	ADDED FOOTPATHS/TRAILS & CORRESPONDING NOTE 12
CDM 02-26-2015	REVISED UTILITIES IN OCEAN AVENUE
CDM 01-23-2015	REVISED BORINGS/PROBES
CDM 01-23-2015	PLAN REVISED TO REFLECT TITLE COMMITMENT 14030089 REVISED 1-12-15
REV. BY:	STATUS:
DATE:	ISSUED TO CLIENT FOR REVIEW
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250 Goddard Rd., Suite 8
Lewiston, ME 04240
Tel. 207-783-5658

BOX CULVERT PLAN AND SECTION
ON LAND OWNED BY:
GRAVES HILL LAND COMPANY, LLC
802-838 OCEAN AVENUE
PORTLAND, MAINE 04103
PREPARED FOR:
HAWTHORN DEVELOPMENT, LLC
9310 NE VANCOUVER MALL DRIVE, SUITE 200
VANCOUVER, WASHINGTON 98662-8210

PROJECT NO.	SCALE
14432	1" = 50'



NOTES:
PRIOR TO FINAL GRADING AND PAVING OPERATIONS BEGIN A CATCH BASIN INSERT (SUCH AS A SILT SACK OR A DANDY BAG II) MUST BE INSTALLED IN EACH BASIN PER MANUFACTURES INSTRUCTIONS. HAY BALES SHOULD BE REMOVED ONCE INSERTS ARE INSTALLED.

Diagram illustrating a pile of organic based erosion control mix. The pile is labeled "ORGANIC BASED EROSION CONTROL MIX" and has dimensions of 12" (height) and 24" (width).

INSTALLATION:

1. THE BARRIER MUST BE PLACED ACROSS THE SLOPE, ALONG THE CONTOUR.
2. EXISTING GROUND SHALL BE PREPARED SUCH THAT THE BARRIER MAY LIE NEARLY FLAT ALONG THE GROUND TO AVOID THE CREATION OF VOIDS AND BRIDGES IN ORDER TO MINIMIZE THE RISK OF EROSION.
3. THE BARRIER SHALL BE A MINIMUM OF 1 FOOT HIGH (AS MEASURED ON THE UPHILL SIDE) AND 2 FEET WIDE FOR SLOPES LESS THAN 5% IN GRADE AND SHALL BE WIDER TO ACCOMMODATE THE ADDITIONAL RUNOFF.
4. EROSION CONTROL MIX CAN BE INSTALLED WHERE SILT FENCE IS ILLUSTRATED ON THE DESIGN PLANS IN AREAS EXCEPT IN, BUT NOT LIMITED TO, THE FOLLOWING AREAS: WETLAND AREAS, AT POINTS OF CONCENTRATED FLOW, BELOW CULVERT OUTLET APRONS, AROUND CATCH BASINS, AND AT THE BOTTOM OF STEEP SLOPES THAT ARE MORE THAN 50 FEET FROM TOP TO BOTTOM.

COARSE AGGREGATE
(2-3" STONE) OR
MATCH FUTURE
DITCH LINING SIZE

6°

Dc

FLOW

Dc

VARIES

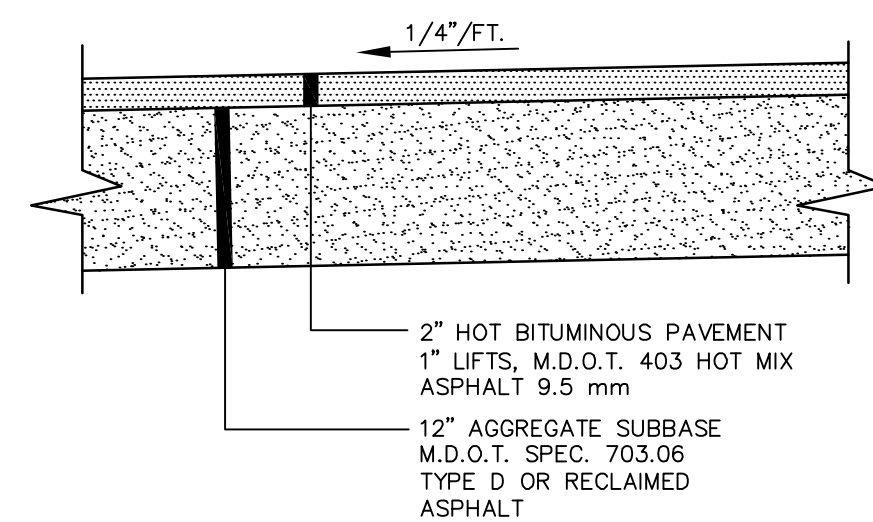
A

L

B

Let L = THE DISTANCE SUCH THAT

L = THE DISTANCE SUCH THAT
POINTS A AND B ARE OF EQUAL
ELEVATION



The diagram shows a cross-section of a concrete slab on aggregate base. The layers from top to bottom are:

- 6" FIBER REINFORCED CONCRETE SLAB** ($F_c = 4000$ psi): The top layer, shown with a stippled texture. It has a vertical contraction joint on the left and a vertical reinforcement bar (rebar) in the center.
- 3" CRUSHED GRAVEL BASE COURSE** (MDOT SPEC 703.6(a) TYPE A): A layer below the concrete slab, shown with a cross-hatched texture.
- 15" AGGREGATE SUBBASE COURSE GRAVEL** (MDOT SPEC 703.6(c) TYPE D): A layer below the base course, shown with a stippled texture.
- NATIVE OR RECOMPACTED GRANULAR BORROW SOIL**: The bottom layer, shown with a horizontal-hatched texture.

Additional features and labels:

- BROOM FINISH/TOOLED JOINTS OR STAMPED COLORED FINISH**: An arrow points to the top surface of the concrete slab.
- NOTE:** 1. PROVIDE CONTRACTION CONTROL JOINTS EVERY 6' IN EACH DIRECTION. An arrow points to the vertical joint in the concrete slab.

PLAN

4" LOAM & SEED/SOD

4"x8-1/2" FILTER FABRIC

JOINT 1/4" ; 1/8"

SECTION

5"+/-

6" REVEAL

BITUMINOUS PAVEMENT

CRUSHED AGGREGATE BASE COURSE

AGGREGATE SUBBASE GRAVEL

7"

12"

12"

6"

NOTES:

1. EXCAVATION INCIDENTAL TO COST OF CURB
2. SUBBASE SHALL BE COMPACTED TO A FIRM EVEN SURFACE PRIOR TO SETTING OF CURB

NOTES:

1. EXCAVATION INCIDENT TO COST
2. SUBBAG COMPACT FIRM E PRIOR OF CUR

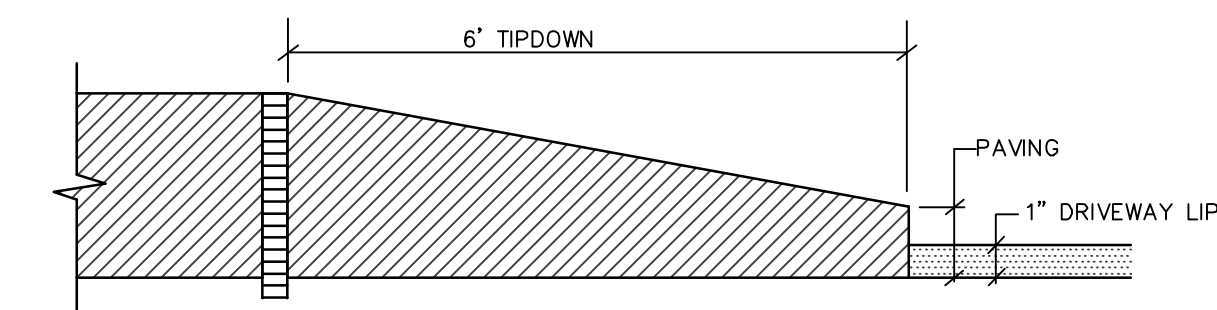


Diagram illustrating the proposed parking lot construction details. The diagram shows a cross-section of the pavement structure, including the existing pavement structure and the proposed parking lot layers. The layers are labeled as follows:

- MINIMUM SUBBASE COURSE-GRAVEL 70.006 (h) TYPE IV
- MINIMUM PAVING (HMA 12.5mm)
- MINIMUM PAVING (HMA 9.5mm)
- EXISTING PAVEMENT STRUCTURE

Dimensions and specifications are provided:

- Overall width: 3'-0"
- Thickness of existing pavement structure: 2" MIN. OR GREATER AS REQUIRED BY IMPROVEMENT SECTION
- Thickness of proposed parking lot layers: 2" MIN. OR GREATER AS REQUIRED BY IMPROVEMENT SECTION
- Notes: SAW CUT AND APPLY TACK COAT (M.D.O.T. SPEC. SECTION 409); MILL EXISTING PAVEMENT TO A DEPTH OF 2" AND APPLY TACK COAT PRIOR TO PLACEMENT OF PAVEMENT OVERLAY.

[illegible]

6'-0"

VARIABLE, SEE PLANS

6'-0"

SIDEWALK

RAMP 0.083

0.02

RAMP 0.083

SIDEWALK

SEE PLANS

TIPDOWN (1:12)

TIPDOWN (1:12)

TRUNCATED DOME

ACCESS ISLE

SLOPE SIDEWALK AS INDICATED TO MEET FINISH PAVEMENT GRADE.

NOTE:
ALL OTHER RAMPS SHALL HAVE MAX. SLOPE OF 0.083 ' /' FOR LENGTH OF 6'-0".

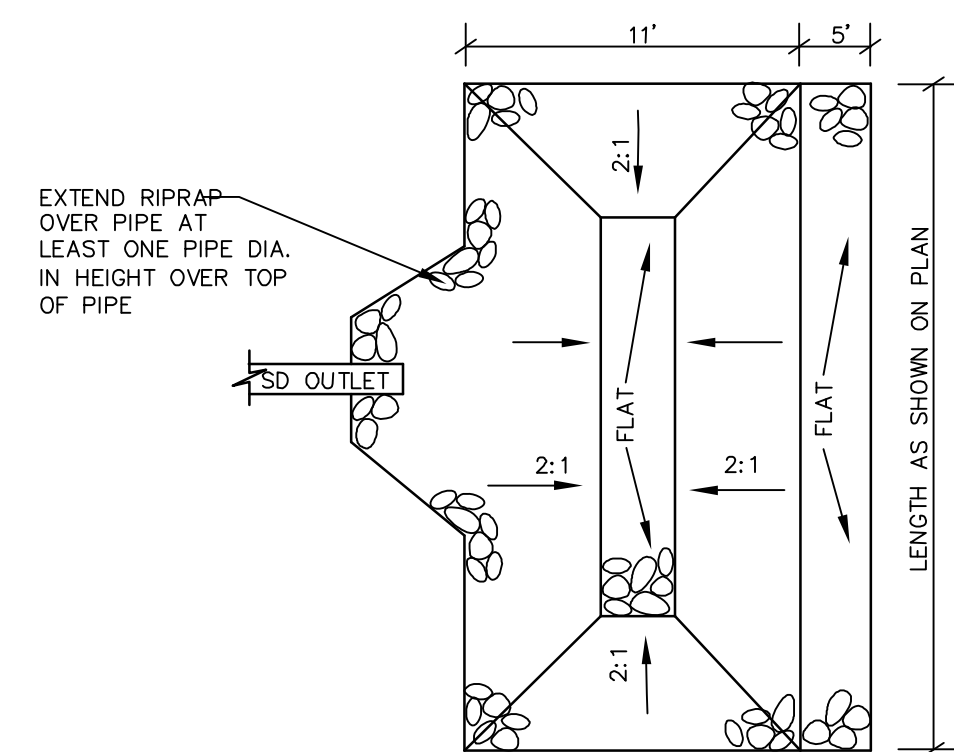
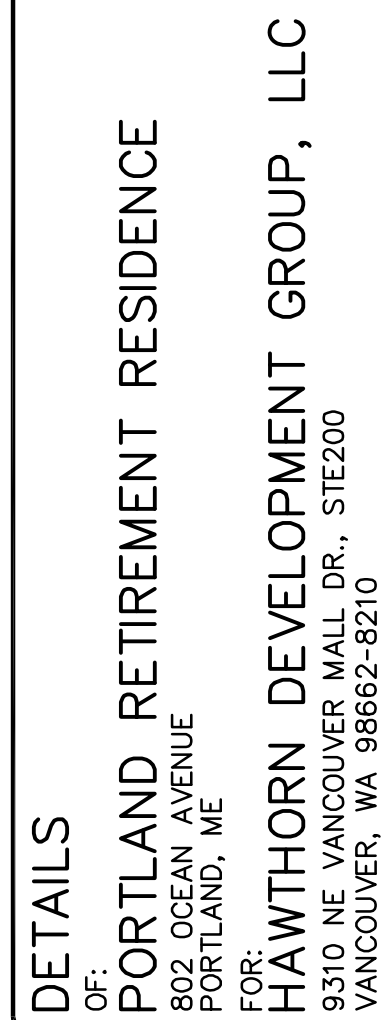
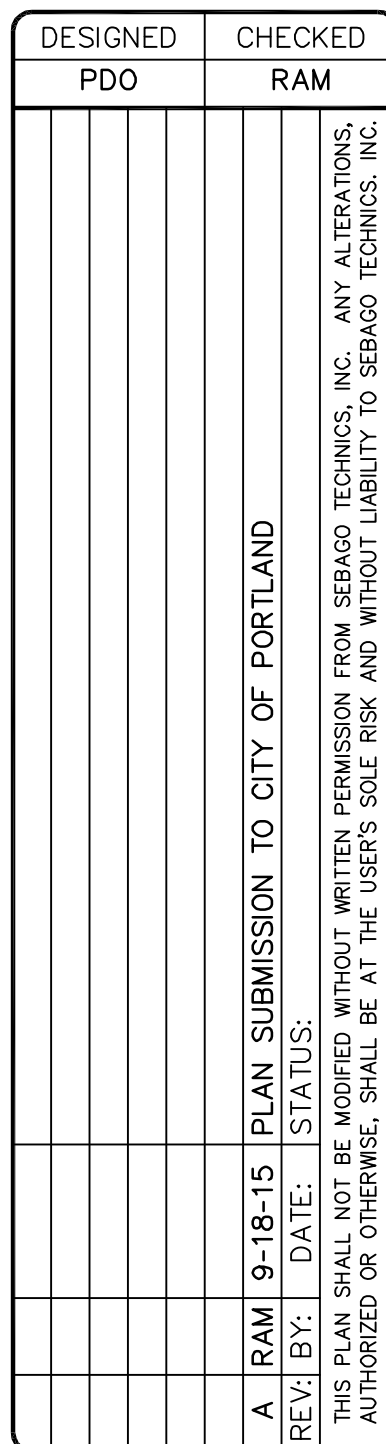


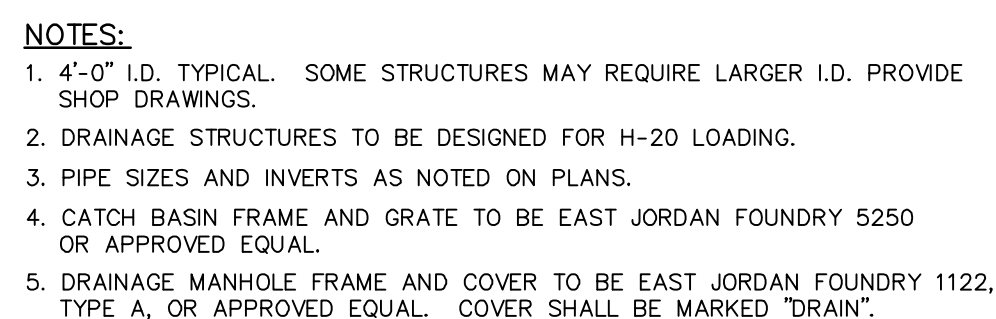
Diagram illustrating the profile view of a stormwater management structure. The structure is shown in cross-section, with a width of 50' MIN. and a depth of 8' MIN. A filter fabric is indicated below the stone. The structure is situated within a public right-of-way, with an existing round shown on the left side.

NOTES:

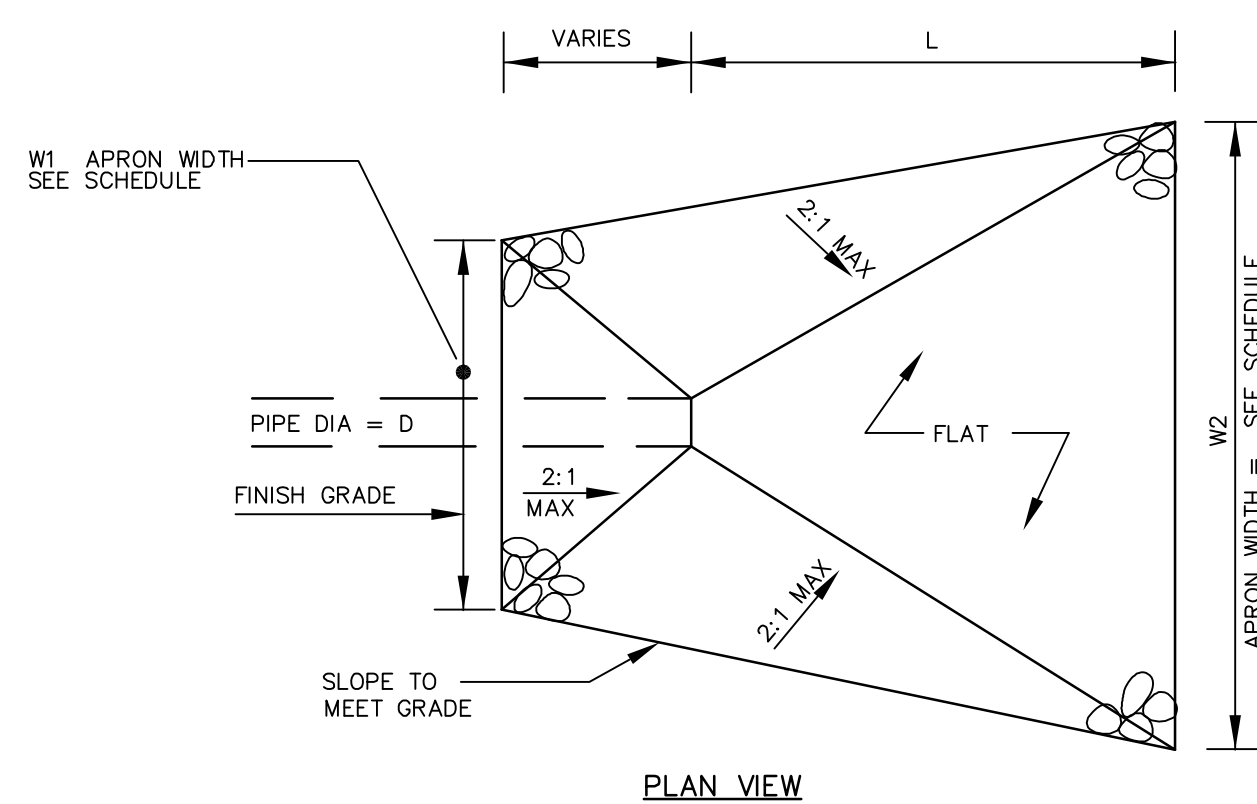
PLAN

1. STONE SIZE- AASHTO DESIGNATION M43, SIZE NO. 2 (2 1/2") TO 1 1/2"). USE CRUSHED STONE.
2. LENGTH- AS SHOWN ON PLANS, MIN. 50 FEET.
3. THICKNESS- NOT LESS THAN EIGHT (8) INCHES.
4. WIDTH- NOT LESS THAN FULL WIDTH OF ALL POINT OF INGRESS OR EGRESS.
5. MAINTENANCE- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT, SPILL, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED IMMEDIATELY.



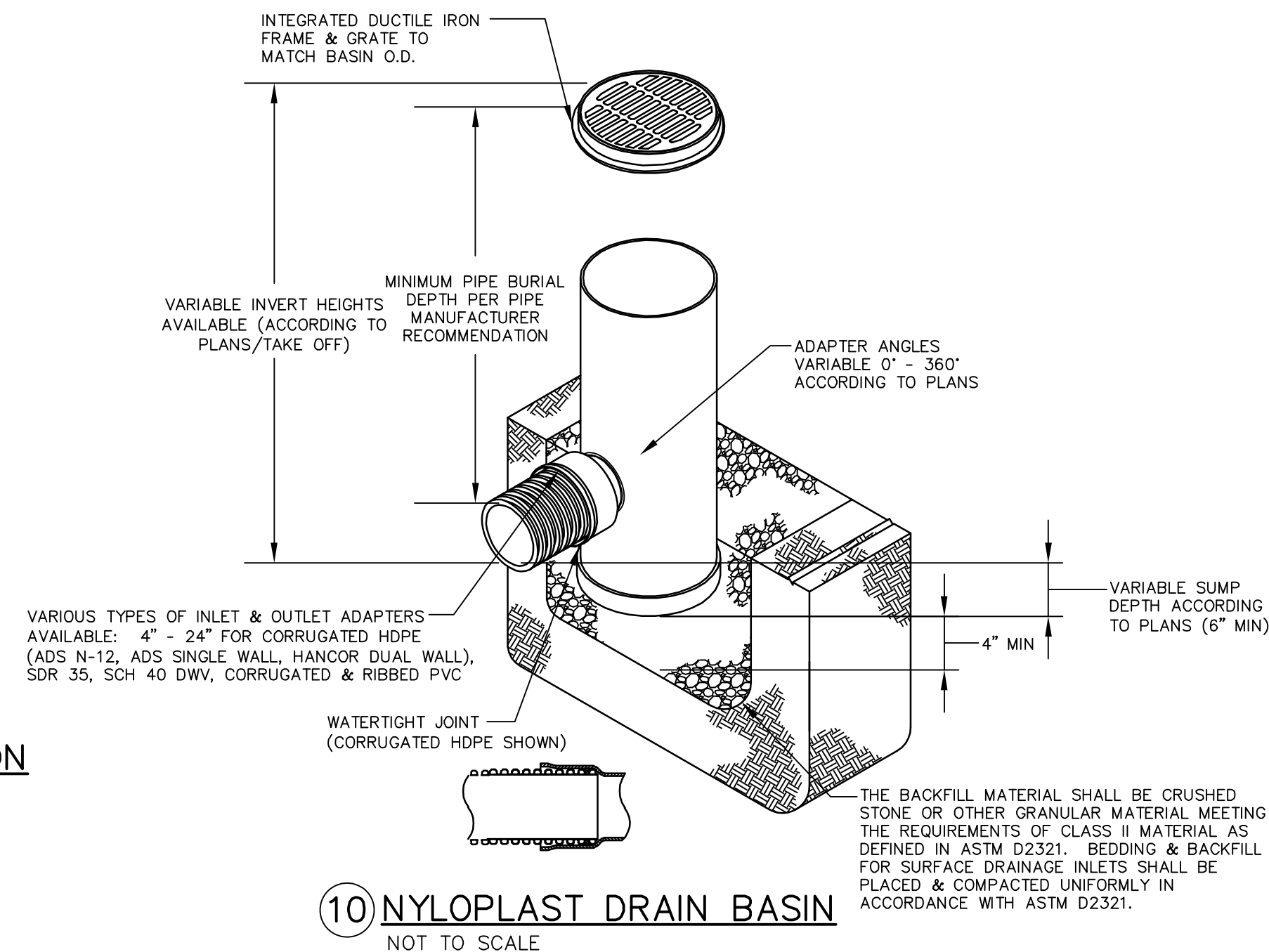


6 TYPICAL CONCRETE DRAINAGE STRUCTURE

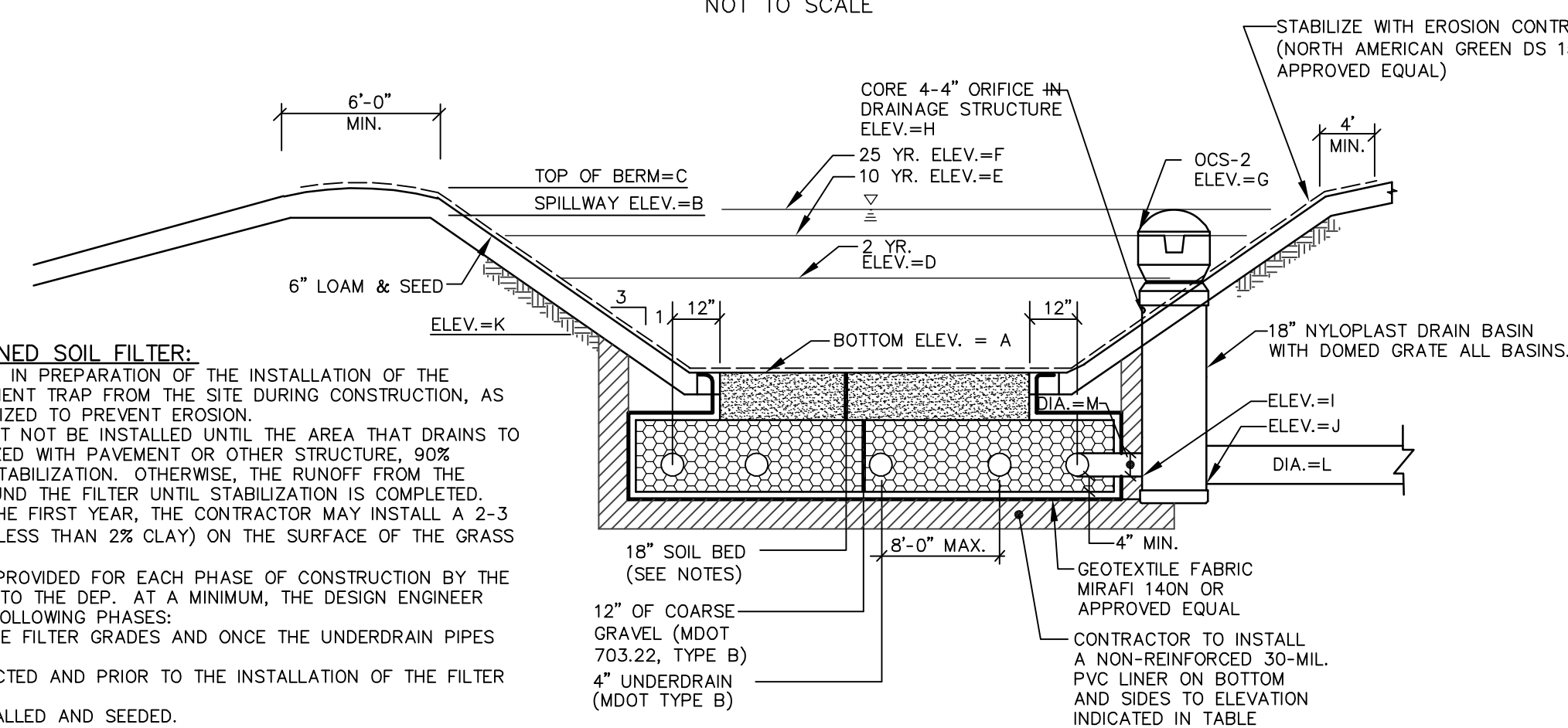


CULVERT DIAMETER D (IN.)	APRON LENGTH - L (FT.)	WIDTH - W1 (FT)	WIDTH - W2 (FT)	RIPRAP D50 (IN.)	RIPRAP THICKNESS (IN.)
12	8	3	9	6	14
15	10	4	12	6	14
18	13	5	15	7	16
24	18	6	20	8	18
36	29	9	32	11	25
42	33	11	37	12	27
48	39	12	43	16	36

7 RIPRAP APRON
NOT TO SCALE



10 NYLOPLAST DRAIN BASIN
NOT TO SCALE



EMBANKMENT CONSTRUCTION NOTES:

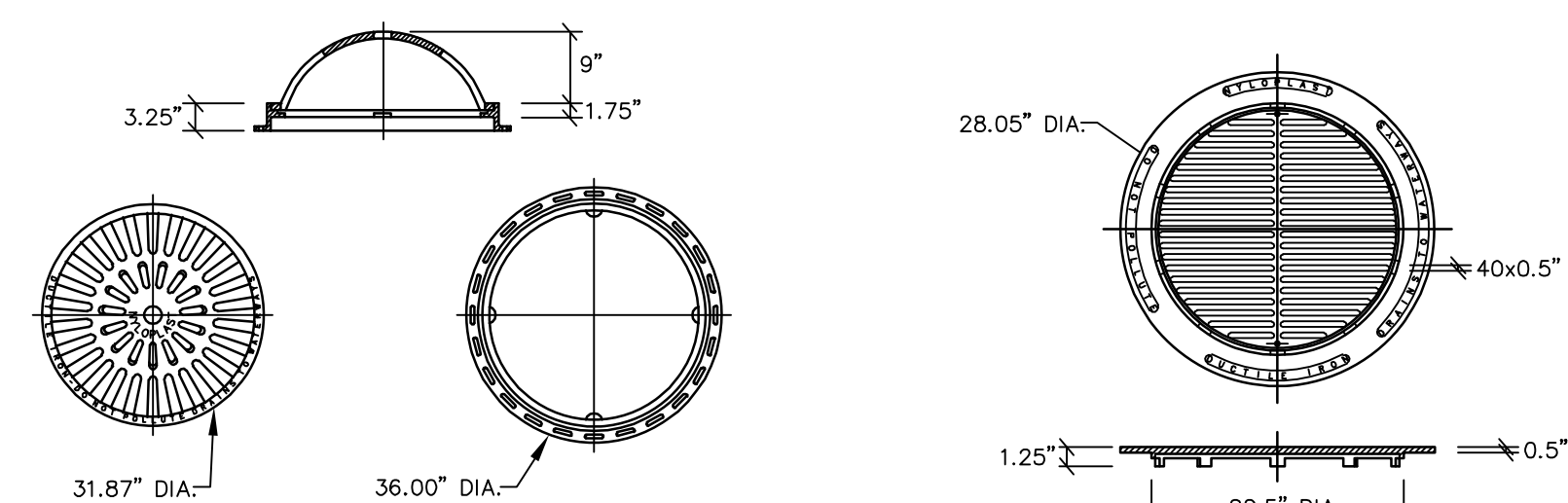
1. CONSTRUCTION OF COMMON BORROW MATERIAL MEETING M.D.O.T. SPECIFICATIONS
2. PLACE BORROW MATERIAL IN 12" LIFTS COMPACTED TO 95% OF MAXIMUM
3. INSTALL RIPRAP AND EROSION CONTROL MESH WHERE SPECIFIED ON PLANS
4. LOAM, SEED, AND STABILIZE IN ACCORDANCE WITH SEDIMENTATION AND EROSION CONTROL PLAN.

POND DIMENSIONS													
ELEVATION IN FEET													DIA (IN)
UNDERDRAIN GRASS FILTER	A	B	C	D	E	F	G	H	I	J	K	L	M
USE-1	125.00	127.5	128.0	126.28	126.74	126.96	127.0	126.00	122.83	122.83	126.0	12	4

SOIL BORING SUMMARY TABLE					
BORING NO.	EXIST. GRADE (FT.)	EXIST. SHWT		PROPOSED BMP STRUCTURE	UNDERDRAIN INVERT ELEV. (FT.)
		DEPTH (FT.)	ELEV. (FT.)		
1	VARIABLE	VARIABLE	VARIABLE	UNDERDRAINED FILTER POND-USF-1	122.53

ENTIRE SITE IS OVERLAID BY LEDGE. SOIL REPORTS INDICATE THAT GROUNDWATER MAY BE WITHIN A COUPLE FEET OF SURFACE BASED UPON ARTESIAN CONDITIONS.

11 UNDERDRAINED SOIL FILTER BASIN
NOT TO SCALE

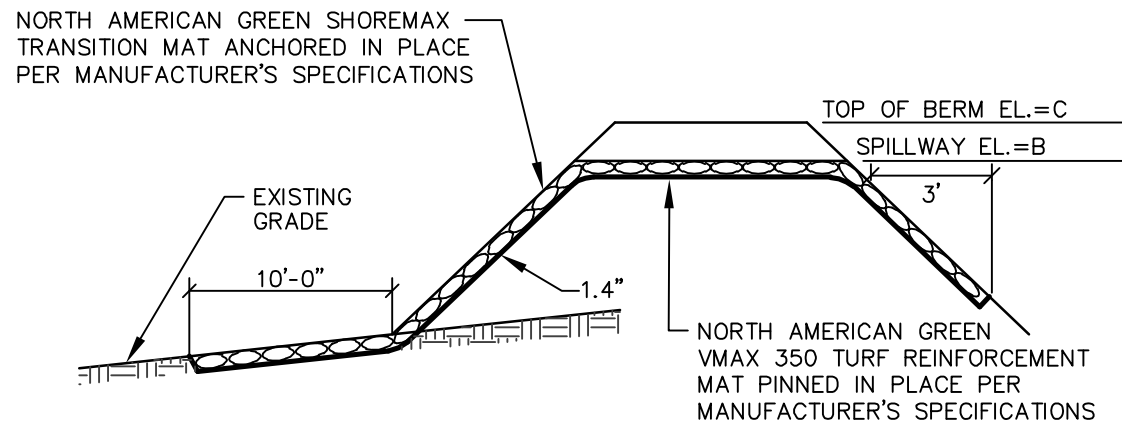


13 NYLOPLAST DROP IN GRATE
NYLOPLAST #2401DI NOT TO SCALE
USE AT ALL FIELD INLETS



12 NYLOPLAST DOME GRATE
NYLOPLAST #3099CGD NOT TO SCALE
USE AT ALL UNDERDRAINED PONDS

[illegible]

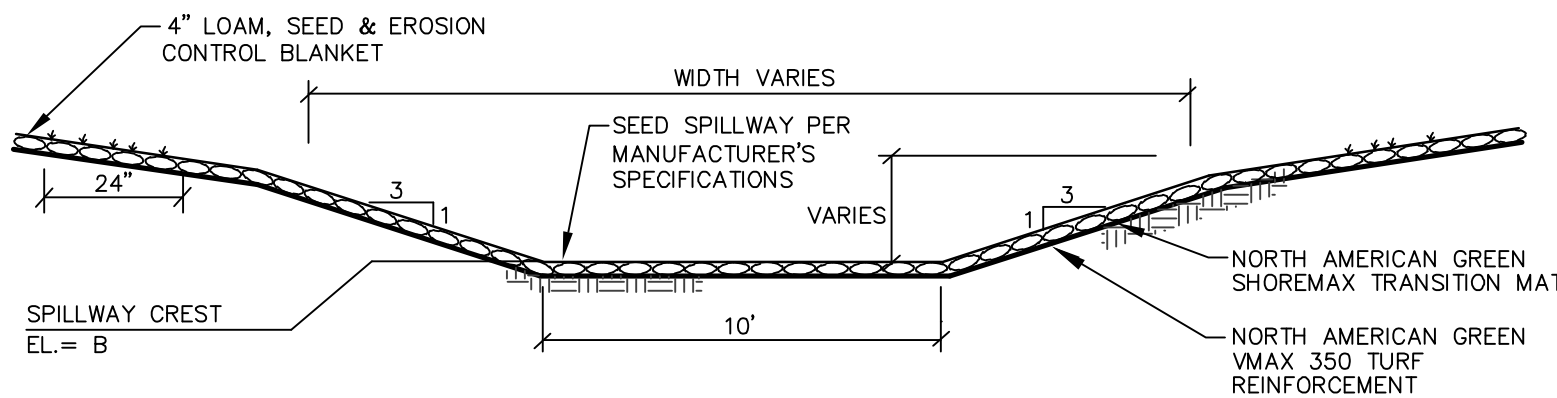


EMBANKMENT CONSTRUCTION

1. CONSTRUCTION OF COMMON BORROW MATERIAL MEETING M.D.O.T. SPECIFICATION.
2. PLACE BORROW MATERIAL IN 12" LIFTS. COMPACTED TO 95% OF MAXIMUM DRY DENSITY.
3. EROSION CONTROL MESH WHERE SPECIFIED ON PLANS.
4. LOAM, SEED, AND STABILIZE IN ACCORDANCE WITH SEDIMENTATION AND EROSION CONTROL PLAN.

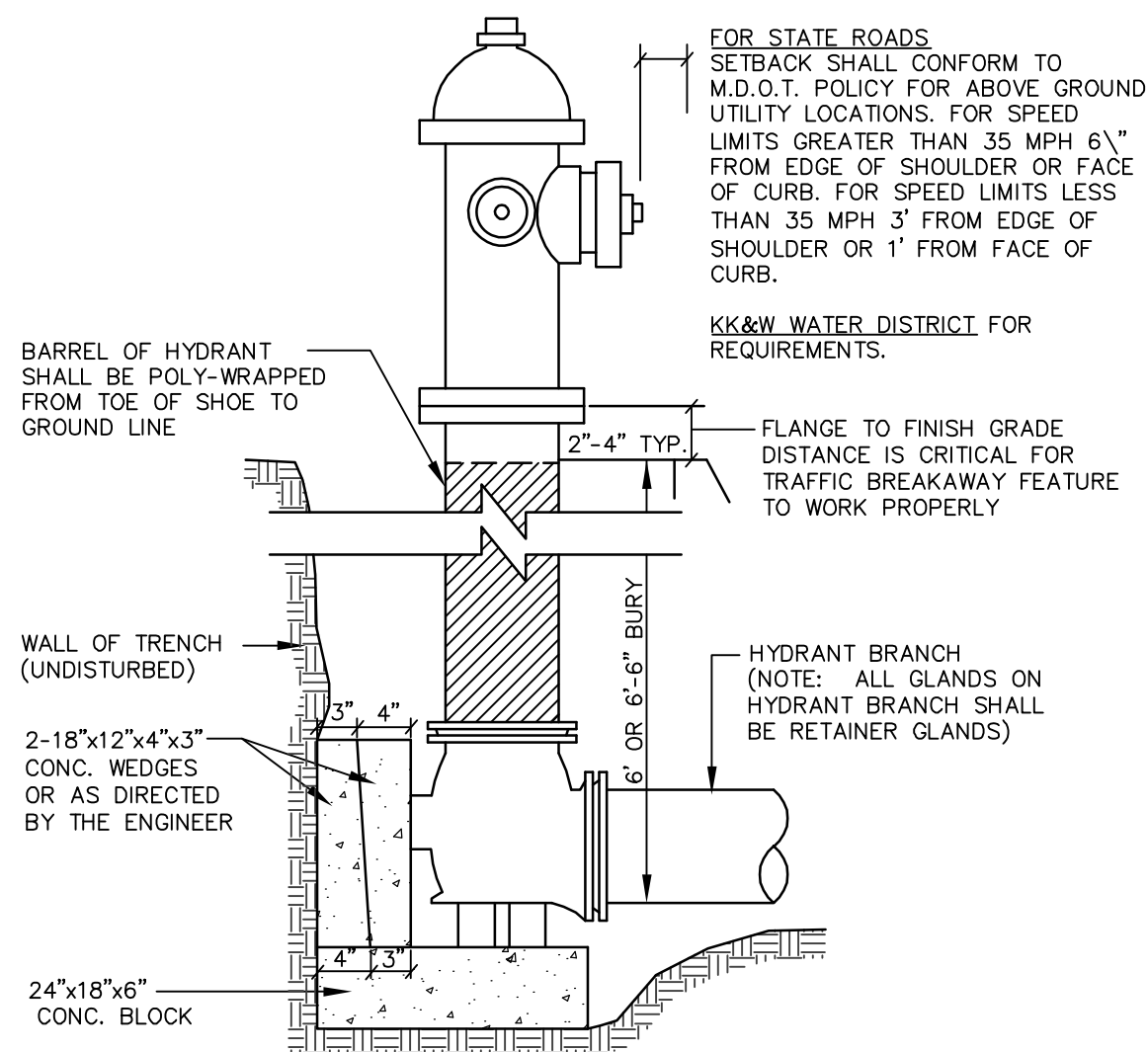
1 SPILLWAY SECTION

NOT TO SCALE



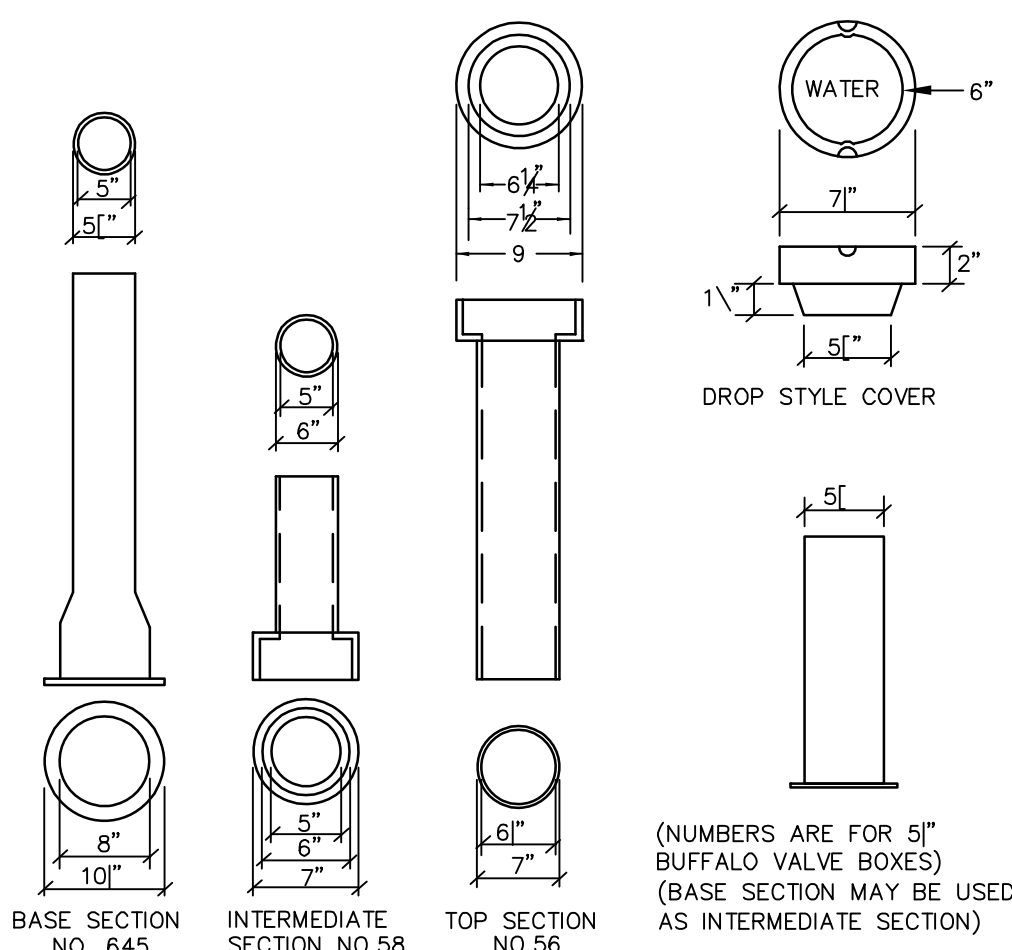
2 EMERGENCY SPILLWAY CROSS-SECTION

NOT TO SCALE



3 TYPICAL HYDRANT INSTALLATION

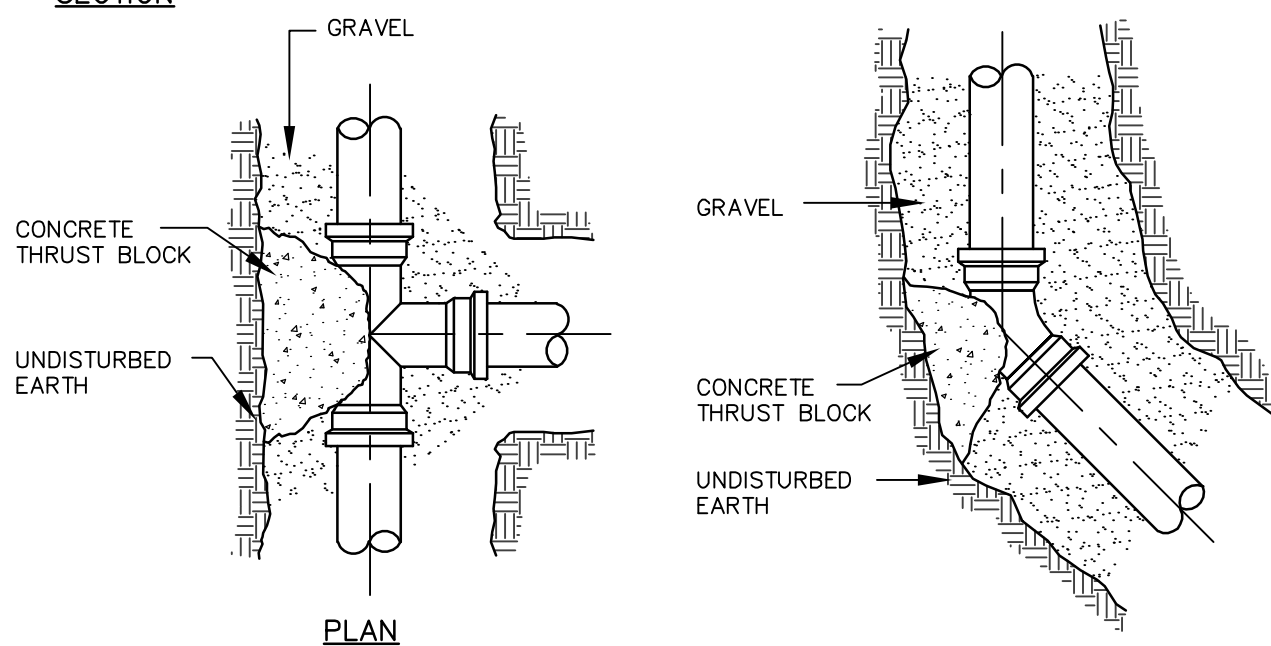
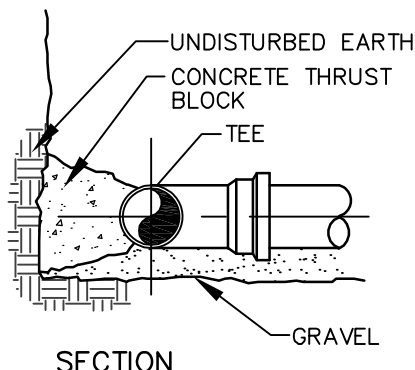
NOT TO SCALE



MATERIALS TO CONFORM WITH KK&W WATER DISTRICT

4 VALVE BOX & COVER

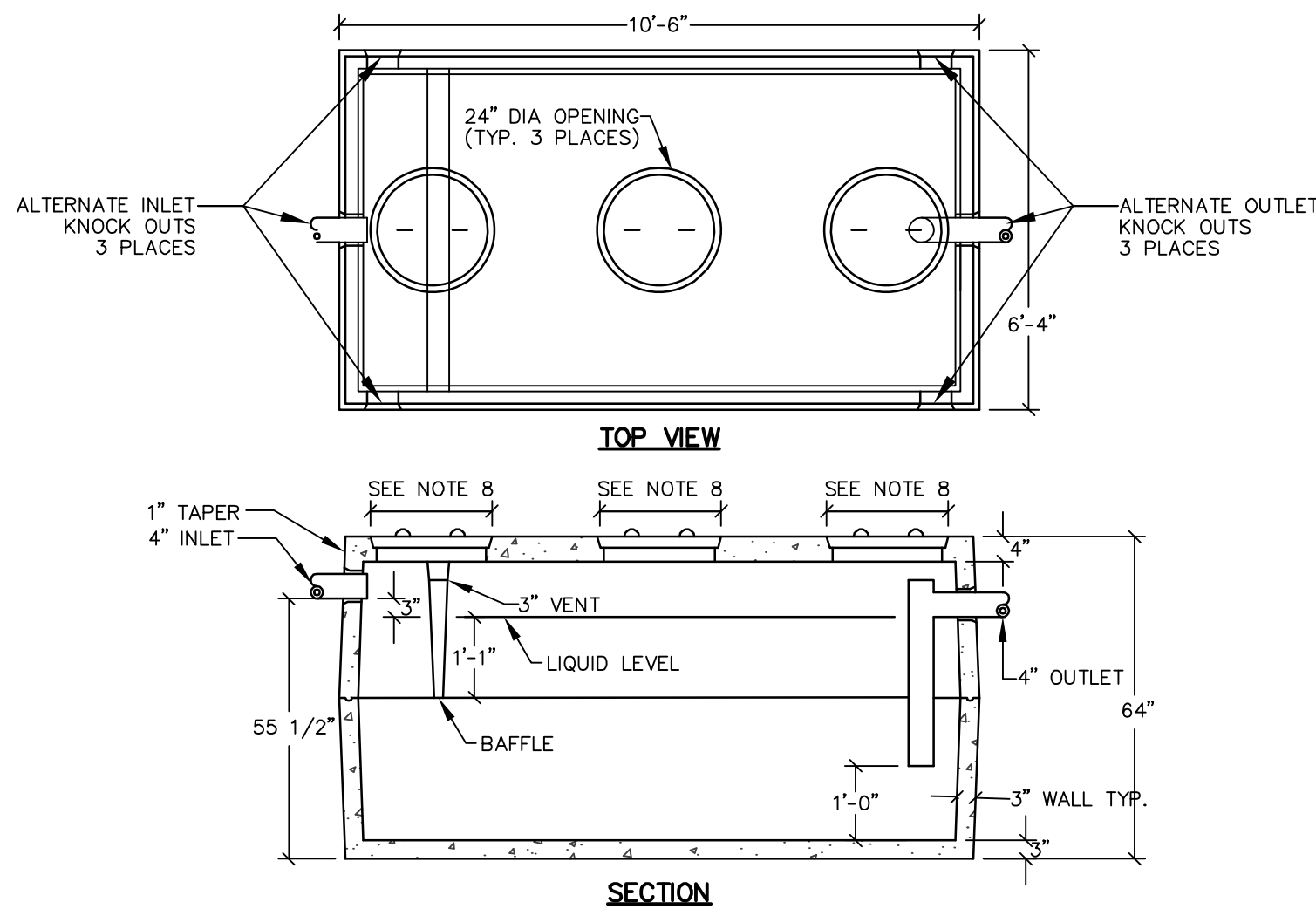
NOT TO SCALE



5 WATER TEE & BEND DETAIL

NOT TO SCALE

FITTINGS	CONCRETE THRUST BLOCK SIZE REQUIREMENTS		
	90° BENDS	45° BENDS	TEES AND PLUGS
PIPE SIZE			
6"	4.0	2.0	3.0
8"	8.0	4.0	6.0
12"	15	10	10

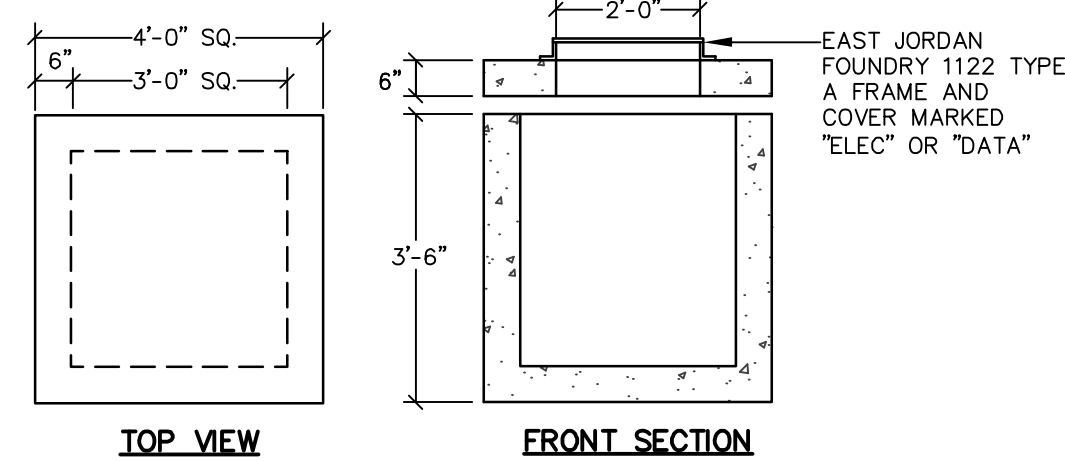


NOTES:

1. STRUCTURE SHALL BE 1,500 GALLON GREASE TRAP AS MANUFACTURED BY PRECAST CONCRETE PRODUCTS OF MAINE, INC. (ITEM #A-904) OR APPROVED EQUAL.
2. CONCRETE 4000 PSI AT 28 DAYS.
3. INLET Baffle IS PRECAST AS ONE UNIT WITH THE TOP SECTION OF THE SEPTIC TANK.
4. TANKS REINFORCED WITH 6X6X10 G.A. WIRE.
5. KEYED JOINTS SEALED WITH ASPHALT SEALANT.
6. HEAVY DUTY SEPTIC TANK TOPS REINFORCED WITH 1/2" REBAR ON 6" CENTERS EACH WAY.
7. GREASE FILTER AVAILABLE.
8. PROVIDE PRECAST SECTIONS AND EAST JORDAN FOUNDRY 1122 TYPE A FRAME AND COVER MARKED "SEWER"

6 1,500 GALLON GREASE TRAP

NOT TO SCALE



TOP VIEW

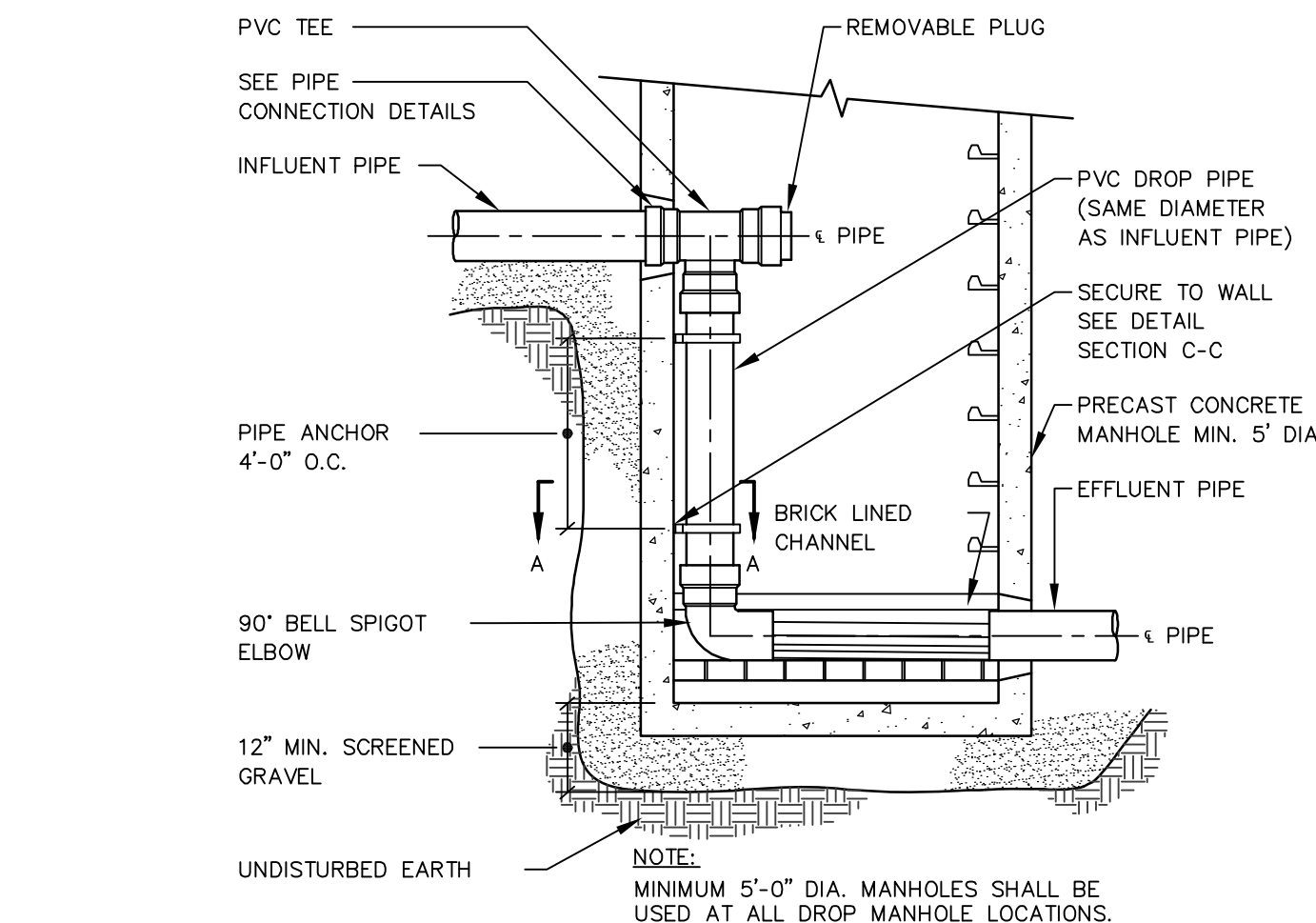
FRONT SECTION

NOTES:

1. STRUCTURE SHALL BE 3' SQ. UTILITY BOX WITH 6" WALLS AS MANUFACTURED BY PRECAST CONCRETE PRODUCTS OF MAINE, INC. (ITEM #B-14) OR APPROVED EQUAL.
2. CONCRETE 4000 PSI AT 28 DAYS.
3. STRUCTURE TO BE H-20 LOADED.
4. OPENINGS AS NEEDED.

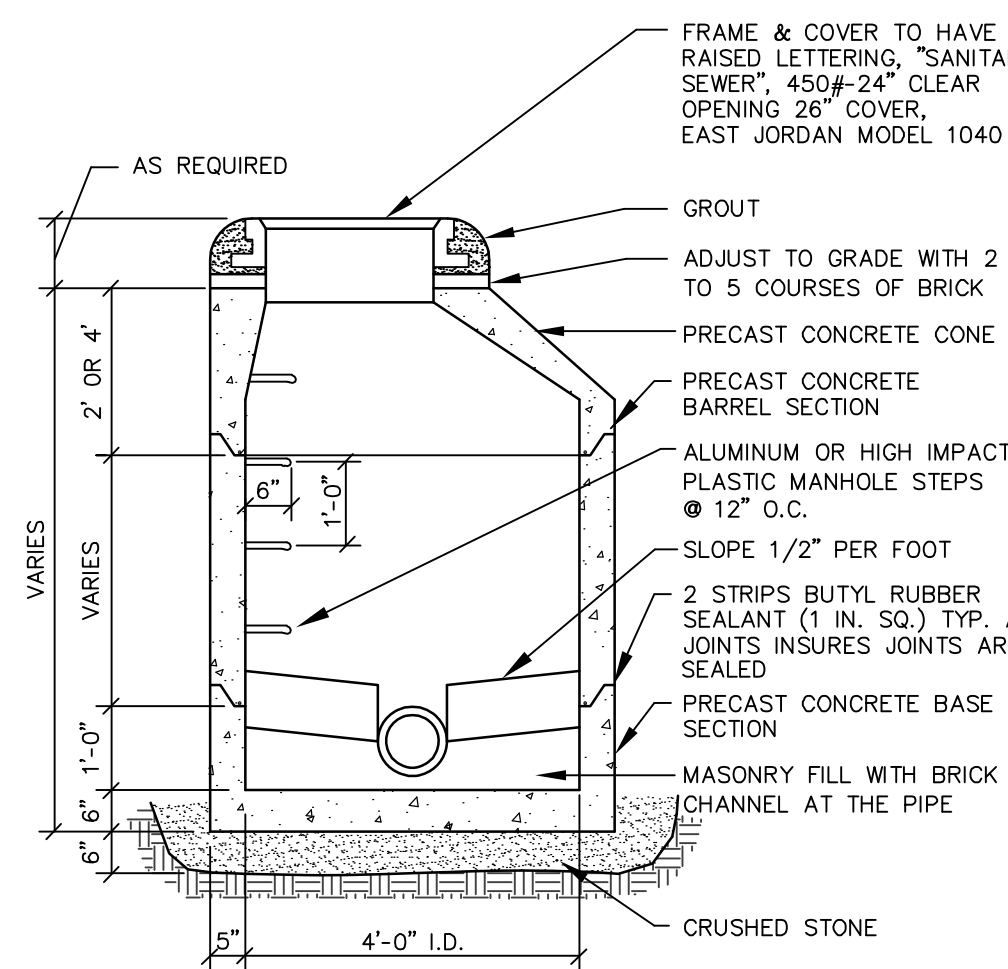
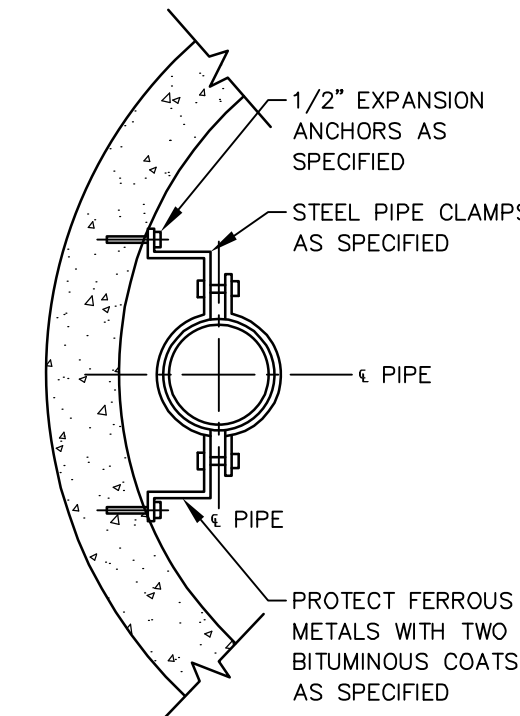
7 UTILITY PULL BOX

NOT TO SCALE



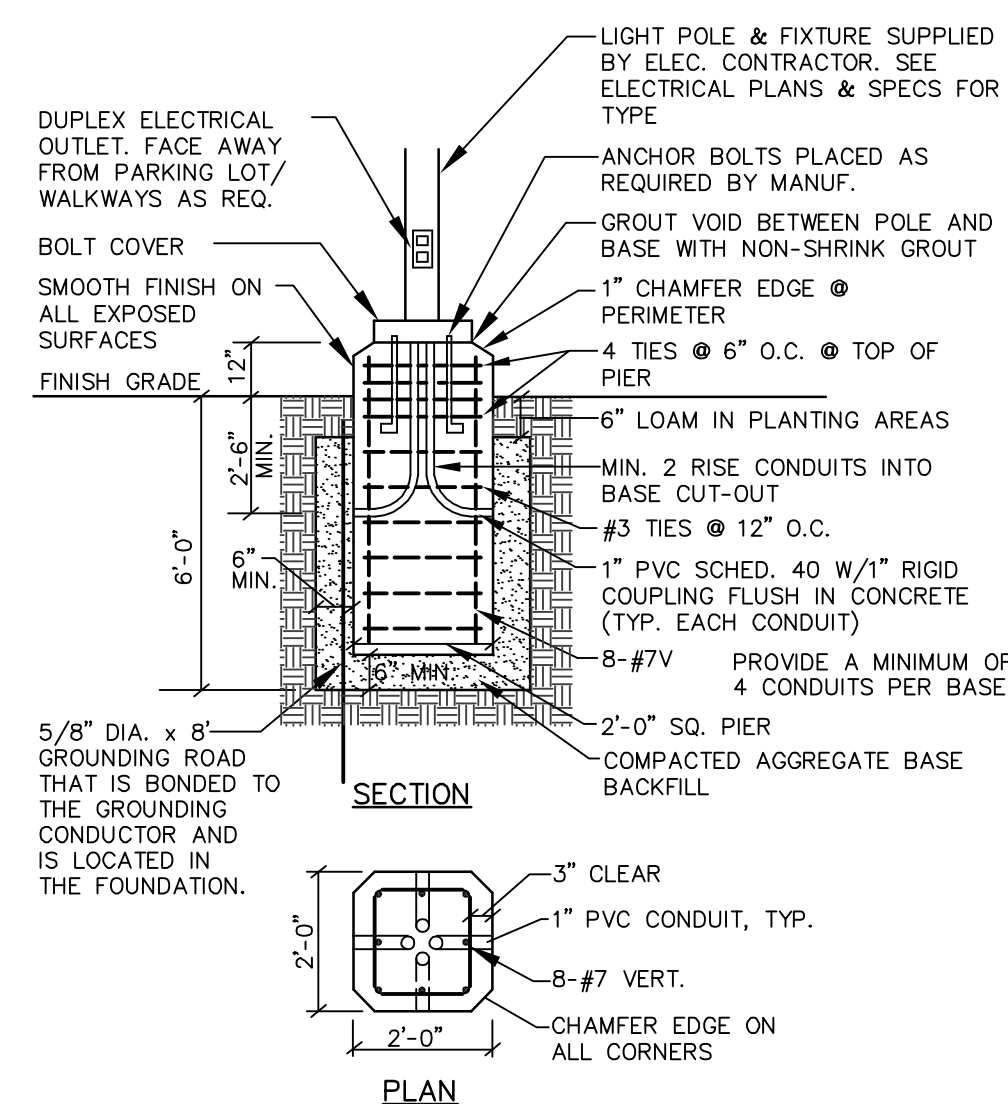
8 PVC DROP CONNECTION (INTERNAL)

NOT TO SCALE



9 PRECAST MANHOLE

NOT TO SCALE

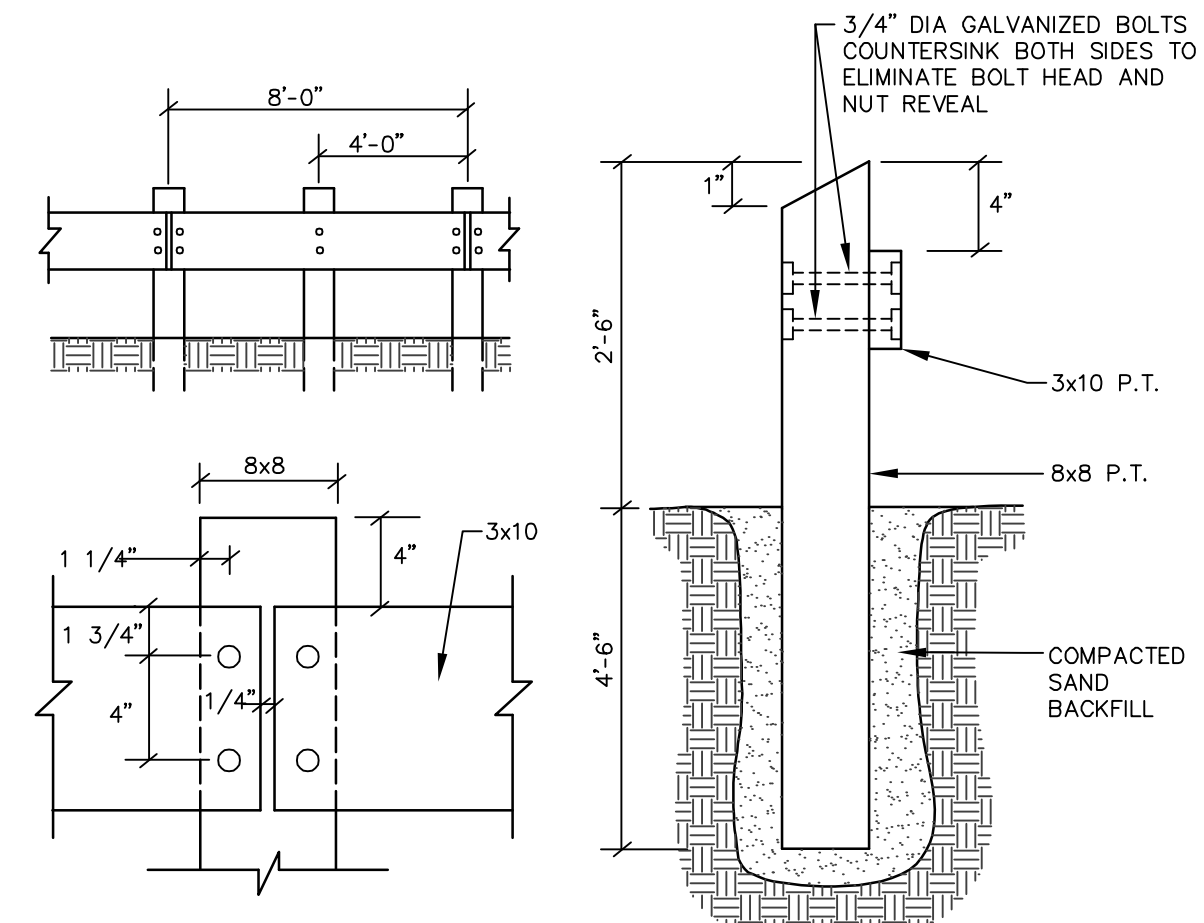


NOTES:

1. CONCRETE $f'_c=4000$ psi.
2. REIN. STEEL GRADE 60 NEW BARS.
3. CONCRETE 3/4" AGG., 6 +/- 1% ENTRAINED AIR.
4. PROVIDE 2 COATS BITUMINOUS DAMPROOFING FOR ALL CONCRETE BELOW GRADE.
5. INSTALL BASE 3'-0" ABOVE FINISH GRADE IN LOCATIONS WHERE POLES ARE IN PARKING LOT PAVEMENT.
6. BID ALT.- CONTRACTOR MAY SUBSTITUTE PRECAST CONCRETE LIGHT POLE BASE EQUAL TO ABOVE SPEC.

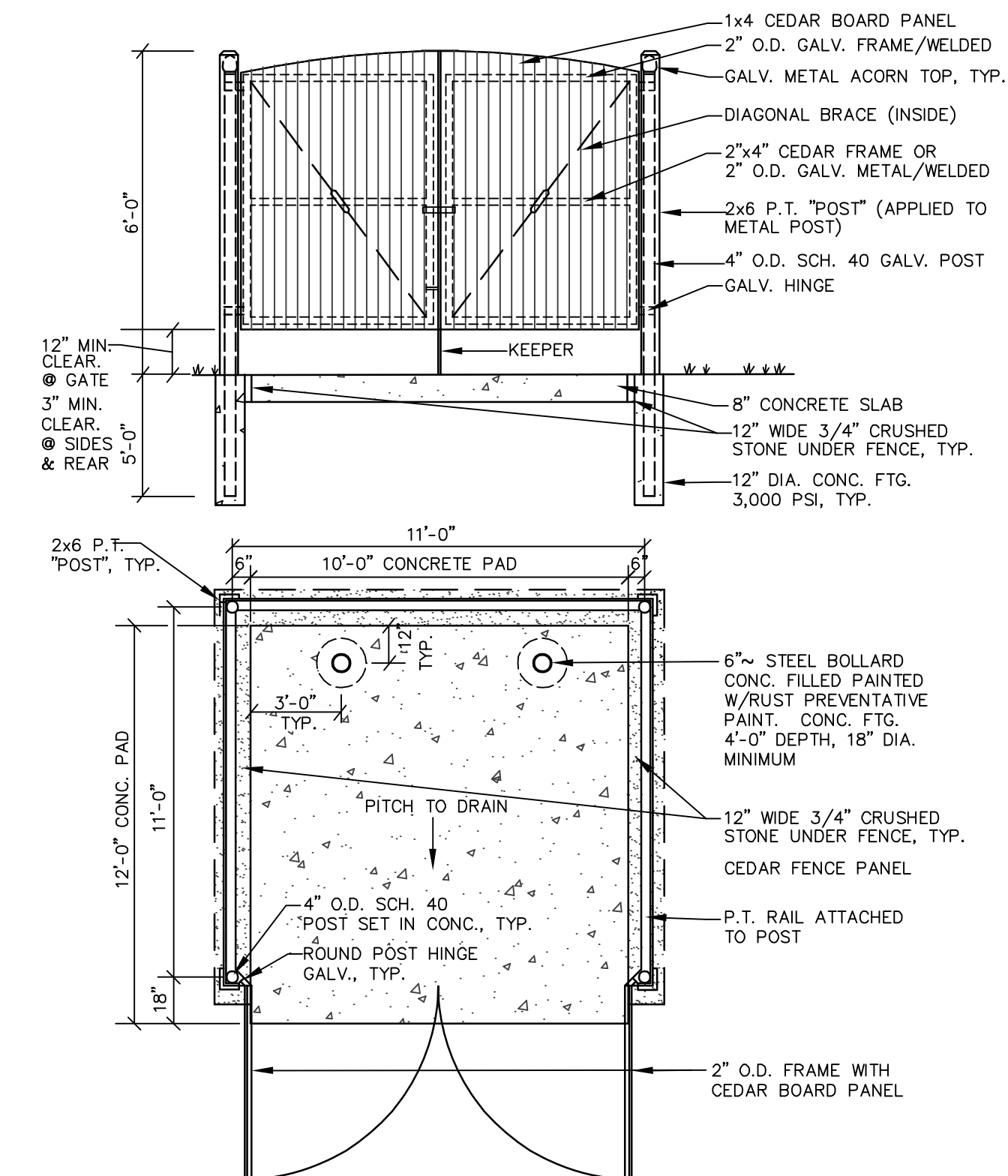
10 LIGHT POLE BASE

NOT TO SCALE



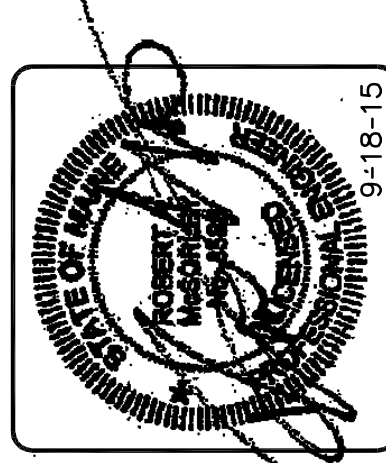
11 PRESSURE TREATED WOOD GUARDRAIL

NOT TO SCALE



12 TYPICAL DUMPSTER ENCLOSURE

NOT TO SCALE



Plan 9.4

DESIGNED	CHECKED
PDO	RAM
A RAM 9-18-15 PLAN SUBMISSION TO CITY OF PORTLAND	
REV. BY:	DATE:
DATE:	DATE:
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TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd., Suite 1A
South Portland, ME 04106
Tel: 207-200-2100 Tel: 207-783-5656

DETAILS OF: PORTLAND RETIREMENT RESIDENCE
802 OCEAN AVENUE
PORTLAND, ME
FOR: HAWTHORN DEVELOPMENT GROUP, LLC
9310 NE VANCOUVER WALL DR., STE200
VANCOUVER, WA 98662-8210

PROJECT NO.	SCALE
14432	NTS

SHEET12 OF14

144320.dwg 1/26/04

UNDERDRAINED SAND FILTER PLAN VIEW

UNDERDRAINED SAND FILTER ELEVATION VIEW

SUBSURFACE UNDERDRAINED SAND FILTER NOTES:

1. THE STORMWATER CHAMBER SHALL BE A STORMTCH MC-3500 OR EQUIVALENT SUBSURFACE STORAGE CHAMBER APPROVED BY THE ENGINEER.
2. THE ENTIRE SUBSURFACE SYSTEM, INCLUDING THE CRUSHED STONE STORAGE VOLUME, THE FILTER MEDIA, NON-WOVEN AND UNDERDRAIN MATERIAL SHALL BE COVERED BY A 12" MIN-WOVEN GEOTEXTILE FABRIC (MIRAFI 160N OR EQUIVALENT).
3. A STRIP OF WOVEN GEOTEXTILE THAT MEETS AASHTO M288 CLASS ONE REQUIREMENTS (MIRAFI F6W04 OR EQUIVALENT) MUST BE PLACED BETWEEN THE BOTTOM OF THE CHAMBER AND ITS STONE FOUNDATION. THIS FABRIC TRAPS SEDIMENTS AND PROTECTS THE UNDERLYING CRUSHED STONE. A SECOND STRIP OF NON-WOVEN GEOTEXTILE (MIRAFI 160N CLASS ONE OR MIRAFI 160N OR EQUIVALENT) SHALL BE DRAPED OVER THE ENTIRE LENGTH OF THE CHAMBERS. THIS FABRIC WILL ALSO TRAP SEDIMENTS AND PROVIDE SEPARATION BETWEEN THE CHAMBERS AND SURROUNDING STONE.
4. THE EMBEDMENT STONE SURROUNDING THE CHAMBERS SHALL BE A WASHED, ANGULAR STONE WITH THE MAJORITY OF PARTICLES BETWEEN #4 AND #10 SIEVES. THE MATERIAL SHALL MEET THE LAOY OF STONE THAT ACTS AS THE FOUNDATION BELOW THE CHAMBERS SHALL BE COMPACTED TO ACHIEVE A 95% STANDARD PROCTOR DENSITY.
5. THE SAND FILTER MATERIAL SHALL BE A UNIFORM MIX, FREE OF STONES LARGER THAN 2 INCHES, STUMPS, ROOTS, OR OTHER SINK OR OBJECTS. THE MATERIAL SHALL MEET THE SPECIFICATIONS FOR MDOT AGGREGATE SAND (MDOT #703.01). HOWEVER, THIS AGGREGATE SAND SHALL BE MIXED WITH LOAM TO CHIVE A SAND/LOAM RATIO OF 10/90. THE PASSING SAND SHALL BE THE LOAM USED IN THIS MIXTURE SHALL HAVE A MINIMAL CLAY CONTENT. THIS 18 INCH LAYER OF SAND FILTRATION MEDIA SHALL BE PLACED TO ACHIEVE A MINIMUM COMPACTION BETWEEN 92% STANDARD PROCTOR DENSITY.

CONSTRUCTION OVERSIGHT NOTES

- FOR SUBSURFACE SAND FILTER:
1. INSPECTIONS BY A PROFESSIONAL ENGINEER SHALL CONSIST OF WEEKLY VISITS TO THE SITE TO INSPECT THE CONSTRUCTION AND STABILIZATION OF THE PROPOSED SUBSURFACE CHAMBERS AND ITS FILTER COURSE WATER CONTROL BUILDING ON THE SITE. INSPECTIONS SHALL CONSIST OF AN APPROPRIATE NUMBER OF VISITS TO THE SITE TO INSPECT THE INSTALLATION OF THE SUBGRADE, FILTER BED, MATERIAL PLACEMENT, INSTALLATION OF STONE, ISOLATOR ROW AND CHAMBER, SURROUNDING STONE, FABRIC LAYMENT AND STORMWATER OVERFLOW BYPASS CONSTRUCTION FROM INITIAL GROUND DISTURBANCE TO FINAL PAVEMENT PLACEMENT.

UNDERDRAINED SAND FILTER SECTION

② OUTLET CONTROL STRUCTURE (OCS-1)
NOT TO SCALE



Plan 10

[illegible]

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Suite 1A
Portland, ME 04106
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250 Goddard Rd.
Suite B
Lewiston, ME 04241
207-783-5666

STORMTECH STORMWATER DETAILS
OF:
PORTLAND RETIREMENT RESIDENCE
802 OCEAN AVENUE
PORTLAND, ME

FOR:
HAWTHORN DEVELOPMENT GROUP, LLC
9310 NE VANCOUVER MALL, DR., STE200
VANCOUVER, WA 98662-8210

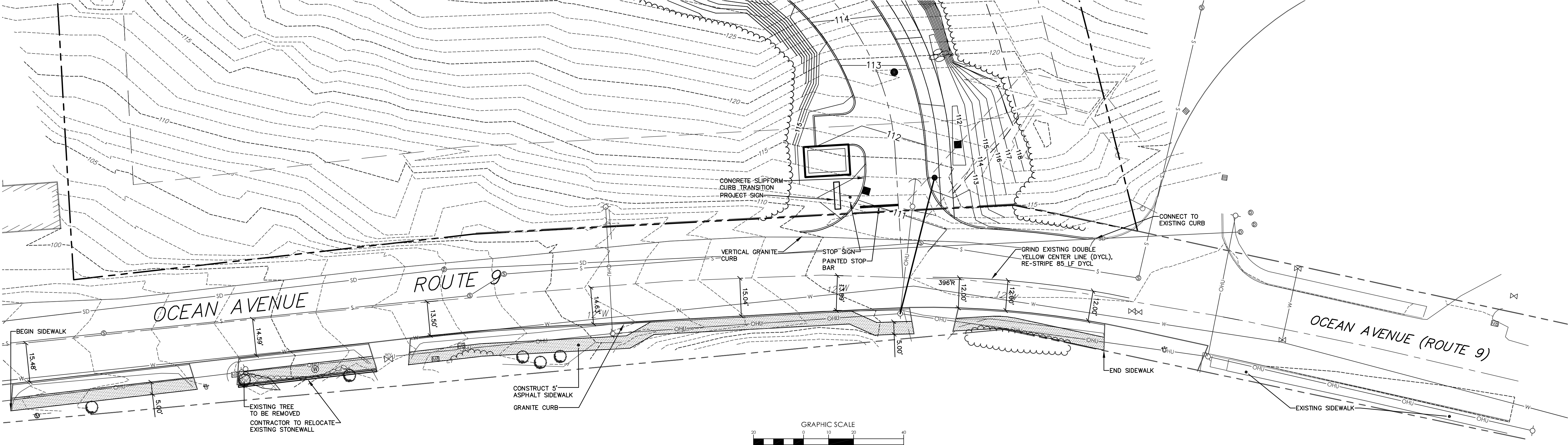
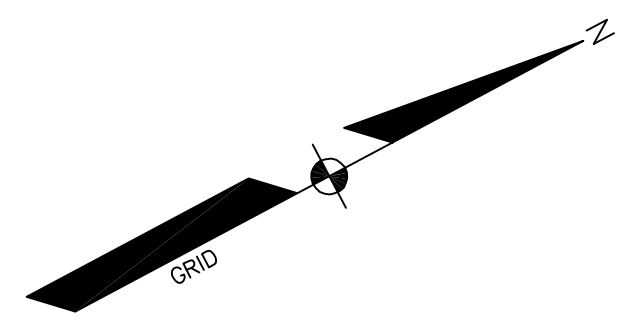
PROJECT NO.	SCALE
14432	NTS

SHEET13 OF14

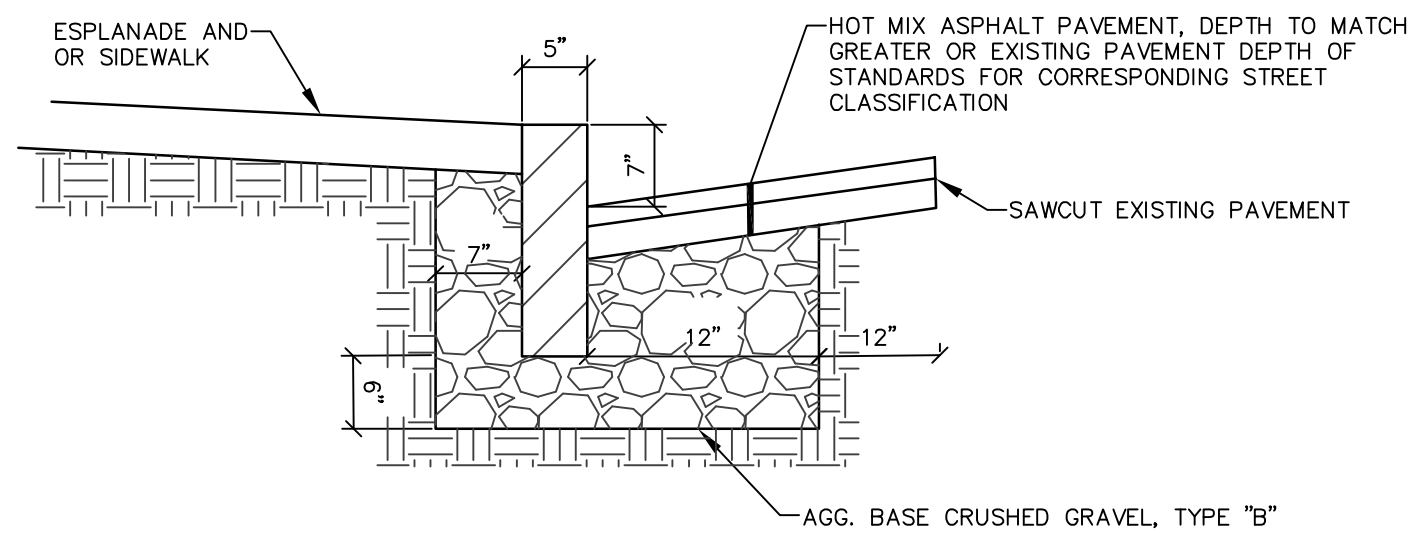
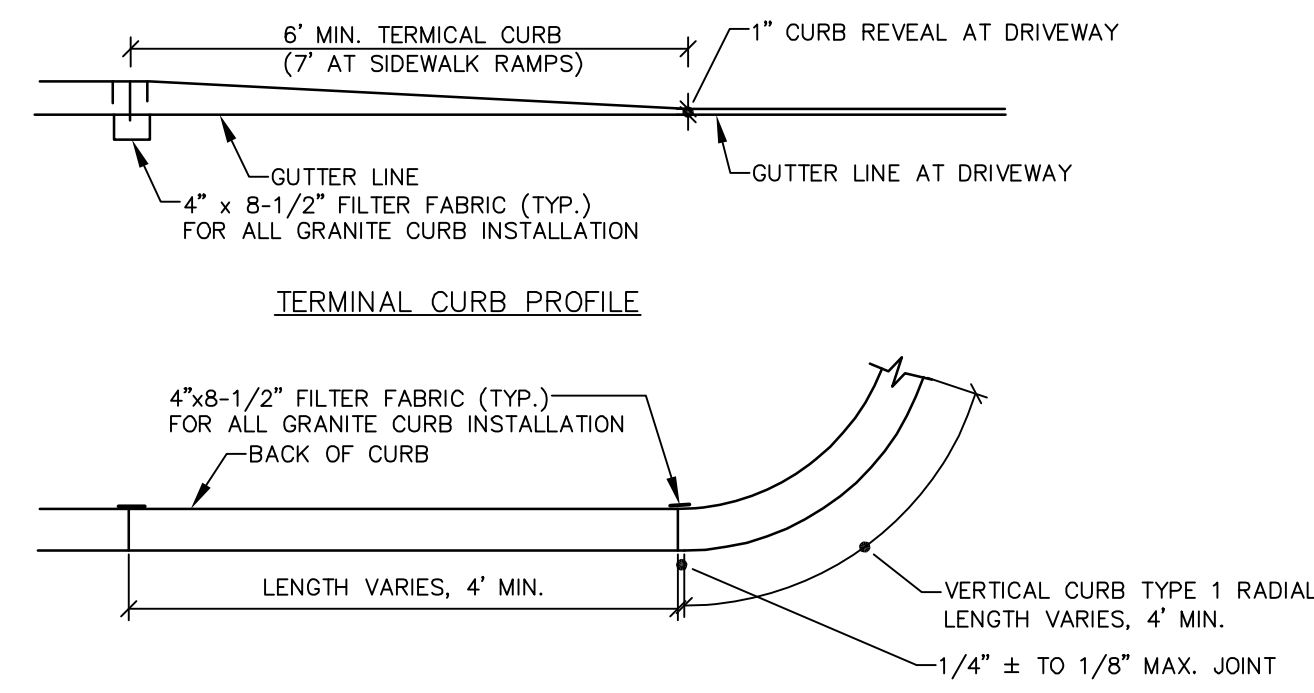
144320 dwo TAB.D5

HOUSEKEEPING:

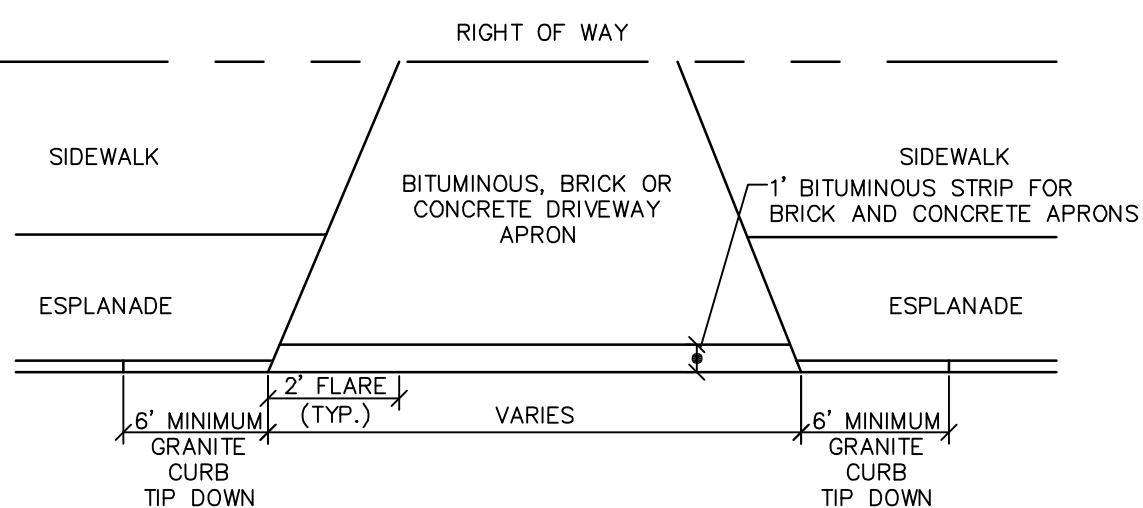
- A. **SPILL PREVENTION:** CONTROLS MUST BE USED TO PREVENT POLLUTANTS FROM BEING DISCHARGED FROM MATERIALS ON-SITE, INCLUDING STORAGE PRACTICES TO MINIMIZE EXPOSURE OF THE MATERIALS TO STORMWATER, AND APPROPRIATE SPILL PREVENTION, CONTAINMENT, AND RESPONSE PLANNING AND IMPLEMENTATION.
- B. **GROUNDWATER PROTECTION:** DURING CONSTRUCTION, LIQUID PETROLEUM PRODUCTS AND OTHER HAZARDOUS MATERIALS WITH THE POTENTIAL TO CONTAMINATE GROUNDWATER MAY NOT BE STORED OR HANDLED IN AREAS OF THE SITE DRAINING TO AN INFILTRATION AREA. AN "INFILTRATION AREA" IS ANY AREA OF THE SITE THAT BY DESIGN OR AS A RESULT OF SOILS, TOPOGRAPHY AND/OR OTHER NATURAL OR MAN-MADE CONDITIONS, INCLUDING BUT NOT LIMITED TO, DITCHES, BERMS, SUMPS, AND OTHER FORMS OF SECONDARY CONTAINMENT THAT PREVENT DISCHARGE TO GROUNDWATER MAY BE USED TO ISOLATE PORTIONS OF THE SITE FOR THE PURPOSES OF STORAGE AND HANDLING OF THESE MATERIALS.
- C. **FUGITIVE SEDIMENT AND DUST:** ACTIONS MUST BE TAKEN TO INSURE THAT ACTIVITIES DO NOT RESULT IN NOTICEABLE EROSION OF SOILS OR FUGITIVE DUST EMISSIONS DURING OR AFTER CONSTRUCTION. OIL MAY NOT BE USED FOR DUST CONTROL.
- D. **DEBRIS AND OTHER MATERIALS:** LITTER, CONSTRUCTION DEBRIS, AND CHEMICALS EXPOSED TO STORMWATER MUST BE PREVENTED FROM BECOMING A POLLUTANT SOURCE.
- E. **TRENCH DEWATERING:** TRENCH DEWATERING IS THE REMOVAL OF WATER FROM TRENCHES, FOUNDATIONS, COFFERDAMS, PONDING, AND OTHER AREAS WITHIN THE CONSTRUCTION AREA THAT RETAIN WATER AFTER EXCAVATION. IN MOST CASES, THE COLLECTED WATER IS HEAVILY SILTED AND HINDERS CORRECT AND SAFE CONSTRUCTION PRACTICES. THE COLLECTED WATER MUST BE REMOVED FROM THE PONDED AREA, EITHER THROUGH GRAVITY OR PUMPING, AND MUST BE SPREAD THROUGH NATURAL, WOODED BUFFERS OR REMOVED TO AREAS THAT ARE SPECIFICALLY DESIGNED TO COLLECT THE MAXIMUM AMOUNT OF WATER POSSIBLE. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PREVENT ALLOWING THE WATER TO FLOW OVER DISTURBED AREAS OF THE SITE. EQUIVALENT MEASURES MAY BE TAKEN IF APPROVED.



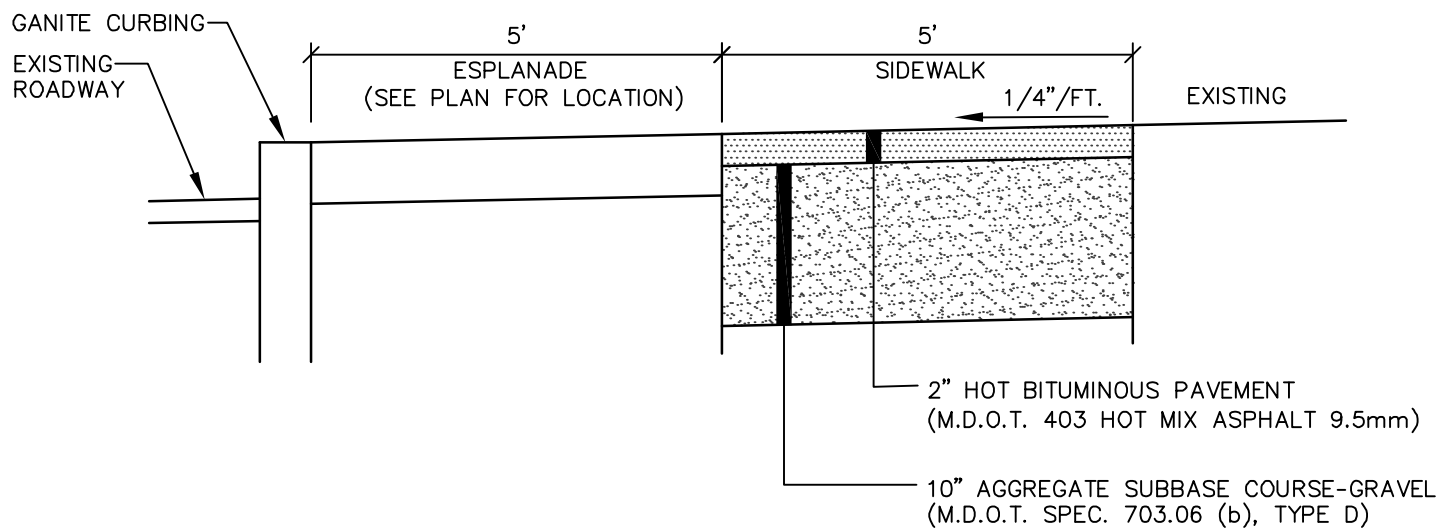
LEGEND	
EXISTING	PROPOSED
	PROPERTY LINE/R.O.W.
	ABUTTER LINE/R.O.W.
	SETBACK
	CENTERLINE
	IRON PIPE/ROD
	BUILDING
	EDGE PAVEMENT
	CURB LINE
	RETAINING WALL
	DECIDUOUS TREE
	SIGN
	WATER
	WATER GATE VALVE
	WATER SHUT OFF
	HYDRANT
	WATER MANHOLE
	SANITARY SEWER
	SANITARY MANHOLE
	STORM DRAIN
	DRAINAGE MANHOLE
	CATCH BASIN
	OVERHEAD UTILITY
	UTILITY POLE



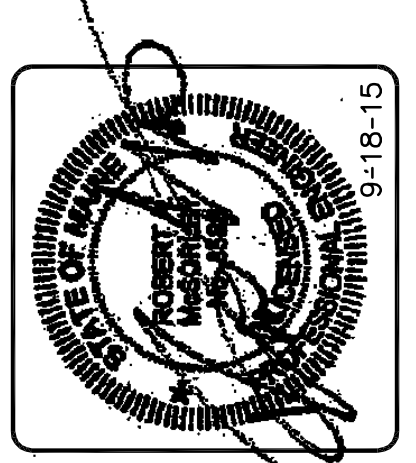
VERTICAL GRANITE CURB
INSTALLATION IN EXISTING STREETS
NOT TO SCALE



DRIVEWAY APRON LAYOUT
NOT TO SCALE



BITUMINOUS SIDEWALK
NOT TO SCALE



Plan 11

DESIGNED	CHECKED
PDO	RAM
A. RAM 9-18-15 PLAN SUBMISSION TO CITY OF PORTLAND	
REV. BY:	DATE:
STATUS: THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.	

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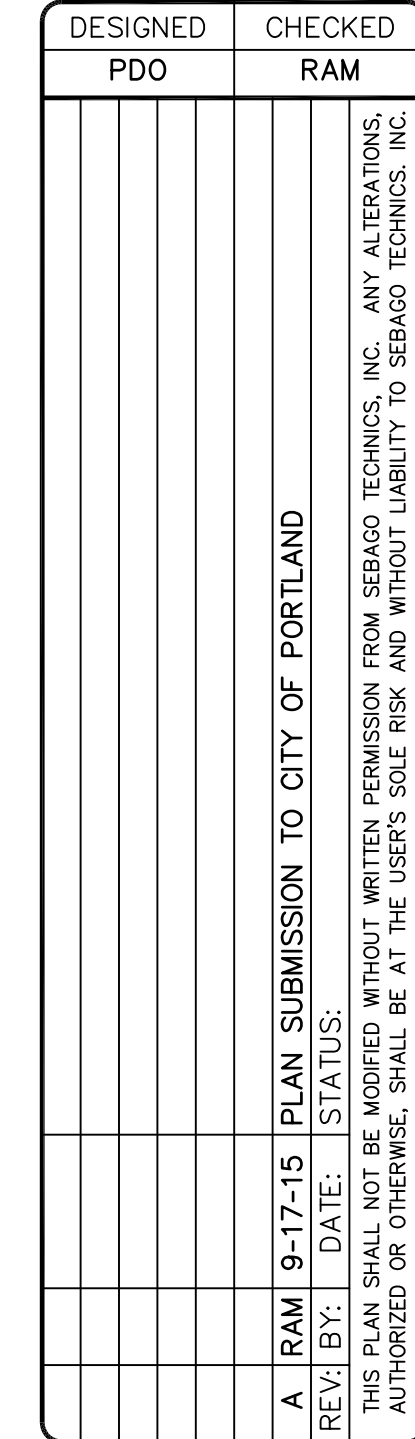
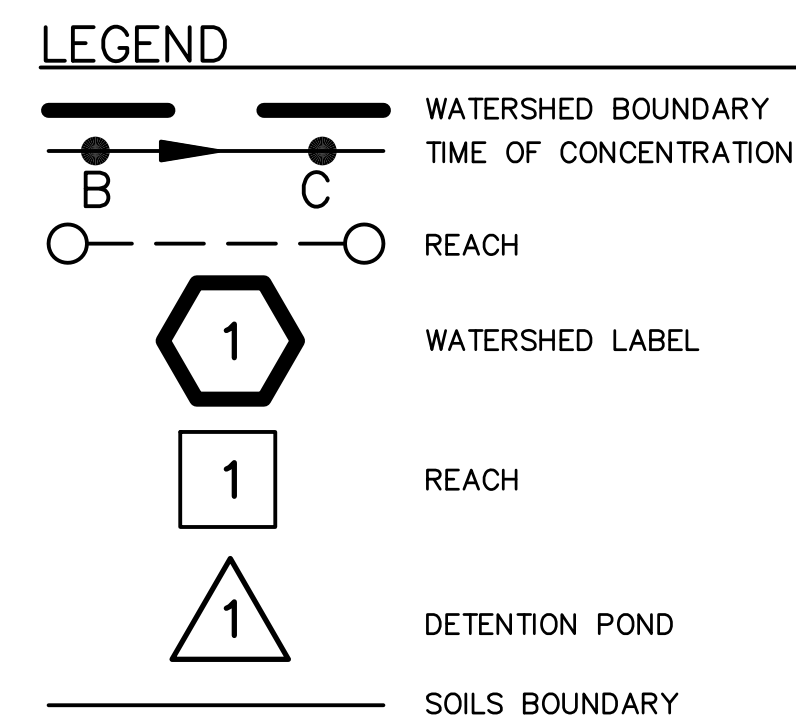
OCEAN AVENUE SIDEWALK PLAN
OF:
PORTLAND RETIREMENT RESIDENCE
802 OCEAN AVENUE
PORTLAND, ME

FOR:
HAWTHORN DEVELOPMENT GROUP, LLC
9310 NE VANCOUVER WALL DR., STE200
VANCOUVER, WA 98662-8210

PROJECT NO. 14432
SCALE 1" = 20'

SHEET 14 OF 14

14432OCEAN SIDEWALK.dwg, TAB: OCEAN AVE SIDEWALK



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TECHNICS

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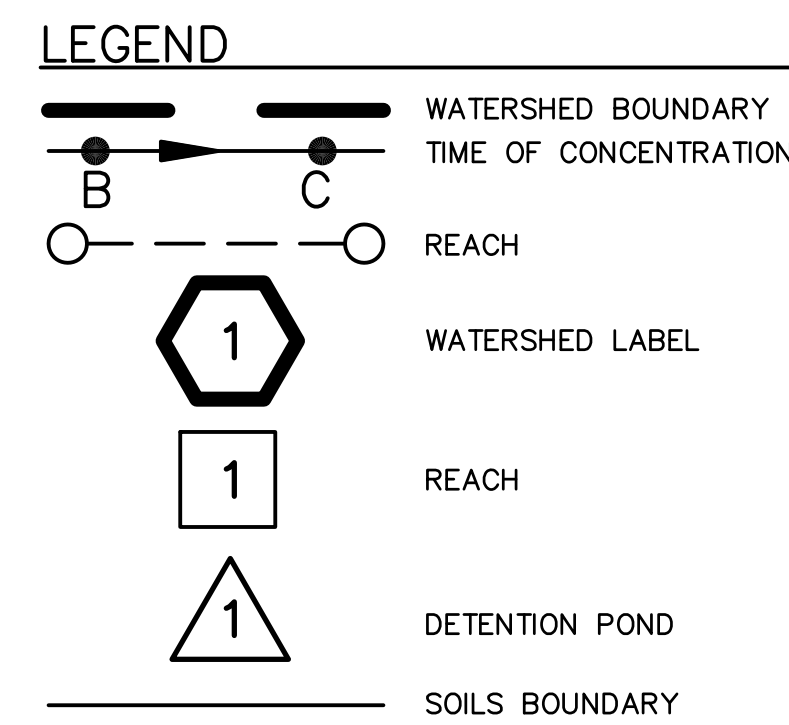
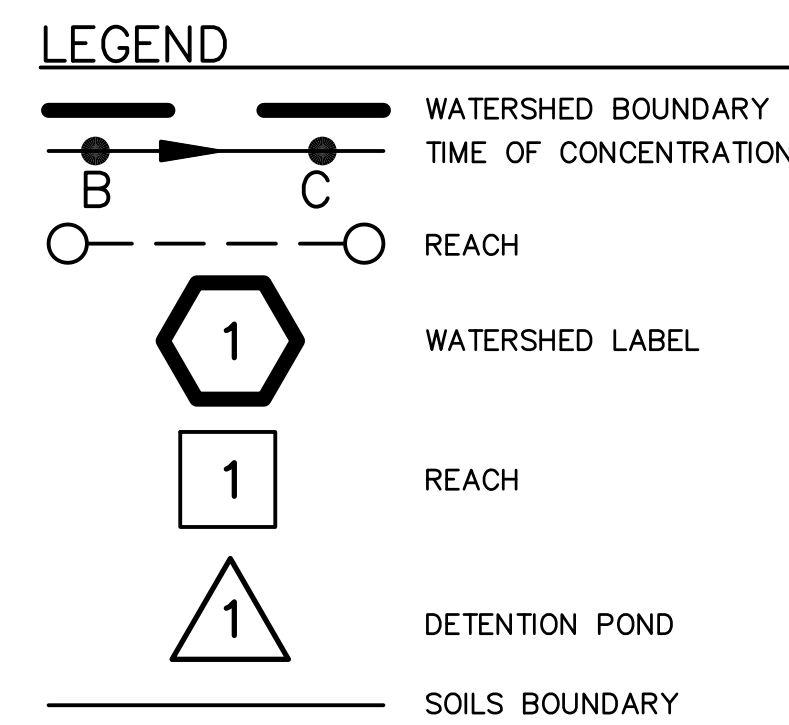
PRE DEVELOPMENT WATERSHED PLAN
OF:
PORTLAND RETIREMENT RESIDENCE
802 OCEAN AVENUE
PORTLAND, ME

FOR:
HAWTHORN RETIREMENT GROUP
9310 NE VANCOUVER MALL DR., STE200
VANCOUVER, WA 98662-8210

PROJECT NO.	SCALE
14432	1" = 50'

SHEET 1 OF 2

144325NP dwig TAB:DRF



LEGEND

	WATERSHED BOUNDARY
	TIME OF CONCENTRATION
	REACH
	WATERSHED LABEL
	REACH
	DETENTION POND
	SOILS BOUNDARY

SHEET 2 OF 2

NOT FOR CONSTRUCTION

[illegible]

SEBAGO
TECHNICS

WWW.SEBAGOTECHNICS.COM

75 John Roberts Rd.
Suite 100
South Portland, ME 04106
Tel. 207-200-2100

250 Goddard Rd.
Suite 100
Lewiston, ME 04240
Tel. 207-783-5656

POST DEVELOPMENT WATERSHED PLAN
OF: PORTLAND RETIREMENT RESIDENCE
802 OCEAN AVENUE
PORTLAND, ME
FOR: HAWTHORN RETIREMENT GROUP
9310 NE VANCOUVER MALL DR., STE200
VANCOUVER, WA 98662-8210

PROJECT NO.	SCALE
14432	1" = 50'

SHEET 2 OF 2

14432SWP.dwg TAB:POST

ELECTRICAL KEY NOTES:

- 1 ELECTRICAL MAIN DISTRIBUTION PANEL LOCATED IN ELECTRICAL ROOM. SEE ONE-LINE 1/E2.2a.
- 2 EMERGENCY STANDBY ENGINE GENERATOR. SEE SPECIFICATIONS ON SHEET E2.1, AND ONE-LINE DIAGRAM 1/E2.2a.
- 3 TELEPHONE TERMINAL BOARD LOCATED IN MECHANICAL ROOM.
- 4 TELEVISION TERMINAL BOARD LOCATED IN MECHANICAL ROOM.
- 5 CONNECT VIA LIGHTING CONTROLLER. SEE DETAIL 3/E2.2b.
- 6 COORDINATE WITH STRUCTURAL FOR ROUTING OF RACEWAY WHEN ROUTED UNDER BUILDING.
- 7 SEE ONE-LINE DIAGRAM 1/E2.2a FOR WIRE AND CONDUIT SIZE.
- 8 PAD MOUNTED UTILITY TRANSFORMER. 120/208 VOLT, 3 PHASE. COORDINATE WITH UTILITY FOR LOCATION AND SIZE.
- 9 PROVIDE A MINIMUM OF (2) 4" SCHEDULE 40 PVC CONDUIT WITH PULL STRING FROM TELEPHONE TERMINAL BOARD TO TELEPHONE COMPANY SERVICE POINT. COORDINATE EXACT ROUTING, CONDUIT SIZE AND QUANTITY, AND TERMINATION POINT WITH TELEPHONE SERVICE PROVIDER. PROVIDE A MINIMUM OF (2) 4" SCHEDULE 40 PVC CONDUIT WITH PULL STRING FROM TELEVISION TERMINAL BOARD TO TELEVISION COMPANY SERVICE POINT. COORDINATE EXACT ROUTING, CONDUIT SIZE AND QUANTITY, AND TERMINATION POINT WITH TELEVISION SERVICE PROVIDER.
- 10 UNDERGROUND PRIMARY SERVICE. COORDINATE SERVICE AND PAY ALL CHARGES AS REQUIRED BY SERVING UTILITY. PROVIDE CONDUIT AND RACEWAY FROM TRANSFORMER TO UTILITY SERVICE VAULT AS REQUIRED BY SERVICE UTILITY. INSTALL RACEWAY A MINIMUM OF 36" BELOW GRADE. COORDINATE EXACT ROUTING, CONDUIT SIZE AND QUANTITY, INSTALLATION REQUIREMENTS, AND TERMINATION POINT WITH UTILITY.

ELECTRICAL GENERAL NOTES:

- 1 OUTSIDE THE BUILDING AND BELOW GRADE, WIRING MAY BE IN SCHEDULE-40 PVC CONDUIT WITH GROUNDING CONDUCTOR IF ACCEPTABLE BY LOCAL CODES. NOT LESS THAN 3/4" CONDUIT.
- 2 INSTALL EXTERIOR CIRCUITS UNDERGROUND. DIRECT BURIED BRANCH CIRCUIT WIRING OUTSIDE THE BUILDING AND BELOW GRADE MY BE IN TYPE UF MOISTURE RESISTANT CABLE. NOT LESS THAN 10AWG CONDUCTORS OR AS NOTED. COMPLY WITH ELECTRICAL CODE AS REQUIRED AND NOTED ON COVER.

SEE A1.1 FOR ADDITIONAL REQUIREMENTS.

SEE E2.1 FOR LIGHT FIXTURE SPECIFICATIONS.

lenity
architecture
3150 Kettle Court SE, Salem, Oregon 97301
P 503.399.1990 F 503.399.0565 wlenityarchitecture.com

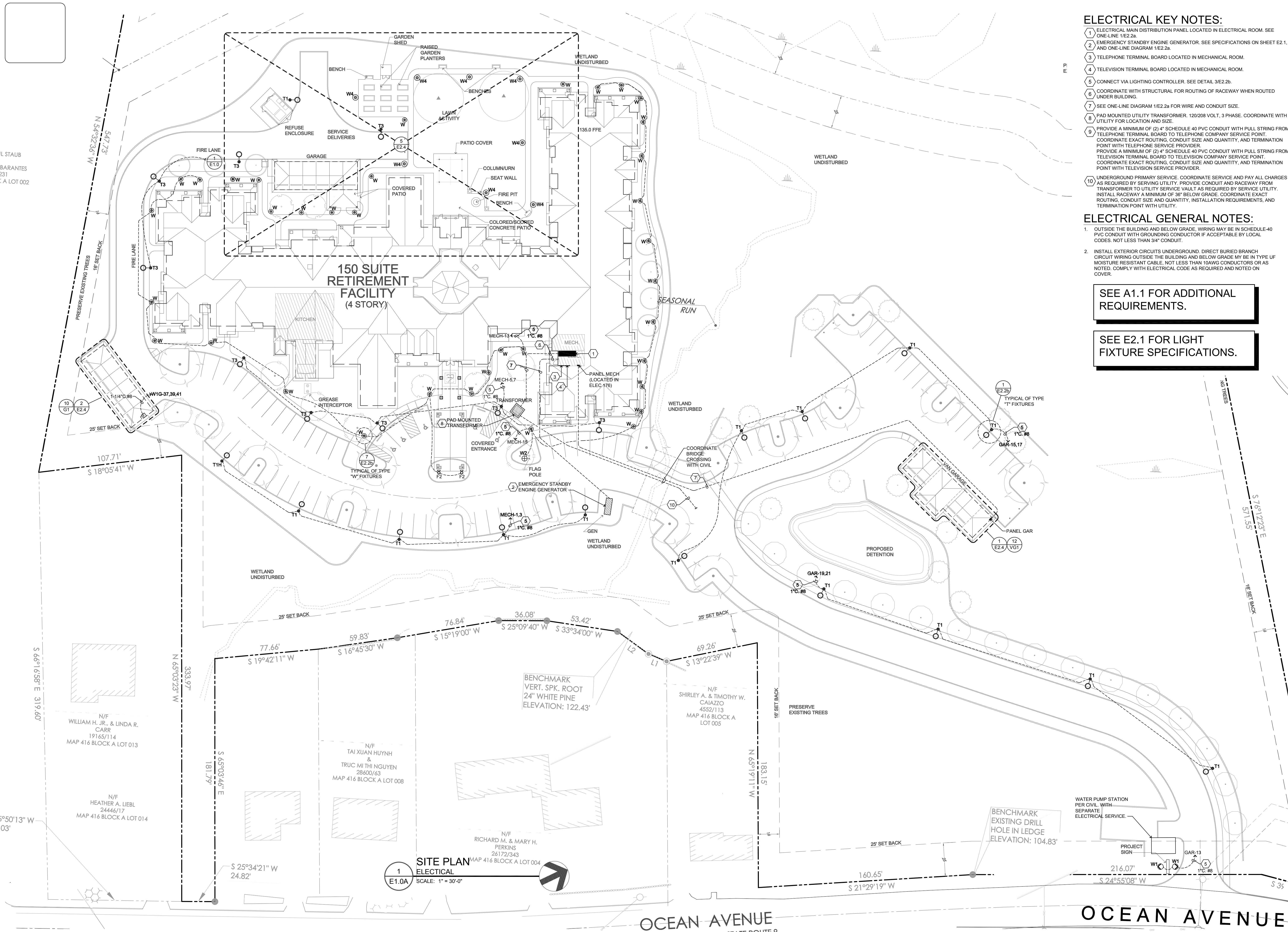
COLSON AND COLSON
GENERAL CONTRACTOR, INC.
2260 MCGILCHRIST STREET SE, SUITE 200
SALEM, OREGON, 97302
PHONE (503) 586-7401

PORTLAND
RETIREMENT RESIDENCE
802 OCEAN AVE. PORTLAND, MAINE 04103

ELECTRICAL
SITE
PLAN

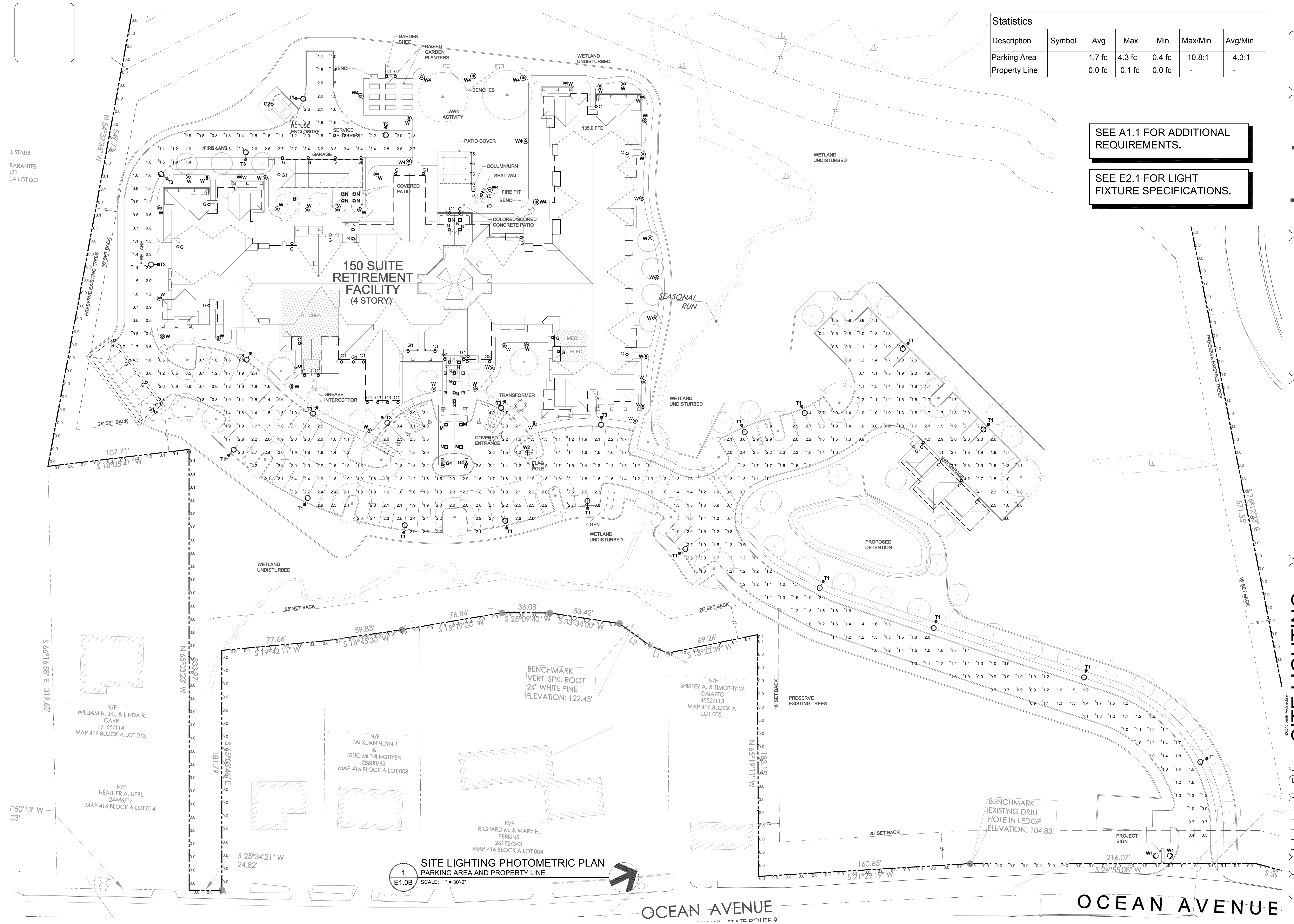
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REVISED DATE

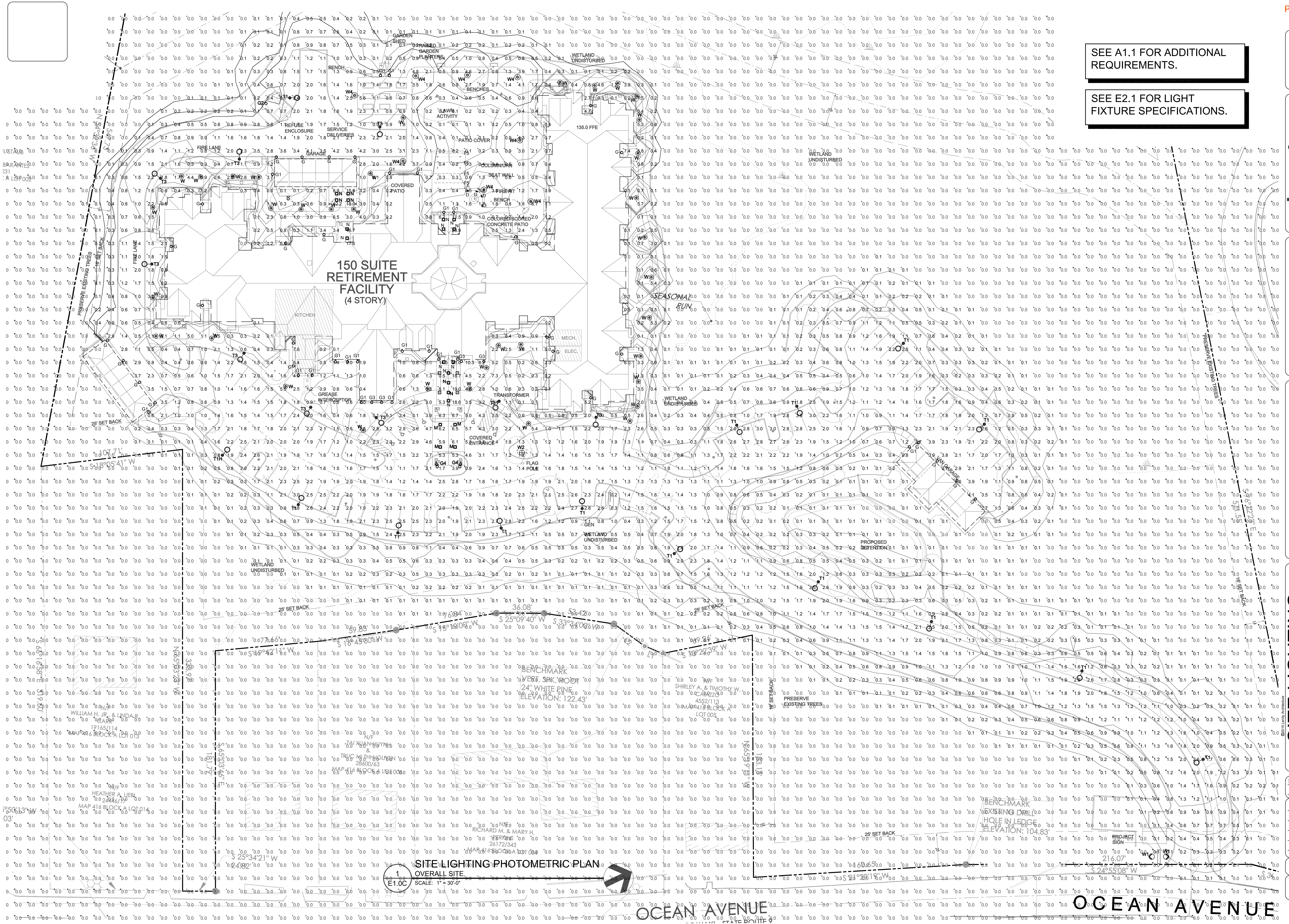
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E1.0A

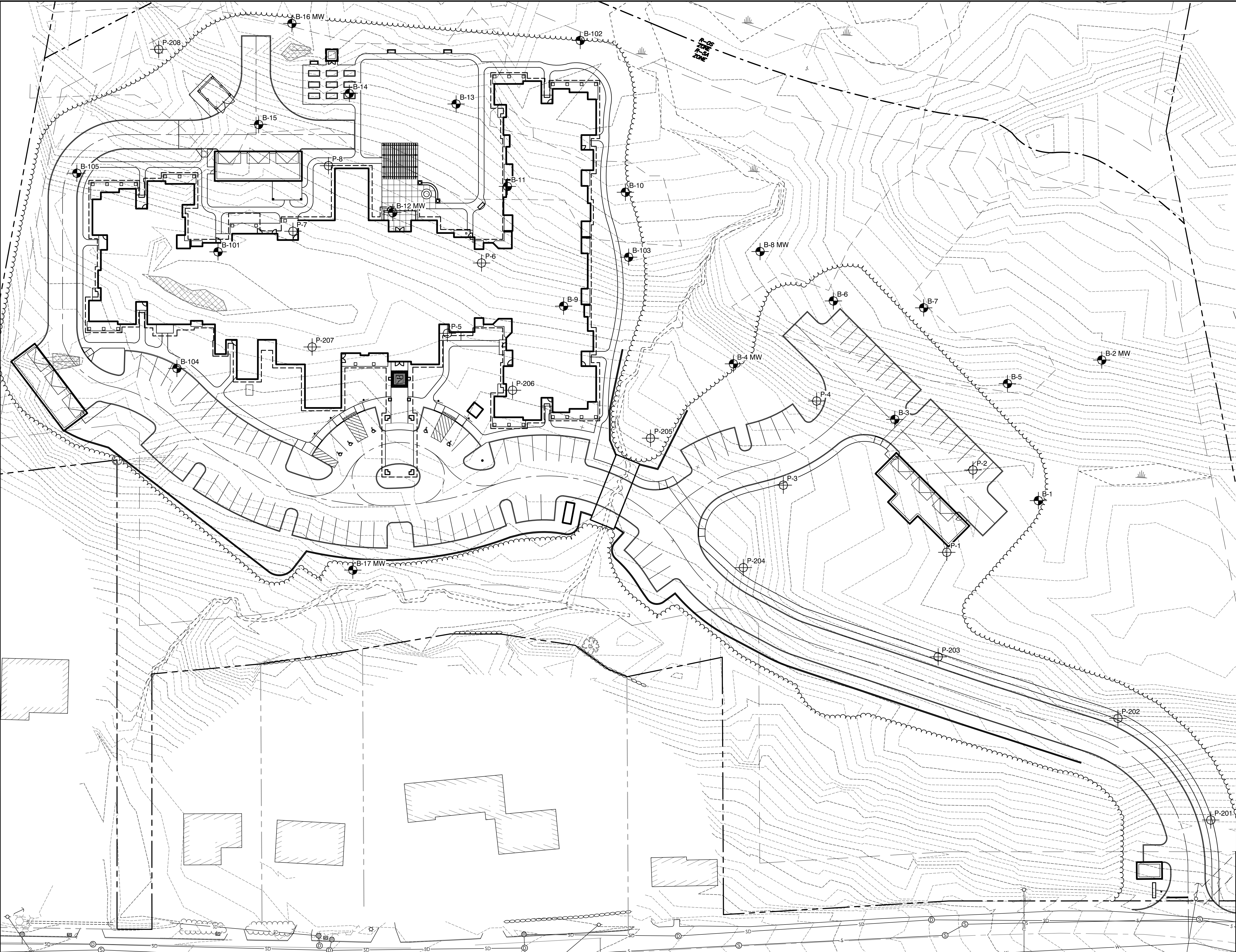


SEE A1.1 FOR ADDITIONAL REQUIREMENTS.

SEE E2.1 FOR LIGHT FIXTURE SPECIFICATIONS.







LEGEND:

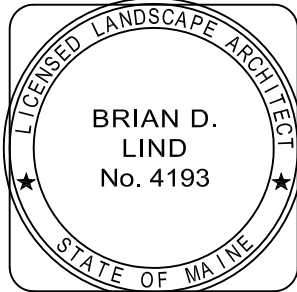
- APPROXIMATE BORING LOCATION
- APPROXIMATE PROBE LOCATION

NOTES:

- EXPLORATION LOCATION PLAN WAS PREPARED FROM A SCALE PLAN OF THE SITE PREPARED BY SEBAGO TECHNICS, RECEIVED VIA E-MAIL SEPTEMBER 16, 2015 IN AUTOCAD DWG FILE FORMAT.
- BORINGS B-101 THROUGH B-105 AND PROBES P-201 THROUGH P-207 WERE LOCATED IN THE FIELD BY SURVEY BY SEBAGO TECHNICS AND PROVIDED ON THE ABOVE REFERENCED PLAN. PROBE P-208 WAS LOCATED IN THE FIELD BY GPS SURVEY BY S. W. COLE ENGINEERING, INC. USING A MAPPING GRADE TRIMBLE GPS RECEIVER AND EXISTING SITE FEATURES TO ESTABLISH CONTROL.
- BORINGS B-1 THROUGH B-16 AND PROBES P-1 THROUGH P-8 WERE PERFORMED BY S. W. COLE ENGINEERING, INC. IN DECEMBER 2004 AND LOCATED ON A 1"=50' SCALE PLAN OF THE SITE ENTITLED "PRE-DEVELOPMENT DRAINAGE PLAN," PREPARED BY BH2M, INC., DATED DECEMBER 2004.
- THIS PLAN SHOULD BE USED IN CONJUNCTION WITH THE ASSOCIATED S. W. COLE ENGINEERING, INC. GEOTECHNICAL REPORT.
- THE PURPOSE OF THIS PLAN IS ONLY TO DEPICT THE LOCATION OF THE EXPLORATIONS IN RELATION TO THE EXISTING CONDITIONS AND PROPOSED CONSTRUCTION AND IS NOT TO BE USED FOR CONSTRUCTION.

0 30 60 Feet

1	09/17/2015	REVISED BASE PLAN, REVISE LOCATIONS OF B-101 - B-105 AND P-201 - P-207 PER SURVEY DATA	CEM	
0	12/05/2014	REPORT SUBMISSION	CEM	
NO.	DATE	DESCRIPTION	BY	
S.W. COLE ENGINEERING, INC. HAWTHORN DEVELOPMENT, LLC EXPLORATION LOCATION PLAN PROPOSED RETIREMENT RESIDENCE 802 OCEAN AVENUE PORTLAND, MAINE				
Job No.:	14-1188	Scale:	1" = 40'	
Date:	12/05/2014	Sheet:	1	



COLSON AND COLSON
GENERAL CONTRACTOR, INC.
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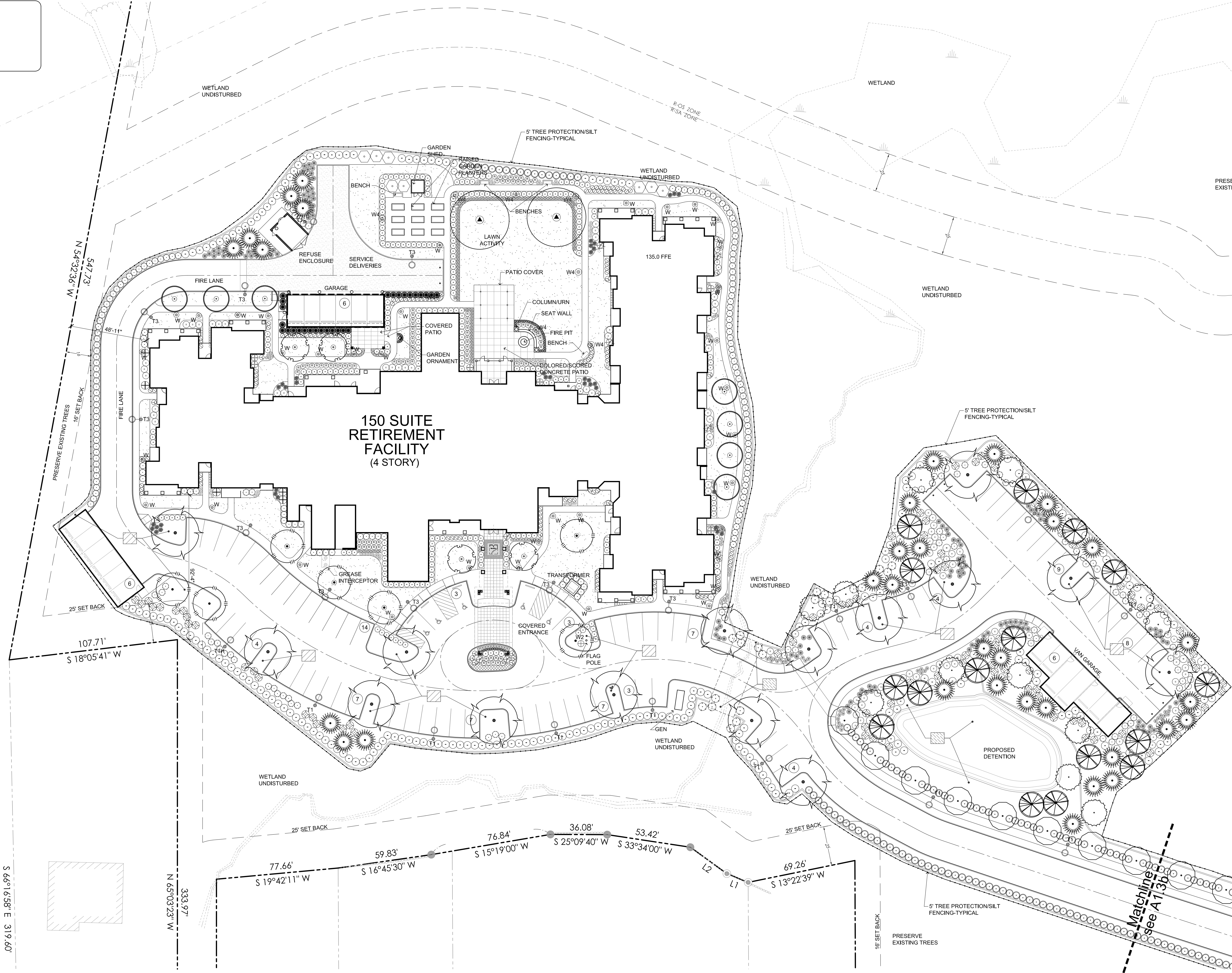
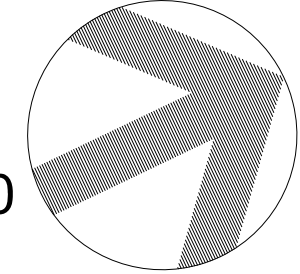
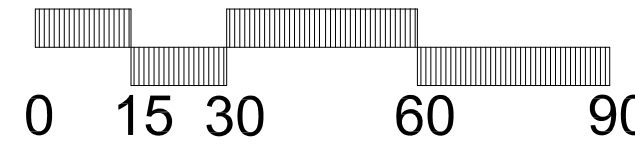
PLANTING PLAN

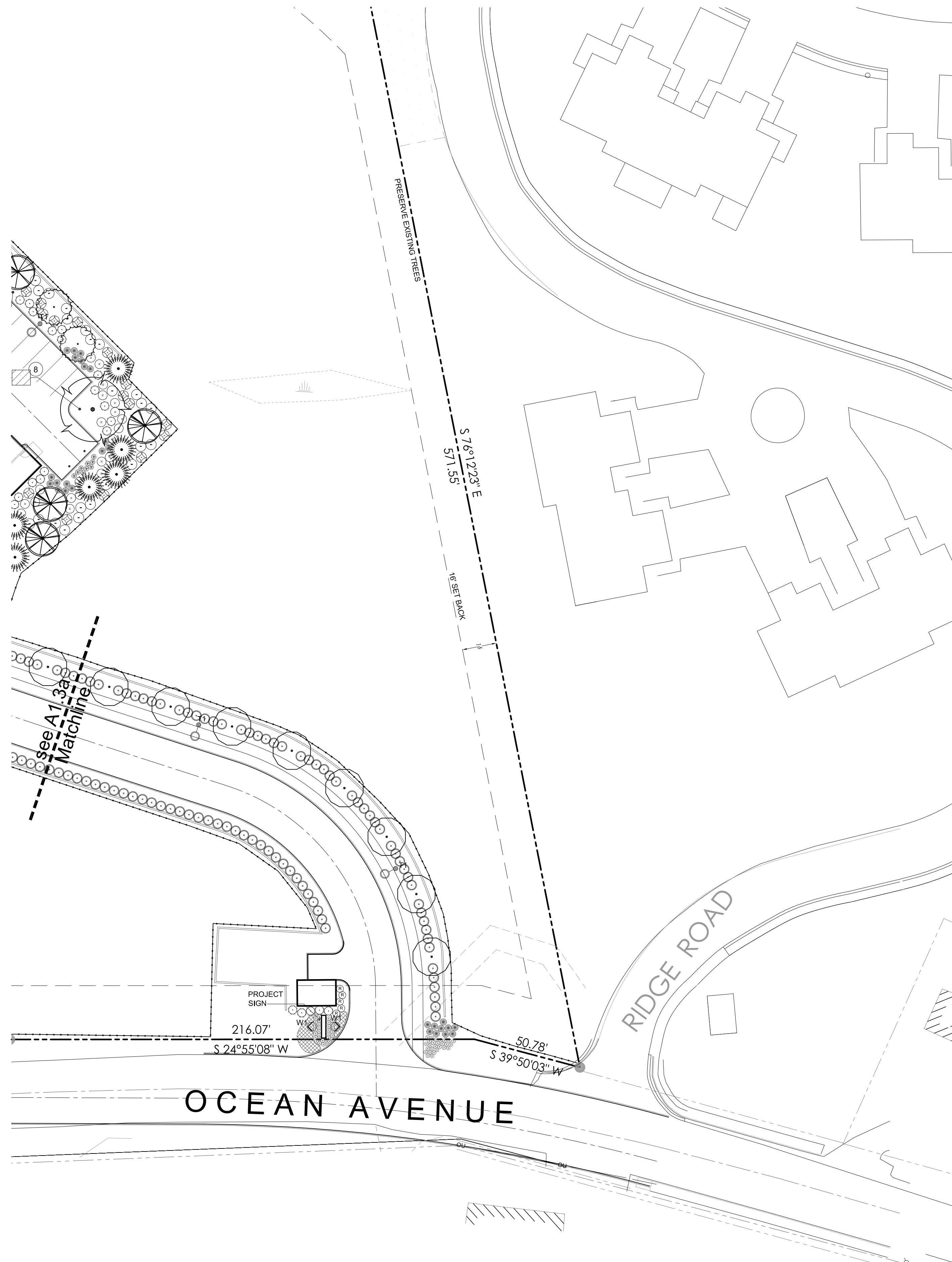
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REVISED DATE	
SHEET	A1.3a

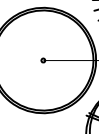
Symbol	Botanical Name / Common Name	Quantity	Size / Comments
Trees: (some symbols reduced in scale in Legend)			
	Acer saccharum 'Green Mountain' Sugar Maple (native)	2	2.50" caliper B&B Standard
	Amelanchier canadensis Shadblow Serviceberry (native)	12	1.75" caliper B&B Standard
	Fraxinus pennsylvanica 'Patmore' Patmore Green Ash (native)	15	2.50" caliper B&B Standard
	Ginkgo biloba 'Princeton Sentry' Princeton Sentry Maidenhair Tree	16	2.50" caliper B&B Standard
	Juniperus virginiana Eastern Red Cedar (native)	33	5-6 ft. B&B Low-branched
	Malus 'Spring Snow' Flowering Crabapple	7	1.75" caliper B&B Standard
	Picea glauca White Spruce (native)	16	6-7 ft. B&B Low-branched
	Prunus sargentii 'Columnaris' Columnar Sargent Flowering Cherry	7	1.75" caliper B&B Standard
	Syringa reticulata 'Ivory Silk' Japanese Tree Lilac	4	1.75" caliper B&B Standard
	Thuja occidentalis 'Emerald' American Arborvitae (native)	27	5-6 ft. B&B Full to ground-matching
Shrubs/Vines:			
	Abies balsamea 'Nana' Dwarf Balsam Fir (native)	15	3 gal. container 18" min. height
	Aronia arbutifolia 'Brilliantissima' Red Chokeberry (native)	79	5 gal. container 24" min. height
	Buxus koreana x sempervirens 'Green Mountain' Green Mountain Boxwood	46	18-21" B&B
	Ceanothus americanus 'Hummingbird' Summersweet (native)	119	3 gal. container 18" min. height
	Cornus sericea 'Baileyi' Redtwig Dogwood (native)	19	3 gal. container 24" min. height
	Gaultheria procumbens Wintergreen (native)	43	3 gal. container 12" min. height
	Hydrangea arborescens 'Annabelle' Annabelle Hydrangea	6	5 gal. container 24" min. height
	Ilex glabra 'Compacta' Compact Inkberry (native)	277	3 gal. container 24" min. height
	Ilex verticillata 'Red Sprite' Winterberry (native)	105	3 gal. container 24" min. height
	Juniperus chinensis 'Old Gold' Old Gold Juniper	239	5 gal. container 24" min. height
	Myrica pennsylvanica Northern Bayberry (native)	239	5 gal. container 24" min. height
	Picea canadensis 'Conica' Dwarf White Spruce (native)	8	36" B&B Full & Symmetrical
	Rosa 'Radrazz' Red Knock-out Rose	95	3 gal. container 18" min. height
	Syringa patula 'Miss Kim' Miss Kim Lilac	5	5 gal. container 24" min. height
	Vaccinium corymbosum Highbush Blueberry (native)	8	5 gal. container 24" min. height
	Weigela 'Wine and Roses' Hybrid Weigela	199	5 gal. container 24" min. height
Grasses / Perennials:			
	Asclepias tuberosa Butterfly Weed (native)	35	1 gal. container
	Coreopsis verticillata 'Zagreb' Coreopsis	117	1 gal. container
	Hemerocallis flava Lemon Daylily	36	1 gal. container
	Heuchera 'Plum Pudding' Alum Root	78	1 gal. container
	Panicum virgatum Switch Grass (native)	130	1 gal. container
	Pennisetum alopecuroides 'Hameln' Hameln Fountain Grass	119	1 gal. container
Ground Covers:			
	Arctostaphylos uva-ursi 'Massachusetts' Bearberry (native)		Liners @ 36" o.c. triangularly spaced
	Native Wetland/Buffer Seed Mix		Hydroseeded all disturbed areas
	Plerson Nurseries Inc. or equal		4" Pots @ 8" o.c. triangularly spaced
	Annual Flowers by season		Sod or Seed areas to be determined
	Spring-Summer-Fall rotations		
	Lawn Areas- Kentucky Bluegrass/ Fescue mix		
Notes:			
1. An automated permanent irrigation system shall be installed using SMART Technology, providing 100% coverage to all landscaped areas.			
2. Provide 5 ft. high Tree Protection fencing around driplines of all trees or tree groups to be preserved prior to commencement of construction. Tree Protection fencing shall remain in place throughout entire construction activity period.			
3. All shrub/ground cover beds to receive a 3" layer of organic mulch.			

PLANTING PLAN

DATE: 5 August 2015 rev. 8-12-15
SCALE: 1" = 30'





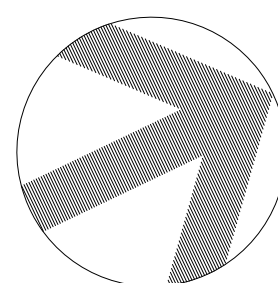
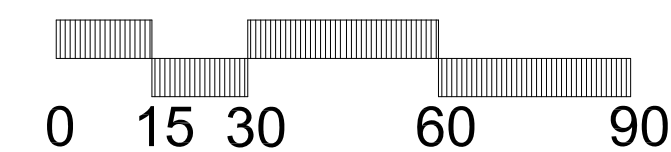
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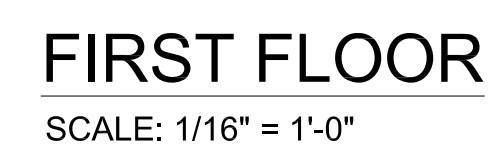
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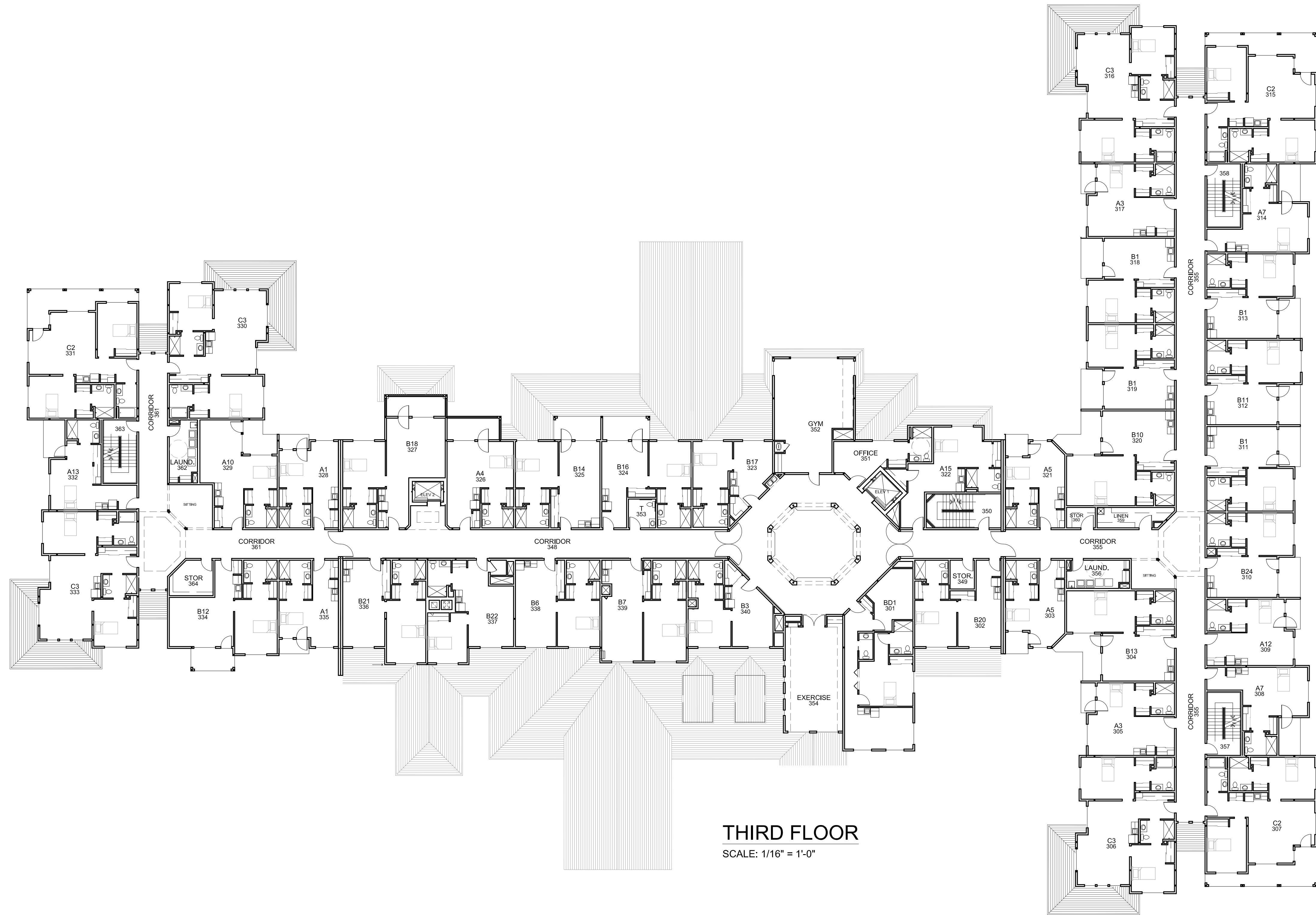
PLANTING PLAN

DATE: 5 August 2015 rev. 8-12-15

SCALE: 1" = 30'

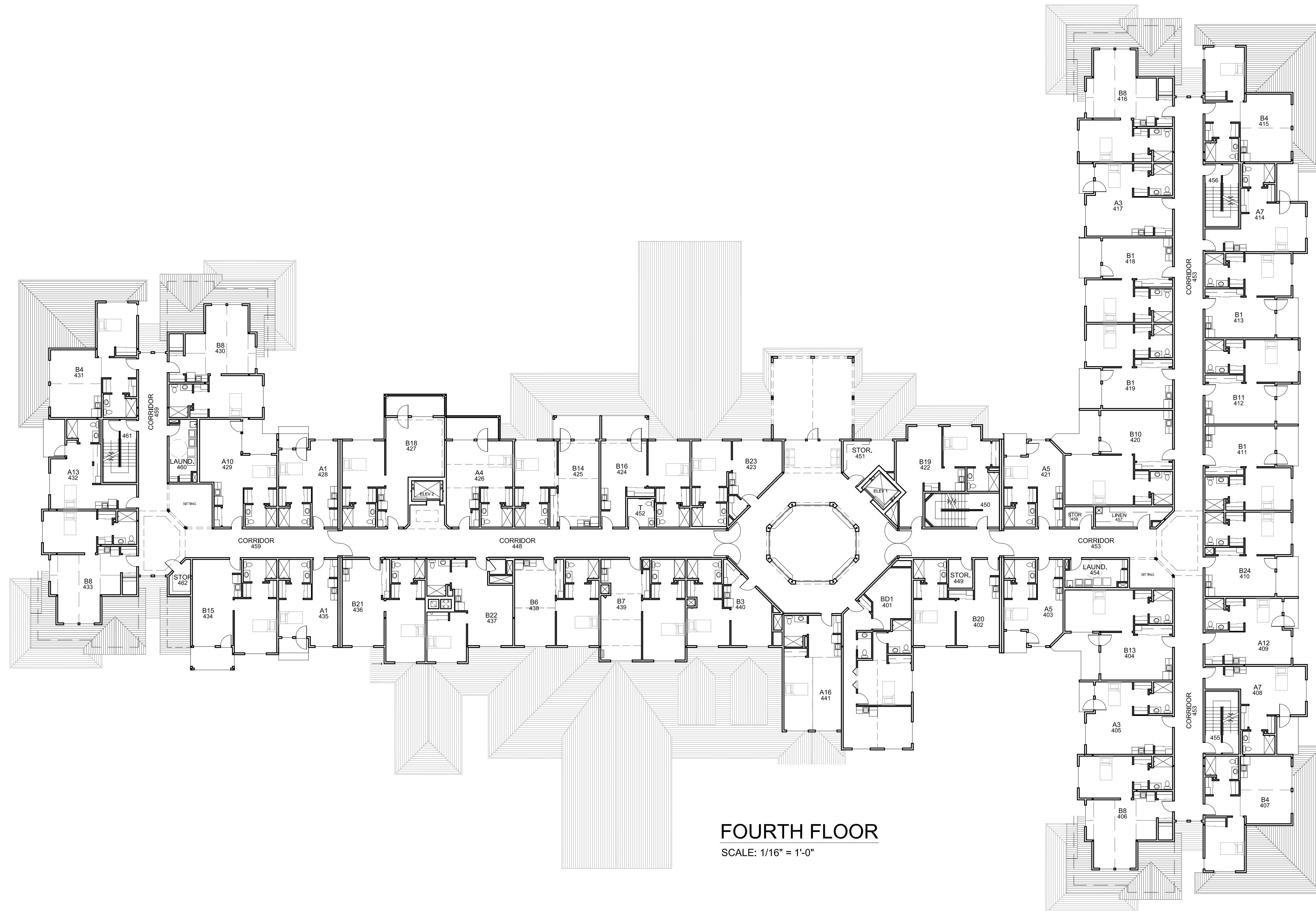


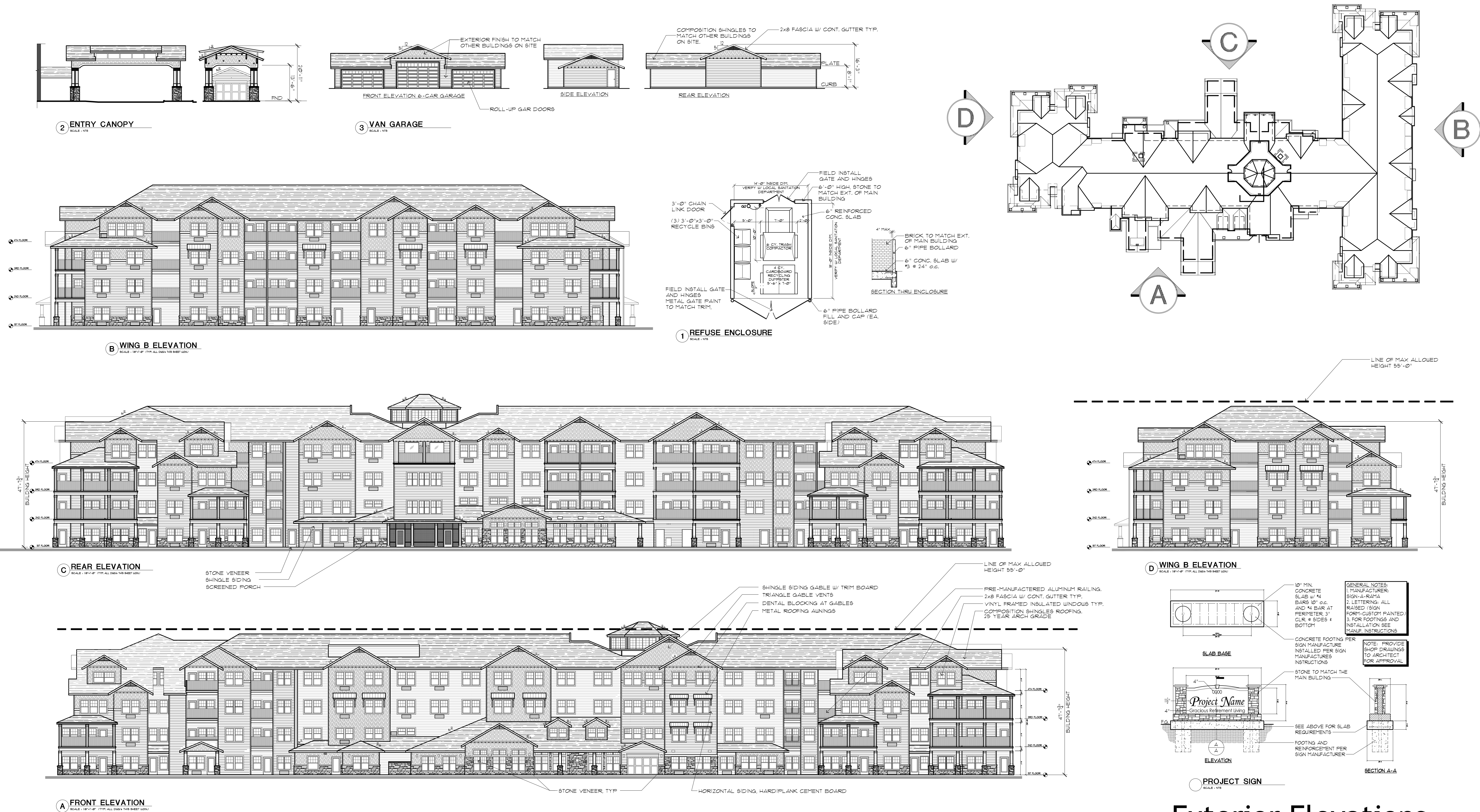




THIRD FLOOR

SCALE: 1/16" = 1'-0"





Exterior Elevations

DATE: 06-01-15



Memorandum

Planning and Urban Development Department

Planning Division

To: Beth Boepple, Chair, and Members of the Portland Planning Board
From: Nell Donaldson, Planner
Date: October 22, 2015
Re: Pleasant Avenue Church Redevelopment, 3 Pleasant Avenue
Project #: 2015-102 **CBL:** 130-H-13, 130-I-12, 130-I-14
Meeting Date: October 27, 2015

I. INTRODUCTION

Hardypond Development Company has requested a preliminary Level III site plan and subdivision review for the redevelopment of the former Clark Memorial Church site at 3 Pleasant Avenue in Deering Center. The project involves the creation of separate lots for the church and the associated rectory, the adaptive reuse of the church building for 25 market rate apartments, the development of the rectory as one additional residential unit, and easements on an existing lot across Pleasant Avenue for the purposes of off-street parking. Few site changes are proposed.

It should be noted that the applicant previously submitted a similar application with plans to redevelop the church with 25 affordable apartment units for use by Shalom House. Based on feedback at the applicant's neighborhood meeting, the development program was modified to include market rate residential units instead. The applicant subsequently resubmitted the application for preliminary review. This revised application is the subject of this workshop.

As a project resulting in 26 new residential units, this development is being referred to the planning board for compliance with the site plan and subdivision standards. The Planning Division sent a total of 142 notices to property owners within 500 feet of the site and a legal ad ran on October 19 and 20, 2015.

Applicant: Bob Gaudreau, Hardypond Development Company, LLC

Consultants: Andrew Johnston, FST; John Shields, Shields Architecture; John Swan, Owen Haskell

II. REQUIRED REVIEWS

Waiver Requests	Applicable Standards
Street trees <i>Single-family (15 Pleasant)</i> - 2 trees required. 2 existing trees. Meets standard. <i>Multi-family (3 Pleasant)</i> - 25 trees required. 1 existing tree, 4 proposed across street. Waiver with contribution for 20 additional trees.*	Site Plan Standard, <i>Section 14-526(b)2.b(iii)</i> and Technical Manual, <i>Section 4.6.1</i> . All multi-family development shall provide one street tree per unit. Single-family developments shall provide two street trees per unit. Waiver permitted where site constraints prevent it, with applicant contributing proportionate amount to Tree Fund.
Review	Applicable Standards
Site Plan	<i>Section 14-526</i>
Subdivision	<i>Section 14-497</i>

* Numbers to be verified at final plan review.

III. PROJECT DATA

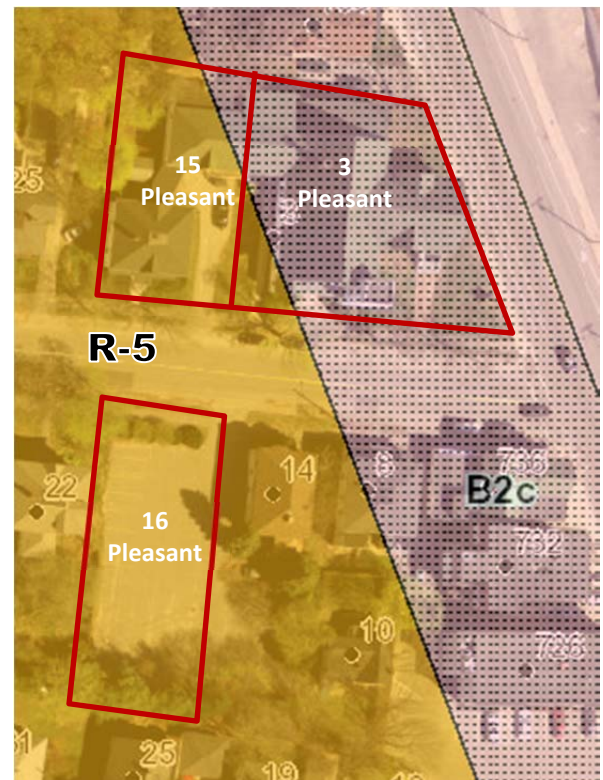
Existing Zoning	R-5 and B-2c
Existing Use	Church, rectory, and parking area
Proposed Use	Residential (conversion of church for multi-family, conversion of rectory for single-family) and parking
Proposed Development Program	25 units residential in church, 1 single-family in rectory
Parcel Sizes	15,682 (multi-family in church at 3 Pleasant Avenue) 6,970 SF (single family at 15 Pleasant Avenue) 10,019 (parking area at 16 Pleasant Avenue)

	<i>Existing</i>	<i>Proposed</i>	<i>Net Change</i>
Building Footprint (church)	8,995 SF	8,995 SF	0 SF
Building Floor Area (church)	17,582 SF	17,582 SF	0 SF

Building Footprint (single-family)	~1,315 SF	~1,315 SF	0 SF
Building Floor Area (single-family)	~2,630 SF	~2,630 SF	0 SF

Impervious Surface Area	20,875 SF	22,179 SF	1,304 SF
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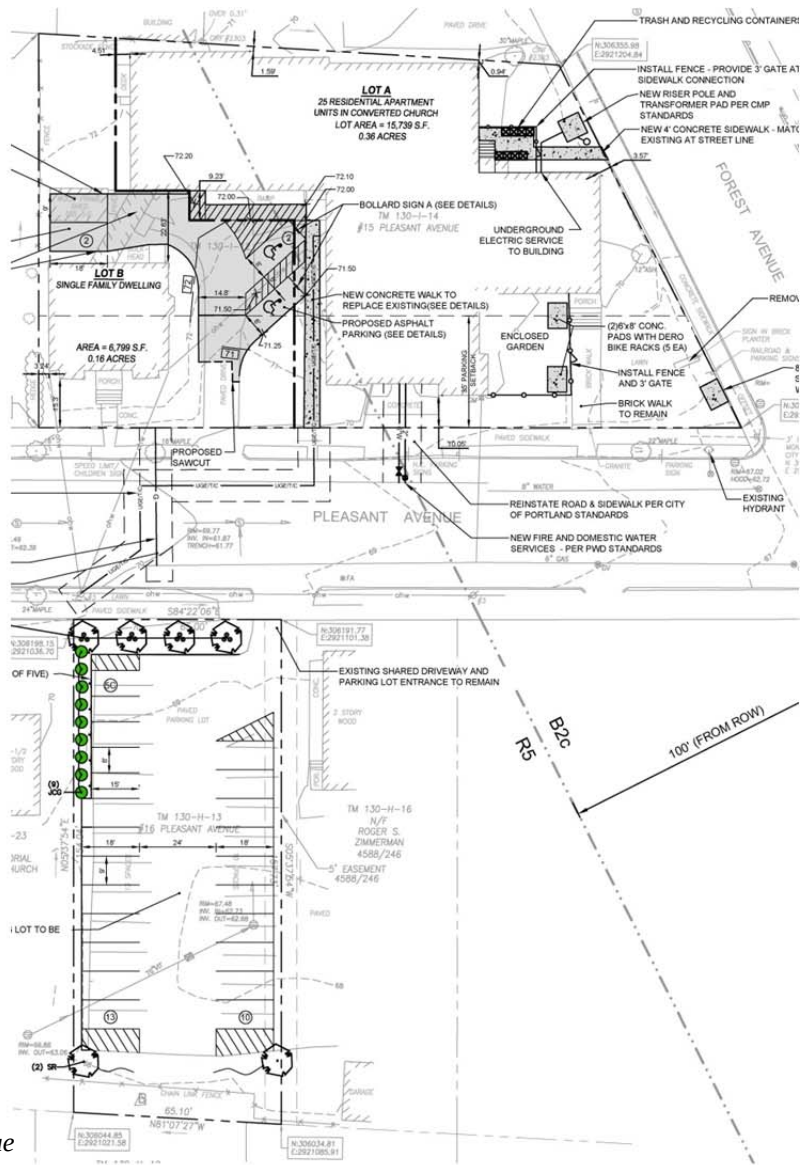
Parking Spaces	23	27	4
Bicycle Parking Spaces	0	10	210
Estimated Cost of Project	\$2,000,000		



Figures 1, 2 and 3: existing church at 3 Pleasant Avenue from Forest Avenue (top left); existing rectory at 15 Pleasant Avenue (bottom left); existing zoning



Figures 4, 5, & 6: existing lots, church, and rectory building (left); proposed site plan, showing reuse of church and rectory buildings; proposed Pleasant Avenue elevation



IV.BACKGROUND & EXISTING CONDITIONS

The Pleasant Avenue Church redevelopment affects three parcels under common ownership near Woodfords Corner, two on the north side of Pleasant Avenue and one on the south (*Figure 4*). The Clark Memorial Church was built on the first of these parcels (3 Pleasant Avenue) and a portion of the second (15 Pleasant Avenue) between 1857 and 1882; the adjacent rectory building was added entirely on the second lot (15 Pleasant Avenue) in the early 20th century. A breezeway currently connects the southwest corner of the church with the northeast corner of the rectory. These two buildings share a driveway. Parking is located across Pleasant Avenue on the third lot (16 Pleasant Avenue), which currently consists entirely of surface parking and shares its driveway with an adjacent residential building.

The zoning on the site is split between Residential R-5 to the west and Community Business B-2C to the east (*Figure 3*). To the north, west, and south in the R-5 zone, the site is surrounded largely by single-family residential development, with some multi-family residential proximate to Forest Avenue. With respect to the B-2c zone, a hair salon occupies the site on Forest Avenue directly across Pleasant Avenue from the site; multi-family residential sits on Forest Avenue directly to the north.

V. PROPOSED DEVELOPMENT

The applicant proposes to:

- Adaptively reuse the existing church building at 3 Pleasant Avenue to develop 25 market rate studio, one-bedroom, and two-bedroom apartments on three floors. Laundry and storage space would also be included in the building. Minor site improvements are proposed in association with the redevelopment. The 3 Pleasant Avenue lot would be reconfigured such that the church building would be wholly contained on the site.
- Demolish the existing breezeway between the church and rectory buildings in order to separate these buildings and allow the rectory to function as a separate single-family residence. The 15 Pleasant Avenue lot would be reconfigured to house the rectory building only. Parking would be developed at the rear of this newly reconfigured lot.
- Use the existing surface parking at 16 Pleasant Avenue, with some minor site improvements, for the purposes of off-street parking for the church redevelopment.

VI. PUBLIC COMMENT

The applicant hosted a neighborhood meeting on Thursday, October 8 (*Attachment F*). Based on the meeting minutes, it appears that attendees' questions focused largely on the potential tenant population, plans for landscaping, traffic impacts, and noise. Staff also received public comments from several neighbors (*Attachments PC-1 to PC-6*). These neighbors raised concerns about the size of the development, as well as parking and traffic implications.

VII. RIGHT, TITLE, & INTEREST

The applicant's submittal includes a deed as evidence of right, title, and interest (*Attachment D*). The development will involve parking and access easements on both the 15 Pleasant Avenue and 16 Pleasant Avenue sites.

VIII. FINANCIAL & TECHNICAL CAPACITY

The estimated cost of the development is \$2 million. The applicant has submitted a letter from TD Bank attesting to the applicant's capacity to successfully complete the project (*Attachment D*).

IX. ZONING ANALYSIS

Planning staff conducted a preliminary zoning analysis. It should be noted that off-street parking on 16 Pleasant Avenue constitutes a conditional use under the R-5 zone, but, because this parking is existing, it is not being reviewed anew here. It should also be noted that, because the church and rectory buildings currently exist and are being reused, there are existing non-conformities with respect to dimensional requirements. Per the preliminary zoning review, no new non-conformities are being created.

The applicant has proposed to use the active street frontage provisions of the B-2c zone to achieve the desired residential density for the adaptive reuse of the church. The B-2c allows for a density of 1 per 1,600 SF in off-peninsula locations by right, with the density increasing to 1 per 435 SF for projects with active street frontages. This means that, with the by-right density of the B-2c zone, the applicant could develop 8 units in the former church. Assuming the density for projects with active street frontages, 30 units would technically be permitted.

Section 14-188 of the code defines an active street frontage as follows:

A building will be determined to have an active street frontage upon meeting the following guidelines to the greatest extent practicable as determined by the Planning Board or Planning Authority:

- *the primary building façade shall be within ten feet of the front street line;*
- *there shall be no parking on the lot within 35 feet of the front street line;*
- *no more than 25% of the first floor primary façade shall consist of access to garages, unutilized space, service entrances, storage or mechanicals, and the remaining minimum 75% shall have an average depth of a minimum of 20 feet for residential or commercial uses;*

- *all primary ground floor entries to multi-family buildings must orient to street, not to interior blocks or parking lots.*

Given the preliminary plans, there are several of these guidelines which merit further discussion:

- The primary church façade on Pleasant Avenue is 10.05 feet from the front property line, or 1/6 of an inch more than technically required to qualify as an active street frontage. It should be reiterated that this is an existing condition (and has been since the late 19th century);
- A portion of one of the ADA-accessible parking spaces on the 15 Pleasant Avenue property is proposed within 35 feet of the front property line. Technically, this space lies within the R-5 zone, meaning that, per consultation with Ann Machado, the B-2c active street frontage guidelines do not apply. However, staff has requested that the applicant consider reconfiguring this space in an attempt to meet the spirit of the active street frontage provisions.

Staff requests the board's feedback on the question of whether the applicant meets the active street frontage guidelines to the greatest extent practicable.

X. SITE PLAN SUBMISSION REQUIREMENTS (Section 14-527) and SUBDIVISION PLAT AND RECORDING PLAT REQUIREMENTS (Section 14-496)

Per the city's land use ordinance, the following materials should be submitted at time of final review:

- Final site plan and subdivision submittal requirements as noted in 14-496 and 14-527(e) and (f), including a construction management plan, landscaping plan, and photometric plan, and
- Per DPS, a revised survey including all the property corner marks and the full extent of the storm drains and sewer lines (including building laterals).

XI. SUBDIVISION REVIEW (14-497(a). Review Criteria)

The proposed development has been reviewed by staff for conformance with the relevant review standards of the City of Portland's subdivision ordinance. Staff comments are below.

1. Water, Air Pollution

There are very minor site changes proposed, including the demolition of a breezeway, the removal of a shed, and some additional paving. The development is not anticipated to have detrimental water or air impacts.

2 & 3. Adequacy of Water Supply

The applicant has provided evidence of capacity from the Portland Water District (*Attachment C*).

4. Soil Erosion

No unreasonable soil erosion or reduction in the capacity of the land to hold water is anticipated.

5. Impacts on Existing or Proposed Highways and Public Roads

The applicant has provided an estimated trip generation of 16 peak hour trips based on the Institute of Transportation Engineers Trip Generation Manual (*Attachment C*). No traffic impact analysis has been conducted. Tom Errico, the city's consulting traffic engineer, has concurred that no traffic study is required (*Attachment 1*).

6. Sanitary Sewer/Stormwater Disposal

The applicant has submitted a wastewater capacity application to the Department of Public Services (*Attachment C*). Verification of capacity will be required at the time of final plan. The applicant has proposed to use existing sewer connections in Pleasant Avenue.

7. Solid Waste

The applicant has proposed trash and recycling enclosure on the Forest Avenue frontage near a new proposed sidewalk with stair access to the building. Staff has requested that the applicant consider moving this trash enclosure to the rear of the building to make it less visible from Forest Avenue.

8. Scenic Beauty

This proposal is not deemed to have an adverse impact on the scenic beauty of the area.

9. Comprehensive Plan

The proposed project will add rental housing to the city's housing stock, and thus meet a number of housing objectives of the comprehensive plan. The project will also adaptively reuse an existing building on a major commuter corridor and transit line, thus achieving some of the smart growth objectives of the comprehensive plan as well.

10. Financial and Technical Capacity

The applicant has submitted a letter from TD Bank attesting to the applicant's capacity to successfully complete the project (*Attachment D*).

11. Wetland/Water Body Impacts

There are no anticipated impacts to wetlands.

12. Groundwater Impacts

There are no anticipated impacts to groundwater supplies.

13. Flood-Prone Area

Per the city's existing flood maps, the site is not located in a flood zone.

XII. SITE PLAN REVIEW

The proposed development has been reviewed by staff for conformance with the relevant review standards of the City of Portland's site plan ordinance. Staff comments are below.

1. Transportation Standards**a. Impact on Surrounding Street Systems**

As noted above, the applicant's narrative estimates that the project will add 16 peak hour trips to the adjacent street system. The impact of these trips is anticipated to be negligible. Mr. Errico has stated that he does not anticipate negative traffic or safety impacts (*Attachment 1*).

b. Access and Circulation

The applicant proposes to provide vehicular access to ADA parking serving the church lot at 3 Pleasant Avenue and parking serving the single-family home at 15 Pleasant Avenue via the existing curb cut on the north side of Pleasant Avenue. This driveway, as well as the ADA parking for the church redevelopment, will technically lie on the single-family lot at 15 Pleasant Avenue, with a 30 foot wide access easement to the church property. Staff has requested that the applicant verify that circulation is technically possible around, to, and from these parking spaces. Mr. Errico has reviewed the configuration of proposed parking and drive aisles. He writes,

The parking area abutting the building is very tight and I'm not sure is workable. The applicant should explore the possibility of relocating one handicapped parking space to the main parking lot, thus creating a more space for vehicle circulation from the two abutting parking spaces (This would need to meet ADA regulations and must be confirmed). I would be supportive of providing additional compact size parking spaces to allow for the target 25 parking spaces.

Access to the off-site parking at 16 Pleasant Avenue (which will serve the church redevelopment) would be provided via an existing driveway shared with the property at 14 Pleasant Avenue. Easements will be necessary in this location as well. Mr. Errico notes,

I find the parking lot layout on the south side of Pleasant Avenue to be acceptable. With that, the applicant should provide dimensions for the driveway servicing the abutting

residential property and provide information on winter maintenance agreements/responsibilities. I would note that encroachment into the driveway by project vehicles is possible, and accordingly delineation of parking spaces is important.

Pedestrian access to the converted church building would remain largely as is, with the exception of a new secondary entrance at the northeast corner of the site on Forest Avenue, which would be reachable via a new sidewalk from the street. The main entrance from Pleasant Avenue would continue to exist as it currently does, via a sidewalk with steps to the building. ADA access would continue to be provided to the west on Pleasant Avenue via a ramp; the sidewalk to the ADA ramp would be reconstructed. Staff has requested that the applicant document ADA access from the street in the revised submittal. There are no proposed changes to pedestrian access to the single-family lot or the parking. Mr. Errico has noted that DPS has not yet evaluated the condition of the sidewalk and ramp at the Pleasant Avenue/Forest Avenue corner (*Attachment 1*). This review will be completed prior to the final plan submittal.

c. *Public Transit Access*

Given that this project is over 20 residential units and located along a transit route, a transit facility, consisting of a transit shelter and a pullout bay, is technically required. The applicant has identified a transit shelter pad on the preliminary plans. A shelter should be designated as well. It appears that a pullout is not possible given right-of-way constraints. Additional coordination with METRO will be required to identify the exact location of these facilities. The applicant has depicted a public access easement surrounding the shelter site on the draft subdivision plan.

d. *Parking*

Division 20 of the land use ordinance requires one parking space per unit for residential development in the B-2 zone (*Section 14-332(a)*). At this ratio, the church redevelopment would be required to provide 25 parking spaces for the 25 residential units. The preliminary plans show 23 parking spaces off-site at 16 Pleasant Avenue and two ADA spaces next door at 15 Pleasant Avenue, or exactly 25 spaces. Both of these parking areas lie within 100 feet of the church lot at 3 Pleasant Avenue, thus meeting the requirements of *Section 14-334* of the ordinance, which permits off-site parking for uses in non-residential zones.

Mike Farmer, of the city's Department of Public Services, has requested additional information on the design of the ADA parking spaces,

The layout shown on the site plan for two handicapped spaces does not, in my view, meet the design standard for a van accessible space. Does the site designer think they need a van accessible space? Does the proposed parking layout meet the design standard for a van accessible space?

Division 20 generally requires two parking spaces per unit for residential buildings in zones without exceptions. Two spaces are proposed at the rear of the single-family building at 15 Pleasant Avenue, meeting this requirement.

The preliminary plans include 10 bike parking spaces in two bike racks, meeting the requirement for residential structures. All of these spaces are proposed inside a fenced area on the Forest Avenue side of the church building. Staff has requested that the applicant move one of the racks to the outside of the fenced area to improve visitor access to bike parking.

e. *Transportation Demand Management*

A transportation demand management plan is not required.

2. *Environmental Quality Standards*

a. *Preservation of Significant Natural Features*

There are no known significant natural features on the site.

b. *Landscaping and Landscape Preservation*

The preliminary plans show four crab apples and 12 hostas on the off-street parking site at 16 Pleasant Avenue. Staff has requested that the applicant provide a landscaping plan for both buildings and the parking area that meets the standards of the site plan ordinance. Jeff Tarling, the city's arborist, has noted that the landscaping plan should include two additional street trees on the north side of Pleasant Avenue, where two have recently been eliminated. As noted above, staff has also requested that the applicant consider moving trash and recycling to the rear of the building, off both Pleasant and Forest Avenues. In addition, a transformer pad is currently depicted on the Forest Avenue frontage. In the revised plans, this pad should be either moved to a more discreet location or screened from public view.

c. *Water Quality/Storm Water Management/Erosion Control*

The applicant has indicated that the impervious surface on site would increase by over 1,000 SF, which would result in a requirement for stormwater mitigation. However, most of the proposed impervious appears to lie over existing impervious; the change in impervious should be verified prior to final plan review. As currently proposed, all stormwater would runoff as in the existing condition and discharge to the city's combined system, with no treatment planned.

David Margolis-Pineo, of the city's Department of Public Services, has requested that the applicant redirect all roof drains currently discharging to the sewer system to grade (*Attachment 2*). In addition, David Senus, the city's consulting civil engineer, has noted that the plans "should include notes related to requirements for street sweeping during construction and catch basin inlet protection" (*Attachment 3*).

3. Public Infrastructure and Community Safety Standards

a. *Consistency with Related Master Plans*

As noted above, the project is generally deemed consistent with related master plans.

b. *Public Safety and Fire Prevention*

The applicant has provided a life safety summary for review by the city's Fire Prevention Bureau (*Attachment B*). Per this summary, the converted church building would have sprinklers. A hydrant is provided at the corner of Forest and Pleasant Avenues. Assistant Fire Chief Keith Gautreau, of the Fire Prevention Bureau, has indicated his general approval (*Attachment 4*).

c. *Availability and Capacity of Public Utilities*

The Portland Water District has provided documentation of capacity to serve the project (*Attachment C*). At the time of final site plan review, the applicant will need to present evidence that there is sufficient sewer capacity to service the commercial and residential units on the site.

There are currently three overhead electrical feeds to the site, including two from Pleasant Avenue and one from Forest Avenue. Mr. Margolis-Pineo has requested that the applicant place all electrical service underground. The preliminary plans show electrical service underground from Pleasant Avenue. A riser pole and transformer pad are depicted on the site's Forest Avenue frontage, with electrical service underground from this location to the building. The location of this transformer pad and electrical service connection should be confirmed with the Department of Public Services prior to the submission of final plans. As noted above, this transformer, assuming it remains, should be screened from public view.

4. Site Design Standards

a. *Massing, Ventilation, and Wind Impact*

No comments.

b. *Shadows*

Not applicable.

c. *Snow and Ice Loading*

Snow storage areas should be delineated on the revised plans.

- d. *View Corridors*
Not applicable.
- e. *Historic Resources*
The existing church building is not designated as a historic structure, nor are there historic structures within 100 feet.
- f. *Exterior Lighting*
A lighting plan, complete with photometrics, should be submitted at the time of final review.
- g. *Noise and Vibration*
No comments.
- h. *Signage and Wayfinding*
No signage or wayfinding is proposed at this time.
- i. *Zoning-Related Design Standards*
The applicant has not proposed any changes to the existing rectory building. However, they have proposed modest exterior changes to the existing church building, including the addition of doors, windows, and several dormers. These additions have generally been designed to integrate with the building's existing historic character. Based on the multi-family design standards, the city's urban designer has requested that the applicant:
 - Review the elevations, particularly with respect to the north side, to ensure that the drawings accurately depict the existing roof design and window pattern;
 - Align proposed windows on the second and third floors on the north side with existing first floor windows; and
 - Confirm that proposed dormers match the existing roof pitch.

XIII. NEXT STEPS

1. Final plan submission, including subdivision and site plan submittal requirements as included in 14-496(a) and (b) and 14-527(e) and (f) for review by the Planning Authority and Planning Board; and
2. Hold final Planning Board hearing.

XIV. ATTACHMENTS

PLANNING BOARD REPORT ATTACHMENTS

1. Traffic Engineer review (memo from Thomas Errico, 10/22/15)
2. Department of Public Services review (memo from David Margolis-Pineo and Mike Farmer, 10/14/15)
3. Civil Engineer review (memo from David Senus, 10/14/15)
4. Fire Prevention Bureau review (memo from Keith Gautreau, 8/12/15)

APPLICANT'S SUBMITTALS

- A. Cover Letter (from Andrew Johnston, FST, 9/29/15)
- B. Level III Site Plan application
- C. Development Description
 - a. Project Overview
 - b. Project Purpose & Need
 - c. Existing Conditions
 - d. Proposed Development
 - e. Land Use Review
 - f. State and Federal Permits
 - g. Easements or Other Burdens
 - h. Traffic
 - i. Soils/Geotechnical Review

- j. Natural Features
- k. Utilities & Stormwater
- D. Right, Title, & Interest; Technical; & Financial Capacity
 - a. Right, Title and Interest
 - b. Technical Capacity
 - c. Financial Capacity
- E. Conformity With Site Plan Standards
- F. Neighborhood Meeting Packet

PLANS

- Plan 1. Cover Sheet
- Plan 2. Boundary Survey
- Plan 3. Preliminary Subdivision Plan
- Plan 4. Site Layout Plan
- Plan 5. Site Details
- Plan 6. First Floor Plan
- Plan 7. Second Floor Plan
- Plan 8. Third Floor Plan
- Plan 9. South & East Elevations
- Plan 10. North & West Elevations

PUBLIC COMMENT

- PC-1. Email from Lorrie Ferrari (7/31/15)
- PC-2. Email from Theresa Puckett (8/19/15)
- PC-3. Email from Betty Libby (8/24/15)
- PC-4. Email from Philip Chamberlain (8/26/15)
- PC-5. Email from Marina Schneller (8/31/15)
- PC-6. Email from Betty Libby (10/8/15)

MEMORANDUM

To: FILE
From: Nell Donaldson
Subject: Application ID: 2015-102
Date: 10/22/2015

Comments Submitted by: Tom Errico/Traffic on 10/22/2015

Nell – I have reviewed the application materials and the following summarizes my preliminary traffic comments.

- I find the parking lot layout on the south side of Pleasant Avenue to be acceptable. With that, the applicant should provide dimensions for the driveway servicing the abutting residential property and provide information on winter maintenance agreements/responsibilities. I would note that encroachment into the driveway by project vehicles is possible, and accordingly delineation of parking spaces is important.
- The parking area abutting the building is very tight and I'm not sure is workable. The applicant should explore the possibility of relocating one handicapped parking space to the main parking lot, thus creating a more space for vehicle circulation from the two abutting parking spaces (This would need to meet ADA regulations and must be confirmed). I would be supportive of providing additional compact size parking spaces to allow for the target 25 parking spaces.
- I find the parking supply to be acceptable. One parking space per residential unit is proposed.
- The proposed project will not generate a significant level of traffic volume and therefore the project would not be expected to negatively impact traffic or safety issues in the project area.
- DPS should evaluate the condition of the sidewalk and provision of an ADA compliant sidewalk ramp at the corner of Forest Avenue.

If you have any questions, please contact me.

MEMORANDUM

To: FILE
From: Nell Donaldson
Subject: Application ID: 2015-102
Date: 10/22/2015

Comments Submitted by: David Margolis-Pineo/Engineering DPS on 8/21/2015

August 21, 2015

Memo To:Nell Donaldson
Barbara Barhydt
From:David Margolis-Pineo
Re:Review Comments for 3 Pleasant Avenue

The Department of Public Services has the following review comments.

- 1.All utility cables to service this complex are required to be placed underground from the road right. There are currently two overhead feeds to the site from Pleasant Ave and one from Forest Ave. It would be desirable to have one underground feed from Pleasant Ave.
- 2.Neither Pleasant or Forest Ave are under street moratoriums.
- 3.The applicant is requested to redirect all roof drains currently discharging to the sewer system to grade.
- 4.Survey comments will be forthcoming.
- 5.All plans are required to be professionally stamped.

We have no further comments at this time

Comments Submitted by: David Margolis-Pineo/Engineering DPS on 10/14/2015

I reviewed the latest site plan (revised as of 9/28/2015) available on e-plan for the above named project.

It appears that no changes have been made on the site plan to address comments 1 and 3 from Dave Margolis-Pineo's (DMP's) e-mail message on 8/21/2015. However, the cover letter (from FST) with the latest site plan indicates that the applicant is agreeable to continuing to work with The City Department of Public Services on the new utility service connections, which are the subject of comments 1 and 3 from DMP.

Comment 5 from DMP's e-mail message was addressed; the revised site plan has a design professional's stamp and signature.

Comment 2 from DMP's e-mail message required no response from the applicant.

Comment 4 from DMP's e-mail message relates to survey comments. We are requesting that the applicant set all the (missing) property corner marks. We also request that the full extent of the storm drains and sewer lines (including building laterals) on, and adjacent to, the project be shown on the site plan.

I have one additional comment, which relates to the designated handicapped parking spaces. The layout shown on the site plan for two handicapped spaces does not, in my view, meet the design standard for a van accessible space. Does the site designer think they need a van accessible space? Does the proposed parking layout meet the design standard for a van accessible space?

Michael Farmer, Project Engineer
Portland Dept. of Public Services
55 Portland Street
Portland, ME 04101
phone: 207-874-8845
fax: 207-874-8852

MEMORANDUM

To: FILE
From: Nell Donaldson
Subject: Application ID: 2015-102
Date: 10/22/2015

Comments Submitted by: David Senus/Civil Engineering on 7/10/2015

1)The application is preliminary. As such, we would anticipate that additional documents will be submitted for the final application, including letters from utilities confirming capacity to serve the proposed development and approving the design. Additionally, final plans should include construction details.

2)In accordance with Section 5 of the City of Portland Technical Manual, a Level III development project is required to submit a stormwater management plan pursuant to the regulations of MaineDEP Chapter 500 Stormwater Management Rules, including conformance with the Basic, General, and Flooding Standards. Given the size of the proposed development and the de minimis increase in impervious area, no formal stormwater management plan submittal will be required. We offer the following comments:

a)Basic Standard: Proposed project impacts will be small and relatively well contained on the site; however, the plans should include notes related to requirements for street sweeping during construction and catch basin inlet protection.

b)General Standard: The project will result in a de minimis increase in impervious area of approximately 675 square feet. As such, the project is not required to include any specific stormwater management features for stormwater quality control.

c)Flooding Standard: The project will result in a de minimis increase in impervious area of approximately 675 square feet. As such, the project is not required to include any specific stormwater management features to control the rate or quantity of stormwater runoff from the site.

Comments Submitted by: David Senus/Civil Engineering on 10/14/2015

The Applicant addressed our comment regarding utility capacity and providing construction details with the final site plan; however, our comment related to street sweeping and catch basin inlet protection does not appear to be addressed in the latest submittal (see highlighted text from July memorandum).

Thanks
Dave

David Senus, PE (Maine), Project Manager
Woodard & Curran, Inc.
41 Hutchins Drive
Portland, ME 04102
Phone: (207) 558 3704
Cell: (207) 210 7035
Fax: (207) 774 6635

MEMORANDUM

To: FILE
From: Nell Donaldson
Subject: Application ID: 2015-102
Date: 10/22/2015

Comments Submitted by: Keith Gautreau/Fire on 8/12/2015

Hydrant location on the corner of Forest and Pleasant is good and adequate flow being tapped into Forest Ave main.

Hydrants

2009 NFPA 1 18.3 Water Supplies and Fire Hydrants

-Fire Department Connections shall not be located where large diameter hose may block egress.

Comments Submitted by: Keith Gautreau/Fire on 8/12/2015

Construction Management Plan

Streets must maintain a 20' width for Fire Department access at all times.

Fire Hydrants shall not be blocked or enclosed by fencing. A 3' foot clearance must be kept at all times around the fire hydrant.

If gates are locked, a Portland Fire Department Knox padlock must be purchased by the applicant to allow access for the Fire Department.

The Construction Company' emergency contact information shall be posted on the property in case of an after hours emergency.

All construction shall comply with 2009 NFPA 1 Chapter 16 Safeguards During Building Construction, Alteration, and Demolition Operations.

Any cutting and welding done will require a Hot Work Permit from Fire Department.

Comments Submitted by: Keith Gautreau/Fire on 8/12/2015

Access to the site looks good off of Forest Ave and Pleasant Ave. 30' Wide access into the proposed parking lot exceeds the minimum requirements. Parking across the street is acceptable and enables better emergency access.

Comments Submitted by: Keith Gautreau/Fire on 10/14/2015

After further looking at the curb cut and driveway for emergency access off Pleasant Ave. it appears very narrow. Emergency access lanes must be minimum 20'.



September 29, 2015

Ms. Barbara Barhydt
Development Review Services Manager
Planning and Development Department
City of Portland
389 Congress Street
Portland, Maine 04101-3509

**Subject: Proposed Redevelopment of Pleasant Avenue Church
3 Pleasant Avenue – Portland, Maine
Preliminary Site Plan and Subdivision Application**

Dear Ms. Barhydt:

On behalf of Hardypond Development Company, LLC, we are pleased to provide the accompanying revised package of submission materials related to a proposed redevelopment of the former Pleasant Avenue Church site located at 3 Pleasant Avenue into 25 residential apartments. Following input from our previous Neighborhood Meeting, the project has been revised to propose 25 market rate residential units. The project site is located on Map 130, Lots I-012 and I-014 according to the City of Portland Tax Assessor's Maps and also includes redivision of the single parcel into two lots. This submission package is intended to meet the City's Preliminary Submission Requirements as outlined in the Level III Application procedures.

Accompanying this cover letter are the following materials:

- Level III Preliminary Site Plan and Subdivision Application
- Section 1: Written Description of Project
- Section 2: Evidence of Right, Title and Interest
- Section 3: Written Assessment of Proposed Project's Compliance with Applicable Zoning and Land Use Requirements

You will find in the accompanying materials, information including the Preliminary Site Layout Plan and Preliminary Subdivision Plan. We have also included preliminary building elevations and floor plans for the building renovations prepared by Shields Architecture. Preliminary information pertaining to the project's utilities needs and statements regarding compliance with the City's Standards are contained within this submission.

Ms. Barbara Barhydt
September 29, 2015
Page 2

The Development Team expects to continue to work with City Officials/Representatives on both the onsite and offsite components including, but not limited to, coordination with Public Services representatives on new service connections for the proposed building and potential transit improvements.

On behalf of the Design Team, we look forward to your assistance on the project and we look forward to the nearest available workshop meeting with Planning Staff. Please find one (1) hard copy of the application materials including one set each of 11x17 and full size plans, along with a CD containing PDF files for all submitted materials.

If you have any questions regarding these materials, please contact this office.

Sincerely,

FAY, SPOFFORD & THORNDIKE

A handwritten signature in blue ink, appearing to read "A. Johnston", is positioned above the printed name.

Andrew D. Johnston, P.E.
Principal Engineer

ADJ/smk

Enclosures – See list above

c: Robert Gaudreau, Hardypond Development Company, LLC

AGENT AUTHORIZATION

From: Bob Gaudreau [<mailto:Bob@hardypond.com>]
Sent: Thursday, June 11, 2015 3:21 PM
To: Andrew Johnston
Subject: RE: Shalom House - Pleasant Avenue Church

Andy:

You are allowed to sign the submission of paperwork as my consultant for the City subdivision application.

So does this take care of everything you desired of me?

Thanks Bob

Hardypond Development Company, LLC
It's Manager

From: Andrew Johnston [<mailto:AJohnston@fstinc.com>]
Sent: Thursday, June 11, 2015 8:51 AM
To: Bob Gaudreau
Cc: Sandi Keef
Subject: Shalom House - Pleasant Avenue Church

Hi Bob,
We are finalizing the preliminary application package for submission, but will need a couple of items from you to do this.

Could you send us the following:

- A copy of the new deed
- A letter of financial capacity
- An agent authorization letter (assuming that you would like us to sign the application)

Thanks,
Andy

Andrew D. Johnston, P.E. | Principal Engineer

 **FAY, SPOFFORD & THORNDIKE**
Celebrating a Century of Engineering Excellence
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Portland, Maine



Yes. Life's good here.

Jeff Levine, AICP, Director
Planning & Urban Development Department

Electronic Signature and Fee Payment Confirmation

Notice: Your electronic signature is considered a legal signature per state law.

By digitally signing the attached document(s), you are signifying your understanding this is a legal document and your electronic signature is considered a **legal signature** per Maine state law. You are also signifying your intent on paying your fees by the opportunities below.

I, the undersigned, intend and acknowledge that no Site Plan or Historic Preservation Applications can be reviewed until payment of appropriate application fees are **paid in full** to the Inspections Office, City of Portland Maine by method noted below:

☐

Within 24-48 hours, once my complete application and corresponding paperwork has been electronically delivered, I intend to **call the Inspections Office** at 207-874-8703 and speak to an administrative representative and provide a credit/debit card over the phone.

☐

Within 24-48 hours, once my application and corresponding paperwork has been electronically delivered, I intend to **call the Inspections Office** at 207-874-8703 and speak to an administrative representative and provide a credit/debit card over the phone.

☒

I intend to deliver a payment method through the U.S. Postal Service mail once my application paperwork has been electronically delivered.

Applicant Signature:

September 29, 2015

Date:

Andrew D. Johnston, P.E.

September 29, 2015

I have provided digital copies and sent them on:

Date:

NOTE: All electronic paperwork must be delivered to buildinginspections@portlandmaine.gov or by physical means i.e. a thumb drive or CD to the Inspections Office, City Hall, 3rd Floor, Room 315.



Level III – Preliminary and Final Site Plans Development Review Application Portland, Maine

Planning and Urban Development Department
Planning Division

Portland's Planning and Urban Development Department coordinates the development review process for site plan, subdivision and other applications under the City's Land Use Code. Attached is the application form for a Level III: Preliminary or Final Site Plan. Please note that Portland has delegated review from the State of Maine for reviews under the Site Location of Development Act, Chapter 500 Stormwater Permits, and Traffic Movement Permits.

Level III: Site Plan Development includes:

- New structures with a total floor area of 10,000 sq. ft. or more except in Industrial Zones.
- New structures with a total floor area of 20,000 sq. ft. or more in Industrial Zones.
- New temporary or permanent parking area(s) or paving of existing unpaved parking areas for more than 75 vehicles.
- Building addition(s) with a total floor area of 10,000 sq. ft. or more (cumulatively within a 3 year period) except in Industrial Zones.
- Building addition(s) with a total floor area of 20,000 sq. ft. or more in Industrial Zones.
- A change in the use of a total floor area of 20,000 sq. ft. or more in any existing building (cumulatively within a 3 year period).
- Multiple family development (3 or more dwelling units) or the addition of any additional dwelling unit if subject to subdivision review.
- Any new major or minor auto business in the B-2 or B-5 Zone, or the construction of any new major or minor auto business greater than 10,000 sq. ft. of building area in any other permitted zone.
- Correctional prerelease facilities.
- Park improvements: New structures greater than 10,000 sq. ft. and/or facilities encompassing 20,000 sq. ft. or more (excludes rehabilitation or replacement of existing facilities); new nighttime outdoor lighting of sports, athletic or recreation facilities not previously illuminated.
- Land disturbance of 3 acres or more (includes stripping, grading, grubbing, filling or excavation).

Portland's development review process and requirements are outlined in the Land Use Code (Chapter 14) which is available on our website:

Land Use Code: <http://me-portland.civicplus.com/DocumentCenter/Home/View/1080>

Design Manual: <http://me-portland.civicplus.com/DocumentCenter/View/2355>

Technical Manual: <http://me-portland.civicplus.com/DocumentCenter/View/2356>

Planning Division
Fourth Floor, City Hall
389 Congress Street
(207) 874-8719

Office Hours
Monday thru Friday
8:00 a.m. – 4:30 p.m.

PROJECT NAME: Pleasant Avenue Church Redevelopment

PROPOSED DEVELOPMENT ADDRESS:

3 Pleasant Avenue, Portland, Maine

PROJECT DESCRIPTION:

Redevelopment of the existing church building to construct 25 apartment units.

Division of the Rectory from the church lot.

CHART/BLOCK/LOT: Map 130, Lots H-013, I-012 & I-014

PRELIMINARY PLAN
FINAL PLAN

09/29/15 (date)
_____ (date)

CONTACT INFORMATION:

Applicant – must be owner, Lessee or Buyer Name: Hardypond Development Company, LLC Business Name, if applicable: Address: 7 Tee Drive City/State : Portland, ME Zip Code: 04103	Applicant Contact Information Work # 207-797-6066 Home# Cell # Fax# e-mail: bob@hardypond.com
Owner – (if different from Applicant) Name: Same Address: City/State : Zip Code:	Owner Contact Information Work # Home# Cell # Fax# e-mail:
Agent/ Representative Fay, Spofford & Thorndike Name: Attn: Andrew Johnston, P.E. Address: 778 Main Street, Suite 8 City/State : South Portland, ME Zip Code: 04106	Agent/Representative Contact information Work # 207-775-1121 Cell # e-mail:
Billing Information Hardypond Development Company, LLC Name: Attn: Robert Gaudreau Address: 7 Tee Drive City/State : Portland, ME Zip Code: 04103	Billing Information Work # 207-797-6066 Cell # Fax# e-mail: bob@hardypond.com

Engineer Fay, Spofford & Thorndike Name: Attn: Andrew Johnston, P.E. Address: 778 Main Street, Suite 8 City/State : South Portland, ME Zip Code: 04106	Engineer Contact Information Work # 207-775-1121 Cell # _____ Fax# 207-879-0896 e-mail: ajohnston@fstinc.com
Surveyor Owen Haskell, Inc. Name: Attn: John Swan, PLS Address: 390 US Route 1, Unit 10 City/State : Falmouth, ME Zip Code: 04105	Surveyor Contact Information Work # 207-774-0424 Cell # _____ Fax# _____ e-mail: jswan@owenhaskell.com
Architect Shields Architecture Name: Attn: John Shields Address: 216 Range Road City/State : Cumberland, ME Zip Code: 04021	Architect Contact Information Work # 207-775-8926 Cell # _____ Fax# _____ e-mail: jshields@maine.rr.com
Attorney Name: Address: City/State : _____ Zip Code: _____	Attorney Contact Information Work # _____ Cell # _____ Fax# _____ e-mail: _____

APPLICATION FEES:

Check all reviews that apply. (Payment may be made by Credit Card, Cash or Check payable to the City of Portland.)

Level III Development (check applicable reviews) ☒ Less than 50,000 sq. ft. (\$500.00) ☐ 50,000 - 100,000 sq. ft. (\$1,000) ☐ 100,000 – 200,000 sq. ft. (\$2,000) ☐ 200,000 – 300,000 sq. ft. (\$3,000) ☐ over \$300,00 sq. ft. (\$5,000) ☐ Parking lots over 11 spaces (\$1,000) ☐ After-the-fact Review (\$1,000.00 plus applicable application fee) Plan Amendments (check applicable reviews) ☐ Planning Staff Review (\$250) ☐ Planning Board Review (\$500) The City invoices separately for the following: • Notices (\$.75 each) • Legal Ad (% of total Ad) • Planning Review (\$40.00 hour) • Legal Review (\$75.00 hour) Third party review fees are assessed separately. Any outside reviews or analysis requested from the Applicant as part of the development review, are the responsibility of the Applicant and are separate from any application or invoice fees.	Other Reviews (check applicable reviews) ☐ Traffic Movement (\$1,000) ☐ Stormwater Quality (\$250) ☒ Subdivisions (\$500 + \$25/lot) # of Lots <u>26</u> x \$25/lot = <u>\$1,150</u> ☐ Site Location (\$3,000, except for residential projects which shall be \$200/lot) # of Lots <u> </u> x \$200/lot = <u> </u> ☐ Other _____ ☐ Change of Use ☐ Flood Plain ☐ Shoreland ☐ Design Review ☐ Housing Replacement ☐ Historic Preservation
--	--

APPLICATION SUBMISSION:

1. All site plans and written application materials must be submitted electronically on a CD or thumb drive with each plan submitted as separate files, with individual file which can be found on the **Electronic Plan and Document Submittal** page of the City's website at <http://me-portland.civicplus.com/764/Electronic-Plan-and-Documents-Submittal>
2. In addition, one (1) paper set of the plans (full size), one (1) paper set of plans (11 x 17), paper copy of written materials, and the application fee must be submitted to the Building Inspections Office to start the review process.

The application must be complete, including but not limited to the contact information, project data, application checklists, wastewater capacity, plan for fire department review, and applicant signature. The submissions shall include one (1) paper packet with folded plans containing the following materials:

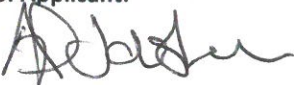
1. One (1) full size site plans that must be folded.
2. One (1) copy of all written materials or as follows, unless otherwise noted:
 - a. Application form that is completed and signed.
 - b. Cover letter stating the nature of the project.
 - c. All Written Submittals (Sec. 14-525 2. (c), including evidence of right, title and interest.
3. A stamped standard boundary survey prepared by a registered land surveyor at a scale not less than one inch to 50 feet.
4. Plans and maps based upon the boundary survey and containing the information found in the attached sample plan checklist.
5. One (1) set of plans reduced to 11 x 17.

Please refer to the application checklist (attached) for a detailed list of submission requirements.

APPLICANT SIGNATURE:

I hereby certify that I am the Owner of record of the named property, or that the owner of record authorizes the proposed work and that I have been authorized by the owner to make this application as his/her authorized agent. I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in this application is issued, I certify that the Planning Authority and Code Enforcement's authorized representative shall have the authority to enter all areas covered by this permit at any reasonable hour to enforce the provisions of the codes applicable to this permit.

This application is for a Level III Site Plan review. It is not a permit to begin construction. An approved site plan, a Performance Guarantee, Inspection Fee, Building Permit, and associated fees will be required prior to construction. Other Federal, State or local permits may be required prior to construction, which are the responsibility of the applicant to obtain.

Signature of Applicant: 	Date: September 29, 2015
--	-----------------------------

PROJECT DATA

The following information is required where applicable, in order to complete the application.

Total Area of Site	32,600	sq. ft.
Proposed Total Disturbed Area of the Site	2,600 +/-	sq. ft.
If the proposed disturbance is greater than one acre, then the applicant shall apply for a Maine Construction General Permit (MCGP) with DEP and a Stormwater Management Permit, Chapter 500, with the City of Portland.		
Impervious Surface Area		
Impervious Area (Total Existing)	20,875	sq. ft.
Impervious Area (Total Proposed)	22,179	sq. ft.
Building Ground Floor Area and Total Floor Area (former Church)		
Building Footprint (Total Existing)	8,995	sq. ft.
Building Footprint (Total Proposed)	8,995	sq. ft.
Building Floor Area (Total Existing)	17,582	sq. ft.
Building Floor Area (Total Proposed)	17,582	sq. ft.
Zoning		
Existing	B2c/R5	
Proposed, if applicable	N/A	
Land Use		
Existing	Institutional, Residential, Parking	
Proposed	Residential, Parking	
Residential, If applicable (former Church)		
# of Residential Units (Total Existing)	1	
# of Residential Units (Total Proposed)	26	
# of Lots (Total Proposed)	26	
# of Affordable Housing Units (Total Proposed)	0	
Proposed Bedroom Mix (former Church)		
# of Efficiency Units (Total Proposed)	16	
# of One-Bedroom Units (Total Proposed)	9	
# of Two-Bedroom Units (Total Proposed)	0	
# of Three-Bedroom Units (Total Proposed)	0	
Parking Spaces		
# of Parking Spaces (Total Existing)	25	
# of Parking Spaces (Total Proposed)	25	
# of Handicapped Spaces (Total Proposed)	2	
Bicycle Parking Spaces		
# of Bicycle Spaces (Total Existing)	0	
# of Bicycle Spaces (Total Proposed)	10	
Estimated Cost of Project		
	\$2,000,000	

PRELIMINARY PLAN (Optional) - Level III Site Plan			
Applicant Checklist	Planner Checklist	# of Copies	GENERAL WRITTEN SUBMISSIONS CHECKLIST
X		1	Completed Application form
X		1	Application fees
X		1	Written description of project
X		1	Evidence of right, title and interest
X		1	Evidence of state and/or federal approvals, if applicable
X		1	Written assessment of proposed project's compliance with applicable zoning requirements
X		1	Summary of existing and/or proposed easement, covenants, public or private rights-of-way, or other burdens on the site
X		1	Written requests for waivers from site plan or technical standards, if applicable.
X		1	Evidence of financial and technical capacity
		1	Traffic Analysis (may be preliminary, in nature, during the preliminary plan phase)
Applicant Checklist	Planner Checklist	# of Copies	SITE PLAN SUBMISSIONS CHECKLIST
X		1	Boundary Survey meeting the requirements of Section 13 of the City of Portland's Technical Manual
X		1	Preliminary Site Plan including the following: (information provided may be preliminary in nature during preliminary plan phase)
			Proposed grading and contours;
			Existing structures with distances from property line;
			Proposed site layout and dimensions for all proposed structures (including piers, docks or wharves in Shoreland Zone), paved areas, and pedestrian and vehicle access ways;
			Preliminary design of proposed stormwater management system in accordance with Section 5 of the Technical Manual (note that Portland has a separate applicability section);
			Preliminary infrastructure improvements;
			Preliminary Landscape Plan in accordance with Section 4 of the Technical Manual;
			Location of significant natural features (including wetlands, ponds, watercourses, floodplains, significant wildlife habitats and fisheries or other important natural features) located on the site as defined in Section 14-526 (b) (1);
			Proposed buffers and preservation measures for significant natural features, as defined in Section 14-526 (b) (1);
			Location , dimensions and ownership of easements, public or private rights of way, both existing and proposed;
			Exterior building elevations.

FINAL PLAN - Level III Site Plan			
Applicant Checklist	Planner Checklist	# of Copies	GENERAL WRITTEN SUBMISSIONS CHECKLIST (* If applicant chooses to submit a Preliminary Plan, then the * items were submitted for that phase and only updates are required)
		1	* Completed Application form
		1	* Application fees
		1	* Written description of project
		1	* Evidence of right, title and interest
		1	* Evidence of state and/or federal permits
		1	* Written assessment of proposed project's specific compliance with applicable Zoning requirements
		1	* Summary of existing and/or proposed easements, covenants, public or private rights-of-way, or other burdens on the site
		1	* Evidence of financial and technical capacity
		1	Construction Management Plan
		1	A traffic study and other applicable transportation plans in accordance with Section 1 of the technical Manual, where applicable.
		1	Written summary of significant natural features located on the site (Section 14-526 (b) (a))
		1	Stormwater management plan and stormwater calculations
		1	Written summary of project's consistency with related city master plans
		1	Evidence of utility capacity to serve
		1	Written summary of solid waste generation and proposed management of solid waste
		1	A code summary referencing NFPA 1 and all Fire Department technical standards
		1	Where applicable, an assessment of the development's consistency with any applicable design standards contained in Section 14-526 and in City of Portland Design Manual
		1	Manufacturer's verification that all proposed HVAC and manufacturing equipment meets applicable state and federal emissions requirements.

Applicant Checklist	Planner Checklist	# of Copies	SITE PLAN SUBMISSIONS CHECKLIST (* If applicant chooses to submit a Preliminary Plan, then the * items were submitted for that phase and only updates are required)
		1	* Boundary Survey meeting the requirements of Section 13 of the City of Portland's Technical Manual
		1	Final Site Plans including the following:
			Existing and proposed structures, as applicable, and distance from property line (including location of proposed piers, docks or wharves if in Shoreland Zone);
			Existing and proposed structures on parcels abutting site;
			All streets and intersections adjacent to the site and any proposed geometric modifications to those streets or intersections;
			Location, dimensions and materials of all existing and proposed driveways, vehicle and pedestrian access ways, and bicycle access ways, with corresponding curb lines;
			Engineered construction specifications and cross-sectional drawings for all proposed driveways, paved areas, sidewalks;
			Location and dimensions of all proposed loading areas including turning templates for applicable design delivery vehicles;
			Existing and proposed public transit infrastructure with applicable dimensions and engineering specifications;
			Location of existing and proposed vehicle and bicycle parking spaces with applicable dimensional and engineering information;
			Location of all snow storage areas and/or a snow removal plan;
			A traffic control plan as detailed in Section 1 of the Technical Manual;
			Proposed buffers and preservation measures for significant natural features, where applicable, as defined in Section 14-526(b)(1);
			Location and proposed alteration to any watercourse;
			A delineation of wetlands boundaries prepared by a qualified professional as detailed in Section 8 of the Technical Manual;
			Proposed buffers and preservation measures for wetlands;
			Existing soil conditions and location of test pits and test borings;
			Existing vegetation to be preserved, proposed site landscaping, screening and proposed street trees, as applicable;
			A stormwater management and drainage plan, in accordance with Section 5 of the Technical Manual;
			Grading plan;
			Ground water protection measures;
			Existing and proposed sewer mains and connections;

- Continued on next page -

		Location of all existing and proposed fire hydrants and a life safety plan in accordance with Section 3 of the Technical Manual;
		Location, sizing, and directional flows of all existing and proposed utilities within the project site and on all abutting streets;
		Location and dimensions of off-premises public or publicly accessible infrastructure immediately adjacent to the site;
		Location and size of all on site solid waste receptacles, including on site storage containers for recyclable materials for any commercial or industrial property;
		Plans showing the location, ground floor area, floor plans and grade elevations for all buildings;
		A shadow analysis as described in Section 11 of the Technical Manual, if applicable;
		A note on the plan identifying the Historic Preservation designation and a copy of the Application for Certificate of Appropriateness, if applicable, as specified in Section Article IX, the Historic Preservation Ordinance;
		Location and dimensions of all existing and proposed HVAC and mechanical equipment and all proposed screening, where applicable;
		An exterior lighting plan in accordance with Section 12 of the Technical Manual;
		A signage plan showing the location, dimensions, height and setback of all existing and proposed signs;
		Location, dimensions and ownership of easements, public or private rights of way, both existing and proposed.



**PORTLAND FIRE DEPARTMENT
SITE REVIEW
FIRE DEPARTMENT CHECKLIST**



A separate drawing[s] shall be provided as part of the site plan application for the Portland Fire Department's review.

1. Name, address, telephone number of applicant
3. Name address, telephone number of architect
4. Proposed uses of any structures [NFPA and IBC classification]
6. Square footage of all structures [total and per story]
7. Elevation of all structures
8. Proposed fire protection of all structures
 - **As of September 16, 2010 all new construction of one and two family homes are required to be sprinkled in compliance with NFPA 13D. This is required by City Code. (NFPA 101 2009 ed.)**
9. Hydrant locations
10. Water main[s] size and location
11. Access to all structures [min. 2 sides]
12. A code summary shall be included referencing NFPA 1 and all fire department. Technical standards.

Some structures may require Fire flows using annex H of NFPA 1



September 29, 2015

Keith Gautreau, Assistant Chief
City of Portland Fire Department
380 Congress Street
Portland, ME 04101

Subject: Proposed Redevelopment of Pleasant Avenue Church
3 Pleasant Ave, Portland, Maine
Applicant: Hardypond Development Company, LLC
NFPA 1 Review to Access and Other Fire Department Issues

Dear Assistant Chief Gautreau:

In accordance with instructions in the City's Site Plan Review packet, please find enclosed the drawing necessary for your review of the former Pleasant Avenue Church site at 3 Pleasant Street for the redevelopment project to construct up to 25 residential apartments. We have listed each item in your checklist below, followed by our response:

➤ **Fire Department Checklist:**

1. Name, address, telephone number of applicant:

Hardypond Development Company, LLC
7 Tee Drive
Portland, Maine 04103
Phone: 207-797-6066
bob@hardypond.com

2. Name address, telephone number of architect:

John Shields
Shields Architecture
216 Range Road
Cumberland, ME 04021
Phone: 207-776-8926
jshields@maine.rr.com

3. Proposed uses of any structures [NFPA and IBC classification]:

The following IBC and NFPA classifications will apply to the Phase III development:

IBC – 2009	NFPA Classification – 2009
R2	Chapter 30

Assistant Chief Keith Gautreau
September 29, 2015
Page 2

4. Square footage of all structures [total and per story]:

BUILDING PROGRAM		
Structure	Total (SF)	Per Story ±
Residential	17,582	1 st Floor – 8,900 SF 2 nd Floor – 5,041 SF 3 rd Floor – 3,641 SF

5. Elevation of all structures:

Building elevations are currently being prepared and will be provided to the Fire Department upon completion.

6. Proposed fire protection of all structures:

All of the structures are proposed to have a sprinkler system. Fire protection is currently provided by an existing onsite hydrant and hydrants within Pleasant Avenue in the vicinity of the site.

7. Hydrant locations:

There is an existing hydrant in front of the building, on the north side of Pleasant Avenue approximately 15' from Forest Avenue.

8. Water main[s] size and location:

The site will be served from the 8" main in Pleasant Avenue.

9. Access to all structures [min. 2 sides]:

The accompanying site plan depicts the site's access conditions that include access to two or more sides of the buildings from the adjacent public streets.

10. A Code Summary shall be included referencing NFPA 1 and all Fire Department Technical Standards.

➤ **NFPA 1 – Chapter 18 Fire Department Access and Water Supply**

18.2 Fire Department Access

The project consists of the re-development of the existing church on the corner of Pleasant Avenue and Forest Avenue. The site has frontage on both of the adjacent streets. Forest Avenue has a paved width of approximately 48 feet adjacent to the site. Pleasant Avenue has a paved width of approximately 40 feet adjacent to the site.

Assistant Chief Keith Gautreau
September 29, 2015
Page 3

Per NFPA 1 Chapter 18.2.3.2.1 access is available to within 50 feet of at least one exterior door of the building.

Per NFPA Chapter 18.2.3.2.2 all first story floors are located within 150 feet of an access road.

There is an existing fire hydrant at the front of the church property, on the north side of Pleasant Avenue, approximately 15 feet from the intersection with Forest Avenue. This is shown on the Site Plan. Additional nearby hydrants are located at the corner of Norwood Street and Pleasant Avenue, and on the east side of Forest Avenue, opposite the intersection with Hartley Street.

➤ **City of Portland Technical Manual Section 3 – Public Safety**

Part 3.4 Site Access Standards

3.4.1. Every dead-end roadway more than one hundred fifty (150') feet in length shall provide a turnaround at the closed end. Turnarounds shall be designed to facilitate future street connectivity and shall always be designed to the right (refer to Figure I-5).

Supporting evidence: Not applicable. No dead-end roads exist or are proposed.

3.4.2. Where possible, developments shall provide access for Fire Department vehicles to at least two sides of all structures. Access may be from streets, access roads, emergency access lanes, or parking areas.

Supporting evidence: As depicted on the site plans, the building has access from two sides via the adjacent streets.

3.4.3. Building setbacks, where required by zoning, shall be adequate to allow for emergency vehicle access and related emergency response activities and shall be evaluated based on the following factors:

- *Building Height.*
- *Building Occupancy.*
- *Construction Type.*
- *Impediments to the Structures.*
- *Safety Features Provided.*

Supporting Evidence: The existing Church and Vestry buildings will remain. The connecting breezeway will be removed providing enhanced separation and access for emergency vehicles.

Assistant Chief Keith Gautreau
September 29, 2015
Page 4

3.4.4. Fire Dept. access roads shall extend to within 50' of an exterior door providing access to the interior of the structure.

Supporting Evidence: All buildings will be provided with an exterior entrance door that will be within 50' of an adjacent street.

3.4.5. Site access shall provide a minimum of nine (9) feet clearance height to accommodate ambulance access.

Supporting Evidence: Not applicable. Clear access is provided along the two adjacent streets.

3.4.6. Elevators shall be sized to accommodate an 80 x 24 inch stretcher.

Supporting Evidence: There are no elevators proposed for the project.

3.4.7. All structures are required to display the assigned street number. Numbers shall be clearly visible from the public right of way.

Supporting Evidence: The applicant will work with the City's Public Services Division to assign street addresses and numbering to meet City standards.

If you have any questions with the information submitted, please contact our office.

Prepared By:

FAY, SPOFFORD & THORNDIKE



Andrew D. Johnston, P.E.
Principal Engineer

ADJ/smk

Enclosure: Figure C-1 – Conceptual Site
Floor Plans and Elevations prepared by Shields Architecture

c: Bob Gautreau, Hardypond Development Company, LLC



September 29, 2015

Mr. David Margolis-Pineo
City of Portland
Department of Public Services
55 Portland Street
Portland, Maine 04101-2991

**Subject: Proposed Redevelopment of Pleasant Avenue Church
3 Pleasant Ave, Portland, Maine
Wastewater Capacity Application**

Dear Mr. Margolis-Pineo:

Our office is working as a consultant to Hardypond Development Company, LLC in the site planning and permitting associated with a proposed redevelopment of the former Pleasant Avenue Church in the City of Portland to construct up to 25 residential apartments. The project site is located on Map 130, Lots I-012, I-013, and H-013 according to the City of Portland Tax Assessor's Maps. On behalf of the developer, we are requesting a letter affirming that the proposed project can be served by the municipal wastewater treatment system.

The project will consist of three buildings with size and use summarized as follows:

Location	Use	Size (SF)
Church	Residential Apartment	17,000±/Above Grade
Rectory	Single-family	2,000±

The accompanying plans indicate the current program proposed.

The project will consist of apartment units in existing and proposed buildings, with estimated daily water uses as follows:

Location	Use	Demand Criteria	Estimated Demand
Church	Residential Apartment	120 gal. per unit/per day – 25 units at 70 gpd	3,000 gpd
Rectory	Single-family 4-Bedroom	360 gal. per day	360 gpd
Total Estimated Flow			3,360 gpd

Mr. David Margolis-Pineo
September 29, 2015
Page 2

Based on this modest amount of flow, we trust that the existing wastewater collection and treatment system has adequate capacity to serve this project. We are in the process of completing the Level III Site Plan Application for a submission to the City Planning Staff and would appreciate your response to the Planning Department.

If you have any questions concerning this request, please contact me.

Sincerely,

FAY, SPOFFORD & THORNDIKE

A handwritten signature in blue ink, appearing to read "A. Johnston", written over a faint horizontal line.

Andrew D. Johnston, P.E.
Principal Engineer

ADJ/smk

Enclosures

c: Robert Gaudreau, Hardypond Development Company, LLC

CITY OF PORTLAND WASTEWATER CAPACITY APPLICATION

Department of Public Services,
55 Portland Street,
Portland, Maine 04101-2991



Mr. Frank J. Brancely,
Senior Engineering Technician,
Phone #: (207) 874-8832,
Fax #: (207) 874-8852,
E-mail: fjb@portlandmaine.gov

Date: September 29, 2015

1. Please, Submit Utility, Site, and Locus Plans.

Site Address: 3 Pleasant Avenue

Chart Block Lot Number: 130-I-14

Proposed Use: Residential Apartments

Previous Use: Church (Institutional)

Existing Sanitary Flows: N/A (Vacant) GPD

Existing Process Flows: N/A GPD

Description and location of City sewer that is to
receive the proposed building sewer lateral.

15" diameter sewer in Pleasant Avenue

Site Category | Commercial (see part 4 below)
Industrial (complete part 5 below)
Governmental
Residential
Other (specify)

X

(Clearly, indicate the proposed connections, on the submitted plans)

2. Please, Submit Contact Information.

City Planner's Name: Barbara Barhydt Phone: 207-874-8699

Owner/Developer Name: Hardypond Development Company, LLC

Owner/Developer Address: 7 Tee Drive, Portland, ME 04103

Phone: 207-797-6066

Fax: _____ E-mail: bob@hardypond.com

Engineering Consultant Name: Fay, Spofford & Thorndike, Attn: Andrew Johnston, P.E.

Engineering Consultant Address: 778 Main Street, Suite 8, South Portland, ME 04106

Phone: 207-775-1121

Fax: 207-879-0896

E-mail: ajohnston@fstinc.com

**(Note: Consultants and Developers should allow +/- 15 days, for capacity status,
prior to Planning Board Review)**

3. Please, Submit Domestic Wastewater Design Flow Calculations.

Estimated Domestic Wastewater Flow Generated: 3,360 GPD

Peaking Factor/ Peak Times: 6

Specify the source of design guidelines: (i.e. "Handbook of Subsurface Wastewater Disposal in Maine,"
"Plumbers and Pipe Fitters Calculation Manual," Portland Water District Records, Other (specify)

TR-16, Handbook of Subsurface Wastewater Disposal in Maine 2015

**(Note: Please submit calculations showing the derivation of your design flows,
either on the following page, in the space provided, or attached, as a separate sheet)**

(See attached letter)

4. Please, Submit External Grease Interceptor Calculations.

Total Drainage Fixture Unit (DFU) Values:

N/A - Residential Only

Size of External Grease Interceptor:

Retention Time:

Peaking Factor/ Peak Times:

(Note: In determining your restaurant process water flows, and the size of your external grease interceptor, please use The Uniform Plumbing Code. Note: In determining the retention time, sixty (60) minutes is the minimum retention time. Note: Please submit detailed calculations showing the derivation of your restaurant process water design flows, and please submit detailed calculations showing the derivation of the size of your external grease interceptor, either in the space provided below, or attached, as a separate sheet)

5. Please, Submit Industrial Process Wastewater Flow Calculations

Estimated Industrial Process Wastewater Flows Generated:

N/A

GPD

Do you currently hold Federal or State discharge permits?

Yes

No

Is the process wastewater termed categorical under CFR 40?

Yes

No

OSHA Standard Industrial Code (SIC):

<http://www.osha.gov/oshstats/sicser.html>

Peaking Factor/Peak Process Times:

(Note: On the submitted plans, please show where the building's domestic sanitary sewer laterals, as well as the building's industrial-commercial process wastewater sewer laterals exits the facility. Also, show where these building sewer laterals enter the city's sewer. Finally, show the location of the wet wells, control manholes, or other access points; and, the locations of filters, strainers, or grease traps)

(Note: Please submit detailed calculations showing the derivation of your design flows, either in the space provided below, or attached, as a separate sheet)

Notes, Comments or Calculation

Pleasant Avenue Church Redevelopment Sewer Demand Estimate

Map , Lots City of Portland, Maine

Building	Use	Demand Criteria	Unit Demand	Units	Demand (gpd)
Church	Apartment	120gpd per dwelling unit	120	25	3000
House Lot	Single family	90gpd/ bedroom	90	4	360
TOTAL PROJECT AVERAGE DAILY WATER DEMAND ESTIMATE				29	3360

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LIST OF ATTACHMENTS

Section 1: Attachment A – Existing Site Photographs

Section 2: Attachment B – Deed

Attachment C – Letter of Financial Capacity

Section 3: Attachment D – Correspondence with Utility Companies

LIST OF PLANS

SHEET #	TITLE
C-1.0	COVER SHEET
C-2.0	ALTA/ACSM LAND TITLE SURVEY BY OWEN HASKELL, INC.
C-2.1	SUBDIVISION PLAN
C-3.0	SITE LAYOUT PLAN
C-4.0	SITE DETAILS

1. DEVELOPMENT DESCRIPTION

1.1 PROJECT OVERVIEW

Hardypond Development Company, LLC has acquired the site of the Pleasant Avenue Church with the objective of redeveloping the site and associated properties to construct 25 market rate apartment units for workforce housing. The apartment units will be constructed within the existing church building, which will be modified to reflect current codes, but with sensitivity to the historical character of the structure. The existing rectory building is currently attached to the church via a breezeway. This will be demolished and the property will be divided to provide a separate lot for the existing residence. It is our understanding that this meets the definition of a functional division of the land.

An easement will be provided on Map 130, Lot H-013, opposite the church site to provide parking for the new use. A total of 25 parking spaces are provided. Section 14.332.4(a) of the City of Portland Land Use Ordinance requires one parking space per dwelling unit for multi-family uses in the B-2c zone.

The project proposes minimal changes to the existing site features and no significant changes to cover conditions, or stormwater runoff.

The objective is to receive approvals for the project in the fall of 2015, begin work on the project immediately thereafter, and have the first tenant spaces available in late fall 2016.

1.2 PROJECT PURPOSE AND NEED

The proposed project is considered a unique opportunity to transform a vacant landmark property into a dynamic new moderate density residential development within an established neighborhood. The benefits of this project include the following:

- The provision of much needed off-peninsula residential units in a growth area with proximity to public transportation and services.
- Provision of housing stock that meets the needs of all residents of the City.
- The renovation of a currently vacant property, promoting infill development and reducing urban sprawl.
- The preservation of a landmark structure and redeveloping to highest and best use.

1.3 EXISTING CONDITIONS

The existing project site comprises Lot I-012/I-014; the church property with frontage on Pleasant Avenue and Forest Avenue; and Lot H-013 which is the parking lot on the opposite side of Pleasant Avenue.

The church lot area is 22,500 SF $\pm$ and includes the main church building, with a footprint area of 9,000 SF $\pm$ and the rectory building with a footprint area of 1,315 SF $\pm$. The two structures are currently connected by a breezeway that joins the southwest corner of the church to the northeast corner of the rectory. A small shed/garage is located to the rear of the rectory. There is a shared driveway that enters the site just east of the rectory building and terminates in two

un-striped parking spaces. There is also parking along the Pleasant Avenue street frontage, including a single handicapped space adjacent to the church entrance at the center of the structure. A brick sidewalk leads from the street to the formal entrance to the building at the southeast corner. The remainder of the property is grass lawn, with street trees and small shrub plantings alongside the building. The property slopes in generally southerly and easterly directions towards the adjacent streets. There are no surface inlets and it appears that runoff from the property drains by sheet flow to Pleasant Avenue and Forest Avenue.

Lot H-013, which houses the current parking lot, has a total land area of approximately 10,100 SF. The majority of the lot is paved, with small, green spaces around the perimeters. The lot slopes gently at a grade of around 2% to a single catch basin located towards the rear of the lot on the eastern side. The pipe from this structure exits towards Pleasant Avenue. There are no other features on the property.

The street conditions adjacent to the property are described as follows:

Street Name	Description	On-street Parking	Condition
Pleasant Avenue	Approximately 40 feet paved width, two-way traffic, bituminous sidewalks both sides.	Yes, on both sides of street.	Moderate, some cracking, and subsidence in sidewalks and pavement.
Forest Avenue	Approximately 47 feet paved width, striped bike lanes on either side, concrete sidewalks on either side.	No	Good, some curb displacement

1.4 PROPOSED DEVELOPMENT

The development program includes the following elements:

1.4.1 ON-SITE

Twenty-five (25) new apartment units are proposed in the redeveloped church building, along with tenant laundry facilities and storage space. The basement of the building will house additional storage, mechanical equipment, and services. The unit breakdown in the building is as follows:

Floor Level	Gross (SF)	Unit (SF)	# Units	Description
Basement	8,900	N/A	None	Mechanical and Service Space
First Floor	8,900	6,741	14	5 efficiencies (1 ADA compliant), 8 one-bed units (1 ADA compliant), 1 two-bed units
Second Floor	5,041	3,797	7	3 efficiencies, 4 one-bed units
Third Floor	3,641	2,233	4	4 efficiencies

Exterior improvements to the property will be limited and will include the demolition of the existing breezeway connecting the church to the rectory, minor re-configuration of the driveway to provide two ADA accessible parking spaces, the provision of bicycle racks and a small enclosed garden/patio area adjacent to the southeast door.

A rear sidewalk connection to Forest Avenue and fenced enclosure for recycling and trash bins will also be added.

1.4.2 OFF-SITE

Limited improvements are proposed to Lot H-013 on the opposite side of the street. An easement will be provided in favor of the new apartment property to allow access and parking on the parcel. A new fence will be constructed along the west side of the parking lot to screen the adjacent property. New pavement striping is proposed to clearly delineate the parking spaces.

1.5 LAND ORDINANCE REVIEW

1.5.1 OVERVIEW

The property currently lies within the City of Portland B-2 Community Business Zone and R-5 Residential Zone. The following Space and Bulk requirements apply to the B-2 Community Business Zone:

B-2 Community Business Zone Summary Dimensional and Parking Requirements Applied to Pleasant Avenue Church Redevelopment		
Zoning Requirements	Current B-2 Zoning Standard	Pleasant Avenue Church
Minimum Lot Size	None	13,094 SF
Minimum Street Frontage	20 feet	127.17 feet on Forest Ave 140.02 feet on Pleasant Ave
Front Yard Setback	None	3.6 feet on Forest Ave, 10.0 feet on Pleasant Ave
Rear Yard Setback	10 feet	1.0 feet (existing)
Side Yard Setback	None	28.6 feet existing, 4.5 feet proposed
Front Yard Maximum	No more than 10 feet	10 feet (existing)
Structure Setbacks	Portions of a structure above 35 feet shall be no closer than 5 feet from the side property line and no closer than 15 feet from a rear property line when such a property line abuts a residential zone.	Not applicable – portions of the building greater than 35 feet do not abut a residential zone property line.
Height Maximum	45 feet	Height of existing structure not known (approximately 50 feet).
Maximum Impervious Surface Ratio	For Residential Uses: None	
Minimum Lot Area per Dwelling Unit	Projects with active street frontages* as defined in Section 14-188, 435 square feet.	Area of lot in B-2c Zone = 13,094 sf. Units allowed = $13,094/435 = 30$. Units proposed = 25
Parking	One space per dwelling unit	1 space per dwelling unit

* Active Street Frontage (Section 14-188)

A building will be determined to have an active street frontage upon meeting the following guidelines to the greatest extent practicable as determined by the Planning Board or Planning Authority: the primary building façade shall be within ten feet of the front street line; there shall be no parking on the lot within 35 feet of the front street line; no more than 35% of the first floor primary façade shall consist of access to garages, unutilized space, service entrances, storage or mechanicals, and the remaining 75% shall have an average depth of a minimum of 20 feet for residential or commercial uses; all primary ground floor entries to multi-family buildings must orient to the street, not to interior blocks or parking lots.

The following Space and Bulk requirements apply to the R-5 Residential Zone:

R-5 Residential Zone Summary Dimensional and Parking Requirements Applied to Pleasant Avenue Church Redevelopment – Lot B – Single family Dwelling		
Zoning Requirements	Current R-5 Zoning Standard	Lot B – Rectory
Minimum Lot Size	6,000 SF generally	6,586 SF
Minimum Street Frontage	50 feet	80 feet
Front Yard Setback	20 feet	15.1 feet (existing)
Rear Yard Setback	20 feet	13.4 feet (to new division line)
Side Yard Setback	2 ½ story – 14 feet	3.1 feet (existing)
Height Maximum	35 feet	Height of existing structure not known – approximately 30 feet
Maximum Lot Coverage	40% of lot area	Building coverage = 22.7%
Parking	Two spaces per dwelling unit	Two spaces provided

1.5.2 SHORELAND ZONING

Not applicable. The site is not located within the Shoreland Zoning District.

1.6 STATE AND FEDERAL PERMITS

The project does not require any State or Federal permits other than State Fire Marshall approval. The development is subject to Site Plan and Subdivision review and approval by the City of Portland and will also require a Building Permit(s) through the City Code Enforcement Office.

1.7 EASEMENTS OR OTHER BURDENS

There is an existing mutual access easement over Lot H-013 and the adjacent property to the east. This is shown on the Survey Plan and will remain to service this lot and the new apartment parcel (Lot A). A new easement will be provided to allow use of this parcel for parking to serve Lot A. A parking and access easement is proposed on Lot B to allow for ADA accessible parking for future residents of the redeveloped church property (Lot A), adjacent to the building and entry ramp.

1.8 TRAFFIC

The proposed project will not result in a significant increase in traffic. The Institute of Transportation Engineers Trip Generation Manual (7th Edition) gives a peak hour trip generation rate for apartments of 0.51-0.62 trips per unit. Using these standard figures, the project could

be expected to generate approximately 16 trips per peak hour. Given the nature and condition of Pleasant Avenue and the abutting streets, we foresee no major impacts to the capacity of the vicinity transportation network. No further traffic analysis is currently proposed.

1.9 SOILS/GEOTECHNICAL REVIEW

The proposed project does not involve any new building structures, or any significant site improvements. Therefore, a detailed geotechnical investigation is not warranted.

1.10 NATURAL FEATURES

There are no significant natural features on either of the existing land parcels. Both properties have been developed for a significant period and there is no land that has not been developed or otherwise disturbed.

1.11 UTILITIES AND STORMWATER

The project will re-use existing utility connections to the extent practical. It is anticipated that a new gas service may be installed to serve the rectory building. In addition, upgrades may be required to the water (fire and domestic) services to the church building pending investigation on size, age, and condition of existing piping.

The project does not propose any significant changes to cover conditions across the site and there will be no significant increase in impervious area. The only improvements are related to the provision of two ADA accessible parking spaces at the entrance to the church building. The total site disturbance associated with this work is approximately 2,600 SF. No changes will be made to existing drainage patterns at the site, which currently drains to the municipal drainage system in Pleasant Avenue. Therefore, no new stormwater management measures are proposed.

1.12 ATTACHMENTS

Attachment A – Existing Site Photographs

ATTACHMENT A

Existing Site Photographs



PHOTO 1 – Views of Parking Lot (Map 130, Lot H-13 from street)



PHOTO 2 – View of Parking Lot (Map 130, Lot H-13)



FAY, SPOFFORD & THORNDIKE

778 Main Street, Suite 8
 South Portland, ME 04106
 Toll Free: 800.835.8666
 Main: 207.775.1121
 Fax: 207.879.0896

**Existing Site Photographs
 Pleasant Avenue Church – Portland, ME
 Photos Taken June 16, 2015**



PHOTO 3 – Existing Church Driveway (Map 130, Lots I-12 & I-14)



PHOTO 4 – Existing Breezeway Connecting Church and Rectory



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 South Portland, ME 04106
 Toll Free: 800.835.8666
 Main: 207.775.1121
 Fax: 207.879.0896

**Existing Site Photographs
 Pleasant Avenue Church – Portland, ME
 Photos Taken June 16, 2015**



PHOTO 5 – Existing Rectory



PHOTO 6 – Existing Church Building from Pleasant Avenue



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778 Main Street, Suite 8
South Portland, ME 04106
Toll Free: 800.835.8666
Main: 207.775.1121
Fax: 207.879.0896

**Existing Site Photographs
Pleasant Avenue Church – Portland, ME
Photos Taken June 16, 2015**



PHOTO 7 – Existing Church Building from Corner of Pleasant Avenue and Forest Avenue



PHOTO 8 – Existing Church Building from Pleasant Avenue



FAY, SPOFFORD & THORNDIKE

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South Portland, ME 04106
Toll Free: 800.835.8666
Main: 207.775.1121
Fax: 207.879.0896

**Existing Site Photographs
Pleasant Avenue Church – Portland, ME
Photos Taken June 16, 2015**



PHOTO 9 – Existing Church Building from Forest Avenue



FAY, SPOFFORD & THORNDIKE

778 Main Street, Suite 8
South Portland, ME 04106
Toll Free: 800.835.8666
Main: 207.775.1121
Fax: 207.879.0896

**Existing Site Photographs
Pleasant Avenue Church – Portland, ME
Photos Taken June 16, 2015**

2. TECHNICAL AND FINANCIAL CAPACITY

2.0 TITLE, RIGHT AND INTEREST

The applicant owns the project site. A copy of the Deed is provided in Attachment B.

2.1 TECHNICAL CAPACITY

The applicant has assembled a highly qualified team of professionals to plan, permit, and develop construction documents for the project. The Team is working under the direction of Mr. Robert Gaudreau of Hardypond Development Company, LLC as Project Developer.

The Team services will be provided by the following companies and their respective team leaders:

2.2 CONSULTANT TEAM

<i>Civil Engineer</i>	Andrew D. Johnston, P.E. Fay, Spofford & Thorndike 778 Main Street, Suite 8 South Portland, ME 04106 (207) 775-1121 – Work (207) 879-0896 – Fax (207) 756-9359 – Cell ajohnston@fstinc.com
<i>Surveyor</i>	John Swan Owen Haskell, Inc. 390 US Route 1, Unit 10 Falmouth, Maine 04105 (207) 774-0424 – Work (207) 774-0511 – Fax jswan@owenhaskell.com
<i>Architect</i>	John Shields Shields Architecture 216 Range Road Cumberland, ME 04021 (207) 775-8926 – Work jshields@maine.rr.com
<i>Attorney</i>	N/A
<i>Landscape Architect</i>	N/A
<i>Lighting/Site Electrical</i>	N/A

2.3 EXPERIENCE OF PROJECT TEAM

The team of consultants retained by developer has expertise and experience in the design of similar residential housing projects. Resumes of key personnel for development team can be provided upon request.

2.4 FINANCIAL CAPACITY

The applicant has the means at its disposal for financing the proposed Pleasant Avenue Redevelopment project. A letter of financial capacity for the project is contained in Attachment D.

2.5 CONSTRUCTION COST ESTIMATE

The preliminary project cost is \$2,000,000.

This value is considered preliminary and approximate and is subject to change as building design and project layout is refined.

2.6 ATTACHMENTS

Attachment B – Deed

Attachment C – Letter of Financial Capacity

ATTACHMENT B

Deed

TRUSTEE'S DEED

I/We, JOHN R. DOWNES, SANDRA L. BROOKS, ARTHUR F. SCHASSBERGER, THOMAS G. SHEFFIELD, SUZANNE L. ROBERGE and MARGARET L. SHEFFIELD, Pastor, TRUSTEES of the Clark Memorial United Methodist Church established pursuant to the Agreement of Trust titled Book of Discipline of the United Methodist Church - 2012 (the "Trust"),

for full value and consideration paid,

hereby grant to HARDYPOND DEVELOPMENT COMPANY, LLC, a Maine limited liability company, whose mailing address is 55 Hardy Road, Falmouth, Maine 04105, its successors and assigns forever,

A certain lot or parcel of land with the buildings thereon, situated on the northerly side of Pleasant Avenue and the westerly side of Forest Avenue in the City of Portland, County of Cumberland and State of Maine bounded and described as follows:

Beginning at the intersection of the northerly sideline of Pleasant Avenue with the westerly sideline of Forest Avenue thence, N 84°22'06" W along the northerly sideline of said Pleasant Avenue 220.02 feet to land now or formerly of James F. and Joann McGreal as described in deed book 9759 page 104;

Thence, N 05°37'54" E along land of said McGreal 123.41 feet to land now or formerly of Michael L. Frager as described in deed book 11464/253;

Thence, S 80°54'22" E along land of said Frager, land now or formerly of Caleb C. Bell II deed book 31402 page 242 and land now or formerly of Martha J. Walsh deed book 3413 Page 42 a distance of 163.08 feet to the westerly sideline of Forest Avenue;

Thence, S 21°07'05" E along the westerly sideline of said Forest Avenue 127.17 feet to the northerly sideline of said Pleasant Avenue and the point of beginning containing 22,538 square feet.

For a more particular description of the above described parcel of land see "ALTA/ACSM Land Title Survey 15-19 & 16 Pleasant Avenue Portland, Cumberland County, Maine made for Hardypond Development Company, LLC" by Owen Haskell, Inc.

Basis of bearings: Maine State Plane NAD83

Also conveying another certain lot or parcel of land situated on the southerly side of Pleasant Avenue in the City of Portland, County of Cumberland and State of Maine bounded and described as follows:

Beginning at a point on the southerly sideline of Pleasant Avenue at the northwesterly corner of land now or formerly of Roger S. Zimmerman as described in deed book 4588 page 246, said point being 174.32 feet from the westerly sideline of Forest Avenue on a course of N 84°22'06"W;

Thence, S 05°37'54" W along land of said Zimmerman 157.73 feet to land now or formerly of Andrew Pixley and Rebecca Wertheimer as described in deed book 27033 page 168;

Thence, N 81°07'27" W along land of said Pixley and Wertheimer and land now or formerly of John T. and Kelly J. Clancy-Jenkins as described in deed book 8671 page 257 a distance of 65.10 feet to other land of Clark Memorial Methodist Church;

MAINE REAL ESTATE TAX PAID

Thence, N 05°37'54" E along other land of said Clark Memorial Methodist Church 154.04 feet to the southerly sideline of said Pleasant Avenue;

Thence, S 84°22'06" E along the southerly sideline of said Pleasant Avenue 65.00 feet to land of said Zimmerman and the point of beginning containing 10,133 square feet.

The above described parcel of land is subject to and benefited by easements as described in deed book 4588 page 246.

For a more particular description of the above described parcel of land see "ALTA/ACSM Land Title Survey 15-19 & 16 Pleasant Avenue Portland, Cumberland County, Maine made for Hardypond Development Company, LLC" by Owen Haskell, Inc.

Basis of bearings: Maine State Plane NAD83

Each of the Trustees as listed above hereby warrants and covenants that they have full authority under the terms of the Trust to execute this deed and to convey the hereinabove described Trust property, that no actions are pending with respect to this Trust which could affect the Trustees' ability to convey the Trust property.

Dated: May 15, 2015

Trustees of the Clark Memorial
United Methodist Church

John R. Downes
John R. Downes, Trustee

Sandra L. Brooks
Sandra L. Brooks, Trustee

Arthur F. Schassberger
Arthur F. Schassberger, Trustee

Thomas G. Sheffield
Thomas G. Sheffield, Trustee

Suzanne L. Roberge
Suzanne L. Roberge, Trustee

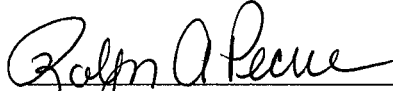
Margaret L. Sheffield
Margaret L. Sheffield, Pastor, Trustee

State of Maine
County of Cumberland, ss.

May 15, 2015

Personally appeared the above-named John R. Downes, Trustee under the above-described Trust, and acknowledged the foregoing instrument to be his free act and deed in his said capacity.

Before me,



Notary Public

Print Name: _____

My Commission Expires **ROBYN A. PEARCE**

Notary Public, Maine

My Commission Expires November 23, 2017

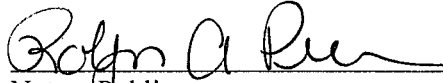
SEAL

State of Maine
County of Cumberland, ss.

May 15, 2015

Personally appeared the above-named Sandra L. Brooks, Trustee under the above-described Trust, and acknowledged the foregoing instrument to be her free act and deed in her said capacity.

Before me,



Notary Public

Print Name: _____

My Commission Expires: _____

ROBYN A. PEARCE

Notary Public, Maine

My Commission Expires November 23, 2017

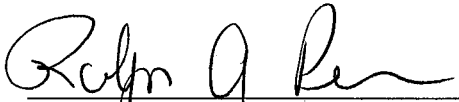
SEAL

State of Maine
County of Cumberland, ss.

May 15, 2015

Personally appeared the above-named Arthur F. Schassberger, Trustee under the above-described Trust, and acknowledged the foregoing instrument to be his free act and deed in his said capacity.

Before me,



Notary Public

Print Name: _____

My Commission Expires: _____

ROBYN A. PEARCE

Notary Public, Maine

My Commission Expires November 23, 2017

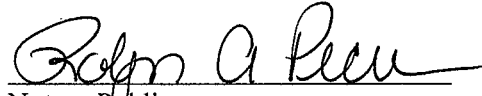
SEAL

State of Maine
County of Cumberland, ss.

May 15, 2015

Personally appeared the above-named Thomas G. Sheffield, Trustee under the above-described Trust, and acknowledged the foregoing instrument to be his free act and deed in his said capacity.

Before me,


Notary Public

Print Name: _____

My Commission Expires: _____

ROBYN A. PEARCE
Notary Public, Maine
My Commission Expires November 23, 2017

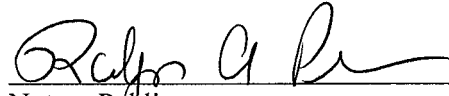
SEAL

State of Maine
County of Cumberland, ss.

May 15, 2015

Personally appeared the above-named Suzanne L. Roberge, Trustee under the above-described Trust, and acknowledged the foregoing instrument to be her free act and deed in her said capacity.

Before me,


Notary Public

Print Name: _____

My Commission Expires: _____

ROBYN A. PEARCE
Notary Public, Maine
My Commission Expires November 23, 2017

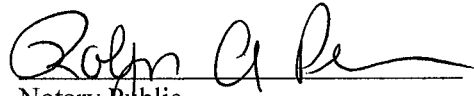
SEAL

State of Maine
County of Cumberland, ss.

May 15, 2015

Personally appeared the above-named Margaret L. Sheffield, Pastor, Trustee under the above-described Trust, and acknowledged the foregoing instrument to be her free act and deed in her said capacity.

Before me,


Notary Public

Print Name: _____

My Commission Expires: _____

ROBYN A. PEARCE
Notary Public, Maine
My Commission Expires November 23, 2017

SEAL

Received
Recorded Register of Deeds
May 15, 2015 02:08:50P
Cumberland County
Nancy A. Lane

ATTACHMENT C

Letter of Financial Capacity



Bank

America's Most Convenient Bank®

TD Bank, N.A.

One Portland Square

P.O. Box 9540

Portland, ME 04112-9540

T: 207-761-8600 F: 207-761-8660

www.tdbank.com

June 11, 2015

City of Portland
389 Congress Street
Portland, Maine 04101

RE: Hardypond Development Company, LLC – Proposed Pleasant Avenue Project

To Whom it May Concern:

TD Bank, NA (the "Bank") has completed a preliminary review of Hardypond Development Company, LLC's (the "Company") proposed project to be located at the former Clark Methodist Church on Pleasant Avenue in Portland. Based on the Bank's knowledge of the project, and the longstanding satisfactory relationship with Bob Gaudreau and Hardypond, we believe that the Company and its principal possess the financial capacity to successfully complete the proposed project.

Please do not hesitate to call me at (207) 828-7026 should you have any questions.
Thank you.

Sincerely,

Ellen Niewoehner
Vice President
Commercial Lending

3. CONFORMITY WITH APPLICABLE DESIGN STANDARDS

The following statement is made in accordance with the City of Portland Code of Ordinances, Chapter 14 Land Use, Article V Section 14-526.

3.1 OVERVIEW

This project conforms with all the applicable design standards of Section 14-526 as demonstrated in the following narrative.

(a) Transportation Standards

1. Impact on Surrounding Street Systems:

The development will fit in with the existing street system, as it will use existing driveways on Pleasant Avenue. Based on the number of residential units proposed, and the limited car ownership anticipated, the project is expected to have an insignificant impact on traffic in the neighborhood. The proximity of the site to public transportation and the adjacent bikeway on Forest Avenue are major assets to the project.

2. Access and Circulation:

a. Site Access and Circulation.

- (i) Access to the former church site is provided via the existing driveway on Pleasant Avenue. This will function in the same manner as the existing driveway. There is no provision for circulation on the property.

Access to the small parking lot on Lot H-013 will be via the existing driveway and shared easement with the abutting property. The parking lot layout is designed in accordance with the City Technical Standards.

- (ii) Access and egress have been designed to avoid conflicts with existing turning movements and traffic flows to the extent practicable.

- (iii) The site does not feature drive up services as mentioned in this requirement.

- (iv) Site access has been designed so as not to impede potential future connection to adjacent streets.

b. Loading and Servicing.

- (i) Not required. There is adequate area along Pleasant Avenue for infrequent periods of loading/unloading associated with residents moving in or out of units.

c. Sidewalks.

- (i) There are existing sidewalks on both sides of Pleasant Avenue and along the eastern side of Forest Avenue abutting the site.

(ii) The adjacent sidewalks appear to be in serviceable condition.

(iii) There are existing internal sidewalks leading to the building entries. These will remain. The concrete sidewalk from Pleasant Avenue to the accessible entrance to the former church will be reconstructed.

3. Public Transit Access:

- a. The development will be served by the existing No. 2 Metro service route with a stop directly adjacent to the property on Forest Avenue.
- b. An area has been identified on the site plan for location of a transit shelter. The applicant will coordinate with Metro and City staff to finalize the location. Given the width of Forest Avenue at this location, a pull-out bay is not proposed.
- c. The location of the transit shelter will be at the base of the sidewalk.
- d. The applicant will not request a waiver to this standard.

4. Parking:

a. Location and Required Number of Vehicle Parking Spaces:

(i) The applicant is proposing to provide a total of twenty-five (25) parking spaces for the project. Two (2) ADA spaces will be provided adjacent to the building entrance. A further twenty-three (23) parking spaces will be provided in the lot on the opposite side of the street. 14-332.2 (b) allows incentives for affordable housing units for rent or sale. Under this provision, the Planning Board may establish a parking requirement for affordable housing units that is less than one parking space per unit. The applicant does not propose to take advantage of this provision at this time.

(ii) The applicant has not prepared a TDM strategy.

(iii) The development does not propose to provide more than the minimum required parking.

(iv) Parking spaces and aisles have been designed to meet the applicable section of the Technical Design Manual.

(v) The project does not propose temporary parking.

b. Location and Required Number of Bicycle Parking Spaces:

(i) The project will provide ten (10) bicycle parking spaces on two pads inside the fenced garden area on Pleasant Avenue.

c. Motorcycles and Scooter Parking:

(i) The project does not propose any motorcycle or scooter parking.

d. Snow Storage:

(i) Snow storage management will employ two approaches.

1. There is space on the main site and the parking lot site to plow moderate amounts of snow to the perimeters of the site.
2. In the event of excessive snow accumulation, provision will be made for removal and off-site snow disposal.

5. Transportation Demand Management (TDM):

- a. A TDM plan is not required for the project.

(b) Environmental Quality Standards

1. Preservation of Significant Natural Features:

- a. The existing site retains no prominent significant natural features therefore no issue related to the preservation of these features applies.
- b. The applicant is not requesting a waiver from this standard.

2. Landscaping and Landscaping Preservation:

a. Landscape Preservation.

- (i) The site's existing tree population will be maintained.

- (ii) Not applicable.

- (iii) Adequate measures to protect existing vegetation during construction will be provided.

- (iv) The applicant will not require a waiver from this standard.

b. Site Landscaping.

(i) Landscaped Buffers:

- (a) There are no observable service or loading areas. The proposed dumpster area will have an enclosure for screening consisting of either wood or PVC.

- (b) The development will be designed to meet the understory planting requirements of Section 4 of the Technical Manual. The project landscape architect is currently reviewing the existing site plant material suitable for reuse and landscape understory compliance.

- (c) Not applicable.

- (d) The Applicant intends to preserve the site landscaping to the extent practicable.

(ii) Parking Lot Landscaping:

- a) The existing pavement and landscaping on Map 130, Lot H013 will remain. No changes are proposed to this area.
- b) Not applicable.
- c) Not applicable.

(iii) Not applicable.

3. Water Quality, Stormwater Management and Erosion Control:

a. Stormwater:

- (i) All stormwater draining onto the site from adjacent properties will be accounted for in the pipe sizing and redirection to a new discharge location as necessary. Runoff from the site will continue to be directed to the City's storm drainage systems in the streets.
- (ii) All stormwater runoff is proposed to discharge to the City street systems. The project will not adversely impact adjacent lots or the City street system.
- (iii) All stormwater runoff is proposed to discharge to the City street systems. The project will not adversely impact adjacent lots or the City street system.
- (iv) All stormwater runoff is proposed to discharge to the City street systems. The project will not adversely impact adjacent lots or the City street system.

- b. The Stormwater Management Plan will meet the requirements and goals stated in Section 5 of the Technical Manual.
- c. The project is not located in a watershed of an urban impaired stream as listed by the MeDEP.
- d. N/A
- e. The project is serviced by both a public wastewater system and public drainage system. The project will not pose a risk of groundwater contamination.
- f. The project will be connected to the public sanitary sewer system which is adequately sized for the project flows.

(c) Public Infrastructure and Community Safety Standards.

1. Consistency with City Master Plans:

- a. The project has been designed to be consistent with the City's Zoning Ordinance and off-site infrastructure.
- b. Not applicable.

2. Public Safety and Fire Prevention:

- a. The site has been designed to promote safe and inviting public and residential access.
- b. No changes to emergency access conditions within the surrounding streets is proposed.
- c. Fire hydrants are located within the adjacent street system. The renovated church building will be fully sprinklered.

3. Availability and Adequate Capacity of Public Utilities:

- a. The applicant will secure letters from all applicable utilities stating their ability to serve this project. Copies of correspondence with utilities are provided in Attachment D.
- b. All on site electrical lines will be underground.
- c. All new utility infrastructure will meet the provisions of the Technical Manual.
- d. The project has an existing sewer service connection.
- e. The sanitary sewer collection system meets all applicable sections of the Technical Manual. A stormwater management system is not required based on the project size.
- f. The project will use fenced trash enclosure at the northeast side of the site to store trash and recyclables temporarily until a contracted waste management company can pick up and dispose of the solid waste from the street.

(e) Site Design Standards.

1. Massing, Ventilation and Wind Impact:

- a. The bulk, location and height of the existing building does not result in adverse impacts to abutting properties.
- b. HVAC venting is proposed to be directed to the building roof and directed away from public spaces.

2. Shadows:

- a. The development is located in the B-2c and R-5 Zones and this standard is not applicable to existing structures.

3. Snow and Ice Loading:

- a. The proposed building is located such that accumulated snow and ice will not fall onto adjacent properties or public ways.

4. View Corridors:

- a. The project site is located outside the Downtown Vision View Corridor Protection Plan.

5. Historic Resources:

- a. The development is not located in a historic district, historic landscape district or City designated landmark.
- b. The development is not located adjacent to or within 100 ft. of a designated landmark, historic district, or historic landscape district.
- c. There are no known archaeological resources on the site.

6. Exterior Lighting:

- a. Site Lighting.
 - (i) Exterior lighting will be designed to meet the requirements of Section 12 of the Technical Manual. No new pole lights are proposed.

7. Noise and Vibration:

The project noise levels will be designed to meet the permitted levels as outlined in the B-2c and R-5 Zones. All HVAC and mechanical equipment is proposed to be mounted on the roof.

8. Signage and Wayfinding:

- a. All street and wayfinding signage shall meet the requirements of the Manual on Uniform Traffic Devices (MUTCD) and Division 22 of the City Code.
 - (i) The project is not located in a historic district or subject to Article IX.
 - (ii) Not applicable.
 - (iii) All street and wayfinding signage shall meet the requirements of the Manual on Uniform Traffic Devices (MUTCD) and Division 22 of the City Code.

9. Zoning Related Design Standards:

- a. The project is designed to be a moderate density development with multiple story building, and the associated driveway and utility improvements.

3.2 ATTACHMENTS

Attachment D – Correspondence with Utility Companies

ATTACHMENT D

Correspondence with Utility Companies



6/4/2015

Andrew Johnston
Fay, Spofford & Thorndike
South Portland, Maine 04106

Sent via email to: AJohnston@fstinc.com

RE: Ability to Serve Letter 3 Pleasant Avenue Redevelopment project, Portland, ME.

Dear Mr. Johnston:

CMP has the ability to serve the proposed project located at 3 Pleasant Avenue in Portland, Maine, in accordance with our CMP Handbook (web link below). We can provide you the desired pad or pole mounted transformers per your request and city approval, in accordance with our CMP Standards Handbook. If you have any questions on the process, or need help in completion of the documents, please feel free to contact me.

New Service Milestones

- Call 1-800-565-3181 to establish a new account and an SAP work order.
- Submit any electronic drawings (PDF (preferred) or DWG files) of the site layout and proposed electrical connections if you have them.
- Submit Load information. Please complete this CMP spreadsheet using load information
- Submit the easement information worksheet. Please complete this CMP form and either email or fax back to us.
- Preliminary meetings with CMP to determine the details of job
- Field planner design appointment to cost out job and develop CMP Invoice.
- Submit invoice for payment.
- Easements signed and payment received.
- Job scheduled for completion after the electrical inspection has been received.

This process can take several months, depending upon several factors including transformer delivery, potential substation upgrades, return of completed paperwork, and other jobs in the system that may be ahead of yours. In addition, contact with the other utilities, including telephone and cable, should be commenced as soon as practical. They may have additional work or charges in addition to the CMP work required to bring your project on line.

For your convenience, here is a link to the CMP Website which contains our Handbook with details on most service requirements:

162 Canco Road Portland, ME 04103
Tel (800) 750-4000
207-842-2367 office
207-458-0382 cell
207-626-4082 fax

www.cmpco.com



An equal opportunity employer



[CMP Handbook of Standard Requirements](http://www.cmpco.com/MediaLibrary/3/6/Content%20Management/YourAccount/PDFs%20and%20Docs/handbook.pdf)

(<http://www.cmpco.com/MediaLibrary/3/6/Content%20Management/YourAccount/PDFs%20and%20Docs/handbook.pdf>)

If you have any questions, please contact me.

Regards,

A handwritten signature in black ink that reads "Jamie Cough".

Jamie Cough
Energy Services Advisor
Central Maine Power Company
162 Canco Road
Portland, ME 04103
207-842-2367 office
207-458-0382 cell
207-626-4082 fax

162 Canco Road Portland, ME 04103
Tel (800) 750-4000
207-842-2367 office
207-458-0382 cell
207-626-4082 fax

www.cmpco.com



An equal opportunity employer



September 29, 2015

Mr. Jamie Cough
Central Maine Power
162 Canco Road
Portland, ME 04103

**Subject: Proposed Redevelopment of Pleasant Avenue Church
3 Pleasant Ave, Portland, Maine
Request for Ability to Serve**

Dear Mr. Cough:

Our office is working as a consultant to Robert Gaudreau on the site planning and permitting associated with a proposed redevelopment of the former Pleasant Avenue Church in the City of Portland to construct up to 25 residential apartments. The project site is located on Map 130, Lots I-012 and I-014 according to the City of Portland Tax Assessor's Maps. On behalf of the developer, we would like to verify CMP's ability to provide power for the project and determine any impact fees, or infrastructure improvements that may be required to serve the site.

The project will consist of renovating two existing buildings with size and use summarized as follows:

Location	Use	Size (SF)
Church	Residential Apartment	17,000±
Rectory	Single-family	2,000±

The buildings will include an underground service extension into each building. Three Phase power is desired. On behalf of the developer, we are requesting a letter affirming that the proposed project can be served by the CMP supply system.

We trust that the existing power supply system has adequate capacity to serve this project. We are in the process of completing the Preliminary Level III Site Plan Application for a submission to the City Planning Staff and we would appreciate your confirmation of site conditions.

We look forward to your review of this request and a summary of your findings and any updated cost projections for the project you may be able to provide. Please include in your assessment for any costs that could be associated with the following:

- Upgrades to nearby CMP infrastructure
- All onsite overhead and underground improvements
- Impact fees or connection fees
- CMP engineering costs

FAY, SPOFFORD & THORNDIKE

Mr. Jamie Cough
September 29, 2015
Page 2

If you have any questions concerning this request, please contact me.

Sincerely,

FAY, SPOFFORD & THORNDIKE



Andrew D. Johnston
Principal Engineer

ADJ/smk

Enclosure: Figure C-1 – Conceptual Site

c: Bob Gaudreau

R:\SP-M167 3 Pleasant Avenue - Portland, ME\Admin\Correspondence Out\Ability to Serve\SP-M167 2015.09.29 Cough-CMP.doc



June 4, 2015

Fay, Spofford & Thorndike
Andrew D. Johnston
Principal Engineer

**Re: Proposed Redevelopment of Pleasant Avenue Church
3 Pleasant Ave, Portland Maine**

Dear Mr. Johnston:

Thank you for your interest in using natural gas for the above referenced project.

Unitil has natural gas in the vicinity of this project to provide additional gas service. Both Forest Ave and Pleasant Ave are part of Unitil's S.U.R.E Project, scheduled for upgrade from cast iron to plastic in 2020. The evaluation to complete the design, costs and determining what the customer contribution may be, if any, can be completed once Unitil receives the completed design in pdf. Unitil welcomes the opportunity for further discussions regarding this project.

If you have any further questions or require additional information, please contact me directly at (207) 541-2536 or at Harmon@unitil.com.

Sincerely,

Bridget L. Harmon
Business Development Representative
Customer Energy Solutions
(o) 207-541-2536 (f) 207-541-2586

ME GAS CUSTOMER ENERGY SOLUTIONS
1075 Forest Avenue
Portland, ME 04103-3586

T 207-541-2508 www.unitil.com



September 29, 2015

Ms. Kelly Fowler
Unitil Service Corp.
PO Box 3586
1075 Forest Avenue
Portland ME 04103

**Subject: Proposed Redevelopment of Pleasant Avenue Church
3 Pleasant Ave, Portland, Maine
Ability to Serve Project with Natural Gas**

Dear Ms. Fowler:

Our office is working as a consultant to Robert Gaudreau on the site planning and permitting associated with the redevelopment of the former Pleasant Avenue Church in the City of Portland to construct up to 25 residential apartments. The project site is located on Map 130, Lots I-012 and I-014 according to the City of Portland Tax Assessor's Maps. The mechanical subcontractor estimates that the gas load for the new apartments will be approximately 1,000,000 BTU/HR. On behalf of the developer, we would like to verify Unitil's ability to provide natural gas services for the project and to determine any impact fees.

At this time, I would request a written letter stating Unitil has the ability to serve the proposed development. Specifically, our office is interested in a letter from you indicating the following:

- The ability of Unitil to serve the project.
- Any connection service or impact fees.
- Notification of any Unitil plans for or recent upgrade the service in this area.
- Engineering and/or construction upgrade fees required to extend the main to the project development area.

If you have any questions concerning this request, please contact me.

Sincerely,

FAY, SPOFFORD & THORNDIKE

A handwritten signature in blue ink, appearing to read 'A. Johnston', is written over a light blue horizontal line.

Andrew D. Johnston
Principal Engineer

ADJ/smk

Enclosure: Figure C-1 – Conceptual Site

c: Bob Gaudreau

R:\SP-M167 3 Pleasant Avenue - Portland, ME\Admin\Correspondence Out\Ability to Serve\SP-M167 2015.09.29-Fowler-ABS-Natural Gas.docx



Portland Water District

FROM SEBAGO LAKE TO CASCO BAY

July 1, 2015

FST

778 Main Street, Suite 8
South Portland, ME 04106

Attn: Andrew Johnson
Re: 3 Pleasant Avenue - Portland
Ability to Serve with PWD Water

Dear Mr. Johnson

The Portland Water District has received your request for an Ability to Serve Determination for the noted site submitted on June 1, 2015. Based on the information provided, we can confirm that the District will be able to serve the proposed project as further described in this letter.

Conditions of Service

The following conditions of service apply:

- It is the District's understanding that the existing Pleasant Avenue Church and Vestry will be converted into 25 residential apartment units. New fire and domestic service(s) may be installed through the properties frontage on Pleasant Avenue or Forest Avenue.
- The existing 1-inch and 3/4-inch diameter services will not be adequate for the proposed use; therefore, they must be terminated by shutting the corporation valve and cutting the piping from the water main.
- Water District approval of water infrastructure plans will be required for the project prior to construction. As your project progresses, we advise that you submit any preliminary design plans to MEANS for review of the water main and water service line configuration. We will work with you to ensure that the design meets our current standards.

Existing Site Service

According to District records, the project site does currently have existing water service. A 1-inch diameter copper water service line serving the church building and a 3/4" copper service serving the parsonage building, located as shown on the attached water service cards, provide water service to this site. Please refer to the "Conditions of Service" section of this letter for requirements related to the use of these services.



Water System Characteristics

According to District records, there is an 8-inch diameter cast iron water main on northerly side of Pleasant Avenue and a public fire hydrant located at the site.

The current data from the nearest hydrant with flow test information is as follows:

Hydrant Location: Pleasant Avenue at Forest Avenue
Hydrant Number: POD-HYD01235
Last Tested: 4/16/2015
Static Pressure: 85 psi
Residual Pressure: Not measured
Flow: Not measured

Public Fire Protection

It is not anticipated that this project will include the installation of new public hydrants to be accepted into the District water system. It is your responsibility to contact the Portland Fire Department to ensure that this project is adequately served by existing and/or proposed hydrants.

Domestic Water Needs

The data noted above indicates there should be adequate pressure and volume of water to serve the domestic water needs of your proposed project. Based on the high water pressure in this area, we recommend that you consider the installation of pressure reducing devices that comply with state plumbing codes.

Private Fire Protection Water Needs

You have indicated that the church building will require water service to provide private fire protection to the site. Please note that the District does not guarantee any quantity of water or pressure through a fire protection service. Please share these results with your sprinkler system designer so that they can design the fire protection system to best fit the noted conditions. If the data is out of date or insufficient for their needs, please contact the MEANS Division to request a hydrant flow test and we will work with you to get more complete data.

If the District can be of further assistance in this matter, please let us know.

Sincerely,
Portland Water District


Glissen Havu, E.I.
Design Engineer

SERVICE RECORD

NO. 15 Pleasant AveREG. NO. SV 2711773ST. DIVISION PortlandCode No. 27

Name _____

Name _____

Name _____

SERVICE DATA

Size of Pipe 1"Kind of Pipe CopperMain to Stop 20' 6"Stop to St. Line 614Date 5/16/2009Mat. on Private 3/4" copperDepth/Main 5' 6"Depth/Private 5' 6"

Shut at Corp. _____

* Note Sewer + Gas go over 8" main

MEASURES

5' 6" - 10' -
cut + smt + 3/4" corp
gas + water
4' apart
sewer 1' away
8"

1" Gas 6" sewer

CODE NO. **D-12-12B**DISTRICT **DEERING**
ST.REQ NO. **9199**NO. **19****Pleasant Ave.**

NAME

Black Memorial Church Parsonage

NAME

NAME

SERVICE RECORD

RENEWAL RECORDS

KIND OF PIPE

KIND OF PIPE

SIZE OF PIPE

SIZE OF PIPE

MAIN TO STOP

MAIN TO STOP

STOP TO ST. LINE

STOP TO ST. LINE

ST. LINE TO BUILDING

ST. LINE TO BUILDING

TOTAL LENGTH

TOTAL LENGTH

DATE

DATE

REMARKS

REMARKS

SERVICE SHUT AT CORP.



September 29, 2015

MEANS Group
Portland Water District
225 Douglass Street
P.O. Box 3553
Portland, Maine 04104-3553

**Subject: Proposed Redevelopment of Pleasant Avenue Church
3 Pleasant Ave, Portland, Maine
Water Supply Ability to Serve**

Dear Coordinator:

Our office is working as a consultant to Robert Gaudreau on the site planning and permitting associated with a proposed redevelopment of the former Pleasant Avenue Church in the City of Portland to construct up to 25 residential apartments. The project site is located on Map 130, Lots I-012 and I-014 according to the City of Portland Tax Assessor's Maps. On behalf of the developer, we would like to verify the Portland Water District's ability to provide domestic and fire supply water for the project and determine any impact fees, or infrastructure improvements that may be required to serve the site.

The project will consist of apartment units in existing buildings, with estimated daily water uses as follows:

Location	Use	Demand Criteria	Estimated Demand
Church	Residential Apartment	Average Occupancy 1.0/unit @ 70 gal. per person/per day - 25 units at 70 gpd	1,750 gpd
Rectory	Single-family 4-Bedroom	Estimated Occupancy 2.5/Unit @ 70 gal. per person/day	175 gpd
Total Project Water Demand			1,925 gpd

The church building will have a fire protection sprinkler system; however, at this time, the size and flow requirements for the fire service have not yet been determined.

We are preparing an application to the City for Level III Site Plan Review, and are seeking to provide documentation indicating the District's ability to provide water supply to this project.

MEANS Group
September 29, 2015
Page 2

If you have any questions concerning this request, please contact me.

Sincerely,

FAY, SPOFFORD & THORNDIKE

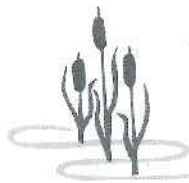
A handwritten signature in blue ink, appearing to read "A. Johnston", is positioned above the printed name.

Andrew D. Johnston
Principal Engineer

ADJ/smk

Enclosure – Figure C-1 – Conceptual Site

c: Bob Gaudreau



HARDYPOND DEVELOPMENT

7 Tee Drive, Portland, ME 04103

Tel: (207) 797-6066

Fax: (207) 797-8986

Att. F

October 15, 2015

Planning and Urban Development Department
Planning Division and Planning Board
City of Portland
389 Congress St. Fourth Floor
Portland, ME 04101

Re: Neighborhood Meeting Certification – 3 Pleasant Avenue Redevelopment

I, **Frank Carr**, hereby certify that a neighborhood meeting was held on **October 8, 2015 at 3 Pleasant Avenue at 6:00PM.**

I also certify that on (date at least ten (10) days prior to the neighborhood meeting), invitations were mailed to the following:

1. All addresses on the mailing list provided by the Planning Division which includes property owners within 500 feet of the proposed development or within 1000 feet of a proposed industrial subdivision or industrial zone change.
2. Residents on the "interested parties" list.
3. A digital copy of the notice was also provided to the Planning Division (jmy@portlandmaine.gov and ldobson@portlandmaine.gov) and the assigned planner to be forwarded to those on the interested citizen list who receive e-mail notices.

We also placed an ad in the Legal Notices section of the Portland Press Herald, and called all interested parties individually who signed in for our August 8, 2015 meeting.

Sincerely,

Frank Carr
Director of Business Development
Hardy Pond Development

Attached to this certification are:

1. Copy of the invitation sent
2. Newspaper Legal Ad
3. Sign-in sheet
4. Meeting minutes

September 28, 2015



Dear Neighbor:

Please join us for a **Neighborhood Meeting** to discuss our request for **Site Plan and Subdivision Plan** approval for the proposed redevelopment of 3 Pleasant Avenue, Portland, formerly known as "Clark Memorial Church". The redevelopment is proposed to include 25 residential apartments in the former church building and a single family residential house in the former vestry.

Meeting Location: Public Meeting Space at the Former Clark Memorial Church
3 Pleasant Avenue
Portland, Maine

Meeting Date: Thursday, October 8, 2015

Meeting Time: 6:00 p.m.

The City Code requires that property owners within 500 feet (except notices must be sent to property owners within 1,000 feet for industrial zoning map amendments and industrial subdivisions) of the proposed development and residents on an "interested parties list", be invited to participate in a neighborhood meeting. A sign-in sheet will be circulated and minutes of the meeting will be taken. Both the sign-in sheet and minutes will be submitted to the Planning Board.

If you have any questions, please feel free to contact me at 207-775-1121.

Sincerely,

FAY, SPOFFORD & THORNDIKE

A handwritten signature in dark ink, appearing to read "Andrew D. Johnston".

Andrew D. Johnston, P.E.
Principal Engineer

ADJ/smk

R:\SP-M167 3 Pleasant Avenue - Portland, ME\Admin\Permitting\Local\Neighborhood Meeting\SP-M167 2015.09.28 Neighborhood Meeting Letter.docx

Note: Under Section 14-32(C) and 14-525 of the City Code of Ordinances, an applicant for a Level III development, subdivision of over five lots/units, or zone change is required to hold a neighborhood meeting within three weeks of submitting a preliminary application or two weeks of submitting a final site plan application, if a preliminary plan was not submitted. The neighborhood meeting must be held at least seven days prior to the Planning Board public hearing on the proposal. Should you wish to offer additional comments on this proposed development, you may contact the Planning Division at 874-8721 or send written correspondence to the Planning and Urban Development Department, Planning Division 4th Floor, 389 Congress Street, Portland, ME 04101 or by email to: bab@portlandmaine.gov

LEGAL ADVERTISEMENTS

of Portland, Docket No. RE-12-353, wherein the Court adjudged the foreclosure of a mortgage granted by Dionne Baggs to Mortgage Electronic Registration Systems, Inc., acting solely as nominee for America's Wholesale Lender dated March 8, 2004 and recorded in the Cumberland County Registry of Deeds in Book 21008, Page 238, should the period of redemption have expired without redemption of the property by the mortgagor(s), a public sale of the property described in the mortgage will be conducted on

October 29, 2015 commencing at 10:00 a.m. at 190 US Route One, 2nd Floor, Rear, Falmouth, Maine

The property is located at 43 William Knight Road, Windham, Cumberland County, Maine, reference as described in said mortgage.

The sale will be by public auction. All bidders for the property will be required to make a deposit of \$5,000.00 in cash, certified or bank check at the time of the public sale made payable to Shechtman Halperin Savage, LLP, which deposit is non-refundable as to the highest bidder. The balance of the purchase price shall be paid within thirty (30) days of the public sale. In the event a representative of The Bank of New York Mellon f/k/a The Bank of New York as Trustee for the Benefit of the Certificateholders of the CWABS, Inc., Asset-Backed Certificates 2004-04 is not present at the time and place stated in this notice, no sale shall be deemed to have occurred and all rights to reschedule a subsequent sale are reserved.

Additional terms will be announced at the public sale.

The Bank of New York Mellon f/k/a The Bank of New York as Trustee for the Benefit of the Certificateholders of the CWABS, Inc., Asset-Backed Certificates 2004-04, by its attorneys, Shechtman Halperin Savage, LLP, James M. Garnet, Esq., John M. Ney, Jr., Esq., 1080 Main Street, Pawtucket, RI 02860 (401) 272-1400

Legal Advertisement
NOTICE OF PUBLIC SALE

Notice is hereby given that in accordance with the Judgment of Foreclosure and Sale entered May 7, 2015 in the action entitled JPMorgan Chase Bank, National Association v. Terri L. Beardsley, et al., by the West Bath District

Court, Docket No. WESDC-RE-13-139, wherein the Court adjudged the foreclosure of a mortgage granted by Terri L. Beardsley to Mortgage Electronic Registration Systems, Inc., as nominee for Regency Mortgage Corporation dated August 20, 2010 and recorded in the Cumberland County Registry of Deeds in Book 28014, Page 36, the period of redemption having expired, a public sale of the property described in the mortgage will be conducted on

October 30, 2015 at 10:00 am
At Bendett & McHugh, P.C., 30 Danforth Street, Suite 104, Portland, Maine.

The property is located at 28 Somerset, Unit B-28, Freeport, Maine, as described in said mortgage. The sale will be by public auction. All bidders for the property will be required to make a deposit of \$5,000.00 in certified or bank check at the time of the public sale made payable to Bendett & McHugh, P.C., which deposit is non-refundable as to the highest bidder. The balance of the purchase price shall be paid within thirty (30) days of the public sale. In the event a representative of the mortgagor is not present at the time and place stated in this notice, no sale shall be deemed to have occurred and all rights to reschedule a subsequent sale are reserved. **If the sale is set aside for any reason, the Purchaser at the sale shall be entitled only to a return of the deposit paid. The Purchaser shall have no further recourse against the Mortgagor, the Mortgagee or the Mortgagee's attorney.**

This property will be sold as is. Additional terms will be announced at the public sale.

JPMorgan Chase Bank, National Association by its attorneys, Bendett & McHugh, P.C., 30 Danforth Street, Ste. 104 Portland, ME 04101 207-221-0016

Legal Advertisement
NOTICE OF PUBLIC SALE

Notice is hereby given that in accordance with the Judgment of Foreclosure and Sale entered May 8, 2015, in the action entitled Wells Fargo Bank, NA v. Heath A. Phillips, et al., by the West Bath District Court, Docket No. WESDC-RE-14-85, wherein the Court adjudged the foreclosure of a mortgage granted by Heath A. Phillips to Mortgage Electronic Registration Systems, Inc., as nominee for PrimeLending, a PlainsCapital Company, dated September 25, 2008, and recorded in

the Sagadahoc County Registry of Deeds in Book 3023, Page 107, the period of redemption having expired, a public sale of the property described in the mortgage will be conducted on

November 6, 2015 at 10:00 am
At Bendett & McHugh, P.C., 30 Danforth Street, Suite 104, Portland, Maine.

The property is located at 185 Alexander Reed Road, Richmond, Maine, as described in said mortgage. The sale will be by public auction. All bidders for the property will be required to make a deposit of \$5,000.00 in certified or bank check at the time of the public sale made payable to Bendett & McHugh, P.C., which deposit is non-refundable as to the highest bidder. The balance of the purchase price shall be paid within thirty (30) days of the public sale. In the event a representative of the mortgagor is not present at the time and place stated in this notice, no sale shall be deemed to have occurred and all rights to reschedule a subsequent sale are reserved. **If the sale is set aside for any reason, the Purchaser at the sale shall be entitled only to a return of the deposit paid. The Purchaser shall have no further recourse against the Mortgagor, the Mortgagee or the Mortgagee's attorney.**

This property will be sold as is. Additional terms will be announced at the public sale.

Wells Fargo Bank, NA by its attorneys, Bendett & McHugh, P.C., 30 Danforth Street, Ste. 104 Portland, ME 04101 207-221-0016

Legal Advertisement
Notice of Public Sale Pursuant to 10 M.R.S.A. §3259 October 23, 2015 at 10:00 a.m.

Property located at 27 Twin Meadows Lane, Falmouth, ME (Map R03, Lot 4 on Block 026)

Notice is hereby given that in accordance with a Judgment and Order of Sale docketed June 4, 2015 entered by the Cumberland County Superior Court in the case of Burton Associates, et als. v. Gary Auritt, et al. Docket #CUMSUP-RE-10-53, wherein the Court adjudged foreclosure of mechanics liens of Burton Associates, Hammond Lumber Company and LaPlante Electric by virtue of Hammond Lumber Mechanics' Lien Certificate recorded in the Cumberland County Registry of Deeds at Book 28362, Page

163, Hammond Lumber Amended Clerk's Certificate recorded at said registry at Book 28773, Page 193. Burton Associates' Clerk's Certificate recorded at said registry at Book 28271, Page 259, LaPlante Electric's Mechanics' Lien Certificate recorded at Book 28518, Page 270, LaPlante Electric's Clerk's Certificate recorded at said registry at Book 28593, Page 34, and ordered the sale pursuant to 10 M.R.S.A. §3259, the period of redemption from said Judgment and Order of Sale having expired, a public sale of the property described in the deed of Aqua Cove Mortgage Corp. to Gary Auritt and Shannon Auritt, dated October 19, 2009, recorded in the Cumberland County Registry of Deeds in Book 27334, Page 104 will be conducted on October 23, 2015, commencing at 10:00 AM at the law office of Bernstein, Shur at 100 Middle St., 6th Floor, Portland, ME.

The property will be offered for sale by public auction, on an "as is" basis, without warranties of any kind, subject to all outstanding municipal assessments and any other encumbrances, land use laws, and conditions an inspection of the property or survey might reveal. The deposit to bid shall be \$15,000. The deposit must be increased to 10% of the successful bid amount within 5 days of the public sale. The balance of the purchase price will be due and payable within 30 days of the public sale. Any and all right, title, and interest of Gary Auritt and Shannon Auritt, their heirs and assigns, will be conveyed to the successful bidder by release deed. All other terms and conditions of the sale will be available from Frank M. Underkuffler, Esq., 116 Main St., Farmington, ME 04938, telephone number 778-9771.

Dated: September 15, 2015.

Hammond Lumber Company
By: Frank M. Underkuffler
Its attorney

Legal Advertisement

Please join us Thursday, October 8th, 2015 at 6PM for a Neighborhood Meeting to discuss our request for Site Plan and Subdivision Plan approval for the proposed redevelopment of 3 Pleasant Avenue, Portland, formerly known as "Clark Memorial Church". The redevelopment is proposed to include 25 market rate residential apartments in the former church building and a single family residential house in the former vestry. Meeting Location: Public Meeting Space at the former Clark Memorial Church 3

Pleasant Avenue Portland, Maine. A sign-in sheet will be circulated and minutes of the meeting will be taken.

Legal Advertisement

SOUTHERN MAINE COMMUNITY COLLEGE NOTICE TO ARCHITECTS AND ENGINEERS REQUEST FOR QUALIFICATIONS

SOUTHERN MAINE COMMUNITY COLLEGE (SMCC) is requesting Architectural / Engineering services from qualified firms to perform **CAMPUS MASTER PLANNING SERVICES** for our South Portland and Brunswick Campuses. Qualification packages are due at 1:00 PM on Wednesday, October 14, 2015, at 92 Campus Center Drive, South Portland, Maine 04106.

Responding firms must comply with the detailed Notice to Architects and Engineers on the BGS website: http://www.maine.gov/bgs/constr/public/prof_services?RFQ_prof.htm Bureau of General Services, 77 State House Station, Augusta, Maine 04333, (207) 624-7360

Note: this Request for Qualifications supersedes the Request for Proposals previously issued/advised by SMCC on 8/26/15

Legal Advertisement

The next quarterly meeting of the Maine Historic Preservation Commission will be held at 10:30 a.m., October 23, 2015 at the Elsie and William Viles House, 71 Stone Street, Augusta, Maine.

The Commission meets quarterly to nominate buildings, sites, and districts to the National Register of Historic Places. For more information, contact the Maine Historic Preservation Commission, 55 Capitol Street, 65 State House Station, Augusta, Maine 04333-0065; telephone 287-2132.

Legal Advertisement

The Standish Planning Board will hold a business meeting on Monday, October 05, 2015 at 7:00 PM in the Standish Municipal Building in Council Chambers

New Business:

Amendment to Standish Town Code, Chapter 181, Land Use Ordinance: Article III, District Regulations regarding overhead doors and Article V, general standards, regarding pedestrian ways

To ensure your participation in this meeting, please

inform us of any special requirements you have regarding a disability at 42-3461

Legal Advertisement

Town of Ogunquit Public Hearing Notice

The Ogunquit Select Board will hold a Public Hearing on the New Application for an On-premise Liquor License Permit for **Prego, LLC dba Five-O Shore Road**, Ogunquit, Maine. The hearing will be held at 6:00pm on Tuesday, October 6, 2015 at the Dunaway Community Center (Town Office), 23 School Street, Ogunquit, Maine, 03907

Legal Advertisement

Town of Ogunquit Public Hearing Notice

The Ogunquit Select Board will hold a Public Hearing on the New Application for an On-premise Liquor License Permit for **Lafin Properties, LLC dba Beachfire**, Ogunquit, Maine. The hearing will be held at 6:00pm on Tuesday, October 6, 2015 at the Dunaway Community Center (Town Office), 23 School Street, Ogunquit, Maine, 03907

Legal Advertisement

Town of Scarborough Zoning Board of Appeals

In compliance with Section V, Zoning Ordinance, Town of Scarborough, adopted March 1985, you are hereby notified of the following appeals. The Town of Scarborough Zoning Board of Appeals will hold a public hearing at 7:00 P.M. on October 14, 2015, at the Municipal Building to hear the following:

Re-approval Hardship Variance Joseph & Charlene Doherty, 16 Jones Creek Dr., U22/8 Special Exception Lindsay Diminick, 15Forecaster Way, R79/5607 Special Exception Christina LaBrecque, 23 Topley Road, R1/8B Standard Variance, Michael Zilkha, 35 Winslow Homer Rd, U19/16 Practically Difficulty Variance Peter & Lorraine Talbot, 3 Pinewood Circle, U17/75

Mark Maroon, Chairman
Zoning Board of Appeals



RECREATION

Boats, Canoes & Kayaks

17.5' FOUR WIND HORIZON 180 2007 190HP Volvo Penta, 4.3L I/O, very low hrs, great cond., First \$13,500 takes it. 207-446-8824

TRANSPORTATION

Antique, Classic, Custom

CHEVROLET CAMARO Z28 1999 45K mi, MINT cond., no rust, garaged 6 yrs 'til 7/14. New tires, 1-tops, LS1 motor w/LS6 air intake. Long tube headers, 3" dual exhaust, Racing cam, New 2 stage clutch, New high strength racing torque arm, 6 spd performance enhanced trans., Eng. balanced & blue printed, Heads ported & polished, High compression pistons, 30 lb Ford fuel injectors, 12 bolt Moser 4:10 rear end, Traction bars, High pressure fuel pump \$11,000/best. 207-329-5341 leave message.

CHEVY CAMARO Z28 1992 Black, auto, 350 V-8, exc. shape, low miles \$6,000. 207-632-6787.

FORD MODEL A RUMBLE SEAT COUPE 1930 Selling for widow. Complete eng. rebuild 1500 mi. ago. Paint fair otherwise very good. \$12,500. 207-318-8757.

MERCEDES-BENZ 190E 1985 59,000 miles, excellent condition, original owner \$6,000. 207-883-5309.

SUBARU IMPREZA WG 2015 hatchback, spoiler, heated seats, black, 850 miles, like new, garaged \$20,500. 883-0910.

Autos For Sale

BMW X5 PREMIUM 2011 AWD, blk/blk, exceptional cond., dealer maint., garaged, 60K mi, full sport & tech pkg, too many options to list \$29,575. 207-318-0805

BUICK LESABRE 2006 Needs work for sticker but looks and drives fine. 152,000 miles. \$1500/best 774-2065

FORD ECONOLINE SI VAN 2006 wheelchair lift w/ cord & remote, silver, 82K miles, good cond. Price reduced to \$7,900. Call 657-3941.

Autos For Sale

FORD F350 2002 With plow. 59K mi, runs great. August sticker, some rust. \$6,900. So. Portland. 799-5367

FORD RANGER P/U 1997 Runs great, all inspected. Asking \$950. Kennebunk 207-286-4625.



FORD TAURUS SE 2006 Sedan, 213K miles - all hwy. V6, new sticker, new tires, great cond., needs nothing \$3,000. 207-205-9123.

GMC HD 1987 half ton, 4WD, auto, PS, PB, 97K miles \$10,900. 207-712-8901.

INFINITI M37 2011 4 dr. Nav., AWD, extra set rims w/snow tires, 40K miles \$25,500. 207-712-8901.

NISSAN MAXIMA SV 2009 red, 70K, leather heated seats, 24MPG, Base, service records, very good cond., \$12,700. 207-939-2417.

SAAB TURBO 1993 4dr, std, midnight blue, registered, high miles, needs muffler \$800 or best offer Boothbay area 207-650-1305.

SATURN AURA 2009 Auto, 4 dr sedan, 28,000 miles \$9,000. 207-272-0402.

SUBARU WRX 2011 black, new snow tires on steel rims, new summer tires incld, dealer maint., 50K, adult owned, exc. cond. \$19,600. 207-318-2289

TOYOTA PRIUS 2007 126K miles, very good cond., pkg #6, nav., Bluetooth, silver w/ grey leather int. Great car! Below book at \$5,800. 829-3175 or 831-3315.

VOLVO S80 2004 AWD, 144K, heated leather, moonroof, 2.5T, auto, Volvo maint., 2nd owner, very good cond., needs nothing, 24/20 mpg \$4,900. 945-9326.

Motorcycles

BMW R1150RS 2003 48,200 miles, bags, new tires & battery, \$4,500. Bridgton 803-2008

HONDA GOLDWING 1800 2001 Runs "as new". 62K miles, 1 owner, includes trailer. Moving to Las Vegas. Sacrifice \$5,500. 207-838-3066

Recreational Vehicles

MONTANA 5TH WHEEL MODEL 3402RL 2013 Self-level sys., 4 slides, "live-in" pkg, king bed, 19' awning \$64,500. 603-723-9306.

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Where Great Deals Happen

Neighborhood Meeting

3 Pleasant Avenue
August 12, 2015

October 9, 2015

First Name	Last Name	Address	City	ST	Zip	Phone	E-mail
1 Leslie	Wilhelm	32+34 Pleasant Ave	Portland	ME	04103	207 232 6016	L Wilhelm@maine.rr.com
2 Jessica	Kelly	32 Clinton St	Portland	ME	04103	671-5211	jessicakelly@maine.rr.com
3 Jane	Patterson	42 Newens St	Portland	ME	04103	207 522 2087	jpatterson4@earthlink.net
4 Sandra	Brooks	51 Woodlawn Ave	Portland	ME	04103	774 7593	
5 Arthur	Schassberger	22 Pleasant Ave	Portland	ME	04103	899-4307	
6 Ray	Downes	18 A/pine	Portland	ME	04103	797 7980	
7 Johannah	Hart	149 Concord			04103	—	—
8 Douglas	MacDonald	8 Pleasant					
9 Burak	Sezen	8 Pleasant	Portland	ME	04103	207 838 2631	bmsezen@gmail.com
10 Ellen	Jackson	139 Hartley	Portland	ME	04103	773 2249	
11 John + Cheslye	Ventimiglia	41 Pleasant	Portland	ME	04103	774-5799	
12 Marina + Schneller	Schneller	47 CLINTON	"	"	"		
13 John	Thibodeau	114 Clinton St.	"	"	"		jet627@icloud.com
14 Max	Feygenbaum	10 Pleasant	"	"	"		Max.Feygenbaum@maine.edu
15 Bruce	Bonstetter	Clinton	"	"	"		
16 Bobbi	Cope	172 Concord St	"	"	"		bcope@maine.rr.com
17 Kevin	Williams	15 Clinton	"	"	"	207 245 4217	
18							
19							
20							

REDEVELOPMENT OF 3 PLEASANT AVENUE
NEIGHBORHOOD MEETING
OCTOBER 9, 2015 – 6:00 P.M.

MEETING MINUTES

The meeting was held at 3 Pleasant Avenue, in the community room of the former Clark Memorial Church. Present were: Robert Gaudreau, President of Hardypond Development; Frank Carr, Director of Business Development of Hardypond Development; and various community members (see attached attendance list).

The meeting was opened at 6:00 by Bob Gaudreau, who requested all present to sign the attendance sheet, as required by the City of Portland. Mr. Gaudreau began by noting that the purpose of this meeting was to introduce a new plan for redevelopment of the former church into 25 market-rate apartments, all in the sanctuary, and that the connector between the former church and the attached single-family house will be removed and the house will be sold separately. He also noted that the plan discussed in August, to provide housing for Shalom House, is no longer in development. When asked for details, he declined to comment further.

Mr. Carr noted that the 25 market-rate apartments will fit well with the City of Portland's affordable housing initiative. Monthly rental rates will be between \$900 and \$1,200, and the apartments will be approximately 500 – 600 square feet. It is anticipated that there will be one two-bedroom apartment and that the others will be split evenly between studio units and one-bedroom units. There will be 23 parking spaces across the street, an additional two handicapped parking spaces near the building, and the adjacent house will have its own two spaces. The parking meets the 1 to 1 parking spot to apartment ratio required for market-rate apartments. The site plan and interior plans were available for attendees to review.

One audience member, a member of the Clark Memorial congregation, stated that she is saddened that Shalom is no longer involved because she had felt that providing housing for Shalom clients was a fitting use for the former church building and would have fulfilled a significant need for Shalom House.

Another audience member, who still wanted to voice an opinion even after learning that Shalom has decided not to proceed, stated that she felt that there would have been too high a density of people with mental illness and that such a use wouldn't be appropriate for the neighborhood. Mr. Gaudreau restated that Shalom is no longer involved in the project.

Mr. Carr and Mr. Gaudreau then opened the meeting up to questions and comments from the audience:

Q: Will there be supervision in the building?

A: No – these apartments will be just like any other apartment building, with an offsite property manager available to deal with any maintenance issues or emergencies, but no onsite management or supervision.

Q: Are there plans for any landscaping or green space?

A: There will be a bike rack, a parking fence, and there will be enhancements to the existing plantings, such enhancements to meet the City's requirements. Mr. Gaudreau added that he already has a permit to remove the connector between the church building and the house, and that the demolition will begin shortly.

Q: How much will the building cost to renovate into apartments?

A: Approximately \$2,000,000.

Q: How will the building's units be marketed?

A: The units will be marketed as market-rate apartments, adaptable to meet ADA requirements.

Q: What will be the impact on traffic?

A: While there hasn't been a traffic study specifically for this development, past Forest Avenue traffic data indicate that an additional 25 vehicles in the area would produce a negligible effect on existing traffic. The City has asked the developer to allow the addition of a bus shelter on the corner of the lot, as it is probable that there will be additional bus usage from the building.

Q: Have you heard anything about the return of the trolley?

A: We have no information about any trolley.

Q: Are there any plans for Section 8 housing in the building?

A: The plan is to develop only market-rate apartments.

Q: Will there be an increase in noise in the neighborhood?

A: The building has hardly any insulation at present, and will have much more, both between the interior and the exterior and between the units themselves, which will help to contain and additional noise.

Q: Will the whole building be residential?

A: There will not be any business use of the building.

Q: What about common areas?

A: The old plan based on Shalom House use had common areas, but this plan will only have apartments and whatever space is necessary for hallways.

Q: Will there be marketing to target specific groups, such as seniors and students?

A: There will be only open marketing, not targeted marketing of any kind and the units will be marketed solely as market-rate apartments.

Q: What if Shalom wanted to rent an apartment in the building?

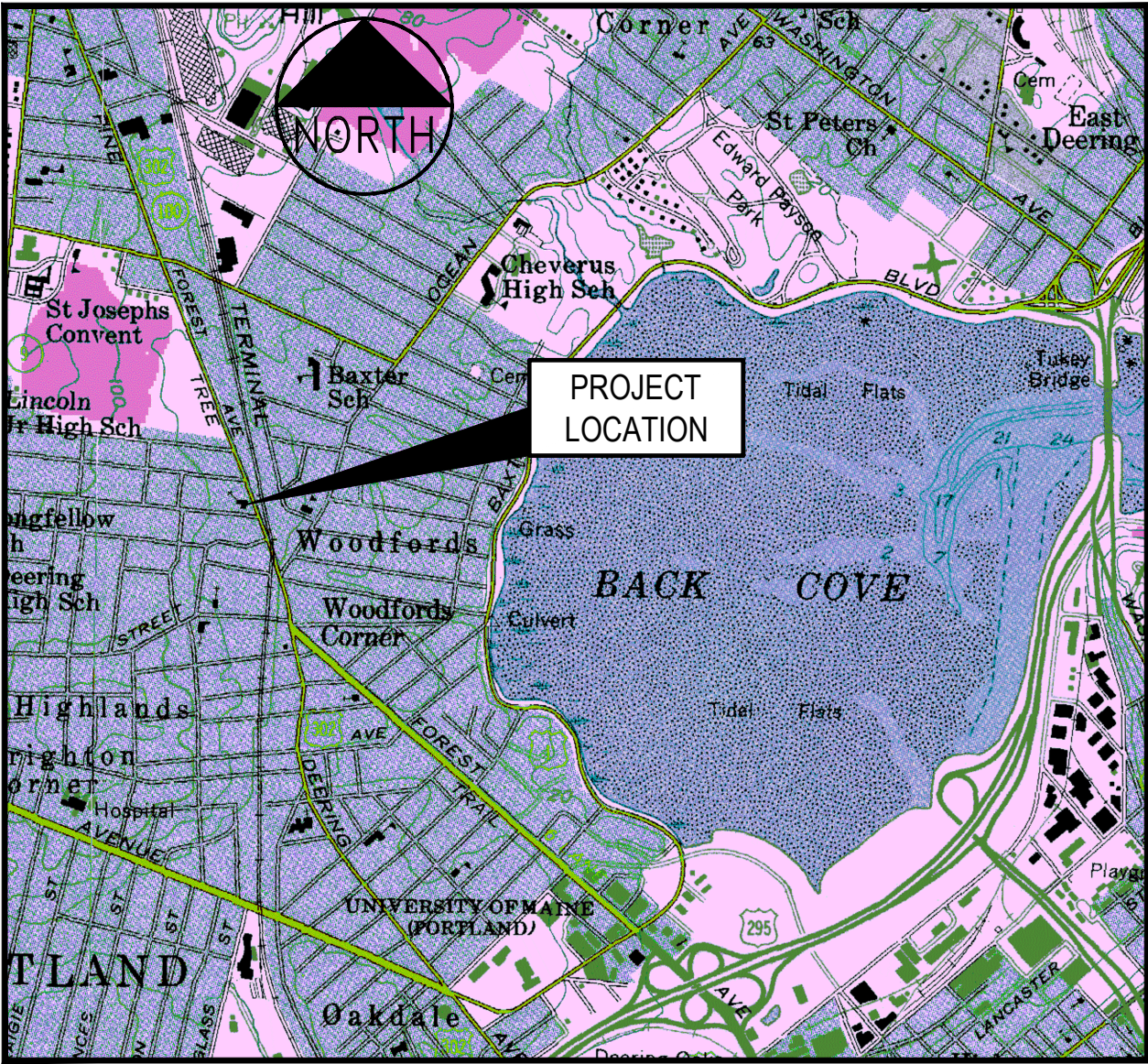
A: That would be inconsistent with Shalom's housing model, which is to acquire buildings with 10 or more units, so we do not anticipate any further interest from Shalom.

Q: Will you be using historic tax credits?

A: No. Historic tax credits are appropriate for former churches that are converted in ways that preserve the sanctuary; they are not appropriate for former churches that break up the sanctuary space into floors of residential units.

When it appeared that there were no further questions from the audience, the meeting was adjourned at approximately 6:30.

Attachments: List of meeting attendees



LOCATION MAP
N.T.S.

SITE DEVELOPMENT PLANS

FOR

PLEASANT AVENUE CHURCH

RE-DEVELOPMENT

PORTLAND, MAINE

LEVEL III SITE PLAN SUBMISSION

SEPTEMBER 28, 2015

PROJECT PARCEL SITE
CITY OF PORTLAND TAX ASSESSOR'S MAP & LOT NUMBERS

MAP	LOT
130	I-012, I-013, & H-013

OWNER/APPLICANT

HARDYPOND DEVELOPMENT COMPANY, LLC

7 TEE DRIVE, PORTLAND, ME 04103

PORTLAND, MAINE 04101

207.797.6066

ATTN: ROBERT GAUDREAU

INDEX

C-1.0	COVER SHEET
C-2.0	ALTA/ACSM LAND TITLE SURVEY BY OWEN HASKELL, INC.
C-2.1	SUBDIVISION PLAN
C-3.0	SITE LAYOUT PLAN
C-4.0	SITE DETAILS

UTILITIES

SEWER

CITY OF PORTLAND
PUBLIC SERVICES ENGINEERING DEPARTMENT
55 PORTLAND STREET
PORTLAND, MAINE 04102
207.874.8850
ATTN: DAVID MARGOLIS-PINEO. P.E.

WATER

PORTLAND WATER DISTRICT
225 DOUGLAS STREET
P.O. BOX 3533
PORTLAND, MAINE 04104
207.761.8310
ATTN: GLISSEN HAVU

POWER

CENTRAL MAINE POWER
162 CANCO ROAD
PORTLAND, MAINE 04103
207.791.1023
ATTN: JAMIE COUGH

TELEPHONE

FAIRPOINT COMMUNICATIONS
FIVE DAVIS FARM ROAD
PORTLAND, MAINE 04103
207.797.1842
ATTN: SUE SERRETTE

CABLE

TIME WARNER CABLE
118 JOHNSON ROAD
PORTLAND, MAINE 04102
877.546.0962
ATTN: ANDREW TROTTIER

NATURAL GAS

UNITIL
1075 FOREST AVENUE
PORTLAND, MAINE 04103
207.797.8002 EXT 6620
ATTN: ALEX SMITH

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1.888.344.7233
DIG SAFE MAINE

PERMITS / APPROVALS

LOCAL

SITE PLAN APPROVAL

BUILDING PERMIT

STREET OPENING PERMIT

GOVERNING BODY

CITY OF PORTLAND PLANNING DEPARTMENT
CITY HALL
389 CONGRESS STREET
PORTLAND, MAINE 04101
207.874.8719
ATTN: BARBARA BARHYDT

CITY OF PORTLAND CODE ENFORCEMENT OFFICE
CITY HALL
389 CONGRESS STREET
PORTLAND, MAINE 04101
207.874.8703

CITY OF PORTLAND CODE ENFORCEMENT OFFICE
CITY HALL
389 CONGRESS STREET
PORTLAND, MAINE 04101
207.874.8703

STATUS

PRELIMINARY SUBMISSION 09.28.15

BY CONTRACTOR - PRIOR TO
CONSTRUCTION

PRIOR TO CONSTRUCTION

PREPARED BY

CIVIL ENGINEER

FAY, SPOFFORD & THORNDIKE

778 MAIN STREET, SUITE 8
SOUTH PORTLAND, MAINE 04106
207.775.1121

ATTN: ANDREW JOHNSTON, P.E.

ARCHITECT

SHIELDS ARCHITECTURE

CUMBERLAND, MAINE
207.776 8926

ATTN: JOHN SHIELDS

SURVEYOR

OWEN HASKELL, INC.

390 U.S. ROUTE 1, SUITE 10
FALMOUTH, MAINE 04105
207.774.0424

LANDSCAPE ARCHITECT

LAND DESIGN SOLUTIONS

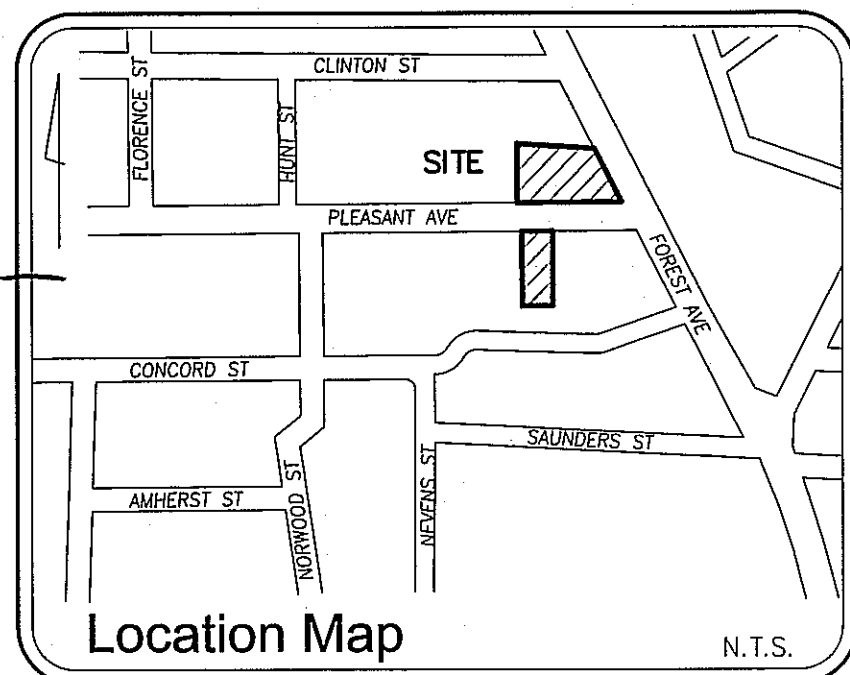
160 LONGWOODS RD
CUMBERLAND, MAINE 04021
207.939.1717

I HEREBY ACKNOWLEDGE THAT THESE PLANS AND SPECIFICATIONS WERE PREPARED UNDER MY DIRECT SUPERVISION, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MAINE AND THAT I AM COMPETENT TO PREPARE THIS DOCUMENT.

PRELIMINARY - NOT FOR CONSTRUCTION

PRELIMINARY NOT FOR CONSTRUCTION

				PROJECT 3 PLEASANT AVENUE CHURCH RE-DEVELOPMENT	
				SHEET TITLE COVER SHEET	
1	09.28.15	PRELIMINARY CITY SUBMISSION	P.E. ANDREW D. JOHNSTON LIC. # 9994	CLIENT HARDYPOND DEVELOPMENT COMPANY, LLC	DRAWN: PBF DESIGNED: CHECKED: FILE NAME: SP-M167 COVER SHEET
REV	DATE	DESCRIPTION			DATE: SCALE: N.T.S. JOB NO. C-1.0
		REVISIONS			



Schedule B Section 2 Exceptions:

FIRST AMERICAN TITLE INSURANCE COMPANY
COMMITMENT FOR TITLE INSURANCE, FILE NO. 15-112375SW
EFFECTIVE DATE: APRIL 8, 2015

1-6. NON SURVEY ITEMS.

7. SUCH STATE OF FACTS AS SHOWN ON A PLAN ENTITLED "PLAN OF CLARK AND LOVELL'S LAND IN WESTBROOK, MAINE" RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN PLAN BOOK 1, PAGE 34 - AS SHOWN ON PLAN.

8. SUBJECT TO AND WITH THE BENEFIT OF THE TERMS AND CONDITIONS OF AN EASEMENT RESERVED IN A DEED FROM CLARK MEMORIAL UNITED METHODIST CHURCH TO ROGER S. ZIMMERMAN AND RONALD L. BREAZEALE DATED APRIL 4, 1980 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 4588, PAGE 246, AND SUBJECT TO THE EASEMENT RIGHTS CONVEYED IN SAID DEED (PARKING LOT). - AS SHOWN ON SURVEY.

9. NON SURVEY ITEM.

Plan References:

1. "PLAN OF CLARK AND LOVELL'S LAND IN WESTBROOK, MAINE" RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN PLAN BOOK 1, PAGE 34

2. CITY OF PORTLAND MAINE BLUE SHEET FOR FOREST AVENUE, PLEASANT AVENUE, CONCORD STREET AND CLINTON STREET.

3. PLANS AND WORKSHEETS ON FILE WITH THE E.C. JORDAN CO. 1881 THROUGH 1944.

Notes:

1. OWNER OF RECORD: CLARK MEMORIAL UNITED METHODIST CHURCH, 15 PLEASANT AVENUE, PORTLAND, MAINE, C.C.R.D. BOOK 364 PAGE 152, BOOK 1158 PAGE 119, BOOK 4013 PAGE 211.

2. PROPERTY IS SHOWN AS TAX MAP 130-I-12, 14 AND TM 130-H-13 ON CITY OF PORTLAND'S ASSESSORS MAP.

3. BEARINGS ARE MAINE STATE PLANE COORDINATE SYSTEM NAD 83 PER CITY POINTS

4. ELEVATIONS ARE NGVD 1929, CITY BENCH MARK, 3' OFFSET MONUMENT NORTHERLY SIDE OF CONCORD STREET AT FIRST ANGLE WESTERLY OF FOREST AVENUE, ELEVATION = 65.89'.

Utility Note:

THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE. THE SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES. CALL 1-888-DIGSAFE AT LEAST THREE BUSINESS DAYS BEFORE PERFORMING ANY CONSTRUCTION. DUE TO OSHA CONFINED SPACE REQUIREMENTS, ALL INVERTS AND PIPE SIZES MUST BE VERIFIED PRIOR TO ANY CONSTRUCTION.

Flood Zone Note:

BY GRAPHIC PLOTTING ONLY, THIS PROPERTY IS IN ZONE X, AREAS DETERMINED TO BE OUTSIDE OF 500-YEAR FLOOD PLAIN, OF THE FLOOD INSURANCE RATE MAP, COMMUNITY PANEL NO. 230051 0007C, WHICH BEARS AN EFFECTIVE DATE OF DECEMBER 8, 1998 AND IS NOT IN A SPECIAL FLOOD HAZARD AREA.

Zoning Information:

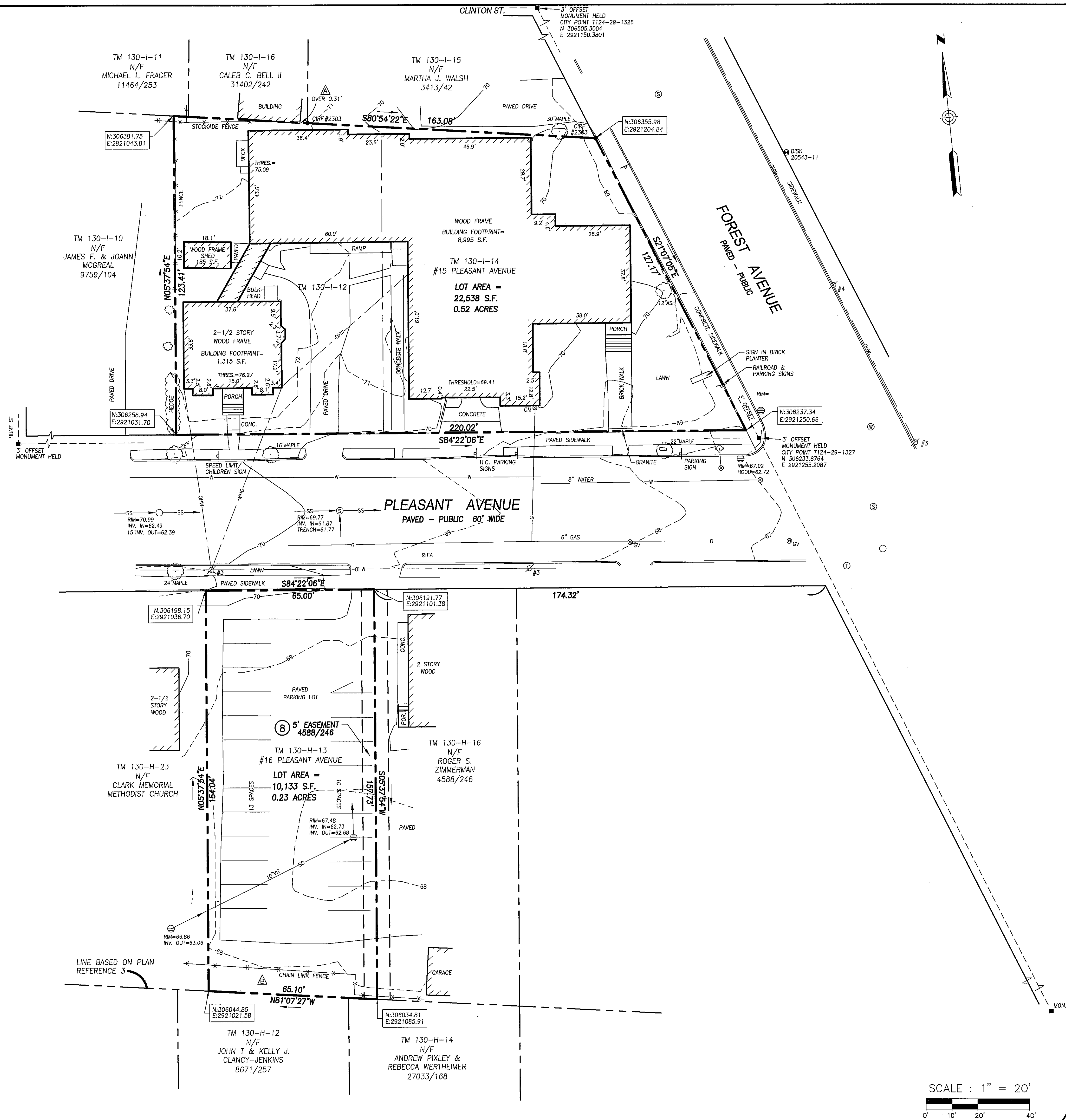
NONE PROVIDED BY TITLE INSURER

Possible Encroachments

- ▲ BUILDING ONTO PROPERTY 0.3'
- ▲ OCCUPIED BY JENKINS

Legend:

- | | |
|--------------------------|------------------------|
| ● IRON PIPE OR ROD FOUND | — CURB |
| ⊙ GAS VALVE | — FENCE |
| ⊙ WATER VALVE | — OHW— OVERHEAD WIRES |
| ⊙ HYDRANT | — W— WATER LINE |
| ⊙ UTILITY POLE | — G— GAS LINE |
| ⊙ MANHOLE | — SS— SANITARY SEWER |
| ⊙ CATCH BASIN | — SD— STORM DRAIN |
| — SIGN | — 70— 1' CONTOUR |
| ⊙ GM GAS METER | N/F NOW OR FORMERLY |
| ⊙ DECIDUOUS TREE | 000/000 DEED BOOK/PAGE |
| | ① SCHEDULE B EXCEPTION |



Legal Description

15-19 PLEASANT AVENUE:

A CERTAIN LOT OR PARCEL OF LAND, WITH THE BUILDINGS THEREON, SITUATED ON THE NORTHERLY SIDE OF PLEASANT AVENUE AND SOUTHWESTERLY SIDE OF FOREST AVENUE, IN THE CITY OF PORTLAND, COUNTY OF CUMBERLAND AND STATE OF MAINE, FORMERLY WESTBROOK, BEING NUMBERED 1 AND 2 AS SHOWN ON A PLAN OF CLARK AND LOVELL'S LAND, RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN PLAN BOOK 1, PAGE 34, TO WHICH PLAN REFERENCE IS HEREBY MADE FOR A MORE PARTICULAR DESCRIPTION OF SAID LOT.

ALSO, ANOTHER CERTAIN LOT OR PARCEL OF LAND, WITH THE BUILDING THEREON, SITUATED ON THE NORTHERLY SIDE OF PLEASANT AVENUE AT THE INTERSECTION OF A LINE DRAWN PARALLEL WITH AND TEN (10) FEET DISTANT WESTERLY FROM THE WESTERLY SIDE LINE OF THE BRICK FOUNDATION WALL OF THE CLARK MEMORIAL CHURCH; THENCE FROM SAID POINT RUNNING NORTHERLY ON THE LINE PARALLEL WITH AND TEN (10) FEET DISTANT WESTERLY FROM SAID WALL ONE HUNDRED TWELVE (112) FEET, MORE OR LESS, TO LAND NOW OR FORMERLY OF ONE ROYAL LEIGHTON; THENCE NORTHWESTERLY ON THE LINE OF LINE OF LAND FORMERLY OF ROYAL LEIGHTON EIGHTY (80) FEET; THENCE SOUTHERLY ONE HUNDRED TWELVE (112) FEET, MORE OR LESS, TO THE POINT OF BEGINNING.

16 PLEASANT AVENUE: PARKING LOT

A CERTAIN LOT OR PARCEL OF LAND WITH THE BUILDING THEREON, LOCATED IN THE CITY OF PORTLAND, IN THE COUNTY OF CUMBERLAND AND STATE OF MAINE, ON THE SOUTHERLY SIDE OF PLEASANT AVENUE AND BOUNDED AND DESCRIBED AS FOLLOWS: COMMENCING AT THE NORTHEASTLY CORNER OF LAND CONVEYED BY MARION W. LITTLEFIELD TO MILDRED G. BODWELL BY DEED DATED AUGUST 15, 1940 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 1614, PAGE 118, BEING THE NORTHEASTLY CORNER OF LOT 5 AS SHOWN ON PLAN OF LAND OF CLARK AND LOVELL RECORDED IN SAID REGISTRY OF DEEDS IN PLAN BOOK 1, PAGE 34; THENCE EASTERLY BY SAID PLEASANT AVENUE ONE HUNDRED TWENTY (120) FEET, MORE OR LESS, TO THE NORTHEASTLY CORNER OF LAND CONVEYED BY CLARENCE A. WESTON TO MARION W. LITTLEFIELD BY DEED DATED JULY 14, 1923 AND RECORDED IN SAID REGISTRY OF DEEDS IN BOOK 1143, PAGE 139; THENCE SOUTHERLY NINE (9) RODS AND FIFTEEN (15) LINKS, MORE OR LESS, AND ON A COURSE WHICH WAS ON OCTOBER 2, 1866 SOUTH EIGHTEEN AND THREE-FOURTHS DEGREES WEST, TO LAND FORMERLY OF WILLIAM MITCHELL; THENCE WESTERLY BY SAID MITCHELL LAND ONE HUNDRED TWENTY (120) FEET, MORE OR LESS, TO THE SOUTHEASTLY CORNER OF LOT 5 AS SHOWN ON SAID PLAN OF CLARK AND LOVELL; THENCE NORTHERLY BY THE EASTERLY LINE OF LOT 5, FORMERLY OF MILDRED G. BODWELL, AND PARALLEL TO THE SECOND COURSE, TO THE POINT OF BEGINNING. BEING LOT 4 AND THE MAJOR PORTION OF LOT 3 AS SHOWN ON SAID PLAN OF CLARK AND LOVELL.

EXCEPTING FROM THE 16 PLEASANT AVENUE PARCEL IS A CERTAIN LOT OR PARCEL OF LAND WITH THE BUILDING THEREON, SITUATED IN THE CITY OF PORTLAND, IN THE COUNTY OF CUMBERLAND AND STATE OF MAINE, ON THE SOUTHERLY SIDE OF PLEASANT AVENUE AND BOUNDED AND DESCRIBED AS FOLLOWS:

COMMENCING AT AN IRON SET IN THE GROUND ON THE SOUTHERLY SIDELINE OF SAID PLEASANT AVENUE AT THE NORTHEASTLY CORNER OF LAND CONVEYED BY CLARENCE A. WESTON TO MARION W. LITTLEFIELD BY DEED DATED JULY 14, 1923 AND RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 1143, PAGE 139; THENCE SOUTH 18° 45' WEST, WHICH COURSE WAS ON OCTOBER 1866 SOUTH 18 3/4° WEST, 158.40 FEET BY OTHER LAND OF CLARK MEMORIAL UNITED METHODIST CHURCH AND BY LAND NOW OR FORMERLY OF MCMANN TO AN IRON SET IN THE GROUND AT LAND FORMERLY OF WILLIAM MITCHELL AND NOW OR FORMERLY OF MORES; THENCE NORTH 69° 17' WEST BY SAID LAND OF MORSE AND BY LAND NOW OR FORMERLY OF PINKHAM, 55.03 FEET TO AN IRON; THENCE NORTH 18° 45' EAST BY OTHER LAND OF CLARK MEMORIAL UNITED METHODIST CHURCH, 156.51 FEET TO A P.K. SPIKE SET IN THE GROUND ON THE SOUTHERLY SIDELINE OF SAID PLEASANT AVENUE; THENCE SOUTH 71° 15' EAST BY SAID PLEASANT AVENUE, 55 FEET TO THE POINT OF BEGINNING.

ALTA/ACSM Land Title Survey

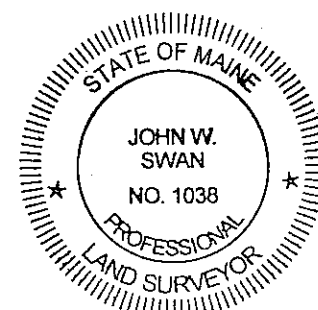
15-19 & 16 Pleasant Avenue
Portland, Cumberland County, Maine
made for
Hardypond Development Company, LLC

Surveyor's Certification

TO: HARDYPOND DEVELOPMENT COMPANY, LLC, FIRST AMERICAN TITLE INSURANCE COMPANY

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH THE 2011 MINIMUM STANDARD DETAIL REQUIREMENTS FOR ALTA/ACSM LAND TITLE SURVEYS, JOINTLY ESTABLISHED AND ADOPTED BY ALTA AND NSPS. THE FIELD WORK WAS COMPLETED ON MAY 7, 2015.

JOHN W. SWAN
PROFESSIONAL LAND SURVEYOR NO. 1038
IN THE STATE OF MAINE
DATE OF PLAN: MAY 13, 2015
REVISION DATE:
OHI JOB NO. 2015-058P



OWEN HASKELL, INC.
PROFESSIONAL LAND SURVEYORS
390 U.S. ROUTE ONE, UNIT 10
FALMOUTH, MAINE 04105
Tel. (207) 774-0424 www.owenhaskell.com

PORTLAND ZONING

ZONE B2c

1. MULTI FAMILY IS PERMITTED USE
2. MINIMUM LOT ARE PER DWELLING UNIT -
- A. 1,500 SF GENERALLY.
- 435 SF IN PROJECTS WITH "ACTIVE STREET FRONTS" PER SECTION 14-188.

A BUILDING WILL BE DETERMINED TO HAVE AN ACTIVE STREET FRONTAGE UPON MEETING THE FOLLOWING GUIDELINES TO THE GREATEST EXTENT PRACTICABLE AS DETERMINED BY THE PLANNING BOARD OR PLANNING AUTHORITY:

- a. THE PRIMARY BUILDING FAÇADE SHALL BE WITHIN TEN FEET OF THE FRONT STREET LINE;
- b. THERE SHALL BE NO PARKING ON THE LOT WITHIN 35 FEET OF THE FRONT STREET LINE;
- c. NO MORE THAN 35% OF THE FIRST FLOOR PRIMARY FAÇADE SHALL CONSIST OF ACCESS TO GARAGES, UNUTILIZED SPACE, SERVICE ENTRANCES, STORAGE OR MECHANICALS, AND THE REMAINING 75% SHALL HAVE AN AVERAGE DEPTH OF A MINIMUM OF 20 FEET FOR RESIDENTIAL OR COMMERCIAL USES;
- d. ALL PRIMARY GROUND FLOOR ENTRIES TO MULTI-FAMILY BUILDINGS MUST ORIENT TO THE STREET, NOT TO INTERIOR BLOCKS OR PARKING LOTS.

- B. PARKING - 1 SPACE PER DWELLING UNIT.

ZONE R5

1. PERMITTED USE - SINGLE & TWO FAMILY DWELLINGS.
2. DIMENSIONAL REQUIREMENTS
- A. MIN. LOT AREA - 6,000SF GENERALLY
- B. MIN. STREET FRONTAGE - 50'
- C. FRONT YARD - 20'
- D. REAR YARD - 20'
- E. SIDE YARD - 8' - 14' DEPENDING ON HEIGHT
- F. MIN. LOT WIDTH - 60'
3. PARKING - 2 SPACES PER DWELLING UNIT.

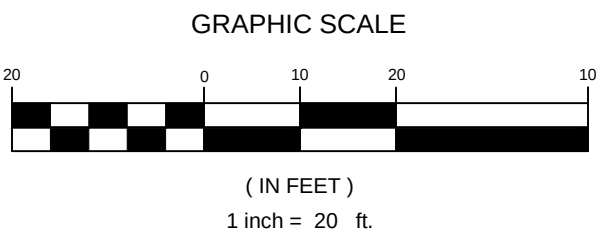
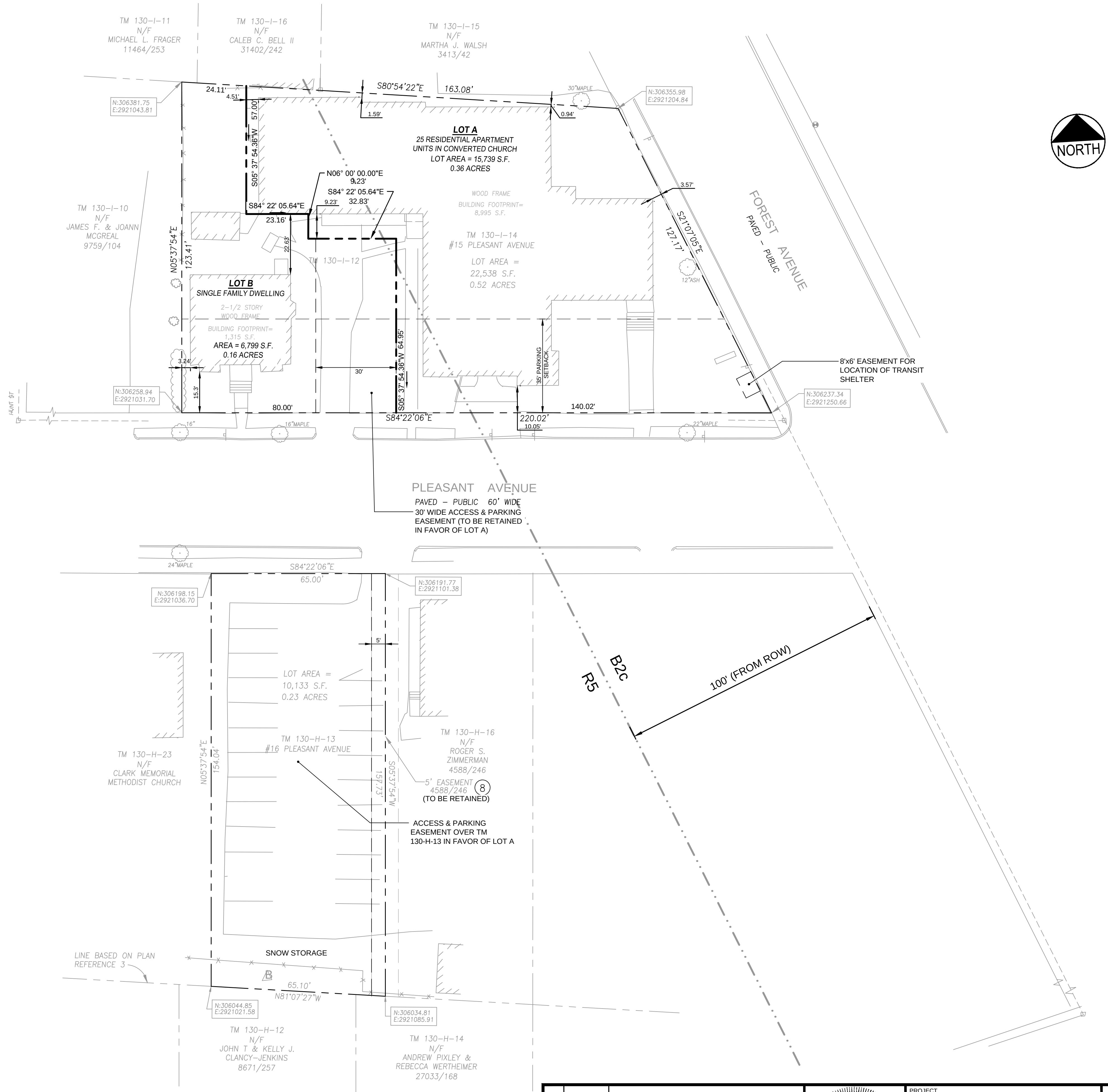
DENSITY CALCULATION

AREA OF LOT A IN Bc ZONE = 13,094 SF

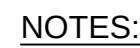
AREA OF LOT B IN R5 ZONE = 2,858 SF

B2c REQUIRES 435 SF/DWELLING UNIT

UNITS ALLOWED = 13,094 / 4 = 30



PRELIMINARY - NOT FOR CONSTRUCTION



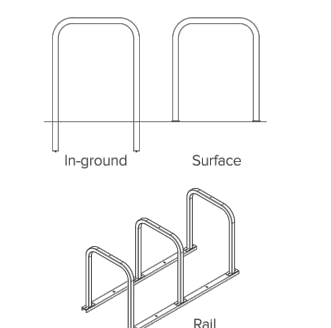
- ## BITUMINOUS CONCRETE PAVEMENT SECTION OVER EXISTING BASE MATERIAL

N.T.S.



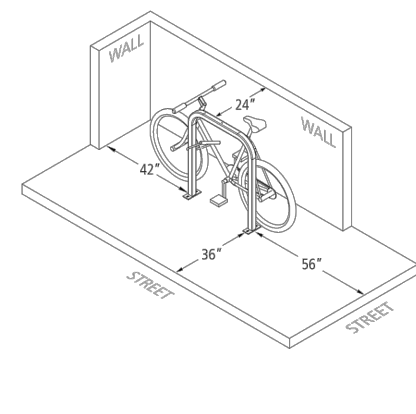
- ## STANDARD DUTY
- ### BITUMINOUS CONCRETE PAVEMENT SECTION

N.T.S.



- MOUNT OPTIONS**

 - ☐ **In-ground**
In ground mount is embedded into concrete base. Specify in ground mount for this option.
 - ☐ **Surface**
Foot Mount has two 2.5"x6"x.25" feet with two anchors per foot. Specify foot mount for this option.
 - ☐ **Rail**
Rail Mounted Downtown Racks are bolted to two parallel rails which can be left freestanding or anchored to the ground. Rails are heavy duty 3"x1.4"x3/16" thick galvanized mounting rails. Specify rail mount for this option.



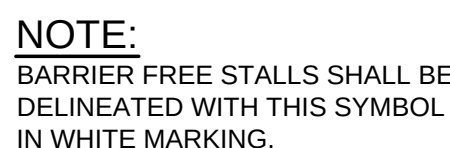
DOWNTOWN RACK - SPECIFICATIONS AND SPACE USE

N.T.S.



- TYPICAL PAVEMENT SECTION
NEW PAVEMENT ADJACENT TO EXISTING PAVEMENT

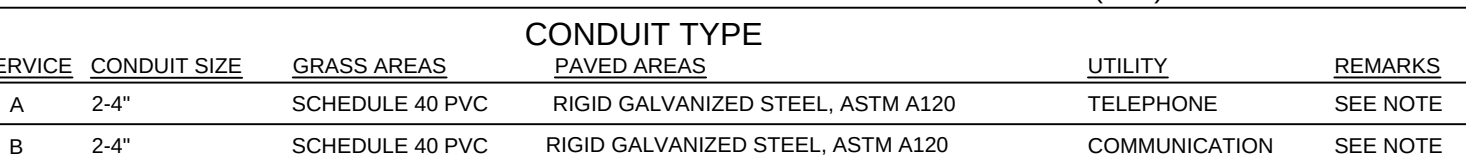
N.T.S.



WORKING SPACE

 INTERNATIONAL BARRIER FREE SYMBOL

N.T.S.



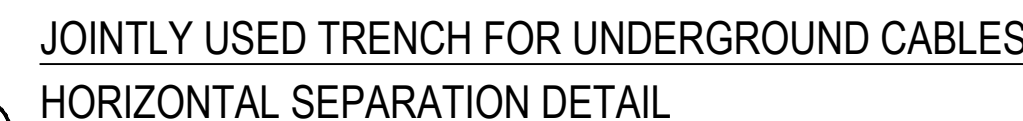
UTILITY TRENCH

TELEPHONE & COMMUNICATIONS

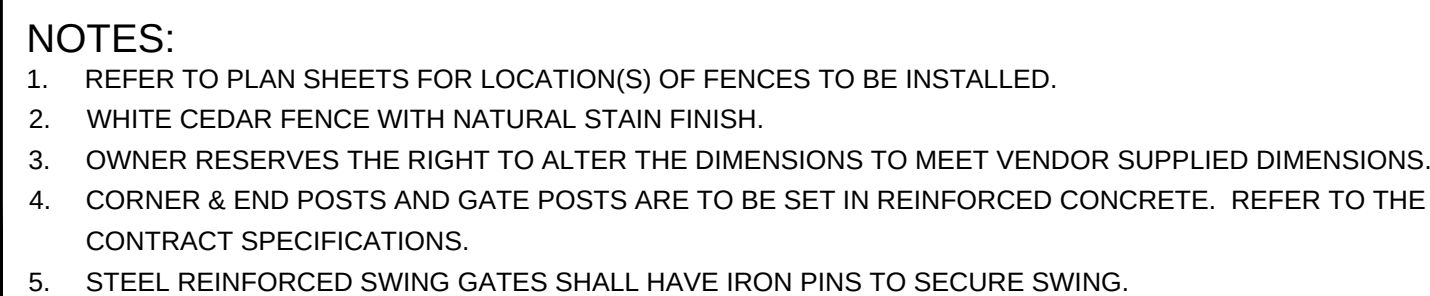
N.T.S.



N.T.S.



NTS



PRIVACY STYLE FENCE WITH VERTICAL TOP SECTION

NTS

PROJECT 3 PLEASANT AVENUE
CHURCH RE-DEVELOPMENT

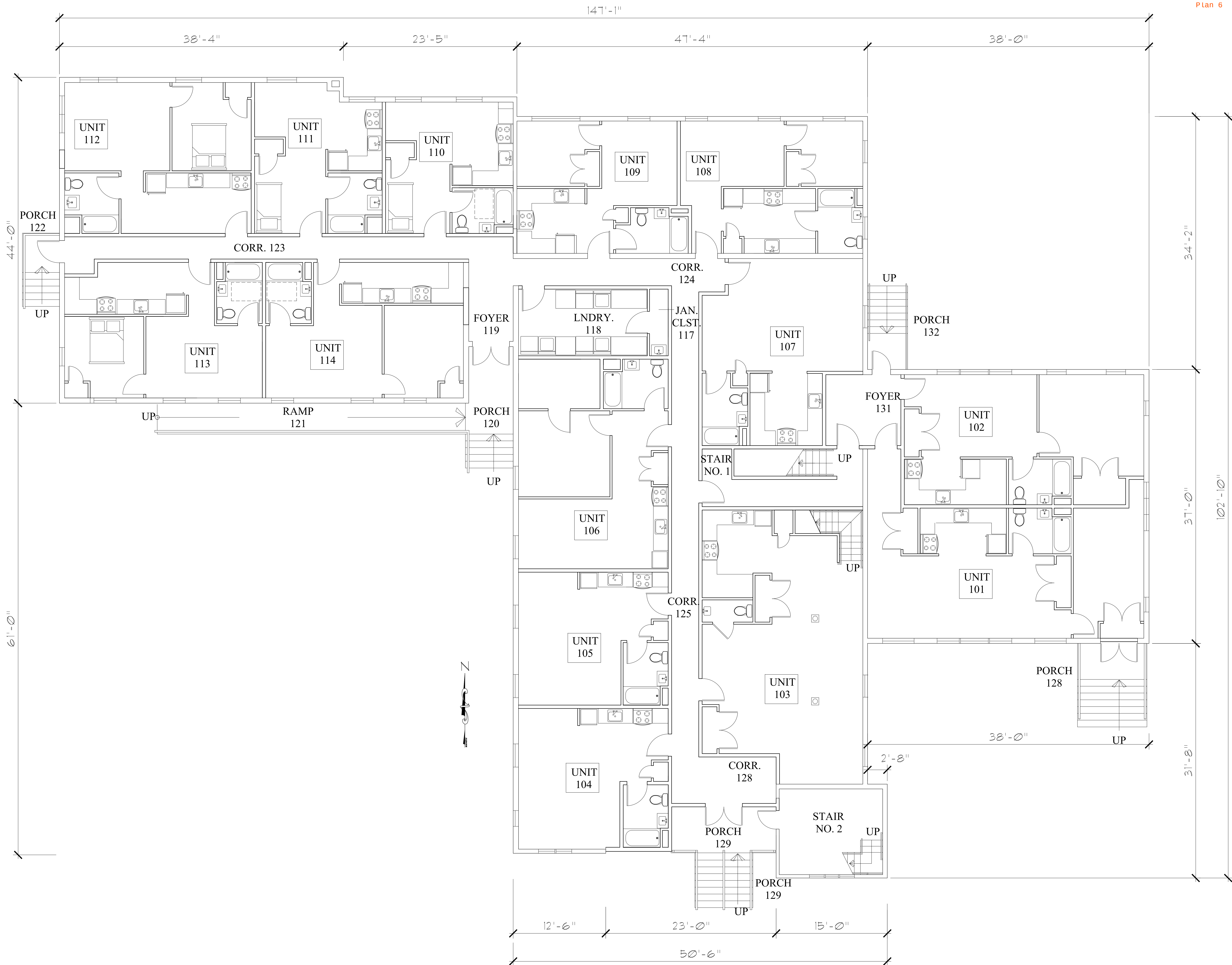
SHEET TITLE

CLIENT
HARDYPOND DEVELOPMENT
COMPANY, LLC

FST
100 YEARS

FAY, SPOFFORD & THORNDIKE
ENGINEERS • PLANNERS • SCIENTISTS
778 MAIN ST, SUITE 8, SOUTH PORTLAND, ME 04106

DRAWN:	PBF	DATE:	
DESIGNED:		SCALE:	NTS
CHECKED:		JOB NO.	
FILE NAME:	SP-M167 DETAILS		
SHEET	C-4.0		





Drawing

SECOND FLOOR PLAN

Date:

9/18/15

Project:

Scale:

1/4" = 1'-0"

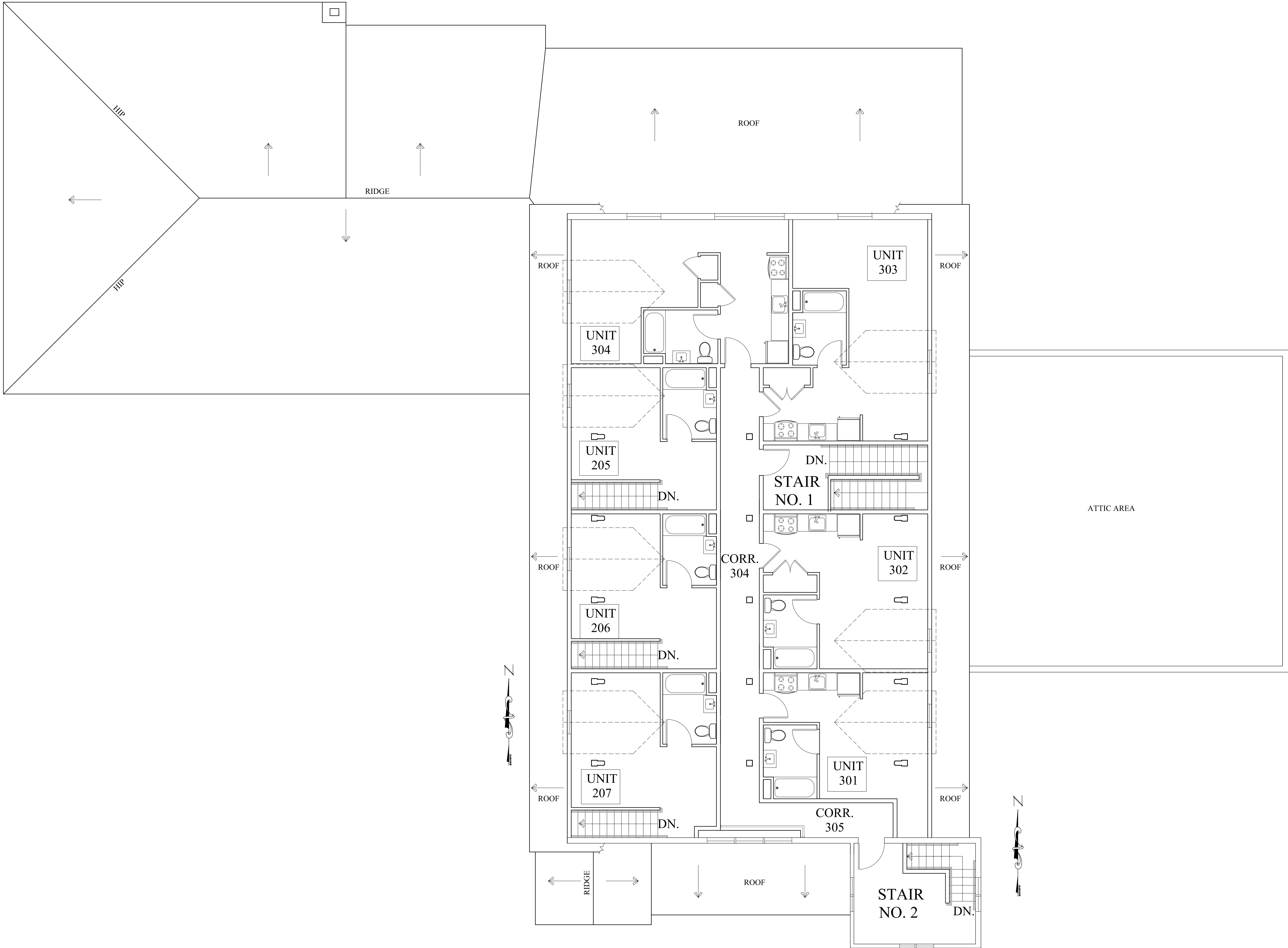
PLEASANT AVENUE
PORTLAND, MAINE

Architect

SHIELDS ARCHITECTURE
CUMBERLAND, MAINE
(207) 776-8926

Owner

SHALOM HOUSE, INC.
106 Gilman Street
Portland, Maine 04102





SOUTH (PLEASANT AVENUE) ELEVATION

GENERAL NOTE

ASPHALT SHINGLE ROOFING, VINYL SIDING
AND BRICK FOUNDATIONS ARE TYPICAL.

KEYED NOTES

- 1 NEW BRICK FOUNDATION TO
MATCH EXISTING.
- 2 NEW WOOD STEPS.
- 3 NEW DOOR.
- 4 NEW SIDING TO MATCH EXISTING.
- 5 NEW WINDOW.
- 6 NEW DORMER (TYP.)



EAST (FOREST AVENUE) ELEVATION

Drawing

SOUTH & EAST
ELEVATIONS

Date
9/18/15

Project:

PLEASANT AVENUE
PORTLAND, MAINE

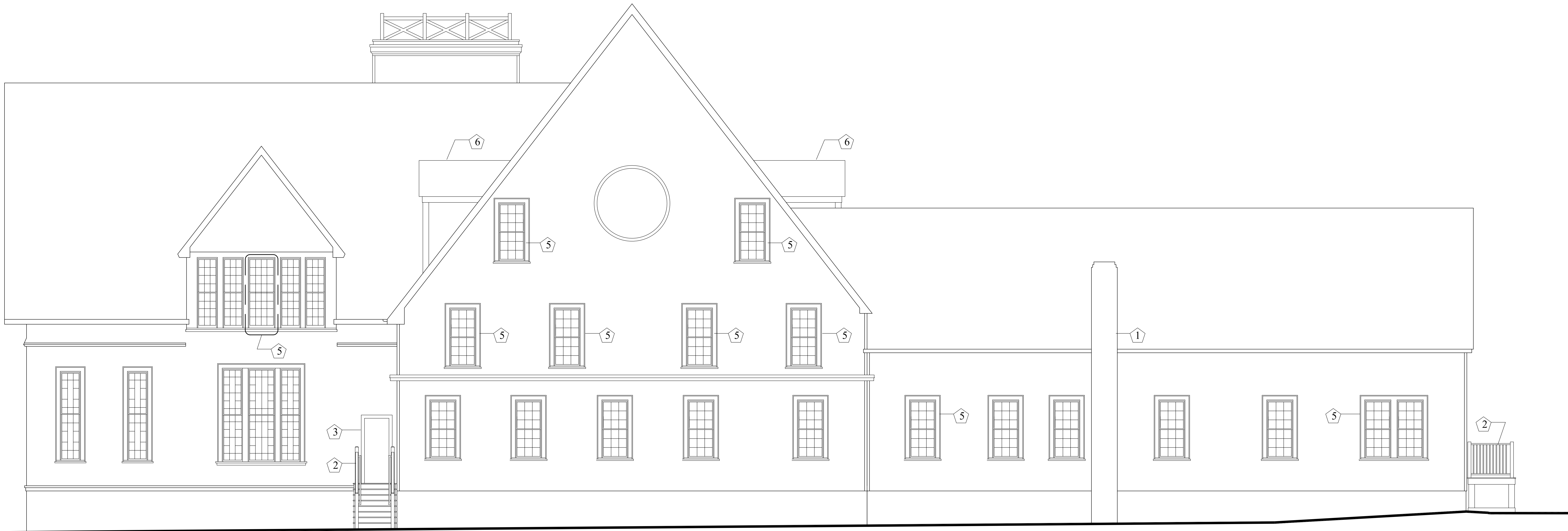
Scale
1/4" = 1'-0"

Architect

SHIELDS ARCHITECTURE
CUMBERLAND, MAINE
(207) 776-8926

Owner

SHALOM HOUSE, INC.
106 Gilman Street
Portland, Maine 04102



NORTH ELEVATION

GENERAL NOTE

ASPHALT SHINGLE ROOFING, VINYL SIDING
AND BRICK FOUNDATIONS ARE TYPICAL.

KEYED NOTES

- 1 EXISTING CHIMNEY.
- 2 NEW WOOD STEPS.
- 3 NEW DOOR.
- 4 NOT USED.
- 5 NEW WINDOW.
- 6 NEW DORMER (TYP.)



WEST ELEVATION

SHALOM HOUSE, INC.
106 Gilman Street
Portland, Maine 04102

SHIELDS ARCHITECTURE
CUMBERLAND, MAINE
(207) 776-8926

PLEASANT AVENUE
PORTLAND, MAINE

NORTH & WEST
ELEVATIONS

A-7

From: Lorrie Ferrari <lorrieferrari@gmail.com>
To: <HCD@portlandmaine.gov>
Date: 7/31/2015 3:04 PM
Subject: Forest and Pleasant Ave project

Hello

I would like to voice my support for this as this type of housing is badly needed. People cannot be successful if they have no place to live and that includes the homeless shelter as that is no place to live. I am sure you will hear the NIMBY argument from the Preserve Deering Neighborhood but this city does not need to push out those less fortunate and Shalom House does a wonderful job housing folks with very challenging conditions

Thank you

Lorrie Ferrari
Belfield St
Portland

From: Theresa Puckett <theresap19@hotmail.com>
To: "bab@portlandmaine.gov" <bab@portlandmaine.gov>
Date: 8/19/2015 10:30 AM
Subject: Proposed development at 3 Pleasant Ave

I was out of the country when the notice came for the public meeting that was in regards to the proposed development of 3 Pleasant Ave, Portland.

I would like to express my concerns regarding the plan to develop 25 apartments in this space. I am very concerned about the density of this development and think it is totally unreasonable for this small space and area. Parking would also be an issue as it is already at a premium. There are already several apartments on this end of the street that don't include parking and this is especially problematic during the winter. Also, I am not aware of any apartment in our residential neighborhood, that has more than 8 units.

I would like a copy of the minutes of the meeting from 8/13/15.

You are welcome to call me at 772-4176.
I live at 48 Pleasant Ave.

Theresa Puckett

From: Betty Libby <bettjlibb@yahoo.com>
To: "hcd@portlandmaine.gov" <hcd@portlandmaine.gov>
Date: 8/24/2015 11:50 AM
Subject: 3 Pleasant Avenue - Shalom House

Dear Ms. Donaldson:

I received your notice regarding the plans for 3 Pleasant Avenue. A number of residents on Pleasant Avenue are concerned by the already lack of parking especially during the odd/even parking days. There seems to be no need for this in the first place since the street sweeper does not sweep the streets on a daily basis. We do not want to pay parking tickets due to no place close to park.

Is this proposal for single person apartments? Are there going to be more residents in each apartment with potentially more cause for more than an one vehicle? 14 spaces and 2 handicap spaces is already 10 parking spots shy of what there should be for 25 apartments and a single family home.

Is the town going to consider changing the even/odd parking issue to both sides of the street parking to alleviate the potential parking issue? At times people on our street already have to park and walk a great distance with this even/odd parking and with more cars on this road something should be done to relieve the owners and residents who already live on this street. Some of us work late nights and do not want to walk in the dark great lengths, our safety is an issue.

I would like to continue to receive notification of public hearings. Please take this real concern to the Planning Board.

I would also like more information on what type of housing Shalom House is?

Thank you. Betty Libby 38 Pleasant Avenue Portland Maine

From: philz21 <philz21@yahoo.co.uk>
To: <hcd@portlandmaine.gov>
CC: Sarah Chamberlain <sk.chamberlain@yahoo.com>
Date: 8/26/2015 6:06 PM
Subject: Clark Church Project

Hi Nell, My name is Philip Chamberlain. Along with my wife Sarah and our family, we are residents on Clinton street. I understand you can put is on an email list about this project, could you add mine and I've cc'd my wife's to be added too. We are both in favor of working class housing being developed on this lot rather than the current proposal of having a very large Shalom House built with residents who will mostly be unemployed and unsupervised. We are hearing from our neighbours that they have the same concerns and the community are in favor of the above proposal rather than the current proposal. We will be attending the Planning Board meeting on the 8th. Is there anything else we should be aware of or doing to communicate our very grave concerns to the planning board and the city? Thanks for your help. Sincerely, Phil

Sent from my Verizon Wireless 4G LTE smartphone

From: Marina Schneller <marinaschneller@yahoo.com>
To: "hcd@portlandmaine.gov" <hcd@portlandmaine.gov>
Date: 8/31/2015 12:42 PM
Subject: Clark Memorial Church [formerly] Redevelopment proposal : Neighborhood meeting, Thurs. August 13 2015

I received the postcard entitled IMPORTANT NOTICE FROM CITY OF PORTLAND' and subsequently the August 3, 2015 invitation from FST to attend the Neighborhood Meeting and did attend.

The meeting was attended by other residents in the vicinity of the former Church. Generally those residents, who bear high assessments and property tax rates--who pay Portland property tax and probably income tax to both the state of Maine and the U.S. Treasury--were concerned 1] for the safety of children in the neighborhood who may attend any one of the three local schools: two of the schools are three blocks from the Clark Memorial [DHS and Longfellow] while Lincoln Junior is about 5 blocks from the site; 2] for the residents' property values and 3] for the residents' safety and well-being. While Forest Ave. may enjoy commercial zoning, it and the Church are contiguous to an area zoned substantially residential.

The City Notice indicated that the Church conversion to 25 apartments was for Shalom House. One of the several posters at the Church recited that the mission of Shalom House was to "give hope to adults with severe mental illness." This 'mission' statement also appeared in a meeting handout. The following points were developed in response to questions posed by the residents and answered by the panel: There will be no custodian on the premises of the converted Church. Of the 25 occupants of the converted Church, 10 - 15% may work [that is, 2.5 to 3.75 of the 25 occupants may work]. Shalom House spends a lot of money on bed bug infestation. At least some of the Shalom facilities in other areas of Portland have required police intervention [no reference to these occurrences were made in any of the handouts]. It is intended that the single family house will be sold. [in the city's NOTICE, it is stated that, the large parking lot across the street from the former 'Church' will have 12 parking spaces, with 2 handicapped spaces on site and 2 spaces on lot B for the single family home'.---it is pretty hard to determine where the last 4 parking spaces will occur.] That is a total of 16 parking spaces one or two structure(s) removed from Forest Ave. Apparently --Portland Landmark recommends retention of the stained glass opaque windows--Difficult to see how additional windows can be added. Portland Landmark should review this. Some occupants will be sleeping in the rafters...there was no proposal for skylights. The following quid pro quo issues were developed in response to residents' questioning. The project will cost about 2 million dollars. The housing will be substantially Section 8 Housing. The Lenders will obtain [low-income] tax credits. There appears to be no tax benefit to the city.

The question which should arise is pretty transparent.
 Marina Schneller

From: Betty Libby <bettjlibb@yahoo.com>
To: Helen Donaldson <HCD@portlandmaine.gov>
Date: 10/8/2015 1:14 PM
Subject: Re: neighborhood meeting - 3 Pleasant Avenue

Hi Helen/Nell: I am unable to attend the neighborhood meeting as I have to work.

However, could it be noted for the record that I have a concern with the parking issue for that many proposed apartments on Pleasant Avenue where we are required to do an even/odd parking.

I feel strongly that with 25 apartments and a single family home that the lot for 12 spaces is not adequate and will result in excessive overflow to on street parking.

To alleviate this situation the City of Portland should allow parking on both sides of the street so current real estate owners or tenants do not have to park an incredible distance (as is already the case on some evenings) or have the threat of receiving parking tickets.

Pleasant Avenue is also a difficult street to pull out into Forest Avenue, especially turning left. I foresee great congestion with so many apartments/cars in one small area. A street light should be considered to prevent accidents and help with flow of traffic.

Thank you for sharing this with the planning board members. Betty Libby 38 Pleasant Avenue Portland Maine 04103

On Tuesday, October 6, 2015 9:09 AM, Helen Donaldson <HCD@portlandmaine.gov> wrote:

To Whom It May Concern: Attached please find a pdf of the neighborhood meeting notice for the revised plans for the redevelopment of the former church at 3 Pleasant Avenue. The meeting will be held at 6 pm on Thursday, 10/8/15. I apologize that I am only forwarding it now, as I just received it here. Again, I will let you know as soon as the planning board workshop on this item is scheduled. Best, Nell

Nell Donaldson
 City of Portland Planning Division
 389 Congress Street
 Portland, Maine
 04101874-8723
 hcd@portlandmaine.gov

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PLANNING BOARD REPORT PORTLAND, MAINE

Recommendation of Historic Preservation Board to Designate Portland Company Historic District 58 Fore Street

Submitted to: Portland Planning Board Public Hearing Date: October 27, 2015	Prepared by: Deborah Andrews, HP Program Manager Date: September 4, 2015 and October 22, 2015
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Note: The following report was prepared in advance of the Planning Board's scheduled September 8 public hearing on the proposed historic district designation. On September 8, the Planning Board agreed to table the public hearing to October 27 to allow time for the property owner to submit additional information related to the condition of Building #1. The Board directed the property owner to submit any additional information to the Historic Preservation for its review and comment in advance of the new hearing date. The supplementary information provided to the Historic Preservation Board at its October 21 meeting, together with a summary of the HP Board's comments are included in ATTACHMENT 14. Public comment received since September 8 is enclosed as ATTACHMENT 15.

INTRODUCTION

The Planning Board will hold a public hearing and final deliberations on a recommendation by the Historic Preservation Board to designate a portion of the property at 58 Fore Street as a local historic district subject to the provisions of Article IX (Historic Preservation) of the Land Use Code. The Planning Board's role in this matter is to determine whether the nominated **Portland Company Historic District** meets applicable designation criteria in Division 3 of the historic preservation ordinance, specifically the criteria identified in Sec. 14-610 (a) and (b). The Planning Board is also charged with considering the effect of such designation on other aspects of the Comprehensive Plan. Based on its determination, the Planning Board will forward its recommendation regarding designation of the Portland Company Historic District to the City Council, which has the final authority as regards local designation of nominated historic properties.

The proposed designation applies to an area occupying approximately 4.3 acres of the 9.93 acre 58 Fore Street parcel and includes 8 identified contributing structures, the footprint of several structures classified as noncontributing due to physical condition or date of construction and common areas associated with the historic Portland company complex.

A workshop on the proposed designation was held on July 28, 2015. Much of the material provided in the July 28 workshop memo is included in the public hearing report. **New material** included in this report includes:

- Responses to questions raised during the preliminary workshop--see Section IX of the report, page 14. Additional attachments related to these responses are enclosed as ATTACHMENTS 10, 11, 12 and 13.
- An evaluation of the effect of the proposed designation on other aspects of the Comprehensive Plan, prepared by Senior Planner Christine Grimando—see Section X of the report, page 19
- Motions for the Board’s consideration

I. HISTORIC PRESERVATION BOARD RECOMMENDATION

On June 24, 2015, the Historic Preservation Board voted 7-0 to recommend to the Planning Board and City Council that the Portland Company complex at 58 Fore Street be designated a local historic district as delineated below and as further defined/described in the attached Portland Company Historic District Designation Report—see [ATTACHMENT 2](#). The Historic Preservation Board’s recommendation was based on findings that the proposed district meets the designation criteria in Division 3 (Categories and Criteria for Designation) of the historic preservation ordinance (Article IX of the Land Use Code).



II. ROLE OF THE HISTORIC PRESERVATION BOARD IN THE DESIGNATION PROCESS

As prescribed in Portland's historic preservation ordinance, the Historic Preservation Board's role in the designation of landmarks and historic districts is to review the merits of the nomination and, based on findings as to whether or not the nominated resource meets the ordinance's designation criteria, forward a recommendation regarding designation to the Planning Board and Council for their consideration. The ordinance requires that the Historic Preservation Board's recommendation be accompanied by a report which includes the following information (see Sec. 14-617):

- Explanation of the significance or lack of significance of the nominated district as it relates to the ordinance's criteria for designation
- Explanation of the integrity or lack of integrity (as defined in the ordinance) of the nominated historic district.
- Any proposed design guidelines for review of alterations or construction in the proposed historic district
- Explanation of the relationship of the nominated district to the ongoing effort by the Historic Preservation Board to identify and nominate potential areas, sites and structures that meet the criteria for designation.
- A map showing the boundaries of the nominated district.
- A list of every site, structure and object in the nominated historic district indicating their degree of cultural, historic, architectural or archaeological significance by classification as of a landmark or contributing significance.

The formal **Portland Company Historic District Designation Report**, including map and building classifications, is enclosed as ATTACHMENT 2. The report reflects the findings of the Historic Preservation Board and is informed by documentation and analysis provided in two consultant reports commissioned by the Portland Planning Department for the City's evaluation of a potential Portland Company historic district. These include *The Portland Company: Historic Significance and Integrity*, prepared by Sutherland Conservation & Consulting (ATTACHMENT 4) and *Portland Company Complex General Building Condition Report*, prepared by Resurgence Engineering and Preservation Inc. (ATTACHMENT 5).

III. ROLE OF THE PLANNING BOARD

In the case of a recommendation for historic district designation, the Historic Preservation Board forwards its recommendation to the Planning Board for its review and recommendation to the City Council. (Recommendations for individual landmark designations are forwarded directly to the City Council.) Like the Historic Preservation Board, the Planning Board must determine whether the district as defined and delineated in the Designation Report meets the minimum criteria for designation set forth in Division 3, Sec. 14-610 (a) and (b) AND Sec. 14-611 of the historic preservation ordinance. These criteria address the *significance, historic and architectural integrity, as well as physical integrity* of the nominated historic district. The Planning Board shall also consider the effect of the proposed designation on other aspects of the comprehensive plan.

IV. BACKGROUND – DOCUMENTATION AND ASSESSMENTS COMMISSIONED BY THE PLANNING DEPARTMENT

In preparation for the Historic Preservation Board’s consideration of the proposed designation, the Planning Department commissioned two detailed reports to provide the level of documentation and assessment needed to fairly evaluate the nominated resource and its eligibility for local historic district designation. Mindful of the fact that the Maine Historic Preservation Commission identified the Portland Company as eligible for listing in the National Register of Historic Places as early as 1976 but that the detailed documentation required for nomination had never been prepared, the Planning Department contracted with Sutherland Conservation & Consulting to document the history of the company (which remained in continuous operation on Fore Street from 1847 to 1982) and to assess its place in the history of Portland and its significance in the history of manufacturing and transportation at the local, state and national levels. The Sutherland report provides a detailed description of the development history of the complex itself as the company evolved to accommodate changes and expansion in production over time. The report also provides a description and assessment of the individual extant historic structures within the complex, describing their respective role in the Portland Company’s operations and their level of historic and architectural integrity. Finally, the Sutherland report provides an analysis of the visual character of the overall building complex.

See ATTACHMENT 4 for a copy of the Sutherland report.

The Planning Department also commissioned a building condition report on the individual structures within the complex. A condition report was important in this instance given the fact that the historic structures within the Portland Company complex appear not to have received any significant level of maintenance, repair or rehabilitation in recent decades and given that the historic preservation ordinance requires that a nominated district not only meet the ordinance’s designation criteria related to *significance*, but also a separate criterion related to the *integrity* of the resource. In order to designate a landmark or historic district, the nominated resource must be found to have sufficient integrity of location, design, *condition*, materials and workmanship to make it worthy of preservation (see Sec. 14-611). The Sutherland report provided adequate information to assess the question of several other relevant aspects of integrity, but it did not address the question of condition.

Although the owners of the property had retained Becker Structural Engineers to provide a condition assessment for their own planning purposes and had provided a copy of the report to the City (see ATTACHMENT 6), Planning and Historic Preservation staff determined that an independent condition assessment would be important to the Board’s deliberations. Resurgence Engineering & Preservation, a structural engineering firm with expertise and experience in historic rehabilitation, was hired by the City to conduct the assessment. It should be noted that the Resurgence report, like the Becker report, was necessarily limited in scope and taken from a “30,000-foot view”. Given the number of buildings to be assessed, the limited budget for the report and the fact that no specific use had yet been identified for any of the buildings which would inform a full assessment of applicable building code, life safety and other requirements, the review was limited to the current condition of the building envelope and structural systems. (The limited parameters of the assessments were acknowledged in both reports.) Additionally, neither consulting firm was asked to explore or recommend specific solutions to address identified building envelope and structural deficiencies.

Although the two condition reports include a fairly detailed written narrative for each building that describes the building envelope and structural system and include observations and identification of issues, both reports also summarize their findings in a rating system for ease of reference—with 1

representing very poor condition and 5 representing a good structural condition. Although the Resurgence report, which came after the Becker report, used the same rating system for ease of comparison, Resurgence provided an alternative rating system as well. As stated in the Resurgence report, “REP believes there is a more accurate and further defined way to classify the buildings in terms of condition.”

In addition to the condition index, both reports provide a “relative structural renovation cost index”. As stated in the Becker report, the cost index was prepared “in an effort to quantify what a renovation might cost”. An inverse rating system was used here—with 1 representing a relatively low renovation cost and 5 representing a relatively high renovation cost. It should be noted that the historic preservation ordinance does not include rehabilitation cost as a factor in the evaluation of nominated historic resources.

A copy of Resurgence Engineering’s *Portland Company Complex General Building Condition Report* is enclosed as ATTACHMENT 5. An excerpted chart from the Resurgence Report (ATTACHMENT 7) provides a building-by-building comparison of Resurgence Engineering’s findings as regards condition and relative rehab cost with those of Becker Structural Engineers.

V. SUMMARY OF PRELIMINARY HP BOARD REVIEW SESSIONS

As noted in the introduction, the Historic Preservation Board held four preliminary workshops on the proposed historic district designation, as well as two site walks.

Workshop and Site Visit to Review History and Significance of Complex

The first workshop, held on September 24, 2014, followed the completion of the Sutherland report. Sutherland’s Scott Hanson made a detailed, illustrated presentation on the history of the Portland Company itself, explaining that it was built in conjunction with construction of the Atlantic & St. Lawrence Railroad and was the first complex in the country built specifically for the manufacture of railroad equipment where the foundry and all of the necessary related shops were located on a single site. He reviewed the extraordinary range of machines, engines and products related to the fields of railroad and marine transportation, industry, manufacturing, and architecture that were produced over the company’s 135-year history, as well as the distribution of its products to industries and municipalities throughout the country. Mr. Hanson also described the pivotal role the Portland Company played in the city of Portland’s development and economy (it was the single largest business in the City in the mid-19th century), as well as that of the state of Maine.

Mr. Hanson also discussed the Portland Company’s “period of significance”, noting that National Register listing requires the identification of a period of significance. (Portland’s ordinance does not specifically require the identification of a period of significance.) The Maine Historic Preservation Commission had determined a period of significance extending from the company’s founding in 1847 to its closing in 1982. Within that period, however, Sutherland found that there are more specific (and more limited) periods of significance for key aspects of the Portland Company’s production. Mr. Hanson indicated that as of the end of World War II, most of the Portland Company’s marine and transportation-related work--the type of engines, machinery and products the company had been founded to produce--had ended and it had diversified its operations to produce a wide range of architectural, industrial and other products. The last building constructed for the express purpose of serving the company’s marine and transportation-related work was the Erecting Building, built in 1918.

In his presentation, Mr. Hanson described the specific role each of the extant buildings played in the overall manufacturing process and the sequence in which products moved throughout the complex—from the initial drawing and pattern-making stage onto the foundry and machine shops and finally, onto assembly in the Erecting Building or Car Shop. Mr. Hanson explained that while some of the Portland Company's original buildings were lost due to fires or were replaced or expanded over time to respond to changing production needs, the historic buildings that remain on the site today collectively encompass the complete historic manufacturing process of the Portland Company. In this respect alone, the Portland Company complex as it exists today is highly significant and underscores Sutherland's finding that *the Portland Company property derives its significance as a complex of related, interdependent structures*. Collectively, the buildings provide a substantially complete record of the type of industry that was located at this site and of the specific functions or steps involved in its fabrication process. The number and size of extant buildings on the site also convey the company's scope and scale of operations during the 19th and 20th centuries.

Mr. Hanson also reviewed Sutherland's findings regarding the historic integrity of each of the extant buildings on the Portland Company property. As Mr. Hanson explained, historic integrity, as defined by the National Register, "is based on the retention of sufficient essential physical features from the historic period, including location, design, setting, materials, workmanship, feeling, and/or association, to convey the significance of a property." Sutherland found that all of the buildings retained sufficient historic integrity to convey the significance of the property. Most of the buildings were found to retain a high degree of historic integrity.

Finally, Mr. Hanson reviewed the visual character of the Portland Company site and described how the complex's visual character contributed to the overall significance of the historic property. Contributing elements to the complex's visual character are the primary entrance drive into the site from Fore Street, which has been the entrance since 1847, as well as the entrance yard which serves the function of entranceway to the linear manufacturing paths of circulation. The entrance yard is also the point from which one can best appreciate the linear alignment of the manufacturing complex. The historic functional organization and placement of the Portland Company buildings in linear proximity to each other is also a major visual characteristic of the site and is unique to Portland in the way that the industrial buildings form private streets or alleys. The overhead pedestrian bridges spanning these private streets were also found to be unique in Portland and contribute to the visual character of the site. As summarized in the Sutherland written report, "to a large degree, the architectural significance of the Portland Company exists in the relationship of the buildings to each other within the complex. The proximity and orientation of the buildings to each other permitted related manufacturing processes to take place in a way that allowed for the efficient progress of stages in the production of the company's products."

Except for a follow-up site walk of the complex in December led by Mr. Hanson, the Historic Preservation Board's consideration of potential historic district designation of the Portland Company was temporarily suspended until April of 2015. Board review was suspended at the request of the Planning Director in order to allow the property owners' pending rezoning request for the property to proceed through review by the Planning Board and Council to conclusion and provide for a sequential review process. Rezoning was felt to be a threshold issue for any potential redevelopment of the site and that consideration of potential historic district designation would appropriately follow.

Formal District Nomination

On February 23, 2015, Board members John Turk and Ted Oldham submitted a formal letter to the Planning Department nominating the Portland Company complex as a local historic district, consistent

with the requirements for nomination and designation set forth in the preservation ordinance. While the previous workshops had been conducted in anticipation of/preparation for the formal designation review process, the nomination letter set the formal process into motion. The letter of nomination was filed as the Planning Board was concluding its review of the rezoning request and the matter was being sent to the City Council for final action.

Workshops and Site visit to Review Building Condition

On April 1, 2015, Al Hodson, principal of Resurgence Engineering, presented his analysis and findings regarding building condition in a detailed workshop session. Like Mr. Hanson, Mr. Hodson provided a building-by-building analysis, describing each building's original structural system and building envelope as well as any modifications which had affected the structural system over time. He reviewed his general observations of condition and highlighted specific areas of concern. He also presented the ratings he had assigned to each building based on his analysis and explained that he had adopted the same rating system used in the Becker report for ease of reference and comparison, while noting that perhaps a more nuanced rating system would provide a more accurate summary of the condition and potential of the buildings. An alternative building condition index was offered for consideration.

Mr. Hodson explained that while all of the buildings had suffered some level of deterioration due to years of deferred maintenance, three buildings stood out as presenting the greatest structural and building envelope challenges. Of the buildings his firm evaluated, three buildings were found to be in the most compromised condition. These were Building #7 (Car Shop), Building #10 (Paint Shop), and Building #11 (Pattern Storehouse). *(Resurgence Engineering's report is enclosed as ATTACHMENT 5. See pg. 2 of Executive Summary; pgs. 25-28 for written condition analysis of each building; pg. 1 of Appendix A for assigned condition and cost rating.*

Mr. Hodson also identified Building #4 as having unique condition issues with an exterior brick masonry wall system that is integrated with built-up iron or steel structural columns, which columns are exposed to weather and in an advanced state of disrepair. The columns at the building exterior would require replacement as part of any rehabilitation program. Detailing for replacement would need to consider both improved performance as well as preservation of historic integrity, including degree of replacement of original material. Like the roof structures at Buildings #1, #2, and #3, Mr. Hodson noted that the roof structure at Building #4 will need to be evaluated for snow load capacity, the decking above the beams will need to be replaced at deteriorated areas and all of the roof sheathing may need replacement. Recognizing these issues, Mr. Hodson's report also noted that the large and consistently framed building has fewer variations in its framing than many other structures on the Portland Company site and this repetition in detailing along with open access to structural members may serve to simplify necessary structural repairs. *(See pg. 1 of Executive Summary, pgs. 19-22 for written condition analysis of Building #4, pg. 1 of Appendix A for assigned condition and cost rating, and pg. 6 of Appendix A for an explanation of the basis for cost opinion conclusions for Building #4.)*

In preparation for the April 1 workshop, Board members were provided copies of the Resurgence Engineering report as well as the Becker Structural Engineers report, which had been produced for the current property owner. During the workshop session, Mr. Hodson made frequent reference to the findings of the Becker report as well as his own. Based on Resurgence's written report and Mr. Hodson's presentation, it appeared that the findings of the two reports were quite similar as regards most buildings. (A comparison chart of the summary rankings for building condition and relative cost to address condition was provided in Mr. Hodson's report (Appendix A, pg. 1) and is enclosed with this report as a separate attachment – ATTACHMENT 7.)

On May 20, a second site walk was conducted of the Portland Company complex, this walk focusing on the issue of condition. Both Mr. Hodson and Paul Becker of Becker Structural Engineers provided commentary, summarizing their findings relative to each building. Given the constraints of a site visit in terms of providing opportunity for Board discussion or public comment, a follow-up workshop session was scheduled for May 27th in City Hall. At the May 27 workshop, Board members shared their observations from the site visit. Staff also provided information about the requirements of the federal and state historic tax credit program and summarized discussions held with staff of the Maine Historic Preservation Commission (MHPC) regarding potential access to tax credits.

Consideration of NPS Certification and Availability of Tax Credits

As the availability of historic tax credits can be a significant factor in the feasibility of an historic rehabilitation project, staff and the HP Board had identified early on in the review process that it would be important to learn more about what might affect the property owners' eligibility for the tax credits. Staff explained that distinctions between Portland's local designation criteria and National Register designation criteria (especially as regards the issue of building condition) made the question of whether current or future owners of the property would be able to take advantage of tax credits fairly complicated. Eligibility for tax credits might be particularly challenging if several buildings were determined under Portland's designation criteria to be noncontributing by virtue of condition. MHPC staff had indicated, however, that if a strong case could be made that the *local* Portland Company Historic District was clearly based on and supported by its local designation criteria, it might be approved as a "Certified Local Historic District" and thereby make the project eligible for federal and state tax credits. A clear and rational basis would have to be demonstrated for the boundaries of the local district and the assigned classifications of individual buildings (landmark, contributing, and noncontributing).

Final Workshop – Preliminary Board Deliberations

On June 10th, the Historic Preservation Board held a final workshop to synthesize the information provided in the various consultant reports, staff reports, site visits and preliminary workshop sessions. While each of the previous workshops had focused on a specific aspect of the Board's overall deliberations, the June 10 session was the first opportunity for Board members to consider the various applicable designation criteria in the aggregate and begin to assign a net "preservation value" for each structure within the complex. The Board also took up the question of appropriate, defensible district boundaries. Chair Benson organized the discussion, focusing on the specific designation criteria (Sec. 14-610 and 611) that must be met in the ordinance and the questions that must be addressed in the designation report that accompanies the Board's recommendation to the Planning Board and City Council (Sec. 14-617).

Following discussion of the significance and integrity of the complex as a whole, the Board spent considerable time discussing the integrity (*historic/architectural* as well as *condition*) of each building and assigned a preliminary classification to each. In taking up each building, Chair Benson summarized the salient findings for each structure included in each of the consultants' reports.

The assignment of a classification is required by the ordinance as part of the designation process. A list of every building, object or site within a nominated historic district must be included in the designation report and assigned a classification of "landmark", "contributing" or "noncontributing" indicating its degree of significance and that a list of structures.

The ordinance's definitions for these terms are instructive in assigning a classification:

Landmark: A property, site, structure or object designated by the Council as having a high degree of historical, cultural and/or architectural significance.

Contributing: A classification applied to a site, structure or object within a historic district signifying that it contributes generally to the qualities that give the historic district cultural, historic, architectural or archaeological significance as embodied in the criteria for designating an historic district, but without being itself a landmark.

Noncontributing: A classification applied to a site, structure, object, or portion thereof within a historic district signifying that 1) it does not contribute generally to the qualities that give the district...significance as embodied in the criteria for designating a historic district; 2) was built within 50 years of the date of district designation unless otherwise designated in the historic resources inventory; or 3) where the location, design, setting, materials, workmanship and association have been so altered or have so deteriorated that the overall integrity of the site, structure or object has been irretrievably lost. A portion of an otherwise contributing or landmark structure may be determined by the historic preservation board to be noncontributing if it meets one or more of the above conditions.

The Board's June 10 preliminary deliberations informed its formal findings and vote on June 24, a summary of which follows.

VI. HP BOARD PUBLIC HEARING – BOARD FINDINGS AND FORMAL RECOMMENDATION

A public hearing on the nomination was held on June 24, 2015. At the start of the hearing, attorney Mary Costigan, representing the property owner, distributed a letter requesting a reclassification of several buildings identified as contributing structures during the Board's preliminary deliberations. These included Buildings 1, 4, 14, and 16. Arguments for reclassifying the buildings were included in her letter. (See ATTACHMENT 9). Ms. Costigan also proposed that the district boundaries be reduced. Finally, Ms. Costigan asked that the Board include in its recommendation to the Planning Board language (likely in the form of an ordinance amendment) making clear that the height allowances established by zoning supersede the historic preservation regulations as they would apply to height for new construction.

Following a review of the Ms. Costigan's letter and a public hearing, the Board conducted its formal deliberations. Following are the Board's formal findings:

CRITERIA FOR DESIGNATION

Sec. 14-610 (a) Minimum Criteria for Designation (Note: nominated districts must satisfy a minimum of one of the following criteria)

1. Its value as a significant example of the cultural, historic, architectural, archeological or related aspect of the heritage of the City of Portland, State of Maine, New England region, or the United States.

Finding: the Portland Company complex exhibits local, state and national significance, as described in detail in the Sutherland report, *The Portland Company: Historic Significance and Integrity*. The Board identified the following major areas of significance:

National significance

- o Research suggests that the Portland Company was the first complex in the country built specifically for the manufacture of railroad equipment with all necessary shops and foundry on a single site.
- o Rare surviving example of a pre-civil War foundry, machine shop and car shop complex, and apparently the only surviving plant in the nation where locomotives were built for the US Government as part of the war effort.

Significance to the State of Maine

- o Contributed significantly to the development of Maine's railroads and maritime industries through manufacture of locomotives, railroad cars, marine engines and boilers.
- o Played a significant role in the development of Maine's paper-making, textile and canning industries.
- o The state's largest 19th century foundry/machine shop

Local significance

- o Founding was directly tied to the establishment of the Atlantic & St. Lawrence Railroad. Company was founded to manufacture railroad locomotives for the railroad.
- o Company's founding was directly associated with the creation of Commercial Street and filling of Broad and Clay Coves, as well as the organization of rail service throughout the City
- o Only intact 19th and early 20th century industrial complex remaining in the city.
- o Largest 19th century employer in the city.

2. Its location as a site of significant historic or prehistoric activity which may have taken place within or which involved the use of any existing structure on the property.

Finding: The Portland Company complex was the site of significant industrial activities of local, state and national importance, as detailed in #1 above, which took place within extant structures on the property.

3. Its identification with a person or persons who significantly contributed to the cultural, historic, architectural, archaeological or related aspect of the development of the City of Portland, State of Maine, New England region, or the United States.

Finding: The Portland Company was founded by John Poor, director of the Atlantic and St. Lawrence Railroad and the person most responsible for Portland's successful bid over Boston to become Montreal's winter port via rail. Other stockholders in the company included noted industrialist, developer and civic leader J.B. Brown and U.S. Secretary of the Treasury William Pitt Fessenden. William Chapman, electrical engineer in charge of the company's research department, did important work in the research that led to the development of microwave technology as well as experimentation and invention related to the use of electricity in manufacturing. Chapman's inventions were used in mills and factories throughout the state.

4. Its exemplification of a significant architectural type, style or design distinguished by innovation, rarity, uniqueness or overall quality of design, detail, materials or craftsmanship.

Finding: The building complex as a whole, and the individual structures included in it express the evolution of construction techniques developed for industrial building types as was required to enclose increasingly complex and large scale manufacturing processes. Located within the complex are substantially unaltered examples of several distinctive industrial building types constructed between 1847 and 1920. The Portland Company buildings from the 1840's and 50's are the only industrial buildings of that period remaining in the city today.

5. Its identification of the work of an architect, designer, engineer or builder whose individual work is significant in the history or development of the City of Portland, the State of Maine, the New England Region or the United States.

Finding: Although noted Portland architect Frederick Thompson was responsible for the design of the projecting shed dormers that were added to the roof of Building # 2 (Machine Shop), this designation criterion is not applicable for the Portland Company.

6. Its representation of a significant cultural, historic, architectural or related theme expressed through distinctive areas, site, structures or objects that may or may not be contiguous.

Finding: The Portland Company complex is representative of Portland's role as a major center of rail and maritime transportation for Maine and northern New England as described in detail in the Sutherland report.

Sec. 14-610 (b) In the case of a nominated historic district, the historic preservation board shall also determine whether a substantial number of the properties, site, structures or objects have a high degree of cultural, historic, architectural or archaeological significance and integrity, many of which may qualify as landmarks, and which may also have within its boundaries other properties site, structures or objects, which while not of such cultural,...significance to qualify as landmarks, nevertheless contribute to the overall visual characteristics of the significant properties, sites structures or objects located within it.

Finding: The Board found that the Portland Company complex meets this requirement. Given the high degree of significance of the district as a whole and the interrelated role each building plays within the district, the Board discussed the possibility of designating it as "landmark district", however this designation type is not included in the preservation ordinance. Also discussed was the possibility of classifying each building as a landmark. Ultimately, the Board determined that the individual buildings are appropriately characterized as "contributing" structures to the overall complex, which is highly significant.

Sec. 14-611. Integrity of landmarks and historic districts.

Any area structure or object that meets the criteria in Section 14-610 must also have sufficient integrity of location, design, condition, materials and workmanship to make it worthy of preservation or restoration. (Note that this integrity standard applies to the district as a whole; the question of integrity also applies in the assignment of a classification or "preservation value" to each individual building or structure within the nominated district boundary.)

Finding: As described in the Sutherland report, the complex as a whole retains a high degree of *historic and architectural integrity* within its identified period of significance. (A period of significance *for the buildings* within the complex was identified as extending from 1847 when the first building was constructed to 1920 when the last building associated with the Portland Company's core transportation and/or marine-related business had been completed. Note that the *company's* period of significance extends much longer, as it remained a leader in its field until the end of WW II, and continued to operate until 1982. It should be noted that Portland's ordinance does not require a determination of period of significance, but the Board discussed the question as part of its effort to determine the relative significance of the more recent extant structures on site: the office building, built in 1950, and the large metal building, built in 1968.

As regards the question of *integrity of condition*, the Board found that although a number of the 16 extant structures have become so deteriorated due to deferred maintenance as to make their rehabilitation infeasible (see assigned classifications of individual structures below), the complex as a whole retains sufficient integrity of condition to make it worthy of preservation and rehabilitation. This finding was based on assessments provided in two separate condition reports prepared by Resurgence Engineering & Consulting and Becker Structural Engineers.

DESIGN GUIDELINES

In the report which is required to accompany the Historic Preservation Board's recommendation regarding designation, the Board may recommend specific design guidelines for the review of alterations or new construction within the proposed district—See Sec. 14-617-(c). Following discussion, the Board elected not to recommend specific design guidelines for the Portland Company district, but to include in the designation report a description of the complex's major visual characteristics that contribute to the district's significance and should be recognized in evaluating future proposals for alterations and infill construction within the district. (See pages 8-10 of Designation Report, ATTACHMENT 2.) The visual character of the site is also described in the Sutherland report (see pg. 4). Major visual characteristics include the presence of a major entrance off Fore Street at the west end of the complex; the open entrance yard; the linear alignment and east-west orientation of the buildings; the separation of connected buildings by private streets and alleys; the presence of overhead pedestrian bridges; the predominance of brick and granite building exteriors; and large scale windows typical of industrial structures.

DISTRICT BOUNDARY DELINEATION and ASSIGNED BUILDING CLASSIFICATIONS

Taking into consideration the documented significance of the Portland Company complex as a whole, the assessment of the complex's extant historic structures in terms of their significance and current condition, and in consideration of the identified visual character of the Portland Company complex, which was determined by the Board to contribute significantly to one's understanding of and appreciation of the historic resource, the Board determined that the district boundary and building classifications as delineated on ATTACHMENT 1 should be recommended to the Planning Board and Council.

Assigned Classifications for Individual Structures within the Proposed District Boundaries

Building 1	Erecting Shop	1918	Contributing
Building 2	Machine Shop	c. 1847	Contributing (a)

Building 3	Machine Shop	c. 1847	Contributing
Building 4	Foundry	1895	Noncontributing (b)
Building 5	Foundry Addition	c. 1980's	Noncontributing (c)
Building 6A, 6B	Blacksmith & Tank Shop	1883, 1896-1904	Contributing
Building 7	Car Shop	1873, 1904	Noncontributing (d)
Building 10	Paint Shop	c. 1873	Noncontributing (e)
Building 11	Pattern Storehouse	1885	Noncontributing (f)
Building 12	Pattern Storehouse	1895	Contributing
Building 14	Drafting Rm/Storehouse	1858-64	Noncontributing (g)
Building 15	Boiler House	1848-64	Noncontributing (h)
Building 16	Brass Foundry	1864-71	Contributing
Building 24	Vault	c. 1905	Contributing
Building 30	Office Building	1950	Noncontributing (i)

Notes:

- (a) Cantilevered roof addition noncontributing due to structural instability
- (b) Noncontributing due to condition, potential requirement for significant reconstruction
- (c) Constructed in 1968, outside the period of significance
- (d) Noncontributing due to severely deteriorated condition
- (e) Noncontributing “ ” “ ” “ ”
- (f) Noncontributing “ “ “ “ “ “
- (g) Noncontributing “ “ “ “ “ “
- (h) Noncontributing “ “ “ “ “ “
- (i) Constructed in 1956, outside the period of significance

Note that a classification of noncontributing allows a building to be demolished as of right. Any proposed replacement new construction would, however, be subject to review and approval under the historic preservation ordinance's new construction standards.

Although several of the buildings included within the recommended district boundary were determined by the Board to be noncontributing due to condition or date of construction, Board members expressed the view that the boundary should include the footprint of most of these noncontributing buildings.

In coming to this conclusion, the Board noted that the placement, alignment and relationship of the extant structures is key to conveying the Portland Company's history and significance and is an important character-defining element of the complex. They also noted that whatever is built in close proximity to the remaining historic structures has the potential to either reinforce or undermine the remaining buildings and one's appreciation of this historic complex. Acknowledging that noncontributing buildings may be demolished as of right under the provisions of Portland's historic preservation ordinance and that new construction within the district is likely, including the footprints of most of the historic extant structures within the district boundary will ensure that whatever new construction is introduced within the historic core of the complex will be reviewed for general compatibility with the abutting or adjacent contributing structures. They also noted that district designation would not preclude future adjustments or alterations to buildings or site features within the district boundaries.

In response to the property owner's request to classify additional buildings as noncontributing (i.e. Buildings 1 and 16), Board members found these buildings to be important contributing structures to the overall complex, as documented in the preservation consultant's report, and that their condition did not warrant their removal. Board members also expressed the view that allowing the removal of additional historic structures from the property would materially affect one's ability to understand and appreciate the history, significance and scale of operations of the former Portland Company complex.

REQUESTED ORDINANCE AMENDMENT

As noted above, Ms. Costigan requested that the Board include as part of its recommendation to the Planning Board an ordinance amendment providing that the height allowances established by the underlying zoning for this property supersede the HP Board's authority as regards review of building height. As the Historic Preservation Board had not been involved in discussions regarding building heights for this property and had not been briefed on details of the final rezoning, including allowable building heights, the Board did not think it was appropriate to include such an amendment as part of its recommendation. They also noted that review of building height for compatibility with a development's surrounding context is an integral part of the Historic Preservation Board's review process for new construction. While it is rare that the Board has required heights lower than that allowed by zoning, maintaining the authority to impose this requirement may be important in some instances. The Board also pointed out that they made an exception to this rule for the Congress Street Historic District given the wide range of building heights exhibited within the district and the fact that recently adopted building heights for the B3 zone had been based on a careful analysis of Congress Street's existing building stock.

VII. FINAL HP BOARD VOTE ON PROPOSED DISTRICT DESIGNATION

Based on the above findings, the Board voted 7-0 to recommend to the Planning Board and City Council that the former Portland Company complex be designated as a local historic district as delineated in the map enclosed as ATTACHMENT 1.

Note: Following the Historic Preservation Board's formal vote on June 24, staff prepared a draft designation report for the Board's review and comment. The draft designation report was reviewed on July 15. Following an opportunity for public comment, the Board confirmed the content of the report with minor clarifications and amendments.

New Information (for 9/8/15 public hearing)

VIII. RESPONSES TO QUESTIONS RAISED AT PLANNING BOARD's 7/28 WORKSHOP

At the Planning Board's July 28 workshop a number of questions were raised about various aspects of the Historic Preservation Board's deliberations and recommendation. Following are responses to specific questions raised by members of the Planning Board as well as clarification on aspects of the Historic Preservation Board's deliberations and findings that appeared to warrant further explanation.

What was the Historic Preservation Board's process for assigning a classification to each building? Is it a balancing act between consideration of significance and condition?

The Board's review process began with an analysis of the Portland Company complex *as a whole*, rather than a focus on individual buildings. This was the appropriate approach given the fact that the Portland Company property is comprised of buildings that are historically and functionally related to each other. Only after the

significance and integrity of the overall complex was evaluated was it appropriate to move on to a detailed evaluation of the individual buildings within it. The building-by-building evaluation focused primarily on the question of *condition* because the *significance* of virtually every extant building within the complex was made clear in the report prepared by Sutherland Conservation & Consulting. The Sutherland report explained that each building within the complex played a specific, necessary and interdependent function in the overall manufacturing process and that much of the property's significance is due to the fact that, collectively, the existing buildings encompass the complete historic manufacturing process of the Portland Company.

The Board's first task was to consider whether the complex of buildings meets the ordinance's *minimum criteria for designation*, which are outlined in Sec. 14-610 (a) and (b) of the ordinance.

Sec. 14-610 (a) lists six potential areas of significance, at least one of which must be clearly met by the nominated resource. In the case of the Portland Company complex, all six of the criteria were found to be met. For two of the criteria, the Portland Company complex was found to be significant at the local, state *and* national level. (A more detailed description of the Board's findings as regards significance is included in the 9/2/15 PUBLIC HEARING report.)

Next, the Board had to determine whether the complex (proposed district) meets the criterion in Sec. 14-610 (b), which states: "In the case of a nominated historic district, the historic preservation board shall also determine whether a substantial number of the properties, sites, structures or objects have a high degree of cultural, historic, architectural or archeological significance and integrity, many of which may qualify as landmarks, and which may also have within its boundaries other properties, sites, structures or objects which, while not of such cultural, historic, architectural or archeological significance to qualify as landmarks, nevertheless contribute to the overall visual characteristics of the significant properties, sites, structures or objects located within it."

Here, the Board determined that all of the extant buildings within the Portland Company complex, with the exception of the 1956 office building (Building #30) and the large 1968 metal building addition to the foundry (Building #5), exhibit a high degree of historic significance as they all played an important, distinct and interdependent role in the overall manufacturing process of the Portland Company. Since the office building did not represent the core function of the historic complex and was added much later in its history, it was found not to be significant. Building #5 was found not to be significant because it was built late in the company's history, when the nature of company's product line began to change.

Note that this review criterion also requires demonstration of "integrity". "Integrity" as defined under this ordinance criterion applies only to a structure's cultural, historic or architectural integrity. Historic integrity is distinct from structural integrity or integrity of condition. "Historic integrity", as explained in the Sutherland report, "is based on the retention of sufficient essential physical features from the historic period, including location, design, setting, materials, workmanship and/or association to convey the significance of the property. The Sutherland report includes an entire section on the integrity of the individual buildings within the complex and on the integrity of the complex as a whole--see SECTION II, beginning on page 21. Here, the Board found that the remaining historic structures within the complex exhibited a high level of *historic and architectural integrity*, as they remain in relatively unaltered condition from the time of their construction.

Following consideration of these two threshold criteria, the ordinance requires that the Board then address the nominated resource's *integrity of condition*:

Sec. 14-611. Integrity of landmarks and historic districts

Any area, structure or object that meets the criteria in section 14-610 must also have sufficient integrity of location, design, condition, materials and workmanship to make it worthy of preservation or restoration.

Under this criterion, the Board considers the *integrity of condition of the overall complex*, taking into consideration the condition of the individual buildings within the complex. Notwithstanding the poor condition of a number of individual buildings, as documented in two reports available for the Board's reference, the Board found that the complex, or proposed district as a whole, had "sufficient integrity of location, design, condition, materials and workmanship to make it worthy of preservation or restoration."

The assignment of a classification for each building within a proposed district is a requirement of the historic preservation ordinance and must be provided as part of the historic district designation report that accompanies the Historic Preservation Board's recommendation. (See Sec. 14-617 (f).) It should be noted that the ordinance does not provide specific criteria which must be met to prove that a building is "noncontributing"; the only guidance provided for this determination is the ordinance definition included in Sec. 14-602 Definitions, which states:

Noncontributing: A classification applied to a site, structure, object, or portion thereof, within a historic district signifying that 1) it does not contribute generally to the qualities that give the historic district cultural, historic, architectural or archaeological significance as embodied in the criteria for designating a historic district; 2) was built within 50 years of the date of district designation unless otherwise designated in the Historic Resources Inventory; or 3) where the location, design, setting, materials, workmanship and association have been so altered or have so deteriorated that the overall integrity of the site, structure or object has been irretrievably lost. A portion of an otherwise contributing or landmark structure may be determined by the historic preservation board to be non-contributing if it meets one or more of the above conditions.

In reviewing the results of the condition reports, the question for the Board was not whether a building was in poor condition, but whether it had "so deteriorated that the overall integrity of the...structure...had been irretrievably lost." The two condition reports, one prepared for the CPB2 for initial planning purposes and cost/benefit analysis (which is not a relevant consideration in the designation review process) and the other for the City for the purposes of designation deliberations, were by their nature preliminary assessments of the overall condition of the buildings. Neither consultant was asked to develop specific proposals for addressing identified structural or building envelope deficiencies. Without knowing what use was proposed for a given building, it would be impossible to develop specific recommendations or to reasonably determine the feasibility of its adaptive reuse.

Given the preliminary nature of the condition reports, it is fair to say that the Historic Preservation Board demonstrated a willingness to accept the findings of the reports where the two reports were clear, definitive and in strong agreement. Accordingly, Buildings #7, #10, #11 and #15 were identified early on in Board's discussions as noncontributing due to condition. Later, based on additional information from CPB2, the Board reclassified Building #14 as well, from contributing as noncontributing

Classification of the foundry (Building #4) proved to be the most difficult. In the Resurgence report, Building #4 was not one of the buildings identified as being in significantly deteriorated condition. (See pg. 32 of Resurgence report, Recommendations and Conclusion - ATTACHMENT 5. Both the Resurgence and the Becker reports, however, noted that Building #4 exhibits unique condition issues with an exterior brick masonry wall system that is integrated with iron structural columns. The columns are exposed to weather and

in an advanced state of disrepair. They noted that in order to correct the structural deficiencies, it might be necessary to dismantle the exterior masonry walls (or portions thereof). The roof structure was also identified as inadequate for snow loads and might need replacement or substantial reinforcement. In response to the findings in the two reports, CPB2 representatives questioned whether this degree of potential intervention (partial or complete reconstruction) could reasonably be defined as preservation or rehabilitation.

At the final workshop, several members of the Board argued that it was premature to classify the foundry as noncontributing without a more detailed structural analysis or exploration of options. They suggested that Building #4 be classified as contributing, but that the classification be annotated to indicate the Board's willingness to reconsider its classification upon more detailed structural analysis. CPB2 argued that the ordinance does not provide for annotated or qualified classifications. Ultimately, the Board voted to classify Building #4 as noncontributing due to condition. This was a particularly difficult decision, as the foundry represents to a large extent the "heart" or center of the Portland Company's operations. The foundry is also a key component of the complex's core manufacturing row, which is comprised of four connected structures through which most of the company's product line moved from raw material stage to final assembly. Also making the decision difficult was the Board's recognition that the removal of the large foundry building would inevitably impact one's ability to appreciate the scale and magnitude of the Portland Company's operations and the significance of the company to Portland's economy from the mid-19th to the mid-20th century.

How were the district boundaries determined? Why does the proposed boundary include the footprint, or partial footprint, of buildings that have been determined to be noncontributing due to condition?

As noted above, the Portland Company property derives its significance *as a complex*. This complex is defined not only by the buildings within it, but also by the alignment and spatial relationship of the buildings and by its contributing site features such as the entrance drive, the alleyways, the entrance yard and the elevated bridges. Collectively, these elements communicate how this industrial complex functioned.

Although several buildings within the complex have been determined to be noncontributing due to their physical condition and it is very likely that new development will be introduced in their place, the question of how future development relates to the remaining historic resources--in terms of placement, orientation, massing, etc.--is an important consideration. It is appropriate to include the footprints (or portion thereof, in the case of Building 4) of these noncontributing structures within the district boundary because of their close proximity to what will likely become the only remaining historic structures on site and so that the architectural characteristics that distinguish this historic complex are taken into consideration in future development. Similarly, it is appropriate to include within the district boundary the entrance drive and entrance yard, as these are elements have been part of the complex since the company's inception. While it is likely that the position, size and/or function of these key site elements will change with any future redevelopment scheme (the Historic Preservation Board has acknowledged this possibility) including them within the district boundary provides an opportunity to preserve the primary visual characteristics of the Portland Company complex by maintaining such attributes as the spatial relationship between the buildings and building rows as well as a general sense of the footprint, scale and sequential nature of the overall complex.

See page 4, *Historic Significance and Visual Character of the Portland Company Site* of Sutherland report (ATTACHMENT 4) for a description of the contribution each element makes in conveying the significance of this property.

Is Building 1 (Erecting Building) significant and does its condition warrant classification as a noncontributing building?

With respect to the question of the Erecting Building's significance, please see attached memo from preservation consultant Scott Hanson, the principal author of the Sutherland report. (ATTACHMENT 10)

With respect to the Erecting Building's condition and feasibility of rehabilitation, please see attached letter from structural engineering consultant Al Hodson, who prepared the building condition report for the City. (ATTACHMENT 11)

It should also be noted that, apart from the Erecting Building's individual merits, it is a key component of the Portland Company's core manufacturing/assembly row, which is currently made up of four buildings. With the potential removal of Building #4 due to condition, preservation of Building 1 becomes especially important if the overall scale and magnitude of the Portland Company's operations and its major presence on the Portland waterfront for almost 150 years is to be conveyed. The Executive Summary in the Sutherland report (see pg. 4) includes the following: "The removal of any of the historic buildings existing in the complex will diminish the ability of the complex to demonstrate the historic manufacturing process of the Portland Company."

What is the condition of Building 16 (brass foundry) and how will the removal of Building 15 affect Building 16?

Please see attached memo from Al Hodson of Resurgence Engineering & Preservation. (ATTACHMENT 11)

Why is the district's eligibility for National Park Service certification (and thus eligibility for historic tax credits) a relevant consideration in the City's local district designation process?

Any conversation about eligibility for Federal or State historic tax credits is only to highlight the opportunity as a possible path to pursue for a future rehabilitation project. Tax credits have proven to be a powerful financial incentive and have been employed in approximately 110 historic rehabilitation projects in Portland alone. It behooves the City of Portland to determine whether the proposed historic district is likely to meet the requirements for National Park Service certification, because NPS certification will be *required* in order to access the historic tax credits.

Reference to the possibility of NPS certification and tax credit eligibility is also relevant to the discussion because Portland's designation criteria are patterned directly after the criteria used by the Maine Historic Preservation Commission and the National Park Service. (The only difference is that Portland's ordinance takes into consideration the physical condition of nominated resources while the National Park Service does not.) If the National Park Service determines that the Portland Company Historic District as proposed by the City of Portland does not include sufficient historic resources to adequately convey the history and significance of the Portland Company complex, it will not certify the district. Portland must be able to make a strong and defensible argument for the removal of historically significant buildings and site elements if the district is to be certified.

See letter from the Maine Historic Preservation Commission - ATTACHMENT 12.

Should the height allowances established in the underlying zoning should govern height within the proposed district or should the HP review standards as they apply to height supersede the zoning regulations?

The Historic Preservation Board did not include as part of its recommendation a proposed ordinance amendment that would pertain to the regulation of building height for new construction within the Portland Company Historic District. As the Historic Preservation Board was not involved in discussions regarding allowable building heights for this property and has not been briefed on details of the final rezoning, the Board did not think it was appropriate to include such an amendment as part of its recommendation. Board members noted that review of building height for compatibility with a proposed development's surrounding context is a standard and integral part of the Historic Preservation Board's review process for new construction. While it is rare that the Board has required a height lower than that allowed by zoning, maintaining the authority to impose this requirement may be important in the review of some projects, particularly in very sensitive contexts. While an exception to this rule was made for the Congress Street Historic District, it was based on the fact that Congress Street exhibits a very wide range of building heights. Additionally, the allowable building heights in the B3 zone had been based on a careful, and recent, analysis of Congress Street's existing building stock. In the Board's view, waiving otherwise applicable review standards should be carefully considered.

Responses to information and attachments included in Ms. Costigan's letter of August 26, 2015:

Note that the district boundary map proposed by CPB2 as provided in Ms. Costigan's letter of August 26 (ATTACHMENT 13) includes two separate boundaries: one around several buildings on the east side of the entrance yard and another around Building # 12. According to cite NR Bulletin 16A, pg. 57, as cited by staff of the Maine Historic Preservation Commission, this is not consistent with standard requirements for delineating boundaries of historic districts. Historic *districts* typically comprise a single contiguous area.

Also, on page 2 of Ms. Costigan's letter, she states "as we know, these credits are reviewed annually and should not be considered as planning tools and may in fact not be available at the time of development or any other rehabilitation project". Maine Historic Preservation Commission staff has confirmed that there is no sunset provision for the Federal tax credits and the State tax credits were recently extended to 2023. An annual *report* on state historic tax credit activity is required, but no *reauthorization review* is required.

IX. ANALYSIS OF PROPOSED DESIGNATION'S CONSISTENCY WITH COMPREHENSIVE PLAN

Senior Planner Christine Grimando has evaluated the proposed historic district designation consistency with the Comprehensive Plan. Following are Ms. Grimando's findings:

The Comprehensive Plan is widely supportive of preservation of Portland's historic resources. Volume 1, State Goal I, *To preserve the State's historic and archeological resources*, endorses preserving and enhancing distinctive areas, sites, structures and objects that have historic, cultural, architectural and archeological significance. It includes an overview of preservation efforts in the city, recommendations for furthering preservation, and reference to the adoption, as part of the 1990 Comprehensive Plan, of the Historic Preservation Ordinance, and the Historic Resources Design Manual, both still being utilized today.

There are several, but not extensive, references to the Portland Company site/58 Fore Street, as well as more general policy for the Eastern Waterfront as a whole, within elements of the Comprehensive Plan. Below are pertinent components for preservation as it concerns 58 Fore Street.

- Volume 1 gives an overview of the years of waterfront planning efforts of the City, and addresses redevelopment of the Waterfront East specifically, which encompasses and extends beyond the Portland Company complex. It outlines four redevelopment principles for development in this area: 1) Character and Impact of Development; 2) Mixed-use as a component of an active, vibrant urban area; 3) maintaining Maritime Resources; and 4) Economically Responsible Development that benefits the city and the region. *Character and Impact of Development* calls for a variety of related outcomes, including compatibility with surrounding neighborhoods and maritime uses, historic preservation and adaptive reuse, compatible architecture, protection of view corridors, as well as integrated street and trail networks.
- Volume I, State Goal I references the Historic Resources Design Manual, which identifies 58 Fore Street as eligible for the National Register of Historic Places on the basis of the 1976 Portland Historic Resources Inventory.
- **A Masterplan for Redevelopment of the Eastern Waterfront** (Masterplan) consists of three documents: 1) **A Masterplan for Redevelopment of the Eastern Waterfront**, 2) **Eastern Waterfront Building Height Study** (Height Study), and 3) **Design Guidelines for the Eastern Waterfront** (Design Guidelines) - the latter are two freestanding documents that were both adopted by reference into the Masterplan. The Height Study does not mention preservation of historic structures, and is focused on height recommendations for new construction, without explicit consideration of how new construction would interact with the existing urban fabric.

The Masterplan reiterates and expands upon the four redevelopment principles for the Eastern Waterfront of Volume 1, encouraging historic preservation and active reuse of historic structures as a component of the *Character and Impact of Development* principle (page 12). The document also encourages aggregation of surface parking for better use of valuable land, including more intensive reuse of historic buildings, replacement of non-historic structures, and open space enhancement (page 6). This also is a recommendation that applies to the entirety of the Eastern Waterfront. In regard to specific recommendations for the Portland Company complex (page 8), the Masterplan notes its potential for adaptive reuse, and that it is a property that has been deemed eligible for inclusion in the National Register of Historic Places. It goes on to note that parking enhancements and better site access will better integrate the property with the rest of the Eastern Waterfront, which in turn is expected to spur adaptive reuse and restoration of historic structures. Finally, adaptive reuse and sensitive rehabilitation of existing historic structures is a primary development consideration.

The Design Guidelines note the historic character of the area by making strong recommendations for new construction that respects the historic character of the waterfront, while representing the best elements of contemporary design (page 4). In regard to historic structures the guidelines state: *Historically and architecturally significant structures and sites should be inventoried and protected from demolition and carefully rehabilitated in a way that is consistent with their original architectural intent. The challenge and opportunity is to adaptively reuse significant structures while retaining their historic character. New additions to historically significant buildings should be designed for compatibility with the original structure in size, composition and material and should result in the minimum necessary loss of original architectural material* (page 7).

An historic district on the site of the Portland Company complex is consistent with Comprehensive Plan policy. The Comprehensive Plan recognizes the importance of historic preservation and rehabilitation for the city as a whole, the unique characteristics of the Eastern Waterfront, and the significant legacy of the Portland Company complex. It also anticipates new construction, and the need for sensitive, compatible architecture beside and (in some cases) in place of the existing building stock. While recognizing the value of preservation and adaptive reuse, its support is framed broadly enough to allow for the Historic Preservation Board, and ultimately the Planning Board and City Council, to make final, informed determinations about the appropriate parameters of a district boundary and its specific contents.

X. MOTIONS FOR CONSIDERATION

Upon the recommendation of the Historic Preservation Board and on the basis of the Portland Company Historic District Designation Report, documentation and analysis provided in reports prepared by Sutherland Conservation & Consulting and Resurgence Engineering & Preservation, and information included in the staff report for the September 8, 2015 public hearing,

- 1) The Planning Board finds that the proposed Portland Company Historic District:**
 - a) meets the historic preservation ordinance’s minimum criteria for designation as set forth in Sec. 14-610 (a), specifically Criteria 1, 2, 3, 4, 5 and 6, based on the Board’s findings that all of the summary statements as to significance of the Portland Company complex included in the 9/8/15 public hearing report are well-founded and based on detailed research and documentation. Accordingly, the Board confirms and references the report’s statements of significance as the basis for its finding; and**
 - b) meets the criterion in Sec. 14-610 (b), based on the Board’s finding that a substantial number of the structures and sites within the proposed district have a high degree of historic and/or architectural significance and integrity, many of which qualify as landmarks, and that the proposed district also has within its boundaries other sites and structures which contribute to the overall visual characteristics of the significant structures located within it. Pursuant to this finding, the Board supports the building classifications included in the Designation Report.; and**
 - c) meets the integrity criterion set forth in Sec. 14-611, based on the Board’s finding that the district and identified contributing structures therein have sufficient integrity of location, design, condition, materials and workmanship to make them worthy of preservation or restoration.**
- 2) The Planning Board also finds that designation of the Portland Company Historic District is consistent with the goals of the Comprehensive Plan, including the Masterplan for Redevelopment of the Eastern Waterfront, based on the analysis provided in the 9/8/15 public hearing report.**

On the basis of the above findings, the Planning Board recommends that the City Council designate the former Portland Company complex as a local historic district (as delineated in ATTACHMENT 2 of the 9/8/15 public hearing report) subject to the provisions of Article IX of the Land Use Code.

ATTACHMENTS

1. Proposed Historic District Map with Boundaries and Individual Building Classifications
 2. Portland Company Historic District Designation Report
 3. Excerpts from Portland's historic preservation ordinance (Article IX of the Land Use Code).
 4. *The Portland Company: Historic Significance and Integrity*, prepared for City of Portland by Sutherland Conservation & Consulting
 5. *Portland Company Complex General Building Condition Report*, prepared for City of Portland by Resurgence Engineering and Preservation Inc.
 6. Evaluation of *Existing Buildings at the Portland Company Property*, prepared for CPB2 by Becker Structural Engineers
 7. Appendix A: Comparative Condition/Cost Analysis (excerpted from Resurgence report)
 8. March 31, 2014 Letter from Maine Historic Preservation Commission regarding eligibility of Portland Company Complex for Listing in the National Register of Historic Places
 9. Letters from interested parties
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Attachments prepared in response to questions raised at PB's 7/28 Workshop

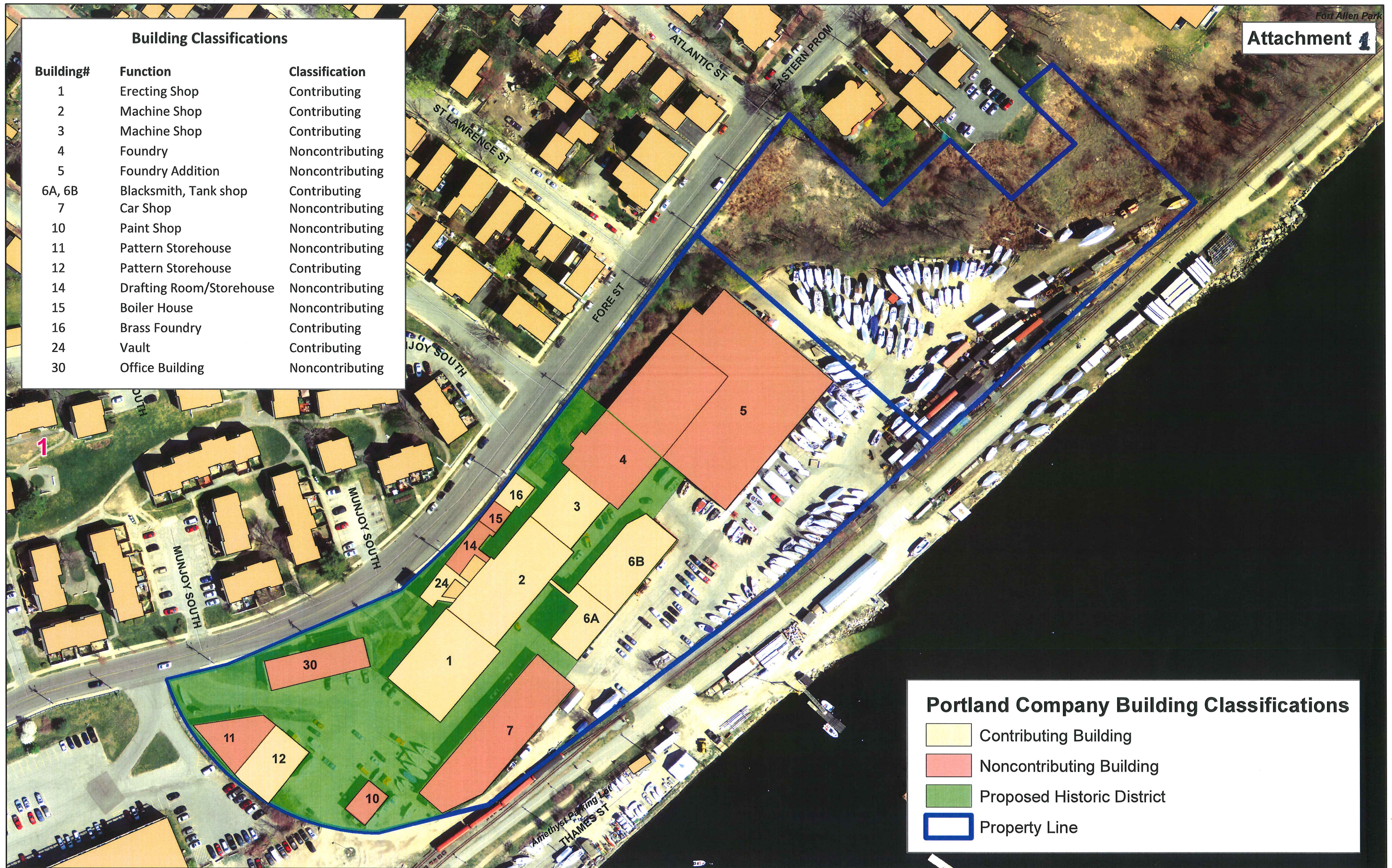
10. 9/2/15 Memo from Scott Hanson, Sutherland Conservation & Consulting, regarding Building 1
 11. 9/4/15 Letter from Al Hodson, Resurgence Engineering, re: condition of Buildings 1 and 16
 12. 9/4/15 Letter from Maine Historic Preservation Commission
 13. 8/26/15 letter from Mary Costigan on behalf of CPB2
-

Information and Public Comment received since 9/8

14. Staff memo summarizing HP Board's 10/21/15 review of latest condition report prepared by Becker Structural Engineers
 - A. Staff memo for 10/21/15 HP Board review
 - B. October 13, 2015 report from Becker Structural Engineers
 - C. Copy of GPL testimony at 10/21 meeting
15. Compilation of most recent public comment

Building Classifications

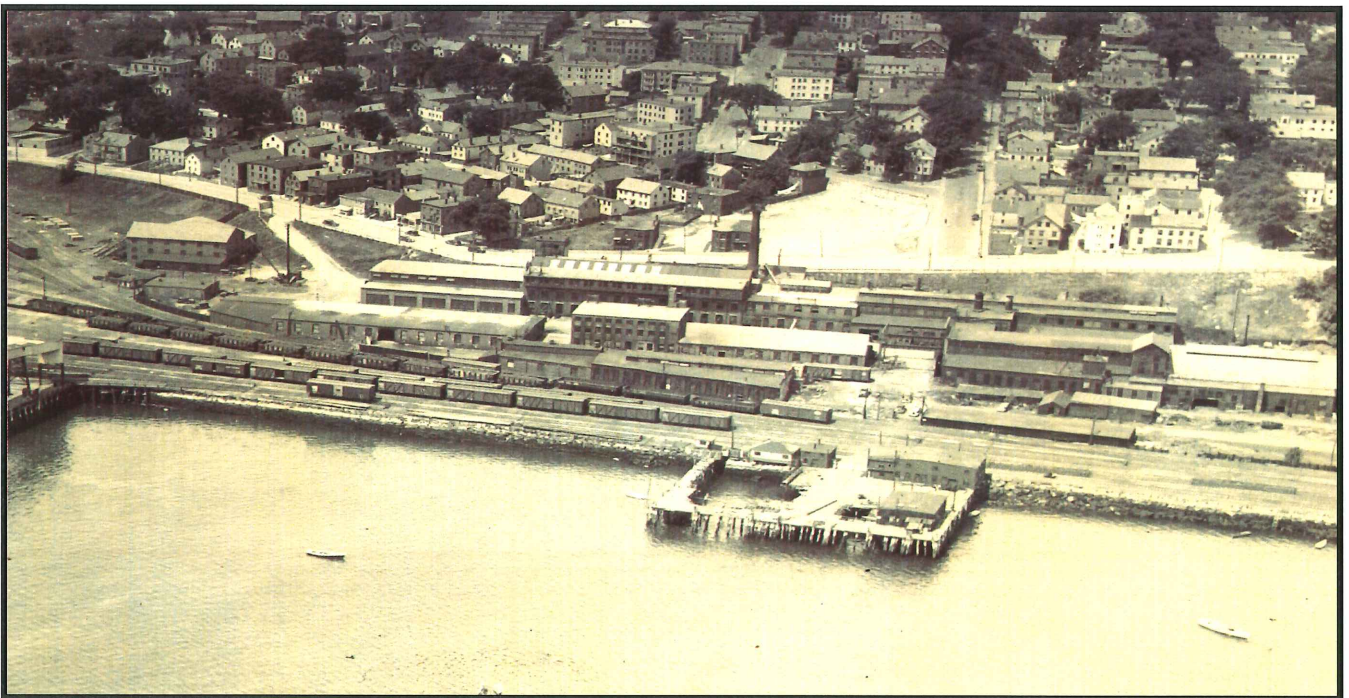
Building#	Function	Classification
1	Erecting Shop	Contributing
2	Machine Shop	Contributing
3	Machine Shop	Contributing
4	Foundry	Noncontributing
5	Foundry Addition	Noncontributing
6A, 6B	Blacksmith, Tank shop	Contributing
7	Car Shop	Noncontributing
10	Paint Shop	Noncontributing
11	Pattern Storehouse	Noncontributing
12	Pattern Storehouse	Contributing
14	Drafting Room/Storehouse	Noncontributing
15	Boiler House	Noncontributing
16	Brass Foundry	Contributing
24	Vault	Contributing
30	Office Building	Noncontributing



Portland Company Building Classifications

- Contributing Building
- Noncontributing Building
- Proposed Historic District
- Property Line

Portland Company Historic District Designation Report



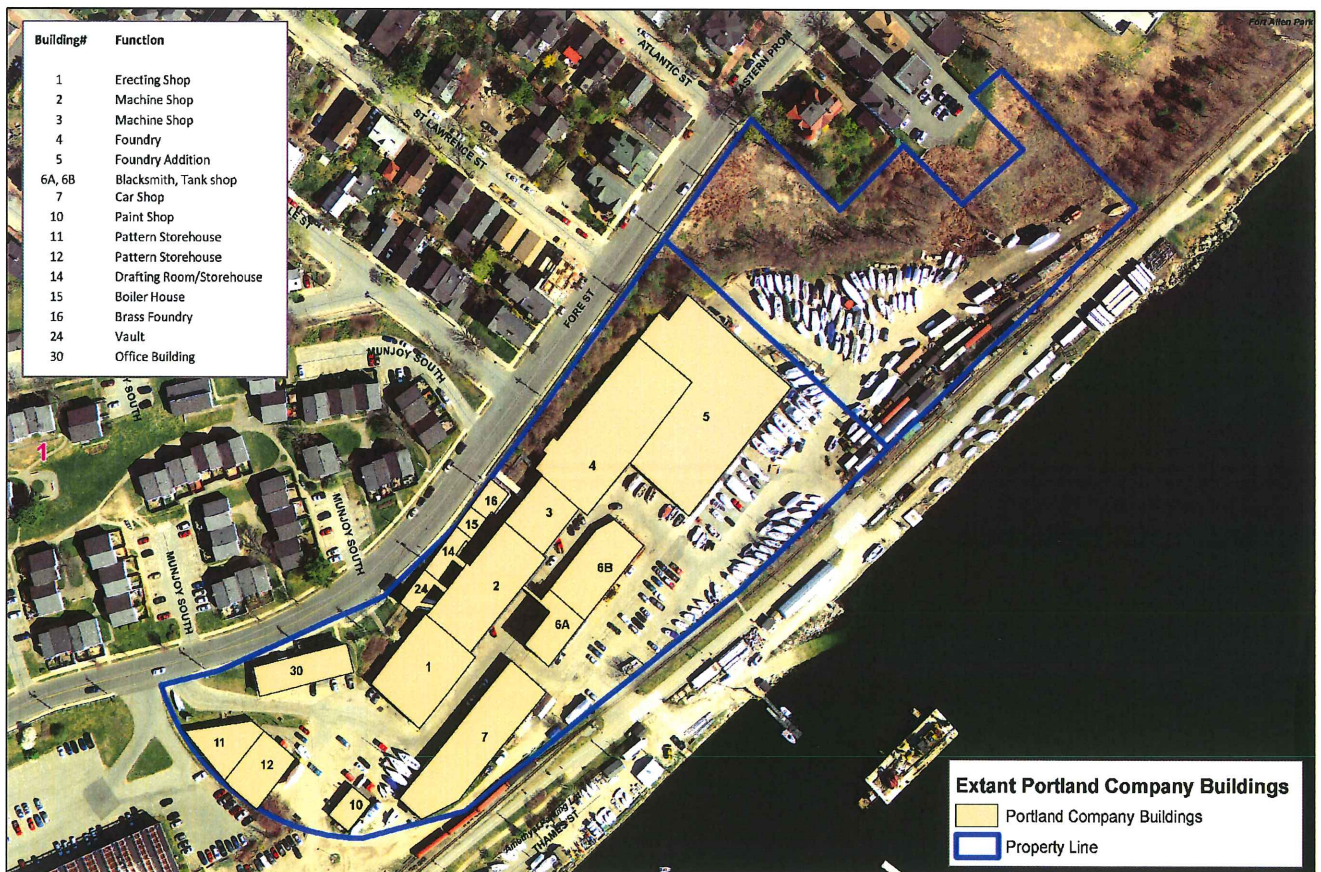
Portland Company circa 1938

Portland Company Historic District

Designation Report

General Description of Complex

The Portland Company complex today is comprised of 16 extant structures occupying approximately 4.3 acres of a 9.93 acre parcel. The complex is located below the original shoreline along Fore Street on filled land that was created to accommodate the construction of the St. Lawrence and Atlantic Railroad.



With the exception of an office building constructed in 1950, all of the buildings within the complex are industrial structures built to house a specific function within the Portland Company's overall manufacturing process. These include both the core production buildings where the company's diverse line of cast metal products were fabricated and assembled (i.e. the principal foundry, a brass foundry,

two machine shops, an erecting building, blacksmith shop, tank shop, and car shop) as well as various accessory structures that housed functions or materials important to the overall operations of the industrial complex. Accessory structures include two pattern storehouses, a paint shop, a drafting room/storehouse and vault. The pattern storehouses and paint shop were purposefully sited well away from the core production buildings to keep flammable materials such as pattern molds and paints away from production areas.

The construction date of the extant buildings ranges from 1847, shortly after the Portland Company was founded, to a large metal building addition constructed circa 1968. Most of the extant structures, however, and *all* of the structures specifically associated with the company's significant railroad- and marine-related work, were constructed before 1920. With the growth of the company and the need to accommodate the changing demands of the various manufacturing processes that took place in the plant, additional buildings, replacement buildings, and building additions were introduced in the 1870's, 1880's, 1890's and 1910's. As such, the Portland Company complex exhibits several industrial building types, each representative of its respective era in terms of design and structural system. Although the buildings have suffered from decades of deferred maintenance and expedient repairs since the Portland Company closed its doors in 1982, most remain in remarkably unaltered condition from the time of the company's occupation.

Most of the buildings on the site are organized in a linear alignment, running more or less parallel to the water's edge. During the Portland Company's tenure, multiple rail lines ran between the southern edge of the manufacturing complex and the water's edge; the locomotives and thousands of other items produced by the company were loaded onto these rails. Today, the number of tracks is significantly reduced. The individual buildings within the manufacturing core (on the east side of the entrance yard) are physically connected at their end walls to allow for the efficient movement of products from one stage of the manufacturing process to the other. This manufacturing core includes three "rows" of buildings separated by private "streets" or alleys. (The northwest row of buildings is actually built against the Fore Street retaining wall. The retaining wall forms the rear wall of these buildings; the side walls of the buildings form buttresses that help support the retaining wall.) Overhead pedestrian bridges span the private alleyways to provide upper floor access between building rows.

Virtually all of the extant buildings within the complex are brick. (While some of the early buildings were wood, they were typically replaced with brick, in some cases due to fire.) Another consistent feature in all of the core manufacturing structures is the presence of large multi-light windows, which were needed to maximize the amount of daylight reaching the interior of these buildings.

The industrial complex is approached from a curving entrance drive off Fore Street, near the western end of the property. The drive leads to a wide entrance yard which separates the manufacturing facilities to the east from the paint shop and pattern storage buildings to the west.

History of the Portland Company

Following is a brief history of the Portland Company. For more detailed and illustrated history of the company, see the Sutherland report or The Portland Company 1846-1982 by David H. Fletcher.

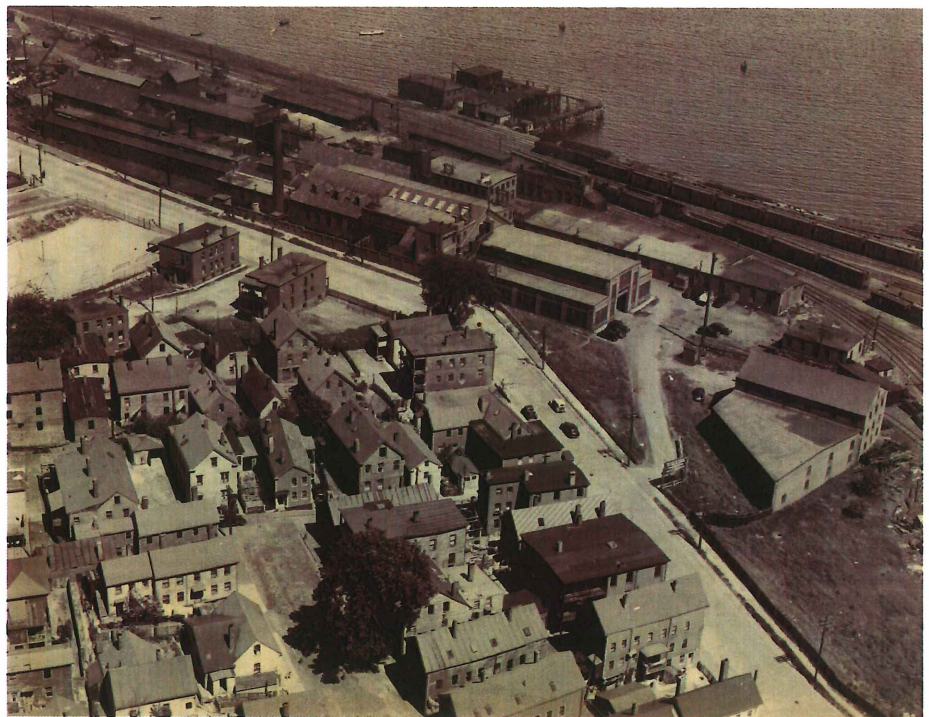
The Portland Company was founded as the Portland Iron Manufacturing Company in 1845 on filled land on Portland's eastern waterfront. The name was changed to the Portland Company in 1846 and the company remained in operation at its 58 Fore Street location for 137 years, until 1982.

The Portland Company was established in conjunction with the construction of the Atlantic & St. Lawrence Railroad which was built to connect Portland to Montreal. John A. Poor, the individual most responsible for Portland's successful bid over Boston to become Montreal's winter port via rail, was a Director of the Atlantic & St. Lawrence and became to Portland Company's first president. The company was founded primarily to build steam railroad locomotives for the newly formed railroad and was sited to be convenient to it, as the railroad's mail line ran between the shop buildings and the waterfront and down Commercial Street.

The first locomotive produced by the company, the *Augusta*, was completed in 1848. For the next 60 years, the manufacturing facility turned out a total of 630 steam locomotives in at least five different gauges. The company built locomotives for Boston &

Maine, Maine Central, Northern Pacific, Panama Railroad, Mexican Central, Sandy River, Wiscasset and Quebec, Portland & Rochester, as well as many other railroad lines.

The Portland Company was the only locomotive works in the country to be established specifically to produce locomotives, as most of the other builders had their start as general machine shops. Here, all of the necessary shops, as well as two foundries to pour both iron and bronze castings, were brought together in a single facility. The use of cast metals, particularly iron, was central to the rapid industrialization and expansion of the United States in the nineteenth century and the use of it at the



This 1938 view illustrates the scale and scope of the industrial complex. The Portland Company was the city's largest employer in the 19th century and spurred residential development on Munjoy Hill and in the India Street neighborhood.

scale undertaken during the period the Portland Company was founded was unprecedented. Cast iron has been called “the plastic of the nineteenth century” for the way it transformed production and expanded the range of products available to industry and the public. Putting all of the stages of production for large machines in one place was a radical advance over traditional practices.

In addition to the hundreds of railroad-related engines, cars and other items it produced, the Portland Company manufactured and installed marine engines and boilers, aids, and other equipment for hundreds of vessels constructed at shipyards throughout Maine. It also shipped marine equipment to other shipyards throughout the country. The Portland Company also produced numerous vessels from the keel up, including tugboats, fishing vessels, yachts, dredges, freighters, fireboats and ferries. Also significant was the Portland Company’s production of lighthouse components and navigation buoys. “Bug Light” at the entrance to Portland Harbor was entirely produced by the Portland Company.

Beyond these two core areas of focus, the Portland Company produced equipment for Maine’s paper, textile and canning industries, as well as other industries throughout the region. Its extraordinary range of manufactured products included freight and passenger cars, fire engines, heavy snowplows, cast iron storefronts, elevators, light poles, manhole covers, and even neutron reactor shells for nuclear power plants late in the company’s existence.

Areas of Significance

As documented in the report prepared for the Portland Planning Department by Sutherland Conservation & Consulting, the Portland Company complex is significant at the local, state and national level. At the local level, the complex exhibits both historic *and* architectural significance.

The Portland Company has national historic significance because it appears to have been the first complex in this country built specifically for the manufacture of railroad equipment with all of the necessary shops and a foundry on a single site. The Portland Company complex as it stands today is a rare surviving example of a pre-Civil War foundry, machine shop, and car shop complex because it retains a number of its original and early buildings, whereas most, if not all, other pre-Civil War complexes have been substantially or wholly demolished. As such, the Portland Company complex contains the oldest surviving railroad shop buildings in the nation still within their historic manufacturing complex context. Recent research indicates the Portland Company appears to be the only surviving pre-Civil War locomotive manufacturing plant in the nation, making it the only one surviving where locomotives were built for the U.S. Government as part of that war effort.

The Portland Company has statewide historic significance because the company made a significant contribution to the development of Maine’s railroads (including the state’s iconic two-foot gauge lines) and maritime shipping industry. The locomotives, railroad cars, marine engines and boilers, and maritime navigation aids produced entirely or in part at the Portland Company were important to the development of rail and maritime transportation in the State of Maine from the middle of the nineteenth

century into the twentieth century. Industrial expansion, natural resource extraction, commerce, and tourism all benefited from improved transportation made possible by products of the Portland Company.

The Portland Company was the state's largest nineteenth century foundry-machine shop, with those two shops combined in a way that was unprecedented in Maine. The company grew to be the state's most substantial engineering and machine manufacturing business, employing 150 of the 500 machinists in the state at one point. The Portland Company also played a significant role in the development of many important industries in Maine including the paper-making, textile, and canning industries. A number of industrial processes likewise benefitted from the research and development of electrical engineer and inventor William Chapman for the Portland Company and through the Chapman Electric Neutralizer Company at the Portland Company.

The Portland Company has local historic significance because it is the only intact nineteenth and early twentieth century industrial complex remaining in the city. Thirty-three manufacturing plants can be identified in the 1876 Bird's Eye View of Portland. Only the Portland Company complex remains largely intact 139 years later. Portland had 60 sizable companies engaged in industrial production of various sorts in 1924, occupying more than 85 buildings. Of these 85 buildings, fewer than a dozen survive outside the Portland Company, none as complexes.

The Portland Company also has local historic significance for its direct association with several major nineteenth century planning and development initiatives within the city of Portland. As part of John A. Poor's vision for creating a modern international port at Portland, he conceived of a wide new street along the waterfront which would contain railroad tracks to connect the Atlantic & St. Lawrence Railroad on the east end of the city to the Portland, Saco & Portsmouth Railroad on the west end while providing both railroads access to the numerous wharves between their terminals. The narrow original waterfront street, Fore Street, followed the natural landform, snaking along the shore around Clay and Broad coves. The new street would be built by filling between the existing wharves below Fore Street, far enough out into the harbor to allow the construction of large new warehouse buildings along the land side of the street. Broad Cove would be filled for construction of the Atlantic & St. Lawrence Railroad terminal and for the Portland Company works and Clay Cove would be filled for the street and new buildings. The Portland Company site alone was originally almost seven acres, the majority of it made by filling the mud flats and cove. This project was undertaken cooperatively by the two railroads, the Portland Company, and the City of Portland, with the railroads paying the cost of filling between the wharves and the City paying wharf owners for the value of their properties seized through eminent domain. The mile-long and one hundred foot wide street would be named Commercial Street. This project was the largest urban planning initiative undertaken in the city of Portland in the nineteenth century and was transformative in its effects.

The buildings of the Portland Company complex have historic architectural significance because they remain substantially unaltered from the time of their original construction or enlargement during the company's occupancy and consequently show clearly the distinguishing characteristics (design and structural system) of several distinctive types of industrial buildings constructed between 1847 and 1920. Additionally, the Portland Company buildings from the 1840s and 1850s are the only industrial buildings of that period remaining in the city of Portland today.

The buildings of the Portland Company also have historic architectural significance because each of the remaining buildings served distinctive function(s) within the overall manufacturing process. Collectively, the existing buildings encompass the complete historic manufacturing process of the Portland Company.

National Register Eligibility: In 1976 the Portland Company complex was identified by the Maine Historic Preservation Commission as being eligible for listing in the National Register of Historic Places. The fact that the historic industrial complex was recognized as being highly significant as early as the 1970's is noteworthy, as the buildings and neighborhoods identified as National Register-eligible during that time period were typically landmark structures or neighborhoods with concentrations of high-style, architecturally notable buildings. Just like vernacular buildings or early working class neighborhoods, industrial sites were slower to gain recognition for their historic or architectural significance. It was the Portland Company's significant role in transportation and marine history at the local, state and national level, as well as its extraordinary importance to the history and economic growth of the City of Portland and the State of Maine that led to its early recognition as a National Register-eligible site.

Integrity of Portland Company Complex

As documented in the Sutherland report, the extant historic structures within the Portland Company complex retain a high degree of historic integrity. Historic integrity is based on the retention of sufficient essential physical features from the historic period, including location, design, setting, materials, workmanship and/or association, to convey the significance of a property. Except for some reversible alterations (e.g. infilled or enlarged window openings), most of the buildings remain substantially unchanged from the time of their original construction or alteration during the Portland Company's period of significance. For local designation purposes, the complex's *period of significance* has been defined as extending from 1847 (when the first building was constructed) until 1920, when the last purpose-built structure for the company's marine- and transportation-related work had been constructed.

As regards integrity of condition, six of the fourteen extant historic structures within the complex have been determined to be so deteriorated as to make their rehabilitation infeasible. Accordingly, these buildings have been classified as "noncontributing" structures due to their condition. (See map

and list of buildings with classifications in ATTACHMENTS 2 and 3. The assignment of this classification was based on applicable ordinance definitions and the professional assessment of two independent structural engineering firms. This level of deterioration is due primarily to a lack of maintenance and necessary repairs in recent decades. In the case of Buildings 4 and 11, however, other complicating factors have accelerated their deterioration. In the case of Building 11, the siting of the building against the Fore Street slope has undermined its structural integrity. In the case of Building 4, its exposed-to-the-weather structural system, which was experimental at the time the building was constructed, has failed.

Notwithstanding the finding as regards these six structures, the complex as a whole retains sufficient integrity of condition to make the remaining buildings and contributing site features worthy of preservation and feasible to rehabilitate. As has been demonstrated in numerous historic rehabilitation projects since Portland's historic preservation ordinance went into effect in 1990, once-significantly deteriorated buildings such as the former Cumberland Cold Storage Building on Merrill's Wharf, the Tracy-Causser Building at 507 Fore Street and the Portland Packing Company Building at 14-26 York Street, have been successfully rehabilitated and creatively adapted to new uses. Additionally, state and federal historic tax credits are available to offset the costs of challenging historic rehabilitation projects.

Visual Character of the Portland Company Site

One's ability to understand and appreciate of the Portland Company as an historic industrial site relies in great measure on the *relationship* of the buildings to each other within the complex. Indeed, the Portland Company derives its significance *as a complex*. Unlike most of Portland's other historic districts which are comprised of individual, often unrelated, structures that were sited according to a pre-established street grid, the Portland Company buildings were sited to perform a specific function within a larger manufacturing process. The proximity and orientation of the buildings to each other permitted related manufacturing processes



The linear alignment of the buildings east of the entrance yard creates a series of private streets or alleys. The distance between building rows allows one to observe the connected nature of the buildings and appreciate the scale of the historic complex.

to take place in a way that allowed for efficient progression of stages in the overall production process. Not only does this functional organization and placement of buildings in linear proximity to each other convey the history of this particular property, it also creates a visual character for the site that is unique for Portland. Also unique to this district is the way that the spacing between individual rows of connected buildings forms private streets or alleys. The overhead pedestrian bridges spanning these private alleyways also contribute to the district's distinct visual character.



A number of architectural characteristics serve to unify the individual buildings within this district. These include a shared material palette (mostly brick with granite or concrete window lintels and sills), a simplicity of form and a linear nature generally associated with industrial architecture. The repetitive nature of the buildings' fenestration is also a unifying characteristic.

A unifying characteristic of the industrial buildings within the Portland Company complex is their simplicity of form and repetition of detail. Most buildings are brick with granite or concrete window lintels and sills.

Other important visual characteristics of the Portland Company site include the presence of a major entrance at the west end of the property that follows the grade between the original shoreline at Fore Street and the complex below. (The current driveway has been the primary entrance to the complex since 1847.)

Important site characteristics include a major entrance into the complex from Fore Street near the west end of the district and a generous open space between Building 12 and the historic manufacturing rows. It is from this open yard that the original alignment of the production buildings is observed and the alleys are accessed.

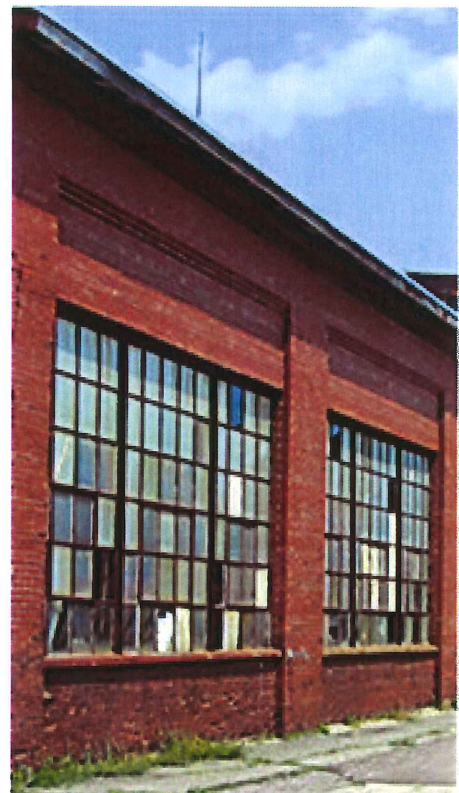


character-defining feature of the property. The yard has been, and continues to be, an open space serving the function of entranceway to the linear manufacturing paths of circulation. It is the point from which the streets or alleys of the complex are accessed. Historically, the entrance yard also served as a fire break between the manufacturing facilities to the east and the pattern and paint storage buildings to the west. The entrance yard has been in its current configuration since 1918.

While specific design guidelines have not been proposed for this district, it is important that these strong and identifiable visual characteristics be considered in the review of future infill development, new construction and site improvements within the district boundaries. New construction within the district should be a clear product of its own time but should also respect and reinforce the industrial architectural vocabulary, site organization and features that are unique to this historic property.



The pedestrian bridges connecting the manufacturing rows at the upper floor level are character-defining features of the industrial complex.



Windows within the manufacturing rows, whether on mid-19th century structures or this 1918 Erecting Building, are typically large and multi-lite.

Proposed Historic District Boundary

The land area encompassed by the proposed historic district is approximately 3.45 acres. Given that much of Building 4 and all of Building 5 are not included within the proposed boundary, the area of the proposed district is smaller than the area occupied by the current building complex (approximately 4.3 acres). The size of the entire property is 9.93 acres.

The district boundary has been drawn to encompass most of the extant historic structures on the Portland Company property, as well as site features and areas that are original to the complex and which contribute to its visual character. Although some of the historic structures within the boundary have been classified as non-contributing and may therefore be demolished as of right, any new development that might occupy the area of the demolished structures will likely affect one's appreciation and understanding of the remaining historic buildings and the complex as a whole. Accordingly, the boundary includes (almost) all of the extant historic structures. The one exception to this rule is the way the boundary is drawn in the vicinity of Building 4 (the 1895 foundry). Here, the boundary encompasses about one third of the length of the original structure. Given Building 4's classification as a noncontributing structure (due to its structural condition), its considerable length and its distance from several major view corridors within the site itself, including its entire footprint within the district boundary was determined to be unwarranted. Including a portion of the footprint, however, ensures that whatever is built adjacent to the remaining historic core of manufacturing buildings (Buildings 1-3) will be generally compatible with this historic core.

On the upland side of the district, the boundary extends to Fore Street. On the water's edge of the district, the boundary is held to the edge of the historic buildings themselves.

See ATTACHMENT 1 for district boundary map.

Structures Included Within Proposed Historic District Boundary

See ATTACHMENT 3 for a list of individual structures within the proposed district, together with their assigned classification (i.e. Contributing or Noncontributing). ATTACHMENT 2 is a color-coded map showing the buildings by classification.

Note: The findings in this designation report are based in part on documentation and professional assessments provided in two studies commissioned by the Portland Planning Department. These include *The Portland Company: Historic Significance and Integrity* prepared by Sutherland Conservation & Consulting and *Portland Company Complex General Building Condition Report* prepared by Resurgence Engineering and Preservation, Inc. Copies of the full reports are available in the Portland Planning Office.

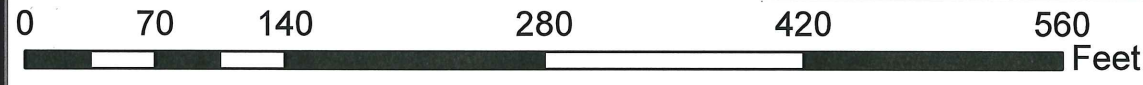
ATTACHMENTS

1. Proposed District Boundary
2. District Boundary with Building Classifications Shown
3. List of Individual Buildings within Proposed District



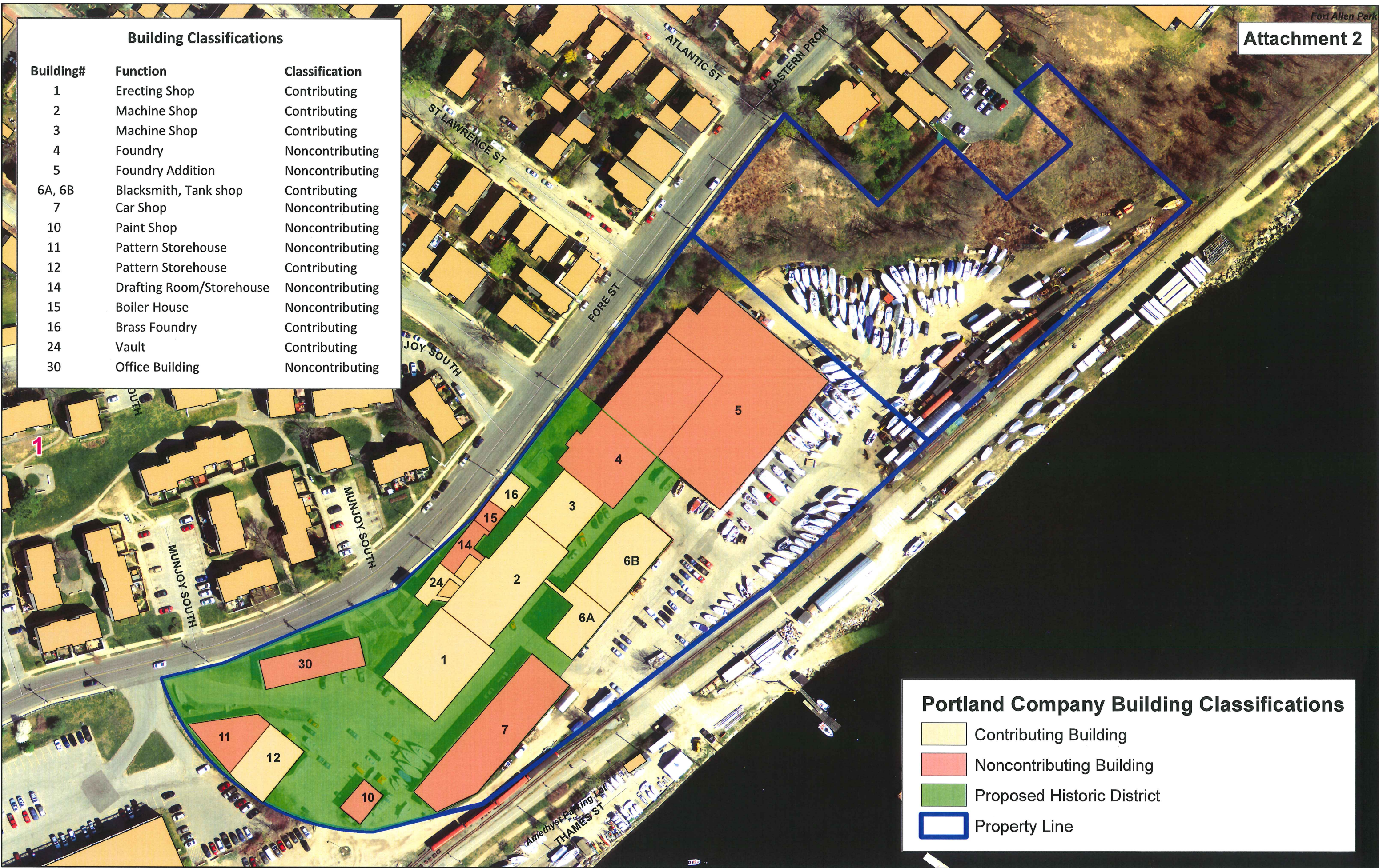
Proposed Portland Company Historic District

Property Line



Building Classifications

Building#	Function	Classification
1	Erecting Shop	Contributing
2	Machine Shop	Contributing
3	Machine Shop	Contributing
4	Foundry	Noncontributing
5	Foundry Addition	Noncontributing
6A, 6B	Blacksmith, Tank shop	Contributing
7	Car Shop	Noncontributing
10	Paint Shop	Noncontributing
11	Pattern Storehouse	Noncontributing
12	Pattern Storehouse	Contributing
14	Drafting Room/Storehouse	Noncontributing
15	Boiler House	Noncontributing
16	Brass Foundry	Contributing
24	Vault	Contributing
30	Office Building	Noncontributing



Portland Company Building Classifications

- Contributing Building
- Noncontributing Building
- Proposed Historic District
- Property Line

List of Portland Company District Buildings, with Classifications



Building 1

Erecting Shop, 1918

CONTRIBUTING



Building 2

Machine Shop, 1847

CONTRIBUTING*

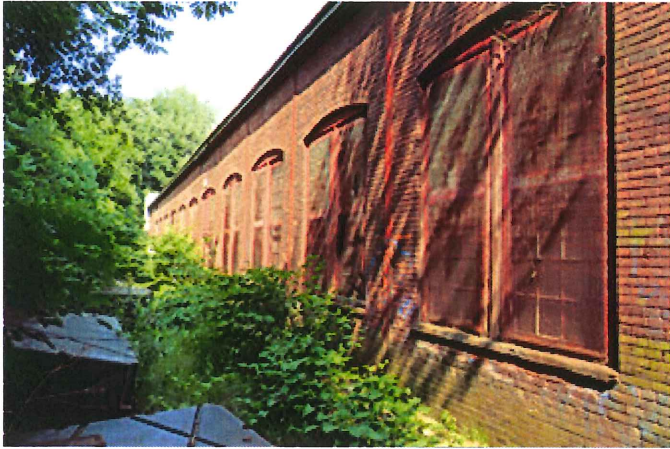
*shed dormer noncontributing based on structural condition



Building 3

Machine Shop, ca. 1847, addition ca 1895

CONTRIBUTING



Building 4

Foundry, 1895, addition 1904-1909

NONCONTRIBUTING based on structural condition



Building 5

Circa 1968 Addition to Foundry

NONCONTRIBUTING (outside the period of significance)



Buildings 6A

Chapman Electric Company building, 1896-1904

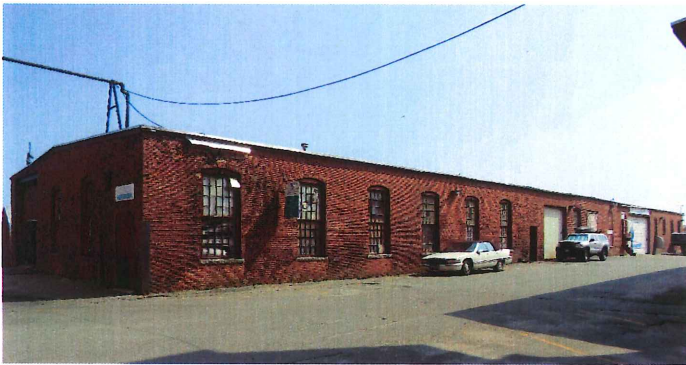
CONTRIBUTING



Building 6B

Blacksmith & Tank Shop, 1883

CONTRIBUTING



Building 7

Car Shop, c. 1873, addition 1904

NONCONTRIBUTING based on overall condition



Building 10

Paint Shop, c. 1873

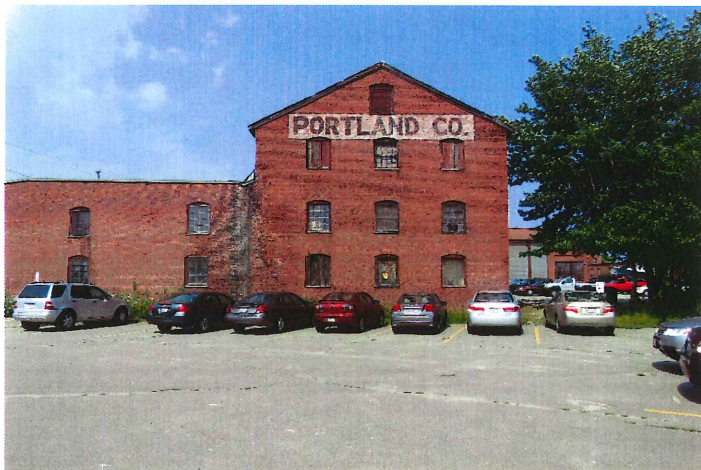
NONCONTRIBUTING based on overall condition



Building 11

Pattern Storehouse, c. 1885, 1895 addition

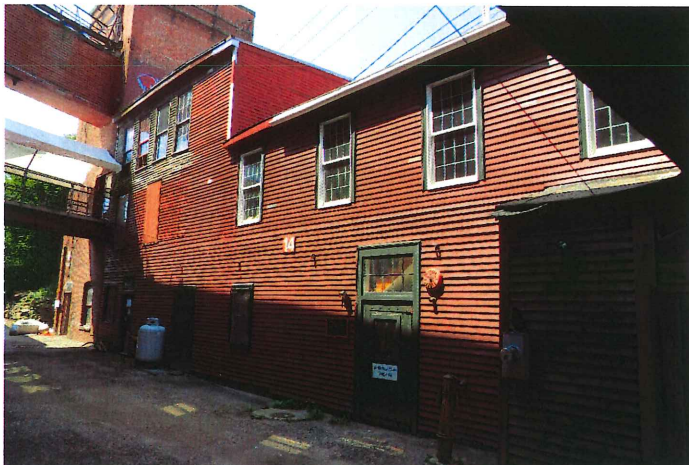
NONCONTRIBUTING based on structural condition



Building 12

Pattern Storehouse, 1895

CONTRIBUTING



Building 14

Drafting/Storehouse, ca. 1858-64

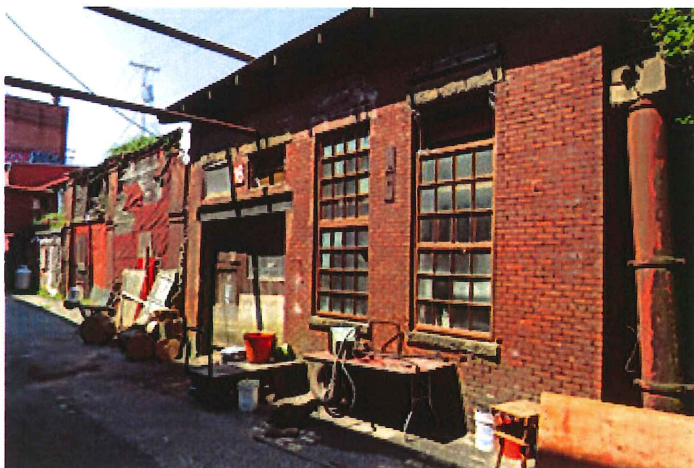
NONCONTRIBUTING based on condition, alterations



Building 15

Boiler, 1858-1864

NONCONTRIBUTING based on condition



Building 16

Brass Foundry, 1864-1871

CONTRIBUTING



Building 24

Vault Storage, ca. 1905

CONTRIBUTING



Building 30

Office Building, 1950

NONCONTRIBUTING (outside period of significance)

(s) To annually report to the council with following matters:

1. Survey work in progress or completed;
 2. The number of projects reviewed (by type);
 3. How many certificates of each type were issued.
- (Ord. No. 235-90, 2-26-90; Ord. No. 165-08/09, 3-16-09)

DIVISION 3. CATEGORIES AND CRITERIA FOR DESIGNATION

Sec. 14-610. Minimum criteria for designation.

(a) The historic preservation board shall limit its consideration to the following criteria in making a determination on a proposed nomination of an area, site, structure or object for designation by ordinance as a landmark or district:

- (1) Its value as a significant example of the cultural, historic, architectural, archeological or related aspect of the heritage of the City of Portland, State of Maine, New England region, or the United States;
- (2) Its location as a site of a significant historic or prehistoric event or activity which may have taken place within or which involved the use of any existing structure on the property;
- (3) Its identification with a person or persons who significantly contributed to the cultural, historic, architectural, archeological or related aspect of the development of the City of Portland, State of Maine, New England region, or the United States;
- (4) Its exemplification of a significant architectural type, style or design distinguished by innovation, rarity, uniqueness or overall quality of design, detail, materials or craftsmanship;
- (5) Its identification as the work of an architect, designer, engineer or builder whose individual work is significant in the history or development of the City of Portland, the State of Maine, the New England region, or the United States; or
- (6) Its representation of a significant cultural, historic,

architectural, archeological or related theme expressed through distinctive areas, sites, structures or objects that may or may not be contiguous.

(b) In the case of a nominated historic district, the historic preservation board shall also determine whether a substantial number of the properties, sites, structures or objects have a high degree of cultural, historic, architectural or archeological significance and integrity, many of which may qualify as landmarks, and which may also have within its boundaries other properties, sites, structures or objects which, while not of such cultural, historic, architectural or archeological significance to qualify as landmarks, nevertheless contribute to the overall visual characteristics of the significant properties, sites, structures or objects located within it.

(c) In the case of a nominated historic landscape district, the historic preservation board shall also consider its significance as a geologic, natural or man-made landscape feature associated with the development, heritage or culture of the City of Portland, State of Maine, New England region, or the United States.

(d) The planning board and council shall apply the criteria of subsections (a), (b) and (c) but shall also consider the effect of such designation on other aspects of the comprehensive plan of the city.

(Ord. No. 235-90, 2-26-90)

Sec. 14-611. Integrity of landmarks and historic districts.

Any area, structure or object that meets the criteria in section 14-610 must also have sufficient integrity of location, design, condition, materials and workmanship to make it worthy of preservation or restoration.

(Ord. No. 235-90, 2-26-90)

Sec. 14-612. Designation of historic landscape districts.

An historic landscape district may be nominated and considered for designation only if the entire area of the district is owned by a unit of federal, state or local government, or any combination of such ownership.

(Ord. No. 235-90, 2-26-90; Ord. No. 220-93, § 2, 5-17-93)

Sec. 14-613. Reserved.

DIVISION 4. NOMINATION, CONSIDERATION AND DESIGNATION

Sec. 14-614. Procedure.

The provision of this division shall govern the nomination, consideration and designation of landmarks and districts.
(Ord. No. 235-90, 2-26-90)

Sec. 14-615. Initiation of nomination.

(a) Nomination of an area, site, structure or object for consideration of designation as a landmark, historic district or historic landscape district shall be submitted to the department, on a form provided by the department, by the following:

- (1) Any two (2) members of the historic preservation board on their own initiative, by written notice to the department; or
- (2) By written petition of any owner, in the case of a landmark; or
- (3) By written petition of one (1) or more owners of affected property in the case of a district; provided two (2) members of the historic preservation board must sponsor the petition.

(b) A nomination shall be completed and filed with the department with all required signatures and any fees specified therefore for the nomination to be pending.

(c) Upon nomination, the department shall notify the owner or owners of the nomination and shall transmit the nomination to the historic preservation board for its consideration at its next scheduled meeting, which in no event shall be held later than thirty (30) days following nomination.

(d) At any time after a complete nomination is filed for an historic district, the owner of a structure who seeks a permit for demolition may apply to the historic preservation board for a determination that the structure to be demolished is noncontributing and eligible for a demolition permit. The determination of the historic preservation board that the structure is eligible for a permit shall be conclusive.

(Ord. No. 235-90, 2-26-90; Ord. No. 165-08/09, 3-16-09)

Sec. 14-616. Notification of nomination and public hearing.

(a) A public hearing on the nomination shall be held by the historic preservation board within thirty (30) days following the first scheduled meeting referred to in section 14-615(c), but in no event later than sixty (60) days following receipt of the completed nomination form by the department. Notice of the nomination and of the public hearing shall be in accordance with the procedures for public hearings before the planning board for site plan approval.

(b) The hearing shall be conducted in accordance with procedures adopted by the historic preservation board. The historic preservation board shall consider all testimony or evidence relating to the designation criteria in division 3 from any person who makes written submissions or appears at the public hearing. Historic preservation board members may also present testimony or make submissions. The owner of a nominated landmark or of property within a nominated district shall be allowed reasonable opportunity to present testimony or evidence concerning the applicability of the designation criteria in division 3.

(Ord. No. 235-90, 2-26-90)

Sec. 14-617. Recommendation by historic preservation board.

Within thirty (30) days following the close of the public hearing, the historic preservation board shall make recommendation to the council in the case of a landmark, or to the planning board in the case of a district, upon the evidence as to whether the nominated landmark or district meets the criteria for designation in division 3. Such recommendation shall be approved by at least four (4) members of the historic preservation board and shall be accompanied by a report to the council or planning board containing the following information:

- (a) Explanation of the significance or lack of significance of the nominated landmark or district as it relates to the criteria for designation.
- (b) Explanation of the integrity or lack of integrity of a nominated landmark or historic district.
- (c) Proposed design guidelines for review of alteration or construction. The specific design guidelines may provide explanation by text and/or schematic examples of visual compatibility for purposes of division 7.
- (d) Relationship of the nominated landmark or district to the ongoing effort by the committee to identify and nominate

department evidencing a determination that specific plans for alteration of a structure or new construction on a site do not require approval under this article.

Contributing: A classification applied to a site, structure or object within a historic district signifying that it contributes generally to the qualities that give the historic district cultural, historic, architectural or archeological significance as embodied in the criteria for designating an historic district, but without being itself a landmark.

Council: The city council.

Demolition: Any act or process that partially or totally destroys a structure or object.

Department: The department of planning and urban development.

Design guidelines: Any design standard specified for alteration or new construction which is unique to a particular landmark, historic district or historic landscape district.

Design manual: The historic resources design manual described in section 14-675.

District: An historic district or historic landscape district.

Historic district: An area designated as an "historic district" by the council.

Historic landscape district: An area designated as an "historic landscape district" by the council.

Landmark: A property, site, structure or object designated as a "landmark" by the council as having a high degree of historical, cultural and/or architectural significance.

Major development: As defined in article V of this chapter.

Minor development: As defined in article V of this chapter.

New construction: The adding to a structure by an addition; the erection or placement of any new structure on a lot or property; or the comprehensive redesign/renovation of an existing structure.

Noncontributing: A classification applied to a site, structure, object, or portion thereof, within a historic district signifying that 1) it does not contribute generally to the qualities that give the historic district cultural, historic, architectural or archaeological significance as embodied in the criteria for designating a historic district; 2) was built within 50 years of the date of district designation unless otherwise designated in the historic resources inventory; or 3) where the location, design, setting, materials, workmanship and association have been so altered or have so deteriorated that the overall integrity of the site, structure or object has been irretrievably lost. A portion of an otherwise contributing or landmark structure may be determined by the historic preservation board to be non-contributing if it meets one or more of the above conditions.

Object: Anything constructed, fabricated or created, the use of which does not require permanent or semi-permanent location on or in the ground.

Open space: Any park and any other area outside of a building open to the public.

Ordinary maintenance: Acts of maintenance or repair which do not include a change in the design, material or outer appearance of a structure, including without limitation repainting, replacement of materials or windows of the same scale, texture and color, and landscaping other than within an historic landscape district.

Owner: The person or persons holding record title to the building, site or property; provided, however, the last previous tax roll in the records of the city assessor's office may be relied upon as showing record ownership in the absence of substantial evidence to the contrary.

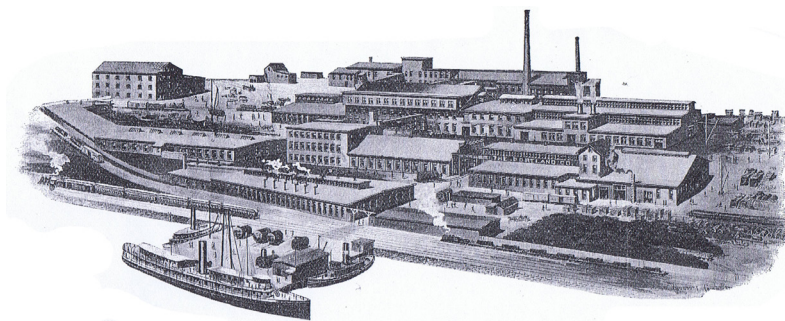
Property: Land and improvements identified as a separate lot for purposes of subdivision, site plan, or zoning regulation.

Relocation: Any removal or relocation of a structure on its site or to another site.

Restoration: Any act which returns a structure or a feature of a structure to a prior state of historic significance.

Sign: As defined in section 14-47.

Site: The location of an event, activity, structure or object.



The Portland Company
Historic Significance and Integrity

Sutherland Conservation & Consulting
2014

Scott T. Hanson
Amy Cole Ives
Matthew Corbett

The Portland Company: Historic Significance and Integrity

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Introduction

Sutherland Conservation & Consulting (SCC) has been retained by the City of Portland to research, document and analyze the historic and architectural significance of the Portland Company complex. The historic assessment report is intended to address the place and significance of the Portland Company within the city of Portland, the state of Maine, and beyond; especially in the context of national trends in manufacturing and transportation during the company's years of operation (1847-1982).

This historic assessment report will:

- identify the areas of historic significance for the complex at the National, State, and Local levels
- identify the historic period(s) of significance for the complex
- use developmental modeling to analyze and assess the relative historic significance of the individual structures as well as the role each structure played in the manufacturing processes of the Portland Company and within the complex as a whole, and how each contributes to the ability to understand and appreciate the evolution of complex over time.

Additionally, SCC has been asked to assess the historic integrity of the individual buildings and the complex as a whole. Historic integrity is distinct from structural integrity. Historic integrity is based on the retention of sufficient essential physical features from the historic period, including location, design, setting, materials, workmanship, feeling, and/or association, to convey the significance of a property.

The work of this report does not duplicate the Inventory of Historic Buildings by Tremont Preservation Services dated January, 2014 or the Evaluation of Existing Buildings at the Portland Company Property by Becker Structural Engineers dated March 28, 2014, but it does utilize the same numbering system for the buildings in the complex to the greatest extent possible to facilitate cross-referencing the reports. The text of the Tremont report has been included as an appendix to this report with annotations that have been added to provide additional information and clarifications based on research completed by Sutherland Conservation & Consulting.

A summary history of the Portland Company has not been included in the body of this report because the Historical Context section of the Tremont report (pages 44-51) provides this information.

Methodology

Primary and secondary sources were reviewed and utilized including extensive research in the Portland Company records at the Maine Historical Society and in depth research into the early history of railroad locomotive manufacturing in the United States. Using historic maps, site plans, building plans and numerous historic photographs, the historic development and evolution of the buildings of the Portland Company complex have been documented and compiled in a series of site plans and developmental models to illustrate how the complex has changed over time. A site visit was completed on July 23, 2014 to inspect and photo-document the interiors and exteriors of all the existing buildings to assess how much of the original design and materials remain intact for the buildings individually and the complex collectively.

The historic photographs and developmental models were compared to the existing conditions photographs to evaluate the historic integrity and significance of the buildings individually and the complex as a whole. The historic and architectural significance and integrity of the Portland Company complex has been assessed utilizing the criteria of the National Register of Historic Places, which is recognized as the standard for determining historic and architectural significance in the United States and is also the basis for the City of Portland's Designation Criteria.

Executive Summary

The Portland Company was established in 1846 in conjunction with construction of the Atlantic & St. Lawrence Railroad which was built to connect Portland to Montreal. John A. Poor, the individual most responsible for Portland's successful bid over Boston to become Montreal's winter port via rail, was a Director of the Atlantic & St. Lawrence Railroad and became the first President of the Portland Company.¹ Other Atlantic & St. Lawrence Directors were also stockholders in the Portland Company, including Portland's wealthiest individual John Bundy Brown, who would become President of the company in 1864; Congressman and later Senator and U. S. Secretary of the Treasury William P. Fessenden; and Captain George Turner, who was given a seat on the railroad's Board between the regular annual Director's elections, shortly after selling property to the Portland Company for their works.

The period of significance for the Portland Company complex begins with the start of operations in 1847 and extends to the end of foundry work at the Portland Company in 1982. Within this period, specific periods of significance are identified for different areas of significance in Appendix G. During the period of significance, the plant experienced several substantial expansions and numerous small alterations. In 1873, fire destroyed several buildings at the south end of the property which were then rebuilt. No substantial changes have been made since 1920 except for the demolition of the wooden blacksmith and tin shop and the replacement of the late-19th century wooden boiler shop by a large modern steel building in the second half of the 20th century. A modern brick and wood office building was built on the site of earlier stables circa 1950. Through all of this, a number of the pre-Civil War buildings have remained largely intact and would be easily recognizable to John A. Poor and the original company directors and employees of the Portland Company.

The use of cast metals, particularly iron, was central to the rapid industrialization and expansion of the United States in the nineteenth century. Although the technology was ancient, the use of it at the scale undertaken during the period the Portland Company was founded was unprecedented. Cast iron has been called, "the plastic of the nineteenth century" for the way it transformed production and expanded the range of products available to industry and the public. Putting all of the stages of production for large machines, like steam locomotives, in one place was a radical advance over traditional practices. Combined with the use of patterned cast iron parts, as opposed to individually hand-crafted unique parts, this advance laid the foundation for Henry Ford's next step in the progression of efficient production, the assembly line. The Portland Company complex represents an important advance in this process and is possibly the only surviving example of such a complex documenting this stage of industrial production in the United States. Its survival in largely intact condition in 2014 is noteworthy and remarkable.

National, State and Local Historic Significance

The Portland Company has national historic significance because it appears to have been the first complex in this country built specifically for the manufacture of railroad equipment with all of the necessary shops and a foundry on a single site. The Portland Company complex as it stands today is a rare surviving example of a pre-Civil War foundry, machine shop, and car shop complex because it retains a number of its original and early buildings, whereas most, if not all, other pre-Civil War complexes have been substantially or wholly demolished. As such, the Portland Company complex contains the oldest surviving railroad shop buildings in the nation still within their historic manufacturing complex context. Recent research indicates the Portland Company appears to be the only surviving pre-Civil War locomotive manufacturing plant in the nation, making it the only one surviving where locomotives were built for the U.S. Government as part of that war effort.

The Portland Company has statewide historic significance because the company made a significant

1 Poor, Laura Elizabeth, John A. Poor. *The First International Railway and the Colonization of New England, Life and Writings of John Alfred Poor*, 1890

contribution to the development of Maine's railroads (including the state's iconic two-foot gauge lines) and maritime shipping industry. The locomotives, railroad cars, marine engines and boilers, and maritime navigation aids produced entirely or in part at the Portland Company were important to the development of rail and maritime transportation in the state of Maine from the middle of the nineteenth century into the twentieth century. Industrial expansion, natural resource extraction, commerce, and tourism all benefited from improved transportation made possible by products of the Portland Company.

The Portland Company was the state's largest nineteenth century foundry-machine shop, with those two shops combined in a way that was unprecedented in Maine. The company grew to be the state's most substantial engineering and machine manufacturing business, employing 150 of the 500 machinists in the state at one point. The Portland Company also played a significant role in the development of many important industries in Maine including the paper-making, textile, and canning industries. A number of industrial processes likewise benefitted from the research and development of electrical engineer and inventor William Chapman for the Portland Company and through the Chapman Electric Neutralizer Company at the Portland Company.

The Portland Company has local historic significance because it is the only intact nineteenth and early twentieth century industrial complex remaining in the city. Thirty-three manufacturing plants can be identified in the 1876 Bird's Eye View of Portland. Only the Portland Company complex remains largely intact 138 years later. Portland had 60 sizable companies engaged in industrial production of various sorts in 1924, occupying more than 85 buildings. Of these 85 buildings, fewer than a dozen survive outside the Portland Company, none as complexes.

The Portland Company has local historic significance for its association with several significant 19th century planning and development initiatives within the city of Portland. As part of John A. Poor's vision for creating a modern international port at Portland, he conceived of a wide new street along the waterfront which would contain railroad tracks to connect the Atlantic & St. Lawrence R. R. on the east end of the city to the Portland, Saco & Portsmouth R. R. on the west end while providing both railroads access to the numerous wharves between their terminals. The narrow original waterfront street, Fore Street, followed the natural landform, snaking along the shore around Clay and Broad coves. The new street would be built by filling between the existing wharves below Fore Street, far enough out into the harbor to allow the construction of large new warehouse buildings along the land side of the street. Broad Cove would be filled for construction of the Atlantic & St. Lawrence Railroad terminal and for the Portland Company works and Clay Cove would be filled for the street and new buildings. The Portland Company site alone is seven acres, the majority of it made by filling the mud flats and cove. This project was undertaken co-operatively by the two railroads, the Portland Company, and the city of Portland, with the railroads paying the cost of filling between the wharves and the City paying wharf owners for the value of their properties seized through eminent domain. The mile-long and one hundred foot wide street would be named Commercial Street.² This project was the largest urban planning initiative undertaken in the city of Portland in the nineteenth century and was transformative in its effects.

Historic Architectural Significance

The buildings of the Portland Company complex have historic architectural significance because they remain substantially unaltered from the time of their original construction and consequently show clearly the distinguishing characteristics (design and construction materials) of several distinctive types of industrial buildings constructed between 1847 and 1920. Additionally, the Portland Company buildings from the 1840s and 1850s are the only industrial buildings of that period remaining in the city of Portland today.

2 Poor, Laura Elizabeth, John A. Poor. *The First International Railway and the Colonization of New England, Life and Writings of John Alfred Poor*, 1890.

Records of the Atlantic & St. Lawrence Railroad, Maine Historical Society.

The buildings of the Portland Company also have historic architectural significance because each of the remaining buildings served distinctive function(s) in the historic manufacturing process. Collectively, the existing buildings encompass the complete historic manufacturing process of the Portland Company.

Historic Significance and Visual Character of the Portland Company Site

The primary entrance to the site off Fore Street is a curving roadway that follows the grade between the original shoreline at Fore Street and the filled mudflat land on which the complex is built. This has been the entrance to the property since 1847 and is historically significant as an original site feature that has not been substantially altered. This curving roadway leads to the historic entrance yard of the complex.

The entrance yard has historically been, and continues to be, an open space serving the function of entranceway to the linear manufacturing paths of circulation. It is the point from which these streets and alleys of the complex are accessed. Historically, it also served as a fire break between the manufacturing facilities, the paint shop and the pattern storage buildings. At different points in time a car shop and other buildings have projected into this space, especially prior to the construction of the much larger erecting shop (building 1) in 1918. The entrance yard has been in its current configuration for nearly 100 years.

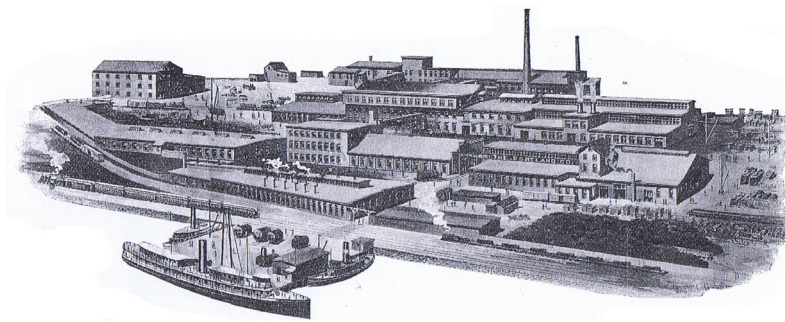
The historic functional organization and placement of the Portland Company buildings in linear proximity to each other creates a visual character for the site that is unique for Portland in the way that the industrial buildings form private streets or alleys. The overhead pedestrian bridges spanning these private streets are also unique in Portland and contribute to the visual character and historic significance of the site.

To a large degree, the architectural significance of the Portland Company exists in the relationship of the buildings to each other within the complex. The proximity and orientation of the buildings to each other permitted related manufacturing processes to take place in a way that allowed for the efficient progression of stages in the production of the company's products.

Findings:

- The Portland Company complex is historically significant within local, state and national historic contexts related to industry, transportation, community planning and architecture.
- The buildings individually and the complex as a whole retain a high degree of architectural integrity to the period of significance for the complex (Portland Company production 1847 – 1982).
- All of the buildings of the complex constructed over 50 years ago contribute to the historic significance and integrity of the Portland Company complex.
- Collectively, the existing buildings encompass the complete historic manufacturing process of the Portland Company with the exception of one shop for the construction of boilers.
- Together, the historic significance and historic integrity of the Portland Company complex make it one of the most historically important sites in the city of Portland.
- The removal of any of the historic buildings existing in the complex will diminish the ability of the complex to demonstrate the historic manufacturing process of the Portland Company.
- The Portland Company was the largest business in the city in the mid-nineteenth century and is the only remaining intact nineteenth and early twentieth century industrial complex in the city of Portland today.
- The Portland Company buildings remaining from the 1840s and 1850s are the only industrial buildings of that period surviving in the city of Portland.

- The outstanding nature of the architectural integrity of the complex and exceptional historic value of the Portland Company as the first self-contained complex in the nation built specifically for the manufacture of railroad equipment may make it a strong candidate for National Historic Landmark eligibility consideration.
- The historic Portland Company complex is a compact manufacturing facility characterized by two distinct areas, the entrance yard and the manufacturing corridors.
- The historic functional organization and placement of the Portland Company buildings in linear proximity to each other along the manufacturing corridors creates a visual character for the site that is unique for Portland in the way that the industrial buildings form private streets or alleys. This is similar to the character found in large textile mill complexes in Maine cities like Lewiston, Biddeford, and Sanford but not found elsewhere in Portland.
- The compact nature, visual continuity and circulation routes of the historic manufacturing facility of the Portland Company are significant character defining features of the site. The removal of any contributing building would adversely impact the historic significance and character of the whole complex.
- Currently the only modern intrusion into the visual continuity of the complex is building 5, located on the northeast side of the foundry building (building 4).
- In considering the redevelopment of the property for new uses while retaining the essential physical features that give it integrity, a large city-owned vacant parcel to the southwest of the site might provide an opportunity for a connection from the site to Thames Street, allowing enhanced access without altering the historic entrance to the site or the visual character of the entrance yard and “streets” between the historic buildings.
- A large area of vacant land on the east end of the site abuts the largest building on the property, the not-historically-significant modern building wrapping around the two sides of the Foundry. Removal of the modern building could allow access to new development at the east end of the site in a way that maintains the visual character of the “street” between the Erection Shop, Machine Shop, and Foundry and the Car Shop and Blacksmith Shop.
- Compatible new buildings on the sites of the demolished Boiler Shop and Tin and Smith Shop could reinforce the historic character of the site’s “streets.”

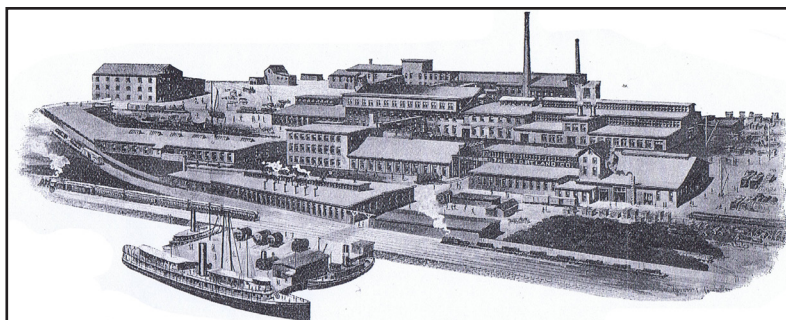


Section I:
Historic Significance of the Portland Company

National Historic Significance of the Portland Company

The Portland Company complex is a rare surviving example of a pre-Civil War foundry, machine shop, and car shop complex built for the manufacture of railroad equipment in 1847. It appears to have been the first such self-contained complex in the nation built specifically for that purpose, with all of the necessary shops and a foundry on a single site. It also contains the oldest surviving railroad shop buildings in the nation.

The first companies to produce railroad locomotives in the United States beginning in 1830 were existing machine shops and/or foundries which adapted existing machinery and practices to build steam locomotives. The few companies established specifically to produce locomotives in the 1830s and early 1840s used outside foundries for the necessary castings. This included the Norris Steam Carriage Company (later Norris Locomotive Works) in Philadelphia and the Baltimore & Ohio Railroad shops at Mount Clare, Maryland, which were begun in 1829. The first foundry at the Mount Clare Shops, now a National Historic Landmark, was not constructed until after the Civil War. The earliest surviving shop building at Mount Clare dates from 1869-70. A number of early locomotives were manufactured by the West Point Foundry in New York, established after the War of 1812 to produce armaments and ammunition for the American forces. This plant exists now only as fragmentary ruins in a state park. Baldwin Locomotive Works, which would become America's largest producer of steam locomotives, began when former watchmaker Mathias Baldwin built a working model steam locomotive for the Peale Museum in Philadelphia in 1831. Baldwin and a partner had established a machine shop in 1825 to manufacture bookbinding tools and textile printing cylinders. In 1832, they built the first full scale Baldwin locomotive, again using an outside foundry. The original Baldwin works were demolished in 1937, after a new plant was built at another location. The neighboring Norris



Sketch of the Portland Company c. 1910. Courtesy of the Maine Historic Preservation Commission.

Locomotive Works buildings had been demolished in 1896. Surviving railroad locomotive foundries and shops from before the Civil War are extremely rare today. It appears from recent research that except for a possible few individual buildings that were once part of locomotive manufacturing complexes, the pre-1860 Portland Company buildings are the only ones remaining. As mentioned above, the Portland Company complex was apparently the first fully self-contained complex built specifically for locomotive construction. It is also the only surviving plant where locomotives were built for the U.S. Government for the use of the Union Army as part of the Civil War effort.¹



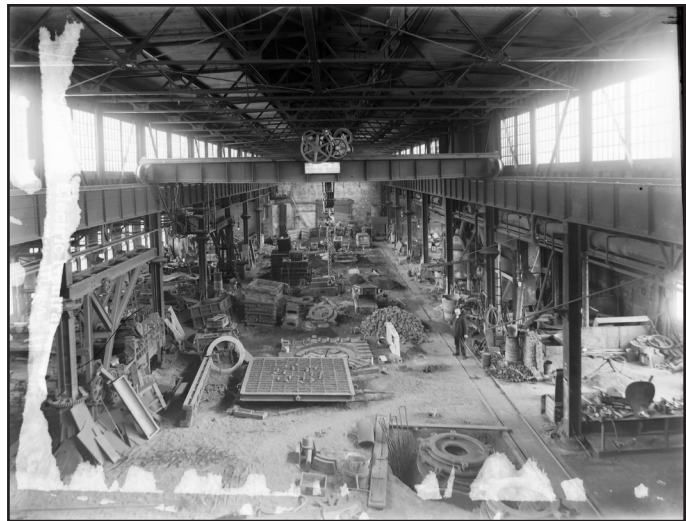
Locomotive rendering, 1851. Courtesy of the Maine Historical Society.

1 Information contained in this paragraph was compiled from numerous sources, the most important being: Meyer, David R. *Networked Machinists: High-Technology Industries in Antebellum America*.
Converse, John H. "Locomotive Building in the United States," *Cassier's Magazine*, Volume 20, 1901. 221-237.
Colburn, Zerah. *The Locomotive Engine: Including a Description of Its Structure, Rules for Estimating Its Capabilities, and Practical Observations on Its Construction and Management*, 1851.
Lamb, J. Parker. *Perfecting the American Steam Locomotive*, 2003.
Simmons-Boardman Publishing Company. "The Norris Locomotive Works," *Railway Age and Railway Review*,

The use of cast metals, particularly iron, was central to the rapid industrialization and expansion of the United States in the nineteenth century. Although the technology was ancient, the use of it at the scale undertaken during the period the Portland Company was founded was unprecedented. Cast iron has been called, “the plastic of the nineteenth century” for the way it transformed production and expanded the range of products available to industry and the public. Putting all of the stages of production for large machines, like steam locomotives, in one place was a radical advance over traditional practices. Combined with the use of patterned cast iron parts, as opposed to individually hand-crafted unique parts, this advance laid the foundation for Henry Ford’s next step in the progression of efficient production, the assembly line. The Portland Company complex represents an important advance in this process and is possibly the only surviving example of such a complex documenting this stage of industrial production in the United States. Its survival in largely intact condition in 2014 is noteworthy and remarkable.

State Historic Significance of the Portland Company

The Portland Company made a significant contribution to the development of Maine’s railroads (including the state’s iconic two-foot gauge lines) and maritime shipping industry. The locomotives, railroad cars, marine engines and boilers, and maritime navigation aids produced entirely or in part at the Portland Company were important to the development of rail and maritime transportation in the state of Maine from the middle of the nineteenth century into the twentieth century. Industrial expansion, natural resource extraction, commerce, and tourism all benefited from improved transportation made possible by products of the Portland Company. The Portland Company was the state’s largest nineteenth century foundry-machine shop, with those two shops combined in a way that was unprecedented in Maine. The company grew to be the state’s most substantial engineering and machine manufacturing business, employing 150 of the 500 machinists in the state at one point.² The Portland Company also played a significant role in the development of many important industries in Maine including the paper-making, textile and canning industries. A number of industrial processes likewise benefitted from the research and development of electrical engineer and inventor William Chapman for the Portland Company and through the Chapman Electric Neutralizer Company located at the Portland Company.



Interior view of the Foundry Building, c. 1880. Courtesy of the Maine Historical Society.

Railroads

The Portland Company was created as an adjunct to the Atlantic & St. Lawrence Railroad shortly after

Volume 47, 1909. 231-236.

Swank, James Moore. *History of the Manufacture of Iron in All Ages: And Particularly in the United States from Colonial Time to 1891*.

White, John H. *A History of the American Locomotive: Its Development, 1830-1880*.

A. Sinclair Company. *Railway and Locomotive Engineering: A Practical Journal of Railway Motive Power and Rolling Stock*, Volume 16, 1903.

Solomon, Brian. *American Steam Locomotive*, 1998.

Kinert, Reed. *Early American Steam Locomotives*, 2012.

2 Rivard, Paul E. *Made in Maine: From Home and Workshops to Mills and Factories*, 2007, 144.

that line was chartered to run from Portland to Montreal. The principal proponent of the Atlantic & St. Lawrence Railroad, John A. Poor, was the first president of the Portland Company as well as a director of the railroad company.

Maine railroads that used Portland Company produced locomotives and cars included the Atlantic & St. Lawrence, the Grand Trunk, the Portland, Saco & Portsmouth, Portland & Kennebec, Portland & Rochester, Portland & Ogdensburg, Eastern, Maine Central, Boston & Maine, and Rumford Falls & Buckfield railroads. A number of locomotives were built for Maine's iconic two-foot gauge railroads including the Phillips & Rangely, Sandy River, Kennebec Central, Bridgton & Saco River, and the Wiscasset & Quebec. Maine's logging railroads also used Portland Company equipment, including geared locomotives to run on the rough temporary tracks of logging railroads and log bunks to transport logs on. In addition to locomotives, the Portland Company manufactured passenger and freight cars, wheels, and rail components including switch frogs.

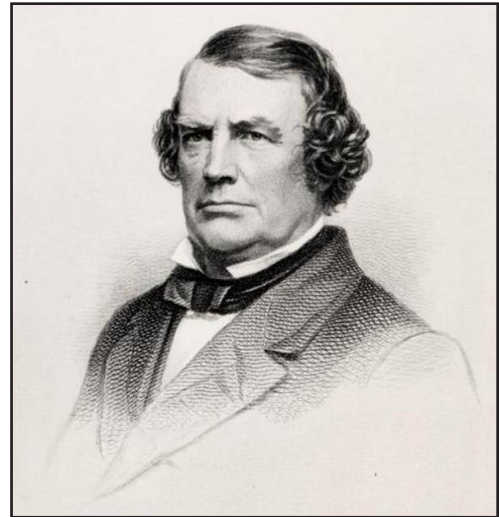
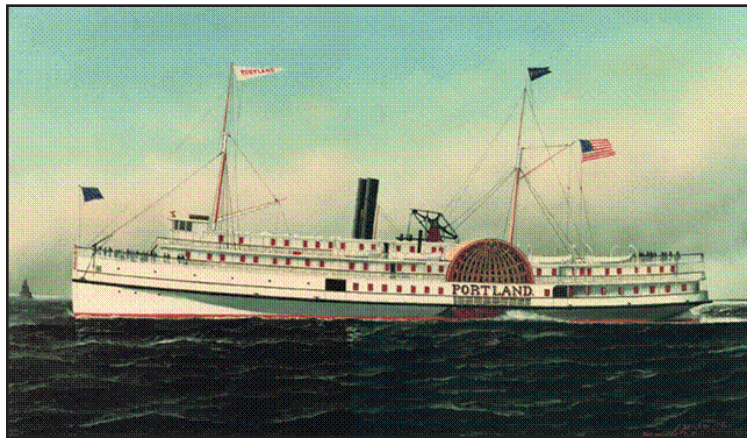


Illustration of John A. Poor. Courtesy of the Maine Historical Society.

Portland Company locomotives were also built for many out-of-state railroads. One hundred locomotives were manufactured for the Northern Pacific Railroad, with half delivered overland and half loaded on ships and sent around Cape Horn to the West Coast. Locomotives were also built for Canadian railroads including the New Brunswick & Canada and the Quebec, Montreal, and the Ottawa, & Occidental, as well as for the Panama Railroad in Central America. Appendix C contains a list of all the railroads named in the records of the Portland Company at the Maine Historical Society.³



Courtesy of the Maine Historical Society.

Maritime Transportation

The directors of the new Portland Company received the first request for the company to build a boiler for a steam ship before the first buildings were completed or operations begun. During the course of its history, the Portland Company manufactured and installed boilers, marine engines and other equipment for hundreds of vessels constructed at shipyards from Kennebunkport to Lubec, as well as its own shipyard in South Portland. Outside of Maine, Portland Company supplied boilers, engines, and other equipment to hundreds of vessels built at yards as

close as Massachusetts and as far away as Oregon. Vessels included massive passenger steamers like the *Portland* (280' long), trawlers and porgy boats for commercial fishing, freighters, passenger ferries, tow and tug boats, private yachts, and the 205' long steam gun ships *Agawam* and *Pontoosuc*, built for the U. S. Navy during the Civil War.⁴

3 Records of the Portland Company, Maine Historical Society. Fletcher, David H. *The Portland Company, 1846-1982*, 2002.

4 Records of the Portland Company, Maine Historical Society. Fletcher, David H. *The Portland Company, 1846-1982*, 2002.

Also significant to marine transportation was the Portland Company's production of lighthouse components and navigation buoys. Drawings at the Maine Historical Society from the late 1860s through the late 1890s include cast iron parts such as lanterns, lamp decks, spiral stairways, doors, sashes, walkways, railings, and other parts for lighthouses in Maine, New Hampshire and Massachusetts. In some cases, such as "Bug Light" at the entrance to Portland Harbor, they manufactured the entire Greek Revival style cast iron structure. They also produced elaborate fog signal whistles which included a boiler, timer, and whistle for installation at light stations and fog signal stations.

Other Maine Industries

Maine companies that used Portland Company equipment include the Burnham & Morrill and Portland Packing Company canning companies, S. D. Warren Paper Company, and Sanford Mills. Specialized equipment for the paper industry included chipper discs and massive debarking drums, washing drums, and sulphite digesters. Numerous large industrial plants and mills were heated and powered by Portland Company steam boilers. In the mid-twentieth century the Portland Company produced parts for rotary welding inside pipes used in nuclear power plants and manufactured neutron reactor shells for those plants. They also manufactured machinery for forming and extruding plastics.



View of a Portland Company digester sitting between the Blacksmith & Tank shop and Boiler Shop. Courtesy of the Maine Historical Society.

William H. Chapman

In the early twentieth century, inventor and electrical engineer William H. Chapman (1860 - 1944) was in charge of the Portland Company's research department and did important work in the basic research that led to the development of microwave technology as well as experimentation and invention related to the use of electricity in manufacturing.⁵ Portland Company voltage regulators were used in mills and factories throughout Maine and beyond. Chapman also invented the Chapman Electric Neutralizing Machine while at the Portland Company in 1906.⁶ This device removed static electricity during the manufacturing process and was critical to the paper and textile industries of Maine. *Who's Who in New England*, 1909, lists Chapman as electrical engineer for the Portland Company and also as director and electrical engineer for Chapman Electric Neutralizer Company, with an office at 58 Fore Street – indicating that Chapman had his own company within the complex of the Portland Company while working for the company. Chapman received a second patent for improvements to the original electric neutralizing design in 1916, the same year he patented an elevator brake.

Local Historic Significance of the Portland Company

Portland Company is the only intact 19th – early 20th century industrial complex in the city of Portland

The Portland Company has local historic significance as the largest business in the city in the mid-nineteenth century and the only remaining intact nineteenth and early twentieth century industrial complex in the city of Portland. Virtually all evidence of Portland's nineteenth century industrial history has been lost with the exception of the Portland Company complex. In *Portland Maine, Its Representative Business Men and Points of Interest*, author George F. Bacon wrote of the Portland Company in 1891, "Since the

⁵ Sprague, Phineas. Society for Industrial Archaeology conference tour of the Portland Company complex, June 16, 2014.

⁶ US Patent #878273 A, filed May 25, 1906, granted February 4, 1908.

incorporation of the Portland Company about 45 years ago it has done more than any other one corporation or firm to make the name of the city well and favorably known throughout the United States, and if there is one enterprise entitled above all others to be classed as representative it is that conducted by the company in question, for this is a Portland undertaking, has always been conducted by Portland men, is located on Portland territory, and by distributing about a quarter of a million of dollars in wages annually has been and is a most powerful factor in attracting skilled workmen to and otherwise promoting the growth of the city.”⁷



Top: view showing 1876 aerial drawing with industrial complexes circled in white.
Below: similar view with remaining industrial sites highlighted.

Thirty-three manufacturing plants can be identified in the 1876 Bird’s Eye View of Portland. Of the thirty-three, which include Portland Stove Foundry, J. B. Brown & Son’s Sugar Refinery, Forest City Sugar Refining Company, Eagle Sugar Refining Company, Portland Packing Company, and Portland Stoneware Company, only three complexes survive to any extent in 2014. Two of these have only a single surviving building, one from the Star Match Factory on West Commercial Street and one from the original Burnham & Morrill Cannery complex on Franklin Street (yellow stars at left). Only the Portland Company complex remains largely intact 138 years later. In 1924 Portland had 60 sizable companies engaged in industrial production of various sorts, occupying more than 85 buildings. Of these individual buildings, fewer than a dozen survive outside the Portland Company. Six companies had large complexes of buildings, including the E. T. Burrowes Company, Thomas Laughlin Company, and Southworth Machine Company.⁸ Fragmentary remains of some of these complexes, such as the early twentieth century Thomas Laughlin Company

foundry building on Hampshire Street now used by Shipyard Brewery, only hint at the history of these sites where hundreds of Portland residents made their livings over many decades.

Portland Company development associated with the creation of Commercial Street

The Portland Company has local historic significance for its association with several significant 19th century planning and development initiatives within the city of Portland. As part of John A. Poor’s vision for creating a modern international port at Portland, he conceived of a wide new street along the waterfront which would contain railroad tracks to connect the Atlantic & St. Lawrence R. R. on the east end of the city to the Portland, Saco & Portsmouth R. R. on the west end while providing both railroads access to the numerous wharves between their terminals. The narrow original waterfront street, Fore Street, followed the natural landform, snaking along the shore around Clay and Broad coves. The new street would be built by filling between the existing wharves below Fore Street, far enough out into the harbor to allow the construction of large new warehouse buildings along the land side of the street. Broad Cove would be filled

7 Bacon, George F. *Portland Maine, Its Representative Business Men and Points of Interest*, 1891, 156.

8 Compiled from the City of Portland 1924 Tax Records.

for construction of the Atlantic & St. Lawrence Railroad terminal and for the Portland Company works and Clay Cove would be filled for the street and new buildings. The Portland Company site alone is seven acres, the majority of it made by filling the mud flats and cove. This project was undertaken cooperatively by the two railroads, the Portland Company, and the city of Portland, with the railroads paying the cost of filling between the wharves and the City paying wharf owners for the value of their properties seized through eminent domain. The mile-long and one hundred foot wide street would be named Commercial Street.⁹

This project was the largest urban planning initiative undertaken in the city of Portland in the nineteenth century and was transformative in its effects. Before arrival of the Atlantic & St. Lawrence Railroad and Portland Company with the related construction of Commercial Street, Portland had a waterfront infrastructure left over from the eighteenth century that was inefficient and ill suited to the age of steam. Shipyards building wooden sailing vessels still launched into Broad Cove. The last vessel launched from these, on November, 9, 1847, was the *Lemuel Dyer*, which struck the railroad trestle then under construction across Broad Cove during its launching.¹⁰ Following the construction of Commercial Street, wharves were extended and directly accessible by rail. Goods could be efficiently transferred between ships and trains, connecting industry and agriculture in interior Maine, New Hampshire, and Vermont to ports in America and Europe via sail and steam ships. With the completion of the Atlantic & St. Lawrence Railroad to Montreal, and subsequent leasing of the line to the Canadian and British owned Grand Trunk Railroad, all of the wharves on the Portland waterfront were connected to interior Canada. As the Grand Trunk extended westward in Canada, eventually reaching the Mid-West of both countries, the Portland waterfront had a direct connection to the agricultural products of the Mid-West and to cities such as Detroit and Chicago with Portland Company-built locomotives pulling Portland Company freight and passenger cars. Direct service between Portland and Chicago began in 1889. The massive grain elevators that would rise over the Grand Trunk yard where Broad Cove had been were the result of this connection. Trans-Atlantic passenger steamship service was instituted the year the railroad to Canada was completed, turning Portland into an international port of entry. This direct connection between Portland and Europe resulted in the immigration of people of numerous nationalities and ethnicities to Portland, diversifying and expanding the population of the city.

The cooperation between the City of Portland in the planning and implementation of the various components of Poor's modernization plan can clearly be seen in the City's investment of \$2 million dollars in the construction of the railroad to Canada, approved by the legislature and funded through municipal bonds approved by the City Council and voters.¹¹ Existing plans for the first stone retaining wall for the Portland Company along Fore Street, in the collections of the Maine Historical Society, were drawn for the company by City Engineer William Goodwin. This wall was constructed in the 1870s to allow room for the company to expand on its increasingly tight site between Munjoy Hill and the Grand Trunk Railroad tracks. It stood on Portland Company property but was rebuilt by the City of Portland in the 1890s, when the original wall developed structural issues¹².

Residential development of the portion of Munjoy Hill across Fore Street from the Portland Company was clearly triggered by the opening of the plant in 1847. Atlantic, St. Lawrence, Sherbrooke, and Waterville streets were laid out opposite the site while the original Portland Company buildings were under construction. The city directory from 1850 shows a heavy concentration of Portland Company employees residing on these streets, including 12 machinists, 6 blacksmiths, a boiler maker, a "car builder." Sixty-five additional Portland Company workers lived on other nearby streets including Fore, Adams, India,

9 Poor, Laura Elizabeth, John A. Poor. *The First International Railway and the Colonization of New England, Life and Writings of John Alfred Poor*, 1890.

Records of the Atlantic & St. Lawrence Railroad, Maine Historical Society.

10 Thurston & Company. ***The Portland Reference Book and City Directory, 1850-1851*, 221.**

11 Records of the Atlantic & St. Lawrence Railroad, Maine Historical Society.

12 Drawings in City of Portland Public Service vault. 55 Portland Street, Portland, ME.

Sumner, Mountfort, Hancock, Hampshire, and Federal. Nine “steam engineers” were also residing in the neighborhood but it is unclear whether they were involved with the Portland Company or Atlantic & St. Lawrence Railroad locomotive engineers, possibly some of each.¹³ By 1858, another street, called Warren Street (now Kellogg), had been extended from Adams, parallel with Waterville, Atlantic, and St. Lawrence. The 1876 Bird’s Eye View illustration of Portland shows two rows of five identical two-story buildings. Such a development pattern suggests housing built for employees of an industrial concern. The Portland Company was the only major industry near the site and one of its original directors was George Warren, suggesting a possible connection between the housing and the company. Minutes of the Director’s meeting held August 3, 1866, record a vote of the Board authorizing the Treasurer to lease unoccupied lands of the company across Fore Street for the erection of temporary housing for employees of the company made homeless by the Great Fire. The buildings in the Bird’s Eye View are likely the result of this action. At a meeting of the Board in 1871 the Directors authorized the sale of the company’s lands north of Fore Street, which may have included the temporary housing built after the fire. The Portland 1924 tax record photos indicate that all of those buildings were gone by that date, replaced by three story “triple-decker” tenement housing facing onto Kellogg and Sheridan streets. Most of the triple-deckers were replaced by contemporary multiunit housing in the 1960s, but several houses of the 1860s period remain on the opposite side of the street that was home to the displaced Portland Company workers in 1866.

Historic Architectural Significance of the Portland Company Buildings and Site

The buildings of the Portland Company complex have historic architectural significance because they remain substantially unaltered from the time of their original construction and consequently clearly show the distinguishing characteristics (design and construction materials) of several distinctive types of industrial buildings built between 1847 and 1920.



Interior view of the Machine Shop. Courtesy of the Maine Historical Society.

The Portland Company buildings remaining from the 1840s and 1850s are the only industrial buildings of that period surviving in the city of Portland.

The buildings of the Portland Company also have historic architectural significance because each of the remaining buildings served distinctive function(s) in the historic manufacturing process. Collectively, the existing buildings encompass the complete historic manufacturing process of the Portland Company.

The earliest buildings constructed by the Portland Company were typical of industrial buildings of the period, with brick walls, granite lintels, and slate roofs. Projecting pilasters on the exterior

walls provided a suggestion of the Greek Revival style then dominant while adding strength to the walls. The large multi-light wood double-hung windows were also typical of the period, when it was essential to maximize the amount of daylight reaching the interior of the building. The additional buildings constructed for the complex between the 1850s and the 1880s are in the same architectural vocabulary and use the same materials as the 1840s buildings.

As the company grew rapidly in the early years, some buildings or building additions were constructed of wood for the sake of speed and cost. Many of these were replaced with brick buildings, sometimes after being destroyed by fire.¹⁴ Alterations were made to the buildings over time to accommodate the changing needs of the manufacturing processes that took place in the plant, as is typical of industrial buildings. One of the more interesting alterations was the early twentieth century addition of projecting shed dormers to the 1847 Machine Shop building designed by Portland architect Frederick A. Tompson to create space for the company's offices and drafting department as well as the research and development laboratory of inventor/engineer William H. Chapman. The vault in the "tower" along Fore Street was part of this same project by Tompson for which the blueprints survive.¹⁵ The Foundry building of 1895 and Erecting Shop of 1918 are typical of industrial buildings built after the introduction of structural steel for this type of building. This change in technology allowed for the creation of much larger open floor spaces with over-head traveling cranes to facilitate more efficient production.



View of the Portland Company yard. Courtesy of the Maine Historical Society.

The buildings of the complex retain a high degree of architectural integrity to the period of significance for the complex (Portland Company production 1847 – 1982). While much of the manufacturing machinery has been removed, evidence of industrial uses can be found throughout the buildings, such as overhead shafting for operating machinery, and wood and iron cranes attached to support columns. Overhead traveling cranes remain in the Foundry and Erecting Shop. The most significant loss to the architectural integrity of the complex was the demolition of the boiler shop building (1858, 1890) in the late-20th century and its replacement by a larger modern metal building that abuts two sides of the foundry building. The one story Tin and Smith Shop (1882), which stood to

the southeast of the Blacksmith Shop, was removed before 1949. The attached timeline (Appendix D) details the construction and alteration dates for the buildings of the complex.

The various buildings of the complex contain examples of a wide variety of building construction engineering techniques employed to increase the strength or functionality of the buildings. These include a number of wood and metal roof truss systems; large floor areas hung from wooden roof truss systems; brick barrel vaulting; cast concrete and steel beam vaulting; cantilevered shed dormers; and single and double trussed girders used to increase the load carrying capacity of upper floors without obstructing the lower floors with posts. The earliest buildings are of load-bearing masonry wall construction with internal timber framing and later buildings utilize steel framing systems. The 1895 Foundry uses an unusual integrated steel column and brick exterior wall system. This was a comparatively early use of structural steel in Maine and represents a transitional phase in the construction technology as large buildings moved from load-bearing masonry walls to steel skeleton framing.

Historic Significance and Visual Character of the Portland Company Site

The primary entrance to the site off Fore Street is a curving roadway that follows the grade between the original shoreline at Fore Street and the filled mudflat land on which the complex is built. This has been the

14 See attached Developmental Timeline and Development Modeling.

15 Portland Company Records, Maine Historical Society.



Historic view of the lab/office space, third floor of the machine shop. Courtesy of the Maine Historical Society.



Current view of the lab/office space.

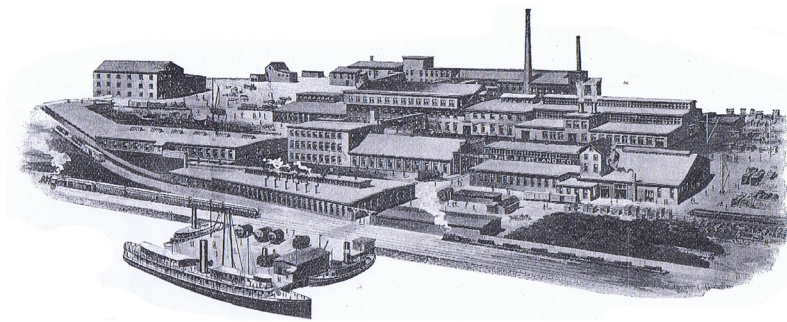
entrance to the property since 1847 and is historically significant as an original site feature that has not been substantially altered. This curving roadway leads to the historic entrance yard of the complex.

The entrance yard has historically been, and continues to be, an open space serving the function of entranceway to the linear manufacturing paths of circulation. It is the point from which these streets and alleys of the complex are accessed. Historically, it also served as a fire break between the manufacturing facilities, the paint shop and the pattern storage buildings. At different points in time a car shop and other buildings have projected into this space, especially prior to the construction of the much larger erecting shop (building 1) in 1918. The entrance yard has been in its current configuration for nearly 100 years.

The historic functional organization and placement of the Portland Company buildings in linear proximity to each other creates a visual character for the majority of the site that is unique for Portland in the way that the industrial buildings form private streets or alleys. This is similar to the character found in large textile mill complexes in Maine cities like Lewiston, Biddeford, and Sanford but not found elsewhere in Portland. The overhead pedestrian bridges spanning these private streets are also unique in Portland and contribute to the visual character of the site. Although the railroad tracks that once served many of these buildings have been removed or buried under pavement, the arrangement of the buildings retains a linear character that resulted from that historic infrastructure serving the buildings. The placement of several buildings outside these rows of buildings also documents considerations for their historic uses. Both the Pattern Storage buildings and the Paint Shop were placed away from other buildings to reduce the risk of fire spreading to them or from them. This was important for the Pattern buildings because they contained very valuable wood patterns for all of the products made by the Portland Company and for the Paint Shop because of the flammable nature of oil paints. The only significant fire at the complex started in the previous Paint Shop and spread to other nearby wooden buildings, destroying several.

Also unique in Portland is the manner in which the Fore Street retaining wall forms the rear wall of the buildings along the northwest side of the alley, with the side walls of the buildings forming buttresses to help support the retaining wall. The brick barrel vaults of the Boiler House support the retaining wall above and allow the space to project under the Fore Street sidewalk.

To a large degree, the architectural significance of the Portland Company exists in the relationship of the buildings to each other within the complex. The proximity and orientation of the buildings to each other permitted related manufacturing processes to take place in a way that allowed for the efficient progression of stages in the production of the company's products. Certain buildings focused on the later stages of manufacturing for particular categories of product, such as the Erecting Shop, Car Shop or Boiler Shop, with the earlier stages of production for all categories of product undertaken in the Foundry and Machine Shop. Research and development, design/drafting, drawing storage, pattern making, pattern storage, and paint storage buildings also served all of the product categories collectively.



Section II:
Integrity of the Existing Portland Company Resources



Building 1: Erecting Shop

Construction Date: 1918

The Erecting Shop was built to replace an earlier wooden erecting shop, built between 1871 and 1880 on the same site. The Foundry, Machine Shop, and Erecting Shop were closely related in the production process, and were aligned so the steps of the work could flow from the Foundry, through the Machine Shop, and into the Erecting Shop, where a locomotive or other large piece of machinery could be assembled above railroad tracks that led from the building to the Grand Trunk rail yard. The brick wall construction relates it to earlier buildings on the site, but its steel truss roofing system, electric overhead traveling crane, clerestory, and large steel framed windows provided maximum utility with a large open floor space and considerable natural light for the assembly process. The building retains a very high degree of integrity to the time of its construction with some alterations to the south and east elevations. These involve increasing the size of the bay doors on the south elevation, likely during the period of significance; and infilling two windows on the east elevation with modern siding material. The remainder of original windows are intact, with some limited areas of deterioration to the frames.





Building 2: Machine Shop

Construction Date: c. 1847

The Machine Shop is one of the first buildings constructed on the site and was one of the key buildings in the production process of locomotives. It is where castings made in the Foundry were finished and prepared for installation. Prior to the construction of the first Erecting Shop (c. 1880) locomotive assembly took place in the Machine Shop. The boilers for the earliest locomotives were also assembled here, before the Boiler Shop was built. Post-mounted cranes and carts were used to move heavy items within the shop, with smaller items moved to the second floor for machining. A truss system allowed the second floor to hang from the roof, leaving the first floor largely open. Some wooden posts have been added in the first floor, to meet modern code requirements for the second story to function as a public assembly space. The building retains a high degree of integrity to the time of its construction with early 20th century alterations to the roof and attic. The c. 1905 Frederick A. Thompson designed offices, drafting room, and electrical laboratory at the attic level are intact, including beadboard office partitions, drafting tables, desks drawing storage drawer units, and electrical equipment in the laboratory. The apparatus used to reflect sunlight from a skylight to develop blueprints remains in place below the roof. Historic plans show tables for 17 draftsmen; desks for 21 clerks and assistant clerks; bookkeeper; purchasing agent; and office boy; with cubicles for the assistant electrical engineer, assistant elevator engineer, assistant mechanical engineer, assistant manager, sales manager, superintendent, and manager; with a private office for the general



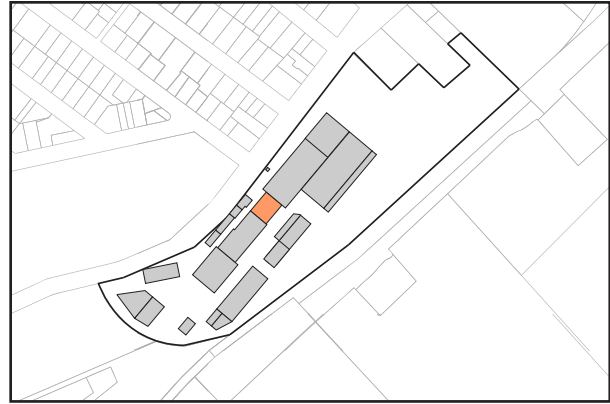
manager and three additional private offices. An upper attic level above the laboratory contains a walkway lined with storage bins for wooden casting patterns, still full of patterns. The original wood and wrought iron Queen Post Truss roof system remains in place with the second floor suspended from it. The use of iron rods for the Queen Posts in the trusses represents an advance in technology from the all-wood trusses common in New England in the 18th and early 19th centuries, as America's increased industrialization made the use of structural metals possible.



Building 3: Machine Shop

Construction Date: c. 1847

This section of the Machine Shop was built in 1847 as a one story blacksmith shop. When the second story was added, c. 1895, the original wood and wrought iron Queen Post Truss roof system was left in place and the floor hung from it with iron rods and double-strut trussed girders. The added wall height essentially creates full-length shed dormers on each side of the original roof and a double-pitched roof with the original gable peak remaining above the much shallower pitch of the shed dormers on either side. Because both ends of the building abut other buildings, this unusual roof form is not visible from the ground. A monitor, probably dating from the original construction, extends along the center portion of the ridge. The ingenious approach taken to expanding this building allowed a second story to be added while retaining the original roof truss structure and the open first floor it made possible. This section of the Machine Shop retains a very high degree of integrity to the period of its expansion into a two story building, c. 1895, while retaining nearly all of the materials from its original 1847 construction. Some wooden posts have been added in the first floor, to meet modern code requirements for the second story to function as a public assembly space. The second floor was the pattern shop, where wooden patterns were made for the iron castings made in the Foundry.





Building 4: Foundry and Acetylene House
Construction Date: 1895; 1904-09

The Foundry was the most important building in the production process, being the space where molten iron and steel were cast in sand molds to produce the parts for the various machines and engines made by the company. Using then cutting-edge technology, it was built in the late 19th century to replace the original 1847 foundry and additions on the same site. The 1896 foundry features a steel truss roof system and could be wider and taller than the earlier building, with a tall clerestory for lighting the center of the building and a modern electric overhead traveling crane to move cauldrons of molten metal and heavy castings. The building utilizes an unusual transitional construction system in its exterior walls. The riveted steel roof trusses were erected on posts formed of back-to-back U channel steel with spacers between them to allow the roof truss gusset plate to be riveted in place between the two U channels at the top. Once the roof system was erected, the spaces between the posts were filled with brick laid up in common bond and engaging with the posts by extending into the recess of the U channel. Above the tops of the posts, the brick wall encased and engaged the steel trusses to the eaves. It appears that once the brick was in place, the roof trusses were supported primarily by the brick walls, not by the steel posts. The Foundry building retains a high degree of integrity to the period of significance and stands largely as built in 1895 except for the northeast end, which was removed entirely when the building was extended in the mid-20th century. Much of the southeast elevation is now contained within the abutting modern metal building and its windows



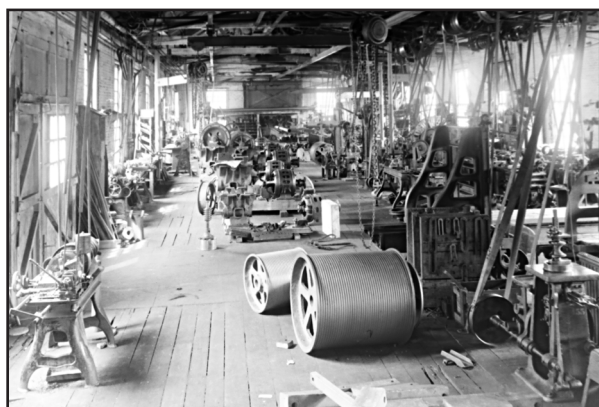
have been infilled. There is some infill construction along this side for offices and storage areas. The original exterior wall and roof system appear to be intact within the later building addition.

The Acetylene House, located on the terrace below the upper retaining wall to the west of the foundry, was a simple brick box, approximately eight feet square. Its roof has failed, and the masonry arch over the door has collapsed. Original drawings for the acetylene house show a shed roof.



Building 6: Blacksmith & Tank Shop
Construction Date: 1883; 1896-1904

As the plant expanded during the 19th century, additional blacksmith shops were constructed to serve different areas of production. Originally freestanding and serving both the machine shop and car shop, this blacksmith shop later served the attached tank shop, where the company produced tanks for various uses from industrial water tanks to municipal standpipes. This building replaced an earlier and wider blacksmith shop on the same site and was likely built reusing the brick and granite of the earlier shop. Its design and use of materials are more like the 1840s and '50s buildings on the site than the 1860s and '70s buildings that followed. It is unclear why the building was rebuilt, but its change in width increased the clearances between the blacksmith shop and the machine shop and foundry, which had additions made to their width during this period. This may have been the reason for rebuilding. The Blacksmith & Tank Shop retains a high degree of integrity to the period of significance. The former Tank Shop now contains the Maine Narrow Gauge Railroad Museum with exposed structural framing and brick walls. Original drawings for the building show it to be longer than it currently exists. A portion of it was likely demolished for the construction of the three story block between 1896 and 1904. This portion of the building contained the Chapman Electric Company, a subsidiary of the Portland Company run by the company's electrical engineer, William Chapman. The Portland Company's electric elevator production also occurred in this building, starting in the early 20th century. The three-story block retains integrity to the period of significance



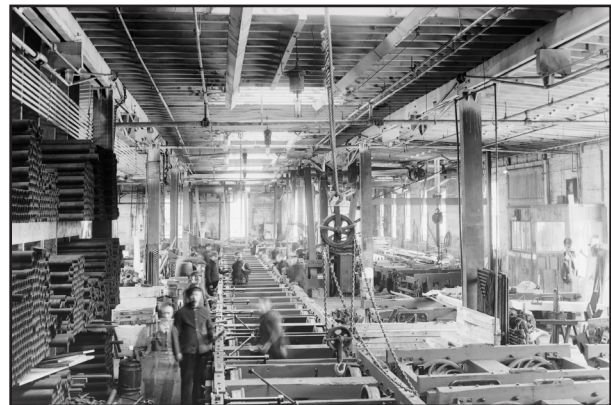
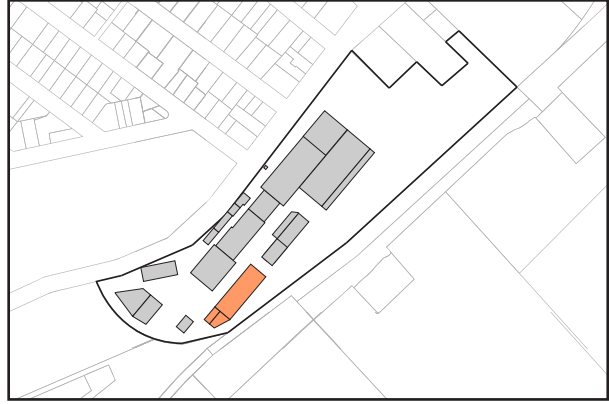
with some alterations to the interior spaces to create offices on the third floor and a meeting room on the second floor. The elevator tower, with historic machinery remains attached to the north side of the building. Many original windows in the three-story block have been replaced.



Building 7: Car Shop

Construction Date: c. 1873; 1904

The Portland Company was founded to manufacture railroad passenger and freight cars as well as locomotives and other equipment. The first wooden car shop was built south of the blacksmith shop around 1847-48. A second car shop was constructed between 1858 and 1864 just slightly to the southwest of the first car shop. Both buildings were destroyed by fire in 1873, and replaced by this brick building. Like the Pattern Storage Building and its additions from the same period, this building uses segmental brick arches over the windows in place of the granite lintels on the earlier buildings. The placement of this building was dictated by the need to have railroad tracks enter the building from the south end. Railroad cars of the period were largely of wood construction with cast and wrought iron fittings, hence the 1904 lumber storage addition to the building. Prior to the construction of the lumber sheds, the car shop had an open car shed adjacent to the original 50' x 21' painting and erecting area of the car shop (projecting from the south end). Like the Foundry/Machine Shop/Erecting Shop, the Car Shop was aligned with the Blacksmith Shop, allowing ironwork for the cars to be efficiently transported into the car shop. It is possible that the car frames and wheel sets were assembled in the blacksmith shop and then rolled over to the Car Shop for construction of the superstructure and finishing. After the Portland Company ceased production of railroad cars, around 1900, the Car Shop was used as a showroom and repair shop for automobiles produced by the Knox Automobile Co. and others and sold by the Portland Company. Subsequently, the Car Shop was used for steel



fabrication and had a related sandblasting room built into it. The Car Shop retains a high level of integrity with some alterations to openings to create additional garage bay entry doors. Some easily reversible modern finishes have been installed on the interior. The Lumber Shed addition at the southeast corner is largely intact from construction, with exposed wood framing.



Building 10: Paint Shop

Construction Date: c. 1873

An earlier wood paint shop (likely one of the earlier car shops, converted for use) was destroyed by fire in 1873, taking the car shop and several other buildings with it. It was rebuilt in brick, probably to be less flammable, and was originally located at some distance from other buildings, likely to limit the possibility of fire spreading. Fires in paint shops were quite common, given the highly flammable nature of the paints and solvents used. At the other end of Portland, the railroad shops at Thompson's Point were destroyed in 1903 by a fire that started in the paint shop there. The Paint Shop retains integrity as a simple brick structure with a wood-framed roof. In 1904, the large lumber shed connected to the east elevation of the Paint Shop and extended down to connect to the Car Shop. The portion of the lumber shed connecting to the Paint Shop has since been demolished. The south wall has been partially reconstructed and the interior features many modern surfaces to create various ventilated painting areas. Original wood structural members are visible throughout the building, though most of the original window openings have been infilled with brick.





Building 11: Pattern Storehouse

Construction Date: 1885; 1895

The design and production of the hand-made wood patterns that were used for casting iron and steel in sand molds was central to the functioning of the Portland Company, and represented a large capital investment for the company. Patterns were reused over long periods of time and their preservation was of critical importance. Documentation indicates that patterns were stored in several locations, including the attic of the Machine Shop, for the first several decades of operation. In 1885, a separate Pattern Storehouse was constructed for their storage. It is not coincidental that it was located at some distance from the other buildings and was built of brick with a slate roof. It was also placed up-wind from the prevailing breezes. This provided additional protection for the company's large investment in flammable wooden patterns if other buildings in the complex caught fire. The Pattern Storehouse retains a high level of integrity to the period of significance. The interior still has an exposed wood structural system and brick walls. The first floor has been fitted for a retail space, though original materials are still exposed. The second floor has a modern drop ceiling and carpet installed over the originally exposed elements.





Building 12: Pattern Storehouse Addition
Construction Date: 1895

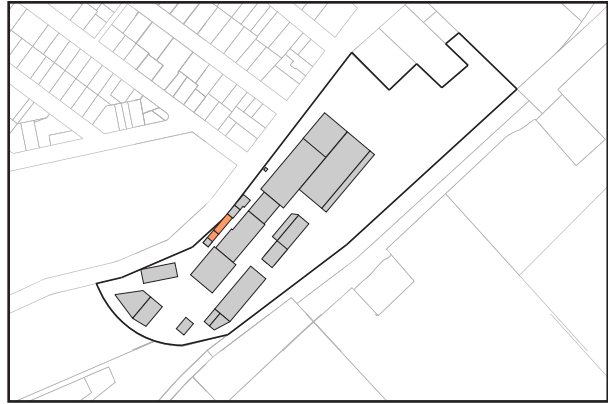
The Pattern Storehouse Addition was built immediately adjacent to the original storehouse, built a decade earlier, using the same materials and technology. From an early date, this building has had “PORTLAND CO.” painted across its south elevation, making the complex immediately recognizable from Fore Street and the waterfront. The Pattern Storehouse Addition has a high level of integrity to the period of significance. The building has had no alterations to the interior and still contains many patterns used by the Portland Company.





Building 14: Drafting Room and Storehouse
Construction Date: 1858-64

The Portland Company constructed a variety of smaller service structures along the Fore Street retaining wall during the 19th century, and made alterations to many of them to adapt them to differing uses into the 20th century. The masonry side walls of all the spaces along the north side of the alley, including the Boiler House and Brass Foundry, serve as buttresses for the stone retaining wall along Fore Street. The spaces were created by roofing over the recesses between the buttresses and building a wall along the alley. The placement of the Drafting Room and Storehouse, separate from the manufacturing buildings and adjacent to the original office building, is both functionally and symbolically relevant. As the company grew, the drafting department outgrew the space, and was moved to the new offices on the expanded third floor of the Machine Shop around 1905. The old drafting room was then used for drawing storage, with a new vault for drawings constructed above it (See Building 24 – Vault Storage). The Drafting Room and Storehouse retain integrity and has had little alterations over their history. The south portion of the original Drafting Room became part of the Vault upon its construction in the beginning of the 20th century. Numerous labeled wooden bins that were used for storage of parts during the Portland Company's operation remain in several of the spaces.

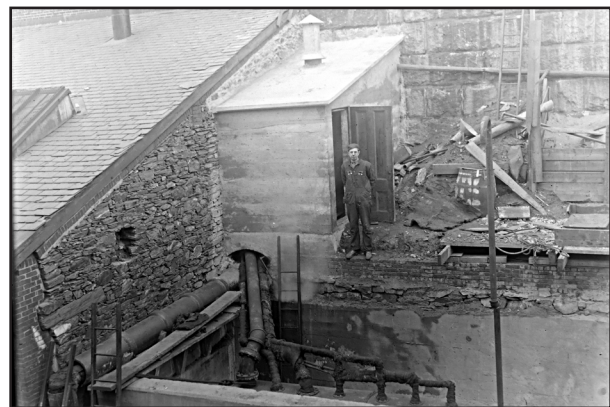




Buildings 15 & 16: Boiler House and Brass Foundry

Construction Date: 1858-64; 1864-71

Based on maps and plans of the complex, it appears the existing Boiler House was constructed between 1858 and 1864; the Brass Foundry was constructed between 1864 and 1871. The 1858 plan of the complex (in the collection of the Maine Historical Society) shows a brick building in this general location, though it is not likely either of the extant buildings. The 1886 Sanborn Map of the Portland Company does not show another Boiler House as suggesting in the Tremont Report. There is a Boiler Shop, where boilers were fabricated, in the northeast quadrant of the complex which may have led to the confusion. The side walls of these buildings, and of the small storage spaces to their west, serve as buttresses for the granite retaining wall the supports Fore Street as it climbs Munjoy Hill adjacent to the complex. The conversion of these voids between the structural buttresses into functional spaces for the complex is an example of ingenuity and determination to utilize every available space on the increasingly crowded site with Fore Street and Munjoy Hill containing one side of the property and the Grand Trunk Railroad properties containing the others. The Boiler House has suffered the loss of a majority of its façade, though remnants illustrate key architectural features that were included in the original construction. The interior, however, retains a remarkable pair of tall brick barrel vaults on stone walls that extend the space under the Fore Street esplanade and sidewalk. The Brass Foundry retains a high degree of integrity on the exterior. The interiors of both buildings appear to retain integrity. The Boiler House still contains the boilers



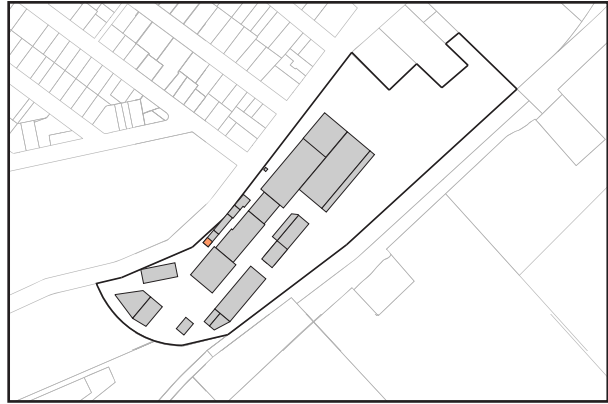
and machinery used by the Portland Company. At the north side of the Brass Foundry, exposed piping and valves remain from a small shed once attached to the Brass Foundry.



Building 24: Vault

Construction Date: c. 1905

As noted with Building 14 – Drafting Room/ Storehouse, the Vault was added on top of one end of the original drafting room when the new drafting room was constructed c. 1905. It was connected to that space on the top floor of the Machine Shop by an overhead pedestrian bridge. With brick walls and vaulted iron beam and concrete floors, the space was intended to protect paper drawings in case of fire. An additional story was added at some point by 1924 to contain the electrical transformers for the plant. The Vault retains a high degree of integrity as it has undergone very few changes over time. The top floor continues to be used for electrical transformers. The c. 1905 vault containing Portland Company drawings (assumed) is not accessible due to safety concerns with the bridge that supplies access from the office and drafting room in the attic of the Machine Shop.





Building 30: Office
Construction Date: 1950

Like most of the earlier buildings at the Portland Company, the 1950 Office Building was representative of architecture and technology of the time of its construction. It was located just to the southwest of the site of the original wood office building, retaining access to the offices from Fore Street without entering the manufacturing complex itself. This building was built after the company had ceased its transportation related work and it is not associated with that area of significance. At an earlier date, sheds and stables for the company were located on the site. It is a modern building, clad in a combination of wood siding and brick. The interiors contain typical features of the period such as pressed-paper acoustical tile ceilings, fluorescent lighting, and aluminum Venetian blinds on the windows. A (non-functional) period office kitchen with built-in dishwasher, range, and refrigerator remains in its original location. The Office Building retains a relatively high degree of integrity. Relatively minor alterations to the interior of the space do not detract from the minimal detail of the mid-century architectural style, much of which still exists. Although built more recently than the other contributing buildings, the Office Building helps to maintain a sense of enclosure for the entrance yard that had previously been provided by the sheds, stables, and fencing that occupied this site. This sense of enclosure is important to the integrity of the entrance yard, a primary feature of the site.

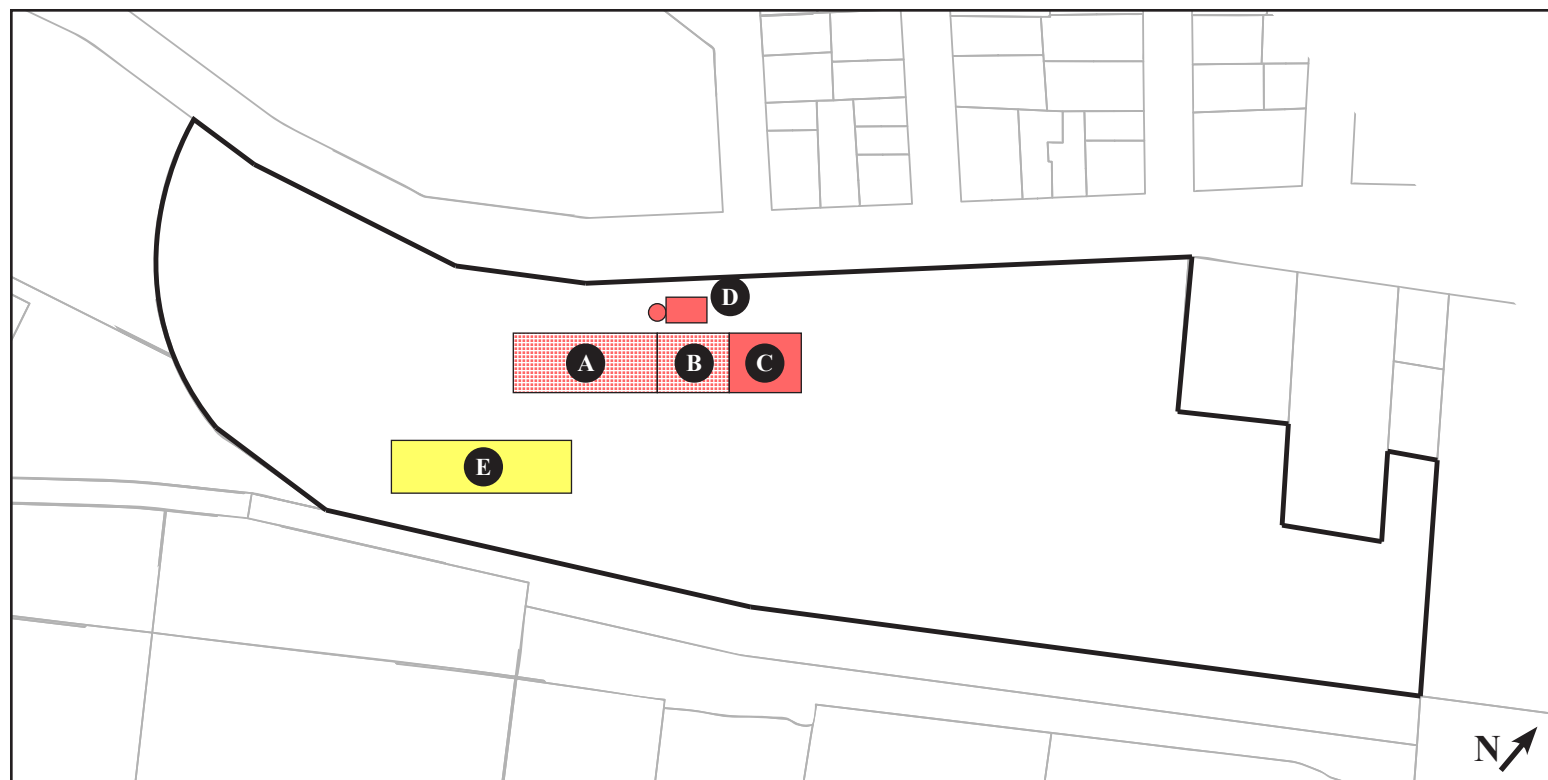


The Portland Company site retains a high level of historic integrity. The property has been the site of the company since its founding in 1846. Located north of the former Grand Trunk Railroad site, the Portland Company retains its feeling as a complex significant for its association with industrial manufacturing. The site features parallel rows of buildings aligned with the former Grand Trunk Railroad tracks with interiors of large, open spaces for heavy manufacturing. The Portland Company was largely built on filled land on the former site of Broad Cove with a large two-tiered retaining wall along Fore Street. Across the street is a residential neighborhood where many of the Portland Company workers lived historically. To the south of the site, modern commercial buildings are located on the former Grand Trunk Railroad yard site on the east side of Fore Street. Within the Portland Company complex, the proximity of the buildings to each other documents how each building played an important role in the production process. Catwalks connect buildings over the private streets of the complex and the historic function of individual buildings relates to that of adjacent buildings.

The individual buildings of the Portland Company generally retain a high level of integrity as they illustrate typical design and construction technologies of industrial buildings between the mid-19th century and early-20th century. The Portland Company complex as a whole also has a high degree of integrity through the retention of essential physical features related to its significance in the areas of industry, transportation, and architecture. Over the history of the Portland Company site, some important buildings were lost to fire (particularly a large conflagration in 1873 that destroyed several buildings at the southeast corner of the property). Other buildings were replaced with new over time, as is common in industrial complexes. The majority of these changes occurred within the period of significance. Of the three original brick buildings built in 1847, two remain. All of the other buildings except two predate 1920. The most recent construction appears to be the addition at the north end of the foundry and the replacement of the boiler shop, both of which occurred between 1951 and 1980. These two buildings were later connected with infill construction. Small secondary buildings were located around the property and had different uses during the history of the complex. Most of these wooden buildings are no longer present, leaving the primary industrial structures to illustrate the manufacturing industry of locomotives, railroad cars, marine, boilers, etc.

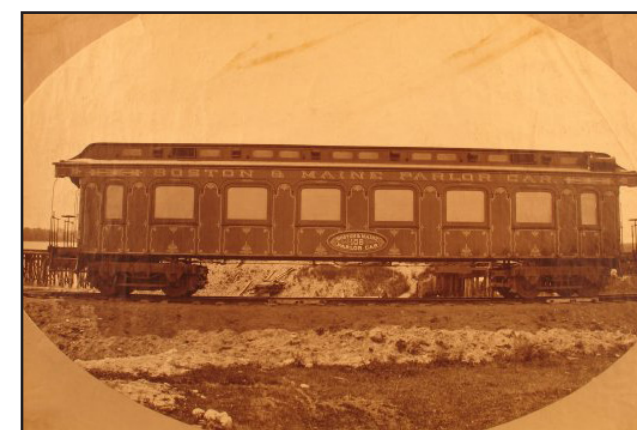
The following maps and models illustrate the evolution of the site from 1847 until 2014.

See Appendix E for listing of Portland Company's contemporaries and their current significance, configuration and integrity.



The Portland Company 1847	
	Masonry
	Wood
	Metal
	Extant Masonry
	Extant Wood
	Extant Metal

A: Machine Shop
B: Smith Shop
C: Foundry
D: Boiler House
E: Car Shop



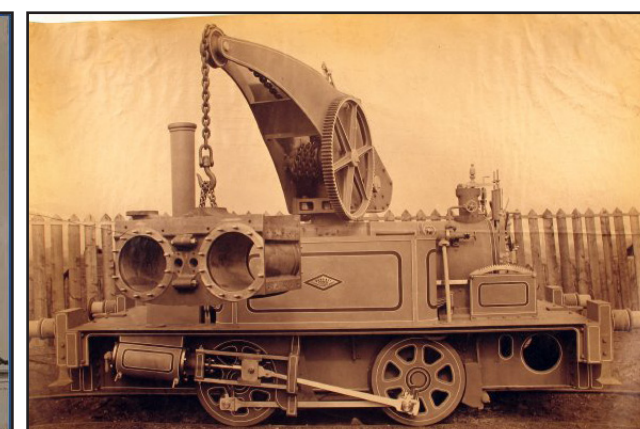
Boston & Maine parlor car. Courtesy of the Maine Historical Society.



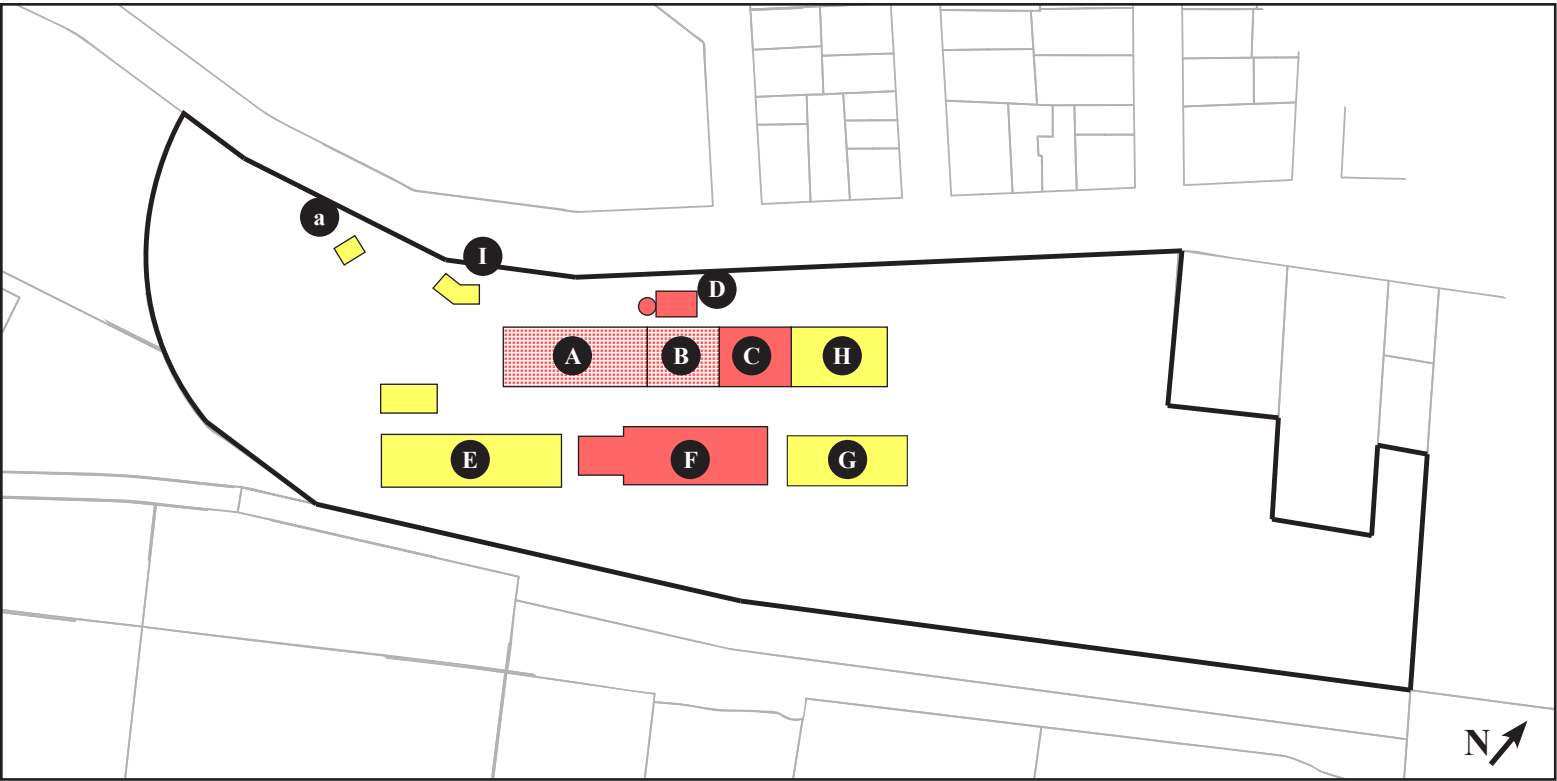
Locomotive from the Portland Company. Courtesy of the Maine Historical Society.



1851 drawing of a locomotive. Courtesy of the Maine Historical Society.



Locomotive crane. Courtesy of the Maine Historical Society.



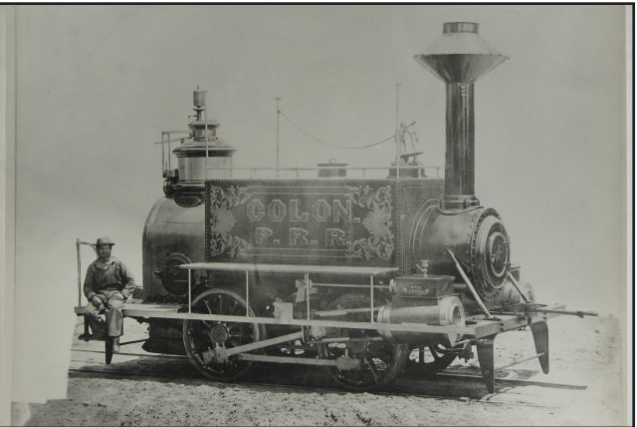
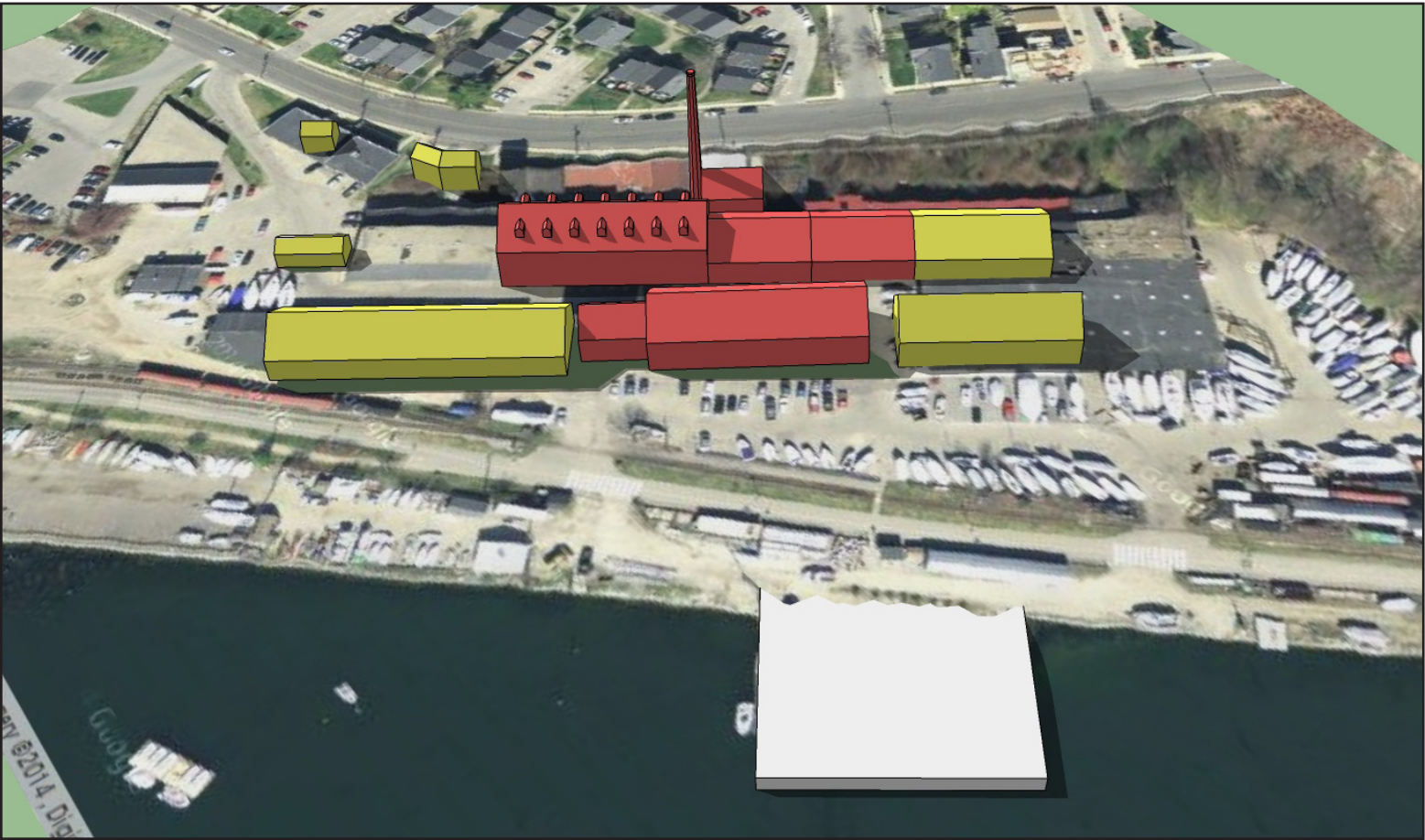
The Portland Company 1858	
	Masonry
	Wood
	Metal
	Extant Masonry
	Extant Wood
	Extant Metal

PRIMARY:

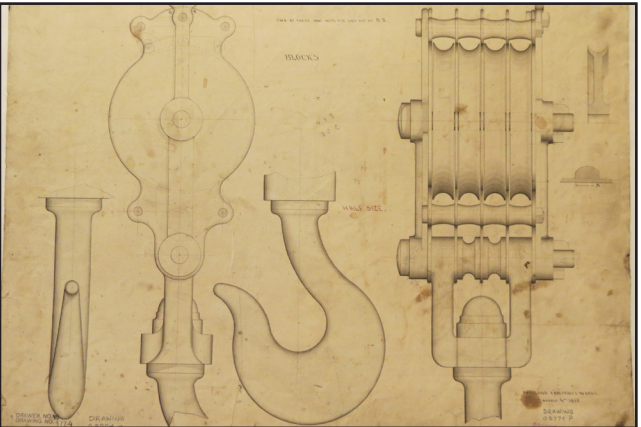
- A: Machine Shop
- B: Smith Shop
- C: Foundry
- D: Boiler House
- E: Car Shop
- F: Blacksmith Shop
- G: Boiler Shop
- H: Foundry Expansion
- I: Office Building

SECONDARY:

- a: Stable



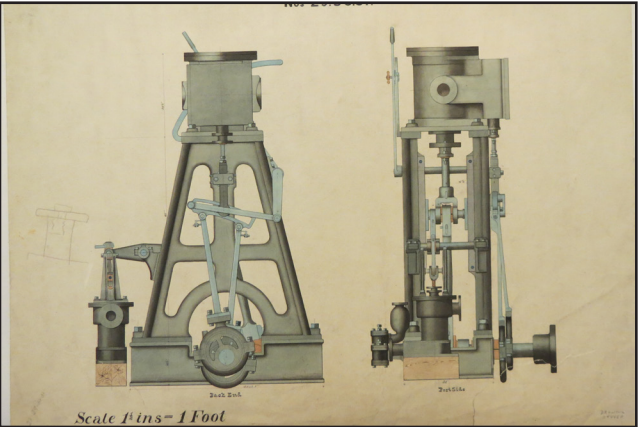
Colon railroad engine. Courtesy of the Maine Historical Society.



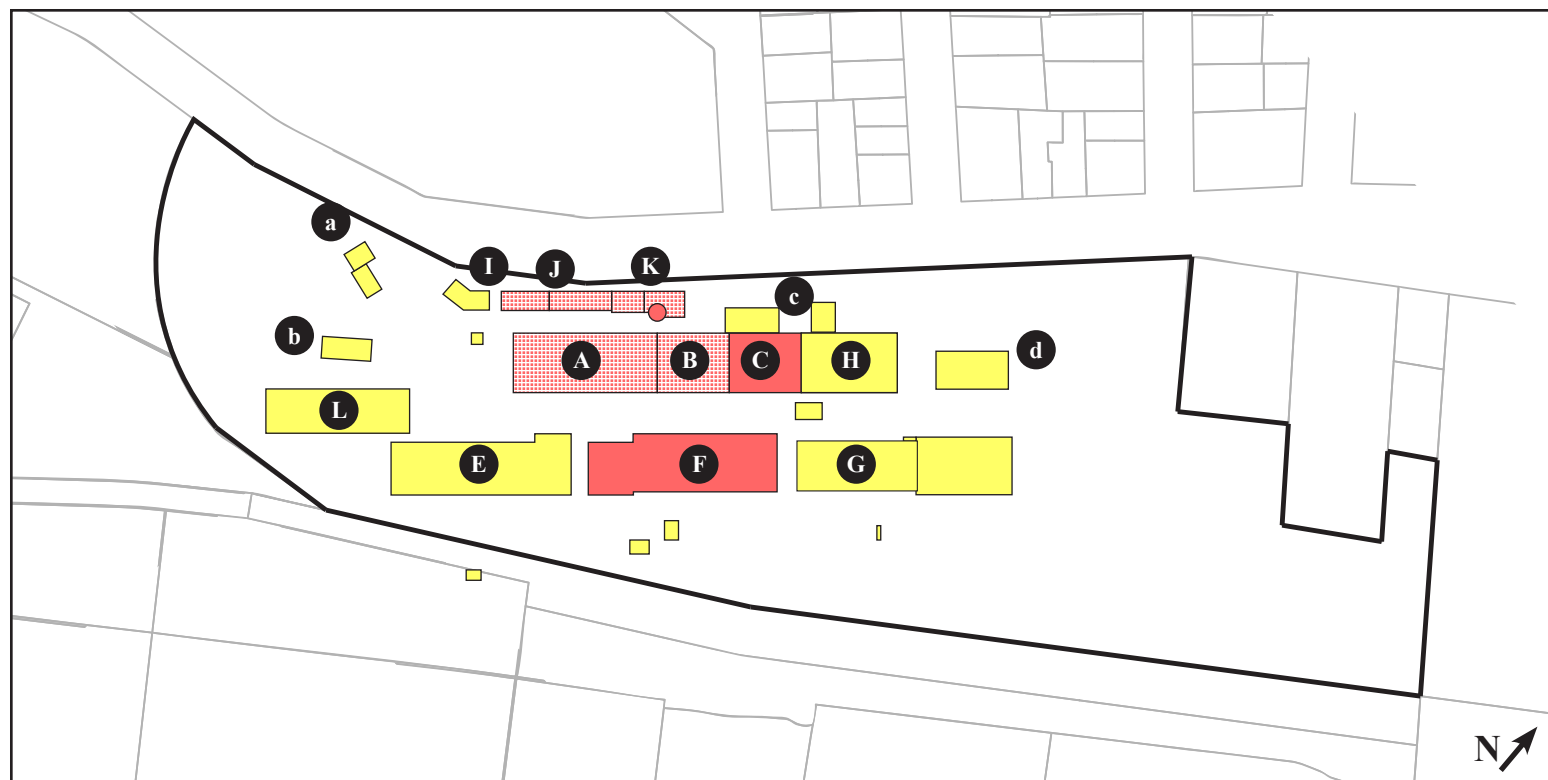
"Blocks" drawing from the Portland Company. Courtesy of the Maine Historical Society.



Portland & Ogdensburg locomotive. Courtesy of the Maine Historical Society.



Propeller Engines. Courtesy of the Maine Historical Society.



The Portland Company 1871

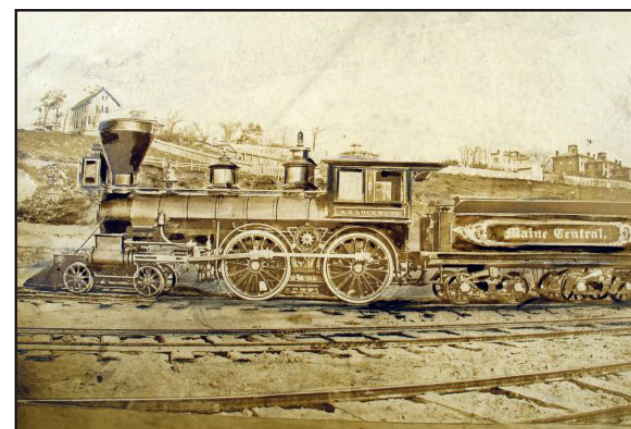
	Masonry
	Wood
	Metal
	Extant Masonry
	Extant Wood
	Extant Metal

PRIMARY:

A: Machine Shop
B: Smith Shop
C: Foundry
E: Car Shop
F: Blacksmith Shop
G: Boiler Shop
H: Foundry Expansion
I: Office Building
J: Drafting Room & Storehouse
K: Boiler House & Brass Foundry
L: Car Shop

SECONDARY:

a: Stable
b: Babbitt Shop
c: Air Furnace & Core Shop
d: Scratch House



Portland Company locomotive. Courtesy of the Maine Historical Society.



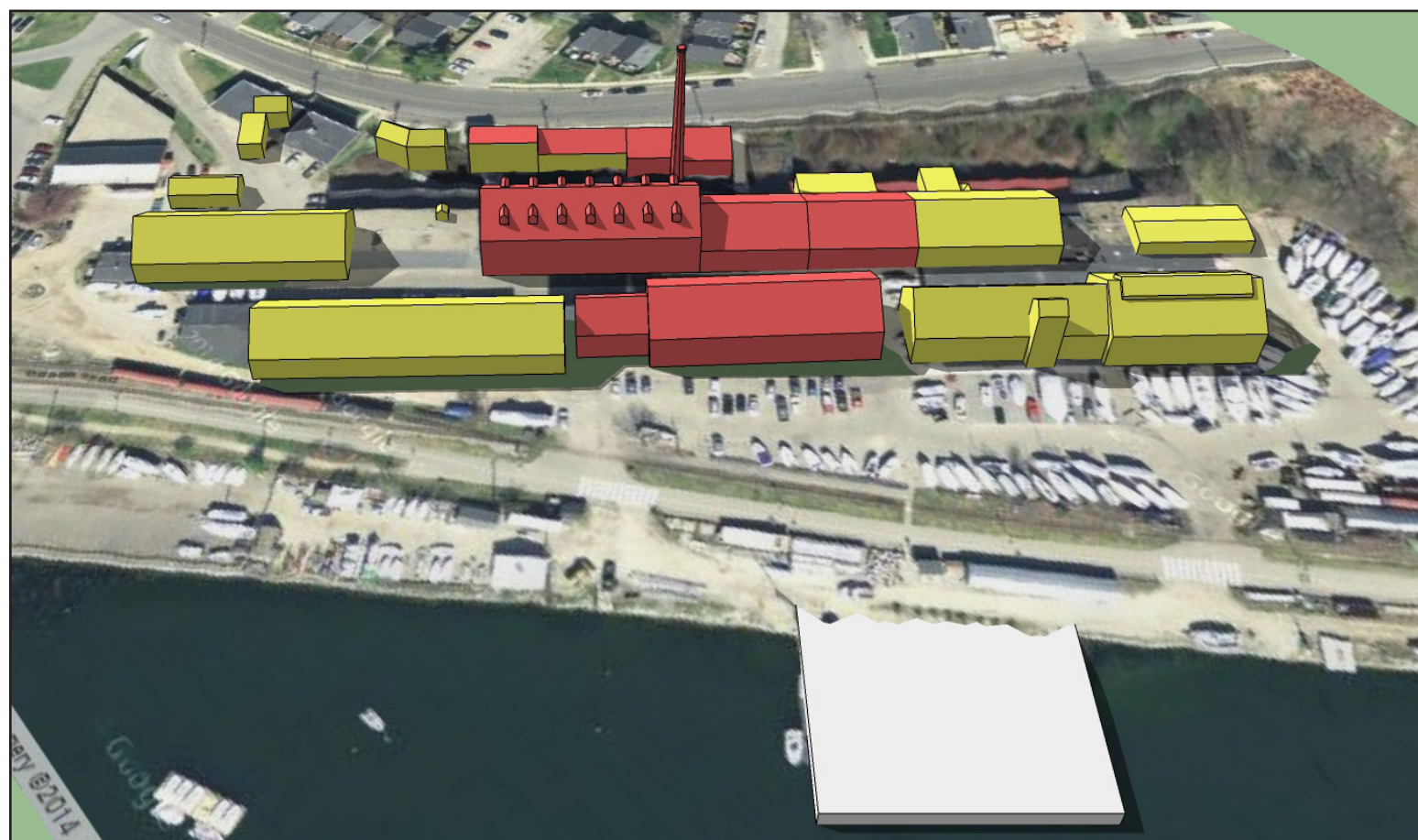
Locomotive south of the Machine Shop. Courtesy of the Maine Historical Society.

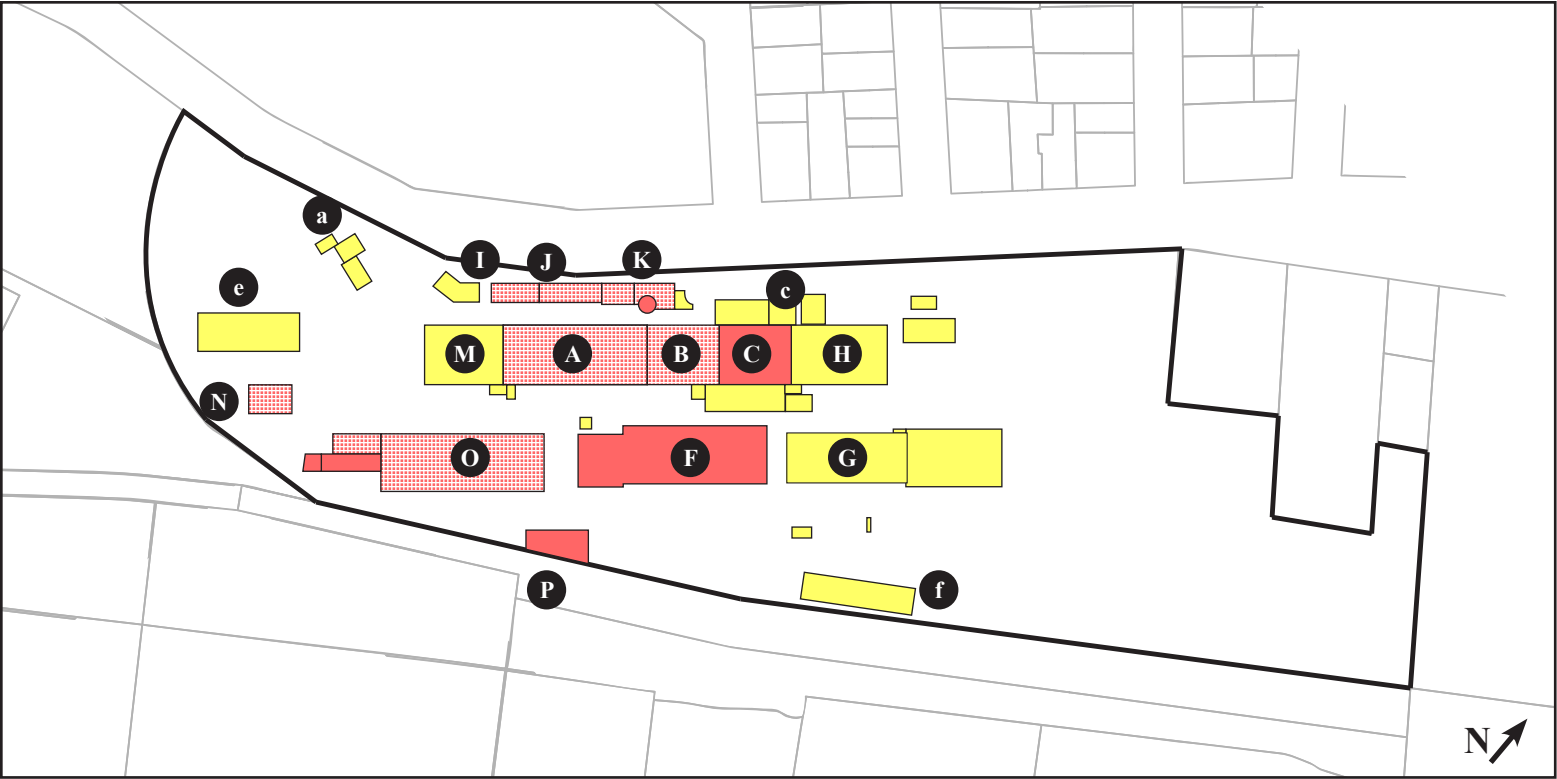


Locomotive with office building at rear. Courtesy of the Maine Historical Society.



View of the Portland Company yard from the north. Courtesy of the Maine Historical Society.





**The Portland Company
1880**

	Masonry
	Wood
	Metal
	Extant Masonry
	Extant Wood
	Extant Metal

PRIMARY:

- A: Machine Shop
- B: Smith Shop
- C: Foundry
- F: Blacksmith Shop
- G: Boiler Shop
- H: Foundry Expansion
- I: Office Building
- J: Drafting Room & Storehouse
- K: Boiler House & Brass Foundry
- M: Erecting Shop
- N: Paint Shop
- O: Car Shop
- P: Tin & Babbitt Shop

SECONDARY:

- a: Stable
- c: Air Furnace, Foundry Expansion & Core Shop
- d: Scratch House
- e: Storehouse
- f: Sand Shed



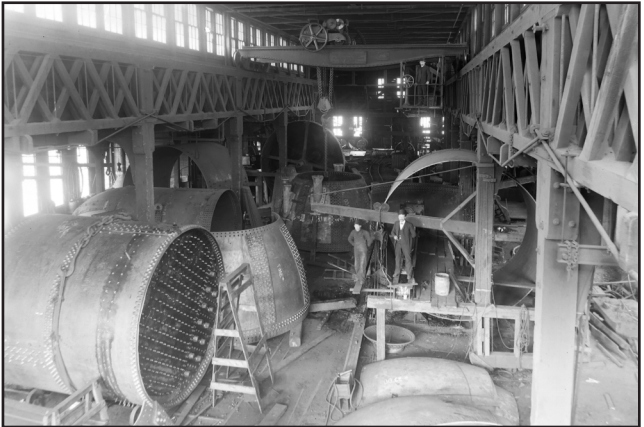
View of the Portland Company yard. Courtesy of the Maine Historical Society.



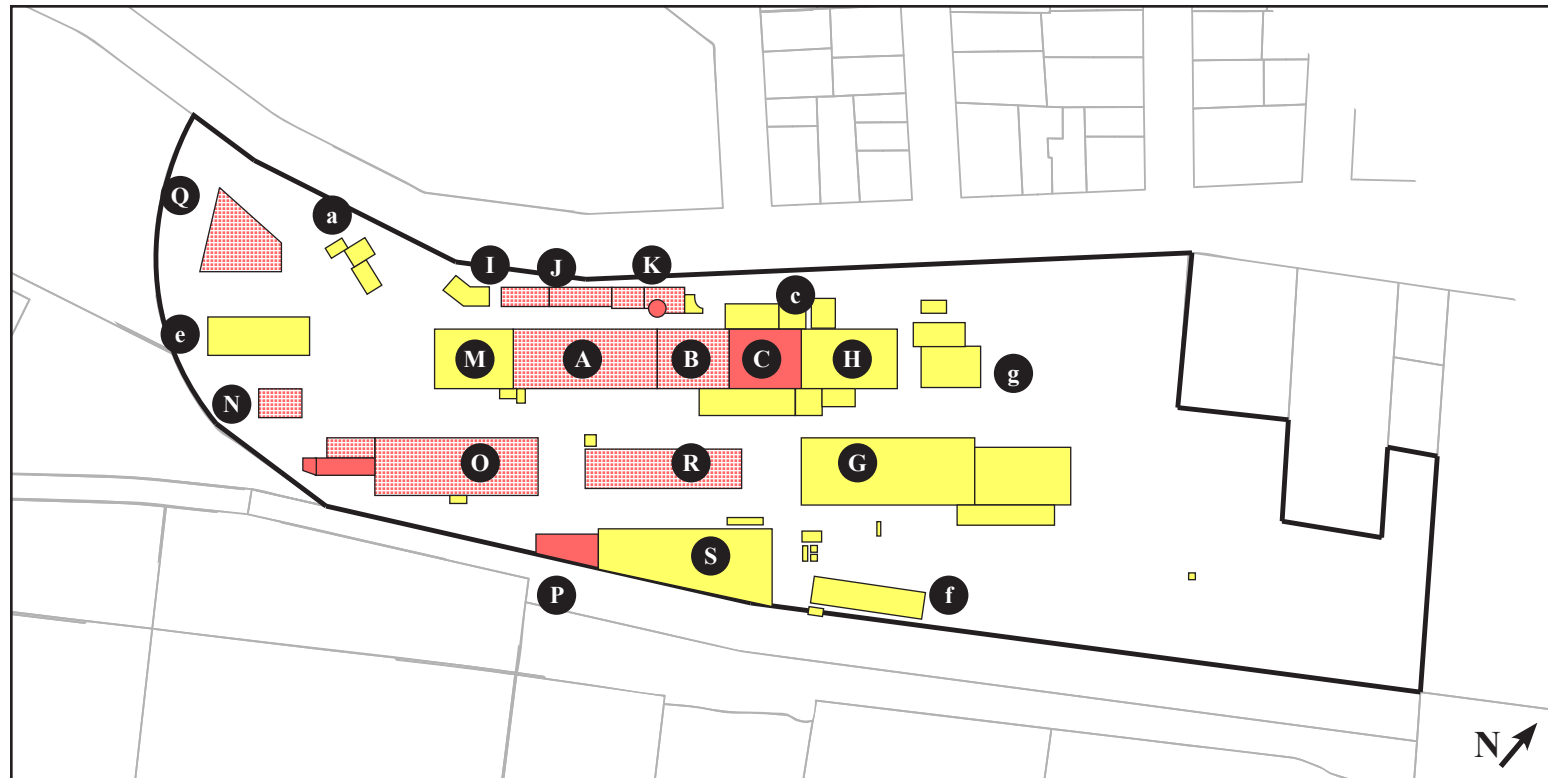
Portland Company works. Courtesy of the Maine Historical Society.



Interior of the machine shop. Courtesy of the Maine Historical Society.



Interior of the boiler shop. Courtesy of the Maine Historical Society.



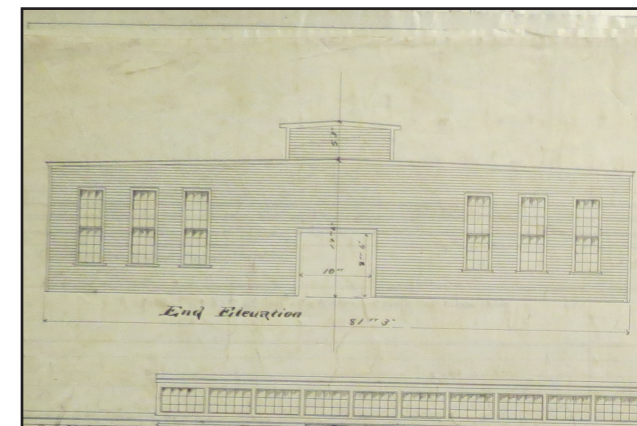
The Portland Company 1890	
	Masonry
	Wood
	Metal
	Extant Masonry
	Extant Wood
	Extant Metal

PRIMARY:

A: Machine Shop
B: Smith Shop
C: Foundry
F: Blacksmith Shop
G: Boiler Shop
H: Foundry Expansion
I: Office Building
J: Drafting Room & Storehouse
K: Boiler House & Brass Foundry
M: Erecting Shop
N: Paint Shop
O: Car Shop
P: Tin & Babbitt Shop
Q: Pattern Storehouse
R: Blacksmith & Tank Shop
S: Blacksmith & Tank Shop

SECONDARY:

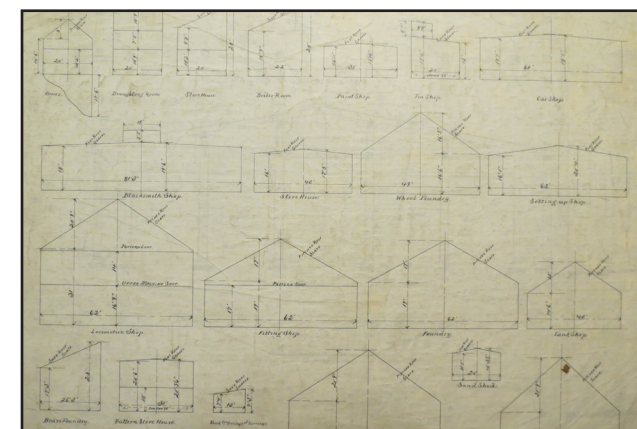
a: Stable
c: Air Furnace, Foundry
Expansion & Core Shop
d: Scratch House
e: Storehouse
f: Sand Shed
g: Wheel Foundry



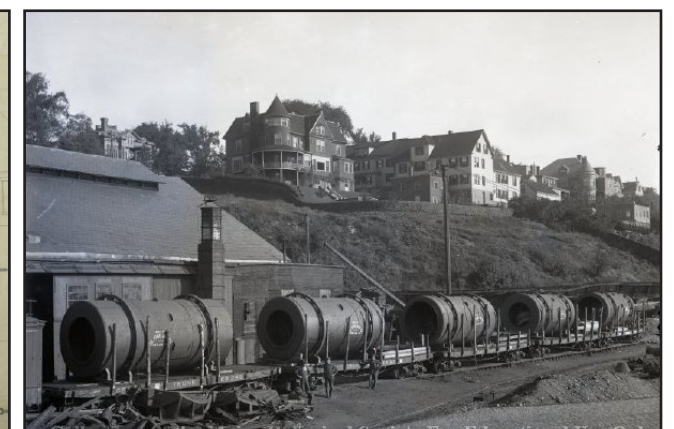
Drawing for new blacksmith and tin shop. Courtesy of the Maine Historical Society.



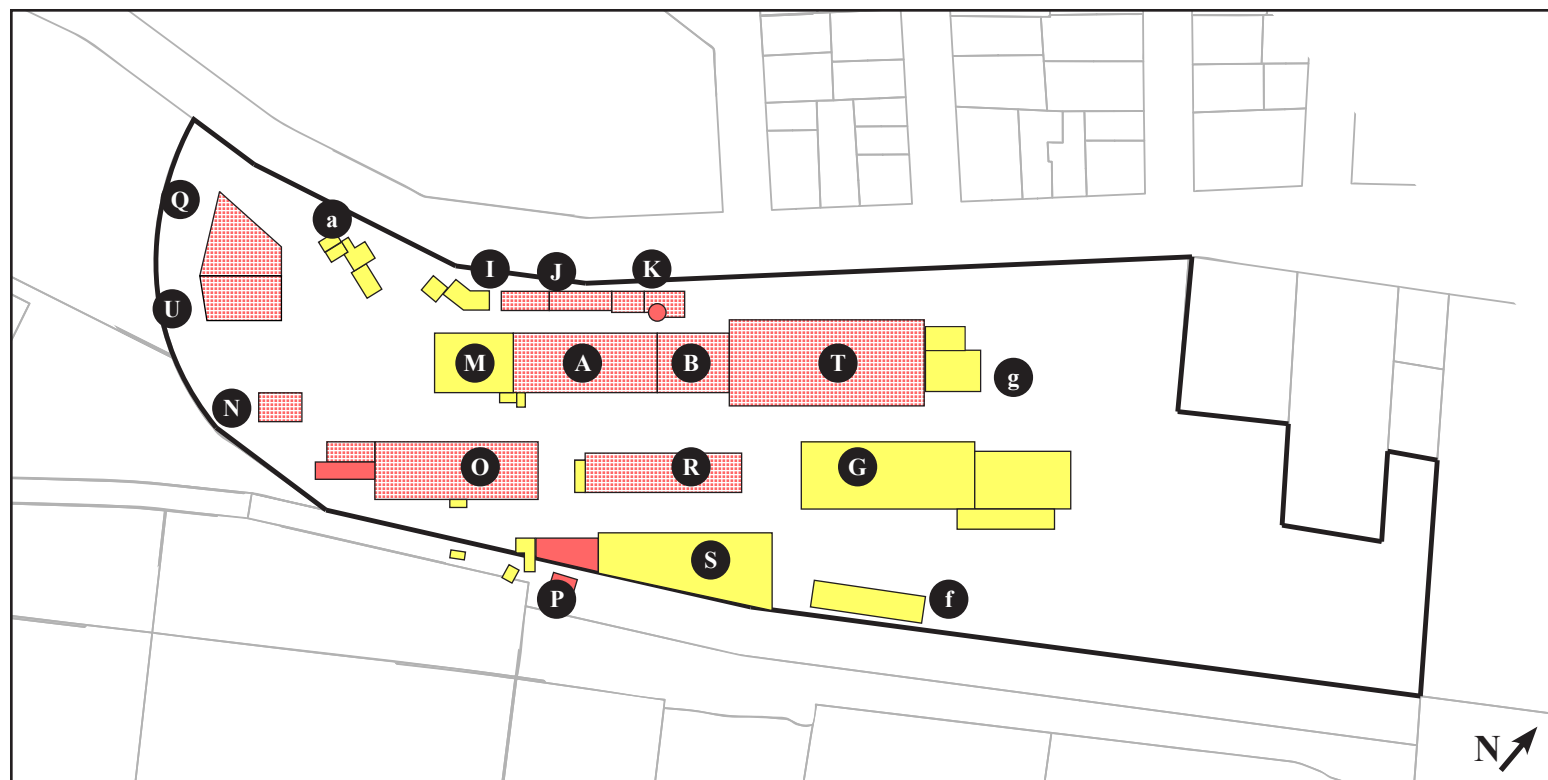
View from the Portland Company erecting shop. Courtesy of the Maine Historical Society.



Various Portland Company buildings in section. Courtesy of the Maine Historical Society.



North end of the Portland Company yard. Courtesy of the Maine Historical Society.



The Portland Company 1896	
	Masonry
	Wood
	Metal
	Extant Masonry
	Extant Wood
	Extant Metal

PRIMARY:

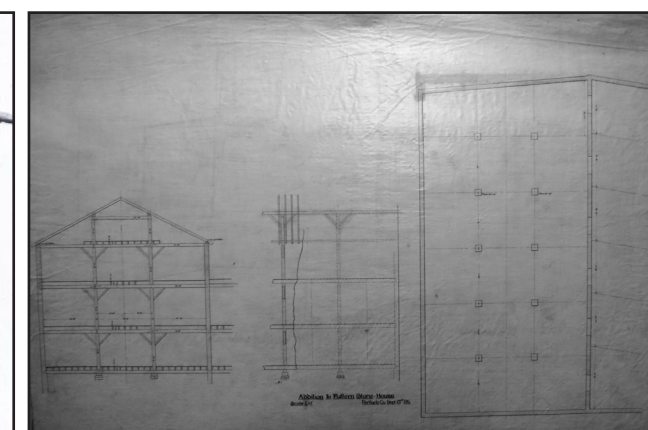
A: Machine Shop
B: Smith Shop
F: Blacksmith Shop
G: Boiler Shop
I: Office Building
J: Drafting Room & Storehouse
K: Boiler House & Brass Foundry
M: Erecting Shop
N: Paint Shop
O: Car Shop
P: Tin & Babbitt Shop
Q: Pattern Storehouse
R: Blacksmith & Tank Shop
S: Blacksmith & Tank Shop
T: Foundry
U: Pattern Storehouse Addition

SECONDARY:

a: Stable
d: Scratch House
f: Sand Shed
g: Wheel Foundry



Courtesy of the Maine Historical Society.



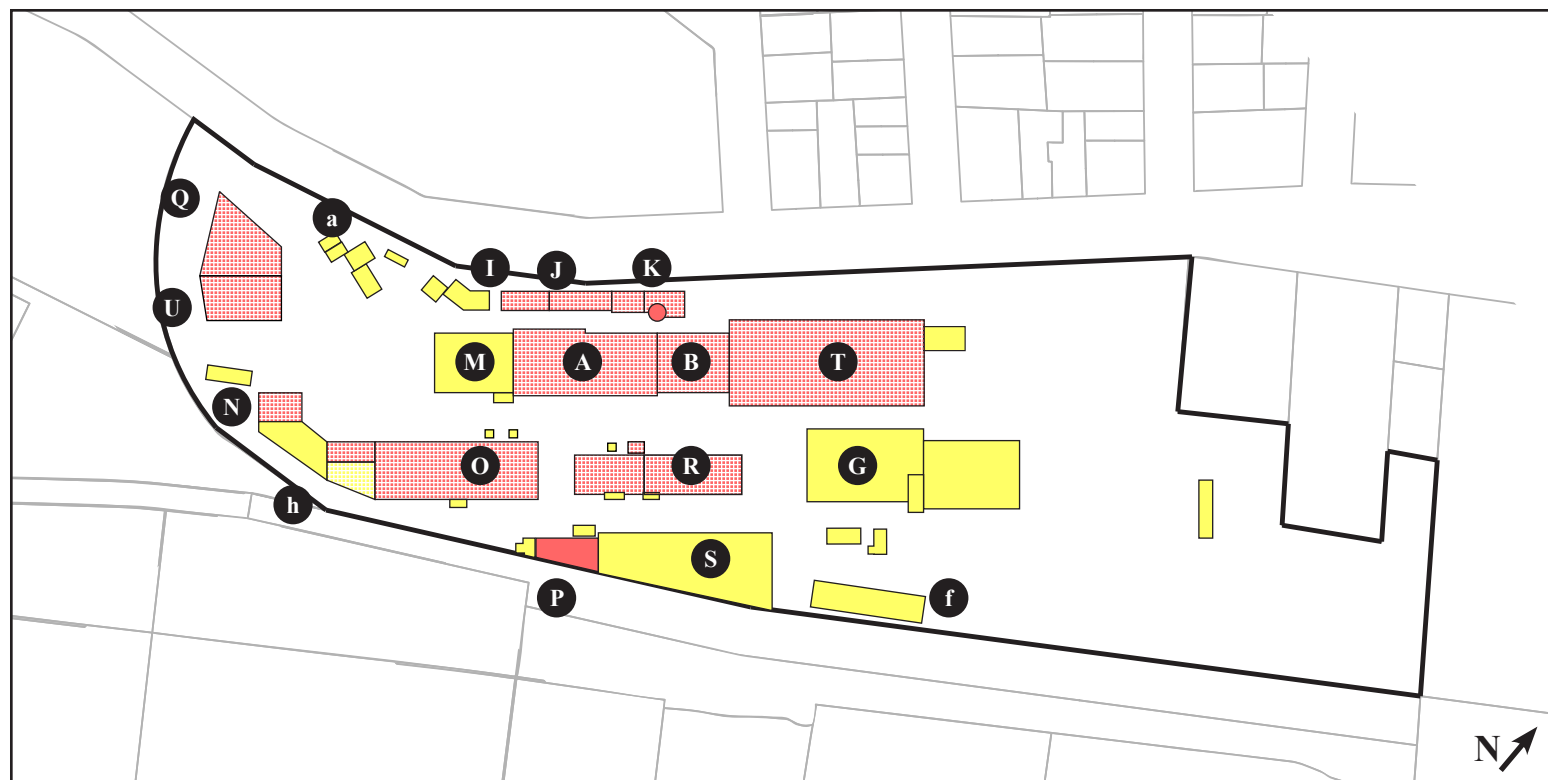
Drawings for the Pattern Storehouse addition.
Courtesy of the Maine Historical Society.



View of the Portland Company entry yard. Cour-
tesy of the Maine Historical Society.



View of the Portland Company works. Courtesy
of the Maine Historical Society.



The Portland Company 1909	
	Masonry
	Wood
	Metal
	Extant Masonry
	Extant Wood
	Extant Metal

PRIMARY:

A: Machine Shop
 B: Smith Shop
 F: Blacksmith Shop
 G: Boiler Shop
 I: Office Building
 J: Drafting Room & Storehouse
 K: Boiler House & Brass Foundry
 M: Erecting Shop
 N: Paint Shop
 O: Car Shop
 P: Tin & Babbitt Shop
 Q: Pattern Storehouse
 R: Blacksmith & Tank Shop
 S: Blacksmith & Tank Shop
 T: Foundry
 U: Pattern Storehouse Addition

SECONDARY:

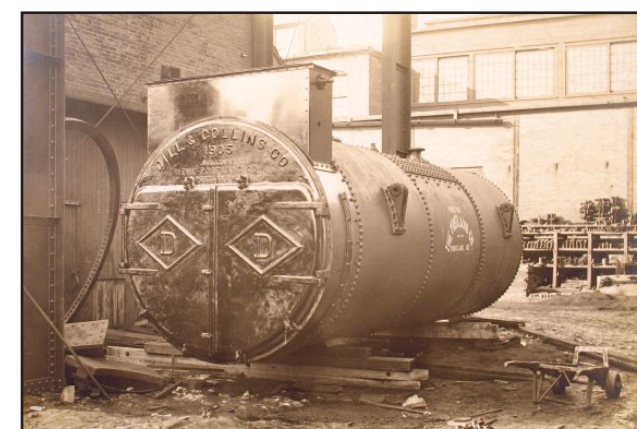
a: Stable
 d: Scratch House
 f: Sand Shed
 h: Lumber Sheds



Interior view on the third floor of the machine shop. Courtesy of the Maine Historical Society.



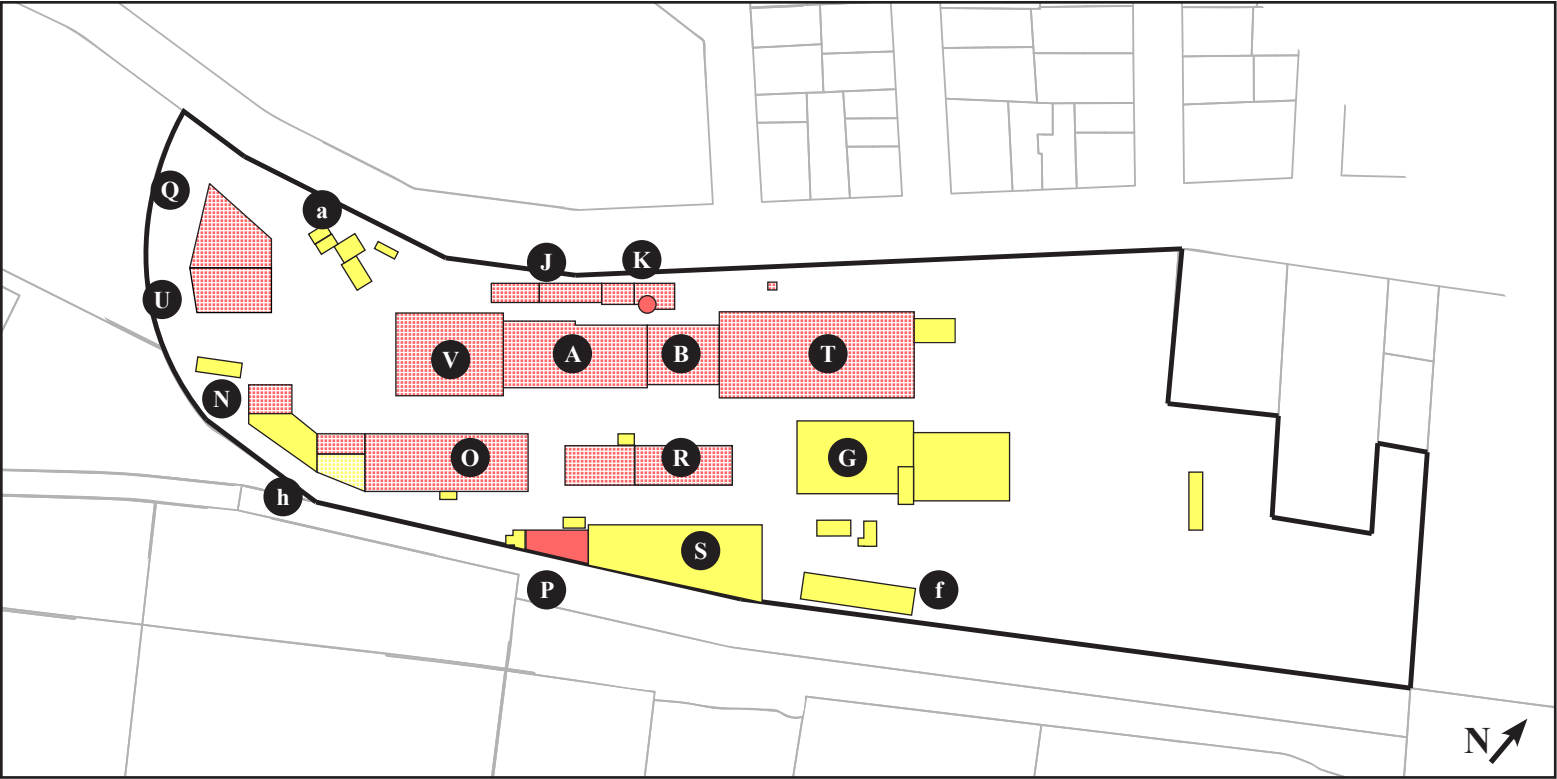
Knox automobile at the Portland Company. Courtesy of the Maine Historical Society.



Large boiler outside the tank shop. Courtesy of the Maine Historical Society.



Knox automobile at the Portland Company. Courtesy of the Maine Historical Society.



**The Portland Company
1918**

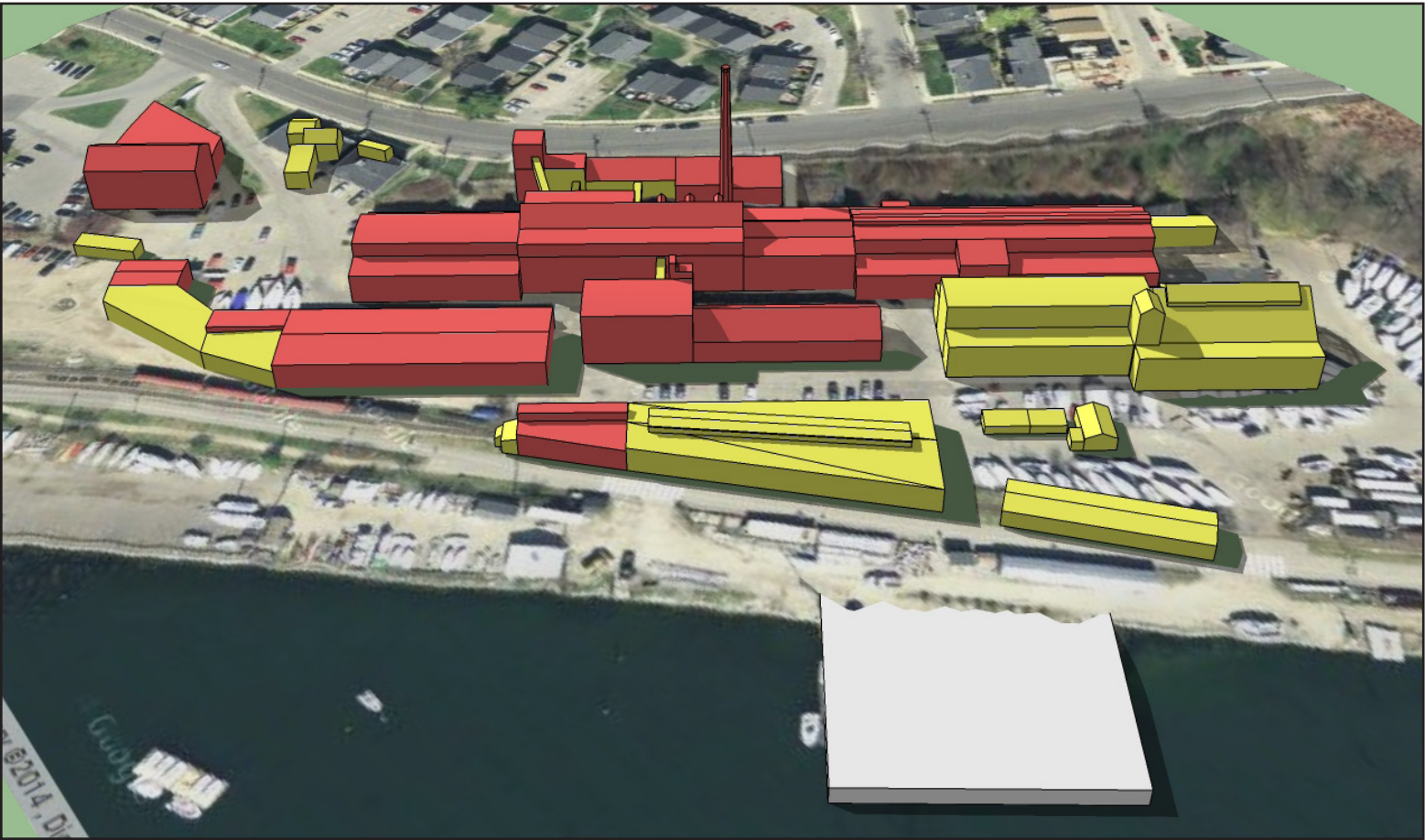
	Masonry
	Wood
	Metal
	Extant Masonry
	Extant Wood
	Extant Metal

- PRIMARY:**

 - A: Machine Shop
 - B: Smith Shop
 - F: Blacksmith Shop
 - G: Boiler Shop
 - J: Drafting Room & Storehouse
 - K: Boiler House & Brass Foundry
 - N: Paint Shop
 - O: Car Shop
 - P: Tin & Babbitt Shop
 - Q: Pattern Storehouse
 - R: Blacksmith & Tank Shop
 - S: Blacksmith & Tank Shop
 - T: Foundry
 - U: Pattern Storehouse Addition
 - V: Erecting Shop

SECONDARY:

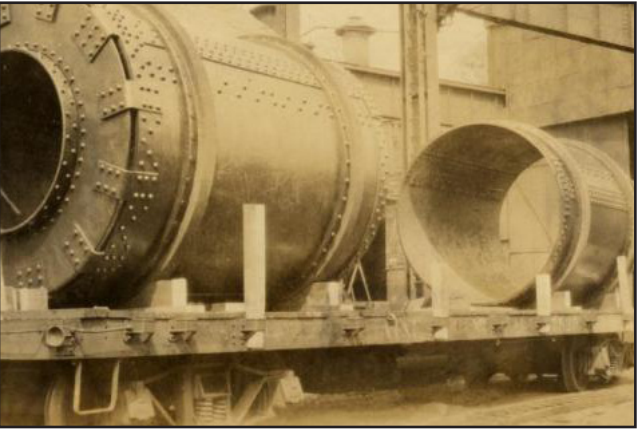
 - a: Stable
 - f: Sand Shed
 - h: Lumber Sheds



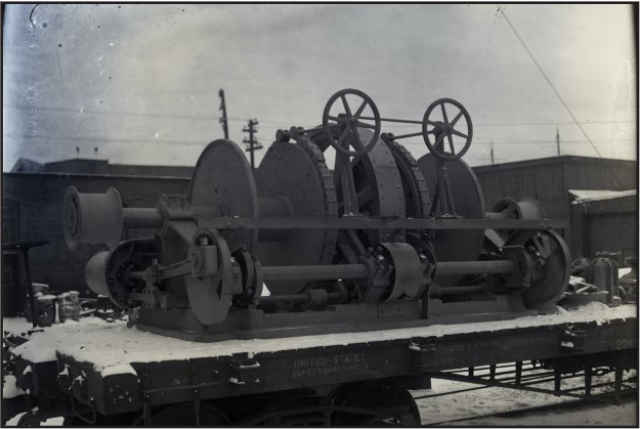
Aerial of the Portland Company. Courtesy of the Maine Historical Society.



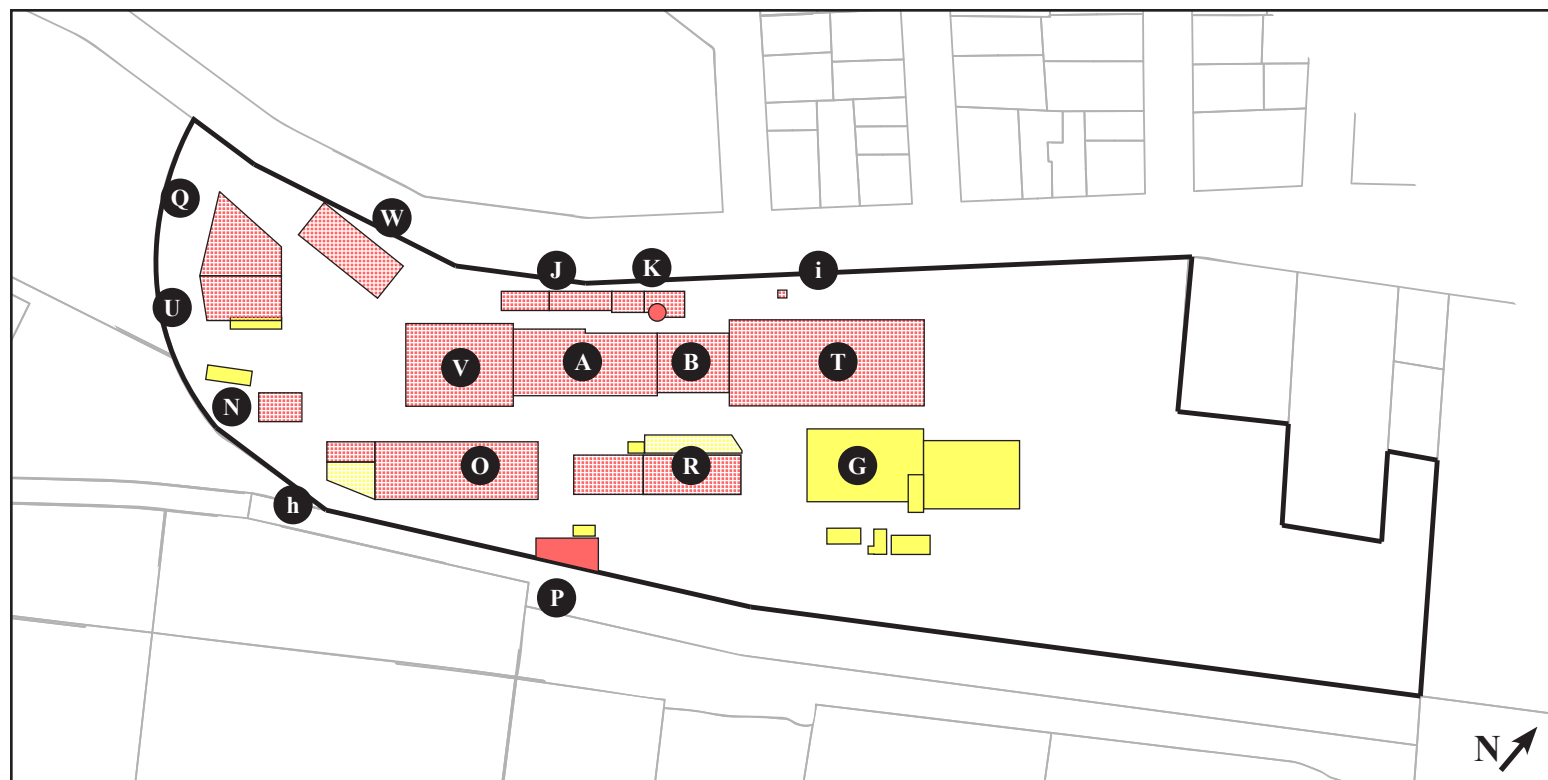
Aerial of the Portland Company. Courtesy of the Maine Historical Society.



Large debarking drums. Courtesy of the Maine Historical Society.



Courtesy of the Maine Historical Society.



**The Portland Company
1951**

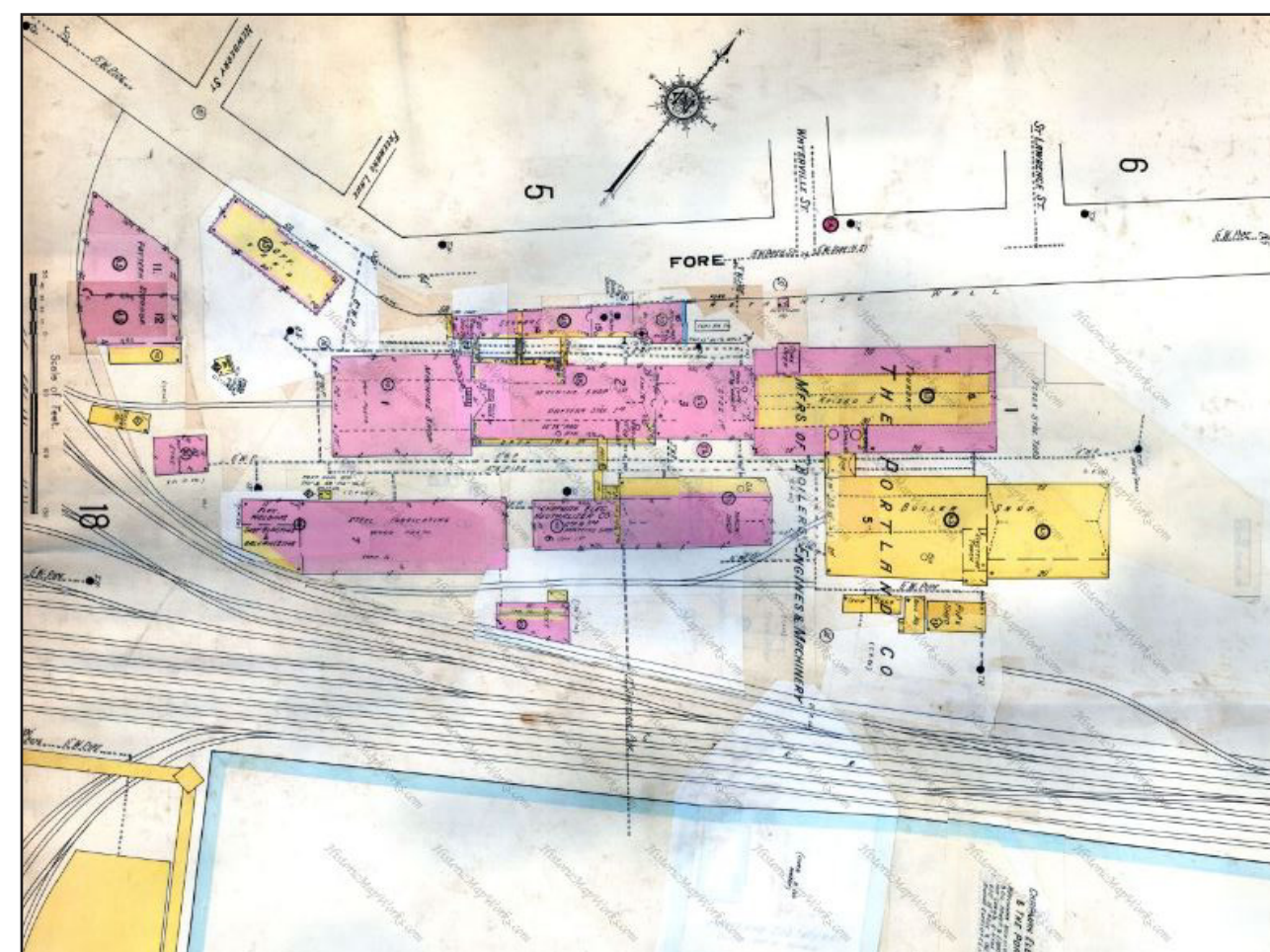
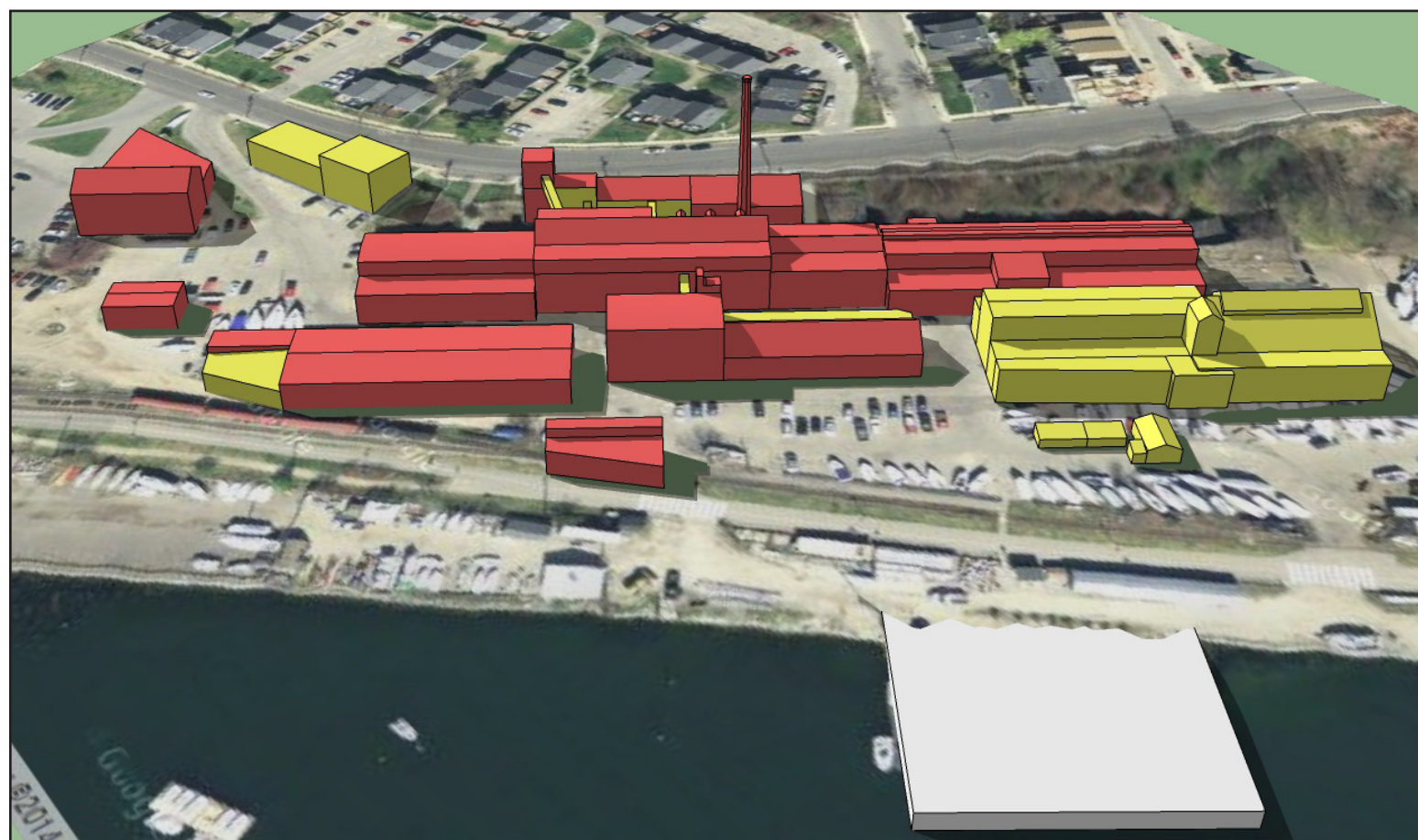
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	Wood
	Metal
	Extant Masonry
	Extant Wood
	Extant Metal

PRIMARY:

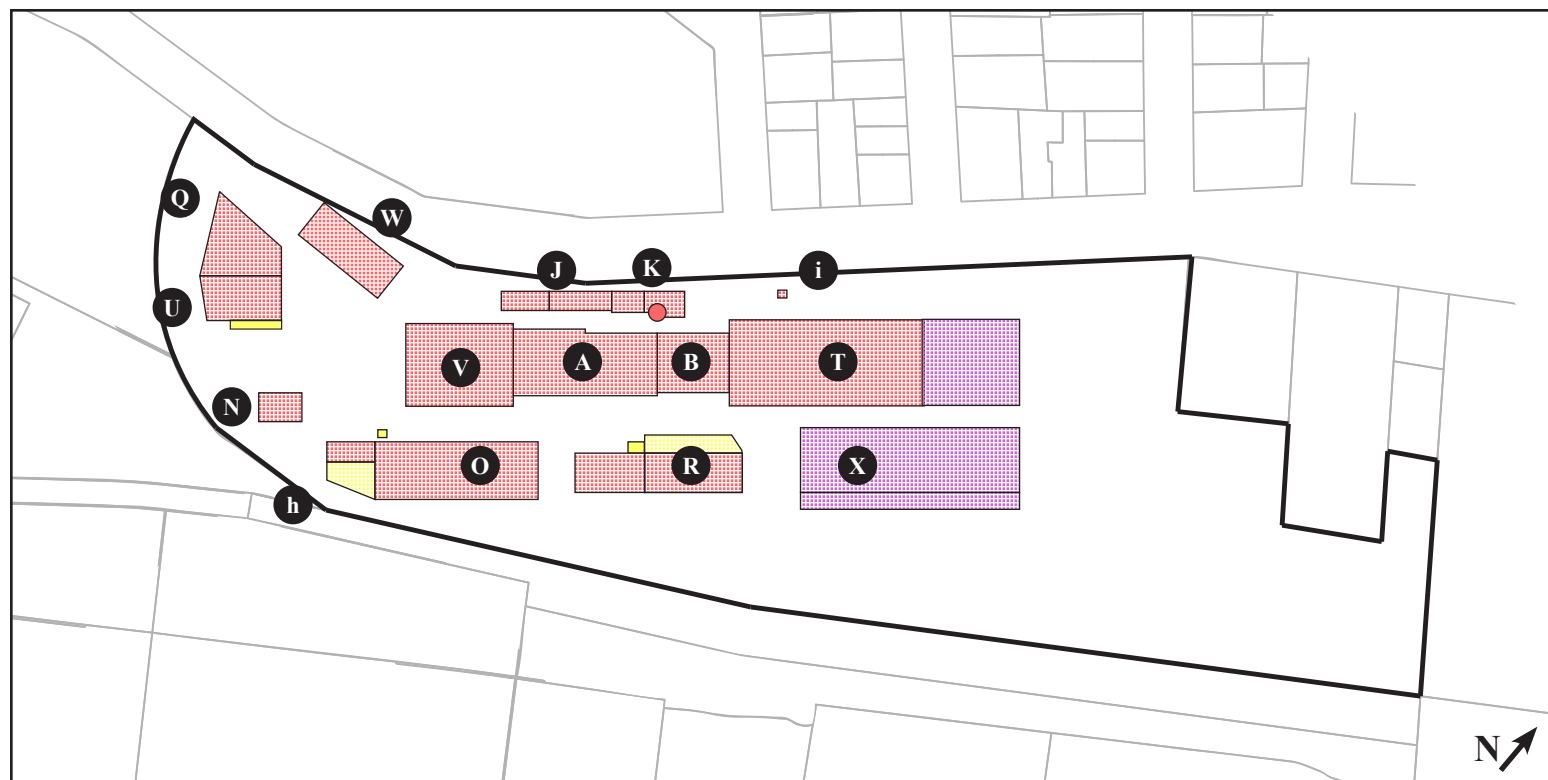
A: Machine Shop
B: Smith Shop
F: Blacksmith Shop
G: Boiler Shop
J: Drafting Room & Storehouse
K: Boiler House & Brass Foundry
N: Paint Shop
O: Car Shop
P: Tin & Babbitt Shop
Q: Pattern Storehouse
R: Blacksmith & Tank Shop
T: Foundry
U: Pattern Storehouse Addition
V: Erecting Shop
W: Office Building

SECONDARY:

h: Lumber Sheds
i: Acetylene House



1951 Sanborn Map for the Portland Company.



**The Portland Company
1986**

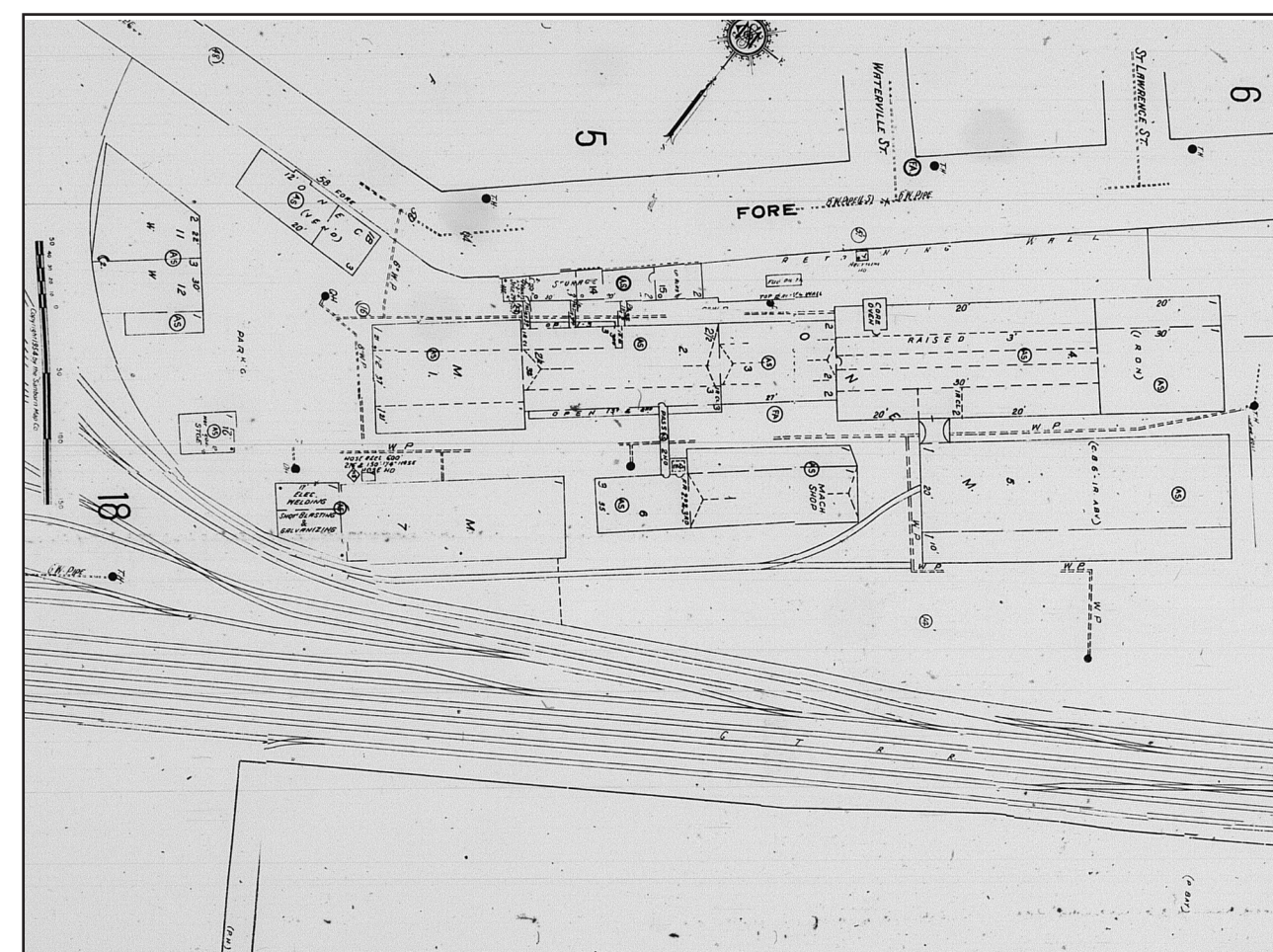
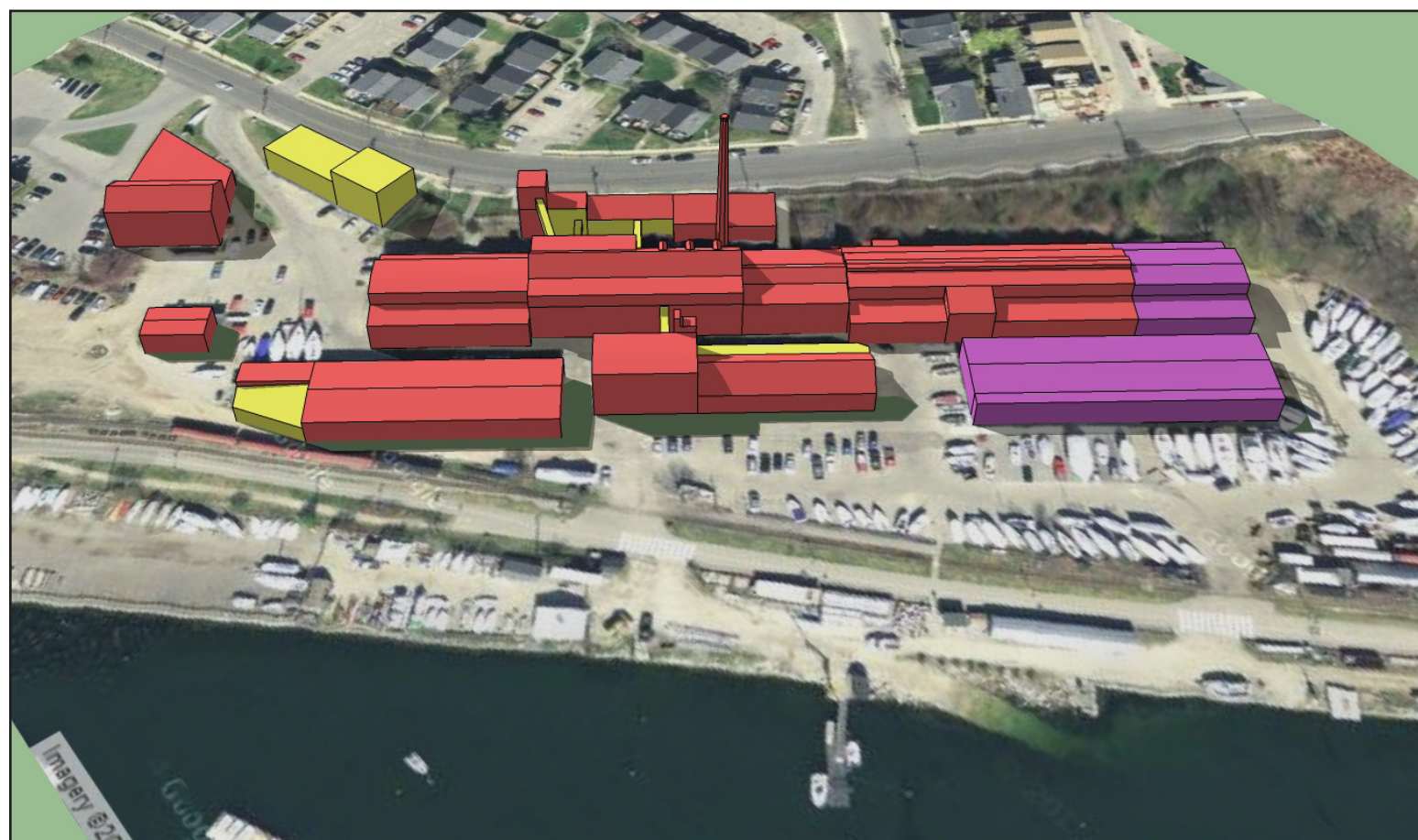
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	Wood
	Metal
	Extant Masonry
	Extant Wood
	Extant Metal

PRIMARY:

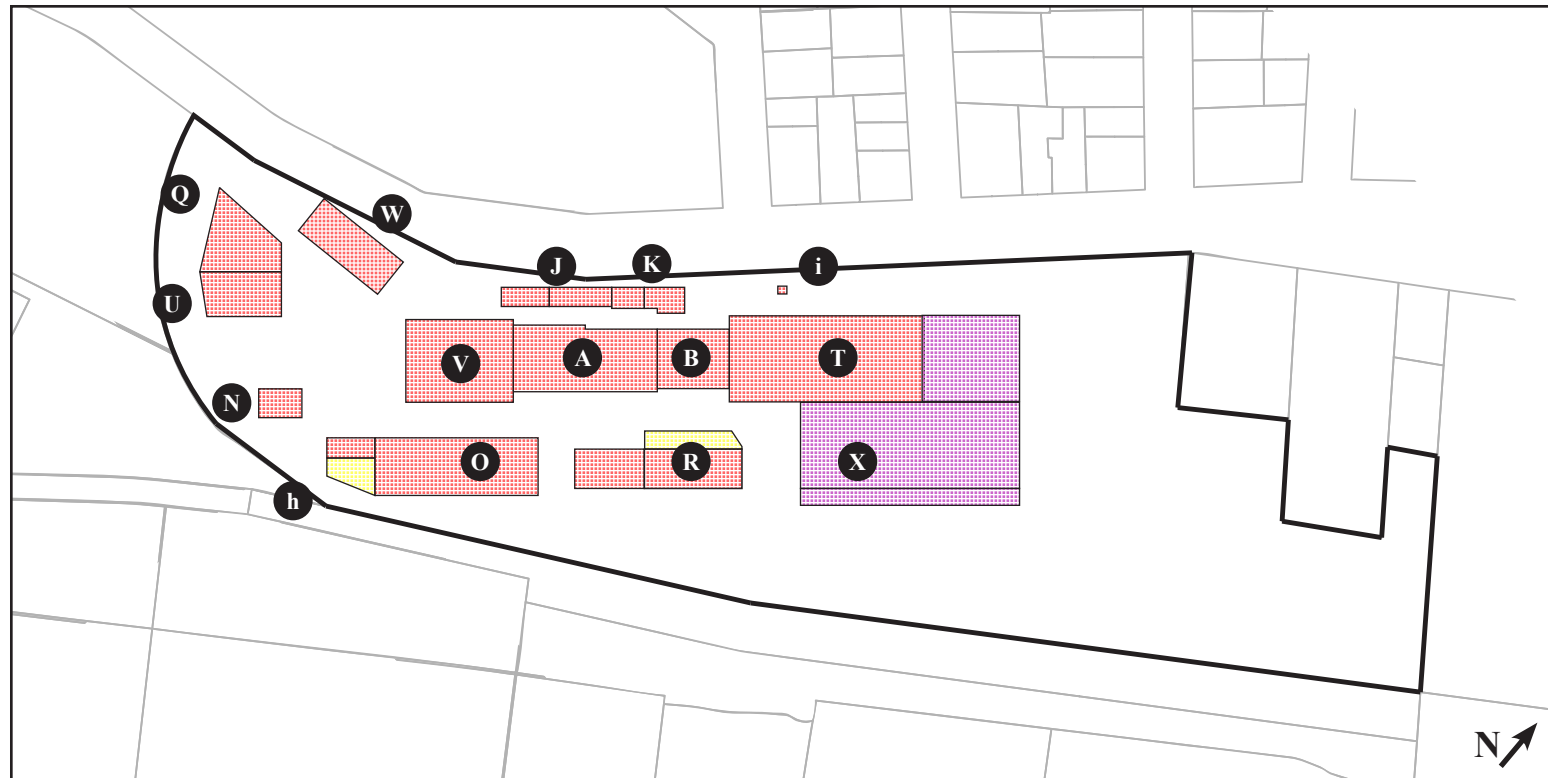
A: Machine Shop
B: Smith Shop
J: Drafting Room & Storehouse
K: Boiler House & Brass Foundry
N: Paint Shop
O: Car Shop
Q: Pattern Storehouse
R: Blacksmith & Tank Shop
T: Foundry
U: Pattern Storehouse Addition
V: Erecting Shop
W: Office Building
X: Modern Construction

SECONDARY:

h: Lumber Sheds
i: Acetylene House



1886 Sanborn Map for the Portland Company.



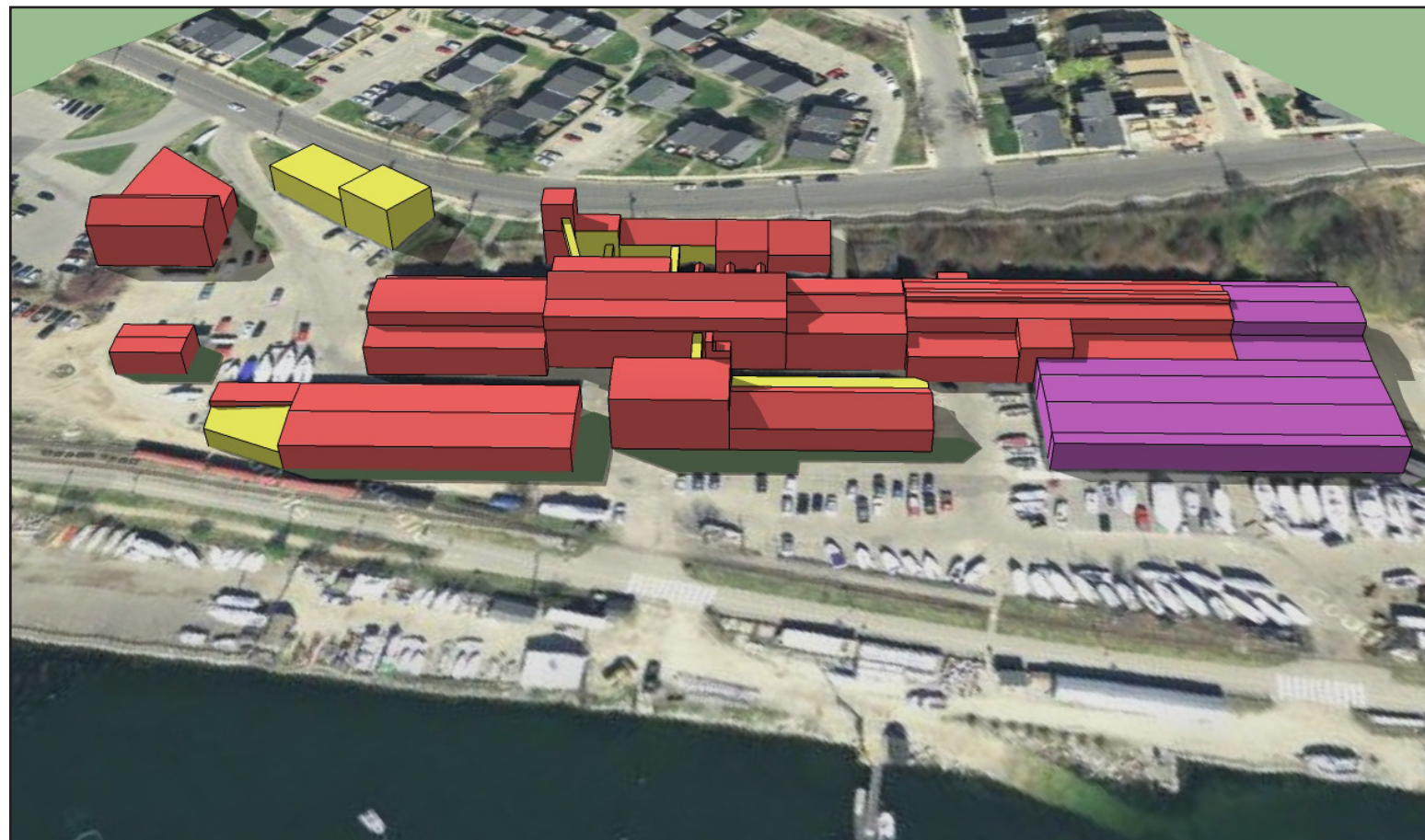
The Portland Company 2014	
	Masonry
	Wood
	Metal
	Extant Masonry
	Extant Wood
	Extant Metal

PRIMARY:

A: Machine Shop
B: Smith Shop
J: Drafting Room & Storehouse
K: Boiler House & Brass Foundry
N: Paint Shop
O: Car Shop
Q: Pattern Storehouse
R: Blacksmith & Tank Shop
T: Foundry
U: Pattern Storehouse Addition
V: Erecting Shop
W: Office Building
X: Modern Construction

SECONDARY:

h: Lumber Sheds
i: Acetylene House



Current view north of the Portland Company.



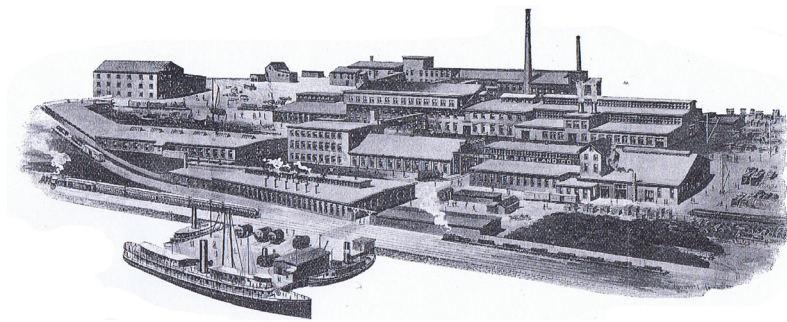
View north in the alley at the west end of the complex.



View east between the car shop and electric company building.



View north between the machine shop and blacksmith and tank shops.



Section III:
Appendices

APPENDIX A: HISTORY OF THE ESTABLISHMENT OF THE PORTLAND COMPANY

The Portland Company was established in conjunction with construction of the Atlantic & St. Lawrence Railroad which was built to connect Portland to Montreal. John A. Poor, the individual most responsible for Portland's successful bid over Boston to become Montreal's winter port via rail, was a Director of the Atlantic & St. Lawrence Railroad and became the first President of the Portland Company.¹ Other Atlantic & St. Lawrence Directors were also stockholders in the Portland Company, including Portland's wealthiest individual John Bundy Brown, who would become President of the company in 1864; Congressman and later Senator and U. S. Secretary of the Treasury William P. Fessenden; and Captain George Turner, who was given a seat on the railroad's Board between the regular annual Director's elections shortly after selling property to the Portland Company for their works. In October 1846, the Directors of the Atlantic & St. Lawrence Railroad contracted with established Philadelphia locomotive builder Septimus Norris to produce locomotives, cars, wheels, rail, and other necessary castings for the construction and operation of the line with the stipulation that these be manufactured in Portland. Septimus Norris was one of eight brothers who were pioneers in the development and fabrication of steam locomotives in the U. S. No facilities existed in Portland to undertake this contract and Norris partnered with several prominent Portland residents, including John A. Poor, as the "Portland Company" in 1846, to undertake this work. The partners appear to have purchased a charter that had been granted by the Maine legislature for the Portland Iron Manufacturing Company in 1845, five days after the charter for the Atlantic & St. Lawrence Railroad was granted. In August 1846, the legislature approved an act changing the name of the corporation to the Portland Company and increasing the allowed capital of the company from fifty-thousand dollars to two-hundred-and-fifty thousand dollars. The act specified that the Portland Company would manufacture locomotive engines, railroad cars, machinery and implements of all kinds, which had not been mentioned in the original charter.²

The first meeting of the Directors of the Portland Company was held on November 11, 1846, at the Exchange Street office of Attorney John A. Poor. John Fox was chosen chairman, and A. W. H. Clapp, Secretary. Other Directors present included Septimus Norris, James C. Churchill, and George Warren. John A. Poor was elected President, Woodbury Storer elected Treasurer, Septimus Norris was elected Chief Engineer, and Horace Felton Superintendent. Horace Felton was an experienced superintendent from the Norris locomotive works in Philadelphia. All of the directors except Norris and Felton were Portland residents. At this first meeting, the Chief Engineer and Superintendent were requested to report as soon "as may be" what buildings would be required and also engines and tools for the company. Norris submitted a list of tools "to be purchased of Norris & Brothers Locomotive Builders, Philadelphia", totaling \$13,500 which were "required to commence our business." These were part of a longer list included all tools, machines, and equipment needed to set up fully operational shops, with a total cost of \$46,955. Additionally, Norris submitted a list of ten men to fill the positions of Foreman, Draftsman, Foreman Finisher, Foreman Foundry, Foreman Pattern Shop, Clerk, Time Keeper, Foreman Boiler Shop, Foreman Putting Shop, and Foreman Smith. All these men, "who understand fully the whole detail of this particular branch of mechanics," apparently having worked at the Norris shops in PA. Also at this meeting, Directors Fox, Warren, Churchill, and Clapp were appointed to a committee to "negotiate with Capt. George Turner and other individuals in relation to a site for the necessary works of the Company." Turner owned land, mud flats, and a wharf along Fore Street at the base of Munjoy Hill. Later the same day, the committee reported that Capt. Turner wanted \$8,500 for his property.³

Five days later the committee had a verbal agreement with Turner to sell a portion of his land below Fore Street for \$4,750 with his consent to move the line of Fore Street and place water reservoirs for the works

1 Poor, Laura Elizabeth, John A. Poor. *The First International Railway and the Colonization of New England, Life and Writings of John Alfred Poor*, 1890

2 Records of the Portland Company and records of the Atlantic & St. Lawrence Railroad, Maine Historical Society.

3 Records of the Portland Company, Maine Historical Society.

on land owned by Turner across the street. The Board approved the agreement and Turner signed it within several days. On the same day, the company President was requested to “make application to the City Government for leave to erect stationary engines and whatever else may be necessarily connected with the Company Works and requiring such licenses,” and Directors Fox, Churchill, and Clapp to, “be a Committee on that part of this Board to confer with the President and Directors of the Atlantic & St. Lawrence Railroad Company on the subject of the location of the works of the Portland Company, with power to negotiate with said Railroad Company, or any committee thereof, touching their right of way, in front of or upon the land of the Portland Company: and all questions that may arise requiring the mutual and concurring action of this Board and said Rail Road Company, prior to the erection of the works of this Company, with a view to such mutual and reciprocal arrangements as may be found advantageous to both parties.” In 1846, the legislature had granted the railroad the right to claim by eminent domain, “so much of the lands, flats, and other real estate ... lying within the City of Portland, and adjoining the navigable waters of Portland harbor,” (essentially within the area bounded by India Street, Fore Street to the point where the street is closest to the harbor, then southeast to the navigation channel of the Fore River and back to India Street) as required for a railroad terminus at Portland including a depot, wharves, docks, etc. The Turner property purchased by the Portland Company was a short distance east of the railroad’s boundary with a lot retained by Turner between them. The fact that the railroad’s eminent domain boundaries did not include the Portland Company property when established by the legislature suggests that space for an adjoining locomotive manufacturer may have been part of the railroad’s plan from the outset. Much of the “property” of both companies was comprised of the mud flats and waters of Broad Cove. The Portland Company directors immediately undertook to plan and contract for a stone sea wall, filling, and grading their site to create sufficient level land for their works.⁴

By late December 1846, less than six weeks after the first meeting of the Board of Directors, tensions had appeared between the Portland Directors and Septimus Norris, brought to a head on December 21, when the Board voted not to pay an invoice for \$138 drawn in the name of President Poor by Norris for drawings for buildings, locomotives, and cars because Norris had no authorization to do so and because Norris had failed to pay an assessment of \$5.00 per share on the 1000 shares of company stock he controlled. Within a short time, the shares had been transferred back to the corporation and Norris was fired as Chief Engineer. There is no documentation that the company purchased the recommended tools and machinery from Norris Locomotive Works of Philadelphia before the ouster of Septimus Norris. Eventually, Norris would settle with the company, receiving \$400 to renounce any claims on the company while allowing them the non-exclusive use of all the patents he controlled for the manufacture of railroad equipment, which he had previously assigned to the company. Horace Felton was also fired briefly but apparently determined he had a better future with the Portland Company than Norris Locomotive Works. Shortly after letting him go, the Board appointed him General Superintendent and he was primarily responsible for making the works operational during the following year and a half.⁵

A seriously complicating factor in the removal of Septimus Norris was his contract with the Atlantic & St. Lawrence Railroad to produce locomotives and other equipment for that company. Norris attempted to retain the contract, offering to lease or buy property from the Portland Company on which to erect shops, but ultimately the contract was canceled by the railroad and the work assigned to the Portland Company. Negotiating the complex legal and practical issues involved with the Norris contract appears to have been helped by John A. Poor’s presence on both Boards. It is clear that the Directors of the railroad were determined to have a manufacturing plant for locomotives and other railroad equipment in Portland and it isn’t surprising that they worked to insure it would happen under local control once Norris proved unable to fulfil his obligations as a stockholder in the Portland Company. Further close cooperation between the companies was required in the building of the shops and establishment of a rail connection to them, as well as construction of a wharf for the Portland Company on the harbor side of the railroad’s trestle from Fish

4 Records of the Portland Company and records of the Atlantic & St. Lawrence Railroad, Maine Historical Society.

5 Records of the Portland Company, Maine Historical Society.

Point to the depot at India Street. Eventually the Portland Company would expand, filling all the water between their first sea wall and the railroad, which would fill around its trestle and build a stone sea wall along the harbor edge.⁶

Beginning in April 1847, the foundry, smith shop, and machine shop, were constructed of brick using plans by Felton. The company contracted with Thomas Cummings as Master Carpenter at \$2.50 per day and Lorenzo D. Mason as Master Mason or Bricklayer at \$2.00 per day. Both were “encouraged to employ carpenters and masons who are stockholders in the company at the same rates as other mechanics.” A cargo of stone then in the harbor was purchased for the buildings from Mr. Littlefield. The stone was used for stone for foundations, underpinning, and window caps. John Soule of Freeport supplied 175,000 bricks at \$5.25 per thousand delivered and Dennison & Kelsey of Freeport supplied two kiln of bricks (approx. 250,000) at \$5.00 per thousand delivered, “to be hard burnt and merchantable.” The foundry was 75’ x 62’, smith shop 75’ x 62’, and machine shop 150’ x 62’ with slate roofs. Fenton was authorized to contract for tools and machinery up to \$8,000 and President Poor contracted with Hinckley & Egery of Bangor for a stationary engine with two boilers 20’ long by 40” diameter to power the machinery of the plant. It was to be installed and operational by August 1. The President and General Supervisor also began to look for a pattern maker and foreman to hire while the shops were under construction. Two additional lots were purchased from Capt. George Turner in November 1847, one to the east of the first lot purchased for \$1,550 and one to the west for \$1,350. The sea wall was extended and a wooden car shop was built on the west lot. The boundaries were apparently not clear as the car shop was built partially on Atlantic & St. Lawrence Railroad land west of the new lot. The railroad sold a piece of property to the company so the car shop was entirely on their own land. The railroad would sell additional land for further expansion of the complex in the early twentieth century. The company’s shops began operation in October 1847, with the first locomotive, the “Augusta,” completed in July 1848. The Augusta was built for the Portland, Saco & Portsmouth Railroad, not the Atlantic & St. Lawrence Railroad. The first locomotive for that line, the “Montreal,” was completed in September 1848. The Portland Company would manufacture a total of 628 locomotives between 1848 and 1909 in addition to hundreds of marine and industrial boilers and numerous other products.⁷

6 Records of the Portland Company and records of the Atlantic & St. Lawrence Railroad, Maine Historical Society.

7 Records of the Portland Company, Maine Historical Society.

APPENDIX B: ADDITIONAL INFORMATION ON JOHN A. POOR

John Alfred Poor was born in Andover, Maine, to Dr. Silvanus and Mary Merrill Poor in January 1808. He spent part of his boyhood with an uncle in Bangor where he attended school at an academy. In 1827, he began the study of law in Bangor. He was admitted to the bar on his 24th birthday and opened a practice in Old Town. In 1833, he returned to Bangor and married Elizabeth Adams Hill, going into partnership with his uncle, also a lawyer. Upon the retirement of his uncle, Poor and his brother, Henry Varnum Poor, also a lawyer, established a partnership. John A. Poor practiced law in Bangor for fourteen years before moving to Portland to pursue other interests, principally railroads.¹

Poor had been present in Boston in April 1834 when the first steam locomotive ran in New England. He later wrote of that experience: “It gave me such a shock that my hair seemed to start from the roots rather than to stand on end; and as I reflected in after years, the locomotive engine grew into a greatness in mind that left all other created things far behind it as marvels and wonders.” In a speech given in Bangor in 1869, Poor described how he came to become the leading proponent of railroad building in Maine:

From 1830, onward, I watched with eager curiosity the development of the railway, its mysterious workings and marvelous power; and I sighed and longed for the introduction of railroads into Maine. I saw how the railroad, wherever introduced, attracted capital and industry. As early as 1835, I perceived that the tide of immigration into Maine, from other parts of New England gradually diminished, and finally was checked completely by the growth of manufactures. I could not help seeing that a time of emigration from Maine was rolling on; for in 1843, on a visit to my native town with less than seven hundred people, eighty young persons had been drawn from it to the workshops and factories of Massachusetts. I felt irresistibly impelled to an effort to resist if possible this state of things. I tried in 1843, as a citizen of Bangor, to move in a plan for a railway east, toward St. John and Halifax, but the time had not come, and I threw my energies into the project of a line from Portland to Montreal, as the great section to begin upon.²

In 1844, Poor wrote a letter to the *Portland Advertiser* outlining his plan for a rail line from Portland to Montreal. His biographer states, “His letter created a profound sensation in Portland ... compared to ‘an alarm bell in the night struck by the hand of a stranger.’” A short time later, Poor relocated to Portland and began organizing the effort to secure a charter from the legislature for the railroad. John A. Poor’s role in the creation of the line from Portland to Montreal is well documented – from his speaking tours through Maine and Quebec, promoting the plan, to his frantic journey from Portland to Montreal by sleigh in a blizzard to head off efforts by Boston to secure the proposed line for their city, and subsequent his efforts to get the railroad financed, built, and equipped.³ Shortly after the line was completed to Montreal, it was leased to the Grand Trunk Railroad, which operated it until the 1980s.⁴

In 1846, a committee of Directors of the Atlantic & St. Lawrence Railroad, which included Poor, negotiated an agreement with the railroads connecting Portland to Portsmouth and Boston which would allow the transfer of passengers and freight between the lines without unnecessary delay or cost. According to Poor’s biography, “The idea itself originated with Mr. Poor, who thus early recognized the impolicy of placing any restriction upon railway transit. To carry it out, he suggested the building of a new street, extending across a part of the city from the station of the Atlantic and St. Lawrence Railway to that of the Boston roads, on

1 Poor, Laura Elizabeth, John A. Poor. *The First International Railway and the Colonization of New England, Life and Writings of John Alfred Poor*, 1890

2 Poor, Laura Elizabeth, John A. Poor. *The First International Railway and the Colonization of New England, Life and Writings of John Alfred Poor*, 1890

3 Poor, Laura Elizabeth, John A. Poor. *The First International Railway and the Colonization of New England, Life and Writings of John Alfred Poor*, 1890

4 Records of the Atlantic & St. Lawrence Railroad, Maine Historical Society.

which a railway track should be laid.”⁵ This would be built several years later and be named Commercial Street. The effect of Poor’s railroad related developments on Portland and Maine cannot be over stated. On a state-wide level, Poor’s efforts greatly increased international trade with both Canada and Europe, provided the state with direct trans-Atlantic passenger ship service, and facilitated the immigration of thousands of French-Canadian families to work in the mills made possible by the improved transportation network.

Poor was also President of the Portland Gas Light Company, incorporated in 1849, which began to supply gas for domestic and street lighting in 1850. In 1849, he purchased the *American Railway Journal* and made his brother, Henry Varnum Poor manager and editor. H. V. Poor later owned the publication and expanded into compiling statistical information on the financing and operation of railroads in the U. S., establishing the foundation of the Standard and Poor’s financial services company. In 1851, he was elected President of the York and Cumberland (later Portland and Rochester) Railroad and conceived of the route of that line over the mud flats of Back Cove in Portland, to connect with the Atlantic & St. Lawrence near that line’s Back Cove Bridge. Kennebec Street and a portion of the Bayside Trail follow this right of way today. Poor established *The State of Maine* newspaper in Portland in 1853 and was its owner and editor until it merged with the *Daily Advertiser* in 1859. The newspaper was devoted to the advocacy of the development of the state and particularly, his own scheme for building the European and North American Railway. In the late 1860s and early 1870s, he was President of the Portland, Rutland, Oswego, and Chicago Railway, a never-built line that was to have replaced the Grand Trunk Railroad in his transcontinental plan, after that railroad declined to become involved in the plan.⁶

The European and North American Railway was John A. Poor’s great dream, of which the Atlantic & St. Lawrence Railroad was to be merely a part. He wanted to create a railroad line that would run from Halifax, Nova Scotia, through New Brunswick and into Maine at Calais, then run to Bangor and on to Auburn, where it would connect with the Atlantic and St. Lawrence line to Montreal. From Montreal, Poor envisioned a line that would run to the Great Lakes and ultimately to the West Coast, serving both the United States and Canada. His vision was for this grand trunk line to connect with trans-Atlantic steam ships at Halifax, providing the shortest possible route from “British America” (the U.S. and Canada) to England and Europe and from the West Coast to Asia. In 1869, he wrote, “For more than thirty years I have contemplated as a certainty the completion of a line of railway across the continent of North America, at its widest part, as the means of securing the shortest possible transit of passengers, mails, and valuable merchandise between the centers of Europe and Asia.” His great concept ran into competition from another plan for a railroad from the Canadian Maritime Provinces to Montreal that stayed entirely within Canada, and resistance from his Atlantic & St. Lawrence partners in Portland, who saw no advantage to the plan, fearing a line from Halifax would make Portland redundant. Poor believed there would be enough business for both. His advocacy for the European & North American Railroad scheme would lead to his failing to be reelected to the Atlantic and St. Lawrence Board of Directors in 1849 and to his disassociation with the Portland Company Board in 1851. Portions of the E. & N. A. Railway in New Brunswick were built between 1851 and 1869, ending at the U. S. Border at St. Croix, N. B. The American European & North American, chartered in 1850, was built from Bangor to Vanceboro, opposite St. Croix, between 1868 and 1871. U.S. President Ulysses S. Grant and Canadian Governor General Lord Lisgar attended the ceremony to open the boundary bridge crossing the St. Croix River and connecting the two parts of the E. & N. A. R. in 1871. From Bangor southward, The Penobscot & Kennebec and Androscoggin & Kennebec railroads (later merged at the Maine Central) provided a link to Portland. Poor was still working on his westward dream, via the proposed Portland, Rutland, Oswego, and Chicago Railway when he died, six weeks before the opening of the European & North American bridge over the St. Croix.⁷

5 Poor, Laura Elizabeth, John A. Poor. *The First International Railway and the Colonization of New England, Life and Writings of John Alfred Poor*, 1890. 49, 50.

6 Poor, Laura Elizabeth, John A. Poor. *The First International Railway and the Colonization of New England, Life and Writings of John Alfred Poor*, 1890

7 Poor, Laura Elizabeth, John A. Poor. *The First International Railway and the Colonization of New Eng-*

Poor spent much of the 1860s in Washington, D. C., advocating and lobbying for his international railroad scheme as well as other projects related to Maine. Among other things, he was the principal proponent for the construction of Fort Popham at the mouth of the Kennebec River during the Civil War. When much of Portland was destroyed in the Great Fire of 1866, Poor undertook to raise funds for the relief of the residents of the city in Washington, where he was residing at the time.⁸

For many years, Poor was an active supporter of the Maine Historical Society, which had accepted him as a member in 1846 (membership of the organization was then limited to 100 persons). Poor devoted much of his leisure time to researching and writing about the early history of New England. In 1859, he read his first paper, “English Colonization in America” to both the Maine Historical Society and the New York Historical Society. Upon his death, the Society held a special meeting and passed a series of resolutions, “expressing a sense of deep obligation to Mr. Poor for his great services in the department of history, as well as in behalf of the material interests of the state, and declaring that he is entitled to be considered a public benefactor, and to be held in grateful remembrance by his fellow-citizens.”⁹

land, Life and Writings of John Alfred Poor, 1890.

8 Poor, Laura Elizabeth, John A. Poor. *The First International Railway and the Colonization of New England, Life and Writings of John Alfred Poor*, 1890.

9 Baxter, James P. “Reminiscences of a Great Enterprise,” 1890. Maine Historical Society.

Poor, Laura Elizabeth, John A. Poor. *The First International Railway and the Colonization of New England, Life and Writings of John Alfred Poor*, 1890.

APPENDIX C: RAILROADS FOR WHICH THE PORTLAND COMPANY PRODUCED LOCOMOTIVES

Alabama & Chattanooga RR	Northern Pacific RR
Androscoggin & Kennebec RR	Nova Scotia RR
Annapolis & Elk Ridge RR	Ogdensburg & Lake Champlain RR
Aroostook Valley RR	Ontario, Simcoe & Lake Huron RR
Atlantic & St. Lawrence RR	Panama RR
Bangor & Piscataquis RR	Penobscot & Kennebec RR
Bangor, Oldtown, & Milford RR	Peoria & Pekin Union RR
Bartlett & Albany RR	Peoria, Pekin and Jacksonville RR
Black Rock and Salisbury Beach RR	Phillips & Rangeley RR
Boston & Maine RR	Port Hope, Lindsay, & Beaverton RR
Bridgton & Saco River RR	Portland & Kennebec RR
Brockville & Ottawa RR	Portland & Ogdensburg RR
Calais & Baring RR	Portland & Rochester RR
Canadian Pacific RR	Portland Saco & Portsmouth RR
Central Mexicano RR	Quebec Central RR
Chicago, Alton, & St. Louis RR	Quebec, Montreal, Ottawa & Occidental RR
Complete Combustion Boiler Co.	Richmond & Danville RR
Dominion of Canada RR	Rumford Falls & Buckfield RR
E. M. Boynton Bicycle Railway	Rutland & Washington RR
Eastern RR	Sandy River RR
European & North American RR	Sawyer River RR
Fredericton Branch RR	Scioto Valley RR
Galveston, Houston & Henderson RR	Spartenburg & Union RR
Grand Trunk RR	St Lawrence & Atlantic RR
Hanover Branch RR	St. Francis & Megantic International RR
Inter-Colonial RR	St. Johnsbury & Lake Champlain RR
John Wood Co.	St. Lawrence & Ottawa RR
Kennebec & Portland RR	St. Stephens Branch RR
Kennebec Central RR	Steel Co. of Canada RR
Kilkenny Lumber Co.	Toledo, Peoria & Burlington RR
Lake Shore & Michigan RR	Toledo, Peoria & Warsaw RR
Lexington & Danville RR	U. S. Government
Logansport, Peoria & Burlington RR	Utica, Ithaca & Elmira RR
Mad River & Lake Erie RR	Vale Coal Co. RR
Maine Central RR	Western Counties RR
McKean & Buffalo RR	Whitby & Port Perry RR
Midland RR	Whiteby, Port Perry & Lindsay RR
Milwaukee & Mississippi RR	Windsor & Annapolis RR
Milwaukee & St. Paul RR	Wiscasset & Quebec RR
Milwaukee, Lake Shore & Western RR	Wood & Black Co.
New Brunswick & Canada RR	Worcester & Nashua RR
New York & Boston RR	York & Cumberland RR
New York City & Northern RR	

APPENDIX D: TIMELINE OF DEVELOPMENT

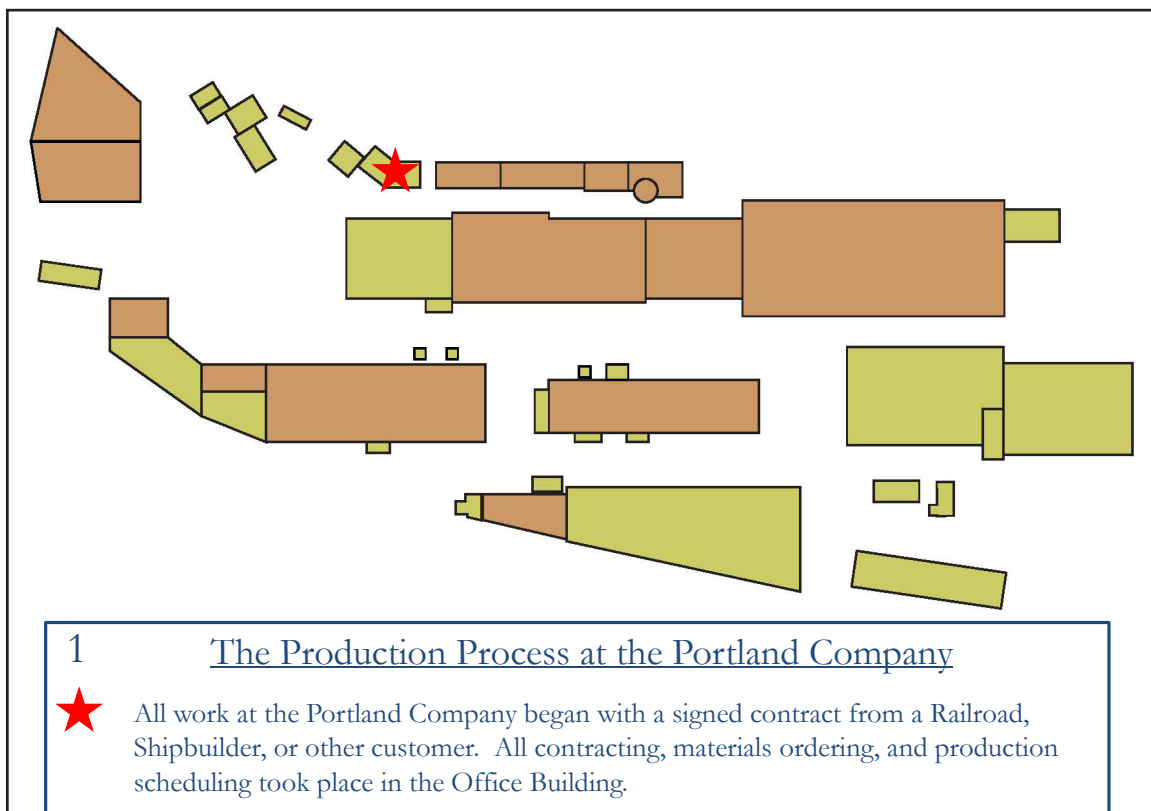
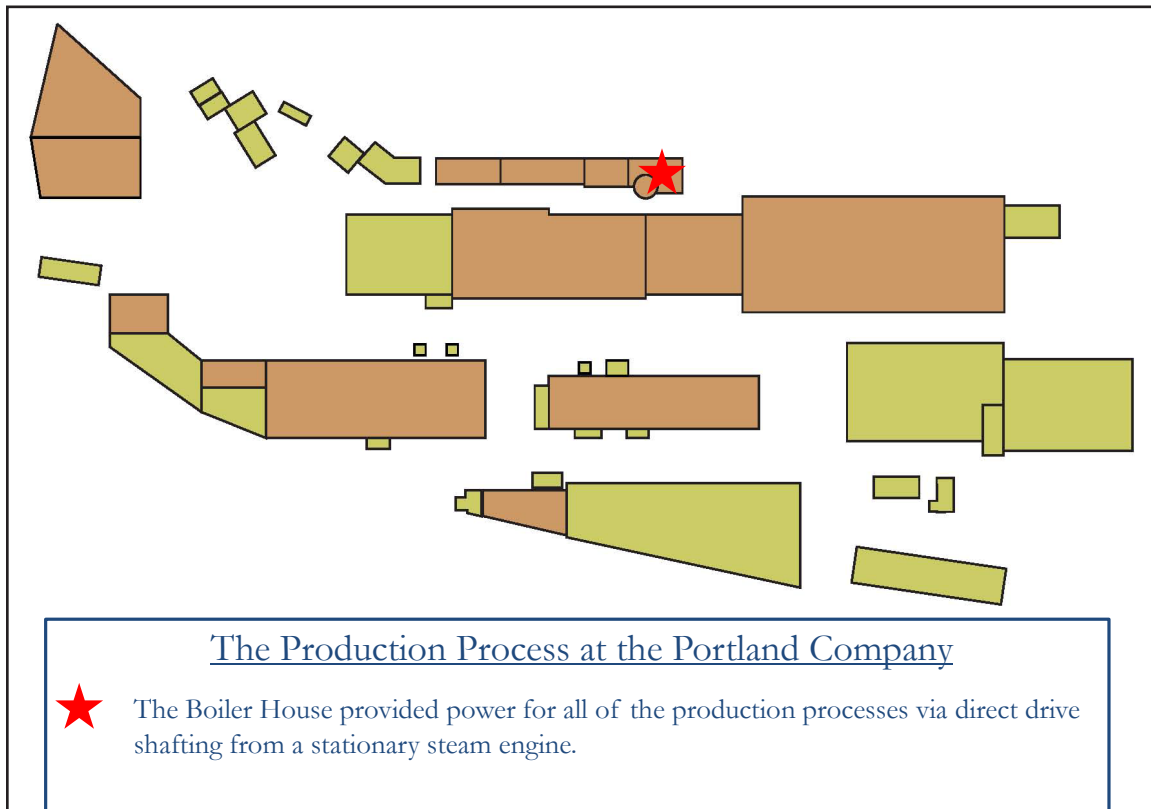
DATE	ITEM
1847	Construction of Machine Shop
1847	Construction of Smith Shop
1847	Construction of Foundry
1847 c.	Construction of Blacksmith Shop
1847 c.	Construction of Car Shop
1847-1858	Construction of Boiler House and 110' Chimney
1847-1858	Construction of Boiler Shop
1847-1858	Construction of Stable
1847-1858	Construction of Office Building
1848	Construction of Foundry Expansion
1858-1864	Large Addition to north end of Boiler Shop
1858-1864	Addition to east end of Stable
1858-1864	Construction of Drafting Room
1858-1864	Construction of Storehouse
1858-1864	Construction of new Boiler House
1858-1864	Addition of Core House to Foundry
1858-1864	Construction of Babbitt Shop at south end of lot
1858-1864	Construction of New Car Shop
1858-1864	Construction of Timekeeper Office
1858-1864	Construction of Scratch House north of Foundry
1862	Construction of Air Furnace east of Foundry
1864-1871	Small addition to southeast end of Blacksmith Shop
1864-1871	Replacement of Boiler House
1864-1871	Construction of Brass Foundry
1871-1880	Addition to west end of Stable
1871-1880	Removal of Timekeeper Office
1871-1880	Construction of Setting-Up Shop
1871-1880	Construction of Sand Shed
1871-1880	Construction of Flask House over Reservoir
1871-1880	Construction of Foundry Expansion
1871-1880	Construction of various additions to Foundry
1873	Destruction of Babbitt Shop by fire
1873	Destruction of New Car Shop by fire
1873	Construction of Car Shop with car shed at south end
1873	Construction of Tin and Babbitt Shop
1873	Construction of Wood Storehouse
1873 c.	Construction of Paint Shop
1880-1886	Three story tower addition to Boiler Shop
1880-1886	Air Furnace addition used for patterns

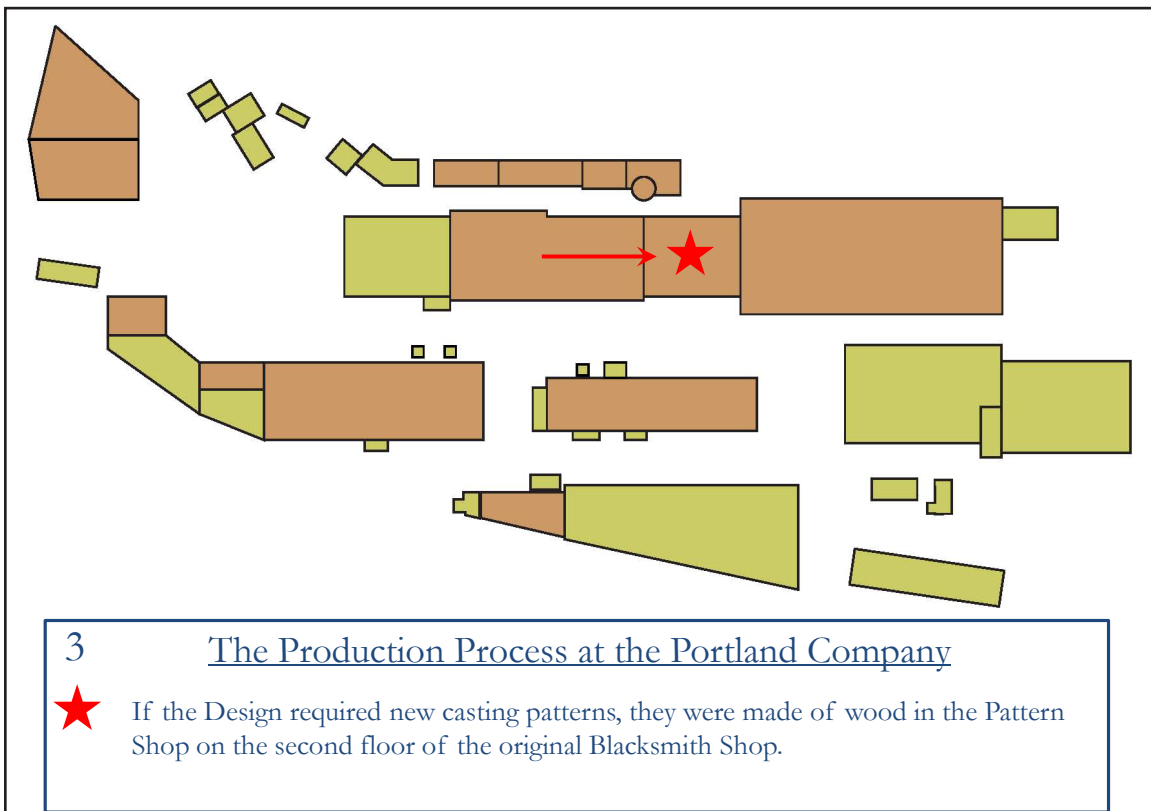
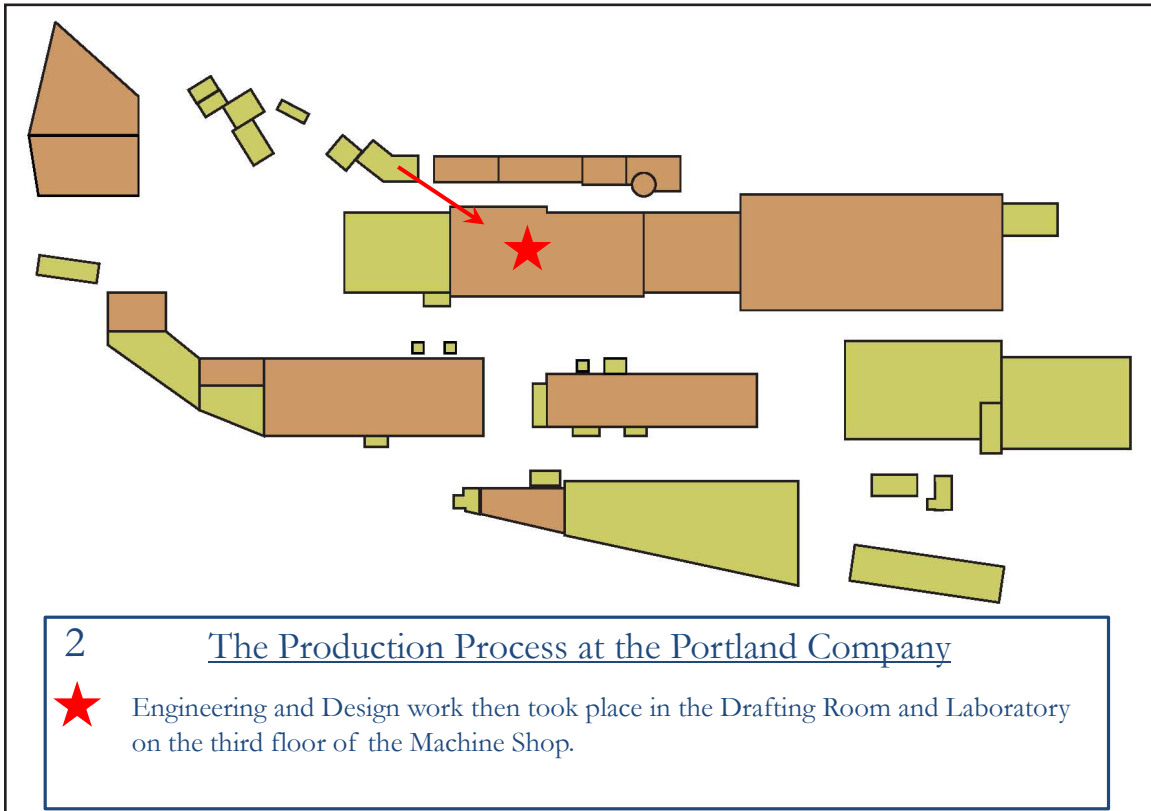
1881	Construction of Wheel Foundry
1882	Construction of Blacksmith and Tank Shop
1883-1884	Reconstruction of Blacksmith Shop
1885	Construction of Pattern Storehouse
1890	Reconstruction of south end of Boiler Shop
1891	Addition to Office Building
1894-1895	Removal of Core House
1894-1895	Removal of Air Furnace addition
1894-1895	Removal of Foundry Expansion
1894-1895	Removal of Wood Storehouse
1895	Construction of New Foundry
1895	Construction of Pattern Storehouse Addition
1896 c.	Second Floor added to Smith Shop
1896-1904	Small additions to east side of Office Building
1896-1904	Construction of three-story section of Blacksmith shop
1896-1904	Removal of Wheel Foundry
1896-1904	Construction of Coke Shed
1904	Construction of Lumber Shed
1904-1909	Brass Foundry used for Storage
1904-1909	Drafting Room used as Storage
1904-1909	Construction of Vault
1909 c.	Expansion of Machine Shop third floor
1909-1914	Removal of Office Building
1914-1924	Removal of Coke Shed
1914-1949	Removal of Stable
1918	Construction of Erecting Shop
1918 c.	Removal of Setting-Up Shop
1918 c.	Construction of Erecting Shop
1924-1949	Removal of Sand Shed
1924-1949	Removal of Blacksmith and Tank Shop
1932	Removal of south portion of Lumber Shed
1949-1951	Removal of Flask House
1949-1951	Construction of Office Building
1951-1980	Removal of 110' Chimney
1951-1980	Removal of Boiler Shop
1951-1980	Construction of large addition at north end of Foundry
1980-1986	Removal of Tin and Babbitt Shop

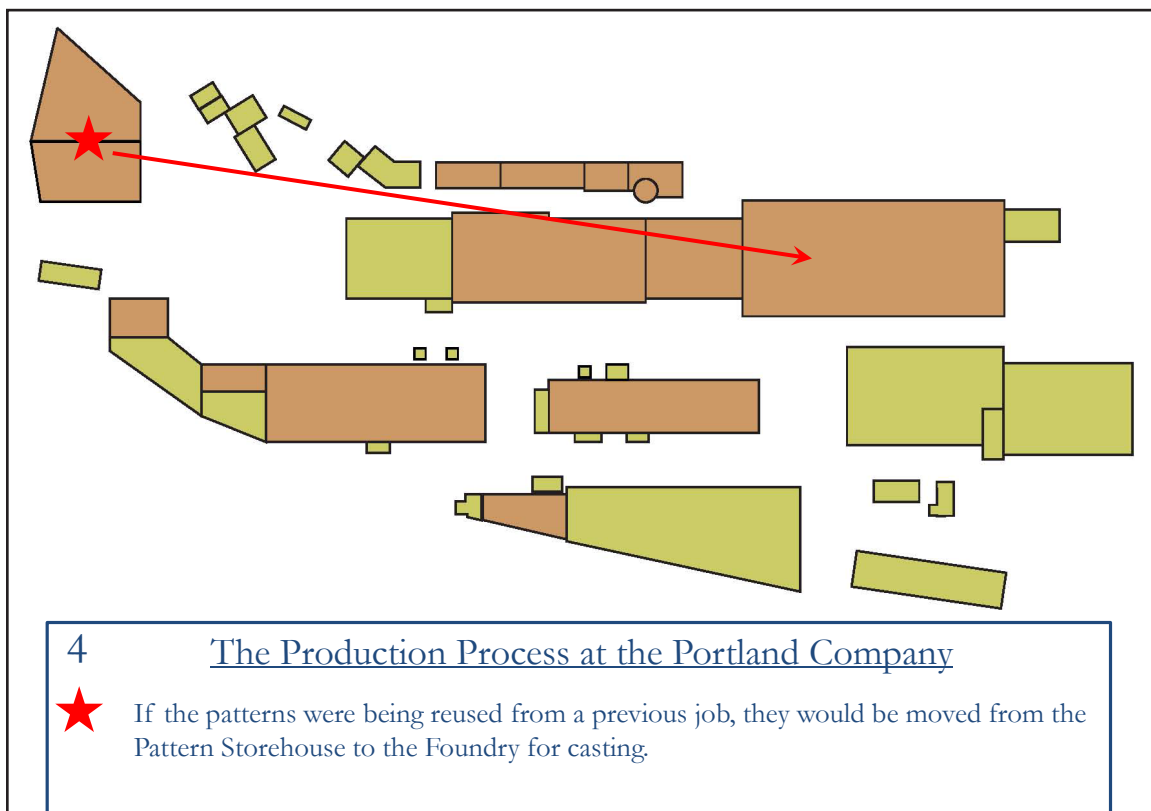
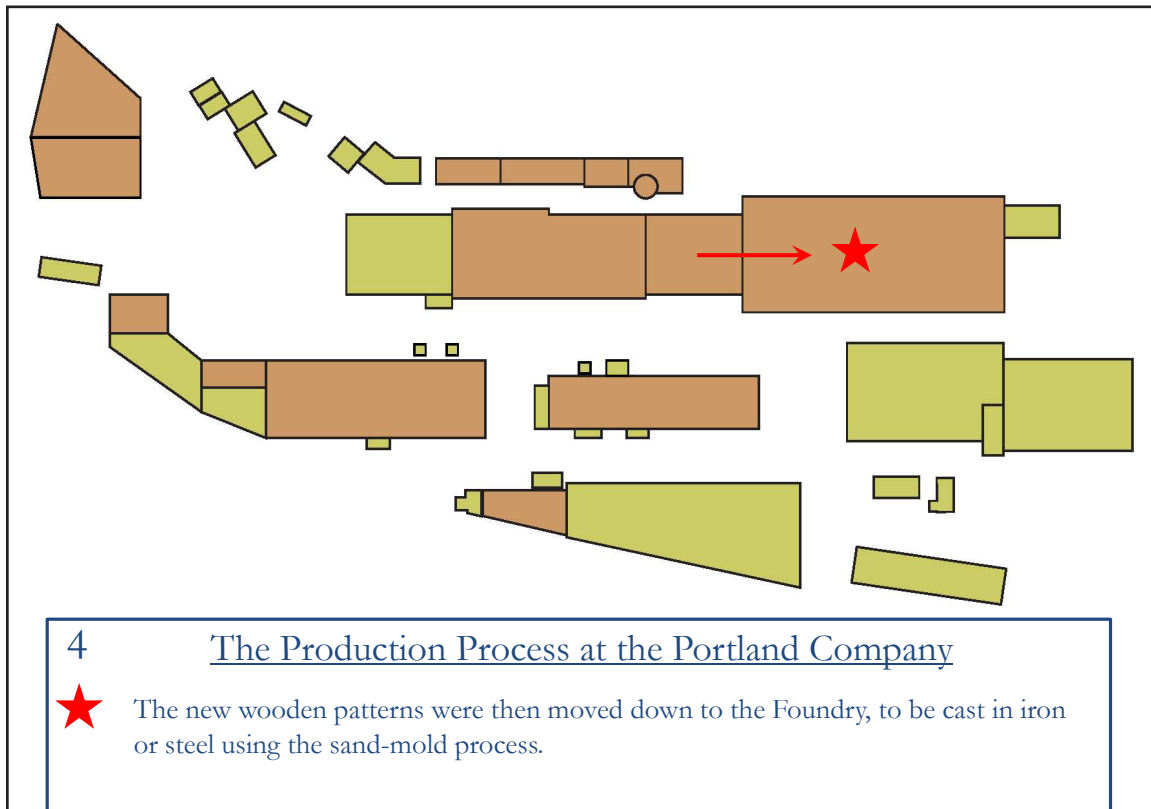
APPENDIX E: OTHER MANUFACTURERS OF LOCOMOTIVES

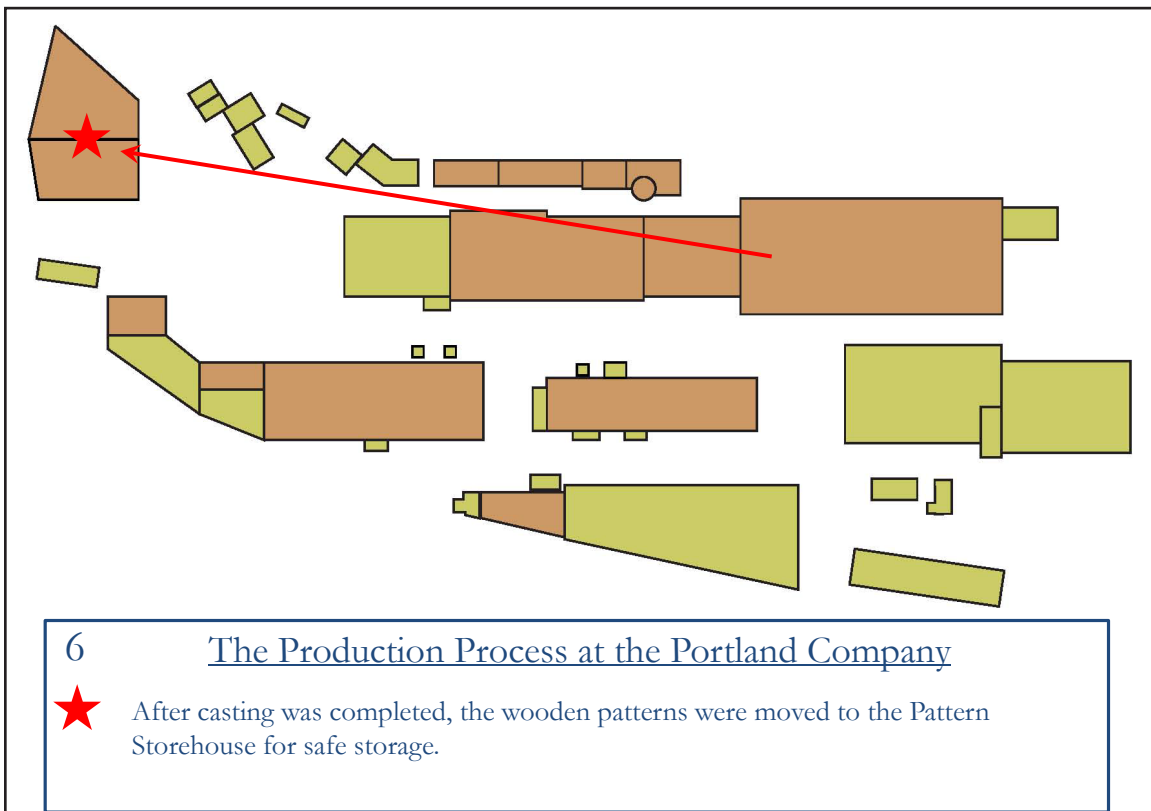
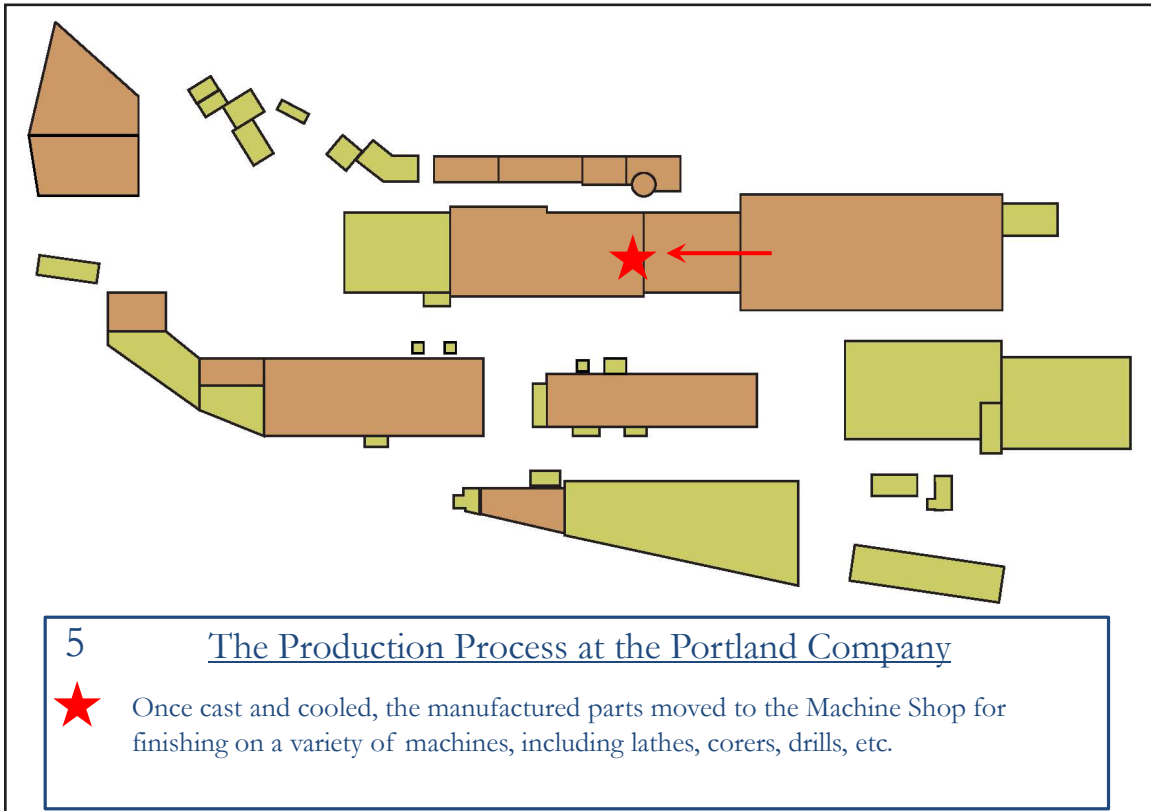
Year Locomotive Production Started	Company Name	Location	Pre-existing Company?	Extent of Facilities – Dates	Surviving Buildings? Dates?
1829	B&O Mt. Clare Shops	Baltimore, MD	No	Car Shops - 1829-30 Ironworks - 1850 Engine service shop and more car shops -1850s Foundry, blacksmith – post- Civil War Circ. Car shop – 1884 Loco., machine, & tender shops and saw mill – 1900-1920	Erecting shop destroyed by fire – 1961 Most remaining buildings demolished – 1976 Surviving: Passenger Car works – 1869-70 Circular Car Shop and Annex – 1884 Freight Car Repair Shop (ruin) – 1919 B&O Passenger Depot (not shop related) - 1851
1830	Canton Locomotive Works – Peter Cooper	Baltimore, MD	Est. 1828 to manuf. Rail for the B&O RR.	1 st loco. Built of scavenged parts, including rifle barrels for boiler tubes. No loco shops built.	No surviving buildings
1831	West Point Foundry	West Point, NY	Est. 1817 to manuf. armaments	Best Fried of Charleston built for the S. Carolina RR	Closed 1911, site now a state park with limited ruins of the manufacturing buildings.
1832	Wm. Norris – Norris Locomotive Works	Philadelphia, PA	Est. 1832 as American Steam Carriage Co.	First loco built in small shop with power from adjacent wheelwright shop. Used Pheonix Foundry for castings	Full set of shops by 1857. Closed 1866. Buildings demolished 1896.
1832	Mattias Baldwin -Baldwin Locomotive Works	Philadelphia, PA	1825 machine shop to manufacture bookbinding machinery and textile printing cylinders	Model loco. For Peale Museum in 1831. First real loco, 1832, using outside foundry	Original site abandoned in 1928 for a new plant in Eddystone, PA. All buildings at first plant demolished 1937.
1834-35	Lowell Machine Shops	Lowell, MA	Est. 1814 (Boston Manuf. Co.) for manuf. Of textile machinery. Moved to Lowell 1824.	Extensive shops for textile machinery production. Locos made in Locks and Canal Shop, 1834-1861	Closed 1928. Site now a parking lot.
1834	Mill Dam Foundry	Boston	Est. 1832	Built first loco. in New England, no others	Buildings in use by other companies by 1838. Current state unknown.
c. 1835	Matteawam Company	New York	Est. 1814. To produce machinery for cotton and sugar mills, etc. Foundry by 1834.	Built two locos c. 1835 for Hudson River RR.	No information found.
1836	Eastwick & Harrison	Philadelphia, PA	Est. 1835 as as Garrett & Eastwick. Former watchmaker, making stat. steam engines	First loco, 1838, apparently in a small shop using an outside foundry. Built a total of 17 locos.	Firm moved to Russia in 1843. No buildings appear to survive.
1837	Rogers Locomotive Works	Patterson, NJ	Est. 1831 to produce textile machinery	First loco 1837, also cast tires for Norris and Baldwin	Became one of the “big three” with Norris and Baldwin. Patterson Museum occupies the 1873 Erecting shop, all other buildings demolished.
1840	Hinckley	Boston, MA	Est. 1831 as small machine shop, later Boston Machine Works. Built 1 st stationary steam engine in MA.	1 st loco 1840, numerous name changes.	Closed 1889. Property and buildings bought by Boston Elevated RR Co., used one building for temp power plant and demolished remainder to clear site for new power plant. The Hinckley building appears not to survive in 2014.
1845	Boston & Providence RR Shops	MA/RI	B&P chartered 1831, const. started 1832, opened 1834.	1 st loco 1845. Used Geo. Griggs Foundry	Railroad absorbed into Old Colony RR and then into New York, New Haven, and Hartford. Location of B&P shops undetermined.
1848	Portland Company	Portland, ME	Est. 1845 to build locomotives and other railroad equipment	Foundry, Machine Shop, and Blacksmith shop built 1847, car shop in 1848, later additions 1850s, 1880s, 1890s, 1918.	2 of 3 pre-Civil War brick buildings are extant along with many other buildings from period of locomotive construction.

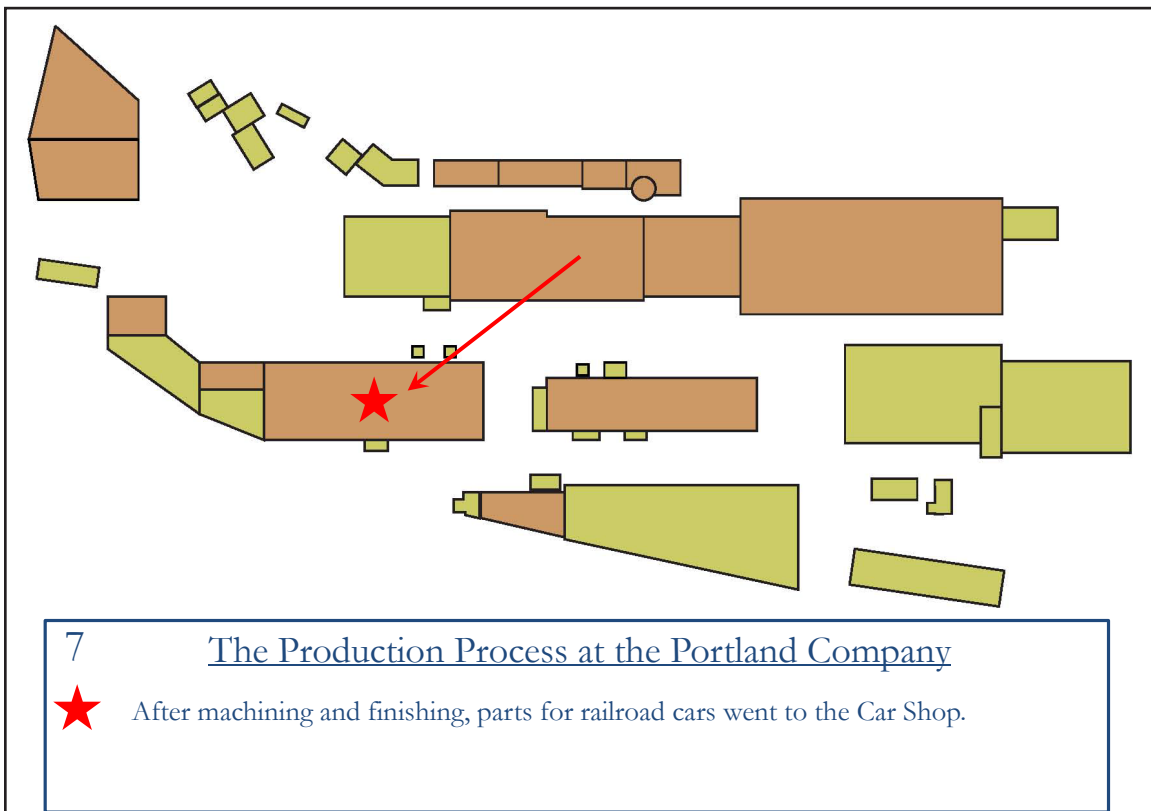
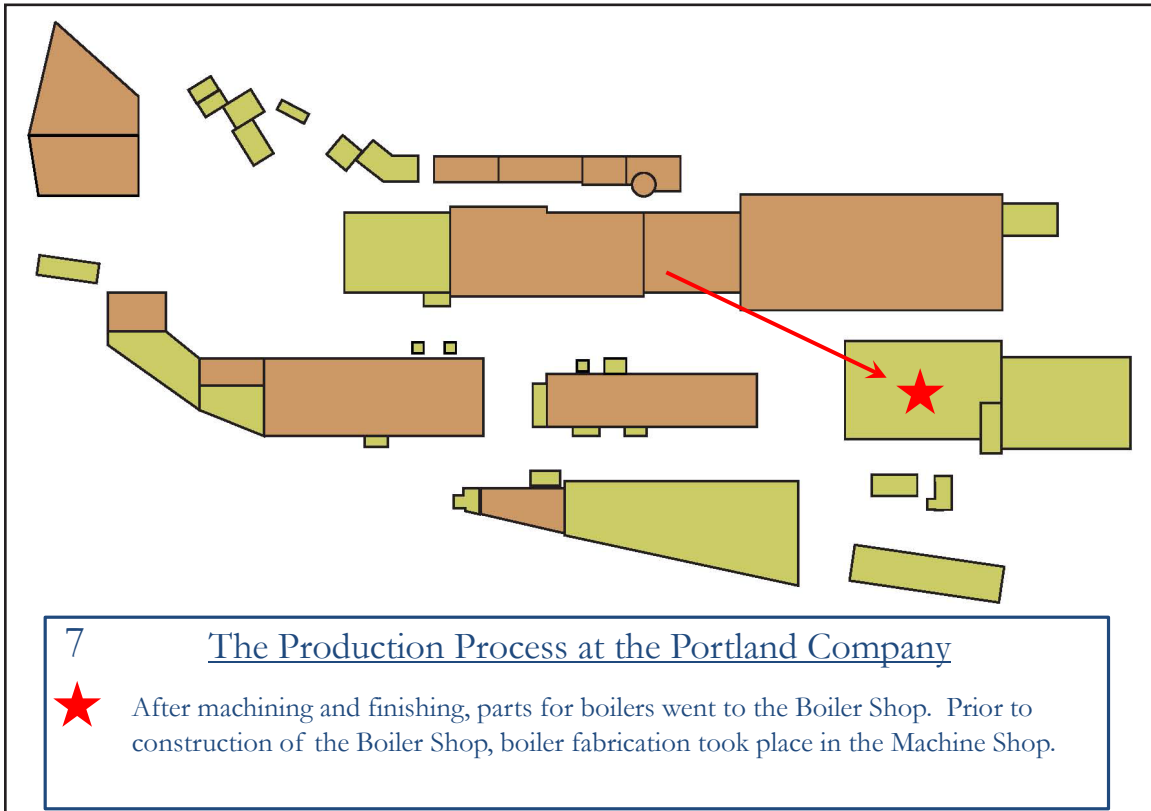
APPENDIX F: PRODUCTION

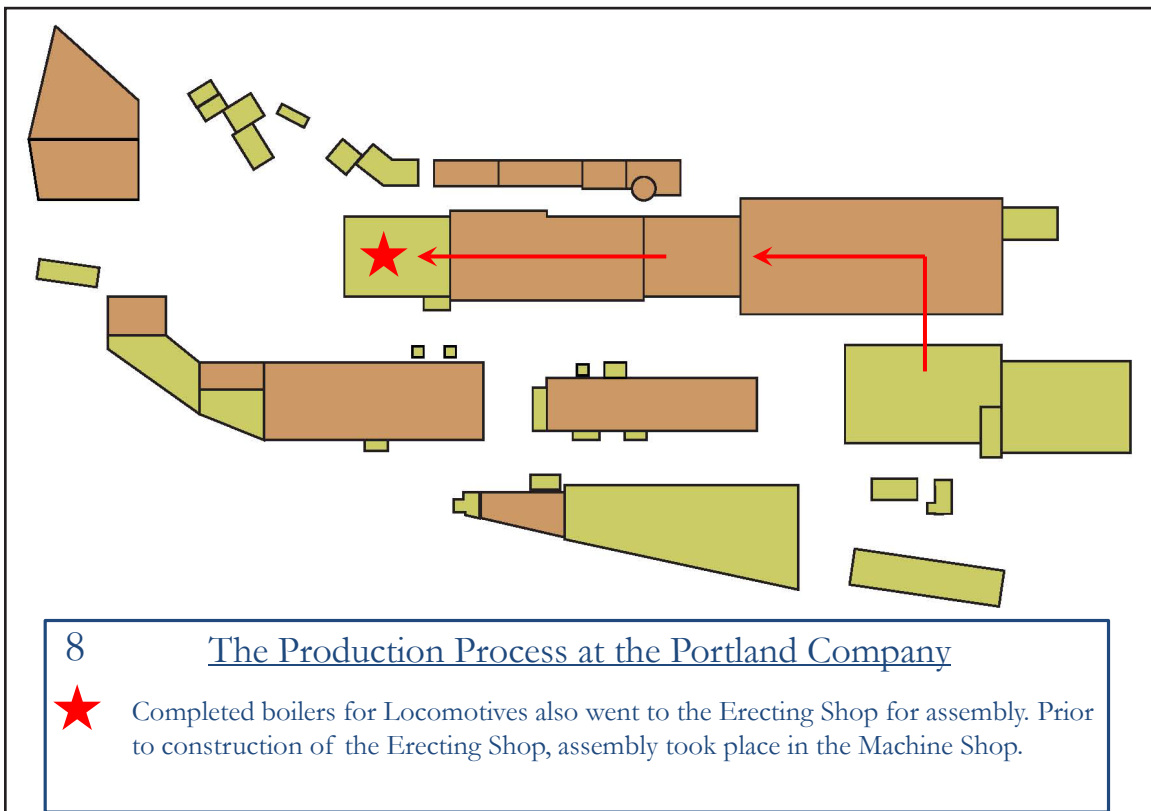
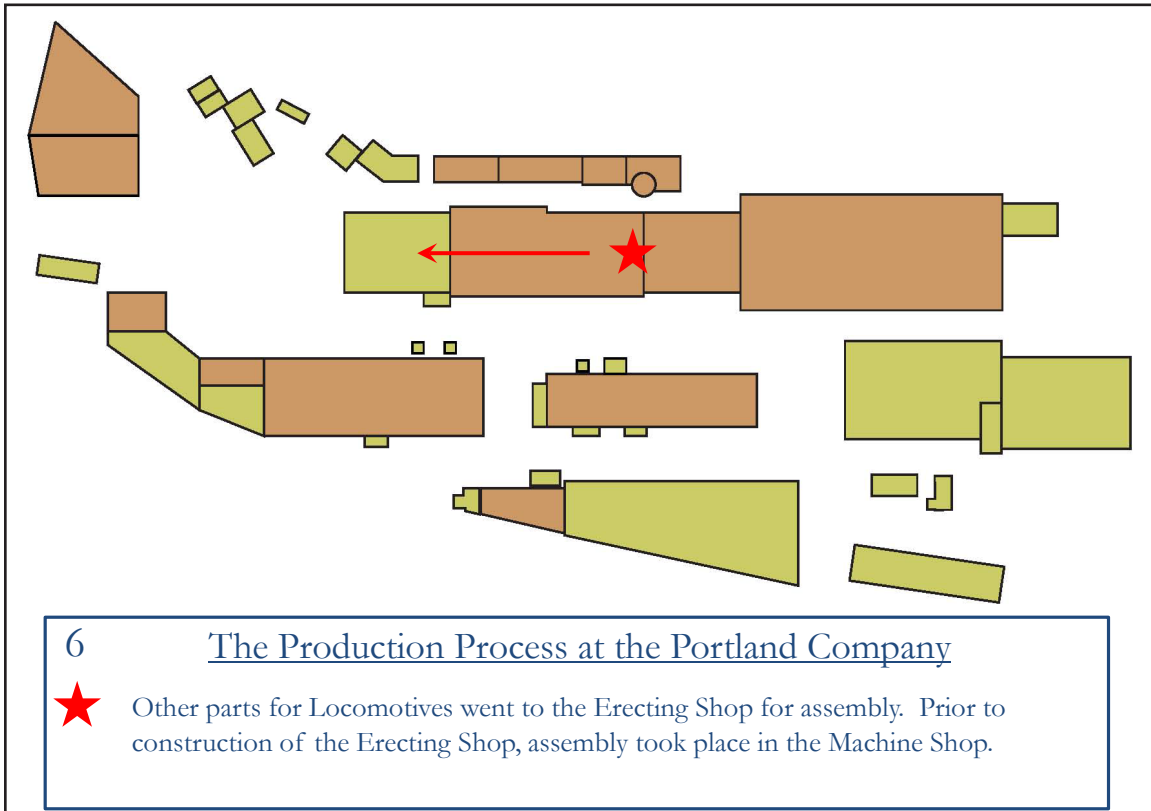


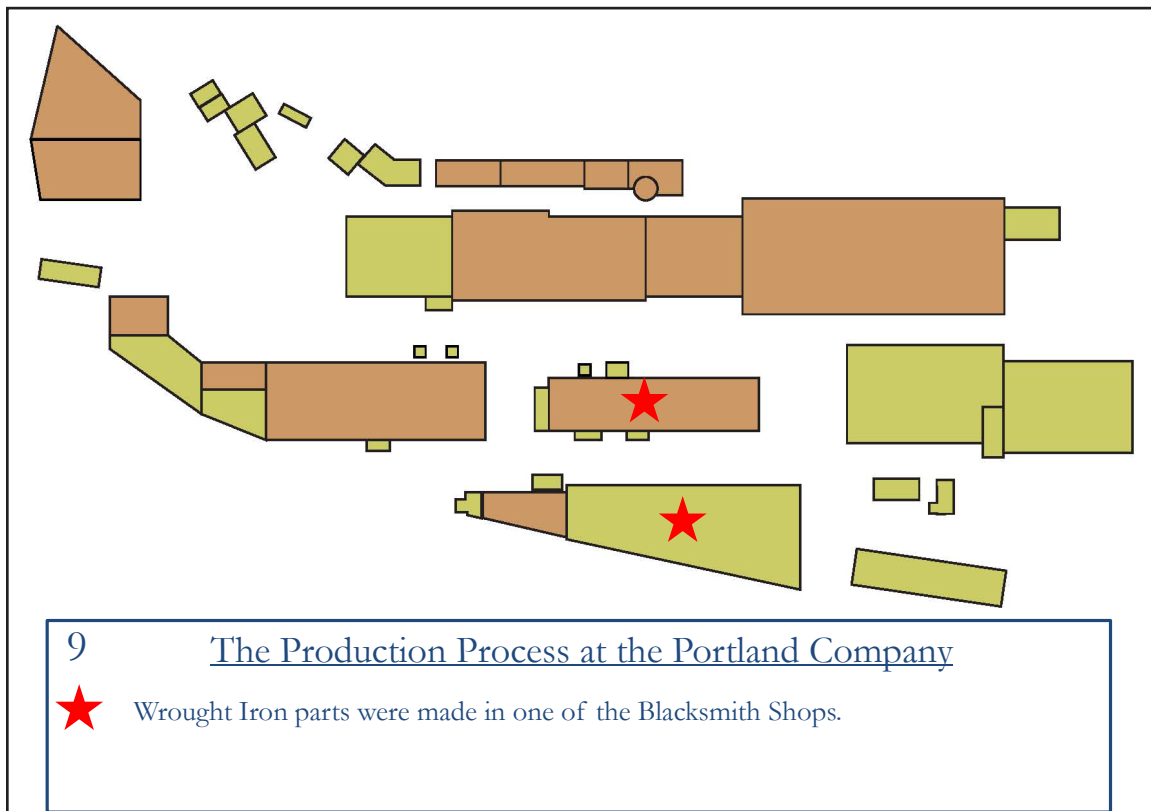
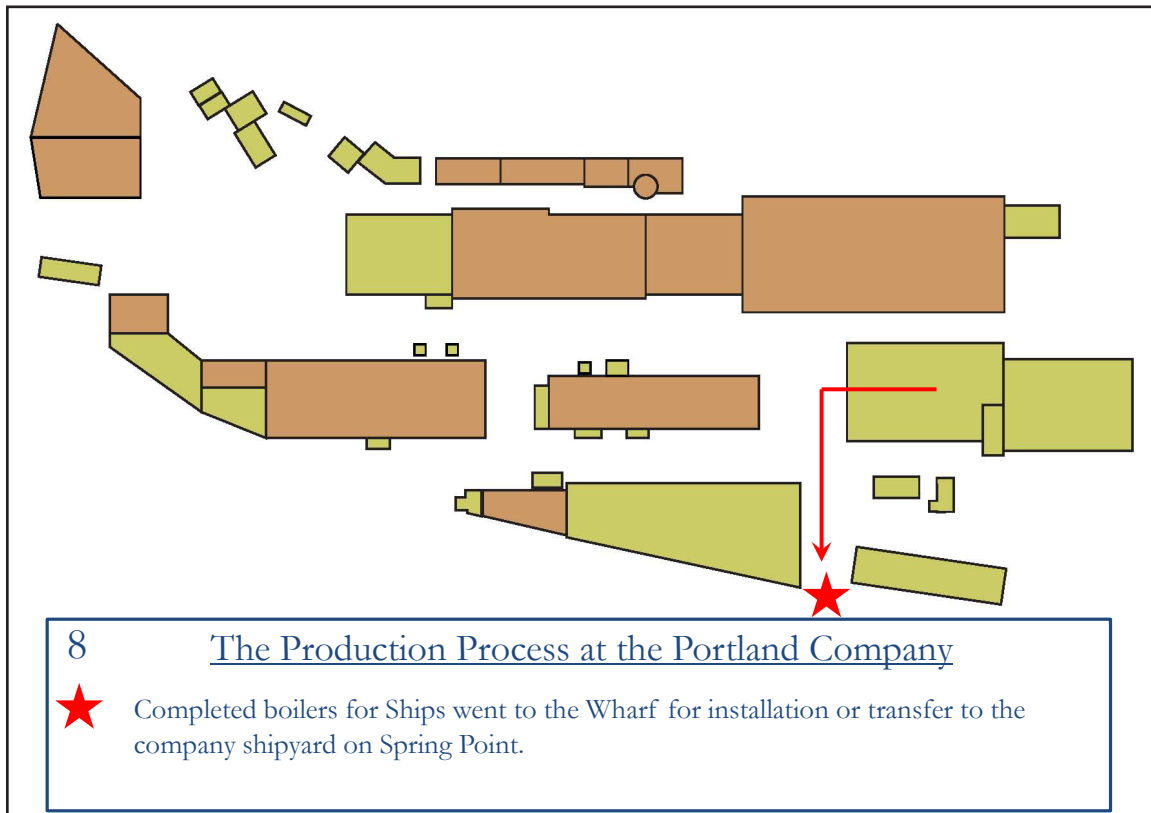


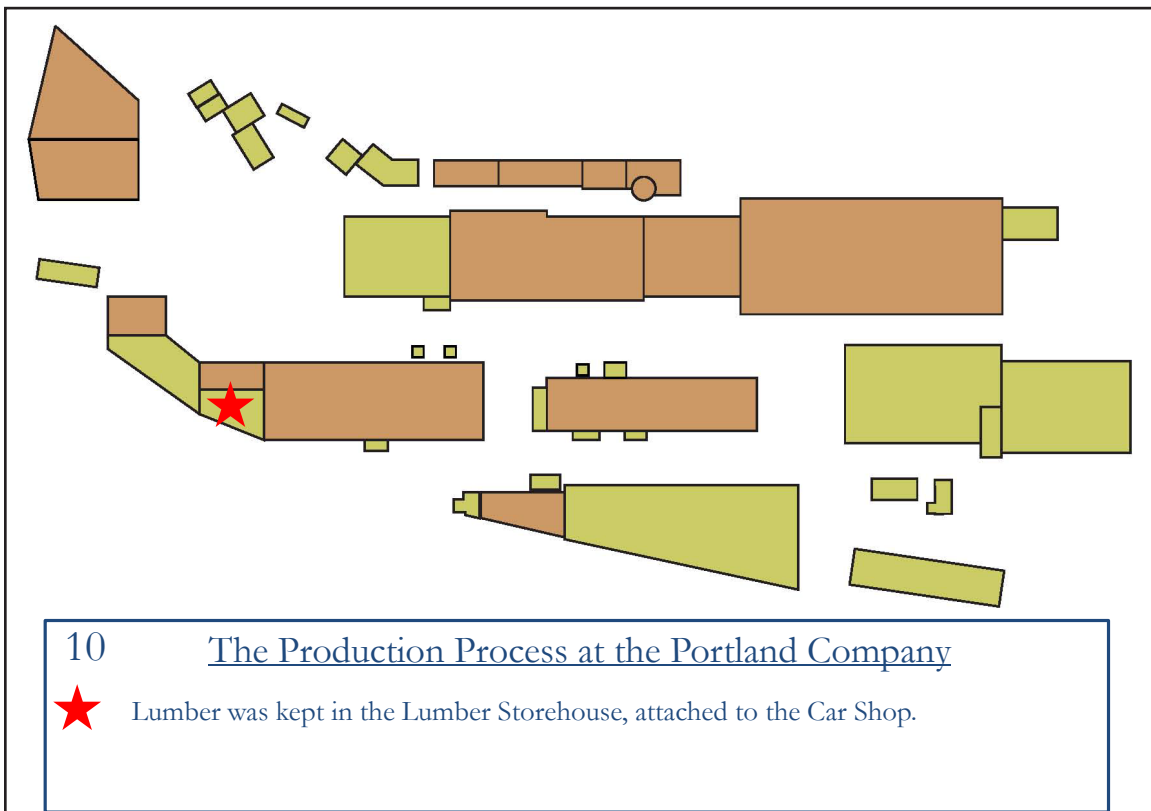
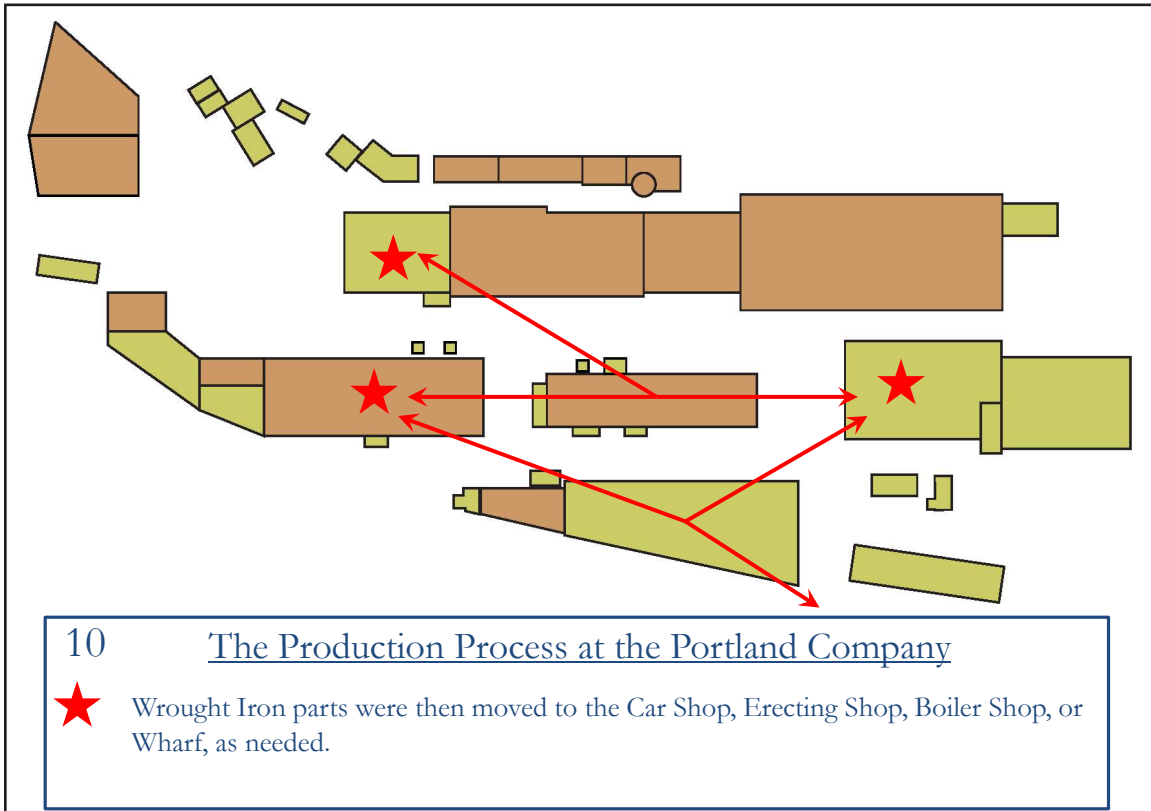


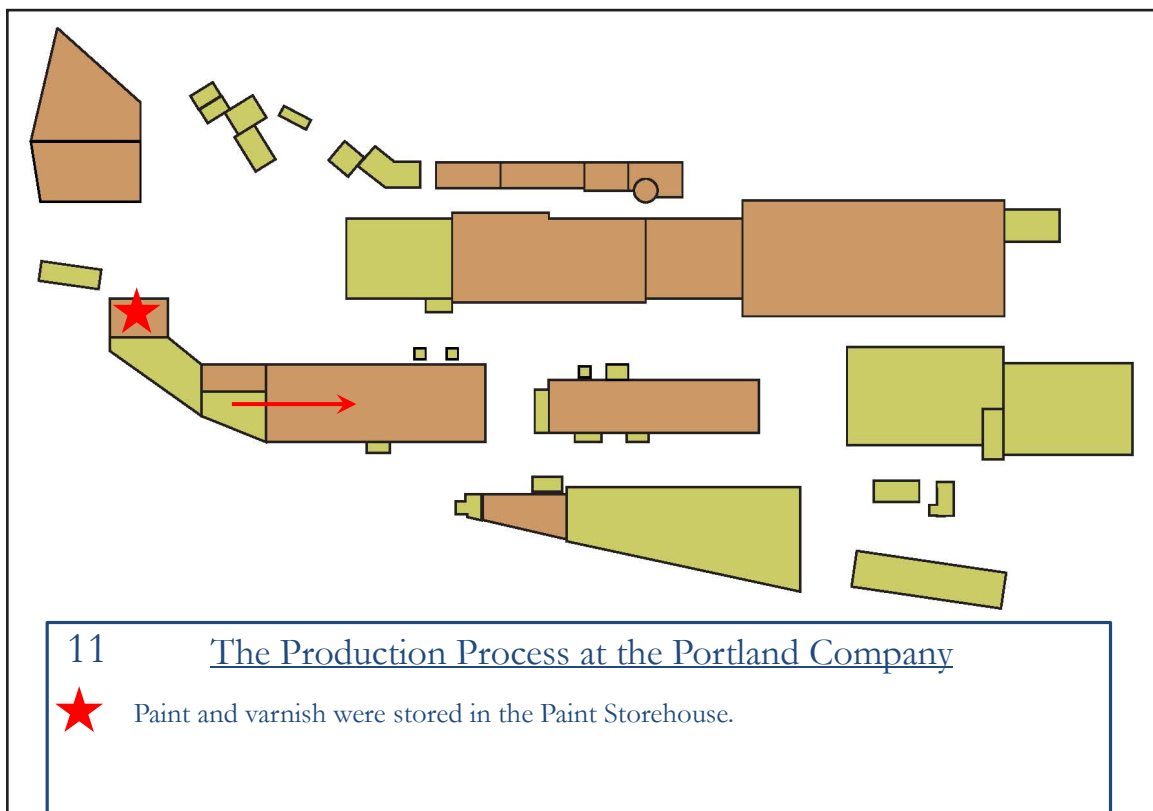
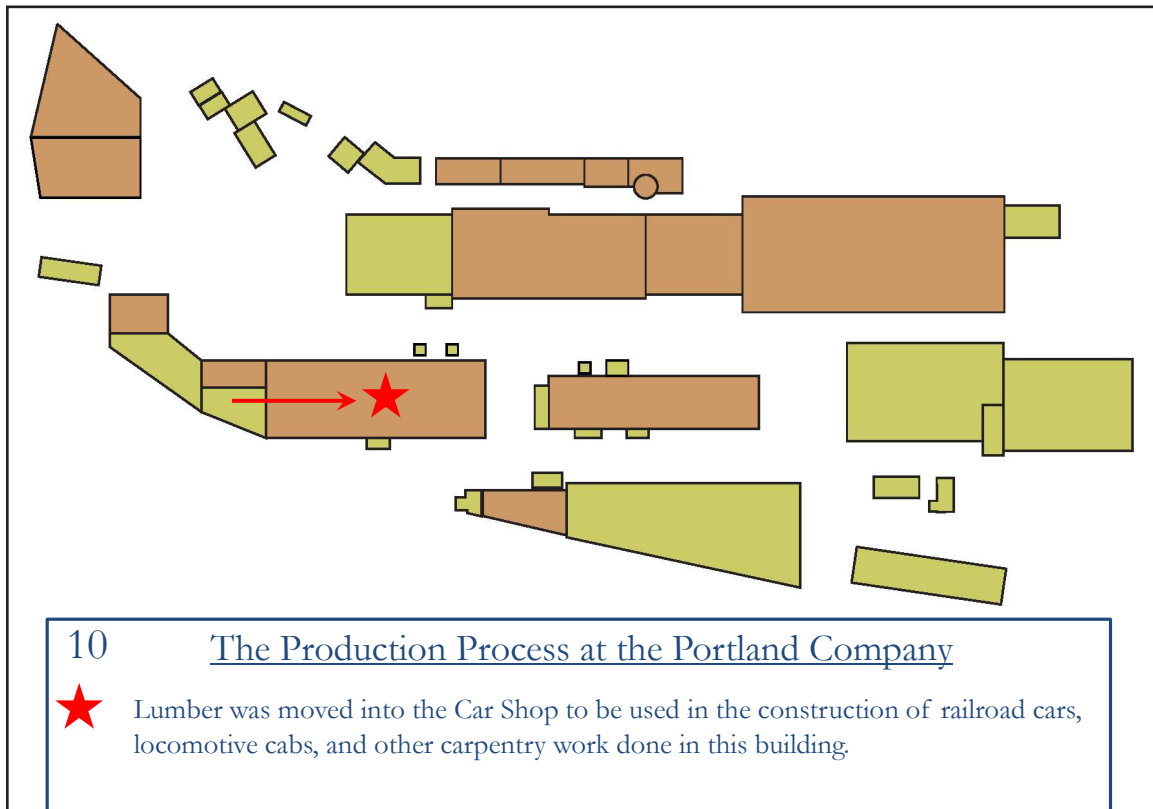


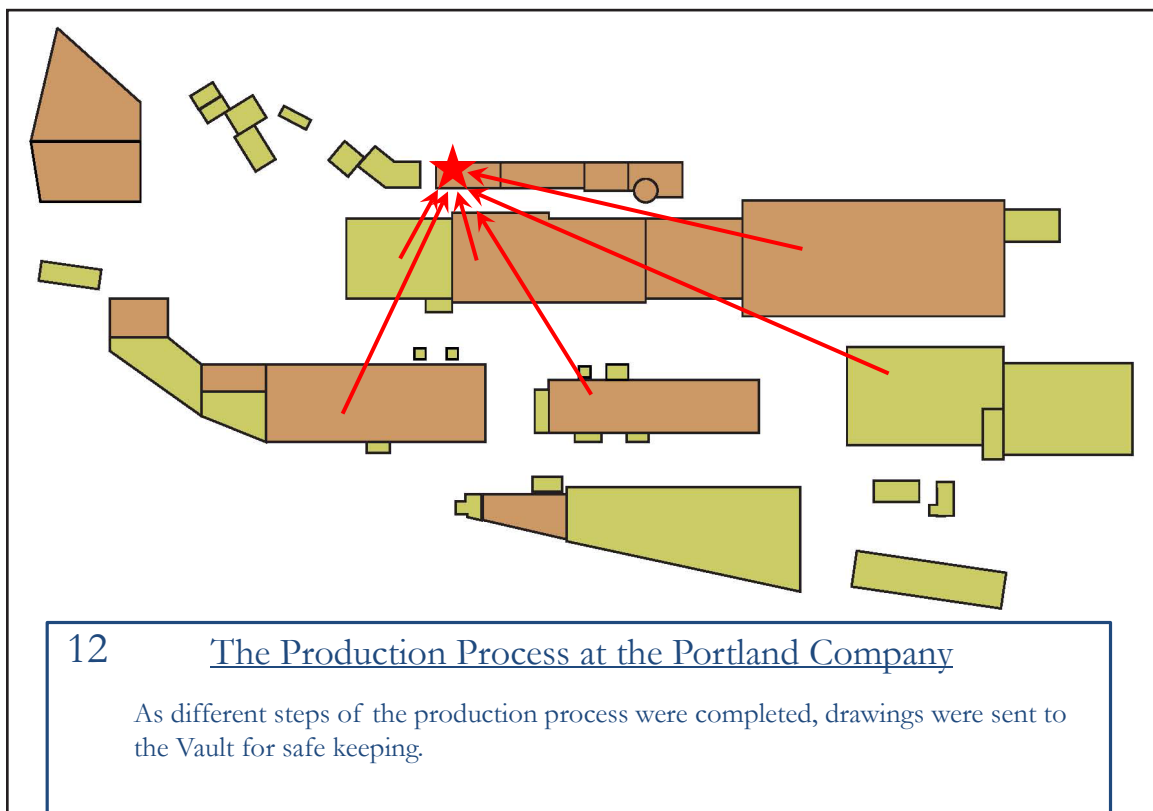
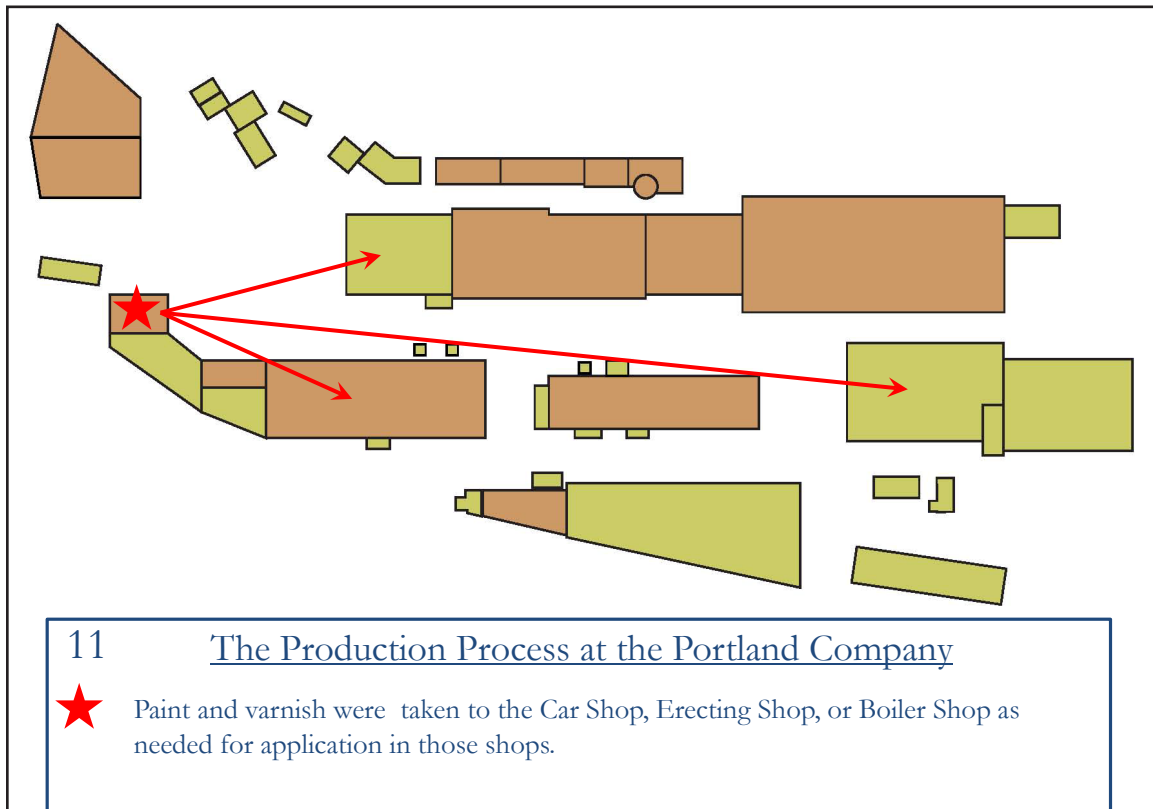












APPENDIX G: NATIONAL REGISTER OF HISTORIC PLACES CRITERIA FOR EVALUATION OF SIGNIFICANCE AND INTEGRITY AS APPLIED TO THE PORTLAND COMPANY (National Register Bulletin Number 15)

For a property to qualify for the National Register it must meet one of the National Register Criteria for Evaluation by:

- Being associated with an important historic context *and*
- Retaining historic integrity of those features necessary to convey its significance.

The significance of a historic property can be judged and explained only when it is evaluated within its historic context. Historic contexts are historical patterns that can be identified through consideration of the history of the property and the history of the surrounding area. Historic contexts are found at a variety of geographical levels or scales.

The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

- That are associated with events that have made a significant contribution to the broad patterns of our history (Criterion A); or
- That are associated with the lives of persons significant in our past (Criterion B); or
- That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction (Criterion C); or
- That have yielded, or may be likely to yield, information important in prehistory or history (Criterion D).

The Portland Company complex is associated with important historic contexts at the National, State and Local levels as delineated in the historic context summary paragraphs below, and retains historic integrity of those features necessary to convey its significance at the National, State and Local levels.

National Level of Significance

National Register Criterion A: Industry (1847 - 1865)

The Portland Company complex is associated with events that have made a significant contribution to the broad patterns of our history at the national level as a rare surviving example of a pre-Civil War foundry, machine shop, and car shop complex built for the manufacture of railroad equipment in 1847. It appears to have been the first such self-contained complex in the nation built specifically for that purpose, with all of the necessary shops and a foundry on a single site. It also contains the oldest surviving railroad shop buildings in the nation. Locomotives, gunships, and cannon were manufactured here for the Union forces during the Civil War.

State Level of Significance

National Register Criterion A: Industry (1847 – 1982)

The Portland Company complex is associated with events that have made a significant contribution to the broad patterns of our history in the area of industry within the city of Portland, Maine. In addition

to the national industrial significance of the Portland Company as the first complete locomotive works built in the United States and a rare surviving pre-Civil War railroad equipment manufacturing plant, the Portland Company played a significant role in the development of many important industries in Maine. These include the paper-making industry, textile industry, canning industry, commercial fishing, and many smaller industries.

National Register Criterion A: Transportation (1847 – 1945)

The Portland Company is associated with events that have made a significant contribution to the broad patterns of our history for its critical role in the development of Maine railroads, including the state's iconic two-foot gauge lines, and also built boilers, marine engines, and other equipment for steam ships, including the famed "Portland." The company was created as an adjunct to the Atlantic & St. Lawrence Railroad shortly after that line was chartered to run from Portland to Montreal. The principal proponent of the Atlantic & St. Lawrence Railroad, John A. Poor, was the first president of the Portland Company as well as a director of the railroad company.

National Register Criterion B: Association with John A. Poor (1847 – 1851)

The Portland Company complex includes the most important surviving buildings associated with John A. Poor (1808-1871), a person significant to the past of the state of Maine. John A. Poor was significant to the past of Maine in numerous areas, but particularly in the areas of transportation and industry. Like the Atlantic & St. Lawrence Railroad, the Portland Company was part of a plan devised by Bangor Attorney John A. Poor to make Portland the winter port for eastern Canada during the months in which the St. Lawrence River was frozen. Starting in 1844, Poor actively promoted his vision for the continent's first international railroad and attracted others to help make it a reality in the 1840s and '50s. Construction of the 250 mile long railroad, estimated to cost ten million dollars, began on July 4, 1846 and the line to Montreal was completed in July 1853. As a director of the Atlantic & St. Lawrence Railroad and President of the Portland Company, Poor was instrumental in ensuring that a locomotive manufacturing plant would be built in Portland.¹

While Poor's success in creating the Atlantic & St. Lawrence Railroad was perhaps his most significant achievement, none of the associated buildings or structures built in Portland during the period of his activity with the railroad survive. Only one Atlantic & St. Lawrence Railroad building from the same period has been identified elsewhere in Maine, a small wooden freight house built in Gilead in 1851 and moved to Auburn after 1968. The few other surviving buildings on the line date from after 1853, when the Grand Trunk Railroad leased the entire Atlantic & St. Lawrence line.² The original buildings of the Portland Company are the most significant surviving buildings associated with John A. Poor, who was President of the company during the period of their construction. The Portland Company Board of Director's meeting minutes from 1847 document that he had a direct role in acquiring materials for their construction and served with General Superintendent Horace Felton as the Building Committee.

Local Level of Significance

National Register Criterion A: Industry (1847 – 1982)

The Portland Company is also significant for industry at the local level, as the largest business in the city in the mid-nineteenth century and only intact nineteenth and early twentieth century industrial complex in the city of Portland. Virtually all evidence of Portland's nineteenth century industrial history has been lost with

1 Records of the Portland Company and records of the Atlantic & St. Lawrence Railroad, Maine Historical Society.

Poor, Laura Elizabeth, John A. Poor. *The First International Railway and the Colonization of New England, Life and Writings of John Alfred Poor*, 1890

2 Mohney, Kirk F. *Along the Rails, a Survey of Maine's Historic Railroad Buildings*. 2000.

the exception of the Portland Company complex. Thirty-three manufacturing plants can be identified in the 1876 Bird's Eye View of Portland. Of the thirty-three, which include Portland Stove Foundry, J. B. Brown & Son's Sugar Refinery, Forest City Sugar Refining Company, Eagle Sugar Refining Company, Portland Packing Company, and Portland Stoneware Company, only three complexes survive to any extent in 2014. Two of these have only a single surviving building, one from the Star Match Factory on West Commercial Street and one from the original Burnham & Morrill Cannery complex on Franklin Street. Only the Portland Company complex remains largely intact 138 years later. In 1924 Portland had 60 sizable companies engaged in industrial production of various sorts, occupying more than 85 buildings. Of these individual buildings, fewer than a dozen survive outside the Portland Company. Six companies had large complexes of buildings, including the E. T. Burrowes Company, Thomas Laughlin Company, and Southworth Machine Company.³ Fragmentary remains of some of these complexes, such as the early twentieth century Thomas Laughlin Company foundry building on Hampshire Street now used by Shipyard Brewery, only hint at the history of these sites where hundreds of Portland residents made their livings over many decades.

Criterion A: Community Planning and Development (1847 – 1853)

The Portland Company is associated with events that have made a significant contribution to the broad patterns of our history in the area of community planning and development. It is associated with and/or responsible for several significant planning and development initiatives within the city of Portland. As part of John A. Poor's vision for creating a modern international port at Portland, he conceived of a wide new street along the waterfront which would contain railroad tracks to connect the Atlantic & St. Lawrence R. R. on the east end of the city to the Portland, Saco & Portsmouth R. R. on the west end while providing both railroads access to the numerous wharves between their terminals. The narrow original waterfront street, Fore Street, followed the natural landform, snaking along the shore around Clay and Broad coves. The new street would be built by filling between the existing wharves below Fore Street, far enough out into the harbor to allow the construction of large new warehouse buildings along the land side of the street. Broad Cove would be filled for construction of the Atlantic & St. Lawrence Railroad terminal and for the Portland Company works and Clay Cove would be filled for the street and new buildings. The Portland Company site alone is seven acres, the majority of it made by filling the mud flats and cove. This project was undertaken cooperatively by the two railroads and the city of Portland, with the railroads paying the cost of filling between the wharves and the City paying wharf owners for the value of their properties seized through eminent domain. The mile-long and one hundred foot wide street would be named Commercial Street.⁴

This project was the largest urban planning initiative undertaken in the city of Portland in the nineteenth century and was transformative in its effects. Before arrival of the Atlantic & St. Lawrence Railroad and Portland Company with the related construction of Commercial Street, Portland had a waterfront infrastructure left over from the eighteenth century that was inefficient and ill suited to the age of steam.

National Register Criterion C: Architecture (1847 – 1951)

The buildings of the Portland Company complex embody the distinctive characteristics of a type, period, or method of construction, specifically several types of industrial buildings built between 1847 and 1920. The Portland Company buildings from the 1840s and 1850s are the only industrial buildings of that period remaining in the city of Portland. The buildings of the complex retain a high degree of architectural integrity to the period of Portland Company production (1847 – 1982). While much of the machinery of the complex has been removed, evidence of industrial uses can be found throughout the buildings, such as overhead shafting for operating machinery, and wood and iron cranes attached to support columns.

3 Compiled from the City of Portland 1924 Tax Records.

4 Poor, Laura Elizabeth, John A. Poor. *The First International Railway and the Colonization of New England, Life and Writings of John Alfred Poor*, 1890.

Records of the Atlantic & St. Lawrence Railroad, Maine Historical Society.

Overhead traveling cranes remain in the Foundry and Erecting Shop.

The various buildings of the complex contain examples of a wide variety of building construction engineering techniques employed to increase the strength or functionality of the buildings. These include a number of wood and metal roof truss systems; large floor areas hung from wooden roof truss systems; brick barrel vaulting; cast concrete and steel beam vaulting; cantilevered shed dormers; and single and double trussed girders used to increase the load carrying capacity of upper floors without obstructing the lower floors with posts. The earliest buildings are of load-bearing masonry wall construction with internal timber framing and later buildings utilize steel framing systems. The 1895 Foundry uses an unusual integrated steel column and brick exterior wall system. This was a comparatively early use of structural steel in Maine and represents a transitional phase in the construction technology as large buildings moved from load-bearing masonry walls to steel skeleton framing.

APPENDIX H: TREMONT PRESERVATION SERVICES BUILDING DESCRIPTIONS WITH ADDITIONAL INFORMATION

SITE OVERVIEW

The former Portland Company site encompasses a 9-acre parcel at 58 Fore Street, situated on filled land along the eastern waterfront of Portland, Maine, bordering the Fore River to the east. The Portland Company site is located at the northern end of a long stretch of industrial and commercial buildings that line the Portland waterfront. The property directly to the south was formerly the Grand Trunk Railway Company site but the historic buildings of the rail company were replaced by modern industrial structures by subsequent owners. To the northeast of the Portland Company site are six residential buildings (from the late 19th and early 20th centuries), a modern apartment building, and the 68-acre Fort Allen Park and Eastern Promenade beyond. The Munjoy Hill neighborhood, largely developed in the 19th century, lies to the northwest of the Portland Company site, where the land slopes sharply upward from the waterfront and to the south by the Casco River. A section of the 2.1 mile Eastern Promenade Walking Trail and a set of railroad tracks run through the property near the water's edge.

The property comprises a complex that includes 13 historic buildings and one large modern building on a paved lot with minimal vegetation (except for a cluster of trees at the northeast corner). There are also about a dozen scattered smaller sheds and outbuildings that all appear to post-date the 1980s. The historic buildings on the site range in age from about 1845 to 1950, as described below.

Additional information:

Dates for the extant buildings range from 1847 to the late-20th century.

BUILDING DESCRIPTIONS

Building 1 - Erecting Building

Construction Date: 1914 (according to Portland 1924 tax assessment)

Description: Rectangular in plan, Building 1 measures roughly 80 feet by 113 feet and joins the south elevation of Building 2, leaving exposed elevations facing west, south and east. It is a single-story building with a taller central bay lit by a roof monitor. The building is constructed of red brick and has little in the way of architectural ornamentation aside from corbeling around the window bays. Brick piers separate the elevations into large window bays that hold the original tripartite multi-pane steel windows. Window openings include concrete sills. The brick roof monitor retains the original multi-pane steel sash running along the entire west and east sides (Photos 7 & 8). The principal elevation (south) features a tall central entry bay that is divided into two asymmetrical openings by a vertical steel beam; each bay holds a modern overhead metal door (Photo 2). Historic photos show that this opening was originally only about half the height it is currently and it was topped by a large panel of windows. A pedestrian entry just west of center holds a modern door as well. In addition to the installation of replacement doors, alterations include infilling of two window bays at the east elevation (Photo 3). The interior is a single open space with utilitarian finishes, including exposed brick walls and exposed steel framing.

Uses: Building 1 was constructed as the Erecting Shop to replace an earlier one-story wood building from the 1870s that was used for the same purpose. By 1949 Building 1 was used as a machine shop.

Additional Information:

Drawings in the collection of the Maine Historical Society date the Erecting Shop to 1918.

Building 2 - Machine Shop

Construction Date: c. 1845

Description: Building 2 is rectangular in plan and measures roughly 150 feet by 62 feet. It joins Building 2 to the south and Building 3 to the north, leaving fully exposed elevations on the east and west sides. The south elevation was fully exposed until about 1875 when a single-story wood frame building was constructed, to be replaced by the existing Building 1 around 1914. Only the brick gables are visible at the north and south elevations today. The 2 1/2 story brick Building 2 was designed in the Greek Revival style, with pedimented gables, tall compound cornices, and symmetrical fenestration, all hallmarks of the style. The building is enclosed by a gabled roof to which were added two wide overhanging shed dormers, one along the entire east side and another along the southern half of the west side (added between 1896 and 1909 - Photo 1). The roofline is defined by a tall compound brick cornice. The exposed side elevations (east and west) feature regularly spaced window openings with rough-cut granite sills and lintels and double-hung wood windows in a 25/25 configuration at the first floor and 15/15 at the second floor. The existing sashes appear to be a mix of original and replacements. Enclosed bridges from the late 19th and early 20th centuries connect the second floor of Building 2 to neighboring structures (Photos 1 & 4). The interior is divided into three levels and is typical of mill construction of the mid-19th century, with exposed brick walls and exposed wood framing. There have been a number of partitions added to the interior over the years.

Uses: Building 2 is the earliest surviving structure of the Portland Company complex. Built as the original machine shop. When originally constructed the south elevation was exposed and a rail spur ran from the mill yard directly into the building through a tall opening at the center of the south elevation. Prior to the 1890s there was also an office at the attic level. The attic level was later used for pattern storage.

Additional Information:

The Machine Shop was built in 1847 with projecting shed dormers added to the attic story by architect Frederick A. Tompson in 1904. This alteration created a new company drafting room and the laboratory of William H. Chapman, the Portland Company's electrical engineer.

Building 3 - Machine Shop

Construction Date: Constructed in two phases. The first floor appears to have been part of the earliest construction in the mill yard, in the late 1840s or early 1850s. The second floor was added in 1895 (according to map research).

Description: Building 3 is rectangular in plan and measures roughly 80 feet by 62 feet. It joins Building 2 to the south and Building 4 to the north, so that only the east and west elevations are fully exposed. Both the first and second floors are constructed of red brick that is consistent in color, although the two floors were built at different times (Photo 1). The first floor is the earliest construction and features detailing similar to that of Building 2, including a tall compound brick cornice, rough-cut granite window sills and lintels (flat heads), and double-hung wood windows. Most windows at the first floor appear to be original and have a 25/25 pane configuration, except three windows at the east elevation, which have an unusual 35/15 configuration. Several window openings at the first floor of the west elevation have been infilled with brick. The east elevation features a wide double doorway at its south end (holding replacement doors: Photos 1 & 2).

The second story was built in the 1890s and is typical of late 19th century construction, with its segmental arched windows with brick heads. Window openings hold what appear to be the original wood double-

hung sashes, in an 8/8 pane configuration. The second floor is enclosed by a pitched roof on which has been placed a temporary storage enclosure. The roofline is defined by simple wood fascia boards. A loading bay with glazed infill, that does not appear to be original but has been in place since at least the early 20th century, is located at the south end of the east elevation (Photo 2). A relatively recent bridge joins the second floor of Building 3 at the west elevation to the neighboring Building 16 (Photo 4).

The utilitarian interior of the building is divided into two levels and is typical of 19th century mill construction, with exposed brick walls and exposed wood framing.

Uses: Building 3 was used as a machine shop into the early 20th century. By 1924 it was set up as a carpentry shop and by mid-20th century was storage space.

Additional Information:

This section of the Machine Shop was built in 1847 as a one story blacksmith shop. When the second story was added, c. 1895, the original wood and wrought iron Queen Post Truss roof system was left in place and the floor hung from it with iron rods and double-strut trussed girders. The added wall height essentially creates full-length shed dormers on each side of the original roof and a double-pitched roof with the original gable peak remaining above the much shallower pitch of the shed dormers on either side. Because both ends of the building abut other buildings, this unusual roof form is not visible from the ground. A monitor, probably dating from the original construction, extends along the center portion of the ridge.

Building 4 – Foundry

Construction Date: 1895 (according to map research)

Description: Building 4 is the largest of the historic buildings in the complex, with a long rectangular plan measuring roughly 203 feet by 87 feet. The building was originally fully exposed at three elevations (north, west, and east). Today it joins Building 3 to the south and is surrounded on its north and east sides by modern structures. Constructed of brick, Building 4 is a single-story structure with three central raised bays, creating a two-tiered monitor along the center of the roof and a tall open span on the interior. Two large vents protruded from the roof at the east side of the building; they are no longer extant but the two-story brick section of the building along the east wall toward the south end marks their location; window openings in this two-story block were infilled with brick (visible in Photo 1). A brick ell off the south end of the west elevation was originally the location of the core oven for the foundry (Photo 7). Although this building has been altered considerably on the exterior, the west elevation remains largely intact, with paired segmental arched windows with brick heads and a simple box cornice defining the roofline (Photo 5). Windows hold original 16/16 wood double-hung sashes. The lower level walls are reinforced with what appears to be vertical steel strapping. Walls of the raised monitor have been inconsistently covered with modern materials and siding so that few windows are visible, especially along the east side (Photo 8). The long band of multi-pane windows can still be seen along the west side of the monitor (historic sashes remain but are in poor condition). A large loading bay at the south end of the east elevation holds a modern garage door. The adjacent window was modified to hold a pedestrian door (visible in Photo 1). The interior is a large open utilitarian space with exposed brick walls and exposed framing.

Uses: Building 4 was historically used as the main foundry for the Portland Company. This use did not change throughout the company's occupancy.

Additional Information:

The Foundry utilizes an unusual transitional construction system in its exterior walls. The riveted steel

roof trusses were erected on posts formed of back-to-back U channel steel with spacers between them to allow the roof truss gusset plate to be riveted in place between the two U channels at the top. Once the roof system was erected, the spaces between the posts were filled with brick laid up in common bond and engaging with the posts by extending into the recess of the U channel. Above the tops of the posts, the brick wall encased and engaged the steel trusses to the eaves. It appears that once the brick was in place, the roof trusses were supported primarily by the brick walls, not by the steel posts.

Building 6 - Blacksmith/Tank Shop; Machine Shop

Construction Dates: northern half - c. 1850; southern half - c. 1900

Description: The freestanding Building 6 was constructed in two distinct rectangular sections. The northern portion was the earliest and measures roughly 120 feet by 41 feet, while the southern section measures approximately 70 feet by 41 feet. The north block is a one-story brick structure enclosed by a gable roof (Photo 2). The construction is consistent with the earliest buildings on the site and it was likely built in the late 1840s. Regularly spaced window openings line the east elevation, while the west elevation is covered by a one-story addition that was built between 1914 and 1949 (today covered by recent siding - Photo 9). Original window openings have rough-cut granite sills and lintels and hold original wood double-hung sashes in a 20/20 pane configuration. Window bays are separated by shallow brick piers. A simple brick fascia defines the roofline. The gabled north elevation features a large central entryway holding a modern overhead door (Photo 4). A diamond-shaped window (now blocked) is located above the central doorway. Brick piers with simple corbeled capitals flank the lower level at the north elevation. The interior of the northern block is divided into large utilitarian spaces with exposed brick walls and exposed framing.

The southern portion of the building was constructed around 1900 and is a three-story brick block with evenly spaced segmental arched window openings (Photo 5). Otherwise, architectural ornamentation is limited to a corbelled brick cornice. There are a number of the original wood double-hung windows remaining (12/12 at the first floor, 8/12 at the second floor, and 8/8 at the third floor. Many of the windows at the second floor were replaced with 1/1 windows. Most of the first floor windows have the lower half of the sash blocked. The west elevation includes a tall tower (original to the south block) with modern siding and added exterior stairs that lead up to the third floor of the south block (Photo 8). An enclosed bridge (that appears to be an original feature - was there by 1906) extends from the second floor of the west elevation to Building 2 (Photo 7). The interior is divided into floor levels and spaces are utilitarian, with exposed brick walls and exposed framing.

Uses: The earlier northern portion was built at a “black smith and tank” shop according to historic maps. When the southern section was erected around 1900, the building shifted to use as a machine shop. By 1949 the southern portion was occupied by Chapman Electric Neutralizer Company, who had an office on the first floor and machine shops above (here until at least 1980). It appears that the northern portion of the building continued in use as a machine shop for the Portland Company.

Additional Information:

Drawings in the collection of the Maine Historical Society show the plans for the one-story tank shop, drawn in 1883. The three-story section of the building was constructed between 1896 and 1904 according to map research.

Building 7 - Carpentry-& Woodworking Shop

Construction Date: c. 1870, with c. 1900 addition

Description: Building 7 is a freestanding one-story brick building. It appears that it was originally constructed with a rectangular main block (170 feet by 60 feet) and a small brick ell off the southwest corner (roughly 50-feet by 21 feet). A small one-story wood-frame addition was constructed off the south end of the main block around 1900 (Photo 5). The building was constructed with evenly-spaced windows with segmental arched brick heads and rough-cut granite sills. Although many windows have been blocked with plywood, original sashes with a 20/20 pane configuration remain in a number of openings. There are several original segmental arched doorways as well, including a large loading door on the east elevation (Photo 4). Only one of the doorways (north elevation-west end) appears to hold the original double doors. Fenestration on Building 7 has been substantially altered over the years. A number of windows have been infilled with brick or partially blocked, while another on the west elevation was infilled and a pedestrian door was created (Photo 7). Several wide loading doors with steel lintels were added, at both the west and east elevations (Photos 3 & 7). A modern temporary storage shed was erected near the northeast corner of the building but it is freestanding (Photo 3).

Uses: The building was constructed for use as the carpentry and woodworking shop. By 1896 the main block was a “car shop” and also held the woodworking department. The woodworking shop remained as late as 1909, at which time the building also functioned as a garage and auto repair shop. By 1949 the space had been given over to steel fabrication (continued into the 1980s). Historic maps indicate that the rear ell was originally used for “printing and erecting,” and later for “printing.” By 1909 it was used for pattern storage. The wood-frame addition just east of the ell was added around 1900 along with a second wood addition further to the south that connected Building 7 to Building 10. The two wood additions were used for storage. The southern addition was removed by 1949, by which time the ell and the northernmost addition were occupied by an electric welding shop (remained into the 1980s).

Additional Information:

The car shop was constructed c. 1873 following a large fire that destroyed many buildings at the southeast corner of the complex. Drawings in the collection of Maine Historical Society include plans for the addition (former lumber shed) dating to 1904.

Building 10 - Paint Shop

Construction Date: c. 1885

Description: Building 10 is a small single-story brick building measuring roughly 46 feet by 30 feet. This freestanding rectangular structure has a shallow pitched roof and little in the way of architectural ornamentation, aside from segmental arched window opening with brick heads and rough-cut granite sills. Window openings along the east elevation have been infilled with brick (Photo 2), while those at the west and north elevations are blocked with plywood. It appears that the original wood double-hung windows (in 12/12 pane configuration) remain beneath the plywood (Photo 4). The principal elevation (north) is dominated by a large loading bay that may have been an added feature (Photo 1), although it was in place as early as 1924 (now infilled with modern materials). Secondary access to the building is currently provided by means of an added doorway on the west elevation - holding a modern flush door (Photo 4). The interior has been finished with modern materials.

Uses: When first constructed around 1885 the building was used as a paint shop. By 1909 auto painting was undertaken here. In the mid-20th century it served as a storage shed (into the 1980s).

Additional Information:

Additional research shows the Paint Shop to have been constructed c. 1873, following the fire at the

southeast corner of the complex.

Building 11 - Pattern Storehouse

Construction Date: c. 1885

Description: Building 11 is a two-story brick building with an irregular footprint, a quadrilateral measuring 30 feet along the north wall, 85 feet along the east wall, 90 feet along the south wall and 89 feet along the northwest wall. It joins Building 12 to the east and is constructed into the side of a hill so that an areaway runs along the northwest wall to expose the lower level windows. Typical of many of the buildings in the complex from the late 19th century, Building 11 is enclosed by a shallow pitched roof and has little architectural ornamentation, aside from segmental arched window openings with brick heads. Unlike most of the other buildings, window here have wood sills and 16-pane wood sashes that appear to be casements (Photo 3). The principal elevation (north) features a large loading bay that is now infilled with two recent doorways (Photo 1). A third doorway is located just to the west (a doorway in this location appears in historic images). A secondary entry was added to the northwest elevation in a former window location, together with a wood pedestrian bridge (Photo 3). The interior is divided into two floors and has been updated somewhat with the addition of carpeting, suspended panel ceilings, and a small number of recent partitions. The brick walls and wood framing remain exposed on the interior.

Uses: Building 11 was used as a pattern warehouse throughout the occupation by the Portland Company.

Building 12 - Pattern Storehouse

Construction Date: Map research indicates that Building 12 was constructed in 1895.

Description: Rectangular in plan, Building 12 measures roughly 40 feet by 80 feet and joins Building 11 to the west. Building 12 is constructed of red brick and, like the other late 19th century buildings in the complex, has little in the way of architectural ornamentation, aside from segmental arched window openings with brick heads. One notable difference from other buildings of the period is that Building 12 has a gable roof (rather than a low-pitched roof), a treatment more typical of the early to mid-19th century buildings of the Portland Company. The rooflines are trimmed with simple unadorned rake boards. While many of the evenly-spaced window opening (with wood sills) are now blocked with plywood, a number retain the original 16-pane wood sashes that appear to function as casements (Photo 3). The principal elevation (north) has two large loading bays with steel lintels (likely original, as they appear in historic photos) flanking an added (post 1988) central brick entry enclosure (Photo 1). The south elevation features a sign painted directly onto the brick wall reading "PORTLAND CO." (appears in early images of the building - Photo 3). The interior is divided into three principal floors, which remain utilitarian spaces with exposed brick walls, wood plank flooring, and exposed wood framing.

Uses: Building 12 was used as a pattern storage warehouse throughout occupancy by the Portland Company.

Additional Information:

The Pattern Storehouse Addition was constructed in 1895, according to drawings in the collection of the Maine Historical Society. At one time, a one-story shed addition was constructed along the east elevation, but it has since been removed.

Building 14 - Drafting Room/Storage

Construction Date: c.1875

Description: Building 14 is rectangular in plan and has two distinct sections, both of which appear to have been built about the same time. The northern section is two stories tall and measures roughly 85 feet by 20 feet (Photo 2), while the southern portion is three stories and measures approximately 30 feet by 20 feet (Photo 1). The building includes a combination of brick and wood-frame construction. The south elevation was originally exposed but now joins Building 24. The north wall abuts Building 15. Building 14 is built up against a retaining wall so that only the upper level, a simple paneled brick wall, is visible from Fore Street (west elevation - Photo 5). The east elevation is sided with clapboards and trimmed with flat wood stock. This facade has been substantially altered, with multiple changes in fenestration, inconsistent window and door replacement, and a small shed addition at the north end. Building 14 is joined to Building 2 by an enclosed walkway at the second floor (extant as early as 1886 - Photo 3). The interior has been altered extensively and finishes are largely modern.

Uses: The southern portion of Building 14 served as a drafting room until about 1895, while the northern portion was always used as a storage facility. By 1896 the southern end of the building was also used for storage and also held an office on the third floor. During the 20th century the building remained in use by the Portland Company as a storehouse.

Additional Information:

The Drafting Room and Storehouse were constructed sometime between 1858 and 1864 according to map research.

Building 15 & 16 - Boiler House/Brass Foundry

Construction Date: c.1850s (based on 1858 plan)

Description: Buildings 15 and 16 appear to have been constructed together and may have been part of the earliest construction on the site (likely late 1840s or early 1850s). Building 15 has been so heavily altered that it is impossible to know for certain what its original appearance may have been. It has a rectangular plan measuring roughly 35 feet by 20 feet and is built up against a stone retaining wall that runs along the Fore Street (west) side of the building. This one story brick building abuts Building 14 to the south and Building 16 to the north. All that remains evident of the historic east elevation (the only exposed elevation) are several wide brick piers between which has been added infill of various types (all in poor condition - Photo 2). The piers are decorated by string courses with corbels and dentils (Photo 3). The same detailing also appears along the cornice line and carries over across the face of Building 16. The rafters of both buildings are currently exposed but appear to have originally been covered by simple fascia boards.

Building 16 is a bit more intact than Building 15 but has also been altered. It is a one-story rectangular brick structure measuring roughly 41 feet by 27 feet. The north elevation abuts a concrete retaining wall, leaving only the east elevation exposed. There were originally four large window openings along the east elevation, trimmed with rough-cut granite sills and lintels; two still retain the original 16/16 wood double-hung sashes (Photo 4). The two southernmost windows were modified when a large loading bay with a steel lintel was installed (now infilled with added materials). Where Building 15 joins Building 16 are the remnants of a brick smoke stack (the base of it is still visible - Photo 5). (No access to interior due to dangerous conditions.)

Uses: Research indicates that Buildings 15 and 16 were constructed as the boiler house for the complex. A brick building appears in this location as early as 1858 and the design details, window in particular with their flat granite heads, are consistent with the earliest construction in the complex. The boilers were held

in what is today Building 15. It is likely that the mill quickly outgrew this relatively small boiler house; by 1886 a much larger boiler building had been constructed elsewhere on the site (no longer extant) and Building 16 was being used as a brass foundry; there were boilers still located in Building 15. This use continued until at least 1924 but had ceased by 1949. The buildings were later used by the Portland Company for storage.

Additional Information:

Based on maps and plans of the complex, it appears the Boiler house was constructed between 1858 and 1864; the Brass Foundry was constructed between 1864 and 1871. The 1858 plan of the complex (in the collection of the Maine Historical Society) shows a brick building in this general location, though doesn't appear to be the existing buildings. Research into the 1886 Sanborn Map of the Portland Company do not show an alternative Boiler House as previously determined. A Boiler Shop is present in the northeast quadrant of the complex.

Building 24 - Vault Storage

Construction Date: between 1896 and 1909

Description: Building 24 is a four-story utilitarian brick structure with minimal fenestration. It is built into a hill and thus has three exposed floors at the west and south elevations and four at the east (Photo 1). It is joined to Building 14 to the north and linked to Building 2 by an older enclosed bridge at the third floor (from c. 1900) and a more recent open bridge sheltered by an awning at the second floor (visible in Photo 1); the latter leads to an entry on the east elevation in the former location of a window. Many of the original windows have been infilled with brick, particularly at the second floor. The few historic window openings that remain (one at the south elevation and three at the east elevation) have segmental arched brick heads and rough-cut granite sills. One at the west elevation was converted to a doorway (second floor) and now holds a flush metal door. Also at the west elevation, an original loading door with historic glazed wood double doors survives at the fourth floor (Photo 4). An entry was added at the second floor of the south elevation (prior to 1924) and today holds recent double doors (Photo 2). The south elevation also features a sign painted directly onto the brick - the existing sign replaced an earlier painted sign of the Portland Company. The north elevation is void of fenestration (Photo 3). The interior is utilitarian (exposed brick walls) with no notable architectural features.

Uses: Building 24 was constructed for vault storage and remained in that use during occupancy by the Portland Company.

Additional Information:

The construction of the Vault dates from between 1904 and 1909 as evidenced by historic maps. It appears that a floor was added before 1924, though it is unclear when or why the Vault was expanded.

Building 30 – Office

Construction Date: 1950

Description: Building 30 is a freestanding Modern office building with a rectangular plan measuring roughly 32 feet by 120 feet. Typical of the style, there is little in the way of ornamentation. The northern third of the building stands three stories, while the southern portion is only two stories (Photo 1). It is built into a hillside so that only the second and third floors are visible from Fore Street (west elevation - Photo 2). The building is enclosed by a shallow shed roof with deep overhanging eaves. It rises from a red brick base that steps up at irregular intervals into the second and third floors. The upper portion of the building

is sheathed with wide clapboard siding. Bands of asymmetrical windows light the second and third floors, while openings at the first level are more evenly-spaced single windows. All sashes were replaced in the 1970s when a major renovation was undertaken. A brick entry shelter was also added to the east elevation as part of the 1970s work. There are two simple entrances off the Fore Street (west) elevation, both holding what appear to be replacement doors. The more prominent of the two is recessed within an entry shelter (Photo 4). The interior was heavily renovated in the 1970s.

Uses: The building was constructed as offices for the Portland Company and has remained in use as office space.

Acetylene House

Construction Date: c. 1909

Description: A small brick Acetylene House measuring approximately 8 feet square is located atop the first tier of the retaining wall to the east of the Foundry's Coke Oven. With no roof, the acetylene house is nearly in ruins, including a severely rotted door frame on the east elevation. Access to the structure is limited by overgrowth of vegetation.

Uses: The Acetylene House was used as the source of acetylene for welding and metal work.

HISTORICAL CONTEXT

Overview

The Portland Company was founded in 1845 as the Portland Iron Manufacturing Company. The name was shortened almost immediately in 1846; its new name has endured since, although operations ceased in 1981. During its nearly 140 year history, the Portland Company manufactured (or outfitted) steam locomotives, passenger cars, vessels, fire engines, elevators, lamp posts, lighthouse segments, ornate architectural elements, manhole covers, and more.

The history of the Portland Company and its associated buildings represent 19th and 20th century national trends in manufacturing and transportation, Portland's position as a seaport and transportation center, and the impact of industrialization on Portland.

Additional Information:

The charter for the Portland Iron Manufacturing Company was granted to individuals not associated with the Portland Company, suggesting that the charter was purchased from the original grantees by John A. Poor and associates, who then requested that the legislature change the name to the Portland Company in 1846.

Portland - 17th Century Settlement and Growth as a Seaport

Portland is located on a peninsula in Casco Bay and is well-known for its advantageous deep water port, its hilly topography, and varied street pattern. Portland has a predominance of 19th century buildings, representing its prosperity as an industrial era seaport and transportation center.

The earliest settlers came to the peninsula by 1628 to fish, trap, and trade. By the mid-1700s, Portland (then known as the Neck and part of Falmouth) was experiencing the wealth and population growth that came with having the "best natural harbor on the eastern seaboard." Lumber was prolific and Portland's main commodity; it was processed and shipped to Boston, England, and the West Indies. Settlers clustered along Fore Street (then at the water's edge) and the base of King Street (renamed India Street).

A period of recovery and rapid growth followed the Civil War and the Neck separated from Falmouth to become Portland. Capitalizing on her natural resources -deep water port, lumber, and fish - Portland thrived during the late 1700s and into the early 1800s.

Additional Information:

The period of recovery and rapid growth followed the Revolutionary War, not the Civil War.

Early 19th Century: Development as a Transportation Center

Portland's population more than doubled between 1800 and 1820 to over 8,500, and by 1832, the population reached over 13,000. Commercial activity was centered along streets familiar today - Fore, Middle, Market, State - and along wharves in the general location they exist today. Homes were built along the base of Munjoy Hill and a new, fashionable neighborhood in the western part of the city.

Portland continued to exploit its abundance of lumber and fish and participated in the booming shipbuilding

and maritime trade industries. By the 1830s, Portland's harbor had the largest commercial fleet on the eastern seaboard. While shipbuilding was at its peak during this time, the U.S. canal system was exploding. A group of Portland businessmen took notice and in 1825 financed the Cumberland and Oxford Canal. Completed in 1830, the canal connected Portland to the Sebago Lake region and provided a new means to transport Maine timber. Moreover, Montreal used the canal system and the St. Lawrence River to transport agricultural products to Portland for export, except during the winter months when the river iced over.

Additional Information:

The Cumberland & Oxford Canal only reached Long Lake in Harrison, Maine, approximately 50 miles from Portland. Its termination was nearly 200 miles from Montreal and it was not used for transportation between Montreal and Portland.

Mid 19th Century: Industrialization, the Railroad, & the Founding of the Portland Company

Nineteenth century advances in transportation and industry, particularly the railroad, brought Portland her greatest growth and prosperity yet and by mid-century, precipitated businesses like the Portland Company. Portland's first railroad, the Portsmouth, Saco, & Portland Railroad, arrived in the city by 1842 and connected southern Maine with Boston. Soon after, in 1845, attorney and savvy businessman, John A. Poor, with engineer, Septimus Norris, founded the Portland Iron Manufacturing Company to produce locomotives for the growing railroads. Furthermore, through Poor's vision and determination, Portland won the bid, over Boston, for the much coveted Atlantic & St. Lawrence Railway terminal in 1847 (later taken over by the Grand Trunk). The Atlantic & St. Lawrence Railway connected Portland with Canada and the west, making Portland Canada's primary port in the northeast, even during the winter.

All three were located on the waterfront: the Portsmouth, Saco, & Portland Railroad terminus was located just southwest of the commercial center, at the base of State Street; the Atlantic & St. Lawrence Railway was located further east, at the base of India and Hancock Streets; and the Portland Iron Manufacturing Co. (by 1846 known simply as the Portland Company) was located on filled land at the base of Waterville Street and just across a small cove from the Atlantic & St. Lawrence Railway. Initially, there was no direct link by railroad between them. To connect the three properties, another stretch of the waterfront was filled, upon which railroad tracks and Commercial Street were constructed; the project was completed by 1853. Now, well situated with a direct link to the railroad (which eventually included a network of six railroads and several steamship routes), a wharf on Casco Bay, and an indirect link to the canal system, the Portland Company was part of a thriving commercial and transportation network.

Additional Information:

As noted above, the Portland Iron Manufacturing Company was founded by individuals not connected with the Portland Company. John A. Poor and others appears to have purchased the charter for that company from the grantees and had the legislature change the name to the Portland Company in 1846.

The involvement of Septimus Norris in the Portland Company was very brief. The Portland Company Director's meeting minutes for 1846, located at the Maine Historical Society, show that Norris was only associated with the company for approximately 6 weeks in November and December of that year. There is no indication that the Portland Company purchased tools and machinery from the Norris Brothers Locomotive Builders in Philadelphia, as recommended by Norris, nor hired any of the ten men he recommended. Horace Fenton, who had come with Norris from Philadelphia, was retained as General Superintendent by the Portland Company directors after Norris was removed from the board. Following legal action, the

Portland Company paid Septimus Norris \$400 for the non-exclusive use of patents he had transferred to the Portland Company during the six weeks he was a director.

Before Broad Cove was filled for the railroad yard between the Portland Company and the Atlantic and St. Lawrence RR depot at India Street, the railroad crossed the cove on a timber trestle, with a siding on another trestle to the Portland Company Works, providing a rail connection to the plant from the outset of operations in 1847.

The Portland Company: Mid-19th Century Manufacturing

The Portland Company was the only company in the U.S. founded for the sole purpose of manufacturing locomotives; others were originally machine shops, adapted for their new purpose. Its complex was a nearly self sufficient operation, able to produce almost every part needed in the manufacturing process. Their buildings evolved with their operations – as industrial and transportation innovation dictated, they redesigned their old shops and added new shops. The Portland Company complex included three buildings as early as 1851—a foundry, a counting room, and a “car house” (Building 2 -machine shop). By the century’s end there were roughly two dozen buildings and sheds supporting their operations and the company was manufacturing a range of products, as follows.

Additional Information:

In 1847, a foundry, machine shop, and blacksmith shop were constructed of brick and a car shop built of wood. The original office, or “counting room” may have been an existing building on the site, as the director’s records do not show any reference to its construction.

Locomotives. Fire Engines. Steamships

Locomotives
1848 - c.1900

The railroad brought economic vitality to Portland and served as the impetus for the founding of the Portland Company. The Portland Company’s first locomotive, the Augusta, was completed in 1848 for the Portland, Saco, & Portsmouth Railroad. Over the next 60 years, 630 more steam locomotives (and hundreds of freight and passenger cars) were constructed for, among others, the Boston & Maine, Maine Central, Northern Pacific, Panama, Mexican Central, Sandy River, Wiscasset, and Quebec Railroads. The Portland Company also built locomotives for the U.S. Government during the Civil War.

Following the war, the railroad (and steamboats) served Maine’s burgeoning tourism industry. As the wealthier looked to escape the heat of the cities, railroads and steamships connected cities with rustic coastal communities and inland areas like Rangeley Lakes. By 1872, 65 trains a day stopped in Portland. Six railroads eventually served the city; the Grand Trunk alone had direct lines to New Hampshire, Vermont, Montreal, and the West.

While railroad track gauge is of standard dimension nationwide today, up to six different dimensions were used until the 1870s. This meant that the Portland Company built locomotives and cars to fit varied width tracks.

Fire Engines
c.1860 - 1870s

The Portland Company manufactured the first of its horse drawn steam fire engines, the “Greyhound,” in 1860. It was used by the Portland Company and the adjacent Grand Trunk Railway as well as being loaned to the City of Portland. The Portland Company subsequently produced at least seven steam engines for the Portland Fire Department. Several more steam fire engines were built during the 1860’s and into the 1870s.

No event made the need for fire engines more evident than the fire that swept through Portland on July 4, 1866. The fire burned the commercial center to the base of Munjoy Hill, stopping just short of the Portland Company but destroying 1500 buildings and leaving ten thousand homeless.

Steamships and Other Vessels c.1860 - c.1920

The advent of steamboat transportation translated to additional business for the Portland Company. The Portland Company built over 350 steam engines and boilers for marine, as well as, industrial uses. They outfitted towboats, fishing vessels, yachts, dredges, freighters, fireboats, and ferries. Some of these vessels were built elsewhere and others were fully constructed at the Portland Company’s boatyard across the harbor in South Portland. Once launched, the vessel would be towed to the Portland Company wharf to be outfitted. For example, the side-wheel passenger steamer, the “Bay State,” was built in Bath, Maine, and then towed to Portland to be outfitted by the Portland Company in 1890.

The Portland Company: Late 19th/Early 20th Century Diversification

Portland’s economy-and the Portland Company’s portfolio-diversified as industrialization progressed. The Portland Company began manufacturing elevators, cast iron elements, and paper industry equipment, and for WWI, they produced brass shell casings. They even distributed automobiles and trucks, making good use of their existing large buildings, expansive property, and proximity to rail transportation.

Elevators early 20th century

The Portland Company manufactured passenger and freight elevators, at first hydraulically powered and later electrically. Most elevator cars were built of solid oak with an iron and steel framework. The Portland Company manufactured three elevators for the Fidelity Trust building. One of them survives in the building today, now known as the Maine Bank and Trust Co. building on Congress St. The Portland Company also produced the elevators for the Portland City Hall.

Cast Iron Late 1800s

During the 19th century, cast iron could be produced cheaply and in vast quantities. It could be cast in a variety of forms and painted different colors making it a desirable alternative to carved stone and wooden architectural elements. Cast iron production was prolific late in the century; whole streetscapes can be found dating from this period, lined with cast iron facades.

The Portland Company cast storefronts, man hole covers, parts for lighthouses (lanterns, lamp decks, spiral stairways, doors and sashes, walkways, railings, vents, spindles and markers, upper sections of light tower), lamp posts, ornate gates, and industrial boilers. They also operated a bronze and brass foundry.

Paper Industry Late 1800s - 1900s

By the 1870s, Maine's lumber supply, namely desirable pine, was becoming depleted. Spruce and fir were plentiful, however, and ideal for the paper industry. Between 1880 and 1900 about 40 mills were built in Maine. Processing moved right to the source, creating small industrial centers in towns like Rumford, Millinocket, Berlin Mills, Sprague's Falls, and Westbrook.

The Portland Company manufactured equipment used in the paper industry including ,pulp digesters, boilers, tanks, steam accumulators, chippers and debarkers, vomit stacks, turbines, penstocks, water-control gates, and gate-hoisting equipment. Equipment, some of which measured as large as 15' in diameter, was transported by rail directly from the Portland Company to many of the mills.

The advent of electricity meant convenience and new challenges, like the heavy static charge that can be produced during the manufacturing process, causing problems in paper and textile mills. The remedy came in the form of an electric neutralizing machine, patented by electrical engineer, William Chapman, in 1908. The Chapman Corporation operated as a subsidiary of the Portland Company in Building 6 at the waterfront mill yard.

Automobile Sales c1907 - c1914

The Portland Company served as Maine's exclusive distributor of the high-end Knox automobiles, trucks, firetrucks, and three-wheeled tractors which were manufactured in Springfield, Massachusetts. In 1910, they added the Brush, Cole, and Thomas automobile line to appeal to middle and lower income buyers. The Portland Company used their garage for auto and truck repairs, and snowplow fittings.

Brass Howitzer Shell Casings for the War 1917 – 1918

The onset of WWI prompted the need for further diversification and brought a brief respite to the regional decline in manufacturing. Tens of thousands of brass shell casings were produced by the Portland Company, packed in pairs, and shipped to another factory to be filled before being sent to the US Army between 1917 and 1918. Women replaced men, who were overseas serving in the military, in this, and other factories.

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PORTLAND COMPANY COMPLEX GENERAL BUILDING CONDITION REPORT

PERFORMED FOR
CITY OF PORTLAND, MAINE PLANNING DEPARTMENT
389 CONGRESS STREET
PORTLAND, ME 04101

MARCH 26, 2015
SUPERSEDES REPORT DATED MARCH 11, 2015



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APPENDIX A - RELATIVE STRUCTURAL CONDITION AND RELATIVE REHABILITATION COSTS

BECKER STRUCTURAL ENGINEERS AND
RESURGENCE ENGINEERING AND
PRESERVATION

APPENDIX B - PHOTOGRAPHS

APPENDIX C - BIBLIOGRAPHY

- March 26 revisions include edits to Executive Summary, Introduction, Recommendations and Conclusion to reflect comments from March 18, 2015 meeting with City of Portland, Greater Portland Landmarks, and CPB2.
- March 26 revisions also include renumbering of Appendix A, Appendix B, and Appendix C. Appendix A edits further compare Becker Structural Engineers and Resurgence Engineering and Preservation rating systems.

1.0 EXECUTIVE SUMMARY

The individual structures within the Portland Company complex that were included in the project scope are in generally poor condition due to deferred maintenance and, in some cases, inherent but correctable lack of stability against lateral forces and snow loads. The severity of deterioration varies from building to building; it also varies within any given building. In some cases, significant deterioration is quite localized; in other cases, the overall structure is in a state of significant disrepair.

Buildings in poor condition do not necessarily warrant demolition. The fact that a number of the buildings within the Portland Company Complex continue to be occupied – some by large assemblies for special events and some by business tenants – attests to the fact that most of the buildings are still serviceable and are in salvageable condition.

In our opinion, it is possible to address the identified structural and building envelope conditions in ways that retain each building's historic character and that are feasible from a cost perspective. To do so, however, will require case-by-case assessment, creative design solutions, and the involvement of consultants and contractors experienced in historic building rehabilitation.

At this site, business and assembly occupancies can continue as long as structural conditions are monitored while the owners develop their plans for the site. Structure and building envelope rehabilitation will be expensive, but may still be cost-competitive with new construction of the same volume and footprint within the existing framework. Historic rehabilitation tax credits could likely make rehabilitation costs more competitive with new construction. Whether one is building anew or rehabilitating the existing buildings, quality materials, detailing, and craftsmanship must be employed to withstand the formidable climatic conditions that occur on the waterfront.

Structural work needs to be performed on the roof and floor structures to increase snow and live load capacity, and to increase lateral stability. Building envelope improvements are necessary to create viable rehabilitated shells that can ward off the elements for decades to come. Other masonry rehabilitation strategies will be required to provide the structural continuity between roof, wall and foundation of the buildings.

After the buildings were assessed by Resurgence Engineering and Preservation in late December 2014, snow loads took a toll on two buildings, causing localized roof truss failure and roof rafter failure in Buildings 4 and 7, respectively. Prior to scheduled public events, the current owners stabilized these deficiencies, and in the case of Building 4, corrected or mitigated them.

We concur with many of the primary findings of Becker Structural Engineers' report as to the current condition of the individual buildings. However, the simplified construction techniques that characterize Buildings 1 and 4, together with the repetitive nature of many of the required repairs, make possible a relatively straightforward rehabilitation project for those two structures. Buildings 2 and 3 are more complicated and careful assessment will be necessary to deal with their structural complexities.

The linear, connected nature of Buildings 1 through 4 also presents an opportunity to improve lateral stability of the buildings within contemporary code requirements while making other repairs. The simple,

modular nature of these long buildings allows for replication of the individual structural repair details. The exposed floor and roof structures provide easy access to make repairs. After additional structural inspection is completed, the limited hidden conditions lower the need to include large cost contingency factors for structural upgrades.

In summary, most of these exposed-frame industrial structures, with the exception of Buildings 2 and 3, are not that complicated when compared to many other historic commercial building rehabilitation projects undertaken in Portland and in Maine during the last quarter century.

In our opinion, three structures stand out as buildings presenting the greatest structural and building envelope challenges. The buildings in the most compromised condition include:

Building 7 (Car Shop)
Building 10 (Paint Shop) and
Building 11 (Pattern Storehouse).

We recommend that Building 11 remain unoccupied until the north (Fore Street) wall can be stabilized. The immediate safety concerns identified by Becker Structural Engineers at the wall between buildings 6A/6B, and of the overall condition of Building 10, are valid concerns and should be addressed as soon as possible, if they have not been already. Stabilizing the wall and roof framing between 6A and 6B can be performed as a stand-alone project prior to other rehabilitation of these buildings.

In any rehabilitation project, it is important to match existing buildings with compatible uses. Existing volumes, architectural complexity, and inherent structural limitations should all be considered to place proper occupancy types within any given building. Higher-risk occupancies (such as schools or other uses anticipating large assemblies) should be matched with buildings that can be strengthened to withstand increased structural loading factors with the least amount of structural intervention.

For purposes of this report we assume that the existing structures would be rehabilitated according to the *Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings*. These Rehabilitation standards allow considerable leeway to perform less expensive repair or replacement, rather than strict – and more costly - restoration or conservation, of deteriorated structural framing elements, thereby making projects more economically feasible. The property's eligibility for the *National Register of Historic Places* also allows access to State and Federal Historic Preservation Tax credits, which can total up to 45% of qualified rehabilitation expenditures.

Building code advances in recent years have come to recognize that deficiencies in historic structures can be individually and specifically repaired, as opposed to replacing entire structural components. These advances can make structural rehabilitation easier and less expensive than comprehensive replacement.

2.0 INTRODUCTION

In November 2014, the City of Portland Planning Department solicited qualification submittals to provide a general building condition report for eight extant structures within the former Portland Company industrial complex at 58 Fore Street. Subsequently, the City increased the number of buildings to be studied to ten, adding Building 3 and Building 14. For each of the structures, the qualified team was asked to assess and provide a written report on the current conditions of the buildings' exterior envelope, structural systems(s) and potential for adaptive reuse, with a preliminary assessment of the relative expense to address current deficiencies in the building envelope and structural systems.

Alfred H. Hodson III, P.E. of Resurgence Engineering and Preservation, Inc. (RE&P) performed a structural evaluation of the Portland Company Complex. Richard Curtis, AIA performed additional building envelope assessment, and Ivan Myjer of Building and Monument Conservation performed masonry assessment. These three individuals completed the work required to inspect the identified buildings. The work scope did not include evaluation of any mechanical or electrical systems, accessibility issues, or life safety code requirements. Specific Buildings in the inspection scope include:

Building 1	Erecting Building	c.1918
Building 2	Machine Shop	c.1847
Building 3	Machine Shop	c.1847
Building 4	Foundry	c. 1895
Building 6B	Tank Shop	c. 1896-1904
Building 7	Car Shop	c. 1873,1904
Building 10	Paint Shop	c. 1873
Building 11	Pattern Storehouse	c. 1885
Building 14	Drafting Room and Storehouse	c. 1858-64
Building 15/16	Boiler House and Brass Foundry	c. 1858, 1864

Assessment of the majority of the buildings occurred on December 29 and 30, 2014. On subsequent return visits, Mr. Hodson and Mr. Curtis visited the site to confirm and discuss items following completion of a draft report, and Mr. Hodson assessed the remaining two buildings.

The intent of the evaluation and this report, for each building within the scope, is to:

- a. Assess and provide a written report on the current condition of the building's individual exterior envelope, the current condition of the building's structural systems, and the building's potential for adaptive re-use.
- b. Provide a preliminary budget of the relative expense to address current building envelope and structural system, including structural alterations and upgrades per IEBC 2009 requirements for a change of use, including the provisions included in Chapter 11 (Historic Structures), as well as upgrades to lateral force resisting systems and diaphragms for wind and seismic loads.
- c. Review previous reports to understand past determinations of conditions, to compare them to current structural conditions. In particular, we reviewed a report prepared by Becker Structural Engineers (BSE) for the current property owners in March 2014, and worked both parallel and independent of their assessment to compare our findings with theirs;

Reporting Requirements in the Project Scope included:

- d. Meet with the Planning Department and the city Historic Preservation Board to describe our findings (*not performed yet*), and;
- e. Submit a final report to City of Portland, Maine Planning Department.

Appendix A of this report provides tables and narrative explaining the rating systems used by Becker Structural Engineers and Resurgence Engineering and Preservation. Appendix B of this report provides photographs documenting the individual buildings and site. The report and appendices should be read in their entirety. Some photos shown in the appendices may indicate damage not specifically mentioned in the report. Appendix C includes a bibliography of sources used as part of this project.

Working within the same parameters as BSE did during their study, we did not consider building code requirements, egress, accessibility, flooding, ventilation, hazardous materials, fire safety and energy code. We did not perform invasive testing or formal structural analysis. We understand that more comprehensive structural and building envelope assessment, including invasive and nondestructive testing, is necessary to perform schematic design, understand building code requirements, and provide more refined cost opinions. Other conditions may exist beneath concealed surfaces that appeared sound or in areas that were not visible during the inspection. This is typical of any older building or complex of buildings facing potential rehabilitation.

For purposes of this report, the long axis of the Portland Company Complex faces north toward Fore Street, and south toward the waterfront. The west side faces the Hamilton Marine complex, and the east side faces the adjacent wooded hillside. This orientation is in keeping with the BSE and SCC reports.

Also for purposes of this report it is assumed that the existing structures would be rehabilitated according to the *Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings*. These Rehabilitation standards allow considerable leeway to perform replacement, rather than strict restoration or conservation, of deteriorated structural framing elements, thereby making projects more economically feasible. (The property's eligibility for the National Register also allows for use of historic preservation tax credits. Preservation tax credits, which can total up to 45% of qualified expenditures, are intended to encourage investment in the rehabilitation of historic structures.)

We have not attended any presentations by Sutherland Conservation and Consulting or CPB2 Management, LLC, in order to retain objectivity in this study.

3.0 DOCUMENT REVIEW

3.1 ORIGINAL CONSTRUCTION DOCUMENTS

We were unable to review original construction documents of the Portland Company Complex. However, we understand some documents are available at Maine Historical Society. Any further assessment of the buildings should include review of these documents in order to compare specified materials with field conditions. This is important for any building rehabilitation project, in order to compare a designer's intent with what was constructed. Occasionally, archived drawings include notes made during construction to document specific construction changes and to provide insight into why those changes occurred.

3.2 PREVIOUS STUDIES AND HISTORIC RESEARCH

In accordance with the Request for Qualifications, we were provided access to two previous reports about the structural condition and history of the buildings in question, including the following:

- Evaluation of Existing Buildings at the Portland Company Property, March 28, 2014, by Becker Structural Engineers(BSE) Paul Becker, P.E., and Ethan Rhile, P.E.
- The Portland Company Historic Significance and Integrity; 2014, by Sutherland Conservation and Consulting (SCC), Scott T. Hanson, Amy Cole Ives, Matthew Corbett. We have not attended any of the presentations about the site that have been occurred since the report's publication.

We reviewed the BSE report to help understand their specific report format, narrative, and scope for purposes of defining our work scope. We worked both independently and in parallel with the BSE report. We reviewed the SCC report primarily to develop an understanding of the site's evolution and to gain an understanding of the relative age of the individual structures within the work scope.

We also performed a brief literature search to better understand some of the construction techniques used in several of the longer mill buildings. References reviewed included texts about late 19th and early 20th century construction design, materials, methods, and techniques. Appendix B lists a full bibliography of materials researched or reviewed for this report, including site surveys and maps available on the Maine Memory Network.

We viewed several historic maps online to view general conditions and layouts of the site, understanding that such maps included some artistic license and potential inaccuracies not found in formal survey maps or photographic images.

OBSERVATION, EVALUATION, RECOMMENDATIONS

4.0 GENERAL OBSERVATIONS AND EVALUATIONS

Site Considerations and Conditions:

The site surrounding the buildings in the work scope is an essentially flat, mostly paved site, with the exception of the north section of the site facing Fore Street. A steep drop from Fore Street to the ground level of the buildings rises from the west end of the site toward the east end, as Fore Street ascends Munjoy Hill toward the Eastern Promenade. This steeply-sloped topography has a direct impact upon Buildings 1 through 4 and Buildings 11 through 16 as stormwater runoff flows off the hillside toward these structures. The first floor of Building 11 sits below the exterior grade of the north wall of that structure. Buildings 14, 15 and 16 share a rubble stone masonry north wall that primarily serves as the Fore Street retaining wall.

The majority of the site surrounding the studied buildings is paved right up to the building perimeter walls. Perimeter site drainage around the buildings is likely not present or operational. We observed only a few catch basins near the buildings, but snowfall hampered a more comprehensive assessment.

At a site with buildings that predate sophisticated topographical surveys and largely available commercial photography, historic maps are often a key resource to determining site conditions. However, one must take into consideration any “artistic license” taken by the cartographer. An 1837 map by James Hall shows the site without any of the Portland Company structures. An 1851 map by H.F. Walling shows the ocean extending up to near the location of Buildings 6 and 7. The present-day Hamilton Marine site was a small cove. By 1857, the site is largely filled in, and several parallel rail tracks are shown extending eastward across the site along the present Eastern Promenade Trail and East Coast Greenway.



Beginnings of the Portland Company Complex indicated in an 1851 map by H.F. Walling. Note the cove area to the southwest of the complex, now filled in and occupied by Hamilton Marine and other structures.

Siting of the buildings with a generally east-west orientation creates shade on north-facing roof surfaces during the winter months. While south-facing roofs absorb sun and melt snow, north-facing roofs tend to keep snow longer, creating potential uneven snow loading conditions. Uneven snow loading is a cause of many winter roof failures, when the building is not able to sustain thrust loads created on the structure.

While the orientation would have minimal effect upon structures that generate their own heat, such as the Building 4 foundry, orientation would create more likely drift conditions on other buildings, as well as Building 4 since its closing as a foundry.

Structural Framing:

The structural framing of the different buildings provides insight into several generations of industrial construction. Heavy timber framing, cast iron hardware and loadbearing masonry walls support the oldest structures that date between 1847 and 1900. The heavy industrial truss construction in the timber-framed structures utilizes Queen Rod trusses (Queen Post trusses using two vertical iron rods to support the tie beam, instead of timber material) to create long, open spans in the work areas of Buildings 2, 3, and 6B. The shallow-pitched roofs of timber-framed Buildings 7, 10, and 11 used more standard post-and-beam techniques. Nineteenth-century builders already knew to use simpler, less efficient King Post trusses in smaller spans, such as in the roof of Building 14.



Queen Rod Truss in Building 6B (left); King Post Truss in Building 14 (right)

Building 2 and Building 3 utilize a 19th-century technique of suspending the second floor from the roof trusses to create more open space at that level. This technique has been observed in several buildings in Maine, and is a visual structural indicator of how the buildings have evolved over time as the Portland Company grew. Other structural features, such as the use of trussed girders (seen in Buildings 2 and 3) were commonly used to strengthen longer framing spans in accordance with formulas from handbooks.

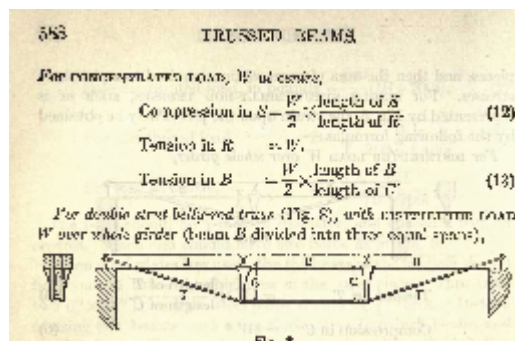
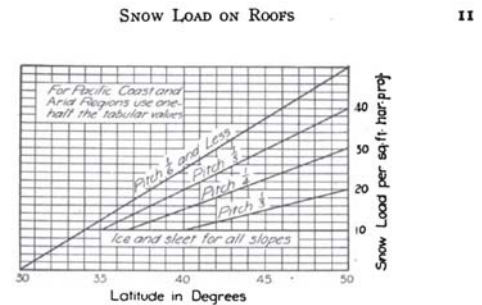


Illustration of "Double Strut Belly Rod Truss" from Architects and Builders Pocket Book, 14th ed. 1905.

Construction techniques changed with the advent of more readily available wrought iron and later, steel, toward the end of the 19th century. The buildings examined in this project scope illustrate the overlapping technological use of iron or steel structural framing beginning with the 1895 replacement Foundry (Building 4) and the 1918 replacement Erecting Building (Building 1). Each of these buildings is an example of steel (or iron) mill building construction, featuring a wide center bay supporting a rail crane, and side bays for other work processes.



1895 Steel Mill Building Construction in Building 4 (left) and c.1904 snow loading diagram from Ketchum text. Snow loading diagram in this text is based upon latitude in degrees, and upon roof pitch.

Windows and Doors:

Overview:

Buildings 1-4 have a very large proportion of glazed openings to the wall surfaces, likely due to the desire for abundant natural light and ventilation opportunities in these industrial/manufacturing buildings. The windows in the walls and clerestories are important architectural components of the complex, and should be maintained or replicated. Almost all of the windows have single pane glass, and due to the high proportion of glazed openings, they afford very little in terms of energy conservation. While there are fewer original, existing windows in the remaining buildings, they too are important architectural components of the complex and of the individual structures. The conditions of the windows vary from fair to very poor, and will demand attention to make the buildings usable for new purposes.

The many sizes and functions of doors in the complex reflect the varied requirements for the different manufacturing processes. Unfortunately, many of the larger original doors have been replaced with more recent doors after the site's period of significance. Like the windows, remaining doors from the period of significance for the site are important architectural components, and should be maintained, if possible, or recreated in kind to meet Park Service standards.

Energy Conservation:

Overview:

Section 101.4.2 (Historic buildings) of the 2009 International Energy Conservation Code (IECC) specifically states that: "Any building that is listed in the State or National Register of Historic Places; designated as a historic property under local or state designation law or survey; certified as a contributing resource with a National Register listed or locally designated historic district; or with an opinion or certification that the property is eligible to be listed on the National or State Registers of Historic Places either individually or as a contributing building to a historic district by the State Historic Preservation Officer or the Keeper of the National Register of Historic Places, are exempt from this code."

This could seem to imply that the buildings at the Portland Company complex are totally exempt from any requirements for insulation, heating system performance and electricity use. However, the Commentary on the IECC makes it clear that if any additions, alterations or renovations are undertaken that are not

classified as “historic” they should comply with Section 101.4.3 (Additions, alterations, renovations or repairs). This section requires that additions, alterations, renovations or repairs conform to the new construction requirements of the IECC. It further requires that additions, alterations, renovations or repairs not overload existing building systems.

What this all means for the Portland Company complex is that there are portions of the building envelope that may be affected by these provisions. For example, in the discussion on exemptions to the requirements, Section 101.4.3 requires that during reroofing activities, roofs without insulation where the sheathing is exposed during reroofing shall be insulated either above or below the sheathing.

Most of the buildings in the complex have no insulation at the walls or roofs. If reroofing is undertaken, it would be rational and more code compliant to add insulation to the roofs. By installing insulation on top of the roof decks, the existing framing could remain exposed on the interior. The requirement for roof insulation in Table 502.2(1) for insulation above the deck is R20, which could be achieved with about 3” of rigid insulation, which should not seriously alter the historic appearance of the exterior.

All of the buildings have solid brick exterior walls, with the brick exposed both inside and out. Insulation of these walls could only be accomplished by covering up the brick on the interior, which may or may not be desired, depending on the final uses. Section 101.4.3 does not require that mass exterior walls such as those in this property be insulated.

Brick Masonry Construction:

The brick masonry at the Portland Company is typical of 19th and early 20th-century construction. The masonry is unreinforced multi-wythe brick construction primarily bonded by lime-rich mortar. As masonry construction changed in the early 20th century, stronger mortar mixes using Portland cement became a preferred construction material. Cement-rich mortar bonds the bricks in Building 1, the most recent structure. Cement-rich mortar is less flexible than lime-rich mortar. This property may have contributed to the cracking visible at the masonry piers in Building 1.

Loadbearing masonry supports most of the structures within the complex. However, the brick masonry in Building 4 serves only to enclose the structural steel frame that supports the roof.

All of the buildings suffer the effects of long-deferred maintenance. Roofs, gutters, flashings, downspouts and brick mortar joints generally require rehabilitation.

All of the buildings suffer from deterioration of the brick masonry caused by rising damp related to poor site drainage and hardscape. The hardscape, in particular, often directs water towards the masonry rather than away from it, and traps water running down the building walls in the joint between the pavement and the foundation. Opening the pavement joints along the buildings may help the soil ventilate, if used in conjunction with gutters, downspouts, and catch basins in strategic locations.

4.1 BUILDING 1 – ERECTING BUILDING, 1918



Building 1 – Erecting Shop, west Elevation

Structure and Building Envelope Description:

- 9,400 square foot footprint, single story with high center bay and clerestory (Photo #1.1)
- Five interior bays with an additional smaller bay near Building 2 west wall (Photo #1.2)
- Unreinforced multi-wythe brick masonry perimeter bearing walls on three sides
- A shared end wall with the older Building 2 brick masonry end wall
- Flat Warren steel roof trusses and steel I-beam purlins with wood board sheathing at high roof
- Flush-framed steel I-beam roof beams and purlins with wood board roof sheathing at low roofs
- Interior steel columns that support both the high bay and the low bay framing, typical of steel mill building construction
- Extensive steel-framed window glazing on west, north, and south walls
- Ballasted rolled asphalt (high roof) membrane roofing (low roofs)

Observations and Evaluation:

- Upper roof surfacing consists of ballasted rolled asphalt, in good to fair condition (Photo #1.3). On lower roofs, a membrane surface covers the roof. We could not determine if it was insulated, or to what extent. Insulation would likely be required on the roofs, especially if there is a goal to retain the visible structure inside the building.
- Roof framing consists of steel trusses and intermediate beams at the clerestory (Photo #1.4). The beams and trusses will need to be analyzed for snow load capacity, and the decking above the beams will need to be replaced at deteriorated areas. The existing board sheathing is a combination of edge bead and edge-and-center bead. We were not able to measure the sheathing thickness. The sheathing does not provide an adequate diaphragm to transfer lateral loads, and it likely does not have sufficient nailing to resist code-required wind uplift forces.
- At the high/low roof intersection, the steel columns are offset, effectively placing an eccentric load on the lower column. This construction technique was typical of mill building construction when travelling cranes occupied the center bay of the structure. The columns, and their connection details, will need to be analyzed to confirm stability in conformance with current codes.
- Large-scale steel frame windows allow significant natural light into the building. The single-pane glazing lacks significant thermal resistance, and would likely need to be replaced with more energy-efficient glazing to keep heat in during the colder months and to keep heat out during the warmer months. Most of the windows are in poor condition and would require extensive rehabilitation or replacement regardless of energy efficiency concerns. As the windows are an important architectural feature of the building, they will need to be rehabilitated to National Parks Service Standards.

- Many of the steel window lintels and precast concrete window sills (Photo #1.6) are damaged and will require replacement. Steel lintels may need to be enlarged to carry loads imposed by current building codes. If replaced, the lintels should be galvanized prior to installation and painted as historically appropriate.
- The building has three load-bearing masonry walls. At the east end of the building the structure ties into the older (c. 1847) end wall of Building 2, transferring both gravity and lateral loads into that wall and building. An additional partial shear wall could help transfer lateral loads at the end of Building 1, and keep the more ornate Building 2 wall gable end wall visible.
- Unreinforced brick masonry walls are in good to fair condition. The bricks are hard, well-fired, and set in a cement rich mortar. Much of the masonry requires repointing, particularly near the south elevation ground level.
- Large cracks exist in the north and south wall masonry near the west end of the building, most likely due to thermal expansion on the long structure (Photo #1.7). The walls at the northwest and southwest corners will need to be rebuilt to tie the three walls back together. Smaller cracks occur in the intermediate piers between the windows, where the side bay framing bears on steel lintels. The cement rich mortar may have induced some of this cracking if it was stronger than the surrounding brick masonry, and the building was restrained from thermal expansion.
- The bottom masonry on the north side of the building is in poor condition due to raised grade and likely saturation from snow accumulation, rising damp, and poor site drainage.

Adaptive Reuse Potential:

- The tall center structure provides opportunity to insert an independent structure inside to provide additional floor space while maintaining some of the open qualities of the building. Another option could be to insert a floor structure inside the building that helps to transfer gravity and lateral loads from the original building into engineered frames and foundations.
- Ground-level access provides potential to sustain a wide range of occupancies, including large-scale assembly, with minimal egress and accessibility issues.
- Space is relatively straightforward to subdivide. Subdividing the space could also improve the lateral rigidity of the structure.
- Reconstruction of the west elevation to its original appearance (Photo #1.8) would address identified deficiencies in the masonry and improve the overall lateral stability of the building.
- Open access to the structural components permits relatively simple structural strengthening techniques that will be repetitive in nature. Much of the structure is well exposed, which should allow for straightforward assessment for corrosion, rot or other potential structural damage.

Recommended Building Envelope and Structural Rehabilitation Scope:

- Strip existing roofing, repair damaged sheathing, and add a structural diaphragm, consisting either of plywood sheathing or metal decking above the interior exposed roof decking.
- Insulate roof, and resurface with proper edge flashing and counterflashing.
- Strengthen existing roof structure as required, particularly near potential drift areas.
- Strengthen existing roof structure as required to provide wind uplift resistance and to transfer lateral loads through roof.
- Repair or replace existing steel windows with thermally efficient units that meet National Park Service Standards.
- Repair or replace existing steel lintels with properly galvanized and painted or prepared and painted steel.
- Repair or replace precast concrete window sills.

- Rebuild the west elevation, wrapping around to the north and south elevations, to match period of historic significance and to strengthen lateral capacity of west end wall.
- Provide shear wall at east end of building as necessary.
- Provide lateral bracing as required to resist code-required lateral loads.

4.2 BUILDING 2 – MACHINE SHOP, 1847, 1905 (3D FLOOR)



Structure and Building Envelope Description:

- 11,300 square foot footprint, three stories with overhanging third floor added in 1905 (above).
- Third floor overhangs for nearly the entire building length on the south side, and approximately half the building length on the north side. Cantilevered floor has little backspan.
- Building may have originally had gutters and downspouts (Photo #2.3), which were rendered obsolete when the third floor was added.
- Building has fifteen window bays and structural bays. Other supplemental columns, girders, and trusses have been added, likely to provide additional upper-floor and roof support as the third floor was added and the building responded to additional loads.
- Unreinforced multi-wythe brick masonry perimeter bearing walls on four sides
- A shared end wall with Building 1 and with Building 3. The west gable wall (Photo #2.6 through Photo #2.8) is a significant architectural feature of the building.
- Two rows of large iron columns and timber posts create 15 structural bays on the first-floor.
- Second floor framing is suspended from original roof framing, which later became the third floor (Photo #2-13).
- Fourteen rows of iron hanger rods pass through the third floor framing to the second floor framing. A few of the hanger rods have been relocated or are missing.
- Timber and iron or steel queen rod roof trusses support raised roof above the 1905 drafting offices. (Photo #2-20, #2-11, and #2-12). The third-floor office spaces extended beyond the masonry wall of the original structure, cantilevered from the first interior (former) attic joist and spanning over the masonry walls.
- Third-floor shed dormer cladding at north elevation consists of stamped metal sheeting in a clapboard pattern (Photo #2.6), while red rolled asphalt clads the South dormer. Areas of missing cladding exist all along the dormers.
- Extensive wood window glazing exists on north and south walls at bottom two stories; with wood windows boarded up on third floor. First floor windows are 25/25 divided light, second floor windows are 15/15 divided light, and third floor windows may have been 2/2 divided light, more common to the early 1900s.
- Roof surfacing partially observed, appears to be rubber membrane as visible from satellite photos and site observations.

Observations and Evaluation:

- Upper roof surfacing appears to consist of membrane. We could not access the upper roof.
- Roof framing consists of queen rod wooden trusses, with a single purlin that carries the junction of the sloped and shed roofs. The beams and trusses will need to be analyzed for snow load capacity, and the vertically-sawn, wide-board decking above the beams will need to be replaced at deteriorated areas. We were not able to measure the sheathing thickness. The sheathing does not provide an adequate diaphragm to transfer lateral loads, and it likely does not have sufficient nailing to resist code-required wind uplift forces.
- The roof structure originally supported the second floor with iron suspension rods to create wide-open first floor and second-floor space. At some point, possibly when the third floor was added, additional timber and iron posts were installed to provide additional second floor support.
- While the structure itself is somewhat regular, many variations in the framing details will require detailed assessment to adequately confirm the integrity of existing load paths. The building has undergone many subtle framing modifications as the building evolved.
- Large wood frame windows allow significant natural light into the building. The single-pane glazing lacks significant thermal resistance, and would likely need to be replaced with more energy-efficient glazing to keep heat in during the colder months and to keep heat out during the warmer months. Most of the windows are in poor condition and would require extensive rehabilitation or replacement regardless of energy efficiency concerns. As the windows are an important architectural feature of the building, they will need to be rehabilitated to National Parks Service Standards.
- Granite headers over the first and second floor windows are mostly in good condition. Several are cracked, and will require either epoxy-dowel repair or in-kind replacement.
- The building has four load-bearing masonry walls. At the east end of the building the structure ties into the end wall of Building 3, transferring both gravity and lateral loads into that wall and building. A roof truss near the west gable end carries much of the gravity load of the roof, but part of the Building 1 roof ties into the wall in other locations.
- The brick masonry exterior of the machine shop is constructed from well-fired bricks set in a mid-19th century lime mortar. The multi-wythe brick walls double in thickness on the interior to form piers that support the second floor beams. The masonry of Building 2 is in very good condition suffering only from the effects of deferred maintenance and poor site drainage. There are some areas of brick replacement that were completed with bricks and mortar that do not match the originals very well.
- It does not appear that the masonry exterior was ever completely repointed in the 20th century. The extremely weathered original lime mortar is visible in almost all of the joints. At the top of the building, there is very little mortar left between the bricks that form the outer wythe of the cornice. There is a real danger that bricks may start to fall out of the upper wall if remedial steps such as repointing and rebuilding of these areas are not undertaken in the near future.
- As with the other buildings at the complex there is a problem with site drainage that is affecting the first ten to twelve courses of brick above the foundation.
- On the east and west elevations, the brickwork starts to corbel outward in increments starting at one brick above the second floor lintels to form a cornice that is 20 courses high. On the north and south gable ends the brickwork corbels out to form a cornice that is 13 courses high.
- Additional openings at the first floor may have been punched into the south elevation of Building 2 when Building 1 was constructed. The original second floor windows of Building 2 are visible from inside Building 1, indicating that the wall between Buildings 1 and 2 is the original exterior wall of Building 2.
- Diamond shaped iron brick ties are visible at the location of the second floor beams on the east and west elevations.
- The top portion of the granite foundation is visible on the exterior, but not interior, of the building.

Adaptive reuse potential:

- This building is the most complex structure of all the buildings we assessed. Its size and height provide the most interesting options and potential views of the water in the complex.
- Second-floor open floor plan provides excellent assembly space, assembly occupancy (or educational occupancy), but assembly occupancy increases load factors on the existing structure. Supplemental posts on the first floor and improved lateral bracing can mitigate the increased load factors resulting from more intense occupancies.
- Ground-level access provides potential to sustain a wide range of occupancies, including large-scale assembly, with minimal egress and accessibility issues.
- Space is relatively straightforward to subdivide.
- Open access to the structural components permits relatively simple structural strengthening techniques that will be repetitive in nature. Structural strengthening will require the analysis of many different isolated framing conditions created as the building was modified over time.

Recommended Building Envelope and Structural Rehabilitation Scope:

- Strip existing roofing, repair damaged sheathing, and add a structural diaphragm, consisting either of plywood sheathing or metal decking above the interior exposed roof decking.
- Insulate roof, and resurface with proper edge flashing and counterflashing.
- Strengthen existing roof structure as required, particularly near potential drift areas. Provide wind uplift resistance and transfer lateral loads through the roof to the walls.
- Repair or replace existing steel windows with thermally efficient units that meet NPS Standards.
- Strengthen cantilevered third floor framing to adequately support contemporary code required loads and wind uplift resistance.
- Repair/replace existing steel lintels with properly galvanized and painted/prepared and painted steel.
- Repair or replace cracked granite window sills.
- Repair the bearing wall between Building 1 and Building 2, and Building 2 and Building 3.
- Test a sample of the original brick setting mortar to determine what kind of lime was used in the original mortar and if additives, such as natural cement, were used to make the mortar hydraulic.
- Repoint 100% of the exterior brickwork using a mortar that replicates the binder and aggregate in the original mortar as closely as possible.
- Remove and reset bricks that are loose at the cornice.
- Modify site drainage to drain water away from the base of the building.

4.3 BUILDING 3 – MACHINE SHOP, 1847

Structure and Building Envelope Description:

- 4,900+/- square foot footprint, two stories with second floor added sometime around 1895, according to the SCC report.
- Second floor walls constructed of multi-wythe brick masonry, and roof trusses supplemented with additional framing to create shallow pitched continuous shed dormers while maintaining the original monitor roof (Photo #3.7).
- Building has seven window bays and six interior structural bays. Supplemental columns, girders, and trusses have been added, likely to provide additional upper-floor and roof support as the second floor was added and the building responded to additional loads (Photo #3.5, Photo #3.6).
- Unreinforced multi-wythe brick masonry perimeter bearing walls on four sides, including the shared end walls with Building 4 and with Building 2.
- Timber and iron or steel roof trusses support additional lumber and rafter framing to support the raised roof above the second floor.
- Wood windows on north and south walls. First floor windows are 25/25 divided light, second floor windows are 10/10 divided light. These windows comprise a comparable surface area to wall ratio as those in the bottom two floors of Building 2, but less area than those in Building 1 and Building 4. Windows on first floor have granite lintels, while those at second floor have shallow arch brick masonry lintels.
- Roof surfacing partially observed, appears to be rubber membrane as visible from satellite photos and site observations.

Observations and Evaluation:

- Upper roof surfacing appears to consist of membrane. We could not access the upper roof.
- Similar to Building 2, roof framing consists of queen rod wooden trusses. The building was added onto by raising the second floor roof and landing on the existing bearing wall, unlike Building 2, which relied on cantilevered floor framing over the top of the bearing wall.
- The beams and trusses will need to be analyzed for snow load capacity, and the vertically-sawn, wide-board decking above the beams will need to be replaced at deteriorated areas. We were not able to measure the sheathing thickness. The sheathing does not provide an adequate diaphragm to transfer lateral loads, and it likely does not have sufficient nailing to resist code-required wind uplift forces.
- While the structure itself is somewhat regular, some variations in the framing details will require detailed assessment to adequately confirm the integrity of existing load paths. There are fewer structural bays and trusses, which means fewer potential differences in truss conditions. Techniques used in modifying the structure included the use of double strut belly-rod trusses, which stiffened the second floor girders.
- Wood frame windows allow significant natural light into the building. The single-pane glazing lacks significant thermal resistance, and would likely need to be replaced with more energy-efficient glazing to keep heat in during the colder months and to keep heat out during the warmer months. Most of the windows are in poor condition and would require extensive rehabilitation or replacement regardless of energy efficiency concerns. As the windows are an important architectural feature of the building, they will need to be rehabilitated to NPS Standards.
- Granite headers over the first floor windows are mostly in good condition. Several are cracked, and will require either epoxy-dowel repair or in-kind replacement. Arched masonry openings over second floor windows also require spot repairs and repointing.
- The building has four load-bearing masonry walls. At the east end of the building the structure ties into the end wall of Building 4, transferring both gravity and lateral loads into that wall and building.

A roof truss near the west gable end carries much of the gravity load of the roof, but part of the Building 2 roof ties into the wall in other locations.

- The brick masonry exterior is in fair condition, in need of widespread repointing and repair of loose and missing brick. Rising damp is a problem at Building 3, as it is at all structures.
- As with the other buildings at the complex there is a problem with site drainage that is affecting the first ten to twelve courses of brick above the foundation.

Adaptive reuse potential:

- This building is the second-most complex structure of all the buildings assessed in this project scope. The later addition of another floor to the building creates more discontinuities that need to be repaired. It's much smaller size and more "in-line" load path at the north and south walls makes it less complicated to rehabilitate than Building 2.
- Second-floor floor plan provides less than optimal assembly space because existing roof trusses interrupt each bay near the sides of the building. Office space could be a possible occupancy, with individual offices or rooms placed within each truss bay and a wider, open central space.
- Ground-level access provides potential to sustain a wide range of occupancies, including components large-scale assembly combined with the other adjacent buildings, with minimal egress and accessibility issues. This structure could perhaps serve as auxiliary space to neighboring Buildings 2 and 4, potentially including service and egress functions.
- Space is relatively straightforward to subdivide, if necessary on the upper floor.
- Open access to the structural components permits relatively simple structural strengthening techniques that will be repetitive in nature. Structural strengthening will require the analysis of many different isolated framing conditions created as the building was modified over time.

Recommended Building Envelope and Structural Rehabilitation Scope:

- Strip existing roofing, repair damaged sheathing, and add a structural diaphragm, consisting either of plywood sheathing or metal decking above the interior exposed roof decking.
- Insulate roof, and resurface with proper edge flashing and counterflashing.
- Strengthen existing roof structure as required, particularly near potential drift areas, and to resist wind uplift.
- Repair or replace existing wood windows with thermally efficient units that meet National Park Service Standards.
- Strengthen second floor framing to adequately support contemporary code required loads for the intended occupancy, if required.
- Repair or replace existing granite lintels at first floor level as required, and Repair or replace granite window sills (first floor) and wood sills (second floor).
- Repair the bearing wall between Building 2 and Building 3, and Building 3 and Building 4.
- Provide lateral bracing or reinforcement as required.
- Rehabilitate the masonry, paying specific attention to details between the first and second floors, and at the top plate of the second floor.

4.4 BUILDING 4 – FOUNDRY, 1895

Structure and Building Envelope Description:

- 16,500+/- square foot footprint, single story structure with center clerestory and continuous rooftop monitor. A part of the south part of the building is two stories, and ties into the more recent Building 5 along the east and south elevations.
- Building is a relatively early example of “steel mill building construction”, and served the purpose as a foundry. Second floor walls along the south side of the building are constructed of multi-wythe brick masonry.
- Two rows of steel or iron columns support the side bay roofs and a continuous crane rail. A spliced upper column, outboard of the crane rail, is tied into longitudinal metal trusses.
- Building has unreinforced multi-wythe brick masonry perimeter screen (not bearing) walls on the north and south sides.
- A concrete masonry block wall replaced the brick masonry wall at building’s east end. The east end was removed and replaced with a more recent extension incorporated into Building 5.
- North and south wall columns are partially exposed on the interior and exterior. The columns consist of four angles joined together with steel lacing bars.
- Extensive wood window glazing on north and south walls, clerestory, and monitor allow significant natural light into the building. First floor windows are double-width, with shallow arch tops and 16/16 light sash. Clerestory window sash are 30-light, single-sash windows that were likely operable
- Roof surfacing partially observed, appears to be metal roofing along the north side bay and rubber membrane on the upper bays and south side, as visible from satellite photos and site observations.

Observations and Evaluation:

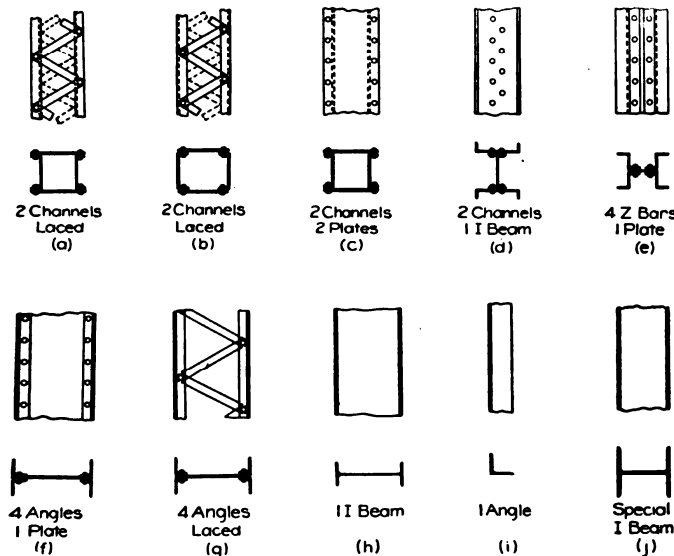
- The building is a relatively early example of “steel mill building” construction, in which steel or iron becomes the primary roof support material. Texts written in that time period detail that the four-angle, laced lower columns are intended for “light loading” which would certainly be the case in a hot foundry structure.

COLUMNS.—The common forms of columns used in mill buildings are shown in Fig. 98. For side columns where the loads are not excessive, column (g) composed of four angles laced is probably the best. In this column a large radius of gyration about an axis at right angles to the direction of the wind is obtained with a small amount

TYPES OF MILL BUILDING COLUMNS

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of metal. The lacing should be designed to take the shear, and should be replaced by a plate, (f) Fig. 98, where the shear is excessive, or where the bending moment developed at the base of the column requires the use of excessive flanges. The I beam column (h) makes a good side column where proper connections are made, and is commonly used for end columns (see Fig. 81). The best corner column is made of an equal legged angle with 4, 5 or 6-in. legs, (i) Fig. 98. Details for the bases of the three columns above described are shown in Fig. 99.



Types of Mill Building Columns from Milo Ketchum Text "The Design of Steel Mill Buildings". Column "g" (bottom row, second from left) is the type of column used in Building 4.

- The building design is similar in design to Building 1, if not completely similar in framing. Both buildings feature large banks of window glass to allow in natural light and provide ventilation. Building 1 relies upon interior bearing on masonry walls at the side bays, rather than on an iron or steel column exposed to external elements and rising damp. Later steel mill buildings, like Building 1, likely evolved from structural designs of earlier steel mill buildings, like Building 4, using more durable structural details.
- The laced angle side bay columns are in poor condition and have failed from a structural standpoint. They will need to be substantially repaired, or likely replaced. The columns are likely realizing some remaining axial capacity due to friction and incidental bond between the corroded steel and the masonry bed joints.
- The condition of the structure, particularly of the partially-exposed, corroded columns presents a complex preservation problem. Should one re-create a building detail that is faulty by design and

ill-suited for a marine-industrial environment, in the interest of authenticity and preservation? Or should a stronger structural column be placed within a new economical curtain wall built of concrete masonry, insulated appropriately, and clad on the interior and exterior with bricks? Could a less thermally-conductive substitute material fill the vertical control joints between the bricks on both faces of the wall to match the appearance of the original column? National Parks Service Preservation Brief 16, *The Use of Substitute Materials on Historic Building Exteriors* addresses some of these concerns. While the repair and conservation of original fabric is of utmost importance in preservation practice, certain building conditions and costs can justify the use of substitute materials.

- Responsible preservation practice also requires design professionals to consider the longevity of any repair or rehabilitation techniques that they specify. Future environmental exposure (marine environment atmosphere, splashback from de-icing salts) maintenance considerations (snow plowing, leaf or sand-blowing) could all undermine a designer's decision to use, for example, galvanized steel columns that replicate the original. One only needs to think about the considerable painting maintenance that all steel-framed parking structures need to undergo to understand the effects of the environment. Re-creating a failed structural detail that provides no true access to maintenance could be considered a failure of preservation to address practicality.
- The double-wide, shallow arch windows illustrate that the north and south walls were not intended to be significant load bearing elements. The side bay trusses bear directly onto plates supported by the tops of the laced angle columns, and the masonry between them was infilled. This construction technique was a major selling point of the steel mill building companies, many of which were major bridge companies. Bridge companies that branched out into steel mill building construction included American Bridge Company and the Pittsburgh Bridge Company. The American Bridge company had a sales office in Portland in 1904 (as advertised in Kidder's Handbook), but we have yet to determine if they were present in 1895. In fact, at the time of publication of his *Steel Mill Buildings* text, Milo Ketchum served as the Contracting Manager for American Bridge Company's Kansas City office.
- The beams and trusses must be analyzed for snow load capacity, and the vertically-sawn, wide-board decking above the beams will need to be replaced at deteriorated areas, especially along the eaves. We were not able to measure the sheathing thickness, but its deteriorated appearance and frequent visible instances of failure causes us to believe that it does not provide an adequate diaphragm to transfer lateral loads, and it likely does not have sufficient nailing to resist code-required wind uplift forces. It is possible that all of the roof sheathing in this building may need to be replaced. Salvageable sheathing could be milled into finish trim lumber or reinstalled on shorter spans below the structural diaphragm sheathing above.
- The structure is one of the more consistently framed buildings in the complex, aside from the large concrete block wall that supports Building 5. There are fewer variations in the framing as the uniform steel components were economically mass fabricated.
- Wood frame windows allow significant natural light into the building. The single-pane glazing lacks significant thermal resistance, and would likely need to be replaced with more energy-efficient glazing to keep heat in during the colder months and to keep heat out during the warmer months. Most of the windows are in poor condition and would require extensive rehabilitation or replacement regardless of energy efficiency concerns. As the windows are an important architectural feature of the building, they will need to be rehabilitated to NPS Standards.
- Shallow arch headers over the first floor windows should be spot repaired.
- The brick masonry exterior is in fair to poor condition, in need of widespread repointing and removal at the deteriorated columns. Rising damp is a problem at Building 4, as it is at all structures, especially along the north wall.

- As with the other buildings at the complex there is a problem with site drainage that is affecting the first ten to twelve courses of brick above the foundation.

Adaptive reuse potential:

- It appears that much of the concrete masonry wall and Building 5 extension could be removed if the goal were to preserve Building 4. This would require temporary shoring of Building 4 and rebuilding the south wall to resemble the original south wall (or modified new south wall)
- Ground-level access provides potential to sustain a wide range of occupancies, including large-scale assembly, with minimal egress and accessibility issues.
- Space is relatively straightforward to subdivide, if necessary.
- Like Building 1, an infill floor could be installed independent of or in support of the existing structure to add space or lateral support.
- Open access to the structural components permits relatively simple structural strengthening techniques that will be repetitive in nature. Structural strengthening will require the analysis of many different isolated framing conditions created as the building was modified over time.

Recommended Building Envelope and Structural Rehabilitation Scope:

- As a first step, explore the feasibility of making structural modifications that meet Historic Tax Credit criteria by consulting with the National Park Service.
- Shore and stabilize the structure as required to address south and north wall column deficiencies. Shore and stabilize building as required to replace concrete masonry walls at the east end of the building, and to rebuild the east gable wall to resemble conditions from the period of historic significance.
- Strip existing roofing, repair damaged sheathing, and add a structural diaphragm, consisting either of plywood sheathing or metal decking above the interior exposed roof decking.
- Insulate roof, and resurface with proper edge flashing and counterflashing.
- Strengthen existing roof structure as required, particularly near potential drift areas, and to resist wind uplift.
- Repair or replace existing wood windows with thermally efficient units that meet National Park Service Standards.
- Repair the bearing wall between Building 3 and Building 4, and the curtain walls on the north and south sides of the building.

4.5 BUILDING 6B — BLACKSMITH SHOP, C. 1896-1904

Structure and Building Envelope Description:

- 6,500+/- square foot footprint, single story structure with relatively steep timber-framed roof and trapezoidal wood-framed shed addition at north side. We did not access the north side addition.
- Timber frame structure has nine interior roof bays along the length of the building (Photo #6B7). Building has ten interior bays spaced at regular intervals.
- Main part of structure lacks interior timber columns. All queen-rod trusses bear on masonry piers or upon timber plates on masonry.
- Exterior masonry features brick piers that extend one wythe beyond the primary masonry field, creating a rhythmic façade that illustrates the pattern of the structural roof framing.
- Large, tall windows, fairly low to the ground, provide excellent natural light. Most windows on the south elevation have been boarded over.
- Three-tab brick-colored asphalt shingles clad the roof, and appear to be in good condition.
- Fiberboard eave trim has completely failed.

Observations and Evaluation:

- We concur with the BSE assertion that repairs need to be performed to temporarily support the wall framing at the Building 6 and Building 6B intersection.
- Extensive water infiltration at the top of the wall is resulting in the degradation of the setting mortar and loose bricks. The brick has widespread open and failed mortar joints.
- The treatment of the masonry is tied to correcting defects in the roofing. The mortar in the courses directly below the roof is deteriorated from water infiltration and as a result the upper courses of brick are loose. Resetting the upper courses of brick may be required.
- Trusses appear to be generally in good to fair condition. However, the bearing conditions at the ends are questionable, due to the eave conditions that have caused significant water infiltration onto the upper masonry. Truss ends and bearing points should be assessed individually to confirm that no rot is present.
- Roof rafters and purlins are undersized. Supplemental rafters are required, and purlins should be intermediately supported to shorten their span. If excessive deflection has already occurred in the rafters, it will be more complex, but not insurmountable, to sister the rafters. A longitudinal bracing system, made clearly distinctive from the original structure, could transfer loads from the center of the purlins to the bottom chord of the queen rod trusses, leaving the purlins in place.

Adaptive reuse potential:

- The building is a short, easily accessed structure with a sloped roof that could easily be repaired. The ample windows allow significant natural light, and the long, regular structure could easily be converted into multiple units.
- Ground-level access provides potential to sustain a wide range of occupancies, including large-scale assembly, with minimal egress and accessibility issues.
- Space is relatively straightforward to subdivide, if necessary.
- Open access to the structural components permits relatively simple structural strengthening techniques that will be repetitive in nature. Structural strengthening will require the analysis of many different isolated framing conditions, particularly at the truss eaves.

Recommended Building Envelope and Structural Rehabilitation Scope:

- Make necessary temporary and permanent stabilizations and repairs at the wall between Building 6 and Building 6B.

- Investigate the top of the brick walls to determine extent of mortar deterioration.
- Investigate the end bearing of the trusses and the top plate of the wall to determine if replacement is needed.
- Strengthen roof rafters, as is likely necessary.
- Analyze the original mortar to determine the type of binder and ratio of aggregate used.
- Remove and reset loos sections of brick.
- Repoint 100% of the exterior walls with a mortar that matches the properties and appearance of the original mortar.
- Replace non-matching modern granite sills with sills that match the existing.
- Perform necessary structural upgrades.

4.6 BUILDING 7 – CAR SHOP, C. 1873, 1904

Structure and Building Envelope Description:

- The building appears to have been originally a long rectangular structure (Photo #7.1 and Photo #7.2), supplemented later on by a shed addition on the south side (Photo #7.5). We did not access the south side addition, which apparently served as a lumber shed.
- The single-story building has perimeter loadbearing masonry walls, and some interior loadbearing masonry partition walls.
- Shallow brick arch lintels top the windows, and granite sills are located at the base of the openings.
- The interior timber frame supports a low-pitched roof. The roof rafters at the center of the structure are rectangular rafters topped with a sloped shim piece (Photo #7.5). The rafters have long spans placing substantial weight on the masonry side walls.
- A combination of membrane and asphalt roofing covers the structure (Photo #7.9).
- Many large openings have been cut into the side bearing walls (Photo #7.1, #7.2, and #7.3).

Observations and Evaluation:

- There appears to have been significant water infiltration from defects in the roof into the brickwork at the top of the wall. The mortar in the upper courses, just below the shallow eaves, is deteriorated as a result of the water infiltration. A similar condition exists at the bottom of the wall where rising damp has deteriorated the mortar in the brick courses just above grade.
- The outer wythes are bowing and detached from the inner wythes at the brick panels between the windows on the south elevation (Photo #7.8, Photo #7.10).
- There are a significant number of cracked and damaged bricks as well as bricks that have been repaired in the past with the same cement rich pointing mortar used to point the bricks.
- There is some corrosion and brick jacking at the steel lintels installed at the newer openings into the building.
- The roof framing is in poor condition and is undersized. In many locations, water infiltration appears to have caused framing rot, and there is likely significant top wall plate rot at the eaves (Photo #7.7). In a few places, we could see daylight through the rotted roof sheathing and failed surfacing.
- The finish grade around the shed addition (Photo #7.4) appears to direct roof runoff back to the base of the south wall.

Adaptive Reuse Potential:

- The building is in poor condition. While its spaces could be rehabilitated and converted to a wide variety of uses, it would likely need to be almost completely rebuilt. The overall condition of the structure would likely dictate that it be placed on new foundations.

Recommended Rehabilitation Scope:

- Comprehensive rebuilding of the existing perimeter loadbearing walls, roof surface and sheathing removal and replacement, significant roof framing strengthening and/or replacement; essentially demolition and reconstruction on the same footprint.

4.7 BUILDING 10 – PAINT SHOP, 1873



Structure and Building Envelope Description:

- 1,350 square foot footprint, single story (Photo #10.1);
- Unreinforced multi-wythe brick masonry perimeter bearing walls;
- Numerous infilled brick windows and enlarged door openings (Photo #10.3, #10.6, #10.8);
- west masonry wall has been partially rebuilt and is currently structurally unstable (Photo #10.3, #10.9);
- Some wood-framed window glazing on north and west walls;
- Battened membrane roof with numerous patches and ponding (Photo #10.2), indicating that the rafters have sagged significantly or rotted near the eaves.

Observations and Evaluation:

- We were unable to access the building interior.
- Upper roof surfacing consists of battened roof membrane, in fair to poor condition. The roof appears to be insulated, judging from conditions viewed through one of the windows.
- The masonry walls are in poor condition, with the west wall in unstable condition. This wall is in sufficiently unstable condition to warrant vacating the building, as stated in the Becker report.
- Roof framing was not visible but reportedly consists of wood rafters. It is possible that the rafters have tapered wedges placed atop each joist to create the very shallow roof pitch, as was done in Building 7 (see Photo #7.5), built around the same time.

Adaptive Reuse Potential:

- The building has a little adaptive reuse potential, due to its overall poor condition. Rehabilitating the structure would require significant time and effort, which may not be economically feasible when compared to a rebuilt structure on the same footprint.
- If the building were rebuilt, it would have to thoroughly comply with all contemporary code requirements for new construction, including foundation design.
- Reconstructing a new building to match the building during its period of historical significance is possible, depending upon future site use.

Recommended Building Envelope and Structural Rehabilitation Scope:

- Demolish and rebuild existing walls, roof, and foundation.
- Rebuild structure to match period of historic significance, using windows that meet National Park Service Standards and building systems complying with building codes for new construction.

4.8 BUILDING 11 – PATTERN STOREHOUSE, 1885

Structure and Building Envelope Description:

- Irregularly shaped, approximately 4,600 square foot footprint, two stories (Photo #11.1)
- Timber-framed interior with reported four-foot deep crawl space below first floor.
- Unreinforced multi-wythe brick masonry perimeter bearing walls on four sides. Building 12 upper wall appears to have been built on top of Building 11 South wall.
- Nearly-flat roof framing, pitched to the south and the north by stacking timber crib pieces beneath roof rafters (Photo #11.7 through #11.10)
- Roof appears to pitch two ways, to the east and to the west, at the intersection with the upper wall of Building 12.
- Relatively little number of wood window openings per square foot of wall.
- Climbing hillside at Fore Street drains runoff to the base of the north wall, several feet above the first floor (Photo #11.3).

Observations and Evaluation:

- We did not access the reported crawl space below the first floor. Given our experience working on structures with significant quantities of runoff pitched toward them, combined with the significant bow in the north wall, we believe that the first floor framing is probably rotting near the north wall, and no longer bracing it.
- The north masonry wall has failed (Photo #11.3, #11.5). Lateral earth pressures and possible first floor framing rot have caused the wall to bulge inward several inches. We believe that this condition creates as significant concern as the wall conditions at Building 10, and that the building should be vacated until this condition is evaluated and repaired.
- We observed evidence of a perimeter drain along the north elevation, but we were unable to confirm if it is operable.
- Roof framing consists of timber framing. The roof framing members are cribbed off of the columns at various heights to create a central ridge and adjacent slopes. This roofing system cannot transfer diaphragm loads from the roof into the timber frames below.
- The west and north unreinforced brick masonry walls are in good to fair condition. Much of the masonry requires repointing, particularly near the west elevation ground level.
- We observed active roof leaking into barrels placed on the second floor (Photo #11.8).
- The bottom masonry on the north side of the building is in poor condition due to raised grade and likely saturation from snow accumulation, rising damp, and poor site drainage.
- There appears to have been some relatively structural reinforcement to a girder tying into the common wall between Building 11 and Building 12 (Photo #11.10).
- The high roof of building 12 presents a significant potential for snow drifting (Photo #11.1, #11.2). Runoff from both roofs drains from the wall at the building junction (Photo #11.2). Previous masonry repointing repairs attempted to solve the problem, but only temporarily eliminated the symptoms.

Adaptive Reuse Potential:

- The building has a relatively short floor-to-floor height between the first and second floors. Combined with the lack of windows, the ground floor space feels confining and may not be suitable for occupancies that require substantial daylight. It could become a future tenant storage area if structural concerns are addressed.
- The lack of windows results from the use as a pattern storehouse, to minimize potential draft situations in the event of a fire.
- The second floor space, despite the relative lack of windows, appears to be brighter and amenable to different commercial occupancies, if the egress were improved.

- The structural failure of the north wall presents a significant economic concern that could be an obstacle to building rehabilitation.

Recommended Building Envelope and Structural Rehabilitation Scope:

- Shore building and rebuild north masonry wall. This will likely require excavation along the base of the north wall, and slope stabilization further back toward Fore Street. Additional work will likely be required to confirm condition of first floor framing.
- Strip existing roofing, repair damaged sheathing, and add a structural diaphragm, consisting either of plywood sheathing or metal decking above the interior exposed roof decking. Provide legitimate connections to transfer forces from upper roof through cribbing to the tops of posts, and to the tops of walls.
- Insulate roof, and resurface with proper edge flashing and counterflashing. Reconsider relationship of roof against Building 12, because splashing and snow drift will likely continue to cause structural problems along this wall.
- Strengthen existing roof structure as required, particularly near potential drift areas.
- Strengthen existing roof structure as required to provide wind uplift resistance and to transfer lateral loads through roof.
- Repair or replace existing wood windows with thermally efficient units that meet National Park Service Standards.

4.9 BUILDING 14—DRAFTING ROOM & STOREHOUSE, 1858-64

Structure and Building Envelope Description:

- Undetermined square foot footprint, two story (Photo #14.1)
- A shared end wall with Building 15/16.
- Wood construction at south-facing wall; use of site retaining wall buttresses for lower side walls at east and west ends (Photo #14.3, Photo #14.4).
- The wood-framed façade has more recently been re-sided, and the some windows replaced.
- A bridge leads from Building 14 to the second floor of Building 3 is in poor condition, but not assessed as part of this survey. (Photo #14.1). A bridge between Building 2 or Building 58 connects the second floor “Map Room” to the Building third floor drafting shop (Photo #14.2).

Observations and Evaluation:

- Upper roof surfacing consists of ballasted rolled asphalt, in good to fair condition. The roof is possibly insulated in some areas, but we could not determine the extent.
- Roof framing consists of timber king post trusses, purlins, and rafters. The rafters, purlins, and trusses must be analyzed for snow load capacity, and the decking above the beams will need to be replaced at deteriorated areas.
- We were not able to measure the sheathing thickness, but it likely does not provide an adequate diaphragm to transfer lateral loads, and it likely does not have sufficient nailing to resist code-required wind uplift forces.
- The current tenant reports that warm-weather condensation is prevalent, as the heat in the building rises to the peak at the Fore Street masonry wall. The condition at the top of the Fore Street wall should be assessed to provide appropriate insulation and weather protection.

Adaptive Reuse Potential:

- Ground-level access to second floor (from 58 Fore St.) and from alleyway provides potential to sustain a wide range of business occupancies, including mercantile, office, and artists' studios, with some thought to egress and accessibility issues. This structure, along with that of Building 15/16 presents a configuration almost unique within the City of Portland. While the structures do not engage Fore Street, they create a unique alleyway on the north side of the site. Properly secured and lighted, it could present unique occupancy opportunities.
- Lateral stone walls provide fire separation between individual units if second-floor walls above are outfitted with appropriate fire-rated doors.
- Reconstruction of the south elevation to its original appearance would address identified deficiencies in the wood façade and improve the overall lateral stability of the building.
- Exposed rubble stone walls, if properly repaired, could become a unique architectural feature of the interior spaces.

Recommended Building Envelope and Structural Rehabilitation Scope:

- Strip existing roofing, repair damaged sheathing, and add a structural diaphragm, consisting either of plywood sheathing or metal decking above the interior exposed roof decking.
- Insulate roof, and resurface with proper edge flashing and counterflashing. Develop a method to insulate the uppermost wall near Fore Street to protect against water and air infiltration.
- Strengthen existing roof structure as required.
- Strengthen existing roof structure as required to provide wind uplift resistance and to transfer lateral loads through roof.

- Repair/ replace existing wood windows with thermally efficient units that meet National Park Service Standards.
- Rebuild the south first-floor elevation to match period of historic significance and to strengthen lateral capacity of south wall.

4.10 BUILDING 15/ 16 – BOILER HOUSE/BRASS FOUNDRY, 1858, 1864

Structure and Building Envelope Description:

- Small (unknown area), two-story structure with conventional lumber framing (15) and unreinforced multi-wythe brick masonry bearing wall (16) along the south (alley) elevation. Building 16 also has an infill wooden partition below a steel beam that previously created a large door opening. Refer to photos #16.1 and #16.2.
- Brick vaults reportedly extend from Building #15 beneath the Fore Street sidewalk. We did not observe these vaults.
- Rubble dry-stacked retaining walls exist at north, west and east elevations. At Building 16, it appears that water penetrates the wall or has in the past.
- Back wall (north wall) is large stone masonry retaining wall supporting hillside at Fore Street.
- Mono-pitch wood-framed roof slopes down toward the south (alley-facing) wall.
- Two-wythe brick masonry front wall features a mixture of granite (likely original) brick, and steel or iron headers on the window and door openings.
- The remnants of the Boiler House chimney base remain between Building 15 and Building 16.
- A large standpipe at east end of building.

Observations and Evaluation:

- The wooden and brick masonry walls of both buildings are in poor condition.
- The chimney base bricks should be checked and stabilized in place.
- Timber and lumber roof framing at Building 16 is undersized for contemporary snow loads.

Adaptive Reuse Potential:

- The building's current use is as a blacksmith's forge, a use not dissimilar to its original purpose as a brass foundry. It may be necessary to rebuild most of the Building 15 framing. In that case, Building 15 would likely need to conform to contemporary code requirements for new structures. From a preservation standpoint, the blacksmith occupancy is likely to be considered as the best and highest use of the structure.
- Open access to framing in Building 16 permits relatively simple structural strengthening techniques. We assume that much of the Building 15 structure will need to be rebuilt.
- As discussed in the Building 14 section, this structure provides opportunities for unique occupancies if properly secured and lighted.

Recommended Building Envelope and Structural Rehabilitation Scope:

- Strip existing roofing, repair damaged sheathing, and add a structural diaphragm, consisting either of plywood sheathing or metal decking above the interior exposed roof decking.
- Insulate roof, and resurface with proper edge flashing and counterflashing.
- Strengthen or rebuild existing roof structure as required, particularly near potential drift areas.
- Strengthen existing roof structure as required to provide wind uplift resistance and to transfer lateral loads through roof.
- Repair or replace existing doors and windows with thermally efficient units that meet National Park Service Standards.
- Repair/replace existing steel lintels with properly galvanized, painted or prepared/painted steel.
- Rebuild the south elevation and Building 15 timber or lumber structures as required.
- Rehabilitate brick masonry front wall of Building 16, to match period of historic significance.
- Improve site drainage and grading around the alley and hillside.

5.0 RECOMMENDATIONS AND CONCLUSION

The individual structures within the Portland Company complex that were included in the project scope are in generally poor condition due to deferred maintenance and, in some cases, inherent but correctable lack of stability against lateral forces and snow loads. The severity of deterioration varies from building to building; it also varies within any given building. In some cases, significant deterioration is quite localized; in other cases, the overall structure is in a state of significant disrepair.

Buildings in poor condition do not necessarily warrant demolition. The fact that a number of the buildings within the Portland Company complex continue to be occupied—some by large assemblies for special events and some by business tenants--attests to the fact that most of the buildings are still serviceable and are in salvageable condition.

In our opinion, it is possible to address the identified structural and building envelope conditions in ways that retain each building's historic character and that are feasible from a cost perspective. To do so, however, will require case-by-case assessment, creative design solutions, and the involvement of consultants and contractors experienced in historic building rehabilitation.

We concur with many of the primary findings of the Becker Structural Engineers report as to the current condition of the individual buildings. We believe, however, that the simplified construction techniques that characterize these buildings together with the repetitive nature of many of the required repairs make possible a relatively straightforward rehabilitation project. These attributes also present an opportunity to improve lateral stability of the building within contemporary code requirements while making other repairs. The simple, modular nature of the long buildings allows for replication of the individual structural repair details. The exposed floor and roof structures provide easy access to make repairs. The limited hidden conditions lower the need to include large cost contingency factors for structural upgrades. In summary, most of the building structures are not that complicated when compared to many other historic commercial building rehabilitation projects undertaken in Portland and in Maine during the last quarter century. With proper planning, specification, and construction administration, most of the existing structures can be rehabilitated by contractors trained in preservation work, primarily in masonry rehabilitation and timber framing. Appropriate planning, engineering, and site inspection will need to occur to ensure the proper execution of the repairs.

In our opinion, three structures stand out as buildings presenting the greatest structural and building envelope challenges. The buildings in the worst condition include Building 7 (Car Shop) #10 (Paint Shop), and 11 (Pattern Storehouse). The immediate safety concerns identified by Becker Structural Engineers at the wall between buildings 6A/6B, and of the overall condition of Building 10, are valid concerns and should be addressed as soon as possible. Stabilizing the wall and roof framing between 6A and 6B can be performed as a stand-alone project prior to other rehabilitation of these buildings. Additionally, Building 11 should not be occupied due to lateral pressures exerted by soil and snow against the north wall.

It has been a pleasure to assist you with this project. If you have any further questions about the content of this report, please feel free to contact me at your convenience.

Sincerely,

A handwritten signature in blue ink on a light yellow background. The signature reads "Alfred H. Hodson III, P.E." in a cursive script.

Alfred H. Hodson III, P.E.
Resurgence Engineering and Preservation, Inc.

C:\2014\jobs\14-032 Portland Company Complex\0326 14-032 Portland Company Complex report.doc (pdf)
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APPENDIX A

**RELATIVE STRUCTURAL CONDITION AND
RELATIVE REHABILITATION COSTS
RESURGENCE ENGINEERING AND
BECKER STRUCTURAL ENGINEERS**

APPENDIX A

PORTLAND COMPANY COMPLEX – MARCH 2015

RELATIVE CONDITION AND REHABILITATION COST COMPARISON

BUILDING NUMBER – NAME DATE	RELATIVE STRUCTURAL CONDITON			RELATIVE REHABILITATION COST	
	BECKER	RESURGENCE /BECKER SCALE	RESURGENCE SCALE	BECKER	RESURGENCE
BUILDING 1 - ERECTING BUILDING 1918	2.0	<u>2.5</u> (REPETITIVE DTLS)	P2	4.0	<u>3.5</u> (REPETITIVE DTLS)
BUILDING 2 - MACHINE SHOP 1847	2.5	2.5	P2+	4.5	4.5
BUILDING 3 - MACHINE SHOP 1847	3.0	3.0	P2+	3.0	3.0
BUILDING 4 – FOUNDRY/ACETYLENE HS 1895, 1904-09	1.5	1.5	VP2	4.5	<u>4.0</u> (REPETITIVE DETAILS, CUSTOM REHABILITATION)
BUILDING 6B - TANK SHOP 1896-1904	3.0	3.0	P2+	3.5	3.5
BUILDING 7 - CAR SHOP 1873,1904	2.0	<u>1.5</u> (BOWED WALLS)	VP1	5.0	5.0
BUILDING 10 - PAINT SHOP 1873	1.0	1.0	VP1	4.5	<u>4.0</u> (REBUILD IN KIND)
BUILDING 11 - PATTERN STOREHOUSE 1885	2.5	<u>2.0 (NORTH WALL)</u>	VP2	4.5	4.5
BUILDING 14 – DRAFTING ROOM AND STOREHOUSE 1858,1864	NOT INSPECTED	2.0	VP3	NOT INSPECTED	3.5
BUILDING 15/16 (NO ACCESS TO B15) BOILER HOUSE/BRASS FOUNDRY 1858, 1864	1.5	1.5	VP3	3.0	3.0
Averages of common buildings inspected (excluding Building 14)	2.11	2.06		4.06	3.89

SEE FOLLOWING PAGES FOR EXPLANATION OF BECKER STRUCTURAL ENGINEERS AND RESURGENCE ENGINEERING RATING SYSTEMS

Notes:

1. Coordinate this document with "Portland Company Complex General Building Assessment" prepared by Resurgence Engineering et al, March 2015, and "Evaluation of Existing Buildings at the Portland Company Property" prepared by Becker Structural Engineers, March 28, 2014.
2. Further discussion about relative rehabilitation costs related to these structures, by Resurgence Engineering, follows this page.

APPENDIX A EXPLANATION OF BECKER AND RESURGENCE RATING SYSTEMS

Becker Structural Engineers' (BSE) Rating System

The relative structural conditions rating system used in the Becker Structural Engineers Report is shown below:

- 1 = Very poor/unsafe/demolition likely
- 2 = Very poor/salvageable with significant structural rework and investment/questionable economic viability/consider demolition
- 3 = Poor/requires substantial structural work to elements and systems
- 4 = Fair/requires nominal structural work to elements
- 5 = Good condition/minor structural work required

Becker's relative rehabilitation cost rating system is based upon structural complexity and size of building, using a scale of 1 to 5 -- 1 being relatively low costs and 5 being relatively high costs. BSE gives no specific definitions of the relative costs, simply a numerical grading system. Such an approach appears to be reasonable, given the preliminary nature of assessment that both firms were instructed to provide.

Resurgence Engineering and Preservation's (REP) Rating System

For ease of comparison, REP used the same relative structural conditions rating system as BSE in the summary chart. However, REP believes there is a more accurate and further defined way to classify the buildings in terms of condition. *See chart on following page for REP's proposed rating system as regards condition.*

REP has used the same relative rehabilitation cost rating system as BSE. The BSE report provided no specific definition of cost for each rating category.

RESURGENCE ENGINEERING RELATIVE STRUCTURAL CONDITION SCALE OF EXISTING BUILDINGS IN POOR CONDITION

BSE condition #	REP NUMBER	DESCRIPTION OF CONDITION, PRE AND POST MITIGATION	LOCAL/MAINE BUILDING EXAMPLES PRE AND POST MITIGATION
(n/a)	VP1 (very poor, not salvageable)	PRE: Immediate <u>widespread public safety threat and site/occupant safety threat</u> if not barricaded and structurally shored; evacuate nearby buildings, streets, sidewalks, block off parking spaces. Potential for widespread debris field in event of collapse; Building cannot be re-occupied following triggering event. POST: Condemn and demolish building.	Buildings with extensive fire damage
1	VP2 (very poor but salvageable, expensive to rehabilitate, i.e. approx.. BSE cost #4 to #5)	PRE: Immediate <u>widespread public safety threat and site/occupant safety threat</u> if not barricaded and structurally shored; evacuate nearby buildings, streets, sidewalks, block off parking spaces. Potential for widespread debris field in event of collapse; Building cannot be re-occupied following triggering event. POST: Building assessed, barricaded, structurally shored; nearby buildings deemed safe for return; streets, and/or sidewalks and parking spots remain blocked off. Building itself cannot be occupied after stabilization. Unsafe for rescue personnel to enter if trespassers are inside. Shored and secured structure relatively expensive, but feasible, to rehabilitate.	PRE: Norway Opera House, 2007-09 POST: Norway Opera House, 2010+
1	VP3 (very poor but salvageable, moderately expensive to rehab, i.e. BSE cost #3 to 4)	PRE: <u>Immediate site/occupant safety threat and localized public safety threat</u> if not if not barricaded and structurally shored; Block off streets, sidewalks, and parking spaces. Potential for localized debris field in event of collapse; Building can be occupied following the triggering event. POST: Building assessed, barricaded, structurally shored; nearby buildings deemed safe for return; streets, and/or sidewalks and parking spots can remain blocked off or reopened following mitigation. Building itself can be occupied.	PRE: Buildings with widespread loose façade components. i.e. Masonic Temple Localized structural failures i.e. Portland Company Complex Building 4 POST: Stabilized structures, removing loose components or installing covered sidewalk and blocked off parking spaces.
2	P1 (very poor but salvageable, less expensive to rehab; i.e. BSE cost #2)	PRE: <u>Likely site/occupant safety threat and localized public safety threat</u> if not if not barricaded and structurally shored; Block off streets, sidewalks, and parking spaces. Potential for localized debris field in event of element failure; Building can be occupied following the triggering event. POST: Building assessed, barricaded, structurally shored; nearby buildings deemed safe for return; streets, and/or sidewalks and parking spots can remain blocked off or reopened following mitigation. Building itself can be resume occupancy.	PRE: Buildings with a few loose façade components that can easily be removed or snow and ice buildup that can easily and quickly be removed, POST: Stabilized structures, removing loose components or installing covered sidewalk and blocked off parking spaces.
3	P2	PRE: <u>Possible site/occupant safety threat and localized public safety threat</u> if not if not barricaded and structurally shored; No triggering event causing distress; possible change of use makes economics questionable. POST: Rehabilitation Feasibility Study considering economics for specific buildings and structures.	PRE: Portland Company Building Complex Building #1

Most of REP's condition and cost ratings align with those of BSE. Using our own rating system, however, REP's conclusions are slightly different, especially in regards to the potential for rehabilitating buildings in distress (i.e. Buildings with a "1" to "2" condition ranking). We would not have necessarily characterized these buildings as unsalvageable, as Becker suggests. Our justification for this would be to consider the cost benefits that could be realized using historic preservation tax credit incentives, along with the added flexibility afforded historic structures under the IEBC. Tax credit incentives could offset the costs of more custom-designed engineering and building envelope rehabilitation solutions. They would also offset the cost of higher-quality, longer lasting building materials necessary for the marine climate.

Our primary departures from BSE exist in Building 1, Building 4, Building 7, Building 10, and Building 11. We downgraded the relative structural condition of Building 7 and Building 11, while we upgraded the relative structural condition of Building 1. We lowered the relative rehabilitation costs of Building 1, Building 4, and Building 10. The paragraphs that follow explain the reason for our departure at each building.

For Building 1 we believe that the more recent construction date (1918), combined with the repetitive nature of the building elements, can allow for a slightly less expensive rehabilitation than indicated in the BSE report.

Building 4 could yield a relatively less expensive rehabilitation if a customized approach to reframing the edge columns and rebuilding the masonry could be achieved economically. Such an approach would have to be understood and approved in advance by the National Park Service if tax credits were desired on this building project. If historic preservation tax credits can be used on this project using a different approach to reframing the edge columns and rebuilding the masonry, while strengthening the existing structure, we disagree that this building is a likely candidate for demolition.

In our opinion, the condition of Building 7 is slightly worse than considered in the BSE report, because of the poor condition of the loadbearing masonry at the north elevation. We concur with the relative rehabilitation costs for the building.

We depart from the BSE cost condition assessment of Building 10, only in the sense that it may make the most economic sense to demolish the existing structure.

The compromised north wall at Building 11 necessitates downgrading its condition from 2.5 to 2.0 in comparison to the BSE report. We recommend that the building remain unoccupied until the north wall is stabilized. Demolition of this structure may be warranted pending further understanding of the roof framing and first floor framing conditions.

As stated in the BSE report, immediate safety concerns need to be addressed, whether as isolated repairs (Building 6A/6B common wall and truss) or comprehensive measures (vacancy of Building 11).

Basis for Cost Opinion Conclusions for Each Building

Building 1 - Erecting Building, c.1918

Relative rehabilitation costs for this structure and building envelope are based primarily upon the fact that the structure is repetitive in construction technique, offset by the likely reconstruction of the front masonry (west) wall. The staging and access cost required to perform clerestory rehabilitation from interior and exterior will be an increasing cost factor in building rehabilitation. A significant amount of steel-framed window glazing would require repair or replacement. Since this is the most recent building in the study, existing steel materials may be of higher quality and some understanding of snow loading requirements was incorporated into the design.

Building 2 – Machine Shop, c.1847

This building, the most structurally complicated and tallest within the buildings studied, would likely cost the most to rehabilitate, but could present the greatest risk/reward. The structure itself will likely take the most time to thoroughly assess from a structural and building envelope standpoint, given the number of changes that occurred over the years and the addition of the third floor. The large wooden windows on the first and second floors would be very labor intensive to rehabilitate, given the large number of individual panes. Third floor windows might not be as expensive to rehabilitate or replace, because they may have been 2:2 light sash, which were common in the early 20th century. A well thought-out temporary shoring plan is necessary to tie the cantilevered third-floor framing further back into the existing building. Third floor cladding, though high up, could be replaced relatively simply. At approximately 45 feet high and three stories, this building will be subjected to the greatest wind and seismic forces of all the buildings studied.

Building 3 – Machine Shop, c.1847

Building 3 is the second most structurally complicated building within the complex, but is not as relatively expensive to rehabilitate as Building 2. The additional floor support structure is less complicated than Building 2, lacking the cantilever framing existing at that neighboring building. The second floor also provides interior access to the much smaller clerestory, facilitating any structural work required there. The smaller overall footprint and lower percentage of glazing helps contain rehabilitation costs.

Building 4 – Foundry, c.1895

The Foundry rehabilitation work likely involves wholesale rethinking of the structure and building envelope along the exterior walls. Structural upgrades and replacement of an existing structural system that was improper for its marine, cold-weather climate may actually simplify the rehabilitation by permitting a complete column removal and replacement with contemporary steel columns, not exposed to the exterior elements. However, this more significant structural change may require the longest lead time to confirm whether the structure and building envelope modifications would be eligible to receive historic tax credits.

Building 6B – Tank Shop, c.1896-1904

Tank Shop rehabilitation is simplified because of its relatively short height, simple gable roof, and relatively small windows. Added longitudinal roof bracing can support the intermediate roof purlins between trusses and stiffen the roof against wind and seismic forces. The low roof height will likely keep the building from experiencing significant wind load increases due to height. Each one of the trusses will require further inspection, nondestructive testing and/or invasive inspection to confirm that end bearing conditions are structurally sound.

Building 7 – Car Shop, c. 1873, 1904

Although the Car Shop is a single-story structure, rehabilitation becomes complicated and more costly due to the overall poor condition and insufficient depth of the roof framing and because of the poor condition of the existing exterior masonry. The existing roof framing has such a low slope that it likely has permanent deflection “set”, which will complicate efforts to strengthen the framing by sistering. Significant roof leaks in the structure have likely rotted sheathing and possibly framing, in more areas than are visible due to penetrating sunlight. The windows are not large or great in area relative to the total façade area, which would diminish the rehabilitation costs somewhat. However, the existing loadbearing masonry would likely require complete rebuilding because it is in such poor condition.

Building 10 – Paint Shop, c. 1873

Originally isolated by the remaining structures for safety purposes, the paint shop stands alone as the most significantly altered structure in the worst overall condition. Building rehabilitation is hard to justify, given the small size and poor condition. Rebuilding the structure to resemble the original during the site's period of significance, in conformance with contemporary codes, would be a more straightforward option, despite the likely required foundation upgrades.

Building 11 – Pattern Storehouse, c. 1885

The Pattern Storehouse carries with it the greatest uncertainty about rehabilitation costs. It is the only building studied that has a wood-framed first floor situated over an earthen crawl space, and it is the only structure that had the majority of its roof framing concealed by ceilings. The low-slope roof, pitching partially toward Building 12, creates drift conditions and roof runoff that are detrimental to both buildings.

Building 14 – Drafting Room and Storehouse, c. 1858-64

Tucked in between buttresses of the Fore Street retaining wall, Building 14, like the Boiler House and Brass Foundry to the immediate north, contains relatively limited floor space in a structure that is practically unique. The existing timber frame purlin and rafter system needs to be carefully assessed near the peak, as that area is vulnerable to condensation and leakage due to snow buildup and insufficient insulation.

Building 15/16 – Boiler House and Brass Foundry c.1858, 1864

We did not enter Building 15, but the visible condition of the second floor framing means the structure would likely need to be rebuilt. Building 16, the Brass Foundry, requires several of the same structural assessments and likely upgrades that Building 14 requires, as well as the rehabilitation of the small south façade.

APPENDIX B
PHOTOGRAPHS

APPENDIX C

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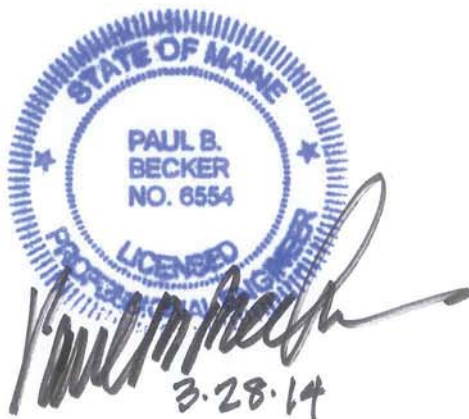
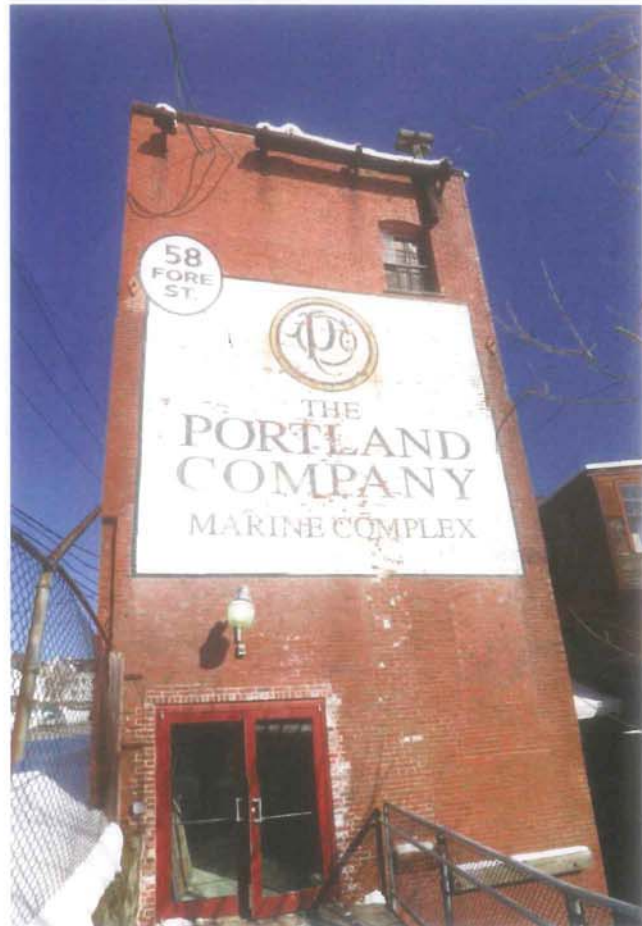
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Evaluation of Existing Buildings
at the
Portland Company Property
58 Fore Street
Portland, Maine

March 28, 2014

Prepared for:
CPB2 Management LLC
Portland Maine



Prepared by:
BECKER
STRUCTURAL ENGINEERS

Evaluation of Existing Buildings at the Portland Company Property
58 Fore Street, Portland, Maine
March 28, 2014

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Book 2

Appendix A – Building Drawings



March 28, 2014

CPB2 Management LLC
P. O. Box 7519
Portland, Maine 04112
Attn: Kevin Costello

The Portland Company
58 Fore Street
Portland, Maine

Dear Kevin:

Per our agreement, Becker Structural Engineers, Inc. performed a review of the buildings associated with the property at the Portland Company complex located at 58 Fore Street in Portland, Maine. We visually reviewed the building exteriors and interior spaces that were reasonably accessible to provide CPB2 with a general understanding of the condition of the existing buildings on the property.

Structural Code Overview

The City of Portland, Maine enforces the Maine Uniform Building and Energy Code (MUBEC) which is an amended version of the 2009 Edition International Code Series prepared and published by the International Code Council (ICC). The International Existing Building Code (IEBC) specifically governs existing construction.

In considering the structural impacts of the redevelopment of the Portland Company property, the chapters of the IEBC discussing Repairs (Chapter 5), Alterations (Chapters 6 to 8), Change of Occupancy (Chapter 9), Additions (Chapter 10), and Historic Buildings (Chapter 11) will need to be addressed if the buildings are to be maintained in the redevelopment plan. Likely impacts of these code sections are discussed below.

Repairs (IEBC Chapter 5)

Due to the observed condition of the buildings at the Portland Company, we anticipate that of repairs will be necessary in all of the buildings. Certain conditions that can be considered dangerous were observed as part of our field investigation, and are detailed later in this report. IEBC requires that dangerous conditions shall be remedied. Repairs are permitted to be made with any material permitted by current code. In most cases repairs are permitted to be made so as to restore the elements to pre-damaged conditions. In the case of substantial structural damage, defined by a 20 percent reduction or greater in critical elements, the repair must meet the requirements of the International Building Code which governs new construction.

Alterations (IBC Chapters 6 to 8)

We anticipate that building alternations may be desired as part of the redevelopment of the Portland Company property. The IBC defines three levels of alteration. Since each redeveloped building will likely encompass a total building work area of more than 50 percent of the building aggregate area, the alterations will be defined as a Level 3 Alteration. Note that the IEBC requirements for alterations are cumulative, and a Level 3 Alteration will be required to meet the requirements of Level 1 & 2 Alterations. Critical components are as follows:

- **New Elements:** New structural elements are required to meet the requirements of the International Building Code governing new construction (reference IEBC Section 707.2).
- **Gravity Modifications:** With some code exceptions, alteration shall not reduce the capacity of the existing load capacity of gravity load carrying elements more than 5 percent of their current capacity and loads shall not be increased by more than 5 percent on existing structure members (reference IEBC 707.4). We anticipate that re-roofing will be necessary and that the addition of insulation will likely be required as part of the State Energy Code. The addition of insulation will increase snow loading on roofs and will require that roofs be analyzed for current snow loads which will likely lead to structural strengthening. In addition, several of the structures have high-low roof conditions which introduce snow drifting from aerodynamic shade. In our experience, building design of this era did not consider these drifting loads and thus we anticipate that roof reinforcing will likely be required in these conditions.
- **Lateral Load Force Resisting System:** The evaluation of the structure for the resistance of wind and seismic loads per the IEBC requires an evaluation of the lateral load resisting system. The level to which the building will require upgrading is determined by the level to which the structure is involved with the alteration. Where more than 30 percent of the total floor and roof area of the building is involved in structural alterations, the altered building must comply with IBC 2009 for wind loads and 75 percent of IBC 2009 for seismic forces. Below the 30 percent structural alteration threshold, the overall system only needs to meet the requirements from the time of original construction, but if alterations increase the stresses by more than 10 percent in a component or element, then the component or element must be upgraded to IBC 2009 wind forces or reduced seismic forces. In general, if wall sections are to be removed or if dead weight is added to the building as part of the redevelopment, the stresses in the existing lateral load resisting system will need to be evaluated. If the resulting stresses as a result of the redevelopment increase by greater than 10 percent then upgrades will be required.

Change of Occupancy (IEBC Chapter 9)

If maintained as part of the redevelopment, the existing buildings at the Portland Company property will be utilized in a different manner than their current use as industrial buildings. The structural portion of the building code defines four occupancy categories, the least stringent being assigned to agricultural and minor storage buildings, and the most stringent being assigned to facilities considered to be essential such as emergency response facilities and hospitals. Based on our code review the current use of these buildings would be assigned to Occupancy Category II which is the default category. We anticipate that the future use of these buildings will be of the same category, and thus the anticipated work will likely not trigger modifications or upgrades per this chapter. The exception would be in the case where a building may be used as an assembly space, education facility or medical facility. In these cases upgrades to the building's lateral load resisting system and roof structure to support snow loadings would be required.

Additions (IEBC Chapter 10)

If additions are part of the redevelopment at the Portland Company, they will be governed by Chapter 10 of the IEBC. Additions must comply with the International Building Code for new construction. If an addition is tied to or built on top of an existing building, then all or a portion of the existing building must meet the requirements of the International Building Code for new



construction. Due to the age and construction of the existing buildings it is unlikely that additions tied to the existing building can be considered without significant structural system upgrades. Thus in our experience it is generally more cost effective to keep additions structurally independent of existing building structures. This would include floor mezzanines within an existing building.

Historic Structures (IEBC Chapter 11)

Understanding the age and history of the buildings at the Portland Company, the provisions of Chapter 11 of the IEBC may apply. Historic buildings must comply with the other sections of the IEBC, except that at the discretion of the local building code official certain exceptions may be permitted. Specifically, a floor not meeting live loading requirements may be accepted provided operational controls are put in place to limit occupancy or access. Additionally, repairs to dangerous conditions may be repaired only such that the specific component or portion need be repaired rather than the entire assembly.

Additional Considerations and Limitations

Our review of the buildings within the Portland Company Complex is limited to the structural systems. Other requirements building code requirements, including but not by limitation, egress, accessibility, flooding, ventilation, fire safety and energy code requirements will need to be addressed as part of redevelopment plans. Also note our review was limited to conditions that were readily visible and accessible. There were spaces that were not safe to access as part of our review. No formal structural analysis was performed as part of this work, and material testing was not performed.

Immediate Safety Concerns

In reviewing the buildings at on the Portland Company property, we identified the following safety concerns:

Building 6A/6B: The east wall of Building 6A is supported by a timber truss at the first floor level. The truss end at the south bearing condition was found to be severely deteriorated and is considered unsafe. Temporary shoring is recommended until such time that permanent repairs can be made.

Building 10: Building 10 exterior masonry walls are severely distress and it unclear if brick wythes are still bonded together. Interior or exterior wall facing could peel off without warning. There is evidence of creep deflection at roof and concerns over ponding roof loads. It is recommended that this building not be occupied.



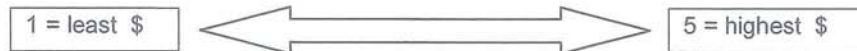
Building Review Notes

The following pages summarize the observed structural condition of the building in the Portland Company complex. To aid the reader we have assigned a number rating between 1 and 5 to each building. The intent is to provide within that number a summary of its structural condition with 1 representing a very poor/unsafe condition and 5 representing a good structural condition. This rating is based on our visual observation and professional opinion of costs to repair, stabilize and remediate the structural issues noted.

A more specific description of the structural rating system is as follows:

1. Very poor/unsafe/demolition likely
2. Very poor/salvageable with significant structural rework and investment/questionable economic viability/consider demolition
3. Poor/requires substantial structural work to elements & systems
4. Fair/requires nominal structural work to elements
5. Good Condition/minor structural work required.

We have also assigned a relative structural renovation cost index to each building in an effort to quantify what a renovation may cost. The cost rating on a similar scale, with 1 representing the least cost to renovate and 5 representing a major reconstruction. Note the cost rating is scaled to the size of the building in addition to the complexity of the repair.



Included on the following pages are high level review notes for the buildings on the Portland Company property. A more detailed review including structural analysis can be completed if requested.

We trust this information meets your needs at this time. If you have any questions, please feel free to contact us at any time.

Sincerely,
BECKER STRUCTURAL ENGINEERS, Inc.

A handwritten signature in black ink, appearing to read "Paul B. Becker".

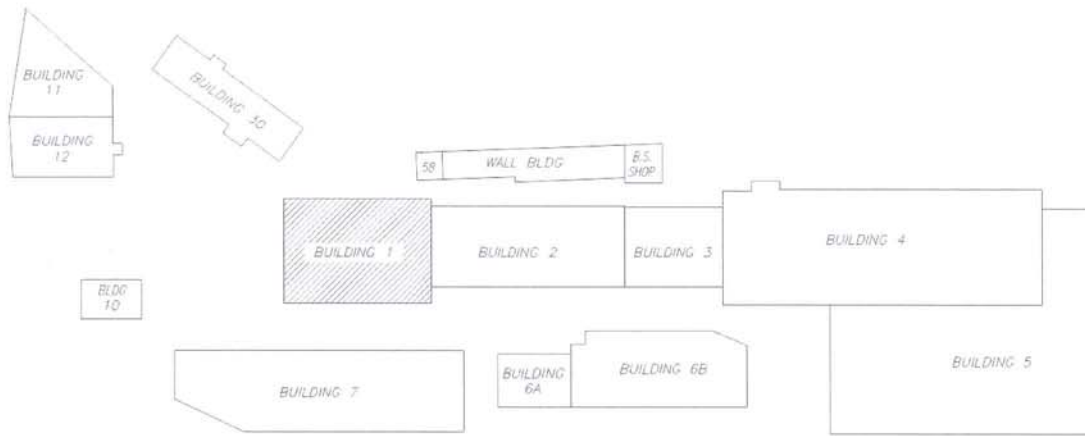
Paul B. Becker, P. E.
President

A handwritten signature in blue ink, appearing to read "Ethan A. Rhile".

Ethan A. Rhile, P. E.
Associate



Building Number: 01



Location Plan

Description, Condition and Assessment:

- Building 1 features a central, longitudinal clerestory high bay space with low “saddle bag” roofs to each side (Photo 1-1).
- The high bay space has bridge crane rails with dual bridge & trolley systems.
- High bay is a steel frame with bridge crane girders at elevation of low “saddle bag” roofs. High bay is framed with clear span steel trusses and decked with wood board sheathing.
- Low roofs are framed with steel beams and girders, and decked with wood board sheathing.
- Low bay exterior walls are multi-wythe unreinforced brick masonry bearing walls.
- The steel frame high roof structure is likely not rated for snow loadings and the low bay roofs are likely not designed for snow drifting due to the high-low roof condition. Both conditions will likely cause overstresses in framing and decks.
- Wood plank roof decking was rotting in several locations, particularly at eaves due to leaking roofs (Photo 1-2). In general, roof appears to have leaks throughout. Wood deck not effective as diaphragm to transfer lateral loads.
- Wooden roof eaves with missing pieces and rot.
- Masonry piers along south elevation had large vertical cracks, likely a result of thermal stresses in the brick and discontinuity of steel lintels. Steel lintel framing over large windows cause disruption of brick piers and cause structural instability of piers with a hinge type condition. Crack allows water infiltration which causes further structural damage (Photo 1-4).
- The lintel flanges exposed over windows at the exterior are rusted with expansion causing rotation and masonry damage.
- Windows are archaic with steel frames, single pane glazing, no thermal break, poor glazing seals, broken panes and corrosion.
- Concrete window sills are spalled and cracked with exposed reinforcing in many locations.
- Many brick masonry joints have missing mortar, particularly at eave drip line below window sills. Moss was noted to be growing in masonry joints at and above the pavement



line. Masonry also has wide spread areas of distress including loose and missing mortar, cracks and spalls. (Photo 1-3)

- South high bay windows have been covered with opaque corrugate panels indicating poor condition.
- South low roof appears to have been overframed to enhance slope.
- Upper roof appears to be an out of date tar and chip roof.
- No definable lateral load resisting system in either principal direction.
 - Limited frame action in high bay of transverse direction. Offset column splices at low/high roof transition and crane girder create a stiffness discontinuity (Photo 1-5).
 - No method to transfer clerestory loads to lower level in longitudinal direction.
 - End wall and side walls have large openings; unreinforced masonry bearing walls known to have poor performance in seismic events.
 - Wood diaphragms likely inadequate to transfer diaphragm shears to exterior walls.

Anticipated Structural Outcomes for Renovation/Restoration:

- Replace roof decking with metal deck along with new roofing and insulation. Establish diaphragm connections to existing walls.
- Reinforce roof to meet snow loading requirements.
- Introduce lateral load resisting system with wall shotcrete or steel frame.
- Repair exterior masonry and rebuild certain areas as required. Extensive rebuilding will be necessary to address cracked masonry pier conditions. Clean masonry.

<i>Structural Condition Rating</i>	<i>2.0</i>
<i>Structural Renovation Cost Rating</i>	<i>4.0</i>

Rating Justification:

All major structural systems are affected in a renovation. Exterior masonry piers have major vertical cracks. Steel lintels create a hinge condition in exterior masonry piers and therefore their stability is questionable. End bay has large masonry openings that are not original to construction and seismic performance of system is very questionable. Rehabilitation of open one story space would have high unit costs considering necessary investment in structure verse net usable space.





Photo 1-1: General View, Building 1



Photo 1-2: Wood deck condition at eave.





Photo 1-3: Building 1 at eave drip line. Note sill condition, window condition, moss and missing mortar.





Photo 1-4: Vertical brick masonry crack at southwest pilaster.

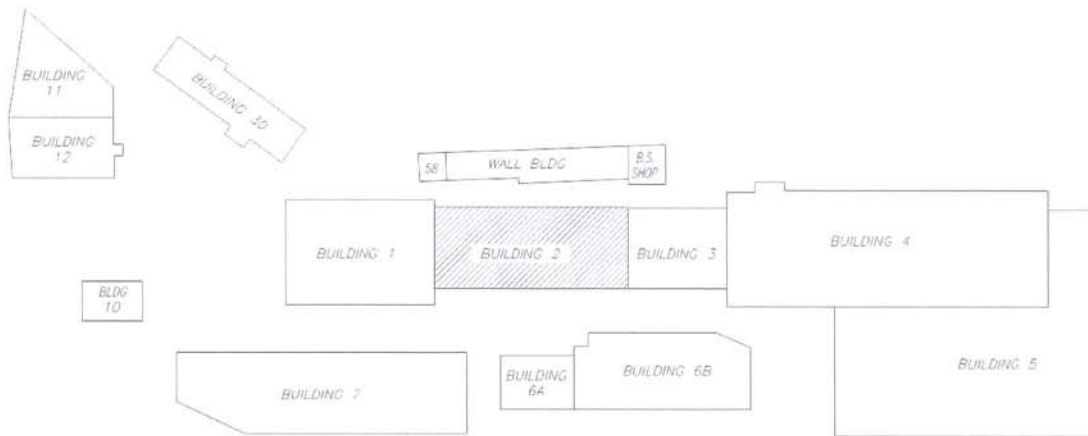




Photo 1-5: Column discontinuity at low-high roof condition.



Building Number: 02



Location Plan

Description, Condition and Assessment:

- Building 2 features open bay ground floor, second floor hung from timber trusses/loft area above (Photo 2-1). Loft area has overhanging shed roof structure that appears to be added after the original construction. Exterior brick masonry walls are load bearing.
- Several timber posts have been added between the ground floor and second floor for supplemental support. Hanger rods from above were removed in several locations and it is likely these posts were provided to supplement the structure (Photo 2-2).
- Second floor and loft show evidence of significant permanent creep deflection.
- Queen and king post trusses rods, steel beams and other methodology have been utilized to supplement the second floor framing in an inconsistent manner (Photo 2-2).
- Modified hangers were noted extending from the loft trusses to the second floor framing.
- At the roof and loft level, charring and fire damage of truss members and wood decking was noted. Several members had substantial charring damage (Photo 2-3).
- Evidence of roof leaking was prevalent.
- At the trusses, broken truss cast iron hanger saddles were noted in several locations (Photo 2-4).
- At the trusses, separation at member compression joints was noted suggesting overstresses and/or broken connection (Photo 2-5).
- A double truss diagonal was replaced with a single, undersized diagonal in one location.
- The roof rafters appeared undersized by current standards.
- The loft overhangs appear to have an insufficient back span on cantilever members.
- Exterior asphalt siding of loft overhangs is in poor condition with large area missing. Windows are covered with plywood panels. Underside of overhang appears to be covered with metal corrugated panels. Some panels appear loose.
- Exterior masonry has open joints and wide spread areas of distress including missing mortar and missing bricks.
- Windows are archaic with wood frame double hung sashes, single pane glazing, no thermal break, and poor glazing seals. Some windows have been replaced.
- Windows in loft area covered with plywood.
- Granite windows sills cracked in several locations.



- Loft level is sided with asphalt shingle siding. Siding in poor condition with pieces falling off.
- No definable lateral load resisting system in either principal direction.
 - Open space with no cross walls in transverse direction.
 - Wood diaphragms likely inadequate to transfer diaphragm shears to exterior walls.

Anticipated Structural Outcomes for Renovation/Restoration:

- Reinforce roof rafters to meet snow loading requirements.
- Reinforce and repair timber roof trusses to address charring, broken and ineffective connections.
- Introduce lateral load resisting system with wall shotcrete or steel frame.
- Reinforce floor sheathing and establish diaphragm connections at second floor and loft level.
- Level and strengthen floors with new vertical load carrying elements and isolated horizontal framing.
- Repair exterior masonry and rebuild certain areas as required. Clean masonry.
- Remove loft cantilevers and restore historic dormer framing and detailing.
- Introduce permanent columns at lower level to relieve truss loads.

Structural Condition Rating	2.5
Structural Renovation Cost Rating	4.5

Rating Justification:

Existing roof trusses have broken hanger connections, separated joints and some fire damage. Hanger rods extending to from the roof to the second floor structure have been removed. Re-establishment of load paths is necessary to correct these conditions and will require extensive rework including the establishment of alternate load paths. Loft overhangs will likely be replaced with dormer to match historic conditions which will require extensive reframing. Exterior masonry is in need of wide repointing. Structural repair/alteration cost is high, but costs are distributed over a large area reducing unit costs. Basic "bones" of building are good. It has a permanent "set" to many floors and framing members, and appears to have been heavily loaded in its lifetime and yet remains structural "significant". There is much to work with.





Photo 2-1: Building 2 exterior south elevation.





Photo 2-2: Interior photo, building 2 taken from the ground floor. Note added posts, king post truss.





Photo 2-3: Charring of truss top chord.



Photo 2-4: Broken truss hanger saddle hanger.

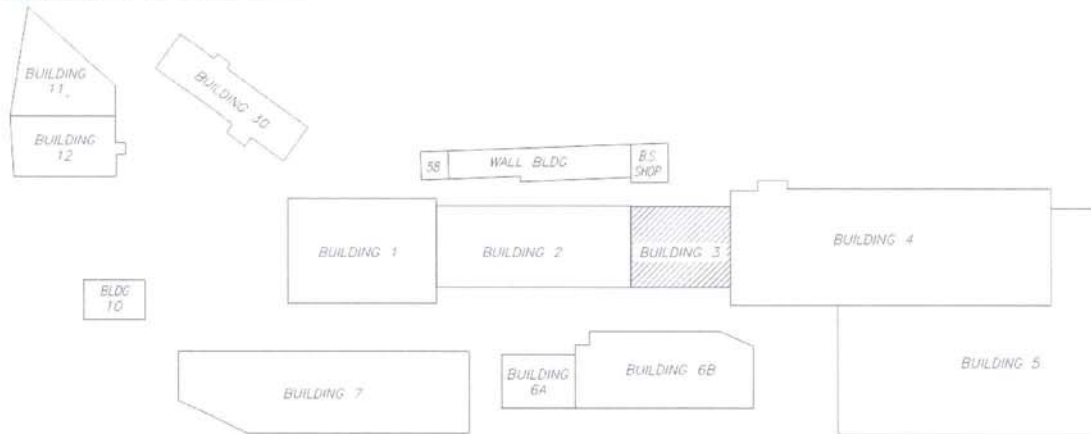




Photo 2-5: Timber truss joint separation.



Building Number: 03



Location Plan

Description, Condition and Assessment:

- Building 3 is two stories with a flat roof with a center bay popup. Second floor is constructed with timber queen post trusses with intermediate timber support posts. Exterior brick masonry walls are load bearing.
- Several timber posts have been added between the ground floor and second floor for supplemental support. Hanger rods from above were removed in some locations and it is likely these posts were provided to supplement the structure (Photo 3-2).
- Second floor show evidence of permanent creep deflection.
- A steel "T" column was added in one location presumably to eliminate an interference. Unbalanced loading on the cantilevered ends of the "T" beam may not be rationally stable (Photo 3-2).
- Evidence of roof leaking was prevalent.
- Shrink wrap covered "shed" area is located on high roof.
- The roof rafters appeared undersized by current standards.
- Wooden arch trim and window trim loose and rotting in several locations.
- Wooden eave trim missing in some locations.
- Exterior masonry has open joints and wide spread areas of distress. We noted vegetation on corbelled bricks, loose bricks, loose and missing mortar.
- Windows are archaic with wood frame double hung, single pane glazing, no thermal break, and poor glazing seals. Some windows have been replaced.
- Exterior unreinforced masonry walls are the lateral system of the building.
 - Open space with no cross walls in transverse direction.
 - unreinforced masonry bearing walls known to have poor performance in seismic events.
 - Wood diaphragms likely inadequate to transfer diaphragm shears to exterior walls.

Anticipated Structural Outcomes for Restoration:

- Reinforce roof rafters to meet snow loading requirements.
- Introduce lateral load resisting system with wall shotcrete or steel frame.



- Reinforce floor sheathing and establish diaphragm connections at second floor and loft level.
- Level and strengthen floors with new vertical load carrying elements and isolated horizontal framing.
- Repair exterior masonry and rebuild certain areas as required. Clean masonry.

<i>Structural Condition Rating</i>	<i>3.0</i>
<i>Structural Renovation Cost Rating</i>	<i>3.0</i>

Rating Justification:

Leveling and strengthening of floors will require extensive re-work of floor framing. Roof framing will require reinforcing throughout the roof for strengthening to meet IBC snow loading requirements. Exterior masonry is in need of wide spread repointing/repair. Building has no "deal breakers".



Photo 3-1: Exterior view of Building 3

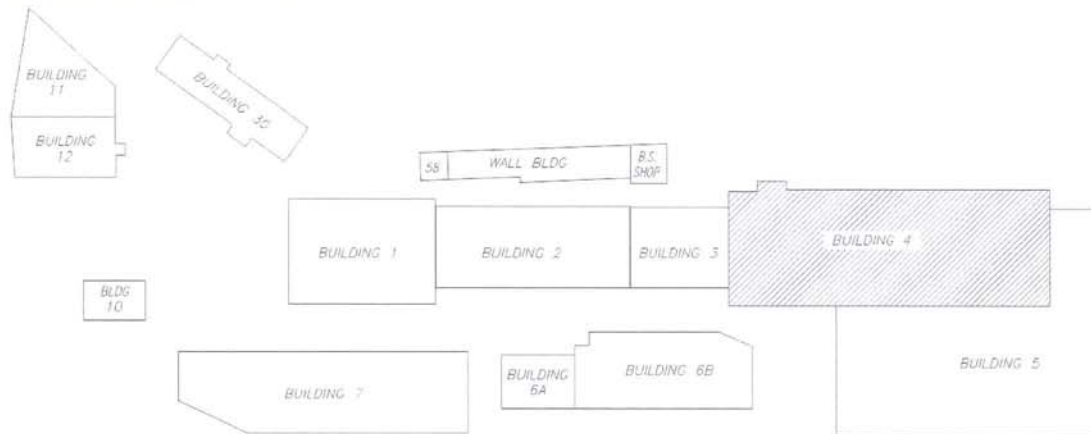




Photo 3-2: Interior view of Building 3. Note supplemental post, "T" column, queen post trusses.



Building Number: 04



Location Plan

Description, Condition and Assessment:

- Building 4 features a central, longitudinal double clerestory high bay space with low “saddle bag” roofs to each side [configuration similar to building 1] (Photo 4-1 & 4-2).
- The high bay space has bridge crane.
- High bay is a steel frame with bridge crane girders at elevation of low roofs. High bay is framed with clear span steel trusses and decked with wood board sheathing (Photo 4-3).
- Low roofs are framed with steel trusses, and decked with wood board sheathing.
- Exterior lattice steel columns were intended to support low roofs at exterior brick walls. In most instances, the steel lattice columns are corroded at ground level to the point that the columns are no longer effective and the only remaining support is the exterior masonry wall (Photos 4-4 & 4-5). Relying on a secondary load such as these unreinforced brick infill walls is not structural sound. Shoring of building exterior steel frame where columns are deteriorated is advised.
- Low bay exterior walls are multi-wythe unreinforced brick masonry, originally intended as non-loadbearing infill between steel columns.
- The steel frame high roof structure is likely not rated for snow loadings and the low bay roofs are likely not designed for snow drifting due to the high-low roof condition. Both conditions will likely cause overstresses in framing and decks.
- Wood plank roof decking was rotting in several locations, particularly at eaves due to leaking roofs (Photo 4-2). In general, roof appears to have leaks throughout. Wood deck not effective diaphragm to transfer lateral loads.
- Wood window trim with missing and rotten pieces.
- Siding at high bay area covered with an asphalt roofing material appears in poor condition.
- Windows are archaic with wood frames, single pane glazing, no thermal break, and poor glazing seals.
- Wood window sills rotting and in poor condition.
- Concrete window sills are spalled and cracked in many locations.
- Masonry also has wide spread areas of distress. Many open joints, spalls and cracked bricks and diagonal cracking are noted, particularly at base of building (Photo 4-5).
- No definable lateral load resisting system in either principal direction.



- Limited frame action in high bay of transverse direction. Compromised exterior columns render frame action ineffective.
- Trussing of clerestory in longitudinal direction provides method of transferring high roof shears to low roof. Resolution of this shear to the exterior masonry walls would require transfer across wood, board sheathed diaphragm and this diaphragm is likely ineffective.

Anticipated Structural Outcomes for Restoration:

- Lattice columns are compromised and will require complete replacement if structure is to be maintained. Replacement would require substantial reconfiguration of exterior wall system in order to remove and replace existing columns.
- Replace roof decking with metal deck along with new roofing and insulation. Establish diaphragm connections to existing walls.
- Reinforce roof to meet snow loading requirements.
- Introduce lateral load resisting system with wall shotcrete or steel frame.
- Repair exterior masonry and rebuild certain areas as required. Extensive rebuilding will be necessary to address deteriorated steel columns. Clean masonry.

<i>Structural Condition Rating</i>	<i>1.5</i>
<i>Structural Renovation Cost Rating</i>	<i>4.5</i>

Rating Justification:

In order to repair exterior severely corroded columns embedded in exterior masonry walls, the entire exterior masonry façade will need to be deconstructed, the columns repaired and the exterior masonry reconstructed. Many of the original relic bricks will likely be destroyed in this process. If original foundation is to be reutilized, façade will need to be reconfigured to protect columns from corrosion. Given the large open volume of this building, the required structural repairs identified in the above sections have a high unit cost.





Photo 4-1: Exterior of Building 4. Note a majority of the south and east faces of the building are wrapped by Building 5.



Photo 4-2: Exterior of Building 4, North Side.





Photo 4-3: View of Building 4 interior looking east. Note plastic leak catch.





Photo 4-4: Column at exterior wall embedded in masonry. Note column section completely deteriorated.

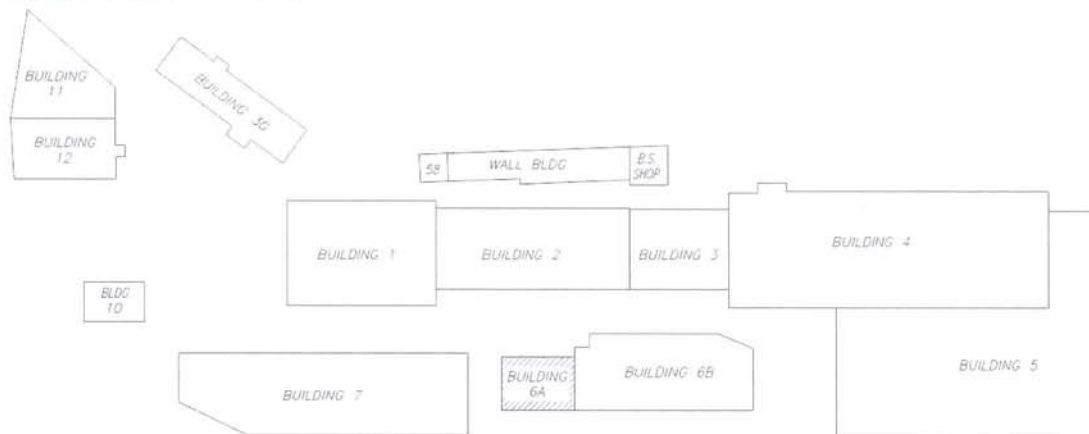




Photo 4-5: Column at exterior wall embedded in masonry. Note column section completely deteriorated. Also note open masonry joints, cracked bricks.



Building Number: 6A



Location Plan

Description, Condition and Assessment:

- Building 6A is a 3-story building with centerline timber beam and column line supporting rough sawn floor and roof joists. Exterior walls are load bearing multiwythe brick masonry. Note first floor open space that is part of Building 6B extends below building 6A (Photo 6A-1).
- Floors have slope to center beam bearing line. It is suspected that the center bearing line has either settled or timber column bases have deteriorated (Photo 6A-2). Timber column bases were surrounded by a concrete slab-on-grade and could not be observed.
- The east wall of Building 6A is supported by a timber truss at the first floor level. The truss end at the south bearing condition was found to be severely deteriorated and is considered unsafe. Temporary shoring is recommended until such time that permanent repairs can be made.
- Several floor joists have longitudinal splitting and may have been overstressed (Photo 6A-3 & 4).
- Visual evidence of prior leaking was visible at the roof level, but leaks did not appear to be active (Photo 6A-5).
- Some roof rafters appeared to be out of plumb. Stabilization means to prevent rotation such as wood blocking was not present (Photo 6A-5).
- Masonry also has wide spread areas of distress. Areas of missing mortar, areas of bulging noted. Southeast corner appears to have been repaired from either a drainage issue or a vehicle impact. Open joints noted in various locations particularly at window heads. Spalled bricks were noted. Moss was noted to be growing in masonry joints at and above the pavement line (Photo 6A-6).
- Rotting wood noted at window sills and at roof eaves (6A-6).
- First and third floor windows constructed of wood and are in poor conditions. Replacement windows noted at second floor.
- Elevator shaft present, but elevator removed.
- Lateral Load Resisting System relies on un-reinforced exterior masonry walls.
 - Unreinforced masonry bearing walls known to have poor performance in seismic events.



- The east wall of building 6A appears to be wood framed and bears on a truss above the first floor level and does not extend to the ground floor. This results in a stiffness discontinuity for the lateral force resisting system which may amplify seismic loads in other portions of the system.

Anticipated Structural Outcomes for Restoration:

- Center bearing foundations may require rework; additional investigation will be required to understand cause of column settlement.
- Lateral load resisting system will require retrofit to address stiffness discontinuity. Introduce lateral load resisting system with wall shotcrete or steel frame.
- Repair exterior masonry including repointing, rebuilding bulged areas, cleaning.
- Replace first and third floor windows.
- Replace wood elements and repaint.

<i>Structural Condition Rating</i>	3.5
<i>Structural Renovation Cost Rating</i>	3.0

Rating Justification:

Basic building structure was well built and is in fair condition. Building masonry will require repairs and rebuilding in several locations, but extent is limited. Upgrades in roof insulation will likely require an upgrade of the roof structure to support additional snow load, but this is very accessible and of limited area. Unsafe condition of building east wall/truss will require shoring and repair. Foundation work inside an existing building, if required, will add to cost. An elevator may need to be added and shaft may need to be expanded to support elevator of sufficient size per current IBC and Maine State requirements. Nature of upgrades is not daunting.





Photo 6A-1: Building 6A exterior view.



Photo 6A-2: General view of center bearing line of Building 6A at second floor level.





Photo 6A-3: Floor joist splitting.





Photo 6A-4: Floor joist splitting.



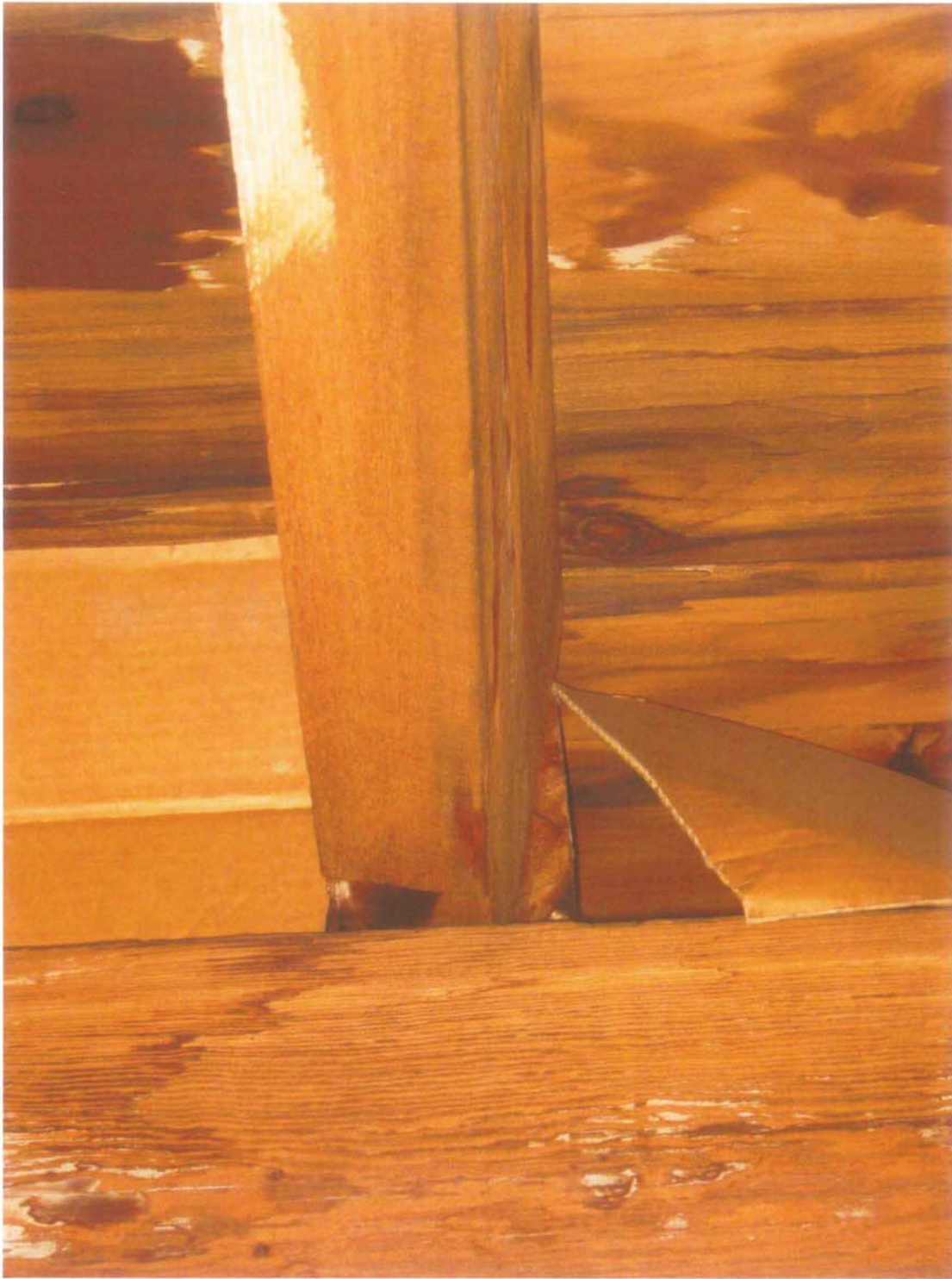


Photo 6A-5: Rotated roof rafter and evidence of prior leaking.

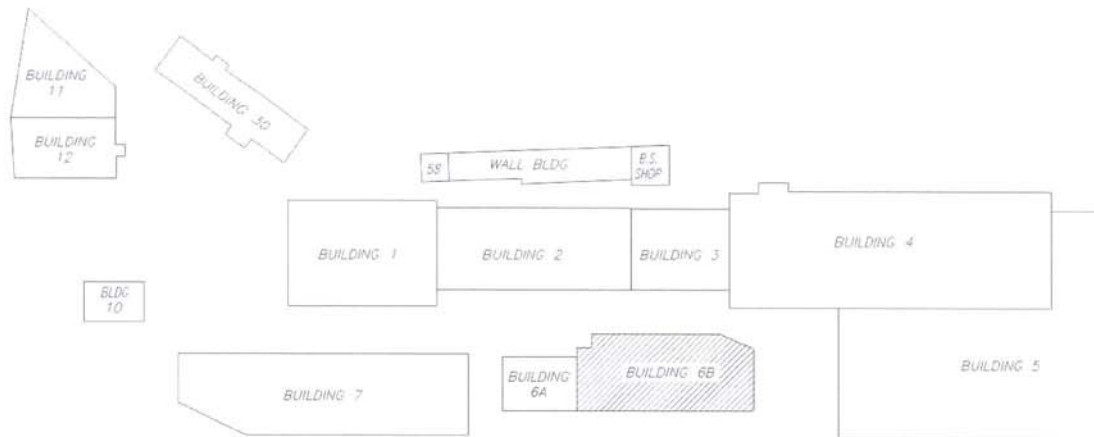




Photo 6A-6: Moss, spalled bricks, open masonry joints and rotting wood sill at Building 6A.



Building Number: 6B



Location Plan

Description, Condition and Assessment:

- Building 6B is a 1-story building with timber gable roof trusses spanning the space. The open floor space extends under building 6A.
- The east wall of Building 6A (visible in 6B space) is supported by a timber truss at the first floor level. The truss end at the south bearing condition was found to be severely deteriorated and is considered unsafe. Temporary shoring is recommended until such time that permanent repairs can be made.
- Roof rafters supported by truss/purlin system appear undersized for snow load.
- Roof trusses appear well built but are likely not designed for current snow loads.
- Visual evidence of prior leaking was visible at the roof level, but leaks did not appear to be active (Photo 6A-5).
- Masonry also has wide spread areas of distress. Areas of missing mortar noted.
- Wood eave trim in poor condition and peeling off the building.
- Several windows are covered with asphalt roofing material. Remaining wood windows are in good to fair condition.
- Lateral Load Resisting System relies on un-reinforced exterior masonry walls.
 - Unreinforced masonry bearing walls known to have poor performance in seismic events.
 - The east wall of building 6A appears to be wood framed and bears on a truss above the first floor level and does not extend to the ground floor. This results in a stiffness discontinuity for the lateral force resisting system which may amplify seismic loads in other portions of the system.
 - Wood diaphragms likely inadequate to transfer diaphragm shears to exterior walls.



Anticipated Structural Outcomes for Renovation/Restoration:

- Repair timber roof truss supporting the exterior wall of Building 6A.
- Lateral load resisting system will require retrofit to address stiffness discontinuity. Introduce lateral load resisting system with wall shotcrete or steel frame.
- Repair exterior masonry including repointing, cleaning.
- Reinforce existing roof rafters and existing wood trusses.
- Replace wood elements and repaint.

<i>Structural Condition Rating</i>	<i>3.0</i>
<i>Structural Renovation Cost Rating</i>	<i>3.5</i>

Rating Justification:

Building masonry will require repairs and rebuilding in many locations. Upgrades in roof insulation will likely require an upgrade of the roof structure, including roof rafters and timber trusses to support additional snow load. Truss upgrades may be costly. Unsafe condition of truss supporting Building 6A will require shoring and repair.





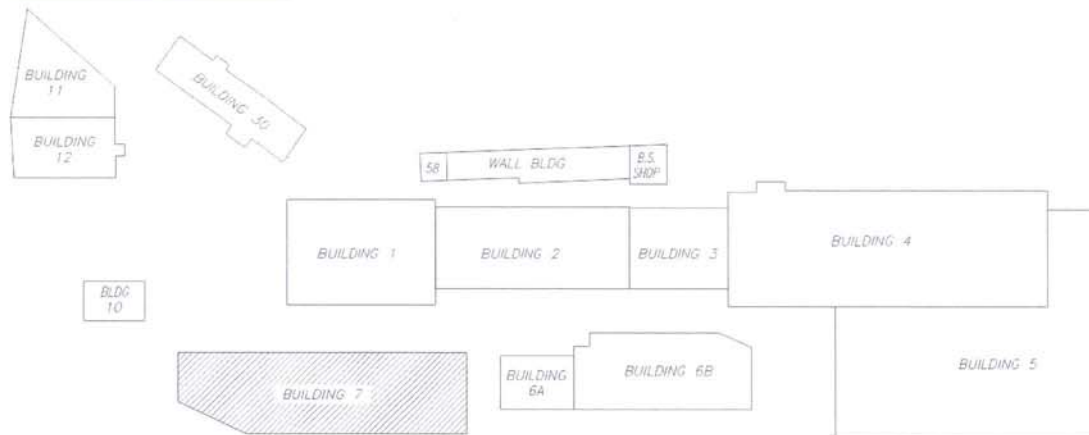
Photo 6B-1: Buildings 6A (left) and 6B (right).



Photo 6B-2: Failed (deteriorated) end of timber truss supporting exterior wall of Building 6A.



Building Number: 7



Location Plan

Description, Condition and Assessment:

- Building 7 is a 1-story building flat roof building with an addition at the west end, south side.
- Roof is wood framed. Roof framing is undersized. Portions of roof have been covered with bituthane and appear to be in poor condition. Roof has many leaks causing deterioration of wood. Daylight visible through roof in at least one condition.
- A small portion of the roof was repaired from a previous failure.
- Eaves appear to be in poor condition with rotting and loose wood, and loose flashing.
- Exterior brick masonry south wall has significant sweep to the north.
- Windows appear to be original wood windows, appear to be in poor condition with missing panes, covered in rigid insulation in many areas.
- Brick masonry has bulging, numerous open joints, spalled bricks and cracking at steel lintels.
- Wood frame shed in the southeast portion of the building is in poor condition with roof sagging and uneven/bowed walls.

Anticipated Structural Outcomes for Renovation/Restoration:

- Reinforce or replace all roof framing
- Repair all column rot.
- Replace/repair/patch/overlay existing wood decking.
- Reconstruct, repair and strengthen masonry bearing walls.
- Remove existing wood framed shed.

Structural Condition Rating	2.0
Structural Renovation Cost Rating	5.0



Rating Justification:

Building masonry walls are in poor condition and in most cases will require rebuilding with new bearing structure meeting current IBC code requirements. Foundation condition is unknown and may require upgrade to current IBC code requirements as a result of reconstruction. Roof framing is in poor condition and extensive replacement would be necessary. Exterior masonry walls require strengthening with any renovation. Essentially rebuilding entire framings system and lateral system.





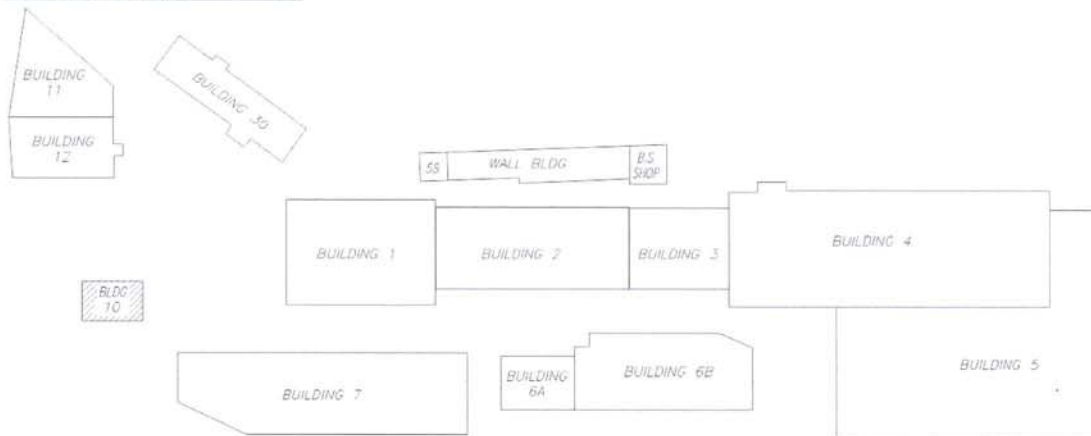
Photo 7-1: South elevation of Building 7.



Photo 7-2: North elevation of Building 7.



Building Number: 10



Location Plan

Description, Condition and Assessment:

- Building 10 is a 1-story building flat roof building.
- Based on operations we did not enter this building.
- Roof is presumed to be wood framed. From exterior the roof appears to be sagging.
- Eaves appear to be in poor condition with rotting and loose wood, and loose flashing.
- Exterior brick masonry walls have sweep, large bows and evidence of settlement, numerous open joints, repairs without toothing, loose and spalled bricks.
- A majority of the original brick masonry window openings have been filled with brick or wood infill panels.
- Windows appear to be original wood windows, appear to be in poor condition.
- Building 10 exterior masonry walls are severely distress and it unclear if brick wythes are still bonded together. Interior or exterior wall facing could peel off without warning. Evidence of creep deflection at roof and concerns over ponding roof loads. It is recommended that this building not be occupied

Anticipated Structural Outcomes for Renovation/Restoration:

- Reconstruct and repair masonry bearing walls
- Reinforce or reconstruct all roof framing
- Replace/repair/patch/overlay existing wood decking.

<i>Structural Condition Rating</i>	<i>1.0</i>
<i>Structural Renovation Cost Rating</i>	<i>4.5</i>

Rating Justification:

Building masonry walls are in poor condition and in most cases will require rebuilding with new bearing structure meeting current IBC code requirements. Foundation condition is unknown and may require upgrade to current IBC code requirements as a result of reconstruction. Roof framing is in poor condition and extensive or complete replacement would be necessary.



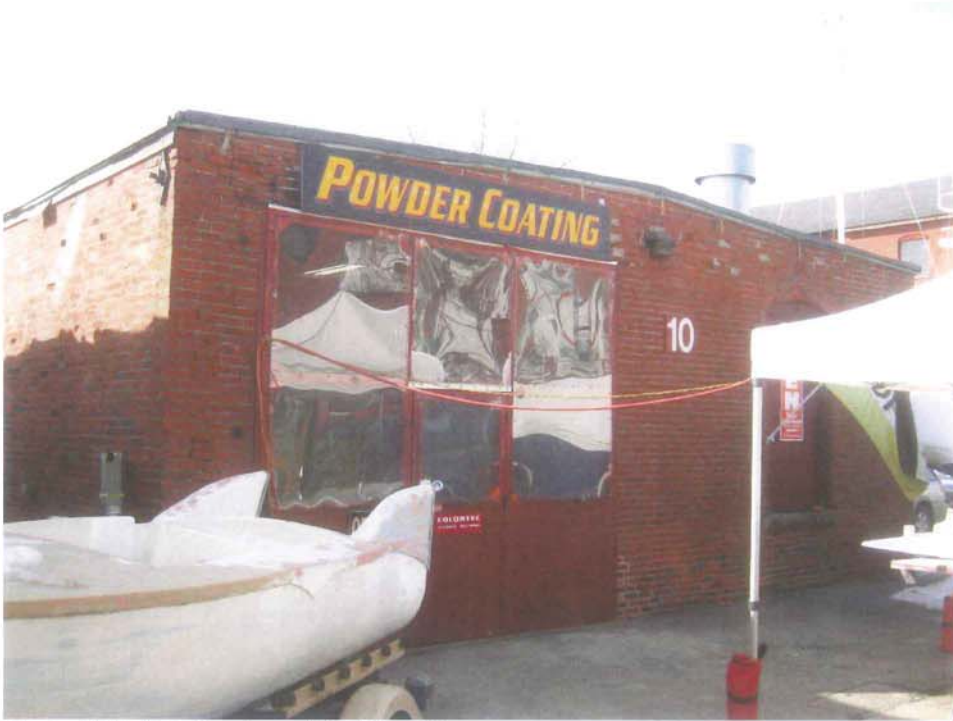


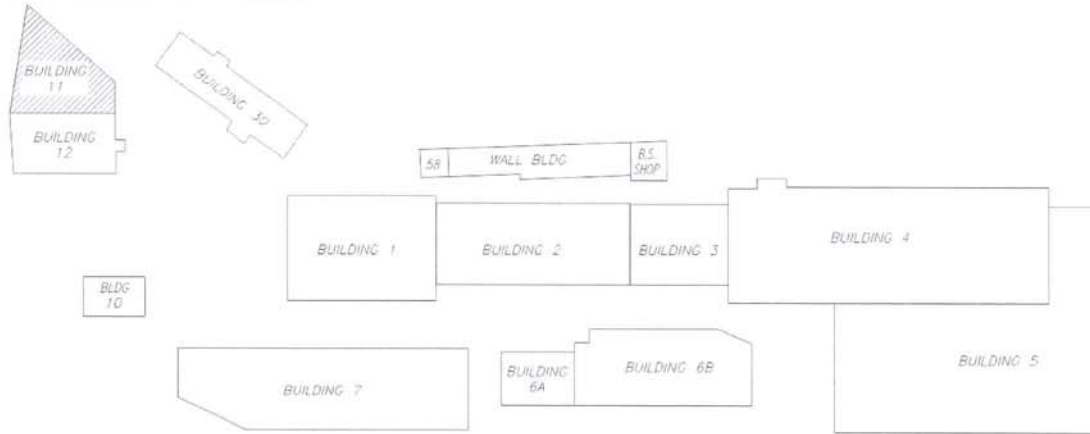
Photo 10-1: Exterior view of Building 10.



Photo 10-2: Exterior view of Building 10.



Building Number: 11



Location Plan

Description, Condition and Assessment:

- Building 11 story is a two story building with a shallow pitch roof (Photos 11-1 & 2).
- South half of roof pitches into wall of building 12 and is a poor drainage condition. Building 12 roof also drains into the same area. The resulting drain water runs down the back wall of the building. It is evident that the masonry in this area has been repaired previously. The wall is stained and continues to suffer damage from water (Photo 11-2).
- Roof is likely not designed for sliding and drifting snow coming from adjacent Building 12 pitched roof.
- The exterior ground floor wall to north is retaining an embankment and is severely bowed inward from the window sill line up (Photo 11-3). Window wells in this area provide avenue for water entry (Photo 11-4).
- The ground floor dips suggesting there may be deterioration of wood joists and sills below the floor, similar to Building 12. The floor has been decked over with plywood and painted so examination of columns and framing was not possible.
- Second floor framing is rough saw wood joist framing with timber beams and posts. Beam checking was noted, perhaps due to drying from unit heaters.
- Roof framed utilizing timber girders supporting rough sawn wood joists and decking. Acoustic ceiling conceals roof framing; catch buckets were spread throughout and staining indicates roof actively leaks (Photo 11-5).
- Roof framing utilizes stacked system to create pitch. There is no bracing present to stabilize stacked wood and prevent roll-over (Photo 11-5).
- Tar and chip roof system is beyond design life and leaks.
- Lap jointed framing showed cracking extending from tension corner.
- Exterior brick masonry bearing walls show distress over windows, wide spread open joints. Open joints at eave noted and some small areas of bulging. Open joints noted at drip lines.
- Corroded steel lintels.
- West elevation wall is swept inward to the east. East wall also noted as swept.
- Bow noted over main entry.



<i>Structural Condition Rating</i>	<i>2.5</i>
<i>Structural Renovation Cost Rating</i>	<i>4.5</i>

Rating Justification: Exterior grade retained by north wall has created severe bow in exterior wall. Fore Street right-of-way is well established and unlikely to be modified, and therefore retaining condition will remain. Roof pitching toward Building 12 with drainage water running down the west wall constantly jeopardizes the envelope of Building 12. Roof framing is undersized. Repitching roof would require complete upgrade to address drifting and sliding snow from adjacent Building 12 Roof.





Photo 11-1: Buildings 11 (right) and 12 (left) looking at southeast corner.



Photo 11-2: West elevation of Building 11. Note drainage condition where building 11 meets building 12.





Photo 11-3: Bowed north wall retaining embankment (lines added for emphasis).





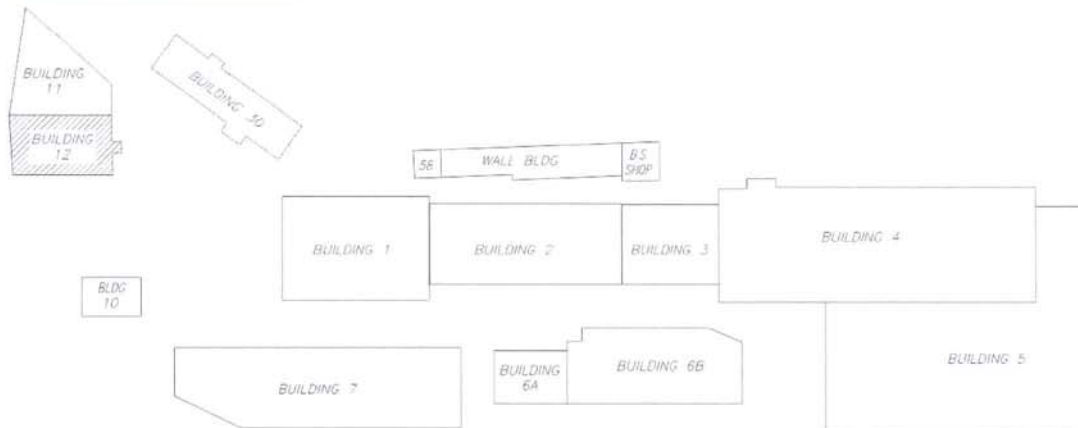
Photo 11-4: Window wells and embankment at north wall.



Photo 11-5: Stacked framing system for Building 11 roof. Note leak catch bucket behind column.



Building Number: 12



Location Plan

Description, Condition and Assessment:

- Building 12 story is a three story building with gable roof and mezzanine space in gable.
- Slate roof materials are loose and missing in many locations, particularly at corners. North half of gable drains onto the roof of Building 11. Wood roof eave trim rotten loose or missing in several locations (Photo 12-2). Some rafter tails appear rotten in some locations. Daylight visible through roof on the east side and rotten sheathing noted in many locations. Roof rafter framing appeared undersized.
- Roof has sag along the longitudinal axis.
- Third floor deck and joists rotten in areas below leaking roofs.
- The ground floor dips to the center. Wood sills bearing on grade and columns bearing on grade were observed to be rotten. In one location the post supporting from the structure above was actually hanging from the floor beam due to the deterioration of the column base (Photo 12-4).
- Note that foundation drains are visible along the west side of the building and that wall appears to be in a low spot. It is likely that the ground floor wood sills and wooden column bases are frequently exposed to wetting.
- Second floor framing is rough saw wood joist framing with timber beams and posts. In general, framing appeared to be in good condition with framing practices consistent of the period. A joist at the northwest corner of the building had the end completely rotted off, possibly from a roof leak running down the face of the wall.
- Separation was noted at the diagonal beam supports at the columns extending from the first to second floor.
- Exterior brick masonry bearing walls show distress and are in fair condition- Distress noted included:
 - Arching & diagonal cracks over windows that extend through the entire width of the masonry (Photo 12-5).
 - Open joints in many locations.
 - Bulging in some locations.
 - Rust jacking at steel lintel on the east side.
 - Walls bowed inward on south and west elevations.



- Evidence of previous shed roof removal- Bulging and slip plane from flashing left in place.
- Entry shed masonry in poor condition.
- Open joints noted in west gable (east gable appears to have been repointed).
- Wooden lintels noted at interior rotting and sagging.
- Wooden window and sills in poor condition with broken and missing panes, rotting wood (Photo 12-1, 2 & 5).

Structural Condition Rating	3.0
Structural Renovation Cost Rating	4.0

Rating Justification: The roof of building 12 is in poor condition and has been letting water into the building for an extended duration. Roof, upper floor and columns of building will require repairs or reconstruction. Masonry damage is significant and portions of masonry walls will need to be rebuilt. Building is located at a low point on the site and drainage condition at crawlspace will need to be resolved. Despite issues, structural "bones" of building are substantial and it was well constructed in its day.

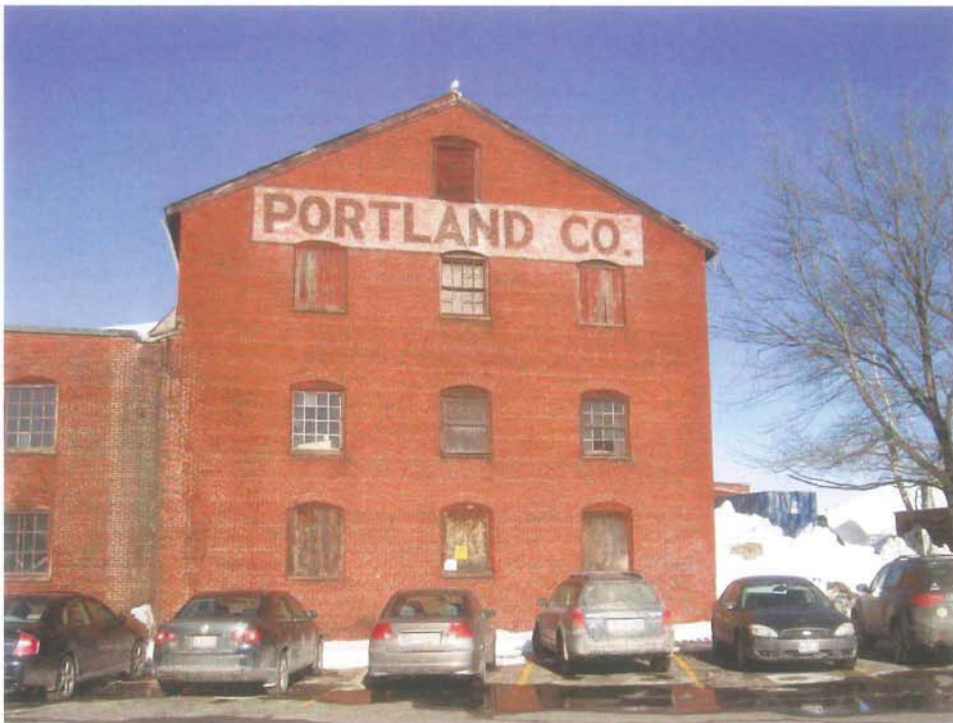


Photo 12-1: West elevation of building 12. Note windows with missing and broken panes, loose slates at eaves.





Photo 12-2: Eave with loose slates, missing eave trim, masonry cracking and broken windows.



Photo 12-3: Daylight visible at through roof sheathing. Condition is at both ends of roof.





Photo 12-4: Rotting column bottom, floor joists and sills at ground floor.

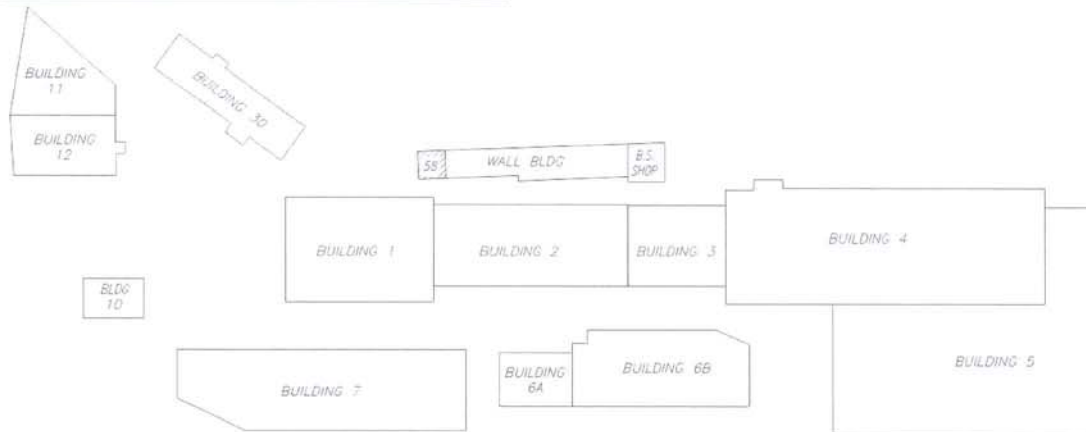




Photo 12-5: Diagonal masonry cracking over window opening, open joints, rotting window sill.



Building Number: 58 Fore Vault/Tower



Location Plan

Description, Condition and Assessment:

- Brick masonry vault tower structure with concrete and steel beam floors. Upper floor was inaccessible due to poor condition of connecting bridge.
- Interior walls were wet and growing moss indicating substantial water penetration or condensation within space.
- Rust flaking where steel beams entered wall may indicate damage to beam end at penetration.
- Exterior brick masonry had joints missing mortar, missing bricks, staining.
- Roof not reviewed.
- Windows broken with missing panes.

Anticipated Structural Outcomes for Restoration:

- Exterior masonry repointing, replacement of bricks and small areas of rebuild. Clean all brick surfaces and apply breathable masonry sealer.
- Remove brick around beams ends, repair beams end and rebuild brick.
- Seismic upgrade may be necessary depending on final use.
- Roof condition unknown, but based on condition of roofs on other buildings in complex, assume roof may be leaking.

<i>Structural Condition Rating</i>	3.5
<i>Structural Renovation Cost Rating</i>	2.5

Rating Justification: Moisture transmission through masonry must be stopped to prevent further degradation of this structure. In order to do so, exterior masonry walls will need to be repaired and repointed, and a breathable sealant applied to the building. Air exchanges and ventilation must be provided on the interior to help dry the structure. Steel beam ends may be compromised requiring repairs. Extensive shoring will be required to repair beam ends.





Photo 58-1: 58 Fore Street Vault/Tower structure viewed from Fore Street.





Photo 58-1: Moss growing on interior walls.





Photo 58-3: Beam end condition with flaking rust.



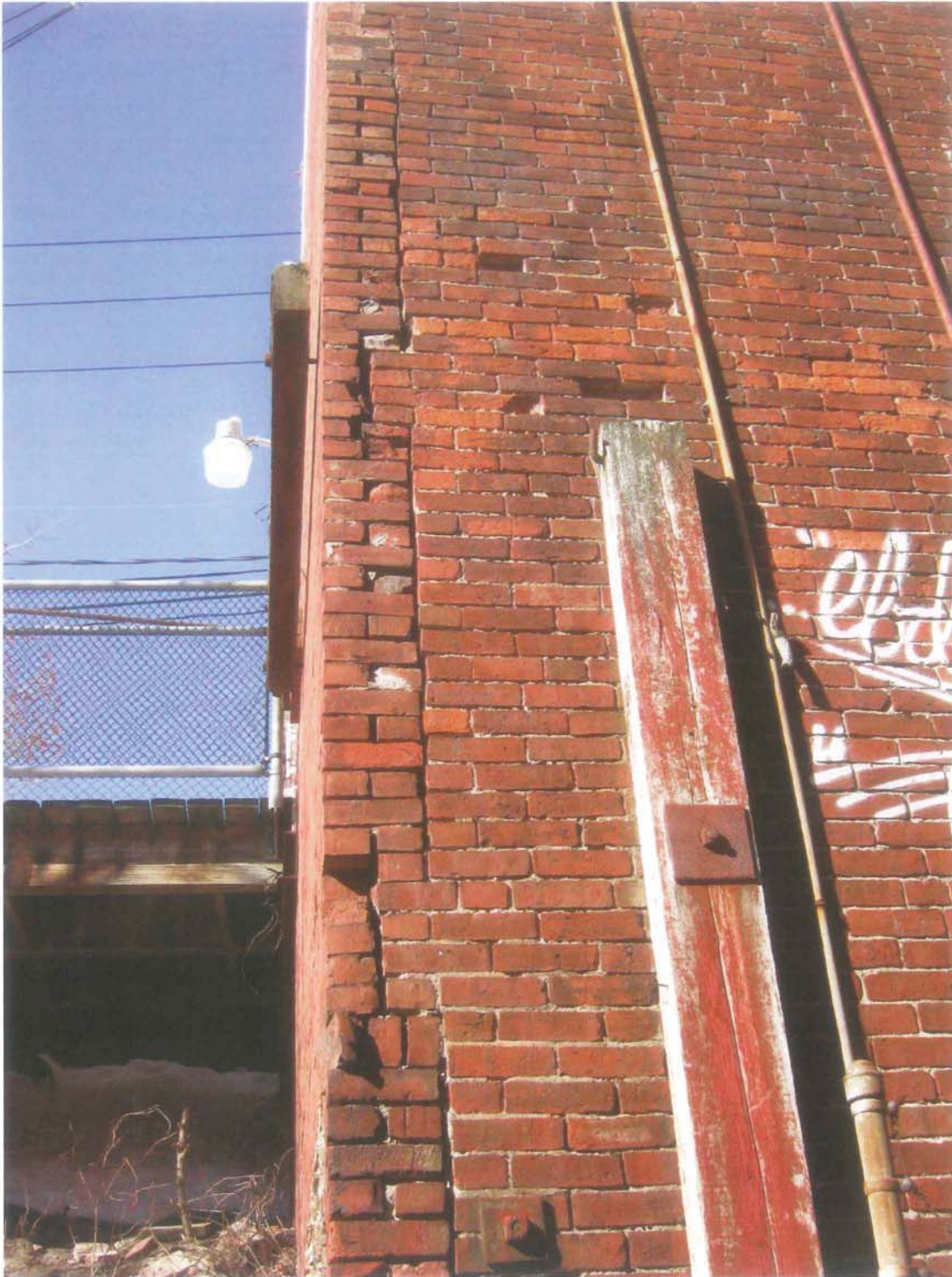
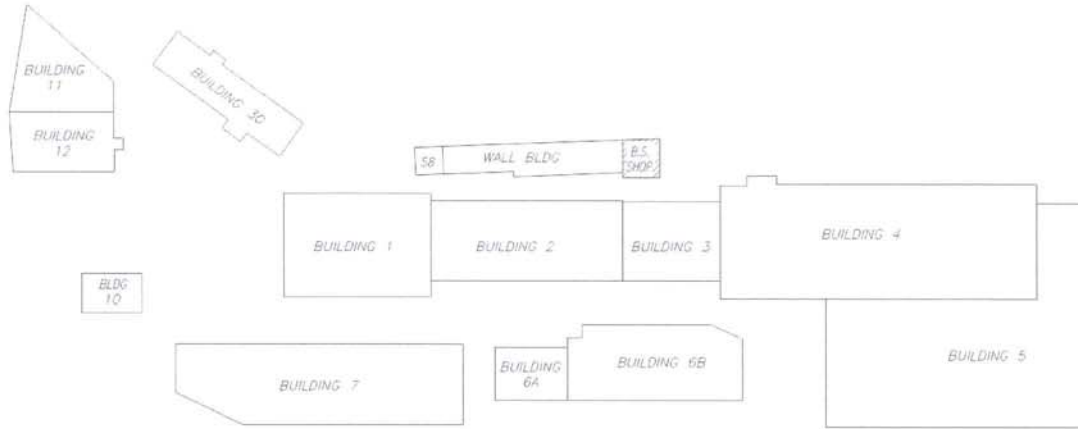


Photo 58-4: Open joints and missing bricks at the corner of the vault/tower.



Building Number: Blacksmith Shop (Building 16)



Location Plan

Description, Condition and Assessment:

- Wood rafter framed roof, back wall and side walls are stone retaining wall for embankment, brick masonry front wall (Photo 16-1).
- Fore Street stone retaining wall at is dry stacked. It was apparent that water travels through the wall.
- North stone walls may be buttressing Fore Street retaining wall.
- Brick masonry had numerous open joints, missing bricks, bulging and moss growth near drip line.
- East side stone wall butts brick masonry front wall to the south; condition is poorly bonded with an open joint.
- Roof rafters appeared to be in good condition, but daylight was visible through roof around chimney penetration.
- Roof eave has been redecked with OSB at eave; roof is covered with shrink wrap.
- Entry did not meet code due to door height.
- Wood windows have broken panes and missing sashes.
- No eave board, building generally not weather tight.
- It is believed that groundwater penetrates this building through the retaining wall.

Anticipated Structural Outcomes for Restoration:

- Repair exterior masonry including extensive repointing and rebuilding to creating contiguous wall conditions.
- Replace windows.
- Create accessible entrance and incorporate 2 means of egress.
- Roof reinforcing to support snow load of properly insulated roof.

<i>Structural Condition Rating</i>	<i>1.5</i>
<i>Structural Renovation Cost Rating</i>	<i>3.0</i>



Rating Justification:

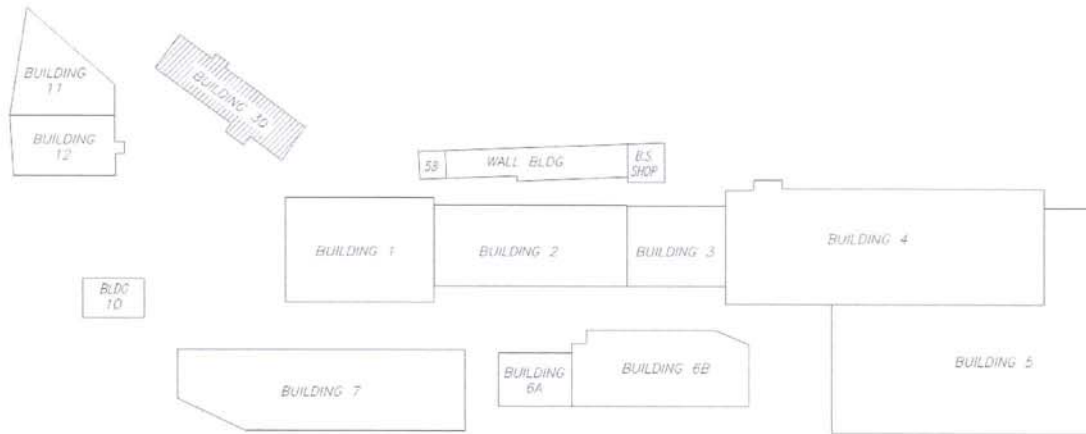
Building currently is not weather tight and extensive work will be necessary address this condition. Entry conditions will need to be brought up to current code for fire and egress compliance. Roof likely not framed to address drifted snow from adjacent high roof/street and will require reinforcement.



Photo 16-1: Exterior view of blacksmith shop/Building 16.



Building Number: 30



Location Plan

Description, Condition and Assessment:

- Building 30 is a two story building with a third story roof pop up area to the east.
- Review as limited- Hard ceilings were in place at time of review and spaces were occupied.
- Peeling paint was noted particularly at the high roof eave (Photo 30-2).
- Siding was uneven and may suggest underlying issues (Photo 30-2).
- Evidence of leaking was noted in several locations on the fixed ceiling adjacent to the southwest wall (Photo 30-3).
- On the south face open joints were noted with horizontal steel protruding. The steel was corroded. Other open joints and missing bricks were noted.
- Window lintels were rusted with mortar separation from the horizontal leg.
- Building exterior sealants are past design life.
- Downspout were leaking and frozen.
- Entry step heights do not meet code requirements.

Anticipated Structural Outcomes for Restoration:

- Repaint existing building.
- Repair exposed lintel conditions with replacement, hot dipped galvanized steel lintels.
- Consider residing and updating air vapor barrier systems.
- Isolate leaking and repair condition with flashing, replacement siding and/or masonry sealing.
- Replace building sealants

Structural Condition Rating	5.0
Structural Renovation Cost Rating	1.0

Rating Justification:

Building is considerably more modern than other structures reviewed on property; majority of repairs will be cosmetic or performed to improve energy efficiency/weather tightening.





Photo 30-1: Southwest elevation of building 30.



Photo 30-2: Peeling paint at roof eave, uneven siding.





Photo 30-3: Leaking noted at ceiling adjacent to southwest wall.



Photo 30-4: Mortar falling from joint with steel protruding; corroded steel lintel and broken mortar adhesion.



End of Book 1



BECKER
STRUCTURAL ENGINEERS

APPENDIX A

**RELATIVE STRUCTURAL CONDITION AND
RELATIVE REHABILITATION COSTS
RESURGENCE ENGINEERING AND
BECKER STRUCTURAL ENGINEERS**

APPENDIX A
PORTLAND COMPANY COMPLEX – MARCH 2015
RELATIVE CONDITION AND REHABILITATION COST COMPARISON

BUILDING NUMBER - NAME DATE	RELATIVE STRUCTURAL CONDITION			RELATIVE REHABILITATION COST	
	BECKER	RESURGENCE /BECKER SCALE	RESURGENCE SCALE	BECKER	RESURGENCE
BUILDING 1 - ERECTING BUILDING 1918	2.0	2.5 (REPETITIVE DTLS)	P2	4.0	3.5 (REPETITIVE DTLS)
BUILDING 2 - MACHINE SHOP 1847	2.5	2.5	P2+	4.5	4.5
BUILDING 3 - MACHINE SHOP 1847	3.0	3.0	P2+	3.0	3.0
BUILDING 4 - FOUNDRY/ACETYLENE HS 1895, 1904-09	1.5	1.5	VP2	4.5	4.0 (REPETITIVE DETAILS, CUSTOM REHABILITATION)
BUILDING 6B - TANK SHOP 1896-1904	3.0	3.0	P2+	3.5	3.5
BUILDING 7 - CAR SHOP 1873, 1904	2.0	1.5 (BOWED WALLS)	VP1	5.0	5.0
BUILDING 10 - PAINT SHOP 1873	1.0	1.0	VP1	4.5	4.0 (REBUILD IN KIND)
BUILDING 11 - PATTERN STOREHOUSE 1885	2.5	2.0 (NORTH WALL)	VP2	4.5	4.5
BUILDING 14 - DRAFTING ROOM AND STOREHOUSE 1858, 1864	NOT INSPECTED	2.0	VP3	NOT INSPECTED	3.5
BUILDING 15/16 (NO ACCESS TO B15) BOILER HOUSE/BRASS FOUNDRY 1858, 1864	1.5	1.5	VP3	3.0	3.0
Averages of common buildings inspected (excluding Building 14)	2.11	2.06		4.06	3.89

SEE FOLLOWING PAGES FOR EXPLANATION OF BECKER STRUCTURAL ENGINEERS AND RESURGENCE ENGINEERING RATING SYSTEMS

Notes:

1. Coordinate this document with "Portland Company Complex General Building Assessment" prepared by Resurgence Engineering et al, March 2015, and "Evaluation of Existing Buildings at the Portland Company Property" prepared by Becker Structural Engineers, March 28, 2014.
2. Further discussion about relative rehabilitation costs related to these structures, by Resurgence Engineering, follows this page.

APPENDIX A EXPLANATION OF BECKER AND RESURGENCE RATING SYSTEMS

Becker Structural Engineers' (BSE) Rating System

The **relative structural conditions** rating system used in the Becker Structural Engineers Report is shown below:

- 1 = Very poor/unsafe/demolition likely
- 2 = Very poor/salvageable with significant structural rework and investment/questionable economic viability/consider demolition
- 3 = Poor/requires substantial structural work to elements and systems
- 4 = Fair/requires nominal structural work to elements
- 5 = Good condition/minor structural work required

Becker's **relative rehabilitation cost rating system** is based upon structural complexity and size of building, using a scale of 1 to 5 -- 1 being relatively low costs and 5 being relatively high costs. BSE gives no specific definitions of the relative costs, simply a numerical grading system. Such an approach appears to be reasonable, given the preliminary nature of assessment that both firms were instructed to provide.

Resurgence Engineering and Preservation's (REP) Rating System

For ease of comparison, REP used the same **relative structural conditions rating system** as BSE in the summary chart. However, REP believes there is a more accurate and further defined way to classify the buildings in terms of condition. *See chart on following page for REP's proposed rating system as regards condition.*

REP has used the same **relative rehabilitation cost rating system** as BSE. The BSE report provided no specific definition of cost for each rating category.

RESURGENCE ENGINEERING RELATIVE STRUCTURAL CONDITION SCALE OF EXISTING BUILDINGS IN POOR CONDITION

BSE condition #	REP NUMBER	DESCRIPTION OF CONDITION, PRE AND POST MITIGATION	LOCAL/MAINE BUILDING EXAMPLES PRE AND POST MITIGATION
(n/a)	VP1 (very poor, not salvageable)	PRE: Immediate <u>widespread public safety threat and site/occupant safety threat</u> if not barricaded and structurally shored; evacuate nearby buildings, streets, sidewalks, block off parking spaces. Potential for widespread debris field in event of collapse; Building cannot be re-occupied following triggering event. POST: Condemn and demolish building.	Buildings with extensive fire damage
1	VP2 (very poor but salvageable, expensive to rehabilitate, i.e. approx. BSE cost #4 to #5)	PRE: Immediate <u>widespread public safety threat and site/occupant safety threat</u> if not barricaded and structurally shored; evacuate nearby buildings, streets, sidewalks, block off parking spaces. Potential for widespread debris field in event of collapse; Building cannot be re-occupied following triggering event. POST: Building assessed, barricaded, structurally shored; nearby buildings deemed safe for return; streets, and/or sidewalks and parking spots remain blocked off. Building itself cannot be occupied after stabilization. Unsafe for rescue personnel to enter if trespassers are inside. Shored and secured structure relatively expensive, but feasible, to rehabilitate.	PRE: Norway Opera House, 2007-09 POST: Norway Opera House, 2010+
1	VP3 (very poor but salvageable, moderately expensive to rehab, i.e. BSE cost #3 to 4)	PRE: <u>Immediate site/occupant safety threat and localized public safety threat</u> if not if not barricaded and structurally shored; Block off streets, sidewalks, and parking spaces. Potential for localized debris field in event of collapse; Building can be occupied following the triggering event. POST: Building assessed, barricaded, structurally shored; nearby buildings deemed safe for return; streets, and/or sidewalks and parking spots can remain blocked off or reopened following mitigation. Building itself can be occupied.	PRE: Buildings with widespread loose façade components, i.e. Masonic Temple Localized structural failures i.e. Portland Company Complex Building 4 POST: Stabilized structures, removing loose components or installing covered sidewalk and blocked off parking spaces.
2	P1 (very poor but salvageable, less expensive to rehab; i.e. BSE cost #2)	PRE: <u>Likely site/occupant safety threat and localized public safety threat</u> if not if not barricaded and structurally shored; Block off streets, sidewalks, and parking spaces. Potential for localized debris field in event of element failure; Building can be occupied following the triggering event. POST: Building assessed, barricaded, structurally shored; nearby buildings deemed safe for return; streets, and/or sidewalks and parking spots can remain blocked off or reopened following mitigation. Building itself can be resume occupancy.	PRE: Buildings with a few loose façade components that can easily be removed or snow and ice buildup that can easily and quickly be removed, POST: Stabilized structures, removing loose components or installing covered sidewalk and blocked off parking spaces.
3	P2	PRE: <u>Possible site/occupant safety threat and localized public safety threat</u> if not if not barricaded and structurally shored; No triggering event causing distress; possible change of use makes economics questionable. POST: Rehabilitation Feasibility Study considering economics for specific buildings and structures.	PRE: Portland Company Building Complex Building #1

Most of REP's condition and cost ratings align with those of BSE. Using our own rating system, however, REP's conclusions are slightly different, especially in regards to the potential for rehabilitating buildings in distress (i.e. Buildings with a "1" to "2" condition ranking). We would not have necessarily characterized these buildings as unsalvageable, as Becker suggests. Our justification for this would be to consider the cost benefits that could be realized using historic preservation tax credit incentives, along with the added flexibility afforded historic structures under the IEBC. Tax credit incentives could offset the costs of more custom-designed engineering and building envelope rehabilitation solutions. They would also offset the cost of higher-quality, longer lasting building materials necessary for the marine climate.

Our primary departures from BSE exist in Building 1, Building 4, Building 7, Building 10, and Building 11. We downgraded the relative structural condition of Building 7 and Building 11, while we upgraded the relative structural condition of Building 1. We lowered the relative rehabilitation costs of Building 1, Building 4, and Building 10. The paragraphs that follow explain the reason for our departure at each building.

For Building 1 we believe that the more recent construction date (1918), combined with the repetitive nature of the building elements, can allow for a slightly less expensive rehabilitation than indicated in the BSE report.

Building 4 could yield a relatively less expensive rehabilitation if a customized approach to reframing the edge columns and rebuilding the masonry could be achieved economically. Such an approach would have to be understood and approved in advance by the National Park Service if tax credits were desired on this building project. If historic preservation tax credits can be used on this project using a different approach to reframing the edge columns and rebuilding the masonry, while strengthening the existing structure, we disagree that this building is a likely candidate for demolition.

In our opinion, the condition of Building 7 is slightly worse than considered in the BSE report, because of the poor condition of the loadbearing masonry at the north elevation. We concur with the relative rehabilitation costs for the building.

We depart from the BSE cost condition assessment of Building 10, only in the sense that it may make the most economic sense to demolish the existing structure.

The compromised north wall at Building 11 necessitates downgrading its condition from 2.5 to 2.0 in comparison to the BSE report. We recommend that the building remain unoccupied until the north wall is stabilized. Demolition of this structure may be warranted pending further understanding of the roof framing and first floor framing conditions.

As stated in the BSE report, immediate safety concerns need to be addressed, whether as isolated repairs (Building 6A/6B common wall and truss) or comprehensive measures (vacancy of Building 11).

Basis for Cost Opinion Conclusions for Each Building

Building 1 - Erecting Building, c.1918

Relative rehabilitation costs for this structure and building envelope are based primarily upon the fact that the structure is repetitive in construction technique, offset by the likely reconstruction of the front masonry (west) wall. The staging and access cost required to perform clerestory rehabilitation from interior and exterior will be an increasing cost factor in building rehabilitation. A significant amount of steel-framed window glazing would require repair or replacement. Since this is the most recent building in the study, existing steel materials may be of higher quality and some understanding of snow loading requirements was incorporated into the design.

Building 2 – Machine Shop, c.1847

This building, the most structurally complicated and tallest within the buildings studied, would likely cost the most to rehabilitate, but could present the greatest risk/reward. The structure itself will likely take the most time to thoroughly assess from a structural and building envelope standpoint, given the number of changes that occurred over the years and the addition of the third floor. The large wooden windows on the first and second floors would be very labor intensive to rehabilitate, given the large number of individual panes. Third floor windows might not be as expensive to rehabilitate or replace, because they may have been 2:2 light sash, which were common in the early 20th century. A well thought-out temporary shoring plan is necessary to tie the cantilevered third-floor framing further back into the existing building. Third floor cladding, though high up, could be replaced relatively simply. At approximately 45 feet high and three stories, this building will be subjected to the greatest wind and seismic forces of all the buildings studied.

Building 3 – Machine Shop, c.1847

Building 3 is the second most structurally complicated building within the complex, but is not as relatively expensive to rehabilitate as Building 2. The additional floor support structure is less complicated than Building 2, lacking the cantilever framing existing at that neighboring building. The second floor also provides interior access to the much smaller clerestory, facilitating any structural work required there. The smaller overall footprint and lower percentage of glazing helps contain rehabilitation costs.

Building 4 – Foundry, c.1895

The Foundry rehabilitation work likely involves wholesale rethinking of the structure and building envelope along the exterior walls. Structural upgrades and replacement of an existing structural system that was improper for its marine, cold-weather climate may actually simplify the rehabilitation by permitting a complete column removal and replacement with contemporary steel columns, not exposed to the exterior elements. However, this more significant structural change may require the longest lead time to confirm whether the structure and building envelope modifications would be eligible to receive historic tax credits.

Building 6B – Tank Shop, c.1896-1904

Tank Shop rehabilitation is simplified because of its relatively short height, simple gable roof, and relatively small windows. Added longitudinal roof bracing can support the intermediate roof purlins between trusses and stiffen the roof against wind and seismic forces. The low roof height will likely keep the building from experiencing significant wind load increases due to height. Each one of the trusses will require further inspection, nondestructive testing and/or invasive inspection to confirm that end bearing conditions are structurally sound.

Building 7 – Car Shop, c. 1873, 1904

Although the Car Shop is a single-story structure, rehabilitation becomes complicated and more costly due to the overall poor condition and insufficient depth of the roof framing and because of the poor condition of the existing exterior masonry. The existing roof framing has such a low slope that it likely has permanent deflection "set", which will complicate efforts to strengthen the framing by sistering. Significant roof leaks in the structure have likely rotted sheathing and possibly framing, in more areas than are visible due to penetrating sunlight. The windows are not large or great in area relative to the total façade area, which would diminish the rehabilitation costs somewhat. However, the existing loadbearing masonry would likely require complete rebuilding because it is in such poor condition.

Building 10 – Paint Shop, c. 1873

Originally isolated by the remaining structures for safety purposes, the paint shop stands alone as the most significantly altered structure in the worst overall condition. Building rehabilitation is hard to justify, given the small size and poor condition. Rebuilding the structure to resemble the original during the site's period of significance, in conformance with contemporary codes, would be a more straightforward option, despite the likely required foundation upgrades.

Building 11 – Pattern Storehouse, c. 1885

The Pattern Storehouse carries with it the greatest uncertainty about rehabilitation costs. It is the only building studied that has a wood-framed first floor situated over an earthen crawl space, and it is the only structure that had the majority of its roof framing concealed by ceilings. The low-slope roof, pitching partially toward Building 12, creates drift conditions and roof runoff that are detrimental to both buildings.

Building 14 – Drafting Room and Storehouse, c. 1858-64

Tucked in between buttresses of the Fore Street retaining wall, Building 14, like the Boiler House and Brass Foundry to the immediate north, contains relatively limited floor space in a structure that is practically unique. The existing timber frame purlin and rafter system needs to be carefully assessed near the peak, as that area is vulnerable to condensation and leakage due to snow buildup and insufficient insulation.

Building 15/16 – Boiler House and Brass Foundry c.1858, 1864

We did not enter Building 15, but the visible condition of the second floor framing means the structure would likely need to be rebuilt. Building 16, the Brass Foundry, requires several of the same structural assessments and likely upgrades that Building 14 requires, as well as the rehabilitation of the small south façade.



PAUL R. LEPAGE
GOVERNOR

MAINE HISTORIC PRESERVATION COMMISSION
55 CAPITOL STREET
65 STATE HOUSE STATION
AUGUSTA, MAINE
04333

EARLE G. SHETTLEWORTH, JR.
DIRECTOR

31 March 2014

Deborah Andrews
Historic Preservation Program Manager
Planning & Urban Development Department
389 Congress Street
Portland, Maine 04101

Re: Portland Company, 58 Fore Street

Dear Deb:

As per our phone conversation of March 28, 2014, I am writing to confirm the findings of the Maine Historic Preservation Commission with regard to the National Register of Historic Places eligibility for the former Portland Company complex at 58 Fore Street. Staff of the Commission reviewed the historic photographs and maps you sent, as well as three reports on the complex (Robert Parker, 1990; Max Yeston, 2012; Tremont Preservation Services, 2014), and it is our opinion that this property is eligible for listing in the National Register as a relatively intact foundry with over a 130 year history.

This property meets National Register Criterion A, in the areas of *Industry, Engineering and Transportation*, with a period of significance that commences with the erection of the first building in 1845/6 and ends with the closing of the foundry in 1982. It is also eligible under Criterion C, as a historic district. All the extant buildings in the complex (1-7, 10-12, 14-16, and 24) are contributing resources. We were not provided information on Building 5 to review, presumably because it constructed recently.

Please do not hesitate to contact me if you need any additional information at this time.

Sincerely,

Christi A. Mitchell

Christi A. Mitchell
Architectural Historian



Our Heritage, Our Legacy

233 West Main Street • Yarmouth, Maine 04096
Tel (207) 847-3577 • info@mainepreservation.org
www.mainepreservation.org

July 15, 2015

Members of the Portland Historic Preservation Board:

On behalf of Maine Preservation, the statewide nonprofit historic preservation organization, I am writing to reiterate our support and clarify our position for designation of The Portland Company complex site on Fore Street as a Local Historic District.

The Portland Company complex has local, statewide and national historic significance, yet years of deferred maintenance have left the complex buildings in serious disrepair. As noted in the memo to the HP Board by Deborah Andrews dated June 19, 2015, the preservation ordinance requires the nominated resource to have sufficient integrity of location, design, *condition*, materials and workmanship to make it worthy of preservation. Maine Preservation (MP) concurs with the HP Board assessment that several of the buildings are noncontributing because of their severely deteriorated condition, including buildings Nos. 7, 10 and 11, and 14.

Maine Preservation shares the opinion that Building No. 4 is a key historic element of the complex core. But based on the Resurgence Engineering and Becker Structural Engineers assessments of the complex, the structural design of the building is inherently flawed. As such, the building requires demolition in whole or major part and reconstruction with a different structural design, which is not historic preservation. We urge the HP Board to thus determine this historically important building noncontributing due to condition.

MP in several conversations with the principals of CPB2, LLC has shared the goal of helping the project pursue historic tax credits, which will greatly improve the economic feasibility of the project as well as ensure rehab to preservation standards. Based on our conversation with Maine Historic Preservation Commission, we believe that a strong and unified case must be made to the National Park Service (NPS) to allow for certain buildings within the District to be determined noncontributing.

MP support buildings numbered 1, 2, 3, 6A, 6B, 12 and 24 as contributing to a district. Building No. 16 is not in good condition, but it has much of its original architectural design in its façade intact. MP requests that a determination of contributing be made for Building 16 for local review purposes only. We do not think that this local designation should apply at the federal level, which has a different legal meaning for the term “contributing.” This is based on its deterioration as well as the prohibition by the NPS for tax credit projects with rooftop additions visible from the street.

While Building No. 1 may be close to the boundary of the period of significance that the Portland HP Board has determined, it is well beyond the 50 year threshold of significance for the National Register of Historic Places, and is just shy of 100 years old. While it has incongruous large doors installed on the front façade, the remainder of this and its other two façades, with banks of large metal windows is arguably much more intact than that of Building No. 2, with most of its front façade missing and its upper floor substantially altered. Buildings No. 1, 2, 3 and 4 form the core of the historic complex, and with Building No. 4 structurally unable to be rehabilitated, it makes Building No. 1 even more significant. In our judgment, Building No. 1 will be required to make a creditable case in applying for historic tax credits, which could produce a win-win for the owners and preservation.

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With the possibility of acquiring historic tax credits, Portland has an opportunity for a rehabilitated complex to become once again a vital community asset. We hope the preservation community and the owners can come to a consensus around the rehabilitation of these key buildings in order to preserve and enhance the architectural integrity, feel and spirit of the complex as a whole.

Thank you for your service.

Sincerely,

A handwritten signature in black ink, appearing to read "Greg Paxton", written in a cursive style.

Greg Paxton
Executive Director

Greater Portland Landmarks, Statement for Historic Preservation Board July 15, 2015

Greater Portland Landmarks supports the Historic Preservation Board's recommendation to create the Portland Company Historic District as documented in the July 15th draft historic district designation report. The key recommendations we support are as follows:

The complex is significant on the local, state and national level

The buildings retain a high degree of historical integrity.

The period of significance is identified as the period from the beginning of the foundry in 1847 through the end of World War II. The period of significance for the architecture of the buildings is identified as through 1920, since the last major building in the complex was completed in 1918.

The structural condition of several of the buildings, as identified in the report, is such that they warrant a classification as non-contributing: these buildings are Building 4 (due to the construction techniques of the metal supports embedded in the masonry, and the inadequate truss system supporting the roof); Building 7, 10, and 11 (identified in 2 structural engineering studies as structurally deficient and in very poor overall condition), and Buildings 14 and 15 (due to poor condition and alterations).

Two additional buildings, Building 5 and Building 30 are rated non-contributing, as outside the period of significance. The total number of buildings rated non-contributing is 8.

Contributing buildings include: Buildings 1, 2, 3, 6A and 6B, 16 and 24, and Building 12. These buildings retain the character defining arrangement that reflects the manufacturing process at the Portland Company complex. Buildings 1-3, Buildings 6A and 6B, and Buildings 16 and 24, which bookend and define the row along the Fore Street retaining wall, set up the linear arrangement that is characteristic of the site. Building 12, set apart to protect the pattern storage from fire danger, establishes the western edge of the complex and defines the entrance yard in front of Building 1. The total number of buildings rated contributing is 8.

We support the proposed boundaries of the district, which encompass 3.45 acres of the 10 acre site. These boundaries allow the historic preservation board to review changes and new construction that impacts the character defining elements of the complex, including the entrance yard, skybridges, and the sites of any non-contributing buildings that may be demolished.

We believe that the proposed district is a fair balance of the community's proven desire to preserve the authentic places that tell its history and make it unique, with the developers desire to create a new mixed-use development on the site. The board has made it clear that it is open to new construction within the district, including additions to the historic buildings. As is demonstrated in a variety of projects in existing districts such as the Old Port and Congress Street, they have a track record of working with property owners to find creative solutions that support contemporary uses of historic buildings and approving innovative new architecture in historic contexts.

We urge you to adopt the designation report and to forward it to the planning board and council for their deliberation and approval.

Hilary Bassett
Executive Director

Comments of Barbara Vestal, 7 Fore St., Portland submitted to Portland's Historic Preservation Board, July 15, 2015

I would like to raise one question about the designation report. 14-617 says that your designation report will contain "proposed design guidelines for review of alteration or construction." However on page 8, it says that specific design guidelines will not be proposed for the district.

There is a lot in the report that is very much like design guidelines. Could they be recast as design guidelines? The photos illustrate some key visual characteristics. The report says that it is important that these strong visual characteristics be considered in future infill development, new construction and site improvements. Would it take much more work to affirmatively state these as design guidelines? I think it would help future Boards to have that as a reference.

Having design guidelines in the district designation report is important. The Design Guidelines for the Eastern Waterfront are not very detailed. The B-6 design guidelines are written so they apply to structures along public streets. The internal circulation pattern may be private ways rather than public streets. In that case, they will not apply.

Even if you do not propose overall design guidelines, I would encourage you in the designation report to consider the "Portland Company Alignment". That appeared as a "no build area" as part of the 2004 Eastern Waterfront Building Height Study. (Copy attached.) In this Illustration 33, the building envelope of the building to the south is pulled back so from Thames St, one would have a view into the alley between the buildings.

By the time the application got out of the Planning Board, the "no build zone" Portland Company alignment had turned into a "building break line." Note #4 addresses it. Instead of a 50' or so break between buildings, it has no particular width. If you think it is important to maintain the alley pattern in this location, that should be addressed in a design guideline.

I understand you have been asked to agree that the maximum building heights by zoning should trump the ability of HP to ask for any lower heights for purposes of meeting the historic preservation standards. This would be unusual, and is only done in Portland in the Congress St. District. It made some sense in the Congress St. district because it applied to existing buildings with a wide variety of heights. Here there is a basic fabric of 2-3 story buildings.

It seems like the designation report should say that you do not feel that it is appropriate to tie your hands like this. It could be particularly relevant along Fore Street, where the Planning Board approved heights being measured from average grade, and allowed buildings along Fore St. to go up to 35' above the grade of Fore St. Depending on the grade measurements, this height calculation might allow buildings to be constructed on top of buildings 16 and 24. Under some interpretations, if you have no option but to defer to the zoning heights, you might not be able to prevent that even if it violates many of your review standards.

B6 Building Height Overlay & Building Envelopes

F

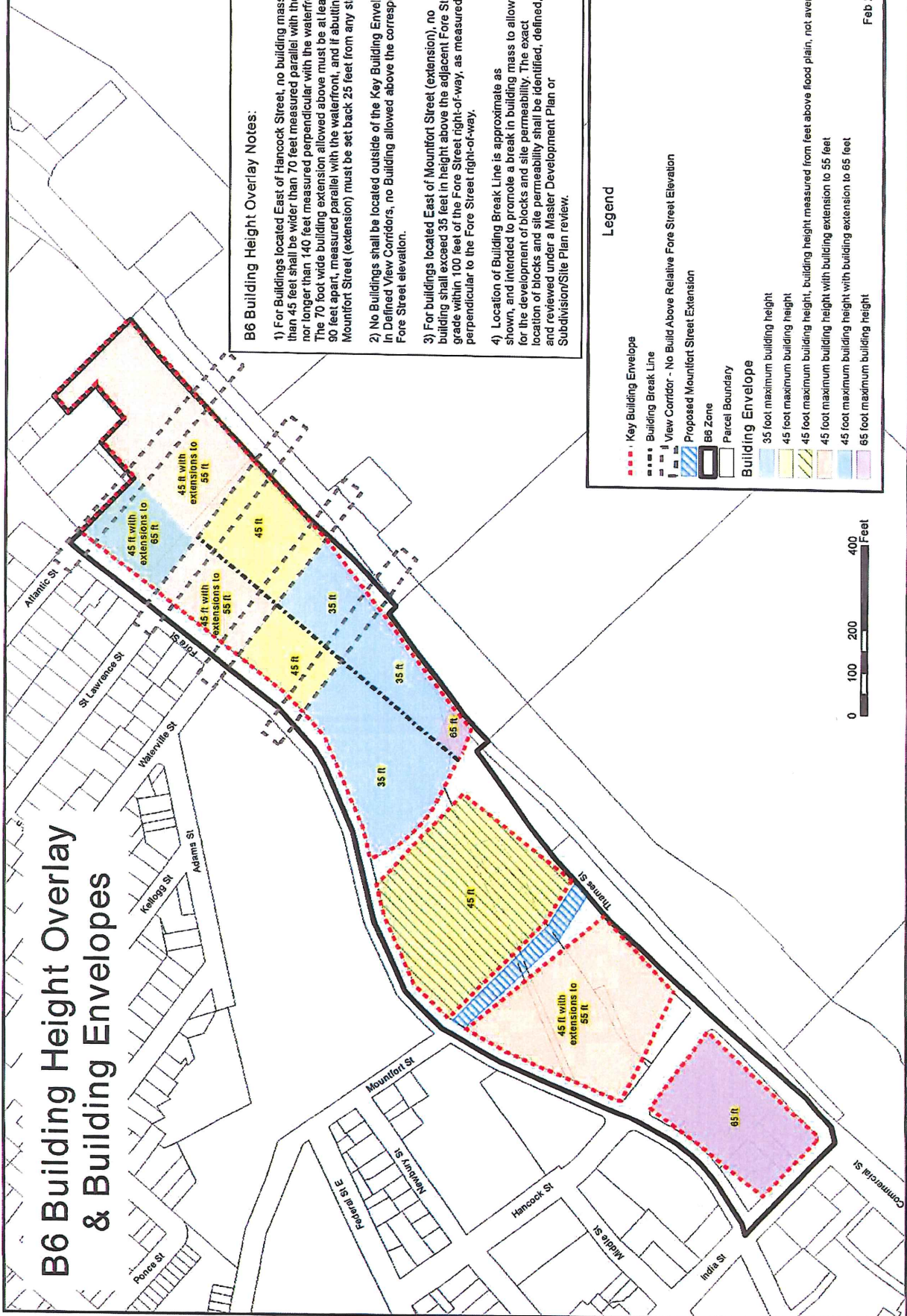
B6 Building Height Overlay Notes:

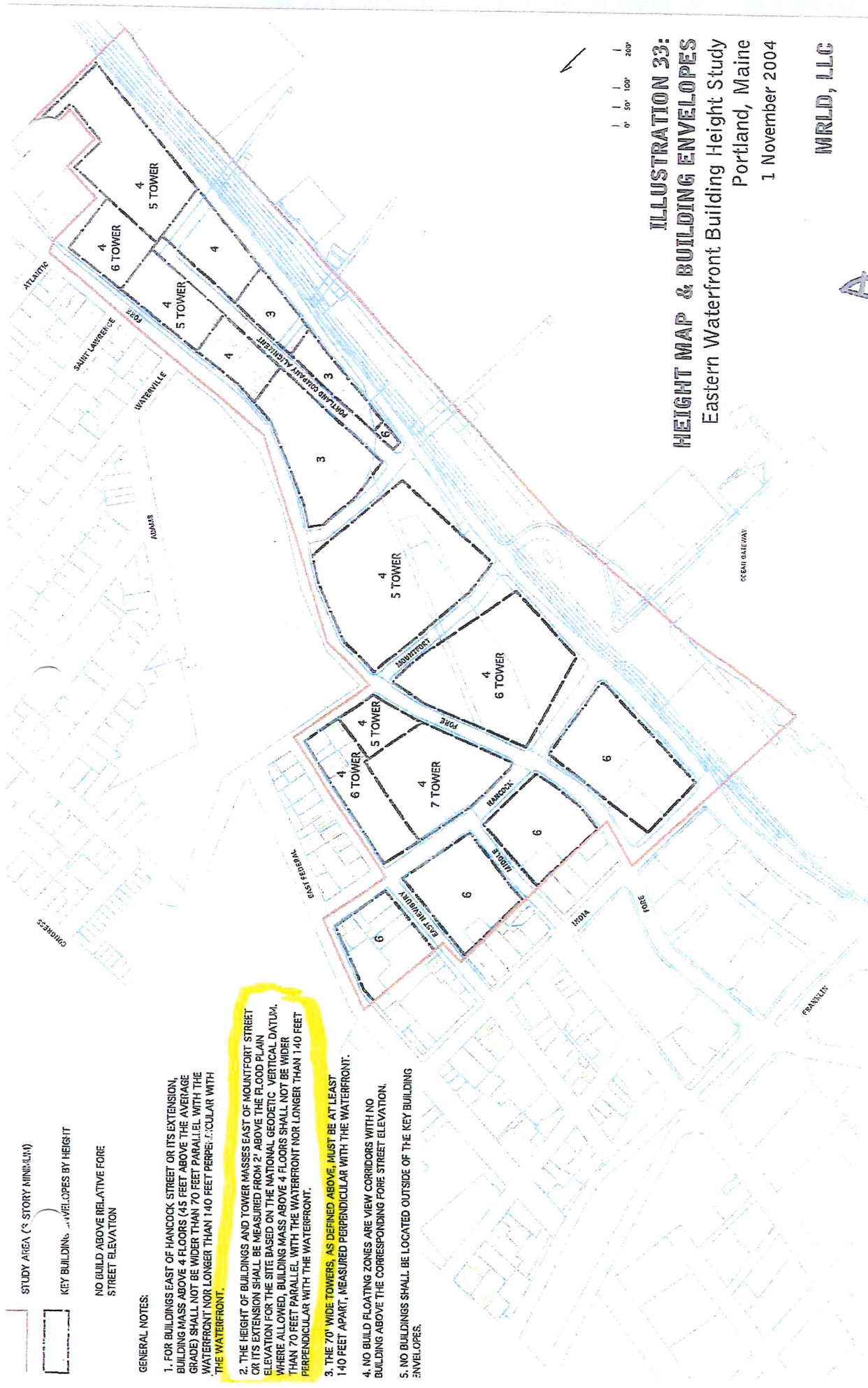
- 1) For Buildings located East of Hancock Street, no building mass higher than 45 feet shall be wider than 70 feet measured parallel with the waterfront nor longer than 140 feet measured perpendicular with the waterfront. The 70 foot wide building extension allowed above must be at least 50 feet apart, measured parallel with the waterfront, and if abutting Mountfort Street (extension) must be set back 25 feet from any street.
- 2) No Buildings shall be located outside of the Key Building Envelope, In Defined View Corridors, no Building allowed above the corresponding Fore Street elevation.
- 3) For buildings located East of Mountfort Street (extension), no building shall exceed 35 feet in height above the adjacent Fore Street grade within 100 feet of the Fore Street right-of-way, as measured perpendicular to the Fore Street right-of-way.
- 4) Location of Building Break Line is approximate as shown, and intended to promote a break in building mass to allow for the development of blocks and site permeability. The exact location of blocks and site permeability shall be identified, defined, and reviewed under a Master Development Plan or Subdivision/Site Plan review.

Legend

- Key Building Envelope
- Building Break Line
- View Corridor - No Build Above Relative Fore Street Elevation
- Proposed Mountfort Street Extension
- B6 Zone
- Parcel Boundary
- Building Envelope
 - 35 foot maximum building height
 - 45 foot maximum building height
 - 45 foot maximum building height, building height measured from feet above flood plain, not average grade
 - 45 foot maximum building height with building extension to 55 feet
 - 45 foot maximum building height with building extension to 65 feet
 - 65 foot maximum building height

Feb 20, 2015





STUDY AREA (3 STORY MINIMUM)

KEY BUILDING ENVELOPES BY HEIGHT

NO BUILD ABOVE RELATIVE FORE STREET ELEVATION

GENERAL NOTES:

1. FOR BUILDINGS EAST OF HANCOCK STREET OR ITS EXTENSION, BUILDING MASS ABOVE 4 FLOORS (45 FEET ABOVE THE AVERAGE GRADE) SHALL NOT BE WIDER THAN 70 FEET PARALLEL WITH THE WATERFRONT NOR LONGER THAN 140 FEET PERPENDICULAR WITH THE WATERFRONT.
2. THE HEIGHT OF BUILDINGS AND TOWER MASSES EAST OF MOUNTFORT STREET OR ITS EXTENSION SHALL BE MEASURED FROM 2' ABOVE THE FLOOD PLAIN ELEVATION FOR THE SITE BASED ON THE NATIONAL GEODETIC VERTICAL DATUM. WHERE ALLOWED, BUILDING MASS ABOVE 4 FLOORS SHALL NOT BE WIDER THAN 70 FEET PARALLEL WITH THE WATERFRONT NOR LONGER THAN 140 FEET PERPENDICULAR WITH THE WATERFRONT.
3. THE 70' WIDE TOWERS, AS DEFINED ABOVE, MUST BE AT LEAST 140 FEET APART, MEASURED PERPENDICULAR WITH THE WATERFRONT.
4. NO BUILD FLOATING ZONES ARE VIEW CORRIDORS WITH NO BUILDING ABOVE THE CORRESPONDING FORE STREET ELEVATION.
5. NO BUILDINGS SHALL BE LOCATED OUTSIDE OF THE KEY BUILDING ENVELOPES.

**ILLUSTRATION 33:
HEIGHT MAP & BUILDING ENVELOPES**
Eastern Waterfront Building Height Study
Portland, Maine
1 November 2004

MRLD, LLC

A.

BERNSTEIN SHUR

COUNSELORS AT LAW

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June 24, 2015

Portland Historic Preservation Board
City of Portland
389 Congress Street
Portland, Maine 04101

Re: Nomination of Portland Company Historic District

Dear Members of the Historic Preservation Board:

Please accept this letter in response to the Board's preliminary deliberations regarding the nomination of the Portland Company property as a historic district submitted on behalf of CPB2, the owner of the property. CPB2 is committed to preserving the significant historic core of the Portland Company complex. While we agree with some of the preliminary conclusions of the Board, we are concerned with the inconsistent application of the Historic Preservation Ordinance that led the Board to conclude that Buildings 1, 4, 14 and 16 are all contributing buildings. Our comments on the Board's preliminary deliberations are summarized as follows: We agree with the Board's proposed designation of buildings 2, 3, 6A, 6B, 12 and 24 as contributing buildings and buildings 7, 10, 11, 15 and 30 as non-contributing. However, we believe that the record and the Ordinance support a finding that buildings 1, 4, 14, and 16 are non-contributing for the reasons set forth below.

Introduction

Our comments and proposal are strongly supported by the conclusions of both structural engineers, one commissioned by the City, Greater Portland Landmarks and CPB2, and the other solely by CPB2. Both reports align exceptionally well with each other. The combination of the consultant fees approached \$30,000 and this expenditure aimed to provide the Board with an analysis of the structural integrity of the majority of the buildings on the site. On the whole, across all of the buildings reviewed, the average rating was 2.0: Very poor/salvageable with significant structural rework and investment/questionable economic viability/consider demolition. The overall structural condition of the buildings makes it infeasible to preserve all of the buildings on the site. However, we believe that it is feasible to preserve and restore the significant historic core of the complex in a manner that celebrates its history to be enjoyed by future generations.

Restoration of any of the buildings on the property will require a significant investment of both time and money. CPB2 encourages the Board to approach the designation with a balanced approach, abiding strictly to the Historic Preservation Ordinance with regard to

structural integrity. It is imperative to select the most historically significant structures worthy of preservation so that the necessary investment can be made to do it the right way. An imbalanced approach may very well lead to a designation that endangers the financial viability and overall quality of the redevelopment. Specifically with regard to Buildings 1 and 4, the Board should be mindful of the additional costs associated with the reuse of large volume buildings that require additional floors to adapt to a modern use that is economically viable.

There has been some discussion by the Board regarding the impact of designation on the ability of CPB2 to obtain historic tax credits for work on the property. It is our understanding that as long as the district boundaries and building classifications are established in accordance with and supported by a certified ordinance, like Portland's, there is no adverse impact upon a property owner's ability to obtain tax credits, if otherwise eligible.

Building Classification

As you are aware, the Ordinance defines non-contributing as: "A classification applied to a site, structure, object, or portion thereof, within a historic district signifying that 1) it does not contribute generally to the qualities that give the historic district cultural, historic, architectural or archaeological significance as embodied in the criteria for designating a historic district; 2) was built within 50 years of the date of district designation unless otherwise designated in the historic resources inventory; or 3) where the location, design, setting, materials, workmanship and association have been so altered or have so deteriorated that the overall integrity of the site, structure or object has been irretrievably lost." The structural reports and the report from Sutherland Conservation and Consulting all support our proposal below to classify a few additional buildings as non-contributing due to either their structural integrity, lack of historic significance, or both.

Building 1: Built in 1918

Building 1 was built over 70 years after the founding of the Portland Company in 1847. It was built in the year that has been determined by the Board to be the end of the period of significance. The current Building #1 replaced an earlier, smaller building, estimated to have been built between 1871 and 1880 (see attached photo). Building 1 was built as an erecting shop, which was the same process that took place next door in Building 2 prior to the construction of the original building 1. Because Building 1 was built at the end of the period of significance, it necessarily follows that the building and the activities that occurred within it do not have a high degree of significance. In addition, as noted in the Sutherland Report and by the Board, the south elevation has been significantly altered with the increase in the size of the bay doors.

The construction of Building 1 masked the architecturally significant façade of Building 2 as seen the attached photo. The removal of Building 1 would reveal the original façade of the 1847 building, as well as the original yard and allow for a truer restoration to the original Portland Company.

Finally, the structural integrity of Building 1 was rated a 2.0 by Becker Structural Engineers and a 2.5/P2 by Resurgence Engineering & Preservation in accordance with the following scale:

2. Very poor/salvageable with significant structural rework and investment/questionable economic viability/consider demolition
3. Poor/requires substantial structural work to elements & systems

In its report, Becker justifies its rating with the following: "All major structural systems will be affected in a renovation. Exterior masonry piers have major vertical cracks. Steel lintels create a hinge condition in exterior masonry piers and therefore their stability is questionable. End bay has large masonry openings that are not original to construction and seismic performance of system is very questionable. Rehabilitation of open one story space would have high unit costs considering necessary investment in structure verse net usable space."

The anticipated work necessary for renovation/restoration of Building 1 noted by Becker and Resurgence are:

- Replace roof decking with metal deck along with new roofing and insulation.
- Establish diaphragm connections to existing walls.
- Reinforce roof to meet snow loading requirements.
- Introduce lateral load resisting system with wall shotcrete or steel frame.
- Repair exterior masonry and rebuild certain areas as required. Extensive rebuilding will be necessary to address cracked masonry pier conditions. Clean masonry.
- Repair or replace steel windows and window sills
- Rebuild the west elevation, wrapping around to the north and south elevations
- Provide a shear wall at the east end of the building as necessary

Based on the above information, we propose that Building 1 be classified as Non-Contributing based upon the date of construction, the fact that it is not the original erecting shop for the Portland Company, and because of its poor structural integrity. Building 1 does not contribute generally to the qualities that give the historic district cultural, historic, architectural or archaeological significance and the design, materials, and workmanship have been so altered and deteriorated that the overall integrity of the structure has been irretrievably lost.

Building 4: Built in 1895

Building 4 replaced the original foundry of the Portland Company site, which was built in 1847, the date of the founding of the Portland Co. Although Building 4 is more historically significant than Building 1, its structural condition is so deteriorated that the overall integrity of the structure has been irretrievably lost.

Building 4 was rated a 1.5 by both Becker Structural Engineers and Resurgence Engineering & Preservation in accordance with the following scale:

1. Very poor/unsafe/demolition likely

2. Very poor/salvageable with significant structural rework and investment/questionable economic viability/consider demolition

Notably, Building 4 received a lower rating from the engineers than Buildings 7 and 11 which have been proposed by the Board to be classified as non-contributing due to their structural condition. In its report, Becker justifies its rating with the following: "The entire exterior masonry façade will need to be deconstructed, the columns repaired and the exterior masonry reconstructed. Many of the original relic bricks will likely be destroyed in this process. If original foundation is to be reutilized, façade will need to be reconfigured to protect columns from corrosion. Given the large open volume of this building, the required structural repairs identified in the above sections have a high unit cost."

The anticipated work necessary for renovation/restoration of Building 1 noted by Becker and Resurgence are:

- Lattice columns are compromised and will require complete replacement
- Require substantial reconfiguration of exterior wall system in order to remove and replace existing columns.
- Replace roof decking with metal deck along with new roofing and insulation as well as establish diaphragm connections to existing walls.
- Reinforce roof to meet snow loading requirements.
- Introduce lateral load resisting system with wall shotcrete or steel frame.
- Repair exterior masonry and rebuild certain areas as required.
- Extensive rebuilding will be necessary to address deteriorated steel columns. Clean masonry.
- Address north and south wall column deficiencies.
- Replace concrete masonry walls at the east end of the building and rebuild the east gable wall.
- Repair or replace windows.
- Repair the bearing wall between Building 3 and Building 4.

In the draft report located within Deb Andrews' June 19th memo there is a footnote to Building 4, which the Board is proposing to classify as contributing "with qualifications." That qualification states that more detailed structural/architectural analysis is warranted due to the historic importance of the building and that "if the degree of reconstruction required to put the building into service would result in undue loss of original building fabric, the Historic Preservation Board is prepared to reclassify Building 4 as non-contributing." As noted by both structural engineers, Building 4 will have to be fully deconstructed and rebuilt and would unquestionably result in the loss of the original building fabric. There is no additional structural analysis needed to make this determination.

If Building 4 is rebuilt, it would require an entirely different architectural and structural form to protect the columns from corroding. Building 4 represents a failed architectural and structural system and there is no question that it is so deteriorated that the overall integrity structure has been irretrievably lost. We therefore propose that Building 4 be classified as non-contributing.

Building 14: Built in 1858

The Board has proposed that Building 15 be classified as non-contributing and that Buildings 14 and 16 on either side of 15 be classified as contributing. The proposed classification creates a bit of a dilemma in determining the best way to restore/reconstruct those buildings. More than the buildings themselves, the significance of Buildings 14 and 16 is due more to their relationship to and alignment with Buildings 2 and 3, creating a back alley-way parallel to Fore Street. We recognize the importance of protecting the presence of the alley as well as the footprint of the existing buildings that define the alley, but do not agree with the classification of Buildings 14 and 16 as contributing.

Building 14 was noted in the Sutherland report with the following description: "The Drafting Room and Storehouse retain integrity and have had little alterations over their history." There is no photographic evidence available to verify this. In addition, Building 15 and 16 have deteriorated brick facades, and building 14 has a wood façade in fair condition. Given the brick interior of the building, it is unlikely that this wood façade is original to the structure. Our proposal is to respect the alley way and footprint of these buildings, but to classify Building 14 as non-contributing given that a restoration would focus on the building footprint, not the building façade. Building 14 does not contribute generally to the qualities that give the historic district cultural, historic, architectural or archaeological significance and the design, materials, and workmanship have been so altered that the overall integrity of the structure has been irretrievably lost.

Building 16: Built in 1864 as the Brass Foundry.

Building 16 was rated a 1.5 by Becker Structural Engineers and not rated by Resurgence Engineering & Preservation in accordance with the following scale:

1. Very poor/unsafe/demolition likely
2. Very poor/salvageable with significant structural rework and investment/questionable economic viability/consider demolition

In its report, Becker justifies its rating with the following: "Building 16 currently is not weather tight and extensive work will be necessary address this condition. Entry conditions will need to be brought up to current code for fire and egress compliance. Roof likely not framed to address drifted snow from adjacent high roof/street and will require reinforcement."

The anticipated work necessary for renovation/restoration of Building 16 noted by Becker and Resurgence are:

- Repair exterior masonry including extensive repointing and rebuilding to creating contiguous wall conditions.
- Replace windows.
- Create accessible entrance and incorporate 2 means of egress.
- Roof reinforcing to support snow load of properly insulated roof.

We therefore propose that Building 16 be classified as non-contributing based on its structural condition.

District Boundaries

We have attached a depiction of the boundaries of a proposed historic district on the Portland Company property. It includes buildings 2, 3, 6A, 6B, 12, 24, 14, 15, and 16, as well as a portion of Building 1. As you can see it does not include the entrance or the current yard, as we believe that the significant historic core of the complex from 1847 included the façade of building 2 and the original yard. Including a portion of Building 1 within the district as a non-contributing building will allow Building 1 to be removed to reveal the façade of Building 2 and to preserve the original yard. In addition, as stated above, we agree that the alignment of buildings 14-16 is an important element of the site, even though the buildings themselves are non-contributing. Therefore, we propose to include those buildings in the district in order to ensure that their footprints are respected in any future development.

In addition, Section 14-611 of the Ordinance requires that "any area, structure or object that meets the criteria in section 14-610 must also have sufficient integrity of location, design, condition, materials and workmanship to make it worthy of preservation or restoration." The district boundaries as currently proposed by the Board does not meet this standard. The attached proposal by CPB2 does meet the standard set forth in Section 14-611 and therefore the property owner is requesting that the Board's preliminary proposal be amended accordingly.

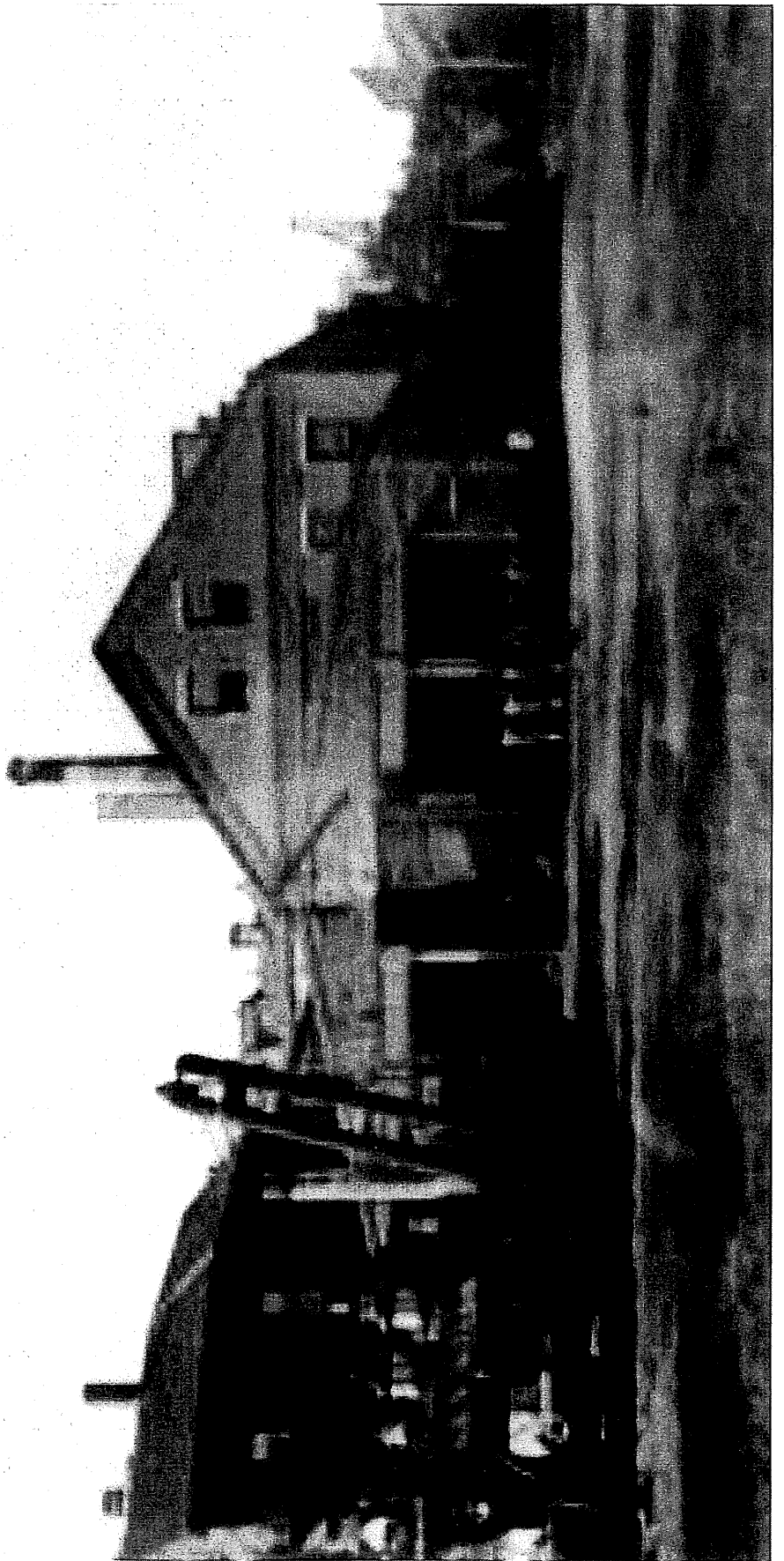
Building Height

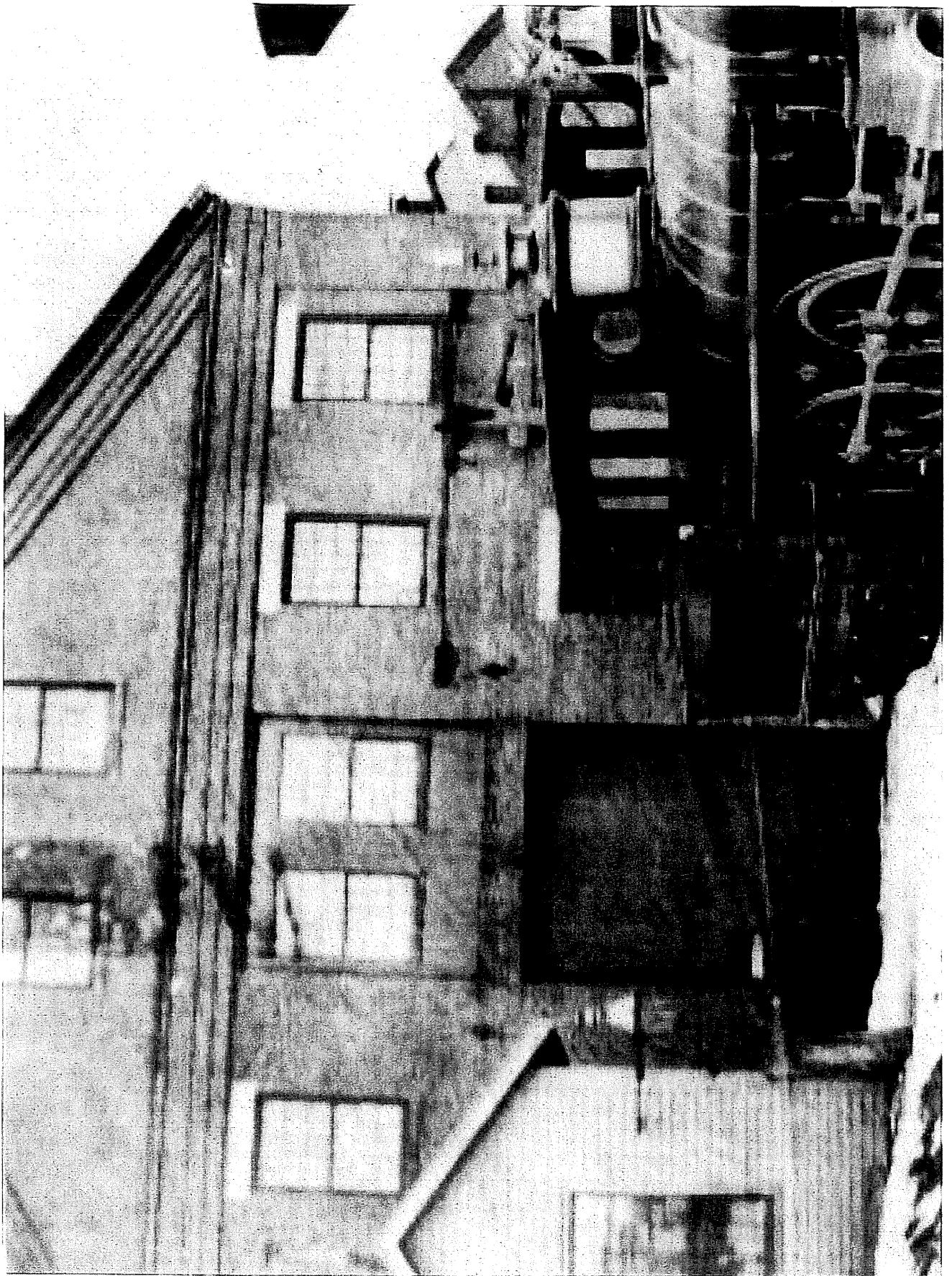
During the last workshop, it was suggested that the Board include language regarding the height of buildings within the district similar to that of the Congress Street District. We would request that such language is added to the Portland Company district as follows: "the height allowances established by zoning shall be honored in reviewing proposals for new construction within the district." The reason for this request is that there has been a significant amount of work involved in creating a height overlay for the B-6 zone within which the property is located. The height study behind the overlay dates back over ten years ago and was recently vetted thoroughly by the Planning Board and the City Council. We therefore request that the existing height overlay be honored by the Board in its review of future proposals.

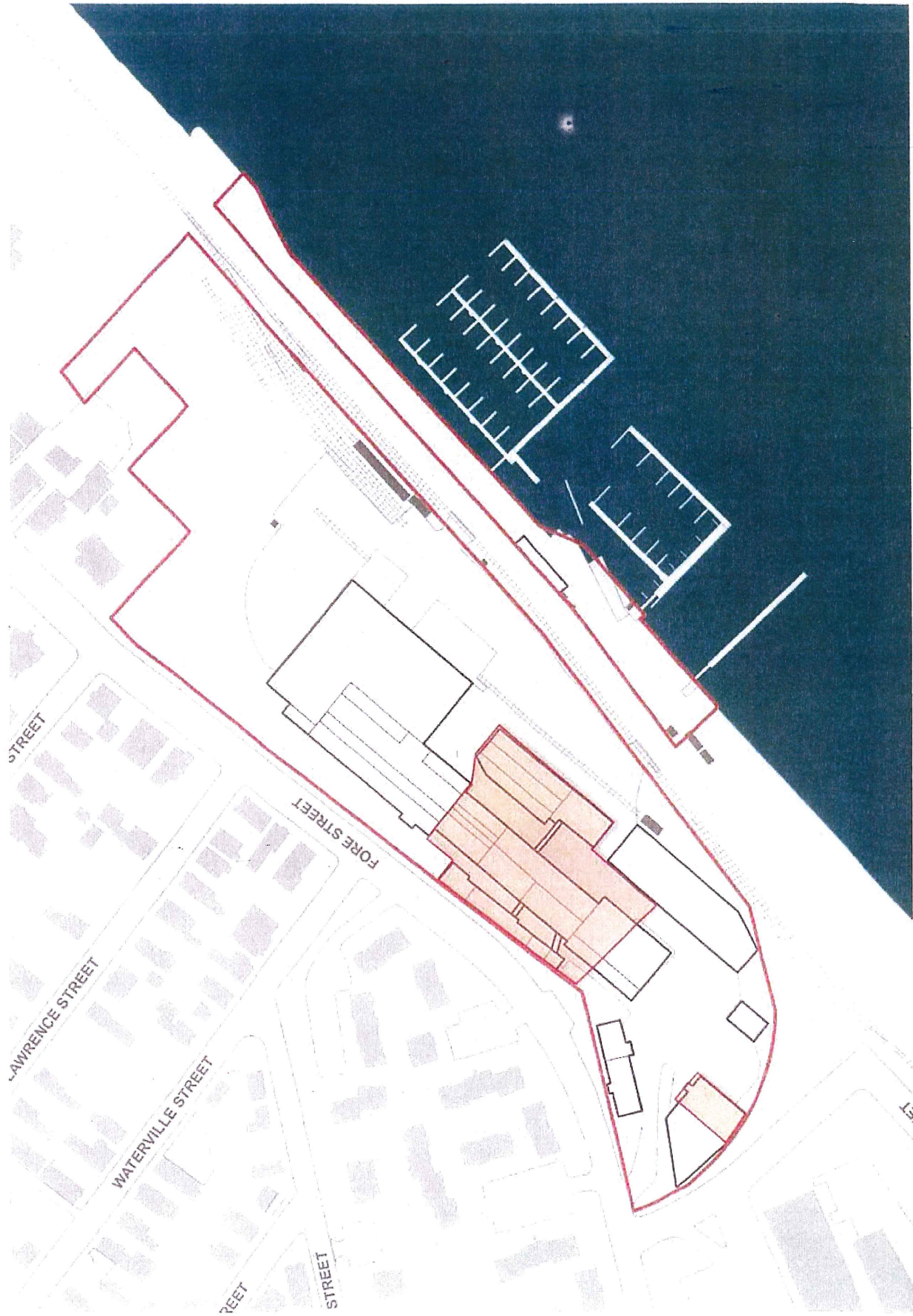
Thank you for your time and thoughtful consideration regarding this important property. We look forward to working with you in the future as the property is developed in a way that we can all be proud of.

Sincerely,


Mary E. Costigan

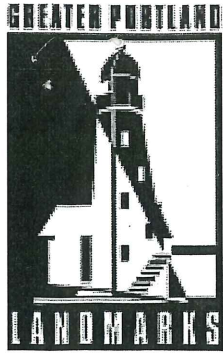




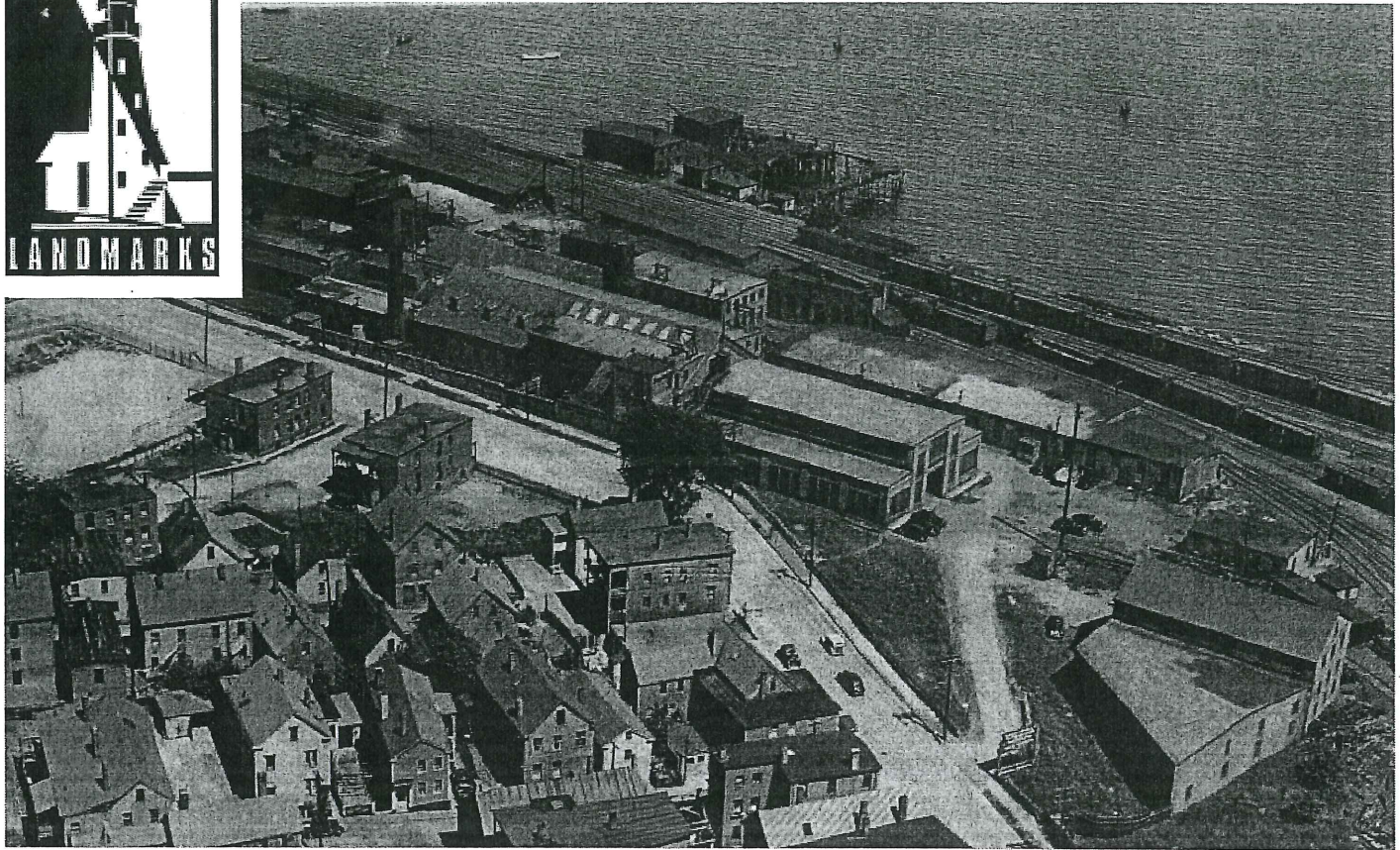


58 Fore Street: Proposed Historic District Boundaries

delivered 6/24/15



A POTENTIAL PORTLAND COMPANY HISTORIC DISTRICT

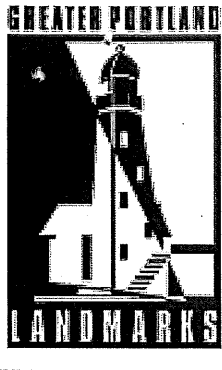


The Sutherland Consulting report identifies the Portland Company as a unique nationally significant example of a complete 19th century locomotive manufacturing facility. It appears to have been the first complex in the United States built specifically for the manufacture of railroad equipment with all of the necessary work shops and a foundry on a single site. It contains the oldest surviving railroad shop buildings in the nation still within their historic manufacturing complex context. It is also significant at the state and local level in the areas of industry, community planning and development, and architecture. Greater Portland Landmarks supports local historic district designation to preserve this rare example of an industrial manufacturing complex.

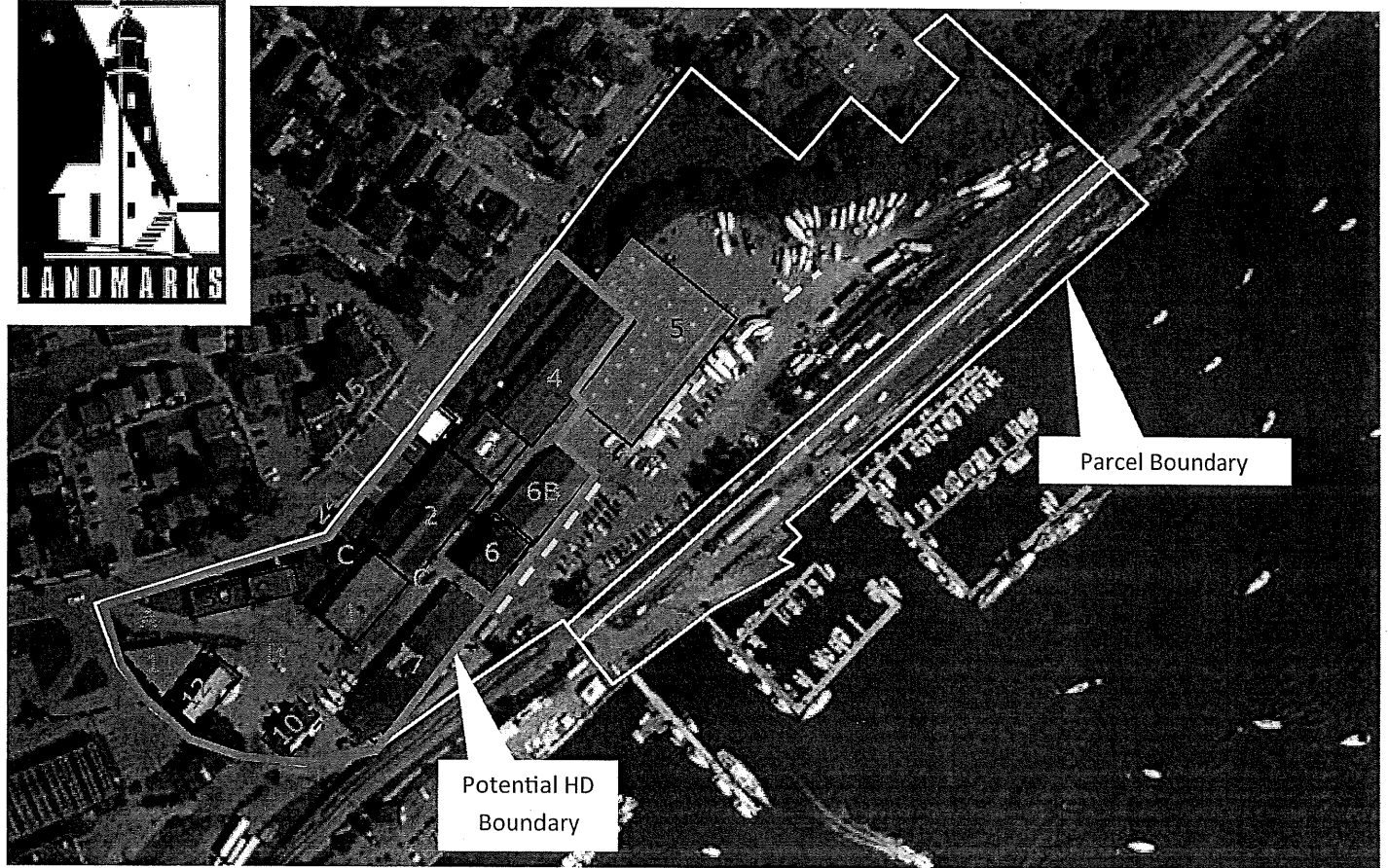
The visual character of the historic complex is defined by the relationship of the buildings to each other and its location below the original shoreline along Fore Street. Still accessed by the 1847 curving driveway off Fore Street, the complex is located on former mud flats and land filled to accommodate the construction of the St. Lawrence and Atlantic Railroad. The proximity and linear orientation of the buildings permitted related manufacturing processes to take place in an efficient progression of production. The alleys formed by the closely built manufacturing buildings are spanned by pedestrian bridges that afforded covered passage between interconnected areas of production. The entrance yard at the south end of the site separated the manufacturing buildings from the combustible materials in the paint shop and the invaluable patterns stored in the two pattern buildings and accommodated railroad tracks to carry locomotives to the nearby railroad yard.

The complex should be locally designated by the City of Portland to preserve the elements of this complex sufficient to illustrate the evolution of this industrial factory as well as the industrial processes and assembly methods that produced the locomotives, boilers, and other products for Maine and the nation.

Greater Portland Landmarks supports a Portland Company Local Historic District that would include nine contributing industrial buildings and site features that comprise the historic foundry-machine shop complex and its historic entrance yard off Fore Street. The boundary of the potential district includes those resources that are historically associated with the manufacture of locomotives, boilers, and other cast iron items for the transportation, paper making, and canning industries during its period of significance from 1847-1920* and retain adequate integrity to portray their relationship to the manufacturing process.



A POTENTIAL PORTLAND COMPANY HISTORIC DISTRICT

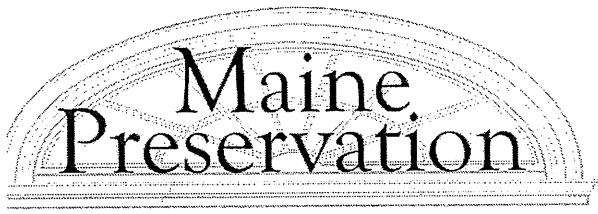


The boundary encompasses all of the significant resources and features that comprise the proposed district as well as six non-contributing resources. The non-contributing resources include Buildings 4 and 7, large scale masonry buildings that contribute significantly to the complex's alley-way character, but are structurally deficient, the significantly altered former boiler house, and two small scale masonry buildings that are also structurally deficient, Buildings 11 and 10. The proposed boundary was drawn based on the limits of the manufacturing complex during its period of significance and to exclude modern intrusions and parking areas as much as possible. The northern boundary is determined by Fore Street. The western boundary is defined by the historic limits of the parcel. The northern and eastern boundaries were drawn to exclude modern buildings and areas of the site that no longer contribute to the integrity of the complex.

*The period of significance begins with the construction of the oldest buildings in the complex and ends after the last significant manufacturing building was completed.

1 Erecting Shop, 1918 (C)	7 Car Shop, c1873, 1904 (N)	24 Vault Storage, c1905 (C)
2 Machine Shop, c1847 (C)	10 Paint Shop, c1873 (N)	30 Office, 1950 (N)
3 Machine Shop, c1847, c1895 (C)	11 Pattern Storehouse, c1885, 1895 (N)	A Entrance Drive (C)
4 Foundry, 1895, 1904-1909 (N)	12 Pattern Storehouse, 1895 (C)	B Entrance Yard (C)
5 Late 20th century (N)	14 Drafting/Storehouse, c1858-64 (C)	C Alley (C)
6 Chapman Elec Co., 1896-1904 (C)	15 Boiler, 1858-1864 (N)	
6B Black Smith & Tank Shop, 1883 (C)	16 Brass Foundry, 1864-1871 (C)	

C = Contributing, N = Non Contributing



Our Heritage, Our Legacy

233 West Main Street • Yarmouth, Maine 04096
Tel (207) 847-3577 • info@mainepreservation.org
www.mainepreservation.org

June 24, 2015

Members of the Historic Preservation Board:

On behalf of Maine Preservation, the statewide nonprofit historic preservation organization, I am writing to support designation of The Portland Company complex site on Fore Street as a Local Historic District.

The Portland Company complex has local, statewide and national historic significance, yet years of deferred maintenance have left the complex buildings in serious disrepair. As noted in the memo to the HP Board by Deborah Andrews dated June 19, 2015, the preservation ordinance requires the nominated resource to have sufficient integrity of location, design, *condition*, materials and workmanship to make it worthy of preservation. Maine Preservation (MP) concurs with the HP Board assessment that several of the buildings are noncontributing because of their severely deteriorated condition including buildings No. 7, 10 and 11.

Maine Preservation shares the opinion that Building No. 4 is a key historic element of the complex core. But based on the Resurgence Engineering and Becker Structural Engineers assessments of the complex, the structural design of the building is greatly flawed. As such, the building requires demolition in whole or major part and reconstruction with a different structural design, which is not historic preservation. We urge the HP Board to thus determine this historically important building noncontributing due to condition.

MP in several conversations with the principals of CPB2, LLC has shared the goal of helping the project pursue historic tax credits, which will greatly improve the economic feasibility of the project as well as ensure rehab to preservation standards. Based on our conversation with Maine Historic Preservation Commission, we believe that a strong and unified case must be made to the National Park Service (NPS) to allow for certain buildings within the District to be determined noncontributing.

Buildings No. 14 and 16 appear in more dire condition than any other buildings on the site, but an engineer has not evaluated them. MP supports the goal of retaining their siting and the alleyway and any significant fabric that can be feasibly rehabilitated. But we support a local determination of contributing for 14 and 16 only if: 1) the owners may present further evidence of their condition which may remove them as contributing; 2) that significant fabric be retained as feasible in rehab; and 3) that additions atop these buildings be permitted, as has been previously discussed. MP requests that such a conditional determination of contributing be made for local review purposes only, with clear direction to the staff that if Portland nominates this district for state and national historic tax credits that these buildings *not be included as contributing for the tax credits*. This is based on their deterioration as well as the prohibition by the NPS for tax credit projects with rooftop additions visible from the street.

With the possibility of acquiring historic tax credits, Portland has an opportunity for a revitalized complex to become once again a vital community asset. Reaching too far to require reconstruction projects of the magnitude required by Buildings No. 4, 14, and 16 could place in jeopardy the entire redevelopment project. We hope the preservation community and the developers can come to a consensus around the rehabilitation of key buildings in order to preserve and enhance the architectural integrity, feel and spirit of the complex as a whole. Thank you for your service.

Sincerely,

Greg Paxton

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To: Deb Andrews
 Historic Preservation Program Manager
 City of Portland

From: Scott Hanson
 Sutherland Conservation & Consulting

September 2, 2015

RE: Portland Company Building 1 (Erecting Shop)

Dear Deb:

You have requested that I provide specific information regarding to the role of Building 1 (Erecting Shop) at the Portland Company throughout the productive life of the company, and its relative significance within the complex. I understand that this question is pursuant to questions raised at the July 28 Planning Board Workshop relative to the historic and architectural significance of the building. The following is from our August 2014 report commissioned by the City of Portland:

Building 1: Erecting Shop (Construction Date: 1918)

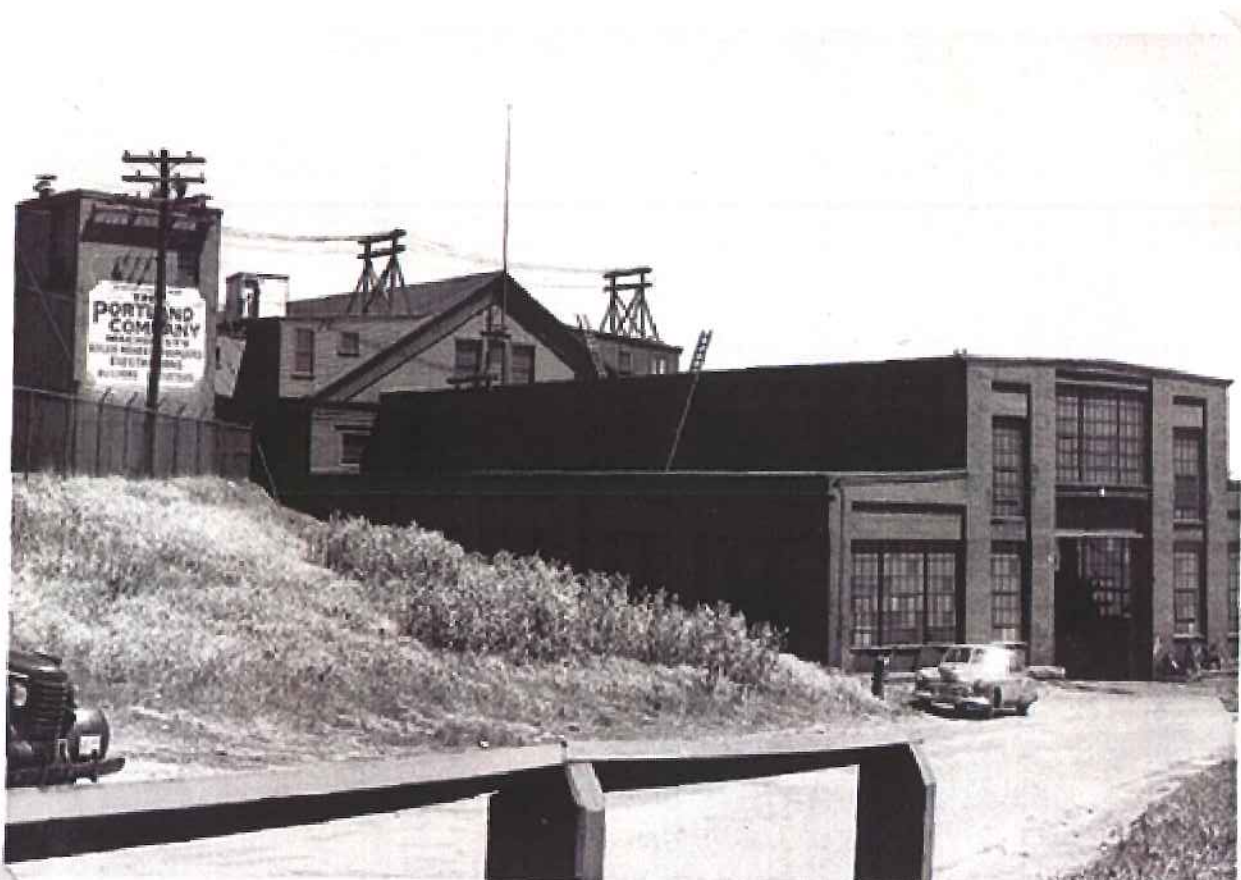
The Erecting Shop was built to replace an earlier wooden erecting shop, built between 1871 and 1880 on the same site. The Foundry, Machine Shop, and Erecting Shop were closely related in the production process, and were aligned so the steps of the work could flow from the Foundry, through the Machine Shop, and into the Erecting Shop, where a locomotive or other large piece of machinery could be assembled above railroad tracks that led from the building to the Grand Trunk rail yard. The brick wall construction relates it to earlier buildings on the site, but its steel truss roofing system, electric overhead traveling crane, clerestory, and large steel framed windows provided maximum utility with a large open floor space and considerable natural light for the assembly process. The building retains a very high degree of integrity to the time of its construction with some alterations to the south and east elevations. These involve increasing the size of the bay doors on the south elevation, likely during the period of significance; and infilling two windows on the east elevation with modern siding material. The remainder of original windows are intact, with some limited areas of deterioration to the frames.

As stated in our report, "The buildings of the Portland Company complex embody the distinctive characteristics of a type, period, or method of construction, specifically several types of industrial buildings built between 1847 and 1920," and "The buildings of the complex retain a high degree of architectural integrity to the period of Portland Company production..." The uses of Building 1 are detailed in the report, stating that the building was, "constructed as the Erecting Shop to replace an earlier one-story wood building from the 1870s that was used for the same purpose. By 1949 Building 1 was used as a machine shop."

The report only briefly addresses late 19th/Early 20th century diversification at the Portland Company, after the period of locomotive construction was over. In the interest of keeping our report on the long and complex history of the site to a readable length, the emphasis of the report was on the development of the buildings, not on their subsequent uses. Like most fabrication shops, the Portland Company was in a state of flux and constant change throughout its lifetime. The many areas of significance documented in the Sutherland report make plain this wide range of products produced by the company. To imply that it has one significant purpose during a short period is to misunderstand the very nature of the Portland Company's ever-changing business. This report's emphasis on the pre-1920 period in no way suggests that the significance of the complex ends at that point in history. As is repeatedly stated in the report, the period of significance continues well into the 20th century. This later period was not detailed in the report to the degree the earlier period was because there were few changes to the physical plant after the construction of Building 1 in 1918. 1918 represents the end of the significant historic *development* of the complex, not the end of its significant historic *functions*.

Like all industrial concerns in the U.S., the Portland Company struggled through the Depression. Unlike many companies, it survived that difficult period and was returned to full production during World War II. Following the war, the company continued its long-time function in providing machinery and equipment for production of consumer products. Following changes in the market, the company began making machinery for the new thermo-plastics industry while continuing to make machinery for paper and textile mills. This type of shift in production is typical of historic industrial facilities and does not constitute a disruption in historic significance as long as the essential stages of production remain the same. At the Portland Company, the essential stages of production described in our report continued until the end of the period of significance. From steam locomotives in 1847 to nuclear reactor containment shells in the 1970s, the production process remained essentially unchanged. Building 1 provided the second largest clear floor space of all the buildings (only the foundry was larger). The large modern steel framed windows made it the best day-lit space in the complex. After the period of use in the erection of massive equipment for paper mills and hydroelectric power plants largely ended, the space was used for an expansion of the neighboring machine shop. As the newest building in the complex, it remained essential to the functioning of the company until the end of the period of significance.

A series of photographs taken at the Portland Company by photographer Leyland Whipple (below) includes a number of images of Building 1 in 1949-50. These photos clearly document that the building was an important functional part of the operations of the Portland Company more than thirty years after it was built. This photo album can be found at: <https://www.flickr.com/photos/mvfotog/sets/72157604779520888/> (accessed September 2, 2015).



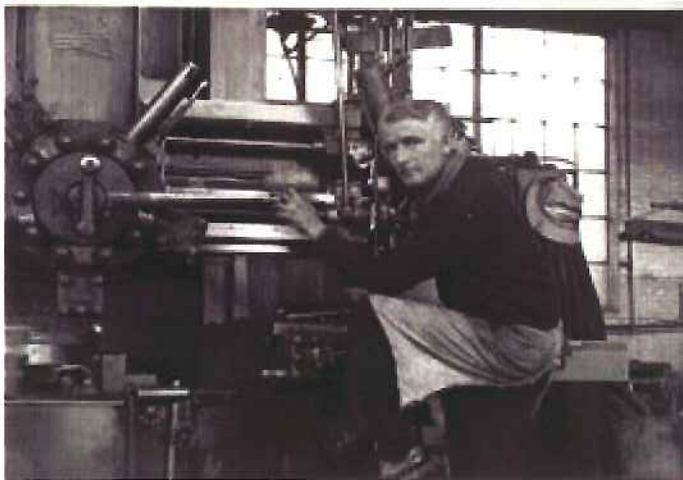
1. Portland Company Building 1 from Gate, c. 1950.



2. Employee Charlie Pratt at work in Building 1, c. 1950.



3. Employee Happy Pettis at work in Building 1, c. 1950.



4. Employee Frank Riley at work in Building 1, c. 1950.

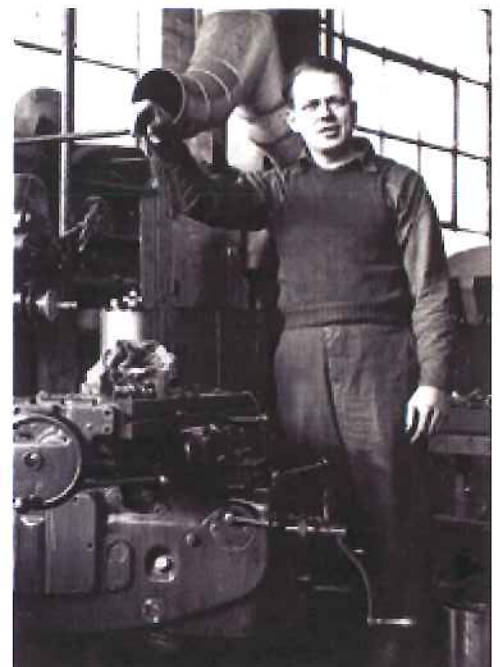


5. Employee Ritchie Murray at work in Building 1, c. 1950.



6. Employee Vic Hammon at work in Building 1, c. 1950.

7. Employee Win Strout at work in Building 1, c. 1950.



RESURGENCE

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132 BRENTWOOD STREET
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WWW.RESURGENCEENGINEERING.COM

September 4, 2015

City of Portland Planning Department
Attn: Deb Andrews
Via email to: dga@portlandmaine.gov

RE: Portland Company Complex, 58 Fore Street, Portland, Maine

Dear Deb,

As I understand, during the Planning Board meeting of July 28, the Board raised questions about the overall condition of Building 1 and Building 16 of the Portland Company Complex. The following discussion provides more background on the building assessment that we performed, and further describes the work required to rehabilitate these two structures. Following are the summary statements regarding the condition of the two buildings included in my March 26, 2015 report. (More detailed analyses were also included in the report.).

Building 1 - Erecting Building, c.1918

Relative rehabilitation costs for this structure and building envelope are based primarily upon the fact that the structure is repetitive in construction technique, offset by the likely reconstruction of the front masonry (west) wall. The staging and access cost required to perform clerestory rehabilitation from interior and exterior will be an increasing cost factor in building rehabilitation. A significant amount of steel-framed window glazing would require repair or replacement. Since this is the youngest building in the study, existing steel materials may be of higher quality and some understanding of snow loading requirements was incorporated into the design.

Building 15/16 – Boiler House and Brass Foundry c.1858, 1864

We did not enter Building 15, but the visible condition of the second floor framing means the structure would likely need to be rebuilt. Building 16, the Brass Foundry, requires several of the same structural assessments and likely upgrades that Building 14 requires, as well as the rehabilitation of the small south façade.

Additional Comments:

Building 1 – Erecting Building, c. 1918

Our historic construction research, described in our report, reveals that Building 1 was constructed in an era that did, in fact, consider the effects of snow loading on buildings, although that snow loading did not consider drift loading adjacent to lower and upper roof intersections. We understand that change of occupancy and conformance with contemporary code requirements dictates full evaluation and strengthening of the roof. Roof strengthening is common in a redevelopment project that involves changing a building's occupancy from industrial or storage occupancy to business or assembly occupancy.

When rehabilitating Building 1, it is possible that original roof decking, which is rotted in many areas, could be recycled and replaced with metal decking or plywood that would create a much stronger roof system. Original roof decking could be cleaned and re-integrated as a finish ceiling surface between new or supplemental roof framing, maintaining the architectural feature of the open structure while providing necessary structural strength to resist snow, wind, and seismic forces.

Exposed steel lintels are often replaced in century-old buildings undergoing rehabilitation. Contemporary coating systems and galvanizing can provide far better long-term corrosion protection than welding and rehabilitating existing corroding lintels, and preserve the original appearance of the original construction. Replacing the lintel systems can also present opportunities to improve lateral force stability.

It is commonplace to replace missing mortar and repoint brick during building redevelopment projects. Change of building ownership often spurs masonry rehabilitation regardless of whether a building structure is rehabilitated or if the building is redeveloped.

The pilaster cracks at the south-facing elevation of Building 1 can be rebuilt and strengthened as part of the overall rehabilitation of that front-facing façade. Other locations in Building 1, toward Building 2 could be modified to provide masonry expansion joints to mitigate future thermal expansion concerns by providing movement joints in the long walls. Returning the front-facing façade to its appearance during the time of historic significance can also provide opportunities to strengthen the end wall by installing supplemental steel bracing or reinforced shotcrete shear wall elements.

While the Structural Outcomes for Renovation/Restoration described in the BSE letter are correct, we wish to point out that the anticipated outcomes for Building 1 are often part of a building structural rehabilitation. In fact, Buildings 2 and 3 present far greater structural challenges than the relatively consistent challenges presented by Building 1. We also reiterate that the more recent construction date (1918), combined with the repetitive nature of the building elements can allow for a slightly less expensive rehabilitation than indicated in the BSE report for Building 1. All repairs and modifications anticipated for the structural rehabilitation of Building 1 will employ standard means and methods normal to steel frame construction and masonry rehabilitation, and from a technical standpoint can be accomplished in a manner that will maintain the integrity of the historic structure.

Building 16 – Brass Foundry, c.1864

We considered Building 15/16 as a joined structure, separated by the chimney and a buttress wall. We did not access Building 15 for safety reasons, nor do we argue its potential removal. However, Building 16 is in much better condition, relatively speaking, than Building 15.

Building 16 can, in fact, survive the removal of Building 15, if the buttress wall between Building 15 and Building 16 is preserved. If necessary for a future design program for the site, Building 16's roof could either be strengthened or bridged (eliminating snow loads) to accommodate construction adjacent to or above Building 16. Several contemporary multi-story structures on Munjoy Hill are being constructed to bridge them over the slope descending toward Washington Avenue.

Potential complexity of the Building 16 alley façade rehabilitation is clearly offset by the small size of the building and by the simple materials used in its construction. The entire alley-facing façade comprises a very small percentage of the overall façade area encompassed by Buildings 2 and 3, let alone the project as a whole.

City of Portland Planning Department, attn.: Deb Andrews
re: The Portland Company Complex, Building 1 (Erecting House) and Building 16 (Brass Foundry)
Page 3 of 3

Conclusion:

In conclusion, Building 1, The Erecting Shop, and Building 16, the Brass Foundry, are in poor condition (Building 1) and in very poor Condition (Building 16), but both buildings are salvageable. Appendix A of our original report, dated March 2016, 2015, further describes these conclusions and degrees to which a structure in poor or very poor condition can be rehabilitated. If you have any further questions, please feel free refer to the original report and to contact me.

Sincerely,

A handwritten signature in blue ink that reads "Alfred H. Hodson III, P.E.".

Alfred H. Hodson III, P.E.

AHH/ah



PAUL R. LEPAGE
GOVERNOR

MAINE HISTORIC PRESERVATION COMMISSION
55 CAPITOL STREET
65 STATE HOUSE STATION
AUGUSTA, MAINE
04333

EARLE G. SHETTLEWORTH, JR.
DIRECTOR

4 September 2015

Deborah Andrews
Historic Preservation Program Manager
Planning & Urban Development Department
389 Congress Street
Portland, Maine 04101

Re: Portland Company, 58 Fore Street

Dear Deb:

In a letter received on September 2, 2015, the Maine Historic Preservation Commission (Commission) was asked to comment as to whether the local historic district at the Portland Company complex, as proposed by the Portland Historic Preservation Board, would be eligible for certification by the National Park Service based on applicable criteria as expressed in Portland's Historic Preservation Ordinance. Technical Preservation Services is the branch of the National Park Service that certifies local historic districts under local historic ordinance.

In 1976 the Commission determined that the entire Portland Company complex was eligible for listing in the National Register of Historic Places. We revisited this finding in 2014 and at that time confirmed the earlier assessment. In a March 31, 2014 letter to Deborah Andrews we stated that the property meets National Register Criterion A, in the areas of Industry, Engineering and Transportation, and Criterion C as a historic district. For both Criteria the period of significance began in 1845/6 and ended in 1982, the year the foundry closed. The only non-contributing building in the complex would be Building 5, which was built after the foundry closed.

As you know, a certified district must substantially meet the National Register criteria (see 36 CFR 67.9). Although a historic district designated under a local statute must meet the National Register criteria as defined in 36 CFR 60, the criteria for local designation in Portland includes additional parameters that are not components of the National Register criteria. "Condition" is not one of the aspects of integrity evaluated under the National Register, nor is there a clause linking integrity to

worthiness of preservation or restoration. For this reason, the Commission does not feel that we have an adequate understanding of how the Technical Preservation Services branch of the National Park Service would apply and evaluate these two factors with respect to the Portland Company Complex, nor can we speculate on how that evaluation might be altered if any of the existing historic buildings were demolished.

Please do not hesitate to contact the Commission if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Christi A. Mitchell". The signature is fluid and cursive, with a large, stylized "C" at the beginning.

Christi A. Mitchell

National Register Coordinator

BERNSTEIN SHUR**COUNSELORS AT LAW**

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Mary E. Costigan
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August 26, 2015

Portland Planning Board
City of Portland
389 Congress Street
Portland, Maine 04101

Re: Proposed Designation of Portland Company Historic District

Dear Planning Board Members:

This letter and the attached materials are intended to address the Board's requests for more information from the July 28th workshop. To remind the Board of CPB2's position on the Historic Preservation Board's recommended historic district on their property at 58 Fore Street: 1) Buildings 1 and 16 should be categorized as non-contributing; 2) the boundaries of the District should be limited to our proposed boundary set forth in the attached; and 3) the following language should be added to the Portland Company Historic District: "the height allowances established by zoning shall be honored in reviewing proposals for new construction within the district."

Building 1

Structural Integrity: We have attached a letter from Becker Structural Engineers that includes an executive summary of the structural condition of Building 1, providing further detail on their original findings. In the letter, Becker concludes that Building 1 is rated "very poor/salvageable with significant structural rework and investment/questionable economic viability/consider demolition." Further, Becker states, "Our justification of this rating is that all major structural systems are affected in a renovation." Becker's full review of Building 1 can be found on pages 5-10 of the March 28, 2014 Structural Report which has been submitted to the Board.

Historic Significance: As we have stated previously, the current Building 1 was built at the end of the period of significance, in 1918. As you can see in the attached timeline, the vast majority of the historically-significant activities of the Portland Company took place between 1847 and 1918. In reviewing the Sutherland Report for further information, it is notable that the Report does not discuss any activities of significance that took place on the site after 1918. Appendix H of the Sutherland Report references a Building Inventory by Tremont Preservation Services, but includes only the significant activities that occurred prior to 1918. In the full text of the Tremont Inventory, the history of the site beyond 1918 states as follows: "During the Depression years, manufacturing plummeted and the Portland

Company suffered bankruptcy." The company stock was purchased by Phineas Sprague's grandfather, who owned it with his cousin through 1956, diversifying the operations to include the manufacturing of snow plows, washing machines, etc. The property changed hands a few more times and produced things such as a machine to form Styrofoam containers, as well as components for the nuclear industry. These are the activities that occurred in the current Building 1 – not the historically significant activities such as the extensive locomotive production mentioned in the Sutherland Report. Those significant activities took place in the original building 1, which was constructed in 1880, was made of wood and had a smaller footprint. Additional photographs of the original building 1 are attached.

Building 2 façade: In addition, to the lack of structural integrity and lack of historic significance of Building 1, the removal of Building 1 will allow for the revealing and restoration of the façade of Building 2 (an original Portland Company Building built by John Poore in 1847) and the original rail yard. The attached artist renderings show CPB2s conceptual ideas of how Building 2 can be showcased and the original yard used as a public plaza.

Historic Tax Credits: Although the Historic Preservation Board, City staff and Maine Preservation are focused on historic tax credits as a reason for retaining Building 1, as we know, these credits are reviewed annually and should not be considered as planning tools and may in fact not be available at the time of development or any other rehabilitation project. Furthermore, availability of potential historic tax credits is not a element of Portland's city ordinances or its comprehensive plan.

Building 16: We have attached photographs and the summary of the structural condition of Building 16 which was rated a 1.5 by Becker Structural Engineers: Very poor/unsafe/demolition likely.

We therefore propose that Building 1 be classified as Non-Contributing based upon the date of construction, the fact that it is not the original erecting shop for the Portland Company, and because of its poor structural integrity and that Building 16 be classified as non-contributing based on its structural condition.

Proposed Historic District

Should the Planning Board recommend a historic district on the Portland Company property, we have attached a depiction of the proposed boundaries. It includes the significant historic core of the complex: buildings 2, 3, 6A, 6B, 12, 24, 14, 15, and 16, as well as a portion of Building 1, to be preserved as open space.

Building Height

We request that language be added to the Portland Company district as follows: "the height allowances established by zoning shall be honored in reviewing proposals for new construction within the district" consistent with language in the Congress Street historic district. We have attached the B-6 Building Height Overlay for your reference. As you can

August 26, 2015
Page 3 of 3

see, the majority of the proposed historic district has a maximum building height of 35 feet and about 25% of the proposed district has a maximum building height of 45 feet.

Thank you for your time and consideration.

Sincerely,

A handwritten signature in black ink, appearing to be 'MEC', with a long horizontal line extending to the right.

Mary E. Costigan



August 25, 2015

CPB2 Management LLC
P. O. Box 7519
Portland, Maine 04112
Attn: Kevin Costello

The Portland Company
58 Fore Street
Portland, Maine

Dear Kevin:

Per your request we have prepared an executive summary regarding the structural condition and likely remedial work associated with Building 1 of the above noted Portland Company complex. Our opinions are based on visual observations made in December 2013 thru February 2014. The intent of our visual review was to provide CPB2 with a general understanding of the structural condition of the existing buildings on the property. We evaluated the structural condition of Building 1 and identified the following:

Findings

- The steel frame high roof structure is likely not rated for snow loadings and the low bay roofs are likely not designed for snow drifting due to the high-low roof condition. Both conditions will likely cause overstresses in framing and decks and will need to be reinforced to meet current code requirements.
- Wood plank roof decking was rotted in several locations, particularly at eaves due to leaking roofs. In general, the roof appears to have leaks throughout. Wood decking is not effective as diaphragm to transfer lateral loads.
- Masonry piers along south elevation had large vertical cracks, likely a result of thermal stresses in the brick and discontinuity of steel lintels. Steel lintel framing over large windows cause disruption of brick piers and cause structural instability of piers with a hinge type condition. Cracks allow water infiltration which causes further structural damage.
- The lintel flanges are exposed over windows at the exterior side and rust jacking is causing expansion, rotation and masonry damage.
- Concrete window sills are spalled and cracked with exposed reinforcing in many locations.
- Many brick masonry joints have missing mortar, particularly at eave drip line below window sills. Moss was noted to be growing in masonry joints at and above the pavement line. Masonry also has wide spread areas of distress including loose and missing mortar, cracks and spalls.
- Upper roof appears to be an out of date tar and chip roof which will need replacement.

- No definable lateral load resisting system in either principal direction.
 - Limited frame action in high bay of transverse direction. Offset column splices at low/high roof transition and crane girder create a stiffness discontinuity.
 - No method to transfer clerestory loads to lower level in longitudinal direction.
 - End wall and side walls have large openings with unreinforced masonry bearing walls known to have poor performance in seismic events.
 - Wood roof diaphragms are likely inadequate to transfer diaphragm shears to exterior walls.

Based on our observations, the anticipated Structural Outcomes for Renovation/Restoration include:

- Replacement of roof decking with metal deck along with new roofing and insulation and re-establishment of diaphragm connections to existing walls.
- Reinforcement of roof framing to meet snow loading requirements.
- Introduce lateral load resisting system with wall shotcrete or steel frame.
- Repair exterior masonry and rebuild certain areas as required. Extensive rebuilding will be necessary to address cracked masonry pier conditions. Clean masonry.

Structural Condition Rating

Based on the level of structural work required to all major structural elements, we rate the structural condition of Building 1 as "very poor/salvageable with significant structural rework and investment/questionable economic viability/consider demolition". Our justification of this rating is that all major structural systems are affected in a renovation. Exterior masonry piers have major vertical cracks. Steel lintels create a hinge condition in exterior masonry piers and therefore their stability is questionable. The end bay has large masonry openings that are not original to construction and seismic performance of the system is very questionable.

Structural Renovation Costs

Rehabilitation of open one story space would have high unit costs considering necessary investment in structure verse net usable space.

In closing, our review indicates that most of the structural systems of Building 1 are in very poor condition. Further, based on the current conditions and the level of alteration needed to repurpose the building, the existing structure will need most elements and systems improved to meet the code requirements of 2009 IEBC and IBC codes which will entail a significant cost in comparison to the useable area of the building. We suggest you reference our original report dated March 28, 2014 for more details on existing conditions and code requirements.

We trust this information meets your needs at this time. If you have any questions, please feel free to contact me.

Sincerely,
BECKER STRUCTURAL ENGINEERS, Inc.

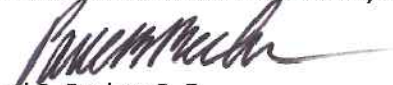

Paul B. Becker, P. E.
President





Photo 1-1: General View, Building 1

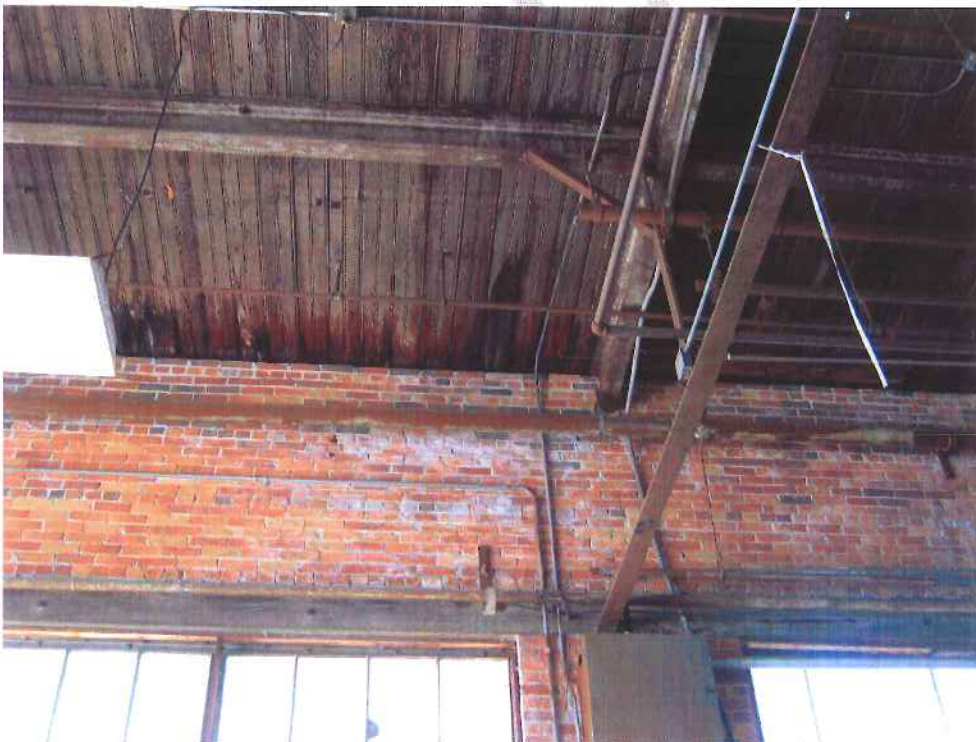


Photo 1-2: Wood deck condition at eave.





Photo 1-4: Vertical brick masonry crack at southwest pilaster.





Photo 1-5: Column discontinuity at low-high roof condition.



APPENDIX A PORTLAND COMPANY COMPLEX – MARCH 2015 RELATIVE CONDITION AND REHABILITATION COST COMPARISON

BUILDING NUMBER - NAME DATE	RELATIVE STRUCTURAL CONDITION			RELATIVE REHABILITATION COST	
	BECKER	RESURGENCE /BECKER SCALE	RESURGENCE SCALE	BECKER	RESURGENCE
BUILDING 1 - ERECTING BUILDING 1918	2.0	2.5 (REPETITIVE DTLS)	P2	4.0	3.5 (REPETITIVE DTLS)
BUILDING 2 - MACHINE SHOP 1847	2.5	2.5	P2+	4.5	4.5
BUILDING 3 - MACHINE SHOP 1847	3.0	3.0	P2+	3.0	3.0
BUILDING 4 - FOUNDRY/ACETYLENE HS 1895, 1904-09	1.5	1.5	VP2	4.5	4.0 (REPETITIVE DETAILS, CUSTOM REHABILITATION)
BUILDING 6B - TANK SHOP 1896-1904	3.0	3.0	P2+	3.5	3.5
BUILDING 7 - CAR SHOP 1873, 1904	2.0	1.5 (BOWED WALLS)	VP1	5.0	5.0
BUILDING 10 - PAINT SHOP 1873	1.0	1.0	VP1	4.5	4.0 (REBUILD IN KIND)
BUILDING 11 - PATTERN STOREHOUSE 1885	2.5	2.0 (NORTH WALL)	VP2	4.5	4.5
BUILDING 14 - DRAFTING ROOM AND STOREHOUSE 1858, 1864	NOT INSPECTED	2.0	VP3	NOT INSPECTED	3.5
BUILDING 15/16 (NO ACCESS TO B15) BOILER HOUSE/BRASS FOUNDRY 1858, 1864	1.5	1.5	VP3	3.0	3.0
Averages of common buildings inspected (excluding Building 14)	2.11	2.06		4.06	3.89

SEE FOLLOWING PAGES FOR EXPLANATION OF BECKER STRUCTURAL ENGINEERS AND RESURGENCE ENGINEERING RATING SYSTEMS

Notes:

1. Coordinate this document with "Portland Company Complex General Building Assessment" prepared by Resurgence Engineering et al, March 2015, and "Evaluation of Existing Buildings at the Portland Company Property" prepared by Becker Structural Engineers, March 28, 2014.
2. Further discussion about relative rehabilitation costs related to these structures, by Resurgence Engineering, follows this page.

RESURGENCE ENGINEERING RELATIVE STRUCTURAL CONDITION SCALE OF EXISTING BUILDINGS IN POOR CONDITION

BSE condition #	REP NUMBER	DESCRIPTION OF CONDITION, PRE AND POST MITIGATION	LOCAL/MAINE BUILDING EXAMPLES PRE AND POST MITIGATION
(n/a)	VP1 (very poor, not salvageable)	PRE: Immediate <u>widespread public safety threat and site/occupant safety threat</u> if not barricaded and structurally shored; evacuate nearby buildings, streets, sidewalks, block off parking spaces. Potential for widespread debris field in event of collapse; Building cannot be re-occupied following triggering event. POST: Condemn and demolish building.	Buildings with extensive fire damage
1	VP2 (very poor but salvageable, expensive to rehabilitate, i.e. approx.. BSE cost #4 to #5)	PRE: Immediate <u>widespread public safety threat and site/occupant safety threat</u> if not barricaded and structurally shored; evacuate nearby buildings, streets, sidewalks, block off parking spaces. Potential for widespread debris field in event of collapse; Building cannot be re-occupied following triggering event. POST: Building assessed, barricaded, structurally shored; nearby buildings deemed safe for return; streets, and/or sidewalks and parking spots remain blocked off. Building itself cannot be occupied after stabilization. Unsafe for rescue personnel to enter if trespassers are inside. Shored and secured structure relatively expensive, but feasible, to rehabilitate.	PRE: Norway Opera House, 2007-09 POST: Norway Opera House, 2010+
1	VP3 (very poor but salvageable, moderately expensive to rehab, i.e. BSE cost #3 to 4)	PRE: <u>Immediate site/occupant safety threat and localized public safety threat</u> if not if not barricaded and structurally shored; Block off streets, sidewalks, and parking spaces. Potential for localized debris field in event of collapse; Building can be occupied following the triggering event. POST: Building assessed, barricaded, structurally shored; nearby buildings deemed safe for return; streets, and/or sidewalks and parking spots can remain blocked off or reopened following mitigation. Building itself can be occupied.	PRE: Buildings with widespread loose façade components. i.e. Masonic Temple Localized structural failures i.e. Portland Company Complex Building 4 POST: Stabilized structures, removing loose components or installing covered sidewalk and blocked off parking spaces.
2	P1 (very poor but salvageable, less expensive to rehab; i.e. BSE cost #2)	PRE: <u>Likely site/occupant safety threat and localized public safety threat</u> if not if not barricaded and structurally shored; Block off streets, sidewalks, and parking spaces. Potential for localized debris field in event of element failure; Building can be occupied following the triggering event. POST: Building assessed, barricaded, structurally shored; nearby buildings deemed safe for return; streets, and/or sidewalks and parking spots can remain blocked off or reopened following mitigation. Building itself can be resume occupancy.	PRE: Buildings with a few loose façade components that can easily be removed or snow and ice buildup that can easily and quickly be removed, POST: Stabilized structures, removing loose components or installing covered sidewalk and blocked off parking spaces.
3	P2	PRE: <u>Possible site/occupant safety threat and localized public safety threat</u> if not if not barricaded and structurally shored; No triggering event causing distress; possible change of use makes economics questionable. POST: Rehabilitation Feasibility Study considering economics for specific buildings and structures.	PRE: Portland Company Building Complex Building #1



PHOTO A : Façade of Building 2 built in 1847, original to the Portland Company (photo circa 1871)



PHOTO B: Original version of Building 1 with low profile and no monitor built ~ 1880



PHOTO C: Second version of Building 1 with roofline change and addition of monitor (photo circa 1896)



PHOTO D: New 1918 version of Building 1 with original western façade (photo circa 1938)

History of the Portland Company and Historic Significance of Products Created

Source: Summarized directly from Sutherland Preservation Consultants and Tremont Preservation Services Reports submitted to the Portland Historic Preservation Board.

The Portland Company: Mid-19th Century Manufacturing: The Portland Company was the only company in the U.S. founded for the sole purpose of manufacturing locomotives.

Locomotives: 1848 - c.1900

The Portland Company's first locomotive, the Augusta, was completed in 1848 for the Portland, Saco, & Portsmouth Railroad. Over the next 60 years, 630 more steam locomotives (and hundreds of freight and passenger cars) were constructed. The Portland Company also built locomotives for the U.S. Government during the Civil War.

Fire Engines: c.1860 - 1870s

The Portland Company manufactured the first of its horse drawn steam fire engines, the "Greyhound," in 1860. The Portland Company subsequently produced at least seven steam engines for the Portland Fire Department. Several more steam fire engines were built during the 1860's and into the 1870s.

Steamships and Other Vessels: c.1860 - c.1920

The Portland Company built over 350 steam engines and boilers for marine, as well as, industrial uses. They outfitted towboats, fishing vessels, yachts, dredges, freighters, fireboats, and ferries.

The Portland Company: Late 19th/Early 20th Century Diversification: Portland's economy—and the Portland Company's portfolio—diversified as industrialization progressed. The Portland Company began manufacturing elevators, cast iron elements, and paper industry equipment, and for WWI, they produced brass shell casings. They even distributed automobiles and trucks.

Elevators: Early 20th century

The Portland Company manufactured passenger and freight elevators, at first hydraulically powered and later electrically. The Portland Company also produced the elevators for the Portland City Hall.

Cast Iron: Late 1800s

The Portland Company cast storefronts, man-hole covers, parts for lighthouses (lanterns, lamp decks, spiral stairways, doors and sashes, walkways, railings, vents, spindles and markers, upper sections of light tower), lamp posts, ornate gates, and industrial boilers. They also operated a bronze and brass foundry.

Paper Industry: Late 1800s - 1900s

The Portland Company manufactured equipment used in the paper industry including pulp digesters, boilers, tanks, steam accumulators, chippers and debarkers, vomit stacks, turbines, penstocks, water-control gates, and gate-hoisting equipment.

The advent of electricity meant convenience and new challenges, like the heavy static charge that can be produced during the manufacturing process, causing problems in paper and textile mills. The remedy came in the form of an electric neutralizing machine, patented by electrical engineer, William Chapman, in 1908. The Chapman Corporation operated as a subsidiary of the Portland Company in Building 6 at the waterfront mill yard.

Automobile Sales: c1907 - c1914

The Portland Company served as Maine's exclusive distributor of the high-end Knox automobiles, trucks, firetrucks, and three-wheeled tractors which were manufactured in Springfield, Massachusetts. In 1910, they added the Brush, Cole, and Thomas automobile line to appeal to middle and lower income buyers.

Brass Howitzer Shell Casings for the War: 1917 - 1918

The onset of WWI prompted the need for further diversification and brought a brief respite to the regional decline in manufacturing. Tens of thousands of brass shell casings were produced by the Portland Company, packed in pairs, and shipped to another factory to be filled before being sent to the US Army between 1917 and 1918. Women replaced men, who were overseas serving in the military, in this, and other factories

NOTE: The following section appeared in the Tremont Preservation Services historical survey of the Portland Company report, but was omitted from the Sutherland Consulting Appendix H, which cited the full Tremont Preservation Services Report

Depression Era through 1950s: Snow Plows, Washing Machines, Canning Industry Equipment, Stainless Steel c1920s - 1950s

During the Depression years, manufacturing plummeted and the Portland Company suffered bankruptcy. William "Widgery" Thomas (grandfather to most recent owner, Phineas Sprague Jr.) and his cousin, Charles Payson, purchased the Portland Company's stock and maintained ownership through 1956. They continued to diversify operations, manufacturing snow plows, washing machines, rotary welders, steam retorts (pressure cookers) for the canning industry, cast bean pots for Burnham & Morrill Company (B & M Baked Beans), marker buoys, and a wood match-making machine for Diamond Match Company.

Mid-20th Century through Present: Nuclear Industry Components, Plastic Bottle Extruding Machines: 20th Century.

In 1956, Thomas and Payson sold the Portland Company to United Industrial Syndicate of New York. UIS sold the business back to descendants of William Thomas, the Sprague family, in 1978. The Spragues operated Portland Engineering on the property and manufactured, among other products, components for the nuclear industry through 1981.

The Historic Core of the former Portland Company at 58 Fore Street





58 Fore St Historic Core Concept – Building 2, original to Portland Co, and oldest building on 58 Fore Site



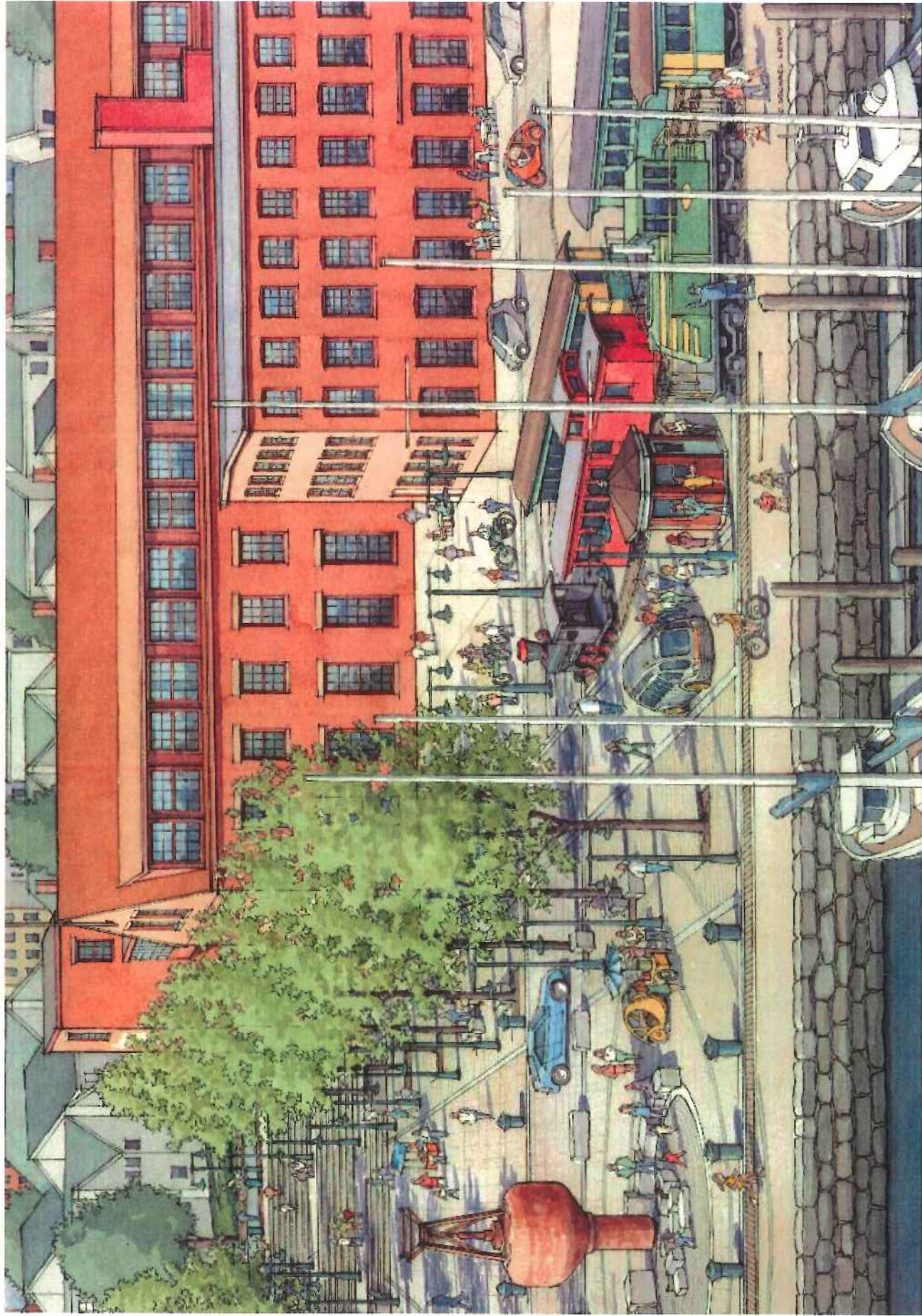
Historic Core Concept – Creating Public Access from Fore Street to Portland's Waterfront



Historic Core Concept – Iconic Facades of the Portland Co Tower, Building 2 c. 1848, and Building 6



Historic Core Concept – Iconic Facades of the Portland Co Tower and Building 2 c. 1848



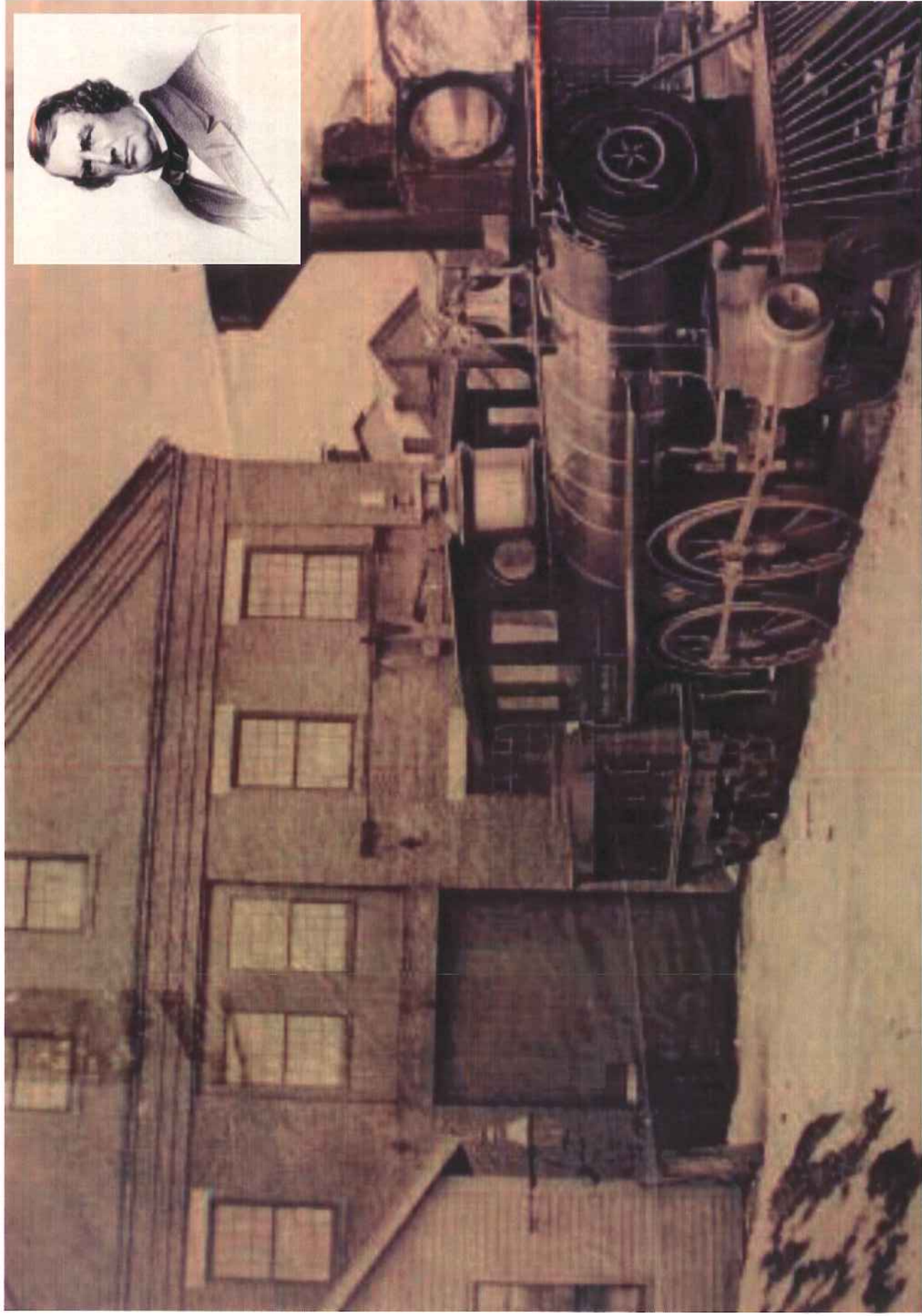
Historic Core Concept – Creating Public Access from Fore Street to Portland's Waterfront



Historic Core Concept – Reinventing the Portland Co Alleys and Linear Alignment



Historic Core Concept – Creating public space between Building 2 and Building 6

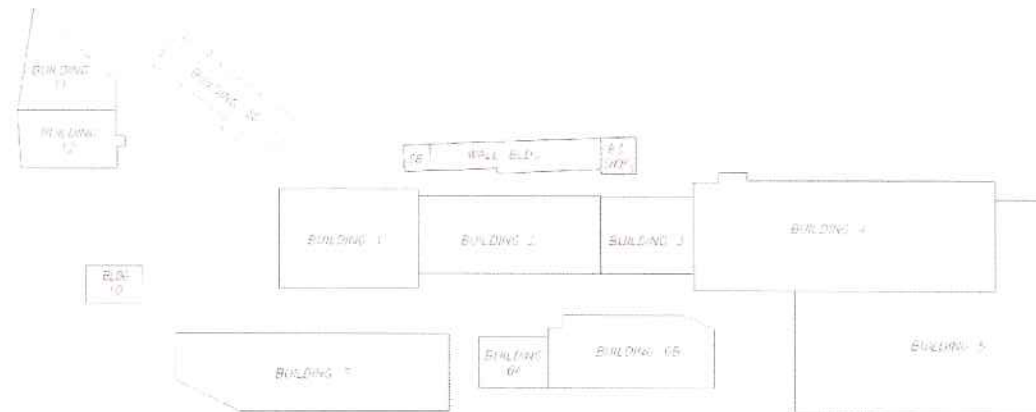


58 Fore Historic Core Concept – Celebrating the Portland Company's Most Historically Significant Building



Revealing the Iconic Façade of Building 2, the Portland Company's first Building (c. 1848)

Building Number: Blacksmith Shop (Building 16)



Location Plan

Description, Condition and Assessment:

- Wood rafter framed roof, back wall and side walls are stone retaining wall for embankment, brick masonry front wall (Photo 16-1).
- Fore Street stone retaining wall at is dry stacked. It was apparent that water travels through the wall.
- North stone walls may be buttressing Fore Street retaining wall.
- Brick masonry had numerous open joints, missing bricks, bulging and moss growth near drip line.
- East side stone wall butts brick masonry front wall to the south; condition is poorly bonded with an open joint.
- Roof rafters appeared to be in good condition, but daylight was visible through roof around chimney penetration.
- Roof eave has been redecked with OSB at eave; roof is covered with shrink wrap.
- Entry did not meet code due to door height.
- Wood windows have broken panes and missing sashes.
- No eave board, building generally not weather tight.
- It is believed that groundwater penetrates this building through the retaining wall.

Anticipated Structural Outcomes for Restoration:

- Repair exterior masonry including extensive repointing and rebuilding to creating contiguous wall conditions.
- Replace windows.
- Create accessible entrance and incorporate 2 means of egress.
- Roof reinforcing to support snow load of properly insulated roof.

Structural Condition Rating	1.5
Structural Renovation Cost Rating	3.0



Rating Justification:

Building currently is not weather tight and extensive work will be necessary address this condition. Entry conditions will need to be brought up to current code for fire and egress compliance. Roof likely not framed to address drifted snow from adjacent high roof/street and will require reinforcement.



Photo 16-1: Exterior view of blacksmith shop/Building 16.





**PHOTO
#16.1**
R 57.jpg

Building 16: View from southeast from alleyway. Note masonry wall return cracks on east elevation (arrow).



**PHOTO
#16.2**
R 56.jpg

Building 15: View from southeast from alleyway. Building did not appear to be safe to enter, and we did not enter first floor.



**PHOTO
#16.3**
a f 93.jpg

Building 16: Enlarged opening in south elevation wall. Entire south wall requires repointing, repair, and anchoring into east wall.



**PHOTO
#16.4**
P 23.jpg

Building 15/16: Remnants of boiler house chimney stack between Buildings 15 and 16.



**PHOTO
#16.5**
P 25.jpg

Building 16: North wall doubles as Fore Street retaining wall. Sloped roof rafters bear onto top of wall. Need to check condition of top plate above this wall.



**PHOTO
#16.6**
A 29 35.jpg

Building 16 south wall (detail): Masonry has simple details and small cornice at the top. Window header at left has been replaced with brick soldier course and steel lintel.



**PHOTO
#16.7**

A 29 36.jpg

Building 16 roof framing, south wall: Roof previously had skylights or vents on south side of roof. Note center line of bearing at braced column. Framing likely undersized.



**PHOTO
#16.8**

A 29 37.jpg

North and east walls: Barrels beneath multiple active roof leaks.



**PHOTO
#16.9**

A 29 42.jpg

Catch basin grate, east of Building 16: Grate covered by leaves and debris, and basin itself appears to be clogged.



**PHOTO
#16.10**

A 30 42.jpg

Building 15 southeast wall corner: Masonry repair is required to create weatherproof and structurally sound transition from brick to stone wall.

APPENDIX A PORTLAND COMPANY COMPLEX – MARCH 2015 RELATIVE CONDITION AND REHABILITATION COST COMPARISON

BUILDING NUMBER – NAME DATE	RELATIVE STRUCTURAL CONDITION			RELATIVE REHABILITATION COST	
	BECKER	RESURGENCE /BECKER SCALE	RESURGENCE SCALE	BECKER	RESURGENCE
BUILDING 1 - ERECTING BUILDING 1918	2.0	2.5 (REPETITIVE DTLS)	P2	4.0	3.5 (REPETITIVE DTLS)
BUILDING 2 - MACHINE SHOP 1847	2.5	2.5	P2+	4.5	4.5
BUILDING 3 - MACHINE SHOP 1847	3.0	3.0	P2+	3.0	3.0
BUILDING 4 – FOUNDRY/ACETYLENE HS 1895, 1904-09	1.5	1.5	VP2	4.5	4.0 (REPETITIVE DETAILS, CUSTOM REHABILITATION)
BUILDING 6B - TANK SHOP 1896-1904	3.0	3.0	P2+	3.5	3.5
BUILDING 7 - CAR SHOP 1873, 1904	2.0	1.5 (BOWED WALLS)	VP1	5.0	5.0
BUILDING 10 - PAINT SHOP 1873	1.0	1.0	VP1	4.5	4.0 (REBUILD IN KIND)
BUILDING 11 - PATTERN STOREHOUSE 1885	2.5	2.0 (NORTH WALL)	VP2	4.5	4.5
BUILDING 14 – DRAFTING ROOM AND STOREHOUSE 1858, 1864	NOT INSPECTED	2.0	VP3	NOT INSPECTED	3.5
BUILDING 15/16 (NO ACCESS TO B15) BOILER HOUSE/BRASS FOUNDRY 1858, 1864	1.5	1.5	VP3	3.0	3.0
Averages of common buildings inspected (excluding Building 14)	2.11	2.06		4.06	3.89

SEE FOLLOWING PAGES FOR EXPLANATION OF BECKER STRUCTURAL ENGINEERS AND RESURGENCE ENGINEERING RATING SYSTEMS

Notes:

1. Coordinate this document with "Portland Company Complex General Building Assessment" prepared by Resurgence Engineering et al, March 2015, and "Evaluation of Existing Buildings at the Portland Company Property" prepared by Becker Structural Engineers, March 28, 2014.
2. Further discussion about relative rehabilitation costs related to these structures, by Resurgence Engineering, follows this page.

APPENDIX A EXPLANATION OF BECKER AND RESURGENCE RATING SYSTEMS

Becker Structural Engineers' (BSE) Rating System

The **relative structural conditions** rating system used in the Becker Structural Engineers Report is shown below:

- 1 = Very poor/unsafe/demolition likely
- 2 = Very poor/salvageable with significant structural rework and investment/questionable economic viability/consider demolition
- 3 = Poor/requires substantial structural work to elements and systems
- 4 = Fair/requires nominal structural work to elements
- 5 = Good condition/minor structural work required

Becker's **relative rehabilitation cost rating system** is based upon structural complexity and size of building, using a scale of 1 to 5 -- 1 being relatively low costs and 5 being relatively high costs. BSE gives no specific definitions of the relative costs, simply a numerical grading system. Such an approach appears to be reasonable, given the preliminary nature of assessment that both firms were instructed to provide.

Resurgence Engineering and Preservation's (REP) Rating System

For ease of comparison, REP used the same **relative structural conditions rating system** as BSE in the summary chart. However, REP believes there is a more accurate and further defined way to classify the buildings in terms of condition. *See chart on following page for REP's proposed rating system as regards condition.*

REP has used the same **relative rehabilitation cost rating system** as BSE. The BSE report provided no specific definition of cost for each rating category.

RESURGENCE ENGINEERING RELATIVE STRUCTURAL CONDITION SCALE OF EXISTING BUILDINGS IN POOR CONDITION

BSE condition #	REP NUMBER	DESCRIPTION OF CONDITION, PRE AND POST MITIGATION	LOCAL/MAINE BUILDING EXAMPLES PRE AND POST MITIGATION
(n/a)	VP1 (very poor, not salvageable)	PRE: Immediate <u>widespread public safety threat and site/occupant safety threat</u> if not barricaded and structurally shored; evacuate nearby buildings, streets, sidewalks, block off parking spaces. Potential for widespread debris field in event of collapse; Building cannot be re-occupied following triggering event. POST: Condemn and demolish building.	Buildings with extensive fire damage
1	VP2 (very poor but salvageable, expensive to rehabilitate, i.e. approx. BSE cost #4 to #5)	PRE: Immediate <u>widespread public safety threat and site/occupant safety threat</u> if not barricaded and structurally shored; evacuate nearby buildings, streets, sidewalks, block off parking spaces. Potential for widespread debris field in event of collapse; Building cannot be re-occupied following triggering event. POST: Building assessed, barricaded, structurally shored; nearby buildings deemed safe for return; streets, and/or sidewalks and parking spots remain blocked off. Building itself cannot be occupied after stabilization. Unsafe for rescue personnel to enter if trespassers are inside. Shored and secured structure relatively expensive, but feasible, to rehabilitate.	PRE: Norway Opera House, 2007-09 POST: Norway Opera House, 2010+
1	VP3 (very poor but salvageable, moderately expensive to rehab, i.e. BSE cost #3 to 4)	PRE: <u>Immediate site/occupant safety threat and localized public safety threat</u> if not if not barricaded and structurally shored; Block off streets, sidewalks, and parking spaces. Potential for localized debris field in event of collapse; Building can be occupied following the triggering event. POST: Building assessed, barricaded, structurally shored; nearby buildings deemed safe for return; streets, and/or sidewalks and parking spots can remain blocked off or reopened following mitigation. Building itself can be occupied.	PRE: Buildings with widespread loose façade components. i.e. Masonic Temple Localized structural failures i.e. Portland Company Complex Building 4 POST: Stabilized structures, removing loose components or installing covered sidewalk and blocked off parking spaces.
2	P1 (very poor but salvageable, less expensive to rehab; i.e. BSE cost #2)	PRE: <u>Likely site/occupant safety threat and localized public safety threat</u> if not if not barricaded and structurally shored; Block off streets, sidewalks, and parking spaces. Potential for localized debris field in event of element failure; Building can be occupied following the triggering event. POST: Building assessed, barricaded, structurally shored; nearby buildings deemed safe for return; streets, and/or sidewalks and parking spots can remain blocked off or reopened following mitigation. Building itself can be resume occupancy.	PRE: Buildings with a few loose façade components that can easily be removed or snow and ice buildup that can easily and quickly be removed, POST: Stabilized structures, removing loose components or installing covered sidewalk and blocked off parking spaces.
3	P2	PRE: <u>Possible site/occupant safety threat and localized public safety threat</u> if not if not barricaded and structurally shored; No triggering event causing distress; possible change of use makes economics questionable. POST: Rehabilitation Feasibility Study considering economics for specific buildings and structures.	PRE: Portland Company Building Complex Building #1

4.10 BUILDING 15/16 – BOILER HOUSE/BRASS FOUNDRY, 1858, 1864

Structure and Building Envelope Description:

- Small (unknown area), two-story structure with conventional lumber framing (15) and unreinforced multi-wythe brick masonry bearing wall (16) along the south (alley) elevation. Building 16 also has an infill wooden partition below a steel beam that previously created a large door opening. Refer to photos #16.1 and #16.2.
- Brick vaults reportedly extend from Building #15 beneath the Fore Street sidewalk. We did not observe these vaults.
- Rubble dry-stacked retaining walls exist at north, west and east elevations. At Building 16, it appears that water penetrates the wall or has in the past.
- Back wall (north wall) is large stone masonry retaining wall supporting hillside at Fore Street.
- Mono-pitch wood-framed roof slopes down toward the south (alley-facing) wall.
- Two-wythe brick masonry front wall features a mixture of granite (likely original) brick, and steel or iron headers on the window and door openings.
- The remnants of the Boiler House chimney base remain between Building 15 and Building 16.
- A large standpipe at east end of building.

Observations and Evaluation:

- The wooden and brick masonry walls of both buildings are in poor condition.
- The chimney base bricks should be checked and stabilized in place.
- Timber and lumber roof framing at Building 16 is undersized for contemporary snow loads.

Adaptive Reuse Potential:

- The building's current use is as a blacksmith's forge, a use not dissimilar to its original purpose as a brass foundry. It may be necessary to rebuild most of the Building 15 framing. In that case, Building 15 would likely need to conform to contemporary code requirements for new structures. From a preservation standpoint, the blacksmith occupancy is likely to be considered as the best and highest use of the structure.
- Open access to framing in Building 16 permits relatively simple structural strengthening techniques. We assume that much of the Building 15 structure will need to be rebuilt.
- As discussed in the Building 14 section, this structure provides opportunities for unique occupancies if properly secured and lighted.

Recommended Building Envelope and Structural Rehabilitation Scope:

- Strip existing roofing, repair damaged sheathing, and add a structural diaphragm, consisting either of plywood sheathing or metal decking above the interior exposed roof decking.
- Insulate roof, and resurface with proper edge flashing and counterflashing.
- Strengthen or rebuild existing roof structure as required, particularly near potential drift areas.
- Strengthen existing roof structure as required to provide wind uplift resistance and to transfer lateral loads through roof.
- Repair or replace existing doors and windows with thermally efficient units that meet National Park Service Standards.
- Repair/replace existing steel lintels with properly galvanized, painted or prepared/painted steel.
- Rebuild the south elevation and Building 15 timber or lumber structures as required.
- Rehabilitate brick masonry front wall of Building 16, to match period of historic significance.
- Improve site drainage and grading around the alley and hillside.

B6 Building Height Overlay

- 1) For Buildings located East of Han than 45 feet shall be wider than 70 f nor longer than 140 feet measured p The 70 foot wide building extension 90 feet apart, measured parallel with Mountfort Street (extension) must be
- 2) No Buildings shall be located outs In Defined View Corridors, no Buildir Fore Street elevation.
- 3) For buildings located East of Mou building shall exceed 35 feet in heigl grade within 100 feet of the Fore Str perpendicular to the Fore Street righ
- 4) Location of Building Break Line is shown, and intended to promote a b for the development of blocks and si location of blocks and site permeabil and reviewed under a Master Develk Subdivision/Site Plan review.

Legend

Key Building Envelope

Building Break Line

View Corridor - No Build Above Relative Fore Street Elevation

Proposed Mountfort Street Extension

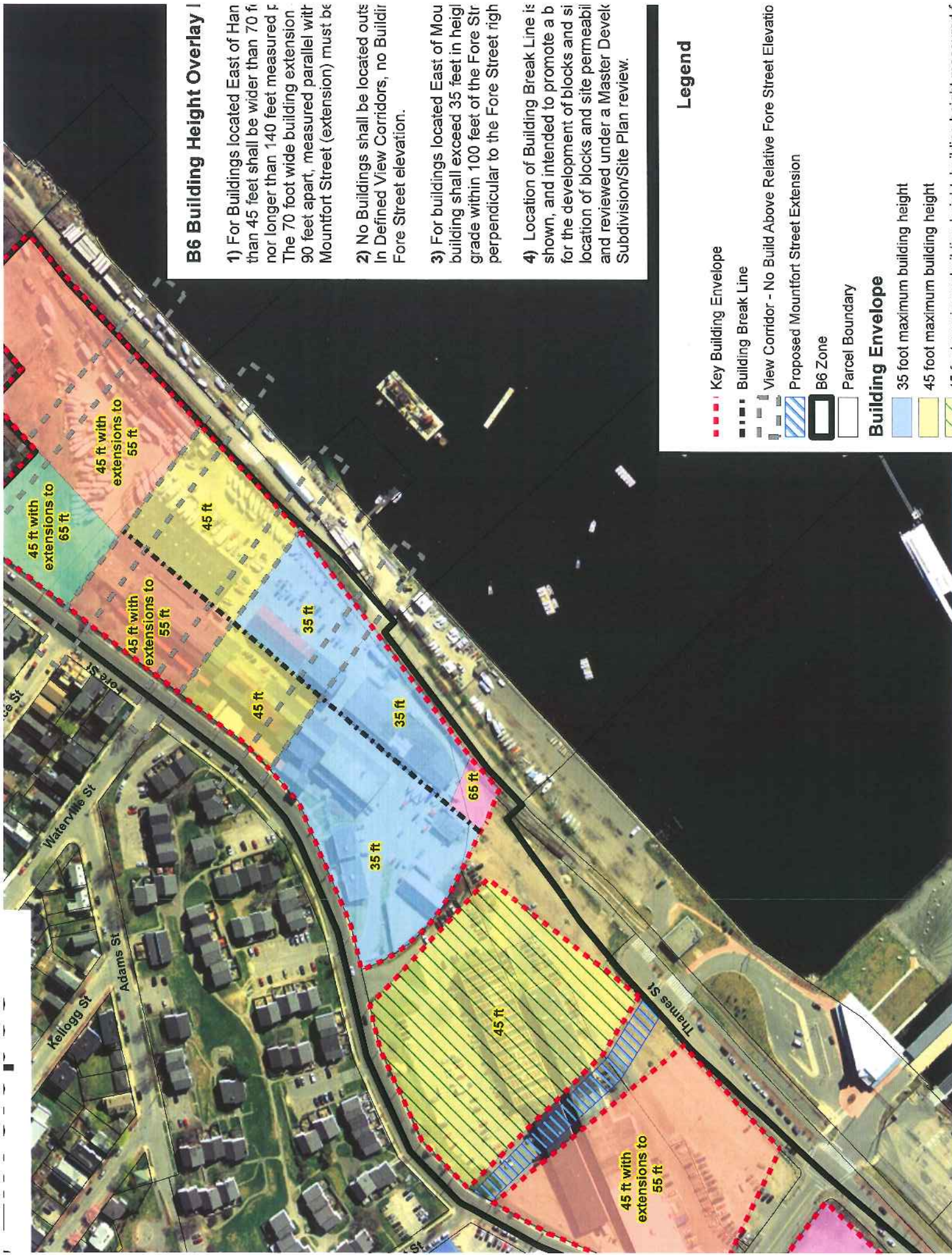
B6 Zone

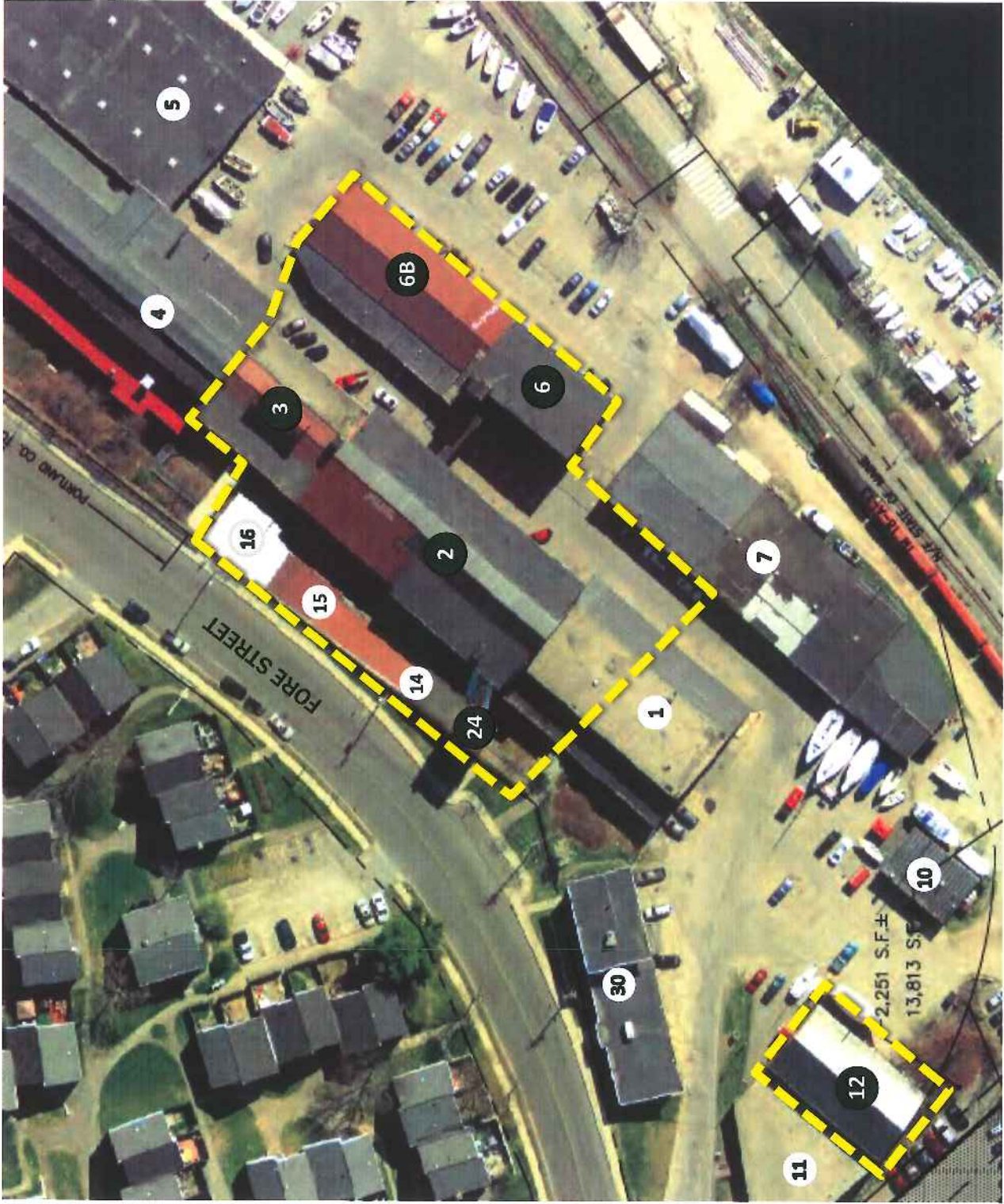
Parcel Boundary

Building Envelope

35 foot maximum building height

45 foot maximum building height





Historic District Boundary: Limits of Boundary for potential Historic District as proposed by CPB2

September 3, 2015

To: Members of Portland's Planning Board

Re: Public Hearing on Proposed Designation of Portland Co. Historic District – Sept. 8

From: Sally Oldham, Portland Resident

My name is Sally Oldham. I am a resident of Portland residing on Vaughan Street. I am writing these comments to urge members of the Planning Board to support the proposal to designate the Portland Company Historic District approved unanimously by the Historic Preservation Board in July, 2015.

The proposed historic district encompasses a complex of interrelated historic buildings and site features that together tell the story of one of the most significant industrial plants in mid-19th to mid-20th century Maine. The Historic Preservation Board has carefully considered the eligibility of this complex under the criteria outlined in Portland's Historic Preservation Ordinance, basing its recommendations on the work of the City's qualified preservation staff, of technical experts contracted by the City, site visits led by these experts, and its own extensive review and deliberations.

I would like to address the requests that CPB2 made to the Planning Board at its workshop held on July 28, 2015 to reclassify Buildings 1 and 16 as non-contributing and to reduce the boundaries of the proposed district.

1. Request to reclassify Buildings 1 and 16 as non-contributing based on condition:

The Planning Board's responsibility under the Historic Preservation Ordinance (Sec. 14-610 Minimum Criteria for Designation) is to apply the criteria for designation of "subsections (a), (b) and (c)" already addressed by the Historic Preservation Board and to "consider the effect of such designation on other aspects of the comprehensive plan of the city."

The ordinance further calls upon the Historic Preservation Board to evaluate the integrity of proposed landmarks and historic districts (Sec. 14-611) calling for "sufficient integrity of location, design, condition, materials and workmanship to make it worthy of preservation or restoration". It appears to me that the responsibility to assess integrity of condition is a responsibility of the Historic Preservation Board alone, not of the Planning Board. CPB2's request that the Planning Board reconsider the findings of the Historic Preservation Board regarding integrity of condition for Buildings 1 and 16 appears misguided as the ordinance places responsibility for this evaluation with the Historic Preservation Board which has considerable expertise to offer and has spent much time on this task.

2. Request to reclassify Building 1 as non-contributing based on historic significance:

CPB2 also called for Building 1 to be reclassified as non-contributing based on its historic significance, citing its construction date of 1918 as being close to the end of the period of significance cited in the Historic Preservation Board's designation report. There is no basis in nationally accepted preservation standards and guidelines to assume that buildings dating from the earliest years of a complex like this should be deemed significant while a building dating close to the end of a period of significance would not be deemed significant.

Portland's ordinance and the procedures of its historic preservation program are based on national preservation standards. The National Register of Historic Places Bulletin, "How to Complete the National Register Registration Form" provides the following guidance about determining a period of significance: "For architecturally significant properties, the period of significance is the date of construction and/or the dates of any significant alterations and additions." "For properties associated with historic trends, such as commercial (in this case industrial) development, the period of significance is the span of time when the property actively contributed to the trend." Building 1 clearly qualifies as contributing for its 1918 construction date based on architectural significance as well for exemplifying its relationship to historic industrial trends in manufacturing over a period post-1918.

3. Request to reduce historic district boundaries:

The Historic Preservation Board's task to identify what is the historic resource here that is worthy of preservation has been a challenging one. While the Sutherland report indicated that all the buildings of the complex are significant and that they retain historic integrity, the evaluation of which buildings retain integrity of condition has resulted in a recommendation that approximately half of the buildings of the complex lack the necessary integrity of condition. Assuming that these building may be demolished, one must look to the remaining buildings and to site features and organization to evaluate whether a critical mass exists sufficient to convey to a lay person the evolution of this industrial factory as well as the many industrial processes and assembly methods that produced the myriad of products of such import to Maine's and in many cases, the nation's economy.

CPB2's proposal to reduce the historic district boundary would leave a remnant of this industrial complex unable to convey its full significance and would leave Building 12 as an orphan with little relation to the remaining buildings. It is through the ability to include within the historic district boundary site features including the entryway, the central yard, the alleys and overhead bridges, as well as the footprint of non-contributing buildings, that it will be possible once the site is fully developed, for the public to comprehend the essential nature of this industrial complex and to learn about the many stories it will help to tell to generations to come.

Conclusion

Finally, I would ask that you stay focused on the task at hand, to review the Historic Preservation Board's recommendations about what buildings, site features and organization should be included within a Portland Company Historic District. Your role in these proceedings is not to make judgments about design concepts for the site. The concept drawings that the developers released at a recent press conference reflect their thinking about reuse of historic buildings and inclusion of site features that has not changed over the past 17 months, from early meetings that they held with representatives of Greater Portland Landmarks, despite all of the newly acquired information about significance, historic integrity and condition that we have gained through the City's efforts over this same period.

The reuse of the Portland Company complex as part of larger mixed-use project will require great creativity, but this magnificent site is of sufficient size to enable preservation of the identified historic district area as well as to meet other City goals of the Eastern Waterfront Master Plan and the Comprehensive Plan. I urge you to recommend to the City Council designation of the Portland Company Historic District as recommended by the Historic Preservation Board.



Memorandum
Planning and Urban Development Department
Planning Division

To: Chair Boepple and Members of the Portland Planning Board

From: Deborah Andrews, Historic Preservation Program Manager

Date: October 22, 2015

Re: 10/21/15 Historic Preservation Board Review of Supplemental Information Re:
 Condition of Building #1, Portland Company Complex

Mtg. Date: October 27, 2015

At its meeting on October 21, the Historic Preservation Board reviewed a new condition report prepared by Becker Structural Engineers for Building #1 (Erecting Building) within the Portland Company complex. The October 13 report provides a more detailed level of analysis of the building's current condition and identifies the work that would be required to put the building into service. The supplemental report was commissioned by CPB2 to support its position that the building should not be classified as a "contributing" structure within any historic district designation proposal. The Historic Preservation Board's review was at the direction of the Planning Board, who agreed to accept additional information regarding the condition of the building provided the HP Board have an opportunity to review and comment on the new findings.

During the Historic Preservation Board's discussion, members expressed the view that the findings of the report were not surprising and were largely consistent with the previous, more general condition reports prepared by Becker and Resurgence Engineering and reviewed as part of the Board's original designation deliberations. Citing the ordinance's definition of "noncontributing" which requires that the Board find that "[the structure's] location, design, setting, materials, workmanship and association have been so altered or have so deteriorated that the overall integrity of the...structure... has been irretrievably lost", Board members found that the building's integrity had not been irretrievably lost. Mr. Oldham noted that the Becker report, in identifying measures to address and rectify the building's condition issues, demonstrates that the building can reasonably be salvaged. Board members Harmon, Turk and Oldham, who are architects, each noted that they had seen buildings in worse condition be successfully rehabilitated and reused. Chair Benson, also an architect, added that nothing in the new Becker report indicates that suggested methods for reinforcing the building go beyond what could be considered normal measures.

Following discussion, Chair Benson took a straw poll of the members present on whether, in consideration of the new information provided by BES, the Board still supported its prior finding as regards Building #1's classification within the proposed historic district. The five Historic Preservation Board members present (Benson, Harmon, Oldham, Turk and Wood) voted unanimously to uphold their previous finding that Building #1 is a contributing structure within the proposed historic district.

Given that the question before the Historic Preservation Board was limited to the *condition* of Building 1, only that aspect of the building's contributing status was addressed at the October 21 meeting. The other requirement of contributing buildings within historic districts is that they "contribute generally to the qualities that give the historic district cultural, historic, architectural or archaeological significance as embodied in the criteria for designating a historic district." (See Sec. 14-602 for definitions of "contributing" and "noncontributing" structures.) As described in the public hearing report, the Historic Preservation Board had also found during its designation deliberations that Building 1 contributes to the qualities that give the Portland Company complex its historic and architectural significance.

Attachments

- A. Staff memo for 10/21/15 HP Board review
- B. October 13, 2015 report from Becker Structural Engineers
- C. Copy of GPL testimony at 10/21 meeting

**HISTORIC PRESERVATION BOARD
CITY OF PORTLAND, MAINE**

**PUBLIC HEARING
PORTLAND COMPANY COMPLEX
58 FORE STREET**

TO: Chair Benson and Members of the Historic Preservation Board

FROM: Deborah Andrews, Historic Preservation Program Manager

DATE: October 15, 2015

RE: October 21, 2015 **Public Hearing – Review and Comment on Additional
Information re: Condition of Building #1, Portland
Company Complex**

Address: former Portland Company complex
58 Fore Street

Introduction

Representatives of CPB2 will be presenting the findings of a recent report prepared by Becker Structural Engineers (BES) regarding the condition of Building #1 within the Portland Company Complex. The report provides a more detailed level of structural analysis of the building than the two reports provided to the Historic Preservation Board during their review of the building complex for potential historic district designation. Both reports, which addressed most of the buildings within the complex, were conducted at the same level of analysis, which was described as a “30,000-foot view”. This level of analysis was considered sufficient for purposes of evaluating the general feasibility of preserving/rehabilitating each of the 16 individual buildings within the complex as part of the designation review process. The latest Becker report was commissioned by CPB2 to support their position that Building #1 lacks sufficient integrity of condition to warrant classification as a “contributing” structure within the proposed Portland Company historic district, a position expressed by CPB2 in letters and testimony to both the Historic Preservation Board and the Planning Board.

Review of the latest Becker report by the Historic Preservation Board is at the direction of the Planning Board. Board members will recall that the Planning Board was scheduled to hold a public hearing and conduct final deliberations on the Portland Company Historic District designation recommendation on September 8th. The public hearing followed a July 28 informational workshop on the Historic Preservation Board’s designation recommendation. At the start of the September 8 meeting, representatives of CPB2 requested that the public hearing be postponed to provide more time for the development team to review and respond to material

provided in the staff report for the public hearing. The report included a series of responses to specific questions raised by Planning Board members at the preliminary workshop, including questions related to the significance and condition of Building # 1. (See Attachment 2, with supporting material.) Mary Costigan, on behalf of her clients, also submitted a letter in advance of the September 8 public hearing addressing the Planning Board's requests for more information. (See Attachment 3, with supporting material.)

During the course of discussion with the Planning Board on September 8, representatives of CPB2 requested an opportunity to provide a more detailed analysis of Building #1 for the Board's consideration. It was the consensus of the Planning Board members that any additional information should first be presented to the Historic Preservation Board, as the HP Board had made the initial determination as to Building #1's classification and had spent considerable time evaluating the condition of each building within the complex during its deliberations on the proposed district designation. The public hearing was tabled to October 27th, with the understanding that any additional information would be presented during the intervening period to the Historic Preservation Board and that the HP Board's input on the supplemental information would be taken into consideration by the Planning Board during its final deliberations.

Role of the Historic Preservation Board

Although the role of the Historic Preservation Board in this matter was not explicitly defined by the Planning Board, staff understands that the Historic Preservation Board is being asked to review and comment on the new information as it relates to their previous finding that Building #1 meets the ordinance criteria of a "contributing" structure. The Board is not being asked to formally amend its July 24 recommendation to the Planning Board, but to act in an advisory role. Additional input from the Historic Preservation Board will be considered by the Planning Board as it reviews the HP Board's historic district designation recommendation for purposes of forwarding its own recommendation to the City Council.

Questions for Consideration

The recent request to provide a more detailed level of analysis for one of the buildings within the Portland Company complex raises the following threshold questions:

- What level of analysis is appropriate to establish "integrity of condition" as part of the historic designation process outlined in Portland's ordinance?
- How does one fairly evaluate the additional information regarding Building #1 when the same level of information is not available for other buildings within the complex?

Moving on to the findings included in the new Becker report, the Board shall, as before, consider whether Building #1 meets the historic preservation ordinance's definition of a "noncontributing" structure, which reads as follows:

Noncontributing: A classification applied to a site, structure, object, or portion thereof within a historic district signifying that 1) it does not contribute generally to the qualities that give the district...significance as embodied in the criteria for designating a historic district; 2) was built within 50 years of the date of district designation unless otherwise designated in the historic resources inventory; or 3) where the location, design, setting, materials, workmanship and association have been so altered or have so deteriorated that the overall integrity of the site, structure or object has been irretrievably lost. A portion of an otherwise contributing or landmark structure may be determined by the historic preservation board to be noncontributing if it meets one or more of the above conditions.

In order for the Board's input to the Planning Board be as clear and informative as possible, Board members are encouraged to fully describe the basis for their findings and to identify the historic preservation ordinance criteria and definitions that guide the Board's determination. (Applicable provisions of the ordinance are cited in 9/8/15 Planning Board report, Attachment 2.)

Attachments

1. October 13, 2015 report from Becker Structural Engineers
2. September 8, 2015 staff report for (postponed) Planning Board Public Hearing, including selected attachments
3. August 26, 2105 letter from Mary Costigan for (postponed) September 8 public hearing
4. Recent public comment



October 13, 2015

Mr. Kevin Costello
Manager
CPB2, LLC
PO Box 7987
Portland, ME 04112

Dear Kevin,

Per your request, we are issuing this letter report to you as a summary of our evaluation of Building 1 of The Portland Company Complex, located at 58 Fore Street in Portland, Maine. The purpose of our evaluation is to assess the condition of the building's structure in order to determine the modifications and repairs required to meet current adopted codes and standards. Our analysis of this structure has expanded from a high level conditions assessment of the 58 Fore Street Complex performed by Becker Structural Engineers (BSE) in 2014, to a more detailed evaluation that will determine the scope of repair work needed to occupy Building 1.

The basis of our analysis as well as itemized descriptions of recommended modifications to the building are included in the following sections of this report. In addition, we have attached drawings S1-S5, which document the recommendations of this report and can be used to reference each of the repair items. After performing our evaluation, we have determined that the repairs and alterations required to meet the current code are extensive.

BASIS OF EVALUATION:

Building 1 at 58 Fore Street was constructed circa 1918. It consists of an exterior masonry wall shell supporting a combination of steel and timber roof structures. Members of BSE visited the building on September 22, 2015 to perform observations and take field measurements of the existing structural elements and systems. Our evaluation is based on these findings and the City's adopted codes, which include the International Building Code (IBC) 2009 edition and the International Existing Building Code (IEBC) 2009 edition. As referenced by IBC, gravity and lateral loads have been determined using the American Society of Civil Engineers, ASCE 7 Minimum Design Loads for Buildings and Other Structures, 2005 edition. The future occupancy of the building is unknown at this time, but for the purposes of this evaluation, we have assumed that this building will serve a public assembly occupancy.

ROOF FRAMING:

Building 1 consists of a center, clerestory roof structure with lower "saddle-bag" roofs along each side. The high roof consists of timber decking spanning to steel purlins. The purlins are supported by clear-spanning steel trusses spaced approximately 20'-0" on center (o.c.), which are in turn supported by steel columns. The lower roofs also consists of timber decking spanning

to steel beams. These beams are carried by steel girders that span to the main steel columns and to the exterior brick walls.

Our recommendations for repairs and modifications to the roof structure are as follows:

- Item R1: Approximately 30% of the existing timber decking is rotted and needs to be replaced. The areas requiring repair are scattered throughout the lower and upper roofs. Our opinion is that it will be more efficient and cost effective to replace all of the decking rather than replace the individual areas of rot. We recommend using a 3" nominal tongue and groove (T&G) timber decking as replacement.
- Item R2: Some of the elements in the roof trusses are overstressed for snow loads. We recommend reinforcing the chords and some of the web members with new steel rods or angles. Further analysis is required to determine if the riveted connections at the truss members are adequate. This detailed analysis was not performed for this report.
- Item R3: The existing columns supporting the roof structure are overstressed. We recommend reinforcing them with new steel tee-shapes and plates. In addition, the column splice that occurs at the low roof is inadequate, and we recommend reinforcing it with new steel side plates.
- Item R4: Our analysis showed the existing bottom chord bridging is inadequate to brace the truss during uplift caused by wind loads. We recommend welding steel reinforcement to the existing bridging and cross-bracing, as well as adding new bridge lines near the ends of the trusses.

LATERAL FORCE RESISTING SYSTEM:

A lateral force resisting system collects wind and seismic loads from the exterior envelope of the building and transfers them to the foundations and substructure. To transfer loads effectively, there must be positive load paths from the envelope to the roof diaphragms (existing roof decking), from the diaphragms to the lateral resisting elements (existing masonry walls), and from the walls to the foundations. Our observations determined that many of these load paths are inadequate or do not exist. Examples of this include inadequate fastening of the roof deck to the exterior walls, as well as several openings and discontinuities in the walls that reduce overall stiffness and capacity. Our opinion is that Building 1 does not have a functioning lateral force resisting system, and thus a new system should be installed.

Our recommendations for the lateral force resisting system are as follows:

- Item L1: To create an effective structural diaphragm for resisting wind and seismic loads, we recommend sheathing over all of the new timber decking with 1/2" thick plywood.
- Item L2: New steel channels and new beam nailers should be installed to allow the roof diaphragm to be positively connected to its support structure.
- Item L3: For lateral forces in the long direction of the building, we recommend installing new steel rod cross-braces within four bays of the clerestory.
- Item L4: To transfer forces from the cross braces identified in item L3, as well as the low roof diaphragms, we recommend installing new columns, beams and braces along the exterior walls and between the existing columns to create moment frames. Further



analysis may allow for the existing crane rail beam to be used as part of the new moment frames, eliminating some of the new structural steel.

- Item L5: For lateral forces in the short direction of the building, we recommend installing HSS cross-braced frames (or frames of a similar configuration). A total of six new frames are proposed to control uplift forces due to wind and seismic loads. We believe the six frames will best lessen the uplift demand on the mat foundations, reducing their size and the overall pile quantity as much as possible.

FOUNDATIONS AND SUBSTRUCTURE:

Little is known about the foundations for Building 1 since most of them are not exposed to view. Based on our past experience with sites along the Portland Waterfront, existing soils typically consist of poorly compacted fill that is often unsatisfactory for support of structures. Historical maps of the area indicate the site was originally underwater and was filled in order to construct the facility. Building 1, however, appears to be well founded with little to no signs of settlement or foundation distress. Therefore, we believe the building may be supported by shallow rock or deep foundation elements, such as pilings or piers, extending to more favorable soils or bedrock below. Prior to proceeding with the design of structural modifications for the building, further geotechnical observations and testing would be required to determine the existing soil properties and the existing foundation characteristics.

Our recommendations for the foundations are as follows and are based on a pile-supported foundation:

- Item F1: The existing concrete slab is in fair to good condition but has several surface deformations and poor levelness. We also found locations where voids beneath the slab are present. To meet the needs of an assembly occupancy, we recommend replacing the slab. Prior to placing the new slab, the existing soils will likely require re-compaction, and new compacted structural fill may also be necessary.
- Item F2: All new columns will require support from new concrete footings. We recommend supporting new footings using steel mini-piles driven to refusal. The existing exterior wall will likely be undermined during the installation of the new footings. Therefore, the scope of foundation work will need to include temporary shoring of the existing exterior walls to install the new footings.
- Item F3: To control uplifts at the braces and moment frames, new mat foundations and strip footings will be required. All new foundations will likely need support from mini-piles. Mini-piles will need to be connected to the mat foundations with uplift anchors. Lastly, the existing columns will need temporary shoring to allow for the existing footing to be removed prior to construction of the new mats.

EXTERIOR WALLS AND FACADE:

The exterior structure of Building 1 consists primarily of multi-wythe, solid brick walls. The building has several large openings for windows, both at the main level and the clerestory. Brick above the openings is typically supported by steel plates attached to steel beam lintels. The brick at the clerestory, however, is supported directly by the roof structure. There are several steel hangers from the high roof structure to the low roof beams that support the brick. The eccentric load from the hangers has caused the high roof beams to twist into the building.



Along the south elevation, several vertical cracks are present in each of the brick piers between the windows. The steel lintels above the windows are anchored into the piers at each end. As thermal expansion and contraction has occurred over time, our opinion is the lintel anchorage is restraining movement and causing the cracks. Further evidence of this is shown by the north elevation, where the larger cracks are not present. This elevation is mostly concealed from exposure to the sun, which would suggest why the cracks have not developed.

Our recommendations for the exterior of the building are as follows:

- Item E1: The cracked piers at the south wall are beyond repair and need to be rebuilt. During the rebuild, we recommend providing vertical control joints in the center of each of the brick piers to control future cracking.
- Item E2: The hanging structure that supports the clerestory facade is not performing adequately, as shown by the twisting beams. We recommend installing new HSS purlins, removing the hanger connections from the existing beams and connecting them to the new HSS beams. The HSS members have resistance to torsion and will not twist.
- Item E3: The steel plates at all of the lintels are heavily corroded and require replacement. We recommend temporarily shoring the facade, removing the plates, removing any rust or corrosion on the lintel, and welding new galvanized plates to the lintels. New flashing details will be required to protect the lintels from future corrosion.
- Item E4: The lintels in the north and south walls create a hinge in the exterior wall, significantly reducing its ability to resist out-of-plane wind loads. To eliminate the hinge, we recommend connecting each of the brick piers to the new columns with clip angle connections.
- Item E5: The exterior brick below the main windows is in poor condition due to rising damp and splash-back from the rain that falls from the upper roofs. Partial reconstruction and repair of this brick will be required..
- Item E6: The steel framed windows and windows sashes throughout the building are in poor condition and should be replaced. In addition, the cast-stone sills beneath the windows are showing signs of heavy corrosion and should also be replaced.
- Item E7: As mentioned in item R1, the roof decking requires replacement at the low roofs. Our observations determined that the brick walls at the clerestory partially bear on the existing deck. These walls are in poor shape, with the brick below the window sills bowing out in most locations. Given the condition of the walls and the wall damage that may occur during the roof deck replacement, we recommend that the clerestory walls be rebuilt.

CONCLUSION AND CLOSING:

Our evaluation of Building 1 has shown that the structure does not meet current code requirements for resisting gravity and lateral forces, including snow, wind and seismic loads. As a result, a significant amount of structural modifications to the foundations and framing will be required. Repair or replacement is recommended for approximately 50% of the existing foundations, 100% of the roof deck, 70% of the roof framing and 40% of the masonry. In addition to these repairs, we believe a significant amount of new structural systems are required to upgrade the building, including braced frames, moment frames, mat foundations and mini-

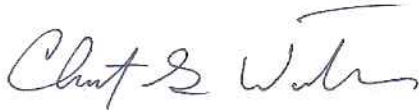


piles. Our review addresses structural concerns only, and it should be understood that there will be mechanical, electrical, plumbing and life-safety upgrades required as well.

We trust that this information addresses your concerns at this time and will be helpful in planning for the future use of Building 1 at 58 Fore Street. This letter report should be understood in the context it is provided. It is based upon our site observations and preliminary analysis of existing conditions. It has been prepared to provide an overview of the building's structural condition, and to identify the scope and nature of structural issues, which may impact future use. As there have been some assumptions made regarding the existing framing and proposed scope of future work, it is important to review, whenever possible, the building for conformance with the assumptions made. We would be happy to discuss this further, so please contact us if you have any questions.

Sincerely,

BECKER STRUCTURAL ENGINEERS, Inc.



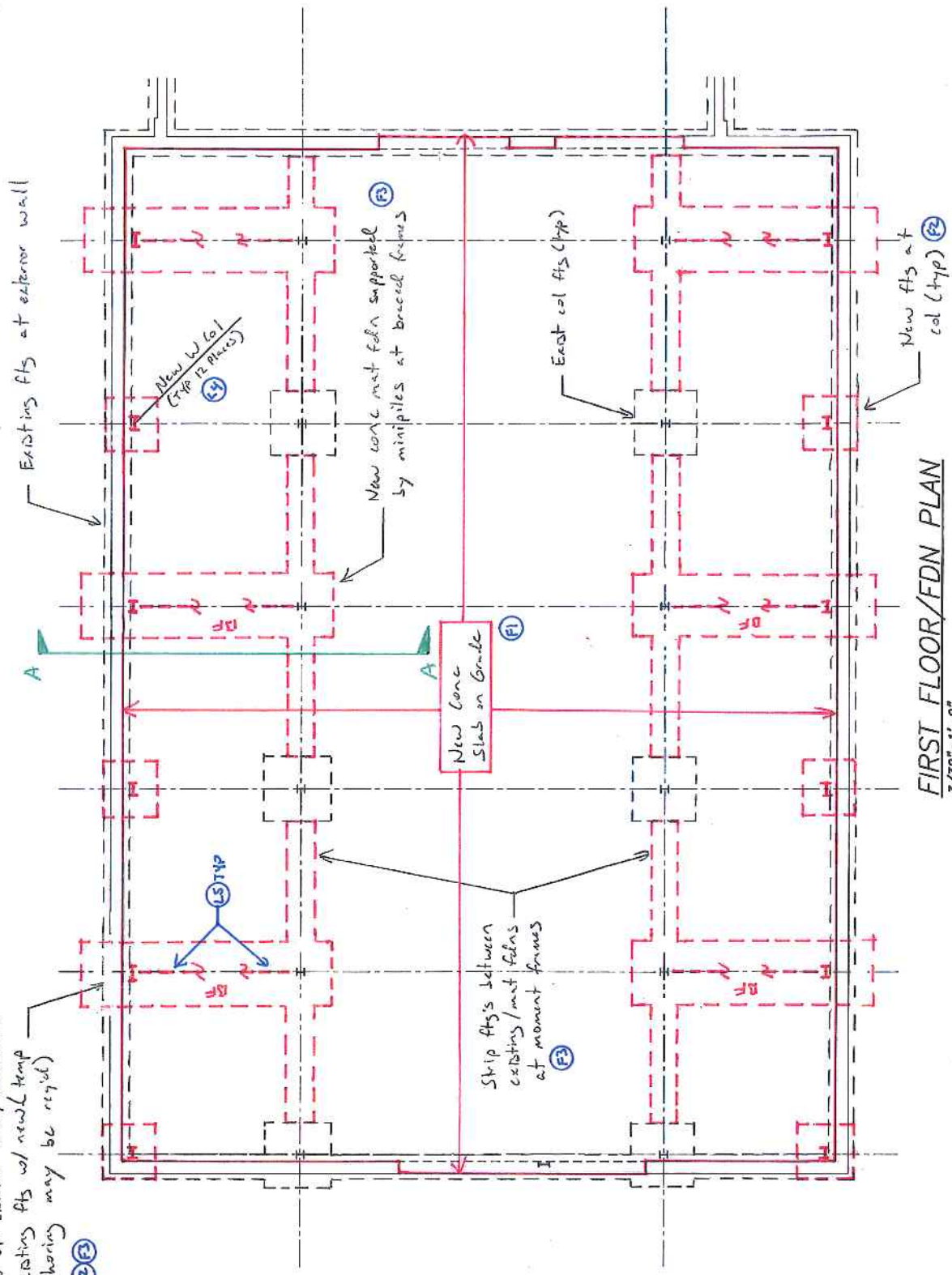
Christopher G. Williams, P.E., S.E.
Project Engineer



Paul B. Becker, P.E.
President



Top of exterior wall, undermine existing ftg w/ new temp shoring may be req'd (F2)(F3)



FIRST FLOOR/FDN PLAN

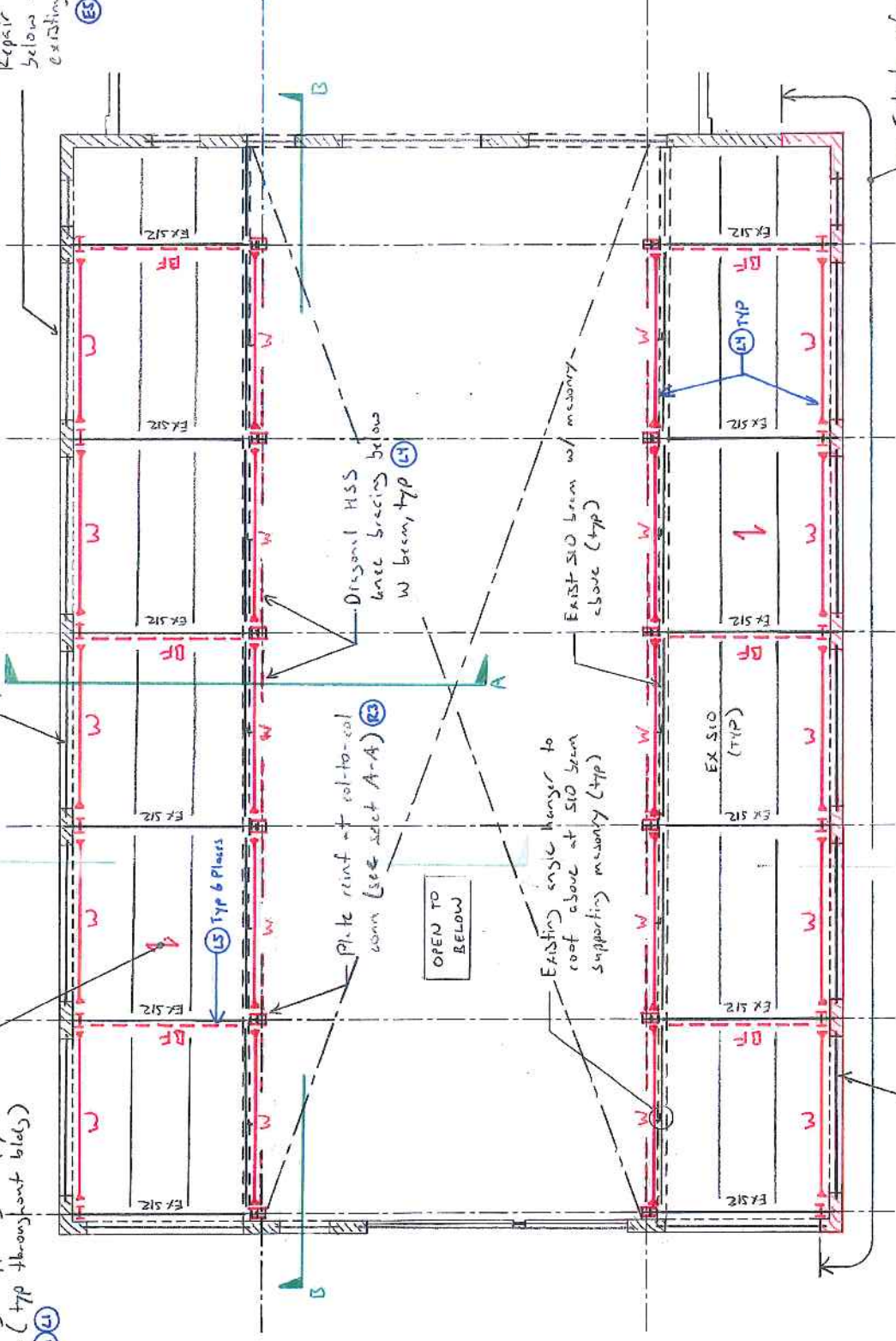
3/32"=1'-0"

1. B.F. indicates new steel braced frame

Remove and replace existing roof decking w/ 3" nominal timber decking supporting 1/2" plywood slts (typ throughout bldg)

Typ all Exist Intls: Remove corroded relieving plates ex intls. Provide new galvanized plate or angle and new flashing as required.

Repair damaged masonry below windows. Replace existing windows (typ)

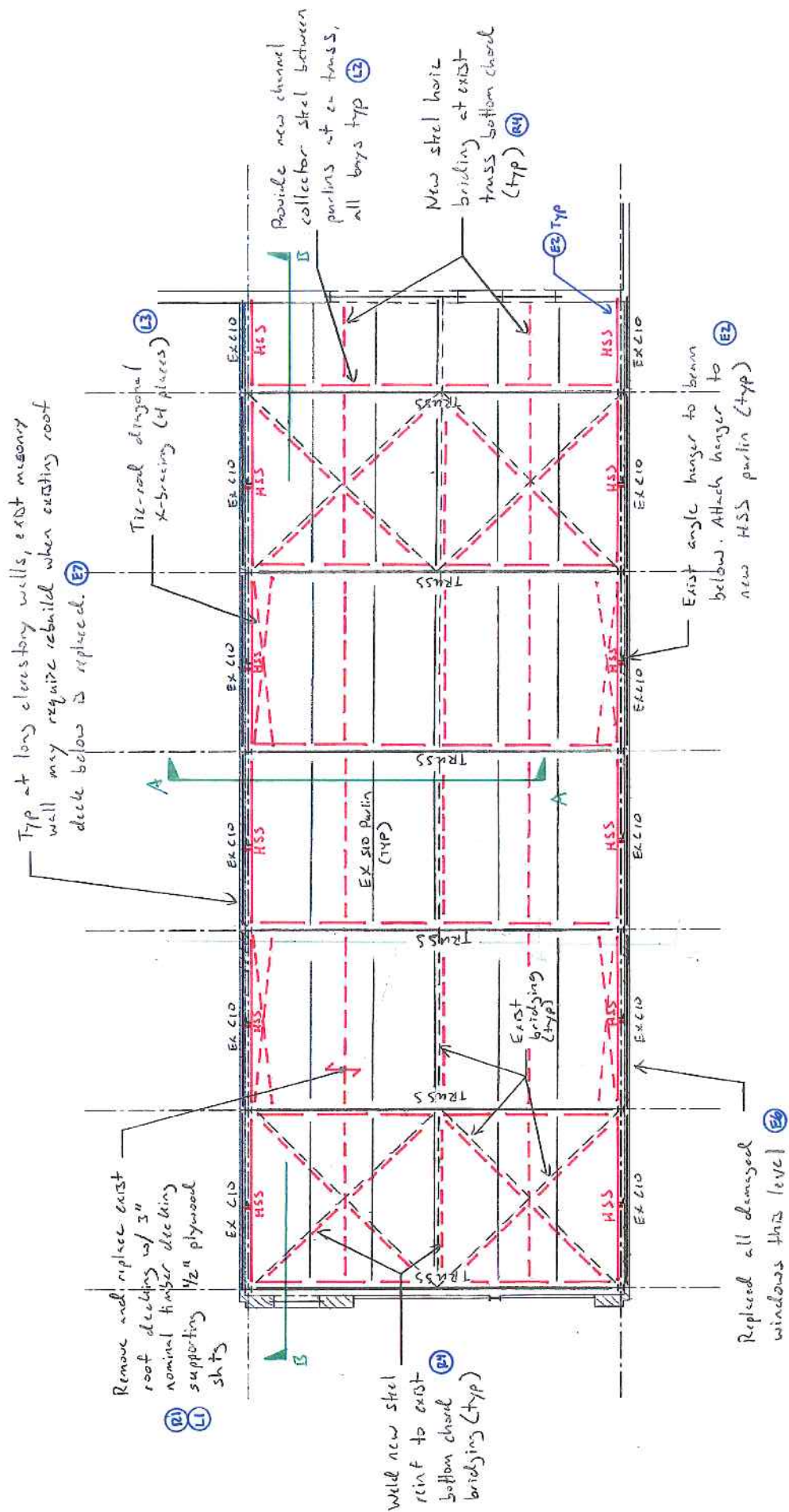


Shore existing intls and masonry above during intl and masonry repairs (typ)

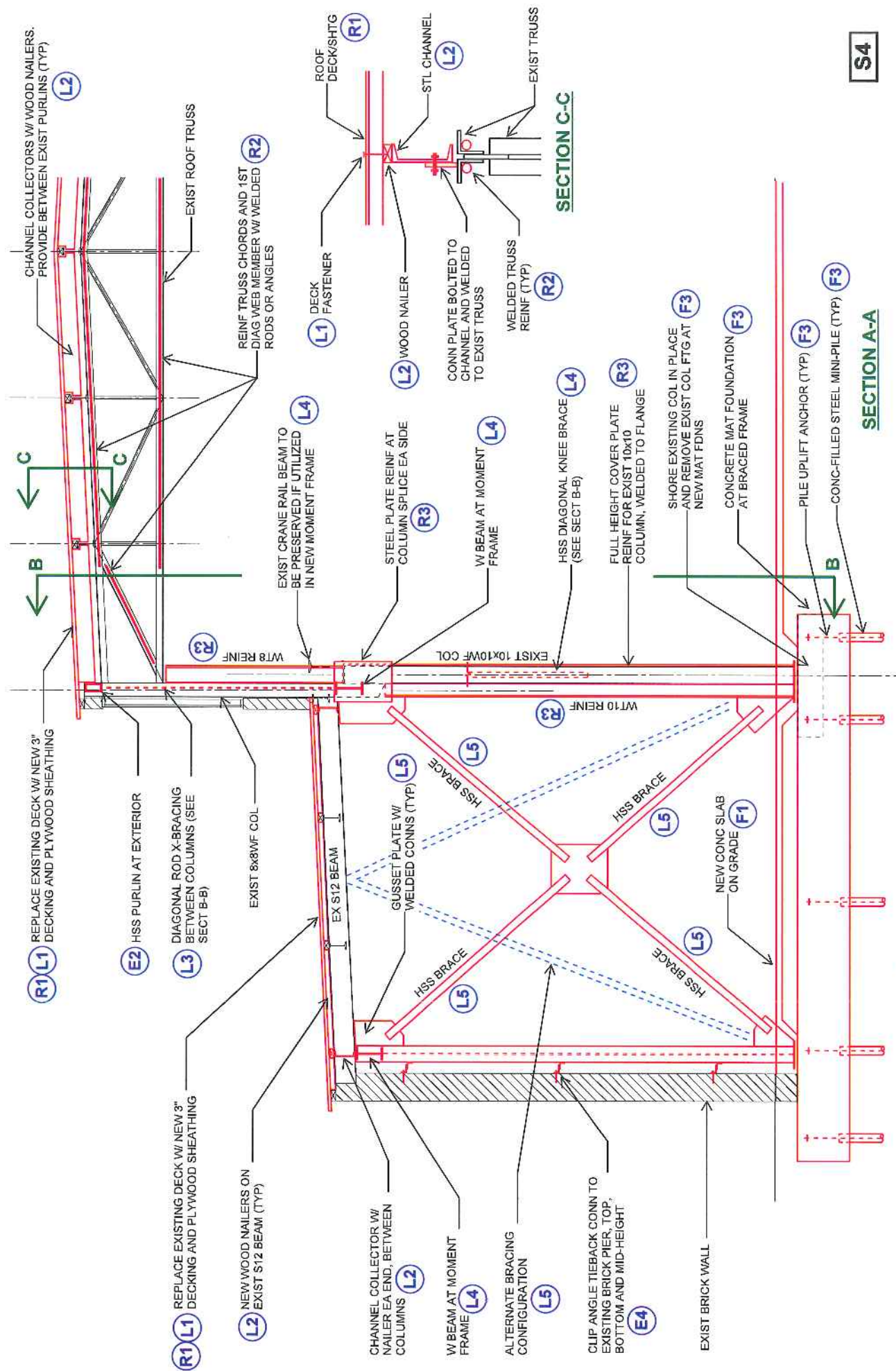
Extents of existing pier and/or wall related to replaced damaged masonry.

LOW ROOF PLAN 3/32"=1'-0"

1. B.F. indicates new steel beam frame.
2. indicates new moment frame connection



HIGH ROOF PLAN
 3/32"=1'-0"





Statement for Historic Preservation Board Public Hearing

Portland Company, 58 Fore Street

21 October 2015

Greater Portland Landmarks originally supported the Historic Preservation Board's finding that Building No. 1 be classified as a contributing building in the proposed Portland Company Local Historic District and continues to do so. Building No. 1 contributes to the general qualities that characterize the proposed district. It is an important structure in the interconnected buildings that comprise the core of the Portland Company's manufacturing process. Architecturally it expresses the qualities of industrial building design during the early 20th century in its large multi-paned window openings and clerestory roof form.

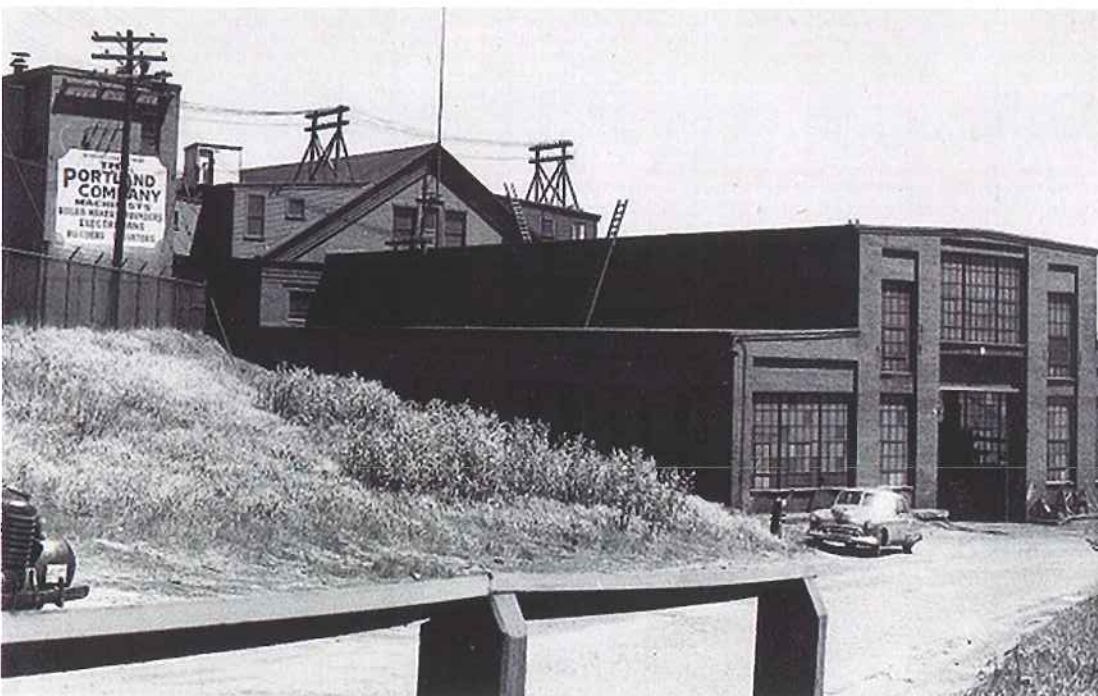
The new report prepared by Becker Structural Engineers (BSE) on the scope of the structural repair work needed for an assembly use in Building No.1 goes beyond the level of information usually considered during the classification of a building as contributing or non-contributing in an historic district. This level of information was not considered or requested during the board's deliberations on the classification of this or other buildings in the complex. In addition this level of information has not been utilized to assess integrity of condition in the proposed India Street Historic District or the newly designated House Island Historic District.

As noted in various reports, Building No. 1 exhibits some deterioration of its exterior materials and has been altered by a new overhead door on the west façade. However the materials and design of the structure have not been so altered or deteriorated to degrade the building's integrity of condition to the point of being "irretrievably lost".

Of the nine buildings inspected by BSE in March of 2014 Building One was assigned a relative structural condition score of 2.0 and a relative rehabilitation cost of 4.0. Only four (Nos. 2, 3, 6, & 11) of the nine buildings inspected were noted by BSE to be in better structural condition and only three (Nos. 3, 6, & 16) had lower anticipated rehabilitation costs. From this assessment and the report completed by Resurgence Engineering, Building No. 1 does not appear to be in substantially worse condition relative to other buildings in the complex designated as contributing and has an average estimated rehabilitation cost. Neither of the structural reports identified a structural need to immediately vacate or demolish the structure that would qualify it to be described as "irretrievably lost". The October 2015 BSE evaluation of Building No.1 does not identify any new structural or safety issues not present in March of 2014. Greater Portland Landmarks strongly supports the continued finding that Building No. 1 be classified as a contributing building in the proposed Portland Company Local Historic District.



Circa 2012 (*Greater Portland Landmarks*)



Circa 1950 (*Portland Maine History 1786 to Present, Facebook Page*)

Deb Andrews, Historic Preservation Program Manager
City of Portland Planning Division
389 Congress Street
Portland, ME 04101

September 25, 2015

Dear Deb,

I will not be able to attend the Planning Board's meeting in October and so would be happy if you were to share my reflections with the members of the Historic Preservation and the Planning Boards.

When I was Executive Director of the Maine Historical Society (1985-1995), one of my favorite collections to peruse was the Portland Company. The abundance of sketches, plans and specifications all pointed to the vibrancy of this Portland enterprise. The watercolor presentation drawings transcended industrial history to art. But by the late 20th century, what was left of Portland's industrial past? Very little. How could this extraordinary story of Portland's manufacturing past best be told?

Portland has the opportunity to do this now, not just for the few researchers who could consult this archive but also for the many, many residents and visitors who will be drawn to the reborn Portland Company site. As a resident of nearby Waterville Street, I have been concerned about the safety of the site as buildings have deteriorated and the property has been underutilized. I fully support the concept of a mixed-use and look forward to the integration of contemporary design into the historical context. I also support the compromise approach that the current nomination proposes; saving all the buildings just isn't feasible. Nor is it the way Portland should step into its future.

At the same time, Portland's history doesn't stop at the end of the 19th century, in spite of what the tourist literature tells visitors. Preserving building #1 should be considered not just "contributing," but essential. The design of building #1 with its large windows and uninterrupted workspace leaves no doubt that the Company was vibrant well into the 20th century. Without it, the story that the preserved buildings tell is truncated to a 19th century history, denying the breadth of the site's architectural and historical significance.

Preserving and adapting building #1 will certainly be an expensive proposition. But there is no other building that explains the whole continuum. Without it, I fear that the Portland Company's redevelopment will resemble a theme park of 19th century picturesqueness. Building #1 challenges us to move into a gutsier, brawnier version of our community's history. It is the building that offers the most intriguing opportunity for the new vision of a Portland Company.

My thanks and appreciation to you and to the members of the Historic Preservation Board for your efforts to create an historic district at the Portland Company.

Sincerely,



Elizabeth Miller
46 Waterville Street #3
Portland, ME 04101
elizabethmiller1953@hotmail.com
207-878-8604

To: City of Portland Planning Board

From: Paula Guillemette Agopian

Re: 58 Fore Street aka (The Portland Co.)

I was present for the Planning Board meeting on 9/8/15 when the item regarding The Portland Co. was tabled to October since CPB2 requested more time to revisit building #1. Let me say that building #4 (The Foundry) should be revisited by the Planning Board as well!

Compromises and concessions have been made by the HP Board and the Planning Dept's HP Office. If I had my way about it I would have placed an "Historic Shroud" over the entire complex except the metal building in the rear and the new office building at the entrance.

I have attended presentations and workshops since October, when the Sutherland Report was unveiled. I have witnessed the HP Board struggle with angst on the issues presented them. I felt a sincere sense of concern for preservation while maintaining pragmatism and sensitivity related to the costs of rehabilitation and preservation.

Building #1 was the last building built within the period of significance (1918) and represents it's era as much as building 2 (1847). It was an intragal part of the operation. While not as architecturally appealing as building #2 we need to bear in mind "this is not a beauty contest" (Ted Olden). In the Resurgence Report done by Al Hodson it reveals that the costs to rehabilitate and retrofit this building are feasible. Another level could be constructed doubling the rentable space \$\$\$.

Building #4 The Foundry, performed the most important function in the production process. It was the heart that pumped the life blood. Yes, it had a failed system from day one, yet it still stands today and the Resurgence Report states it could be remedied with reinforcement and supports.

In real estate the rule of thumb is, if it's attached it is part of the structure. #1 is attached to #2, #2 to #3 and #4. They are all one structure!

I encourage you to have the fortitude and courage to listen to the Chair of the HP Board and accept the proposal as presented with one exception, building #4 (The Foundry) be put on hold and reconsider it to be included. Remember historic preservation's purpose is to re-enforce and not to undermine!

Sincerely,



Paula Guillemette Agopian

cc. Mayor Brennan, Portland City Council, Historic Preservation Board, Deb Andrews, Landmarks

October 22, 15

Deb Andrews
City of Portland
389 Congress St.
Portland, Maine 04101

RE: Portland Company Historic District Boundary

Dear Deb,

I am writing to encourage the Planning Board reconsider the determination of Building #1 as a contributing building as part of the local historic district determination of the former Portland Company.

I strongly believe a "non-contributing" designation for Building 1 is appropriate for the following three reasons;

1. Eastern Waterfront Master Plan (EWMP): In strong contrast to the clear focus in the EWMP on enhancing waterfront accessibility, Building 1's location dramatically reduces the ability to create public access from Fore Street, through the 58 Fore site, to the waterfront.
2. Historic Significance Considerations: Building 1 not only has lesser historic significance than the rest of the buildings that make up the historic core, it detracts from the public's ability to view and appreciate the most historically significant building of the former Portland Company, Building 2.

Eastern Waterfront Master Plan: "The water's edge is the most precious resource we have." This is the opening line to the EWMP. The single most prominent and consistent theme across the EWMP's 36 pages is increased waterfront accessibility, **"Development in the Eastern Waterfront provides opportunity to expand public access to the water and shore: along both private and public properties and for both active and passive uses."** It is clear that increasing accessibility to the waterfront for the community is something that will benefit everyone in Portland. Building 1's location creates a significant impediment to the creation of public access from Fore Street to the waterfront.

Under the master planning committee objectives section, "The Master Planning process has sought involvement from all stakeholders in an open, participatory process and has considered both impacts and opportunities presented for the Eastern Waterfront." Nowhere in the EWMP is there a discussion of a local historic district at the 58 Fore site, and in fact, the specific section that discusses the Portland Company Complex states only that the committee "encourages the adaptive reuse and sensible rehabilitation of

historic structures." Equal focus is placed on noting, "Importantly, the complex is the only private property in the area with direct water access. It is clear throughout the EWMP that public access to the waterfront is a community focus, and further, it would be an amenity and a significant benefit to the people of the city of Portland.

Historic Significance: Locomotive manufacturing, which is what the Portland Co is renowned and celebrated for, ceased at the Portland Company in 1906. This version of Building 1 is not original to the complex, and was built in 1918. No locomotive was ever constructed in this building. Further, the Portland Company's manufacturing plummeted in the depression era of the 1920's and the Portland Company suffered bankruptcy. The undeniable reality is that very little of significance occurred in this Building 1.

Of greater significance, however, is the fact that Building 1 is not only less significant, but its existence covers the beautiful façade of the most historically significant building of the entire Portland Co, being Building 2, constructed by John Poore in 1847. Building 2 retains original architectural detail, is the first building of the Portland Company and represents the lifeblood of locomotive and other manufacturing of the former Portland Company.

In conclusion, the Planning Board's role in this matter is to not only ensure the Historic Preservation Board has abided by its ordinance requirements, but also to ensure the comprehensive plan is upheld with the Board's recommendation to the City Council.

Building 1 demonstrates limited historic significance, and its location actually detracts from the public's ability to fully appreciate and celebrate Building 2, and also limits the ability to create meaningful public access through the site to the waterfront.

It is imperative that the Planning Board weigh this decision within the context of the comprehensive plan for the entire eastern waterfront.

Sincerely,

Chip

Carle Henry
Munjoy Hill & Peaks Island

From: Herb Adams <hadams@smccme.edu>
To: Deb Andrews <dga@portlandmaine.gov>
Date: 10/23/2015 12:02 PM
Subject: RE: 58 Fore Street

TO: Members of the Portland Planning Board
c/o D.G. Andrews, City of Portland

RE: Designations in footprint of 58 Fore Street

Dear Board Members :

This message is to strongly encourage the Board to designate as broadly as possible the protections for the area and the structures now at 58 Fore Street, the former Portland Company, and to make the protected footprint on this site as large and encompassing as possible.

As you know, 58 Fore Street, the Portland Company, is one of the very last virtually intact industrial sites of its kind remaining in the United States. It is unique by any yardstick of comparison.

Here the very contours of industrial Maine and American were - literally -- forged. From steam locomotives to the nation's first nuclear reactor containment vessel, to the static eliminator in the photocopier that reproduced this document, to the foam extrusion machine that made the Big Mac Styrofoam box -- all were invented or perfected at the Portland Company.

Its legacy is vast. None of it should be lost. I believe that we, its heirs, should protect it. And whoever may own it should celebrate it -- and not demolish it.

Yes, historic designations may seem inconvenient at the moment. In the long run they always pay off. Yes, they may cost a bit more in the present -- but the prudent investor looks to the long term payoff in the future.

As an example, I strongly encourage the Board to include Building No. 4, in its entire and intact form, within the broadest drawn Historic District footprint as possible. This building was an integral part of the assembly-line process (of which the Portland Company was a national pioneer) for its steam locomotives and large industrial equipment of all kinds. The massive productions then moved down a succession of buildings and exited thru the great doors of what (I believe) is termed Building No. 1 on the digital maps.

There is nothing left in the United States like this -- largely intact, still identifiable, and redolent of the very mastery of iron and steel-shaping work that the Portland Company pioneered in America.. Henry Ford himself was well aware of the Portland Company's linear processes, and cited them in construction of his vast River Rouge auto plant (much of which has long since been lost)

I am puzzled by the developer's plans to demolish or demote so much of what is intact -- these are treasures a prudent investor

should see as gems, not rough at all, just in need of a period of polishing after long neglect.

Such careful thinking should be given to every building on the site.

There is nothing in America left like the Portland Company. Once gone, there will be nothing to ever replace it. Careful prudent, building-by-building restoration and wise re-use should be the rule here -- and the public and the developer both will profit by it.

Demolition of this heritage, and replacing it with a plaque nodding to "What Once Stood Here " is not progress. Holding on to our heritage, and enhancing it, IS progress.

Just like Joan A. Poor, who founded the Portland Company, looked to build for a future he knew he would not see, we should hold on to the best we have for a future we know we WILL see.

Please remember that 20 years ago nay-sayers denounced the very idea of an Historic Preservation Ordinance as a job-killer and a city-destroyer, and the very idea of panels (like the one you sit on) as progress-killers. Today we know they are anything but. Our beautiful city -- and our wallet in tourist dollars -- have benefitted from their existence.

In summary, I believe our best and wisest act for Portland would be to make the Historic District for the Portland Company as big as possible, to embrace as many structures as possible, and to save Building 4 entirely as one example of this broad embrace.

It is an embrace of the future, after all, not just the past.

Thank you for your consideration.

Sincerely,

Herb Adams
Former State Representative
Adjunct Professor History and Social Science, SMCC



PLANNING BOARD REPORT PORTLAND, MAINE

Longfellow Apartments
667 Congress Street
Subdivision and Level III Site Plan
2015-093
Redfern Properties, LLC, Applicant

Submitted to: Portland Planning Board
Public Hearing Date: October 27th, 2015

Prepared by: Shukria Wiar, Planner
Date: October 23rd, 2015

I. INTRODUCTION

On behalf of MSD Properties, LLC, Jonathan Cully of Redfern Properties has submitted a Level III site plan and subdivision application for the property at 667 Congress Street. Redfern Properties is working in partnership with MSD Properties, LLC and Joe's Super Variety to redevelop the property with an eight-story apartment building. The property is bordered by Congress Street, Avon Street, and Vernon Place within the Downtown Business Zone (B-3). The property was rezoned from B-3 and Residential R-6 zones to Downtown Business B-3 zone with accompanying height overlap map revisions. The City Council approved the zone change on June 15, 2015.

The proposed project will have a total of one hundred and thirty-nine (139) apartment units that will include thirty-four (34) efficiency units, ninety-seven (97) one-bedroom units, and eight (8) two-bedroom units. The proposed building will provide a total of eighty-one (81) parking spaces on the first two levels of the building; thirty-seven (37) of the spaces located in the basement level of the building and the remaining forty-four (44) spaces on the first floor of the building. Three of the 81 spaces will be reserved for Joe's Smoke Shop resulting in a total of 78 spaces reserved for tenants of the building. In addition, secured covered space in the garage is reserved for bicycle parking (for a total of 56 bicycles), a private share vehicle parking space for the use of the tenants, and three motorcycle parking spaces.

The property is approximately 25,740 square feet with 98 feet of frontage on Congress Street. The site also has frontages along Avon Street and Vernon Place. The property is within the Congress Street Historic District and abuts another historic district in the rear of the property, the Deering Street Historic District.

A notice of this public hearing was sent to 270 property owners within 500 feet and interested citizens, and appeared in the October 19th and October 20th, 2015, editions of the *Portland Press-Herald*. At the time of preparing this report the Planning Division had not received any written comments since the Planning Board workshop.

Applicant Name	Redfern Properties, LLC
Consultants	
Agent Representative	Jonathan Cully of Redfern Properties, LLC
Engineer	William Savage of Acorn Engineering
Surveyor	David Titcomb of Titcomb Associates
Architect	Ryan Senatore of Ryan Senatore Architecture

REQUESTS FOR WAIVERS (staff evaluation within review under standards)

Waiver Request	Applicable Standard
<i>Parking Lot and Parking Space Design – Technical Design Standard Section 1.14 to allow 18 feet for driveway width</i>	<i>Technical Design Standard Section 1.14. Parking Lot and Parking Space Design - Any parking lot with 10 or fewer spaces shall contain standard sized parking spaces. Parking lots with greater than 10 spaces may be comprised of up to 20% compact parking spaces.</i>
<i>Minimum Driveway Width (two-way) - Technical Design Standard Section 1.7.2.3 to allow the driveway access to a street be 18 feet instead of the required minimum width of 20 feet for two-way ingress and egress.</i>	<i>Technical Design Standard Section 1.7.2.3 Minimum Driveway Width (two-way)- Any site with driveway access to a street shall have a minimum width of 20 feet for two-way ingress and egress, with a preferred width of 24 feet. City of Portland Technical Manual 5</i>
<i>Street tree Requirement – Sec. 14-526 2.b.iii. a</i> The street tree requirement is one tree per unit for a total of 136 trees (x \$200= \$27, 200)	<i>Sec. 14-526 2.b.iii (b) Waiver.</i> Where the applicant can demonstrate that site constraints prevent the planting of required street trees in the City right of way, the Reviewing Authority may permit the planting of street trees in the front yard, within ten feet of the property line. Existing preserved healthy trees that are six (6) inches or more in caliper and are on the site within ten (10) feet of the property line may be counted towards this requirement. If planting street trees is neither feasible in the City right of way nor within the site, the applicant shall contribute to the City of Portland Tree Fund an amount proportionate to the cost of required street trees.
<i>Sidewalk and Curbing Waiver- S Sec. 25-96. Required for nonresidential, two-family or multi-family development; exceptions. Sidewalk waiver for Avon Street and sidewalk and curbing for Vernon Place.</i>	<i>Sec. 25-96. Required for nonresidential, two-family or multi-family development; exceptions.</i> Where a nonresidential, or two-family or multi-family development requiring site plan approval abuts any accepted street and a sidewalk with granite curbing satisfactory to the public works authority has not already been provided, a sidewalk constructed of bituminous concrete, portland cement concrete, brick or other paving material and granite curbing shall be provided along the entire street frontage of the lot. If either a sidewalk or curbing, but not both, shall exist at such location which is satisfactory to the public works authority, only a sidewalk or curbing, as the case may be, shall be provided. In either case, such sidewalk and curbing shall be constructed in accordance with the specifications and to the satisfaction of the public works authority at no cost to the city. In conjunction with major site plan review, the planning board, or with minor site plan review, the planning authority, may waive or modify the requirements contained herein upon a like finding and on the same terms and conditions as set forth in section 14-506(b) of this Code.

II. PROJECT DATA

Existing Zoning	Downtown Business B3
Tax Map	CBL:
Existing Use	Retail; Surface parking
Proposed Use	Market-rate Apartments with Structured Parking
Parcel Size	25,740 SF

Number of Units to be Demolished	None
Number of Affordable Units	The proposed units will be market rate.
Proposed Bedroom Mix	34 efficiency units, 97 one-bedroom, 8 two-bedroom units
Building Footprint	23,968 SF
Building Floor Area	141,742 SF
Building Height	65' at all streets (street wall) and stepbacks to 85'
Impervious Surface Area	26,121 SF
Parking Spaces	81 spaces: 37 on basement level; 44 on first level
Bicycle Parking Spaces	56 spaces: 52 in garage and 4 along Congress Street
Estimated Cost of Project	\$20,000,000

III. EXISTING CONDITIONS AND ZONING

The north and north-west sides of the site abut the Deering Street neighborhood, which is composed of single and multifamily homes within the Deering Street Historic District. The buildings to the east of this property are the Trelawney Building at 655 Congress Street and an apartment building at 645 Congress Street. Across the street is the George S. Hunt Block and Lafayette Building. All of these sites are within the Congress Street Historic District.

Currently, the site contains a two and half story building that houses Joe's Variety Shop and a surface parking lot with sixty-three (63) parking spaces that generally are leased to abutting properties. Avon Street is a one way street that connects to Deering Street, whereas Vernon Place is a two-way, dead-end street. Both streets are public streets. There is one entry to the parking area via Vernon Street. There are three curb cuts to the site on Avon Street to the site; however all of the curb cuts are blocked with guardrails.



The property is located within the Congress Street Historic District and abuts the Deering Street Historic District, and is generally characterized by medium- to large scale residential development of a historic nature. The properties directly across Congress Street are marked by residential multi-family development and commercial businesses. Joe's Variety Shop building is considered noncontributing to the Congress Street Historic District and therefore, can be demolished to make way for the redevelopment project.

Historic photographs of the subject parcels generally show residential and business development of the type characteristic of Congress Street today. A church, a lunch room, and general store occupied the proposed site at the time of the 1924 tax records. The St. Stephen's Church was razed in 1965 and the property has been used as a surface parking since then.

IV. PROPOSED DEVELOPMENT

The applicant is proposing to construct an eight-story multifamily apartment building with two levels of parking underneath. Joe's Variety Shop will be occupying the front portion of the first floor along Congress Street. The basement and first level will house the parking spaces (37 on the basement level and 44 on first level for a total 81) for the building uses. The upper floors are proposed as rental apartments. Access to the site will be via two entrances: one off of Avon Street for the basement level and one off of Vernon Place for the first level.

The parcel currently contains a surface parking lot with spaces within 35' of adjacent streets. Surface parking, whether existing or proposed, may not be located within 35' of the street, which in this case includes Vernon and Avon.

These spaces, as proposed, are considered structured parking, in which case they are allowed.



Figure 4: Aerial of the Proposed Site

Il Street (at Deering Avenue) to Franklin Street.





Figure 5: Rendering of the Proposed Building, Congress Street

In terms of design and building form, the site is located within the Congress Street Historic District. Thus, the project is subject for review under the Historic Preservation Ordinance and is exempt from the B-3 Design Guidelines.

The Historic Preservation Board held a workshop and a public hearing on this project and the development was granted a certificate of appropriateness from the Board on September 2, 2015.

V. PUBLIC COMMENT

As of the writing of this

report, no public comments have been submitted.

A Neighborhood Meeting is required for this project and the applicant has confirmed that the neighborhood meeting was held on August 26, 2015, see [Attachment 13](#).

VI. RIGHT, TITLE AND INTEREST AND FINANCIAL/TECHNICAL CAPACITY

a. The owner of the property is MSD Properties, LLC. The applicant has provided a copy of a deed of sale personal representative, recorded at the Cumberland County Registry of Deeds (Book 32458 Page 30720), which demonstrates their right, title and interest in the property.

b. The estimated cost of the development is \$20,000,000. The applicant has submitted a letter from NBT Bank, dated August 27, 2015, as demonstration of their financial and technical capacity to complete the proposed development.

VII. DEVELOPMENT REVIEW

A. SITE PLAN SUBMISSION REQUIREMENTS (Section 14-527) and SUBDIVISION PLAT AND RECORDING PLAT REQUIREMENTS (Section 14-496)

The applicant has not submitted a recording plat. The final plat was reviewed by Bill Clark, City Surveyor, below are his comments:

1. Minor drafting suggestions for legibility.
2. Granite Monuments OK to set at sideline corners at Congress Street as we will be able to access them.
3. Drainage easements. Need to define who will own and be responsible for them.
4. The existing 10 foot wide Storm Drain Easement from Vernon Place to Avon Street will need to be discontinued by City Council as we will not be responsible for a storm drain or sewer which runs under a building.

5. Need to add note to subdivision plan that the City will not be responsible for the catch basin in Vernon Place and the storm drain which runs under the building.

The plat shall reflect any easements that relate to the subdivision plan.

B. SUBDIVISION (Section 14-497)

The proposed development has been reviewed by staff for conformance with the relevant review standards of Portland's Subdivision Ordinance and applicable regulations. Staff comments are listed below.

1. Will Not Result in Undue Water and Air Pollution (Section 14-497 (a) 1), and Will Not Result in Undue Soil Erosion (Section 14-497 (a) 4)

David Senus, P.E. with Woodard and Curran Engineering, has reviewed the erosion and sediment control plan and is satisfied with the proposed plans.

2. Sufficient Water Available (Section 14-497 (a) 2 and 3)

The project will be served by the utility services located in Congress Street. Separate services are proposed for the commercial property and the residential units. Confirmation of ability to serve letter from PWD and DPS has been submitted.

3. Will Not Cause Unreasonable Traffic Congestion (Section 14-497 (a) 5)

Tom Errico, P.E. Ty Lin reviewed the proposal's details including the access, parking, and vehicle circulation ([Attachment 1](#)). Mr. Errico finds the project to be acceptable. The proposed project is not anticipated to cause unreasonable traffic congestion.

4. Will Provide for Adequate Sanitary Sewer and Stormwater Disposal (Section 14-497 (a) 6), and Will Not Cause an Unreasonable Burden on Municipal Solid Waste and Sewage (Section 14-497 (a) 7)

The development is anticipated to have 23,810 gallons per day of wastewater flow and DPS has confirmed that there is sufficient sewer capacity to serve the project.

5. Scenic Beauty, Natural, Historic, Habitat and other Resources (Section 14-497 (a) 8)

The proposal site is within an historic district and has received a certificate of appropriateness for the proposed building from the Historic Preservation Board. It is in an urban neighborhood surrounded by a variety of residential building types. The proposed building does not impact the natural beauty of the area or adversely affect any significant wildlife habitat, rare or irreplaceable natural areas, or any public access to the shoreline. The staff finds the proposal in conformance with this standard.

6. Comprehensive Plan (Section 14-497 (a) 9)

The applicant has submitted their analysis of the projects conformance with the Comprehensive Plan (refer to [Attachment C](#)). The staff has identified the following goals and policies which are relevant to the proposed housing development and finds the proposal in conformance with the Comprehensive Plan:

Portland Housing Goal: Ensure that an adequate supply of housing is available to meet the needs, preferences, and financial capabilities of all Portland households, now and in the future.

Policies

- Ensure the construction of a diverse mix of housing types that offers a continuum of options across all income levels, which are both renter and owner-occupied, including but not limited to the following:
 - ii. Housing units for decreasing household size, such as young professionals, empty nesters, single-parent households, and senior citizens.
- Encourage higher density housing for both rental and home ownership opportunities, particularly located near services, such as schools, businesses, institutions, employers, and public transportation.

- Increase Portland's rental housing stock to maintain a reasonable balance between supply and demand yielding consumer choice, affordable rents, and reasonable return to landlords.
- Identify vacant land and redevelopment opportunities throughout the City to facilitate the construction of new housing.

Portland Housing Goal: Maintain and enhance the livability of Portland's neighborhoods as the City grows and evolves through careful land use regulations, design and public participation that respect neighborhood integrity.

Policies

- Encourage innovative new housing development, which is designed to be compatible with the scale, character, and traditional development patterns of each individual residential neighborhood.
- Encourage new housing development in proximity to neighborhood assets such as open space, schools, community services and public transportation.
- Ensure the integrity and economic value of Portland's neighborhoods.

7. Financial Capability (Section 14-497 (a) 10)

The estimated cost of the development is \$20,000,000. The applicant has submitted a letter from NBT Bank, dated August 27, 2015, as demonstration of their financial and technical capacity to complete the proposed development.

8. Easements

The applicant will provide the city with a pedestrian easement for those areas of the sidewalk that are within the development property bounds, as well as drainage and roadway easements. The construction of the building is proposed to use wall anchors to secure the basement walls during construction. The applicant will need a license for the wall anchors.

The utilities' easements for the neighborhood would also need to be on the subdivision plat.

C. SITE PLAN STANDARDS (Section 14-526)

The proposed development has been reviewed by staff for conformance with the relevant review standards of Portland's site plan ordinance and applicable regulations. Staff comments are listed below.

1. Transportation Standards

a. Impact on Surrounding Street Systems and Access and Circulation- see Subdivision, Paragraph VIII (B) (3), above.

b. Construction Management Plan

A construction management plan has been submitted by the applicant and the review by the Department of Public Services is pending. Any recommendations will be forwarded to the applicant.

c. Sidewalks

The sidewalk and ADA ramps along Congress Street will be rebuilt and replaced. As for the Avon Street, the applicant is not proposing to install a sidewalk along their frontage and thus, increase the width of the street from fourteen (14) feet to sixteen (16) feet to meet the Fire Department standard for access. On Vernon Place, the existing street does not include a sidewalk adjacent to the project. The applicant is proposing a shared vehicle and pedestrian space for Vernon Place. The shared space will be delineated by a stamped and flash pavement walkway from the main building entrance to on the Vernon Street first level garage entrance.

The City staff had recommended that Avon Street should be a shared street, similar to Foundry Lane. The revised site plan does not show this recommendation and the applicant is concerned with redesigning Avon Street along the Trelawney Building. The City staff has reviewed the plans and strongly recommends that there be a sidewalk on Avon Street. Avon Street does have a four foot existing concrete sidewalk on the opposite side that is in poor condition. There are overhead utilities and associated poles. According to the applicant, the utility poles will be removed, but confirmation of this is needed as there are three poles existing poles shown on the plans. . The City staff recommends that all the utility poles be removed, including the one closest to the Congress and Avon Streets intersection.



The applicant have submitted a waiver request for sidewalk and curbing for both Avon Street and Vernon Place. City staff would recommend the waiver for Avon Street with the assumption that an alternative safe route is provided for the pedestrians. Tom Errico, Consultant Traffic Engineer, has reviewed the revised site plans and offers the following recommendations in regard to the sidewalks and curbing on both the side streets:

The width of the sidewalk along Avon Street abutting the property is noted as between 3 and 5 feet wide. I need to review specific details regarding this sidewalk to ensure appropriate accessibility is provided.

Status: Given the narrow width of the street and sidewalk, I recommend that a fully shared street be considered (curbs to be removed or relocated to buildings on both sides of the street with special surface pavement treatment). This would allow for improved or desired emergency access, easier maintenance, and would allow for a multi-modal street that would provide for all users in a safe and calmed environment.

Final Status: Per City Ordinance the applicant is required to either provide a sidewalk along their property frontage along Avon Street or formally request a waiver from constructing a sidewalk following specific waiver criteria. Given the unique characteristics of Avon Street, and site limitations, I support a waiver for a sidewalk along their property frontage, with the assumption that an acceptable alternative route is provided on the opposite side of the street. Accordingly, the applicant shall be responsible for providing a fully ADA compliant sidewalk facility that meets City of Portland material policy requirements. The final design of Avon Street requires final approval by DPS as it relates to maintenance activities and I would suggest that a cross-section illustration be provided before final approval is granted.

The crosswalk on Avon Street should be eliminated.

Final Status: The plans shall be [revised to] remove the raised crosswalk. With the introduction of a tall building and the “cannon” effect it will have on motorists, traffic calming devices are not required. I would further note that pedestrians will have a fully ADA compliant sidewalk for use and thus will be separated from vehicles.

The plans note that the sidewalk on Vernon Place will not have curbing. I will review this with DPS staff.

Status: I continue to review design treatments for Vernon Place given its unique function. As noted below, the applicant shall complete the formal waiver process for curb and sidewalk. The City needs to be comfortable with the design and function of Vernon Place with the added project traffic (traffic volumes will increase substantially from current conditions). Specifically accommodating pedestrians safely, vehicle movements, DPS maintenance equipment and their ability to turn around safely, landscaping, drainage, and access/egress movements into and out of the garage and the driveways on the west side of the street.

Final Status: The final design of Vernon Place is unique and requires final approval by DPS as it relates to maintenance activities. While the applicant did not submit formal waiver information, it is my professional opinion that the general cross-section design is acceptable, pending DPS review. I would suggest that a cross-section illustration be provided before final approval is granted.

The applicant shall formally request a waiver for a sidewalk along Vernon Place.

Status: The City has a defined Waiver criteria process that the applicant should comply with.

Final Status: See prior comment.

The following are Mr. Errico’s recommendations for the ADA ramps:

The alignment of the sidewalk ramps on Congress Street will need to direct pedestrians to the appropriate path of travel from an ADA perspective. Adjustments will need to be incorporated.

Status: The ramp at corner of the Avon Street is unacceptable and alignment for walking parallel to Congress Street shall be provided. I would also note that the ramp at Vernon Place may need to change following the final configuration of the street.

Final Status: I have reviewed the plans and generally find them to be acceptable. Specific cross-slope and grade details will be required as part of final construction.

The applicant is requesting a waiver for driveway width. 18 feet is being proposed. My initial review indicates I would be supportive of a waiver given the characteristics of Vernon Place and Avon Street.

Status: I have no further comment.

David Margolis-Pineo, Deputy City Engineer, reviewed the revised plans for Avon Street and offers the following recommendation:

Due to poor condition the applicant is requested to reconstruct the sidewalk on the East side of Avon St using the current required brick sidewalk material. To allow greater access for emergency vehicles, granite curbing with a two inch reveal is proposed. This Department

does not support the applicant's request for a waiver. [To clarify DPS position (10.23.15), the department supports the waiver of a sidewalk alongside the proposed building subject to a condition that the Avon Street sidewalk on the opposite site of the street be reconstructed.]

Public Service Operations staff have concerns of building damage on Avon St during snow plowing. Therefore the applicant is requested to install vertical granite curbing along the property line with a seven inch reveal. It is also understood that there will be no projections from the building face into the Avon St right of way from the applicant's building.

d. Public Transit Access

The site is on METRO lines Route 1- Congress Street, Route 8- Peninsular Loop, and Routes 9A/9B- Crosstown Loop. The applicant will need to coordinate with METRO to determine if bus shelters or other bus stop amenities will be required.

e. Parking

It is understood that the applicant is using the site at present for parking for tenants from other properties and are on a monthly rental.

The proposed building design provides a total of 81 parking spaces; three of these spaces are reserved for Joe's Smoke Shop resulting in a total of 78 spaces reserved for tenants of the building. In addition, secured covered space is reserved for bicycle parking (total space for 52 bicycles), four exterior bicycle parking spaces along Congress Street, a private auto share service, and three motorcycle parking spaces.

Section 14-332.1 (k) – For residential development on the peninsula, including new construction, the parking requirement is one space per dwelling unit. This same section also states that:

The planning board may establish a parking requirement that is less than the normally required number of spaces upon a finding of unique conditions that result in a lesser parking demand, such as housing for persons who cannot drive, housing that participates in a travel demand management program, availability of transit, or housing which includes permanent restrictions on automobile usage, and which is permanently restricted from utilizing resident on-street parking stickers.

The applicant is proposing to provide a ride share car, per Zoning Ordinance (Section 14-332.1 (k) 2), which allows the parking spaces to be reduced by eight spaces. The applicant is proposing to locate the car-share space on-site. The City staff finds this acceptable.

The proposed development is for 139 residential units with 81 parking spaces, of which three are for Joe's Variety Store, as part of this project. Following is the breakdown of the parking that is required by zoning versus the reduced ratio that the applicant is requesting:

	1:1 Ratio (As required by Zoning)	.58 :1 Ratio (As requested by Applicant)
Parking spaces as required per zoning (minus the first three proposed units)	139	$139 \times .58 = 81$
U-car share	8	8
Total of Spaces Required	131	73

The applicant is actually proposing a ratio of .56 because three of the proposed parking spaces are to be used by the variety store (78/139 spaces).

	.56:1 Ratio (Actual reduced ratio)
Parking spaces as required per zoning (minus the first three proposed units)	136 (139 minus the 3 for store) x .56 = 76
U-car share	8
Total of Spaces Required	68

The request for a reduced ratio is based on the data collected on projects on Portland's Peninsula. It should be noted that the data is from either affordable housing or mixed affordable and market rate housing. This development is only market rate housing.

Tom Errico, Consultant Traffic Engineer, has reviewed the revised site plans and offers the following recommendations:

I have reviewed the traffic impact study prepared by Traffic Solutions and while I continue to review details, I generally find the conclusions to be acceptable.

Status: I concur with the conclusions of the Traffic Impact Study that the project will not have a significant impact on traffic operations and safety in the vicinity of the project. I have no further comment.

Final Status: I have no further comment.

The applicant has noted that an on-going parking study of similar developments is proceeding and the results of the parking study will be provided in the future.

Status: The applicant has conducted a parking evaluation and is suggesting use of a parking generation rate of 0.58 parking spaces per residential unit. In my professional opinion the type of residential apartment (market rate versus low income or other) will influence parking demand of a project. The highest parking generation rate recorded was for the Island View Apartments (a market rate complex), where 0.70 parking spaces per unit were recorded. It is my suggestion that the applicant provide a parking analysis that is solely based on market rate apartments.

Final Status: Requested information pending.

If the Board finds the proposed parking spaces does not meet parking requirement, the Board can request the applicant to pay fee- in-lieu. Section 14-345, Peninsula fee-in-lieu of Parking, states:

Any major or minor development subject to site plan review located in a non-residential zone on the Portland Peninsula shall either provide the required parking or pay a fee according to the provisions of (a) and (b) below.

(a) Provide the number of off-street parking spaces according to the provisions of section 14-332 (uses requiring off-street parking) and section 14-334 (offsite parking) of this division; or,

(b) Pay a fee-in-lieu of parking of not less than \$5,000.00 as adjusted annually per (c) below, per space not provided. Fees shall be deposited into the Sustainable Transportation Fund, as established in Section 14-346 of this division.

f. Bicycle Parking

The proposals include fifty-six (56) bicycle parking spaces in the garage of the building (52) and along Congress Street façade (4).

2. *Environmental Quality Standards*

a. Preservation of Significant Natural Features

There are no known significant natural features on the site.

b. Landscaping and Landscape Preservation

The site is being built out to the edge of the property; therefore there is little room for landscaping. The applicant is proposing a vegetated/ green screen walls on the side of the proposed building along the lower portion of Vernon Place and at the rear of the property. As part of the Site Plan standards, there are sections that address landscaping on site. Section Sec. 14-526(b) (2)(b)(i) states:

(b) *Understory Plantings*. All development subject to required zoning setbacks shall include a minimum of six (6) shrubs per forty five (45) linear feet of all frontages as measured along the property line. A shrub shall be defined as one shrub, one ornamental grass, and/or 3 perennials. Required shrubs may be installed anywhere on the site, including a green roof, if proposed, and may be planted in any arrangement. Existing vegetation to be preserved on the site may be counted towards this requirement as detailed in Section 4 of the Technical Manual.

(d) *Buffer from Surrounding Development*. All residential development shall provide and/or preserve evergreen vegetated buffers where necessary to buffer the development from detrimental impacts of existing surrounding development.

Since the applicant is proposing vegetated/ green walls where is feasible, the applicant has fulfilled the landscaping buffer requirement.

Jeff Traling, City Arborist, has reviewed the landscaping plan and would like to see green walls on Avon Street as well. Below is Mr. Tarling's complete recommendations:

The proposed 667 Congress Street project as designed with a 99.9% build-out of space between Vernon Place and Avon Street presents a minimal amount of available landscape space. The project does feature three 'street-trees' with granite planters along Congress Street which is our standard approach along the frontage. Due to narrow width of Vernon Place and Avon Street the project does propose 'Green Wall' treatment along Vernon Place and no treatment options along Avon due to restricted space. Green wall is also proposed for the Deering Street facing rear facade as well.

Due to the important function of the green wall in this project site recommendation / condition would include a closer look to create a more robust planting of green wall plants perhaps using four plants per section density vs. two, and a review of 'best plant' options to cover the wall.

The large expanse of blank wall along Avon Street would benefit from a green wall treatment if at all possible. In conducting brief research it appears possible to have some types of this system with minimal 'ground' space. Recommendation would be to take a second look at possible options. Green wall use and successful green wall experiences in Portland is relatively new. They have potential if properly constructed and maintained to provide landscape buffer in a narrow, vertical space.

Concerns include protecting plant root system from winter deicing salts which might be improved by placing plants in raised planters in the same fashion as the raised granite tree planters.

The applicant is also proposing three street trees on Congress Street, in front of the building. The City standards requires one street tree per unit, therefore with 139 units, a total of 139 street trees are required. Due to site restrictions, the remaining streets cannot be planted on the site. The applicant has asked for a waiver of this standard. The site plan standard for granting a waiver of the street tree requirement is presented below and it requires a financial contribution. The designated contribution is \$200 per tree to the City's Tree Fund for the remaining trees, which in this case would for 136 trees and would be a total of \$27,200.00. See below for the specific language in Section 14-526 (b)(2) (b)(iii)b- Waiver-

Where the applicant can demonstrate that site constraints prevent the planting of required street trees in the City right of way, the Reviewing Authority may permit the planting of street trees in the front yard, within ten feet of the property line. Existing preserved healthy trees that are six (6) inches or more in caliper and are on the site within ten (10) feet of the property line may be counted towards this requirement. If planting street trees is neither feasible in the City right of way nor within the site, the applicant shall contribute to the City of Portland Tree Fund an amount proportionate to the cost of required street trees.

The applicant is requesting that the full contribution be waived, as the applicant is proposing to install granite planters for the Congress Street trees, and install a green wall along Vernon Place and along the rear of the building for a cost of \$96,000.00. Jeff Tarling has recommended that a green wall be installed along Avon Street as well, which the applicant had proposed and then was removed in order to widen Avon Street to a minimum width of 16 feet of pavement for emergency access. The applicant's request and cost estimate is included in Attachment 25. The street tree waiver does not provide criteria for a complete waiver of the tree contribution, but the Board may consider this request or a partial reduction under the general waiver criteria excerpted below:

(f) *General Waiver*

1. Except for the requirements set forth in Section 14-526 (a)-(d) for which individual waiver criteria are provided, the Reviewing Authority if it finds that extraordinary conditions exist or that undue hardship may result from strict compliance with these regulations may vary the regulations so that substantial justice may be done and the public interest secured; provided that such variation will not have the effect of nullifying the intent and purpose of the land development plan and the regulations of this article.

Mr. Tarling reviewed the applicant's request and he states that "*Contribution to the Portland 'Tree Fund' is recommended*".

c. Water Quality, Storm Water Management and Erosion Control

There is currently a separation of the combined sewer and stormwater within Avon Street and close proximately to the site. The City of Portland has hired a contractor to perform a sewer separation and roadway reconstruction project on Deering Street; the work is beginning at this time. As part of this work, a new, separated storm drain and sewer system will be installed in Avon Street, up to the location of the proposed storm drain connections for this project.

According to the City's Consultant Engineer, David Senus, the proposed project "appears that the design is well coordinated with those plans; we encourage the Applicant and their engineering and construction team to work closely with the City DPS Office and their Contractor during the construction phase to ensure that the timing of this work and the associated pipe connections can be properly coordinated with the Deering Street work which will occur over the coming months".

The existing site area is a single paved and gravel parking area with an existing building. The current surface runoff from the site flows into two subcatchments ending in the existing catch basins located in the Northeast and Northwest corners of the property. The majority of runoff, about 96%, flows from the existing building, parking lot, to the newly proposed catchbasin and separated storm drain piping on Avon Street. The remaining runoff, about 4%, consists of flow from the west border along an overgrown gravel area to the catch basin at the end of Vernon Place.

The new development will have all stormwater flow, including snowmelt, from the first floor parking directed to the basement floor and then connected to the existing municipal system. The majority of the first floor parking will be covered by the proposed building while the perimeter parking will be open (no roof).

In accordance with Section 5 of the City of Portland Technical Manual, a Level III development project is required to submit a stormwater management plan pursuant to the regulations of MaineDEP Chapter 500 Stormwater Management Rules, including conformance with the Basic, General, and Flooding Standards.

Since the project will not result in an increase in impervious area and therefore will not need to meet the General or Flooding Standards. As such, the project is not required to include any specific stormwater management features for stormwater quality control or to control the rate or quantity of stormwater runoff from the site.

David Senus of Woodard and Curran has reviewed the preliminary project and had the following comments:

- *Sheet C30: A roof drain appears to connect into the floor drain system at a proposed cleanout. All roof drains should be connected into the separated storm drain system.*
- *The Applicant has noted that the 8" vitrified clay sanitary sewer in Vernon Place that crosses the project property is inactive, and they propose to demolish this sewer or infill the sewer with flowable fill. Prior to infilling or demolishing the sewer, the Applicant should plug the invert out in the downstream manhole in Vernon Place with a water-tight plug, and monitor the manhole to determine if any flow is evident over the course of several days (including at least one rainfall event). The Applicant shall coordinate their monitoring of this system with DPS (David Margolis-Pineo and John Emerson). Abandonment of the sewer shall include demolishing the manholes in Vernon Place to at*

least 3' below grade, filling in any remaining open space with 3/4" crushed stone, and repairing the pavement section with City Standard compacted gravels and pavement lifts.

- *The proposed curb line abutting an existing curb inlet catch basin at the corner of Congress Street and Vernon Place is proposed to be realigned, with a tip-down proposed at the location of the existing catch basin. This catch basin and associated lateral should be demolished and replaced, with a new catch basin located along the curb line east of the existing location.*

All previous review comments contained in memorandums from Woodard & Curran dated August 20th and September 18th have been adequately addressed.

Mr. Margolis- Pineo, Deputy City Engineer, has the following comments to offer:

- *There is one catchbasin which collects drainage on Vernon Place. The discharge from this City owned and maintained structure discharge through a pipe across the applicant's property in a 10' wide drainage easement. The building proposed by the applicant does not allow the City to maintain this utility. Therefore the applicant is requested to assume maintenance responsibilities for this drainage pipe and the City will relinquish the 10' wide drainage easement.*
- *Sewer evaluation: City crews have inspected a reach of sewer on Avon Street down stream of where the applicant wishes to connect their sanitary lateral. That sewer evaluation has not been received. We would like to request that if that reach of sewer is in need of replacement, the applicant be responsible to do so.*
- *There is concern that the existing sanitary sewer on Vernon Place, scheduled to be abandoned by the applicant, may still be active. The applicant is request to verify to the City's wastewater group satisfaction that is line is in fact 100% abandoned.*

3. *Public Infrastructure and Community Safety Standards*

a. Consistency with Master Plans

See Subdivision, Paragraph VIII (B)6 above.

b. Public Safety and Fire Prevention

The Crime Prevention through Environmental Design (CPTED) standards in the site plan ordinance address the principles of natural surveillance, access control and territorial reinforcement so that the design of developments enhance the security of public and private spaces and reduce the potential for crime. The main entry to the building is from Congress Street.

A lighting and photometric plan has been submitted on September 15, 2015. Since two cobra heads street lighting is proposed to be removed on Avon Street, the Board had concerns about lack of lighting on this street. In a meeting held on September 28th, 2015, the applicant indicated that they will increase the wall mounted fixtures on their building to help light the street. Revised lighting and photometric plans has not been submitted to reflect this change. The applicant will have to submit revised plans for review and approval by staff. Since the project is a historic district, the lighting fixtures were reviewed and approved by the Historic Preservation Board.

David Margolis-Pineo also is concerned with the street lighting and offers the comment below:

Street lighting on Avon St: Since Avon Street will become a 20' wide right of way with two – eight story building on each side, and it is proposed to remove two light poles with cobra head lighting, the applicant is requested submit a lighting detail and lamination report on

light levels for the length of the applicant's property.

c. Availability and Adequate Capacity of Public Utilities

Water/ Sanitary Sewer/ Natural Gas:

The proposed project is anticipated to add a net water usage from the development of approximately 24,000 gallons per day (GPD). Separate services are proposed for the commercial property and the residential units. For the residential units, the developer has proposed a new 8-inch fire line service for the development that would tie into the existing water main in Congress Street with a redundant connection within Avon Street, as well as a four-inch domestic service in Congress Street. The developer is also proposing an individual one-inch service for the commercial property.

The development is anticipated to have 23,810 GPD of wastewater flow and Department of Public Services have submitted the ability to serve letter. Separate services are proposed for the commercial property and the residential units. For the residential units, the developer has proposed a new 8-inch sewer service for the development that would tie into the existing sewer within Avon Street. The developer is also proposing an individual six-inch service for the commercial property, including a 4-inch service for kitchen waste leading from an internal grease interceptor.

The developer plans to serve the proposed building with a gas service; the new service be established from the existing underground line within Vernon Place, and into the mechanical closet for the development.

Electricity/ Telephone/ Cable TV:

There are currently overhead wires crossing the proposed site that are anticipated to be removed as part of this project. The new service for electrical will be from the existing line within Congress Street, and into the existing CMP manhole within the Vernon Place corridor. Electric services currently existing within Vernon Place are anticipated to be redirected from the existing CMP manhole within the Vernon Place corridor, onto the utility poles adjacent to the project, and then reconnecting to each existing Vernon Place service.

As for the telephone and cable (communication), the new service will be from the existing services overhead within Vernon Place. All utilities lines shall be underground to the site.

Waste Management:

All residential development of will provide for the temporary storage and removal of all trash and recyclable materials. All storage of trash and recyclables containers are fully enclosed within the first floor of the development, and screened from the public view.

4. Site Design Standards

a. Snow and Ice Loading

The applicant is proposing on-site snow storage; the area for storage is to the east of the parking lot (Attachment 11).

b. View Corridors

This site is not within a Protected View Corridor as per the "View Corridor Protection Plan" approved by the Portland City Council in 2001.

c. Historic Resources

The site is within the Congress Street Historic District and has been reviewed and approved by Historic Preservation Board on September 2, 2015.

d. Exterior Lighting

Refer to Paragraph VII (C)3(b) above.

e. Noise and Vibration

All heating, ventilation and air conditioning equipment (HVAC), air handling units (AHU), emergency generators, and similar equipment will have to be shown on the plans and meet state and federal emissions requirements. These mechanical equipment should be located to the interior of the site, away from abutting residential properties and be screened from view from any public street and from adjacent sites by structure walls, evergreen landscaping, fencing, masonry wall or a combination thereof. This information will have to be submitted for review as part of the building permit.

f. Signage and Wayfinding

This standard does not apply to the proposal.

g. Zoning Related Design Standards

Since the property is located in the Congress Street Historic District, the Historic Preservation Board reviewed the design of the building. The Board has had one workshop and a public hearing on the item on September 2nd, 2015. The project was approved the Board.

VIII. STAFF RECOMMENDATION

Subject to the proposed motions and conditions of approval listed below, Planning Division staff recommends that the Planning Board approve the proposed development.

IX. PROPOSED MOTIONS

WAIVERS

On the basis of the application, plans, reports and other information submitted by the applicant, findings and recommendations, contained in the Planning Board Report for the proposed subdivision and site plan (application 2015-093), including but not limited to the report and the staff reviews relevant to Portland's Technical and Design Standards and other regulations, as well as the Planning Board deliberations and the testimony presented at the Planning Board hearing.

1. The Planning Board (**waives/does not waive**) Technical Design Standard Section 1.14 *Parking Lot and Parking Space Design* to allow 26 compact parking spaces, exceeding the required 20% compact spaces allowed.
2. The Planning Board (**waives/does not waive**) Technical Design Standard Section 1.7.2.3 *Minimum Driveway Width (two-way)* to allow the driveway access to Avon Street to be 18 feet instead of the required minimum width of 20 feet for two-way ingress and egress.
3. The Planning Board (**finds/does not find**) that the applicant has demonstrated that site constraints prevent the planting of required street trees along Congress and Avon Streets and Vernon Place, thus the Planning Board (**waives/does not waive**) Section 14-526 (b) (2) (b) (iii) *Street Trees* [to allow for a contribution of \$27,200 to the City's Street Tree Fund to be substituted for the provision of on-site street trees] OR [to waive a portion or all of the street tree contribution under the General Waiver criteria due to the applicant's improvements for granite tree wells and installation of green walls.]
4. Sidewalk Waiver for Avon Street:

The Planning Board [**waives / does not waive**] with regard to Avon Street as specified in Zoning Ordinance, Section 14-498 (b) (8) (a and b), which requires that sidewalks and curbing shall be constructed on each side of each street in accordance with article III of chapter 25 and curbs shall be constructed on each side of each street, to allow no sidewalk on the side of the proposed building, subject to the condition that the applicant shall be responsible for providing a fully ADA compliant sidewalk on the opposite side of Avon Street meeting the City of Portland's material policy requirements. The final design of Avon Street shall require a final approval by the Department of Public Services as it relates to maintenance activities. The curbing shall be constructed as provided in article VI of chapter 25.

5. Sidewalk and Cubing for Vernon Place:

The Planning Board [**waives / does not waive**] with regard to Vernon Place as specified in Zoning Ordinance, Section 14-498 (b) (8) (a and b), which requires that sidewalks and curbing shall be constructed on each side of each street in accordance with article III of chapter 25 and curbs shall be constructed on each side of each street, to allow sidewalk and curbing to the garage opening on Vernon Place and no sidewalk beyond that point. The curbing shall be constructed as provided in article VI of chapter 25.

Subdivision Plat

On the basis of the application, plans, reports, and other information submitted by the applicant, findings and recommendations contained in Planning Board Report for application 2015-093 relevant to the Subdivision Ordinance, and other regulations, as well as the Planning Board deliberations and the testimony presented at the Planning Board hearings, the Planning Board finds the following:

That the plan (**is/is not**) in conformance with the subdivision standards of the land use code, subject to the following conditions:

1. The final boundary survey, subdivision plat, and site plans shall be stamped by a registered professional land surveyor and registered engineer;
2. The Subdivision Plat shall be finalized to the satisfaction of the Planning Authority, Department of Public Services and Corporation Counsel;
3. That the following shall be finalized to the satisfaction of the Corporation Counsel prior to the issuance of a Certificate of Occupancy:
 - a. Sidewalk Easement
 - b. Drainage Easement
 - c. Roadway Easement
 - d. Building Wall Anchor Irrevocable License
 - e. Stormwater management agreement
4. The recording plat shall be revised noting all waivers and conditions for review and approval by the Planning Authority prior to recording. All waivers shall be recorded within 90 days of the Planning Board approval.
5. The City Surveyor comments dated 10.21.2015, as stated below and marked up on the plat, shall be addressed prior to the issuance of a building permit:
 - a. Drainage easements. Need to define who will own and be responsible for them.
 - b. The existing 10 foot wide Storm Drain Easement from Vernon Place to Avon Street will need to be discontinued by City Council as the City will not be responsible for a storm drain or sewer which runs under a building.
 - c. Need to add note to subdivision plan that the City will not be responsible for the catch basin in Vernon Place and the storm drain which runs under the building.

Level III Site Plan

On the basis of the application, plans, reports, and other information submitted by the applicant, findings and recommendations contained in Planning Board Report for application 2015-093 relevant to the Site Plan Ordinance, and other regulations, as well as the Planning Board deliberations and the testimony presented at the Planning Board hearings, the Planning Board finds the following:

That the plan **(meets/does not meet)** the parking requirements of the zoning ordinance with the provision of 81 on-site vehicle parking spaces; and

That the plan **(is/is not)** in conformance with the site plan standards and all other applicable provisions of the land use code, and subject to the following conditions:

1. The Consultant Traffic Engineer comments dated 10.22.2015, as stated below, shall be submitted for review and approval prior to the issuance of a building permit:
 - a. Cross-section details of the streets be provided for Vernon Place and Avon Street
 - b. Final approval by DPS as it relates to the on-going city maintenance operations.
 - c. Cross-slope and grade details will be required for the ADA ramps being proposed on Congress Street.
 - d. Provide a parking analysis that is solely based on market rate apartments.
 - e. Eliminate the crosswalk on Avon Street.
2. Traffic Demand Management Plan shall include a provision that strategies be adjusted, as necessary, to address parking demand conditions. As part of this requirement, the applicant shall conduct a parking survey, with methods approved by the City, at initial full occupancy and annually thereafter.
3. The Deputy City Engineer comments dated 10.22.2015, as stated below, shall be addressed prior to the issuance of a building permit:
 - a. Sewer evaluation: City crews have inspected a reach of sewer on Avon Street down stream of where the applicant wishes to connect their sanitary lateral. This sewer evaluation has not been received by Department of Public Services (DPS). DPS requests that if that reach of sewer is in need of replacement, the applicant shall be responsible to do so.
 - b. The applicant shall be required to install vertical granite curbing along the property line with a seven inch reveal on Avon Street.
 - c. There is concern that the existing sanitary sewer on Vernon Place, scheduled to be abandoned by the applicant, may still be active. The applicant is request to verify to the City's wastewater group satisfaction that is line is in fact 100% abandoned.
4. The City Arborist comments dated 10.22.2015, as stated below, shall be addressed prior to the issuance of a building permit:
 - a. The applicant shall create a more robust planting of green wall plants and a review of 'best plant' options to cover the wall.
5. The Consultant Stormwater Engineer comments, dated 10.21.2015, shall be addressed prior to the issuance of a building permit.
6. The ramps at the corner of Congress Street shall meet the Historic District detail Figure I-7A in the Technical Standards.
7. The bicycle hitch shall meet the Technical Standards in regard to mounting and color.

8. The developer/contractor/subcontractor must comply with conditions of the construction stormwater management plan and sediment and erosion control plan based on City standards and state guidelines. The owner/operator of the approved stormwater management system and all assigns shall comply with the conditions of Chapter 32 Stormwater including Article III, Post Construction Stormwater Management, which specifies the annual inspections and reporting requirements. A maintenance agreement for the stormwater drainage system, as attached, or in substantially the same form with any changes to be approved by Corporation Counsel, shall be submitted, signed, and recorded prior to the issuance of a building permit with a copy to the Department of Public Services.
9. That all HVAC systems and external mechanical equipment shall meet the maximum allowable noise requirements of the zone; each unit shall submit documentation of dBA output to confirm compliance of both the unit and the building in respect of rated noise levels and cumulative noise levels, to the satisfaction of the Zoning Administrator prior to the issuance of a Building Permit for that unit.

ATTACHMENTS:**Memo Attachments**

1. Traffic Engineering Review (Tom Errico, T Y Lin), comments dated 10.22.2015
2. Department of Public Services Review, David Margolis-Pineo, dated 10.22.2015
3. Civic Engineer Review, David Senus, dated 10.21.2015
4. Fire Department Review, Capt. Keith Gautreau, dated 09.29.2015
5. City Arborist, Jeff Tarling, dated 10.22.2015
6. City Surveyor, Bill Clark, dated 10.21.2015
- 6a. Mark up of Subdivision Plat

Public Comments- No Public Comments**Applicant's Submittal**

1. Cover Letter
2. Level III Application
3. Zoning Analysis
4. MSD Properties LLC Deed
5. Ability to Serve Request Response
6. Stormwater Report
7. Erosion Control Report
8. Waste Removal Letter
9. Waivers Request
10. Financial Capacity Letter NBT
11. Snow Storage Plan- 7.30.15
12. Traffic Memorandum Preliminary
 - a. Traffic Impact Study
13. Neighborhood Meeting Package
14. Fire Risk Management Memo- 09.11.15
15. Parking Assessment Study- 09.15.15
16. Construction Management Plan- 09.11.15
17. Site Logistic Narrative
18. Photometric Plan- 09.10.15
19. Exterior Wall Sconce
20. Congo_Waivers- 09.15.15
21. TDM Report

22. Comments Response Letter- 10.13.15
23. Waivers- 10.13.15
24. Wall Anchor Email
 - a. Soil Nail Information
 - b. SOE - Layout
25. Applicant's Cost Estimate for Landscaping 10.22.15

Plans

- | | |
|--------|--|
| Plan1 | C-01_cover sheet & legend 10-13-15 |
| Plan2 | C-02_general notes 10-13-15 |
| Plan3 | Existing conditions |
| Plan4 | C-10_site plan_basement_10-13-15 |
| Plan5 | C-11_site plan_first floor_10-13-15 |
| Plan6 | C-20_utility plan_10-13-15 |
| Plan7 | C-30_grading_basement_10-13-15 |
| Plan8 | C-31_grading_first floor_10-13-15 |
| Plan9 | C-40_site details 1_10-13-15 |
| Plan10 | C-41_site details 2_10-13-15 |
| Plan11 | C-42_utility details_10-13-15 |
| Plan12 | C-43_drainage details 1_10-13-15 |
| Plan13 | C-44_drainage details 2_10-13-15l-01 landscape_9.15.15 |
| Plan14 | C-45_esc details_10-13-15 |
| Plan15 | C-50_cross-section 1_10.13.15 |
| Plan16 | L-1_landscape plan_10-13-15 |

From: Tom Errico <thomas.errico@tylin.com>
To: Shukria Wiar <SHUKRIAW@portlandmaine.gov>
CC: David Margolis-Pineo <DMP@portlandmaine.gov>, Katherine Earley <KAS@portlandmaine.gov>, Jeff Tarling <JST@portlandmaine.gov>, "Jeremiah Bartlett" <JBartlett@portlandmaine.gov>
Date: 10/22/2015 11:17 AM
Subject: 667 Congress Street - Final Traffic Comments

Shukria - The following is a status update on my September 23, 2015 comments and should be considered the Final Traffic Comments.

* The parking layout on the first floor is extremely tight and the applicant needs to provide auto-turn templates for most parking spaces. Status: The applicant has provided the requested auto-turn analysis that illustrates a mid-sized vehicle can access and egress parking spaces. I find the layout to be acceptable but would note that drivers will have difficulty accessing parking spaces, particularly for larger vehicles. Final Status: I have no further comment.

* The parking layout on the basement level appears less constrained, but some tight spaces are proposed where columns are complicating maneuvering and therefore requires an auto-turn analysis. Status: See prior comment. Final Status: I have no further comment.

* The plans note that the sidewalk on Vernon Place will not have curbing. I will review this with DPS staff. Status: I continue to review design treatments for Vernon Place given its unique function. As noted below, the applicant shall complete the formal waiver process for curb and sidewalk. The City needs to be comfortable with the design and function of Vernon Place with the added project traffic (traffic volumes will increase substantially from current conditions). Specifically accommodating pedestrians safely, vehicle movements, DPS maintenance equipment and their ability to turn around safely, landscaping, drainage, and access/egress movements into and out of the garage and the driveways on the west side of the street. Final Status: The final design of Vernon Place is unique and requires final approval by DPS as it relates to maintenance activities. While the applicant did not submit formal waiver information, it is my professional opinion that the general cross-section design is acceptable, pending DPS review. I would suggest that a cross-section illustration be provided before final approval is granted.

* The alignment of the sidewalk ramps on Congress Street will need to direct pedestrians to the appropriate path of travel from an ADA perspective. Adjustments will need to be incorporated. Status: The ramp at corner of the Avon Street is unacceptable and alignment for walking parallel to Congress Street shall be provided. I would also note that the ramp at Vernon Place may need to change following the final configuration of the street. Final Status: I have reviewed the plans and generally find them to be acceptable. Specific cross-slope and grade details will be required as part of final construction.

* The applicant is requesting a waiver for driveway width. 18 feet is being proposed. My initial review indicates I would be supportive of a waiver given the characteristics of Vernon Place and Avon Street. Status: I have no further comment. Final Status: I have no further comment.

* I have reviewed the traffic impact study prepared by Traffic Solutions and while I continue to review details, I generally find the conclusions to be acceptable. Status: I concur with the conclusions of the Traffic Impact Study that the project will not have a significant impact on traffic operations and safety in the vicinity of the project. I have no further comment. Final Status: I have no further comment.

* The applicant has noted that an on-going parking study of similar developments is proceeding and the results of the parking study will be provided in the future. Status: The applicant has conducted a parking evaluation and is suggesting use of a parking generation rate of 0.58 parking spaces per residential unit. In my professional opinion the type of residential apartment (market rate versus low income or other) will influence parking demand of a project. The highest parking generation rate recorded was for the Island View Apartments (a market rate complex), where 0.70 parking spaces per unit were recorded. It is my suggestion that the applicant provide a parking analysis that is solely based on market rate apartments. Final Status: Requested information pending.

* The applicant shall provide documentation on current users of the existing parking lot. Status: The applicant has noted that existing vehicles parking on the site are not conditioned to a site plan approval requirement. I have no further questions. Final Status: I have no further comment.

* The width of the sidewalk along Avon Street abutting the property is noted as between 3 and 5 feet wide. I need to review specific

details regarding this sidewalk to ensure appropriate accessibility is provided.

Status: Given the narrow width of the street and sidewalk, I recommend that a fully shared street be considered (curbs to be removed or relocated to buildings on both sides of the street with special surface pavement treatment). This would allow for improved or desired emergency access, easier maintenance, and would allow for a multi-modal street that would provide for all users in a safe and calmed environment.

Final Status: Per City Ordinance the applicant is required to either provide a sidewalk along their property frontage along Avon Street or formally request a waiver from constructing a sidewalk following specific waiver criteria. Given the unique characteristics of Avon Street, and site limitations, I support a waiver for a sidewalk along their property frontage, with the assumption that an acceptable alternative route is provided on the opposite side of the street. Accordingly, the applicant shall be responsible for providing a fully ADA compliant sidewalk facility that meets City of Portland material policy requirements. The final design of Avon Street requires final approval by DPS as it relates to maintenance activities and I would suggest that a cross-section illustration be provided before final approval is granted.

* The applicant shall formally request a waiver for a sidewalk along Vernon Place.

Status: The City has a defined Waiver criteria process that the applicant should comply with.

Final Status: See prior comment.

New Comments

* The applicant has submitted a Transportation Demand Management Plan and I find it to be reasonable. It is my assumption that all the strategies noted in the report will be implemented.

Final Status: I would suggest that the TDM Plan include a provision that strategies be adjusted, as necessary, to address parking demand conditions. As part of this requirement, the applicant shall conduct a parking survey, with methods approved by the City, at initial full occupancy and annually thereafter.

* I support a waiver from the City's Technical standards for parking stall size.

Final Status: I have no further comment.

* The applicant should identify any parking circulation aisle waiver requirements.

Final Status: The applicant has noted that there are no specific waivers needed (the diagonal width noted does not require a waiver) and therefore I have no further comments.

* The applicant should provide information on how the tandem parking spaces will be managed.

Final Status: The applicant notes that the TDM Coordinator will manage these spaces and I have no further comment.

* The crosswalk on Avon Street should be eliminated.

Final Status: The plans shall be remove the raised crosswalk. With the introduction of a tall building and the "cannon" effect it will have on motorists, traffic calming devices are not required. I would further note that pedestrians will have a fully ADA compliant sidewalk for use and thus will be separated from vehicles.

* The applicant should confirm that one handicapped parking space meets ADA or other required standards.

Final Status: The applicant has noted that the project fully complies and I have no further comment.

Please contact me if you have any questions.

Best regards,

Thomas A. Errico, PE
Senior Associate
Traffic Engineering Director
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"One Vision, One Company"

Please consider the environment before printing.

From: David Margolis-Pineo
To: Barbara Barhydt; Shukria Wiar
CC: DEVELOPMENT REVIEW GROUP
Date: 10/22/2015 2:22 PM
Subject: Revised Review Comments for 667 Congress St

October 22, 2015

Memo To: Barbara Barhydt
Shukria Wiar
From: David Margolis-Pineo
Re: 667 Congress Street Development Review Comments (2015-125)

The applicant has addressed this Department's comments. However, the following issue are still a concern.

1. There is one catchbasin which collects drainage on Vernon Place. The discharge from this City owned and maintained structure discharge through a pipe across the applicant's property in a 10' wide drainage easement. The building proposed by the applicant does not allow the City to maintain this utility. Therefore the applicant is requested to assume maintenance responsibilities for this drainage pipe and the City will relinquish the 10' wide drainage easement.
2. Sewer evaluation: City crews have inspected a reach of sewer on Avon Street down stream of where the applicant wishes to connect their sanitary lateral. That sewer evaluation has not been received. We would like to request that if that reach of sewer is in need of replacement, the applicant be responsible to do so.
3. Due to poor condition the applicant is requested to reconstruct the sidewalk on the East side of Avon St using the current required brick sidewalk material. To allow greater access for emergency vehicles, granite curbing with a two inch reveal is proposed. This Department does not support the applicant's request for a waiver.
4. Public Service Operations staff have concerns of building damage on Avon St during snow plowing. Therefore the applicant is requested to install vertical granite curbing along the property line with a seven inch reveal. It is also understood that there will be no projections from the building face into the Avon St right of way from the applicant's building.
5. There is concern that the existing sanitary sewer on Vernon Place, scheduled to be abandoned by the applicant, may still be active. The applicant is request to verify to the City's wastewater group satisfaction that is line is in fact 100% abandoned.
6. Street lighting on Avon St. Since Avon Street will become a 20' wide right of way with two – eight story building on each side, and it is proposed to remove two light poles with cobra head lighting, the applicant is requested submit a lighting detail and lamination report on light levels for the length of the applicant's property.

We have no further comments.

MEMORANDUM



TO: Shukria Wiar, Planner
FROM: David Senus, PE
DATE: October 21, 2015
RE: 667 Congress Street, Level III Site Plan Application

Woodard & Curran has reviewed the response to comments submittal provided for the Level III Site Plan Application for the proposed mixed use development located at 667 Congress Street in Portland, Maine. The project involves the demolition of an existing variety store and surface parking lot and the construction of an eight story building for rental apartments, commercial space, and two levels of parking.

Documents Reviewed by Woodard & Curran

- Engineering Plans, Sheets C-01, C-02, C-03, C-10, C-11, C-20, C-30, C-31, C-40, C-41, C-42, C-43, C-44, C-45, and C-50, REV dated October 13, 2015, prepared by Acorn Engineering, Inc., on behalf of Redfern Properties, LLC.
- Response to Comments Letter dated October 13, 2015 prepared by Acorn Engineering, Inc., on behalf of Redfern Properties, LLC.

Comments

- 1) Sheet C30: A roof drain appears to connect into the floor drain system at a proposed cleanout. All roof drains should be connected into the separated storm drain system.
- 2) The Applicant has noted that the 8" vitrified clay sanitary sewer in Vernon Place that crosses the project property is inactive, and they propose to demolish this sewer or infill the sewer with flowable fill. Prior to infilling or demolishing the sewer, the Applicant should plug the invert out in the downstream manhole in Vernon Place with a water-tight plug, and monitor the manhole to determine if any flow is evident over the course of several days (including at least one rainfall event). The Applicant shall coordinate their monitoring of this system with DPS (David Margolis-Pineo and John Emerson). Abandonment of the sewer shall include demolishing the manholes in Vernon Place to at least 3' below grade, filling in any remaining open space with 3/4" crushed stone, and repairing the pavement section with City Standard compacted gravels and pavement lifts.
- 3) The proposed curb line abutting an existing curb inlet catch basin at the corner of Congress Street and Vernon Place is proposed to be realigned, with a tip-down proposed at the location of the existing catch basin. This catch basin and associated lateral should be demolished and replaced, with a new catch basin located along the curb line east of the existing location.

All previous review comments contained in memorandums from Woodard & Curran dated August 20th and September 18th have been adequately addressed.

MEMORANDUM

To: FILE
From: Shukria Wiar
Subject: Application ID: 2015-125
Date: 10/23/2015

Comments Submitted by: Keith Gautreau/Fire on 9/25/2015

The revised plans show 16' width on Avon Street for emergency access with the sidewalk on the abutter's property to remain. Given the closeness to the adjacent building the sidewalk should be okay to remain but conversations have taken place between myself and Tom Errico about whether both sidewalks should be taken out of the street?

Comments Submitted by: Keith Gautreau/Fire on 9/29/2015

Met with applicant yesterday and we may have an agreement to remove the proposed green wall on the new construction side of Avon to create 2 more feet of room to expand to 18' width. Some discussions around the removal of the existing utility pole servicing Time Warner. Applicant was going to look into feasibility of removing pole and attaching utilities to the existing building.

From: Jeff Tarling
To: Shukria Wiar
CC: David Margolis-Pineo
Date: 10/22/2015 1:02 PM
Subject: 667 Congress Street

Hi Shukria -

The proposed 667 Congress Street project as designed with a 99.9% build-out of space between Vernon Place and Avon Street presents a minimal amount of available landscape space. The project does feature three 'street-trees' with granite planters along Congress Street which is our standard approach along the frontage. Due to narrow width of Vernon Place and Avon Street the project does propose 'Green Wall' treatment along Vernon Place and no treatment options along Avon due to restricted space. Green wall is also proposed for the Deering Street facing rear facade as well.

Due to the important function of the green wall in this project site recommendation / condition would include a closer look to create a more robust planting of green wall plants perhaps using four plants per section density vs two, and a review of 'best plant' options to cover the wall.

The large expanse of blank wall along Avon Street would benefit from a green wall treatment if at all possible. In conducting brief research it appears possible to have some types of this system with minimal 'ground' space. Recommendation would be to take a second look at possible options. Green wall use and successful green wall experiences in Portland is relatively new. They have potential if properly constructed and maintained to provide landscape buffer in a narrow, vertical space. Concerns include protecting plant root system from winter deicing salts which might be improved by placing plants in raised planters in the same fashion as the raised granite tree planters.

Contribution to the Portland 'Tree Fund' is recommended.

Jeff Tarling
City Arborist

Green Wall Information:

<http://lin.ca/sites/default/files/attachments/Amos%20Tim,%20Sirrs%20Sue%20-%20Cold%20Climate%20Living%20Walls.pdf>

From: William Clark
To: David Margolis-Pineo
CC: Shukria Wiar
Date: 10/21/2015 4:09 PM
Subject: 667 Congress St Subdivision Plat survey review
Attachments: Plat 2_FirstFloor_667 Congress_10-13-15 survey review 10 21 2015.PDF

Attached is a scan of the review.

1. Minor drafting suggestions for legibility.
2. Granite Monuments OK to set at sideline corners at Congress Street as we will be able to access them.
3. Drainage easements. Need to define who will own and be responsible for them.
4. The existing 10 foot wide Storm Drain Easement from Vernon Place to Avon Street will need to be discontinued by City Council as we will not be responsible for a storm drain or sewer which runs under a building.
5. Need to add note to subdivision plan that the City will not be responsible for the catch basin in Vernon Place and the storm drain which runs under the building.

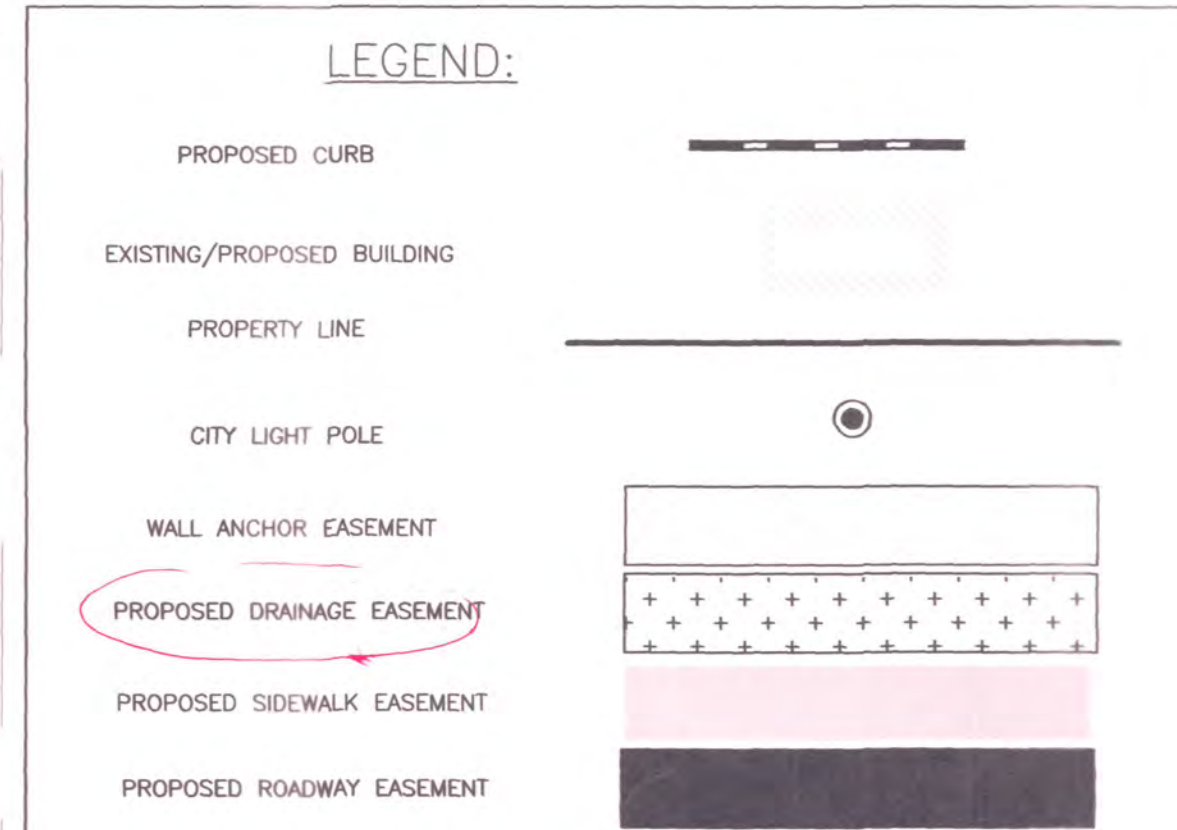
Thanks,

Bill

1. LOCUS PARCEL IS SHOWN ON THE CITY OF PORTLAND ASSESSOR'S MAP 46 BLOCK C LOTS 19 AND 20, LISTED AS 667 CONGRESS STREET.
2. AREA OF LOCUS PARCEL, INCLUDING EASEMENT, IS 26,127 SQUARE FEET (0.60 ACRE)
3. LOCUS PARCEL NOT FOUND TO BE LOCATED WITHIN A FEMO FLOOD ZONE.
4. ALL BUILDING CORNER OFFSETS TO BOUNDARY LINES ARE FROM CORNERBOARDS AND NOT BUILDING FOUNDATION, UNLESS OTHERWISE NOTED.
5. VEHICLE ACCESS SHALL BE MAINTAINED AT ALL TIMES BY ADEQUATE SNOW REMOVAL IN ACCORDANCE WITH THE PROJECTED SNOW STORAGE PLAN.
6. THE SHERIDAN SUBDIVISION PLAT FOR THE CREATION OF UP TO 139 DWELLING UNITS IN A NEW MIXED-USE BUILDING TO BE CONSTRUCTED ON THE SUBJECT PROPERTY. APPROVAL OF THIS PLAT DOES NOT CREATE ANY SUBDIVISION OF THE LAND ON THE SUBJECT PROPERTY.
7. THE SIGNATURES OF THE CITY OF PORTLAND PLANNING BOARD ON THIS SUBDIVISION PLAT CONSTITUTE SUBDIVISION APPROVAL FOR THE CREATION OF 139 RESIDENTIAL UNITS. THE NON-RESIDENTIAL UNITS ARE NOT SUBJECT TO SUBDIVISION REGULATION.
8. MAINTENANCE AND MANAGEMENT OF DRIVEWAYS, SIDEWALKS, STORMWATER DEVICES, SITE LIGHTING, TRASH REMOVAL, PRIVATE UTILITIES, AND SNOW REMOVAL SHALL BE THE RESPONSIBILITY OF THE OWNER.
9. THE OWNER IS RESPONSIBLE FOR COMPLYING WITH THE CONDITIONS OF CHAPTER 32 STORMWATER INCLUDING ARTICLE III, POST-CONSTRUCTION STORMWATER MANAGEMENT, WHICH SPECIFIES ANNUAL INSPECTIONS AND REPORTING REQUIREMENTS AT A MINIMUM. IN ADDITION, THE OWNER SHALL BE RESPONSIBLE FOR COMPLYING WITH THE CONDITIONS OF THE SUBMITTED STORMWATER MANAGEMENT PLAN AND THE APPROVED PLANS, AND MEET CITY OF PORTLAND AND STATE REQUIREMENTS.
10. STATE PLANE COORDINATES RETRIEVED FROM EXISTING CONDITIONS PLAN PROVIDED BY TTCOMB ASSOCIATES.

PLAN REFERENCES

1. PLAN OF PROPERTY AT PORTLAND MADE FOR SAINT STEPHEN CHURCH BY H.J. & E.C. JORDAN CIVIL ENGINEERS DATED JUNE, 1947.
2. CONDOMINIUM PLAN MADE FOR MARYELLEN SULLIVAN BY NORTHEAST CIVIL SOLUTIONS DATED OCTOBER 20, 2006 RECORDED IN PLAN BOOK 207, PAGE 390.
3. CONDOMINIUM PLAT DEERING HEIGHTS CONDOMINIUMS MADE FOR 24 DEERING STREET, LLC BY OWEN HASKELL, INC. RECORDED IN PLAN BOOK 215, PAGE 49.
4. RIGHT OF WAY PLANS PROVIDED BY THE CITY OF PORTLAND PUBLIC SERVICES ENGINEERING DEPARTMENT.
5. CITY OF PORTLAND, MAINE DEPARTMENT OF PUBLIC WORKS VERNON PLACE SURFACE WATER DRAIN DATED NOVEMBER 21, 1951, FILE NUMBER 638/14.
6. CITY OF PORTLAND, MAINE DEPARTMENT OF PUBLIC WORKS VERNON PLACE NEW SEWER (PRIVATE) DATED MARCH 11, 1934, FILE NUMBER 409/56.
7. EXISTING CONDITIONS SURVEY MADE FOR REDFERN PROPERTIES BY TITCOMB ASSOCIATES DATED APRIL 6, 2015.



EASEMENTS:

1. THE FOLLOWING EXISTING EASEMENT SHALL BE DISCONTINUED WITH THE CONSTRUCTION OF THE PROJECT OVERHEAD UTILITY EASEMENT CONVEYED BY JOSEPH L. DISCATO AND MARY J. DISCATO TO CENTRAL MAIN POWER COMPANY AND NEW ENGLAND TELEPHONE AND TELEGRAPH COMPANY RECORDED IN BOOK 3892, PAGE 160.
2. STORMWATER CONVEYANCE FROM VERNON PLACE TOWARDS AVON STREET HAS BEEN PROPOSED WITH THE DRAINAGE EASEMENT IN THE REAR OF THE PROJECT. PLEASE SEE EASEMENT RECORDED IN CORD BOOK _____ PAGE _____.
3. PROPOSED EASEMENT: SITE PLAN PROVIDES SIDEWALKS THAT ARE INCLUDED PARTIALLY IN THE CITY RIGHT-OF-WAY AND PARTIALLY WITHIN THE PROJECT PROPERTY. THESE LOCATIONS, SHOWN ON THE SUBDIVISION PLAT, ARE AN EASEMENT FOR PEDESTRIAN TRAVEL OVER PORTIONS OF THE SIDEWALK LOCATED ON THE SUBJECT PROPERTY TO BE RECORDED IN CORD BOOK _____ PAGE _____.
4. PROPOSED SEMI-PERMANENT WALL ANCHOR EASEMENT: TO BE RECORDED IN CORD BOOK _____ PAGE _____. WALL ANCHORS MAY BE REMOVED DURING FUTURE ROADWAY UTILITY WORK. ONCE 667 BASEMENT WALLS ARE REMOVED, WALL ANCHORS SHALL BE REMOVED.
5. A PROPOSED EASEMENT FOR ROADWAY TRAVEL BETWEEN THE PROPERTY LINE AND THE BUILDING EDGE HAS BEEN RECORDED ON THE SUBJECT PROPERTY TO BE RECORDED IN CORD BOOK _____ PAGE _____.
6. PROPOSED AND EXISTING EASEMENTS AND LICENSES TO BE FINALIZED BY ITTCOM ASSOCIATES PRIOR TO BEING LOCATED AT CCPO.

RECEIVED: _____
RECORDED IN _____
ATTEST: _____ REGISTRAR

CHARPERSON: _____ DATE: _____

SURVEYORS' NOTES

1. BOOK AND PAGE REFERENCES ARE TO THE CUMBERLAND COUNTY REGISTRY OF DEEDS.
2. BEARINGS ARE REFERENCED TO GRID NORTH, MAINE STATE PLANE COORDINATE SYSTEM, NAD83, WEST ZONE.
3. ELEVATIONS ARE BASED ON CITY OF PORTLAND DATUM.
4. ALL INFORMATION ON THIS PLAN IS APPROXIMATE, BASED ON LOCATION OF VISIBLE FEATURES AND INFORMATION CONTAINED ON PLANS AND DRAWINGS PROVIDED BY OTHERS. DISGASE AND/OR THE APPROPRIATE UTILITIES SHOULD BE LOCATED AND PRICED IN THE FIELD.
5. THE 10' SURFACE DRAIN SHOWN IS DESCRIBED IN AN ACCEPTANCE BY ORDER OF THE CITY COUNCIL, PASSED NOVEMBER 5, 1951, CITY OF PORTLAND RECORDS, VOLUME 70, PAGE 508 AND DICTATED ON REFERENCE 5 HEREIN, NO RECORDED DEED FOUND, PRESCRIPTIVE RIGHTS MAY EXIST.

This survey conforms to the current standards of practice set forth by the Maine State Board of Licensure for Land Surveyors.



Rex J. Croteau, P.L.S. #2273

[illegible]

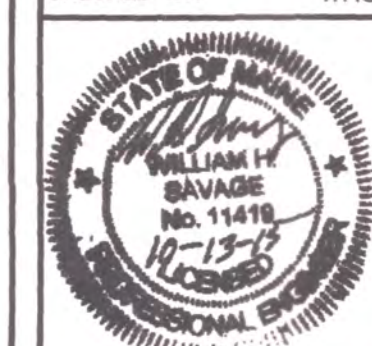
DRAWING NAME: SUBDIVISION PLAT: FIRST FLOOR
PROJECT NAME: 667 CONGRESS STREET REDEVELOPMENT
CLIENT: REDFERN PROPERTIES, LLC.


A C O R N
ENGINEERING, INC.

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN
 AUTHORIZATION OF THE ENGINEER. ANY CHANGES
 AUTHORIZED OR OTHERWISE SHALL BE AT THE USER'S SOLE
 RISK.

ACORN ENGINEERING, INC.
 100 NORTH STREET, PORTLAND MAINE 04102

FILE:	1060_CONGRESS
DATE:	9/15/15
JN:	1060
SCALE:	1"=10'
DESIGNED BY:	OJD
DRAWN BY:	OJD
CHECKED BY:	WHS



DRAWING NO.

SP-2

SURVEY REVIEW 10/21/15



P.O. Box 8816
Portland, ME 04104
Office: 207-221-5746
Fax: 207-221-2822
www.redfernproperties.com

July 31, 2015

Shukria Wiar
Planning Division, City of Portland
389 Congress Street, 4th Floor
Portland, ME 04101

Re: 667 Congress Street, Level III Site Plan Application

Dear Shukria:

Please find attached the Preliminary Level III Site Plan Application related to our proposed mixed-use development at 667 Congress Street. The proposed project contemplates 139 market rate rental apartments on Floors 2-8, with Joe's Super Variety occupying a ground floor retail suite. Two levels of parking will provide 82 parking spaces. The project is designed to incorporate 'smart growth' principles and a high standard for energy efficiency.

Attached to this application, please find the following documents:

1. Completed Application Form (7 pages)
2. Evidence of Right, Title, & Interest – MSD Properties LLC Deed (3 pages)
3. Zoning Analysis (2 pages)
4. Written Requests for Waivers (2 pages)
5. Traffic Analysis (1 page)
6. Boundary Survey (1 page)
7. Civil Engineer Cover Letter (3 pages)
8. Site Plan/Civil Engineering Drawings (14 pages)
9. Preliminary Stormwater Management Plan (61 pages)
10. Preliminary Erosion Control Plan (12 pages)
11. Capacity to Serve Letters (20 pages)
12. Architectural Drawings & Renderings, including elevation (8 pages)

We have made a separate application to the Historic Preservation Board for a Certificate of Appropriateness related to our Architectural Design.

We do not believe that any federal or state permits are required for this project

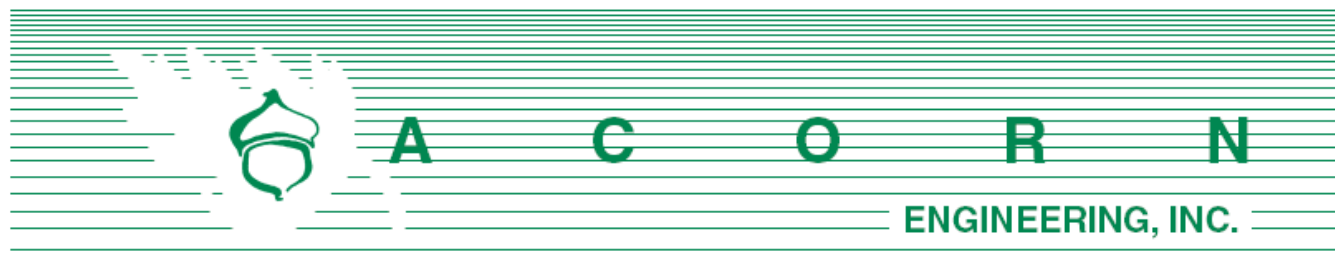
With respect to Financial and Technical Capacity, we believe that Redfern Properties LLC track record of developing successful projects in Portland constitutes ample evidence. If the City requires a letter from one of our prospective lenders, we would be happy to provide one.

We look forward to working with the City of Portland to achieve a successful project. Please do not hesitate to contact me.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Jonathan Culley', with a stylized flourish at the end.

Jonathan Culley
Redfern Properties LLC



Shukria Wiar – Planner
City Planner
Planning Division
389 Congress Street
4th Floor
Portland, ME 04101

July 30th, 2015

Re: Preliminary Civil Application
667 Congress St Redevelopment
667 Congress St, Portland ME 04101

Shukria,

Acorn Engineering, Inc., in coordination with the project team, is pleased to submit the civil engineering components for a Preliminary Application for a Level III Site Plan for the redevelopment of 667 Congress Street. The proposed development design is at a considerable level of completion for a preliminary application. The following design work has been completed:

- 1) **Existing Conditions:** Acorn Engineering has teamed up with Titcomb Associates to produce an initial survey of the development site. The survey outlines the existing utilities and grades of the area and serves as a basis for all continued design. A geotechnical report has also been completed by Summit Geoengineering Services and defines the structural soundness of the subsurface as well as outlines any structural guidelines for further development based on existing soil conditions. The report is included as an attachment in the Stormwater Report.

Acorn is also aware of the current Deering Street reconstruction by Woodard & Curran and have incorporated the anticipated finished project into the initial design; this reconstruction will directly impact the Congress Street redevelopment's drainage system.

Regarding exiting easements there is an existing stormwater drain easement that extends 10 feet from the northernmost property line as well. Proposed easements may include a grease trap within the City ROW, a pedestrian easement from the developer to the City and guy wire easement to reinforce an existing pole.

- 2) **Site Plan:** The current layout includes an interior parking garage in the basement and first floor of the building. The proposed basement parking access is located on Avon Street while the first floor access is off of Vernon Place; this outlet arrangement allows for split traffic patterns and ease of access from two separate points. There is a total of 81 physical parking spaces comprised of both standard and compact spaces. However, with the introduction of a single shared parking space, the effective parking space total increases to 88 (1 shared space as the equivalent of 8 spaces) which represents 63% of total residential units.

Because the majority of parking need is residential, it is defined as a low turnover lot and can therefore support a more compact layout. Using a parking lot design study published by Carl Walker, Inc. as a basis of design, the proposed layout uses a 75 degree angled, elongated

compact parking space (8.5' X 16-18') with a one-way drive aisle width. Carl Walker, Inc. is an engineering firm that specializes in parking structure design. This layout is supported by the User Comfort Factor (UCF) and Level of Service (LOS) approach and is able to maximize parking spaces while maintaining parking maneuverability.

Due to the covered nature of the parking lots, no landscaping was incorporated into the interior design; these lots are most like a parking garage and therefore do not apply to the requirements set by the City of Portland Code of Ordinances for Land Use. However, there will be three trees planted along Congress Street in front of the building. This is an improvement to the lack of trees or landscaping currently on the property. The additional street trees required along Vernon Place and Avon Street will not be put into place due to space restrictions but the equivalent of 13 trees will be contributed to the City of Portland Tree Fund.

The remaining building space will be occupied by a commercial space (Joe's Variety Store) on the first floor with seven additional floors of residential units.

3) Utility Plan: Acorn Engineering has sent out Ability to Serve letters to gas, water, telephone, cable, electricity, solid waste removal, and sewer utilities and have successfully secured responses from Unitil (gas), Portland Water District (water), Fairport Communications (phone/cable), and Central Maine Power (electricity). The majority of these providers have also been met with onsite and reviewed proposed changes to existing utilities. A summary of the responses is included in this application.

4) Grading, Drainage and Erosion Control Plan: Through implementation of a covered parking lot, the majority of surface runoff will be from the roof with minimal runoff from some exposed bituminous concrete on the first floor. Therefore, the proposed development produces cleaner runoff than the existing, uncovered surface parking lot. All runoff is to be redirected to the basement floor and then connected to the newly separated stormwater system within Avon Street.

For a more detailed description of the proposed drainage and grading system, refer to the Stormwater Report. This report includes evidence that the proposed development will not increase surface runoff flows.

5) Lighting: The existing building front is directly lit by a street light on Congress Street that meets the downtown district municipal standards. A portion of the site is also lit by another approved lamp on the corner of Congress Street and Vernon Place. Vernon Place and Avon Street will be lit by mounted lamps along the building's edge; these lamps will comply with the Historic District's guidelines.

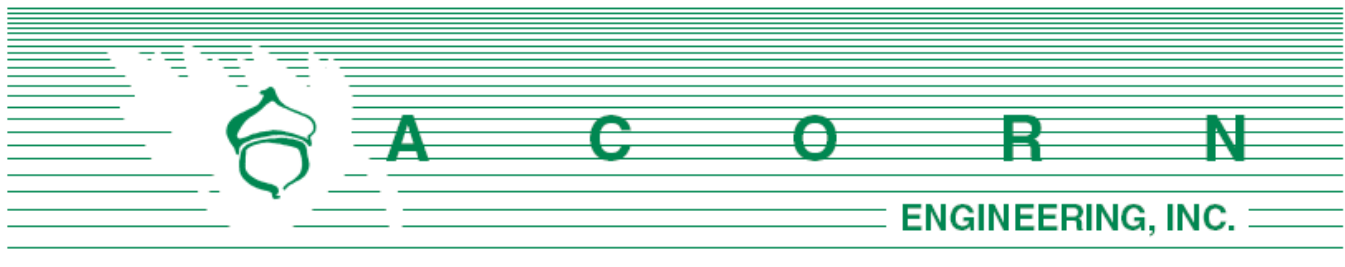
Please do not hesitate to contact our office with any questions or comments.

Sincerely,



Will Savage, P.E.
President
Acorn Engineering, Inc.





**667 CONGRESS STREET PRELIMINARY CIVIL APPLICATION:
TABLE OF CONTENTS**

1. Cover Letter
 - 1.1. Existing Conditions
 - 1.2. Site Plan
 - 1.3. Utility Plan
 - 1.4. Grading, Drainage, and Erosion Control
 - 1.5. Lighting
2. Preliminary Traffic Analysis (under separate cover)
3. Utilities - Ability to Serve Requests and Responses
4. Stormwater Report
 - 4.1. Pre-Development Watershed Map
 - 4.2. Post-Development Watershed Map
 - 4.3. Soils Map
 - 4.4. HydroCAD Calculations
 - 4.5. Summit Geoengineering Services – Soil Boring Logs, May 2015
5. Erosion Control Report
6. Waste Removal Letter
7. List of Requested Waivers

APPENDICIES:

- C-01 Cover Plan
- C-02 General Notes
 - EX Existing Conditions Plan – Titcomb Surveying
- C-10 Site Layout Plan: Basement
- C-11 Site Layout Plan: First Floor
- C-20 Utility Plan
- C-30 Grading & Drainage Plan: Basement
- C-31 Grading & Drainage Plan: First Floor
- C-40 Site Details – 1
- C-41 Site Details – 2
- C-42 Utility Details
- C-43 Drainage Details - 1
- C-44 Drainage Details - 2
- C-45 Erosion Control Details & Notes
- SNOW Snow Storage Plan

Portland, Maine



Yes. Life's good here.

Jeff Levine, AICP, Director
Planning & Urban Development Department

Electronic Signature and Fee Payment Confirmation

Notice: Your electronic signature is considered a legal signature per state law.

By digitally signing the attached document(s), you are signifying your understanding this is a legal document and your electronic signature is considered a **legal signature** per Maine state law. You are also signifying your intent on paying your fees by the opportunities below.

I, the undersigned, intend and acknowledge that no Site Plan or Historic Preservation Applications can be reviewed until payment of appropriate application fees are **paid in full** to the Inspections Office, City of Portland Maine by method noted below:

- ☐ Within 24-48 hours, once my complete application and corresponding paperwork has been electronically delivered, I intend to **call the Inspections Office** at 207-874-8703 and speak to an administrative representative and provide a credit/debit card over the phone.
- ☐ Within 24-48 hours, once my application and corresponding paperwork has been electronically delivered, I intend to **call the Inspections Office** at 207-874-8703 and speak to an administrative representative and provide a credit/debit card over the phone.
- ☒ I intend to deliver a payment method through the U.S. Postal Service mail once my application paperwork has been electronically delivered.


Applicant Signature:

7/31/2015

Date:


I have provided digital copies and sent them on:

7/31/2015

Date:

NOTE: All electronic paperwork must be delivered to buildinginspections@portlandmaine.gov or by physical means i.e. a thumb drive or CD to the Inspections Office, City Hall, 3rd Floor, Room 315.



Level III – Preliminary and Final Site Plans Development Review Application Portland, Maine

Planning and Urban Development Department
Planning Division

Portland's Planning and Urban Development Department coordinates the development review process for site plan, subdivision and other applications under the City's Land Use Code. Attached is the application form for a Level III: Preliminary or Final Site Plan. Please note that Portland has delegated review from the State of Maine for reviews under the Site Location of Development Act, Chapter 500 Stormwater Permits, and Traffic Movement Permits.

Level III: Site Plan Development includes:

- New structures with a total floor area of 10,000 sq. ft. or more except in Industrial Zones.
- New structures with a total floor area of 20,000 sq. ft. or more in Industrial Zones.
- New temporary or permanent parking area(s) or paving of existing unpaved parking areas for more than 75 vehicles.
- Building addition(s) with a total floor area of 10,000 sq. ft. or more (cumulatively within a 3 year period) except in Industrial Zones.
- Building addition(s) with a total floor area of 20,000 sq. ft. or more in Industrial Zones.
- A change in the use of a total floor area of 20,000 sq. ft. or more in any existing building (cumulatively within a 3 year period).
- Multiple family development (3 or more dwelling units) or the addition of any additional dwelling unit if subject to subdivision review.
- Any new major or minor auto business in the B-2 or B-5 Zone, or the construction of any new major or minor auto business greater than 10,000 sq. ft. of building area in any other permitted zone.
- Correctional prerelease facilities.
- Park improvements: New structures greater than 10,000 sq. ft. and/or facilities encompassing 20,000 sq. ft. or more (excludes rehabilitation or replacement of existing facilities); new nighttime outdoor lighting of sports, athletic or recreation facilities not previously illuminated.
- Land disturbance of 3 acres or more (includes stripping, grading, grubbing, filling or excavation).

Portland's development review process and requirements are outlined in the Land Use Code (Chapter 14) which is available on our website:

Land Use Code: <http://me-portland.civicplus.com/DocumentCenter/Home/View/1080>

Design Manual: <http://me-portland.civicplus.com/DocumentCenter/View/2355>

Technical Manual: <http://me-portland.civicplus.com/DocumentCenter/View/2356>

Planning Division
Fourth Floor, City Hall
389 Congress Street
(207) 874-8719

Office Hours
Monday thru Friday
8:00 a.m. – 4:30 p.m.

PROJECT NAME: ___Longfellow Apartments_____

PROPOSED DEVELOPMENT ADDRESS: ___667 Congress Street_____

PROJECT DESCRIPTION: Project contemplates demolition of existing variety store and subsequent construction of 8-story apartment building with one ground floor retail suite and 2 levels of parking. In total the new building will have 139 market-rate rental apartments and 82 parking spaces.

CHART/BLOCK/LOT: ___46-C-19-20_____ **PRELIMINARY PLAN** _____ (date)
FINAL PLAN _____ (date)

CONTACT INFORMATION:

Applicant – must be owner, Lessee or Buyer Name: Redfern Properties LLC, on behalf of MSD Properties LLC Address: P.O. Box 8816 City/State : Portland, ME Zip Code: 04104	Applicant Contact Information Work # Home# Cell # 207-776-9715 Fax# e-mail: jonathan@redfernproperties.com
Owner – (if different from Applicant) Name: MSD Properties LLC Address: P.O. Box 5055 City/State : Portland, ME Zip Code: 04101	Owner Contact Information Work # Home# Adam Taylor Attorney 207-828-2005 Cell # Fax# e-mail: ataylor@tmfttorneys.com
Agent/ Representative Name: Address: City/State : Zip Code:	Agent/Representative Contact information Work # Cell # e-mail:
Billing Information Name: Redfern Properties LLC Address: Same as Above City/State : Zip Code:	Billing Information Work # Cell # 207-776-9715 Fax# e-mail: jonathan@redfernproperties.com

Engineer Name: Acorn Engineering/Will Savage Owner Address: 158 Danforth Street City/State : Portland, ME Zip Code: 04102	Engineer Contact Information Work # 207-775-2655 Cell # 207-317-1884 Fax# e-mail: wsavage@acorn-engineering.com
Surveyor Name: Titcomb Associates Address: 133 Gray Road City/State : Falmouth, ME Zip Code: 04105	Surveyor Contact Information Work # 207-797-9199 Cell # Fax# e-mail: dtitcomb@titcombsurvey.com
Architect Name: Ryan Senatore Architecture Address: 565 Congress Street, Suite 304 City/State : Portland, ME Zip Code: 04101	Architect Contact Information Work # 207-650-6414 Cell # 207-650-6414 Fax# e-mail: ryan@senatorearchitecture.com
Attorney Name: Pierce Atwood/Eben Adams Partner Address: 254 Commercial St. City/State : Portland, ME Zip Code: 04101	Attorney Contact Information Work # 207-791-1175 Cell # Fax# e-mail: eadams@pierceatwood.com

APPLICATION FEES:

Check all reviews that apply. (Payment may be made by Credit Card, Cash or Check payable to the City of Portland.)

Level III Development (check applicable reviews) ___ Less than 50,000 sq. ft. (\$500.00) ___ 50,000 - 100,000 sq. ft. (\$1,000) ___ x 100,000 – 200,000 sq. ft. (\$2,000) ___ 200,000 – 300,000 sq. ft. (\$3,000) ___ over 300,00 sq. ft. (\$5,000) ___ Parking lots over 11 spaces (\$1,000) ___ After-the-fact Review (\$1,000.00 plus applicable application fee) Plan Amendments (check applicable reviews) ___ Planning Staff Review (\$250) ___ Planning Board Review (\$500) The City invoices separately for the following: • Notices (\$.75 each) • Legal Ad (% of total Ad) • Planning Review (\$40.00 hour) • Legal Review (\$75.00 hour) Third party review fees are assessed separately. Any outside reviews or analysis requested from the Applicant as part of the development review, are the responsibility of the Applicant and are separate from any application or invoice fees.	Other Reviews (check applicable reviews) ___ Traffic Movement (\$1,000) ___ Stormwater Quality (\$250) ___ x Subdivisions (\$500 + \$25/lot) # of Lots _139_ x \$25/lot = _\$3,475_ ___ Site Location (\$3,000, except for residential projects which shall be \$200/lot) # of Lots ___ x \$200/lot = _____ ___ Other _____ ___ Change of Use ___ Flood Plain ___ Shoreland ___ Design Review ___ Housing Replacement ___ Historic Preservation
--	---

APPLICATION SUBMISSION:

1. All site plans and written application materials must be submitted electronically on a CD or thumb drive with each plan submitted as separate files, with individual file which can be found on the **Electronic Plan and Document Submittal** page of the City's website at <http://me-portland.civicplus.com/764/Electronic-Plan-and-Document-Submittal>
2. In addition, one (1) paper set of the plans (full size), one (1) paper set of plans (11 x 17), paper copy of written materials, and the application fee must be submitted to the Building Inspections Office to start the review process.

The application must be complete, including but not limited to the contact information, project data, application checklists, wastewater capacity, plan for fire department review, and applicant signature. The submissions shall include one (1) paper packet with folded plans containing the following materials:

1. One (1) full size site plans that must be folded.
2. One (1) copy of all written materials or as follows, unless otherwise noted:
 - a. Application form that is completed and signed.
 - b. Cover letter stating the nature of the project.
 - c. All Written Submittals (Sec. 14-525 2. (c), including evidence of right, title and interest.
3. A stamped standard boundary survey prepared by a registered land surveyor at a scale not less than one inch to 50 feet.
4. Plans and maps based upon the boundary survey and containing the information found in the attached sample plan checklist.
5. One (1) set of plans reduced to 11 x 17.

Please refer to the application checklist (attached) for a detailed list of submission requirements.

APPLICANT SIGNATURE:

I hereby certify that I am the Owner of record of the named property, or that the owner of record authorizes the proposed work and that I have been authorized by the owner to make this application as his/her authorized agent. I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in this application is issued, I certify that the Planning Authority and Code Enforcement's authorized representative shall have the authority to enter all areas covered by this permit at any reasonable hour to enforce the provisions of the codes applicable to this permit.

This application is for a Level III Site Plan review. It is not a permit to begin construction. An approved site plan, a Performance Guarantee, Inspection Fee, Building Permit, and associated fees will be required prior to construction. Other Federal, State or local permits may be required prior to construction, which are the responsibility of the applicant to obtain.

Signature of Applicant: 	Date: 7/31/2015
---	---------------------------

PROJECT DATA

The following information is required where applicable, in order to complete the application.

Total Area of Site	26,126.91	sq. ft.
Proposed Total Disturbed Area of the Site	26,126.91	sq. ft.
If the proposed disturbance is greater than one acre, then the applicant shall apply for a Maine Construction General Permit (MCGP) with DEP and a Stormwater Management Permit, Chapter 500, with the City of Portland.		
Impervious Surface Area		
Impervious Area (Total Existing)	26,126.91	sq. ft.
Impervious Area (Total Proposed)	26,126.91	sq. ft.
Building Ground Floor Area and Total Floor Area		
Building Footprint (Total Existing)	3,672.72	sq. ft.
Building Footprint (Total Proposed)	23,968	sq. ft.
Building Floor Area (Total Existing)	3,672.72	sq. ft.
Building Floor Area (Total Proposed)	141,742	sq. ft.
Zoning		
Existing	B-3	
Proposed, if applicable		
Land Use		
Existing	Retail & Parking Lot	
Proposed	Retail, Residential	
Residential, If applicable		
# of Residential Units (Total Existing)	0	
# of Residential Units (Total Proposed)	139	
# of Lots (Total Proposed)	1	
# of Affordable Housing Units (Total Proposed)	0 (no subsidized units)	
Proposed Bedroom Mix		
# of Efficiency Units (Total Proposed)	34	
# of One-Bedroom Units (Total Proposed)	97	
# of Two-Bedroom Units (Total Proposed)	8	
# of Three-Bedroom Units (Total Proposed)	0	
Parking Spaces		
# of Parking Spaces (Total Existing)	63	
# of Parking Spaces (Total Proposed)	81	
# of Handicapped Spaces (Total Proposed)	2	
Bicycle Parking Spaces		
# of Bicycle Spaces (Total Existing)	0	
# of Bicycle Spaces (Total Proposed)	56	
Estimated Cost of Project	\$20,000,000.00	

PRELIMINARY PLAN (Optional) - Level III Site Plan			
Applicant Checklist	Planner Checklist	# of Copies	GENERAL WRITTEN SUBMISSIONS CHECKLIST
x		1	Completed Application form
x		1	Application fees
x		1	Written description of project
x		1	Evidence of right, title and interest
n/a		1	Evidence of state and/or federal approvals, if applicable
x		1	Written assessment of proposed project's compliance with applicable zoning requirements
n/a		1	Summary of existing and/or proposed easement, covenants, public or private rights-of-way, or other burdens on the site
x		1	Written requests for waivers from site plan or technical standards, if applicable.
see cover letter		1	Evidence of financial and technical capacity
x		1	Traffic Analysis (may be preliminary, in nature, during the preliminary plan phase)
Applicant Checklist	Planner Checklist	# of Copies	SITE PLAN SUBMISSIONS CHECKLIST
x		1	Boundary Survey meeting the requirements of Section 13 of the City of Portland's Technical Manual
x		1	Preliminary Site Plan including the following: (information provided may be preliminary in nature during preliminary plan phase)
x			Proposed grading and contours;
x			Existing structures with distances from property line;
x			Proposed site layout and dimensions for all proposed structures (including piers, docks or wharves in Shoreland Zone), paved areas, and pedestrian and vehicle access ways;
x			Preliminary design of proposed stormwater management system in accordance with Section 5 of the Technical Manual (note that Portland has a separate applicability section);
x			Preliminary infrastructure improvements;
x			Preliminary Landscape Plan in accordance with Section 4 of the Technical Manual;
x			Location of significant natural features (including wetlands, ponds, watercourses, floodplains, significant wildlife habitats and fisheries or other important natural features) located on the site as defined in Section 14-526 (b) (1);
x			Proposed buffers and preservation measures for significant natural features, as defined in Section 14-526 (b) (1);
x			Location , dimensions and ownership of easements, public or private rights of way, both existing and proposed;
x			Exterior building elevations.

April 7, 2015

Apartments

665 Congress, Portland, Maine

Zoning Analysis

Zone: B3 Downtown Business Zone 14-216
- Congress Street Historic District
- Pedestrian Overlay Zone
- Downtown Urban Design Guidelines

CBL: Portland Tax Map 046, Block C, Lots 19, 20
Street Address: 663-669 Congress Street, 1-21 Vernon Place, 2-22 Avon Street
Lot Size: 25,730 sf = 0.5907 acres

Uses Allowed: Multifamily Residential, Retail

Dimensional Requirements:

	Required	Provided
Minimum Lot Size	none	25,730 sf
Minimum Street Frontage	15 ft	641 ft
Street wall line max setback	5 ft	2 ft
Minimum Yard Dimensions	none	-
Minimum Lot Width	none	-
Maximum Lot Coverage	100%	100%
Maximum Blank Facade (Congress Street Only)	15 ft	3 ft
Maximum Blank Facade (Vernon and Avon Only)	30 ft	12 ft

207-650-6414

senatorearchitecture.com

ryan@senatorearchitecture.com

565 Congress St, Portland ME

	Required	Provided
Maximum building height (to top of highest roof beam)	85 ft	85' from avg grd.
Maximum Street Wall 65' (All 3 streets)	65 ft	65 ft
Minimum Building Height within 50' of Street (not required at covered parking, exception 1)	35'	65 ft
Residential Density	No Limit	-
Parking	1 per Unit	81 total spaces
PAD Overlay Zone 75% Street Facade (Congress Only)	20' deep retail	80%

DEED OF SALE BY PERSONAL REPRESENTATIVE

Maine Statutory Short Form

WE, **LOUIS A. DISCATIO**, of 18 Smith Farm Lane, Portland ME 04103, and **TERESA REO**, aka **THERESA DISCATIO**, of 99 Lowell Street, South Portland ME 04106, duly appointed and acting **PERSONAL REPRESENTATIVES of the ESTATE of JOSEPH L. DISCATIO**, **Cumberland Probate Docket #2012-1034**, by the power conferred by the Probate Code, and every other power, and with the right provided by decedent to convey property without notice to devisees or heirs, for consideration paid, **grant to MSD PROPERTIES, LLC**, a Maine Limited Liability Company with a principal place of business at 665 Congress Street, Portland ME 04101, certain lots or parcels of land and improvements in Portland, Cumberland County Maine on the northerly side of Congress Street bounded on the south by Congress Street, on the west by Vernon Place, and on the east by Avon Street, of approximately .6 acres, described on Exhibit A attached.

This property was conveyed to Joseph L. Discatio and Mary Discatio as joint tenants by warranty deed of Joseph L. Discatio dated September 16, 1990 and recorded on September 18, 1990 in Book 9322 Page 86 of the Cumberland County Registry of Deeds. Mary Discatio died on July 8, 1999; her estate was not probated.

WITNESS, my hand and seal this 10 day of June, 2013.

Witness

Louis A. Discatio
Grantor – Louis A. Discatio, Personal Representative
Estate of Joseph L. Discatio

Witness

Teresa A. Reo
Grantor – Teresa Reo, aka Theresa Discatio,
Personal Representative Estate of Joseph L. Discatio

State of Maine
Cumberland, SS

Personally appeared before me, the above named Louis A. Discatio and Teresa Reo, aka Theresa Discatio, in their capacity as Joint Personal Representatives of the Estate of Joseph L. Discatio, acknowledged the foregoing instrument to be their free act and deed, and subscribed the same.

Before me,
6-10-2013
Date

Andrew J. Doukas
Andrew J. Doukas, Attorney At Law
ME BAR #2932

MAINE REAL ESTATE TAX PAID

EXHIBIT A – LEGAL DESCRIPTION OF PROPERTY AT 665 CONGRESS STREET,
PORTLAND, CUMBERLAND COUNTY, MAINE

PARCEL I

A certain lot or parcel of land with the buildings thereon, situated on the northwesterly corner of Congress Street and Congress Place, in said City of Portland, County of Cumberland and State of Maine, and having a frontage of thirty-eight (38) feet on Congress Street, and a frontage of about two hundred two (202) feet on Congress Place, with a depth of forty-five (45) feet at the northerly end. Said premises being bounded on the south by Congress Street, on the east by Congress Place, on the north by land now or formerly of T.A. and W.H. Roberts, and on the west by land now or formerly of H.W. and A. Deering, and by land of St. Stephens Church.

Congress Place is now known as Avon Street.

PARCEL II

First: A certain lot or parcel of land situated in said Portland on the easterly side of Vernon Court and numbered 13 and 15 on said Court, and being the same property conveyed by Grenville H. Deering to Ernest J. Eddy by deed dated November 2, 1907 and recorded in Cumberland County Registry of Deeds in Book 816, Page 149, to which deed and the deeds therein referred to reference is hereby made for a more particular description.

Second: A certain lot or parcel of land, with any buildings thereon, situated on the easterly side of Vernon Court in said Portland and being the most northerly lot of land on the easterly side of said Court and being the premises numbered 19 and 21 as shown on the city valuation plan recorded in Cumberland County Registry of Deeds in Book 5, Page 46, and being the same premises conveyed by Elizabeth E. Deering to said Ernest J. Eddy by deed dated December 18, 1908 and recorded in said Registry of Deeds in Book 835, Page 6, to which deed and the deeds therein referred to reference is hereby made for more particular description of the premises.

Third: A certain lot or parcel of land, with any buildings thereon, situated on the northeasterly side of Vernon Court, otherwise known as Vernon Place, and being the same property conveyed by Robert C. Schmidt to said Ernest J. Eddy by deed dated December 14, 1908 and recorded in said Registry of Deeds in Book 835, Page 4, to which deed and the deeds therein referred to reference is hereby made for a more particular description of the premises.

Fourth: A certain lot or parcel of land at 18-22 Avon Street running in a southerly direction towards Congress Street from the southerly boundary line of the former Kelsey property at the southwest corner of Avon and Deering Streets, a distance of seventy-three and one-half (73 ½) feet, more or less to a junction with the property now or formerly of the Avon Corp. located at the west corner of Avon and Congress Streets, bounded on the southerly side by the said property now or formerly of the Trustees of the Dalton Memorial Chapel and Burnham Hall; bounded on the west by property now or formerly of the Trustees of the Dalton Memorial Chapel and Burnham Hall and

bounded on the north by said former Kelsey property and property now or formerly of said Avon Corp.

Fifth: A certain lot or parcel of land at number 11 (called 5) Vernon Place, together with the brick frame dwelling, or apartment house thereon, the said property being bounded as follows: On the northerly side by the land, brick and frame house of the said Dalton Memorial Chapel and Burnham Hall, a distance of forty-five (45) feet, more or less, on the easterly side by property now or formerly of the Avon corp. located at the northwesterly corner of Congress and Avon Streets a distance of approximately thirty-six (36) feet, more or less, to a junction with the land and Parish house of the Rector, Wardens and Vestrymen of St. Stephen's Parish, or Church; on the southerly side by the said land and Parish House of said Rector, Wardens and Vestrymen of St. Stephens's Parish or Church; on the westerly side by the line of Vernon Place.

Sixth: Also releasing and conveying all my right, title and interest in the following described real estate: A certain lot or parcel of land with (any) buildings thereon, situated on the northerly side of Congress Street and numbered 665 ½ Congress Street and now or formerly known as "Joe's Smoke Shop," said land beginning at a point one hundred and eighty-five (185) feet, more or less, from State Street at the easterly line of St. Stephen's Episcopal Church edifice and extending in an easterly direction eight and one-half (8 ½) or nine (9) feet thence in a northerly direction a distance of thirty-six (36) feet; thence approximately seven (7) feet in a westerly direction to the easterly wall of the said St. Stephen's Episcopal Church edifice, the said wall being the westerly boundary of the said property.

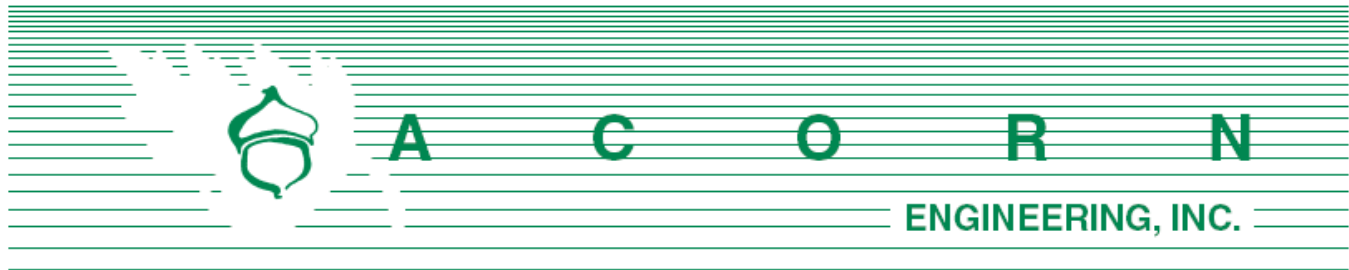
Seventh: Also a certain other lot or parcel of land, with any buildings thereon, known as St. Stephen's Church, and situated on the northerly side of Congress Street in said Portland, bounded and described as follows:

Said lot is on the corner of Congress Street and Vernon Court, so-called, and is sixty-three (63) feet on Congress Street running back on Vernon Court one hundred and thirty (130) feet, more or less, on the easterly side of said court as far northerly as the land formerly owned and occupied by Hiram W. and Alvin Deering, said lot is bounded on the easterly side thereof by a line described in a Decree of the Supreme Judicial Court held in and for the County of Cumberland, April Term 1838 in the case of Hannah Harding In Equity vs. Job Randall, as a "line drawn from the northerly corner of said lot to Main Street and intersecting said Street two (2) feet easterly of the easterly end of the dwelling house in said pleadings mentioned and excluding the well near said house," to which Decree, duly entered on the Docket of said Court, in said suit, reference for a particular description of said easterly side line of the lot hereby conveyed is always to be had.

Meaning and intending to convey, and hereby conveying, all right, title and interest in and to lots 19-23 as shown on City of Portland Assessors Chart Plan 46, Block C, as recorded in the City Assessors, Portland, Maine.

Meaning and intending to convey, and hereby conveying, all real estate of the grantor which is situated in the block in said Portland which is bounded southerly by Congress Street; westerly by Vernon Place and easterly by Avon Street.

Received
Recorded Register of Deeds
Jun 10, 2013 03:36:33P
Cumberland County
Pamela E. Lovley



Central Maine Power Company
Attn: Jamie Cough
162 Canco Road
Portland, Maine 04103

April 22, 2015

Subject: 667 Congress Street Development - Redfern Properties, LLC – Portland
Re: Ability to Serve

Mr. Cough,

On behalf of Redfern Properties, LLC, we are pleased to submit the following request for Central Maine Power's ability to serve the proposed development. 667 Congress Street is a 132-unit vertical urban infill development located near Longfellow Square in Portland. The proposed building is anticipated to be 8 stories tall; the first story will comprise of a retail space and an indoor parking facility; and the second through eighth stories will contain a total of 132 rental units within the building. A basement-level parking lot will also be included in the design.

The proposed redevelopment project is located at 667 Congress Street (Map, Book, Lot 46 C020 and C019) bordered by Congress Street, Vernon Place, and Avon Street in Portland, Maine. There is an existing smoke shop/variety store building and parking lot located within the project location which is to be demolished as part of the proposed project. The smoke shop/variety store will be incorporated into the new building.

The developer plans to serve the proposed building with a 3-phase electric service. At this time we have proposed that the new service be established from the existing line within Congress Street, and into the existing CMP manhole within the Vernon Place corridor. We are assuming that Congress Street has 3-phase power. The service would then be routed overhead to the existing utility poles within Vernon Place. From the utility poles, the service would then be redirected underground into a transformer, located at the western property corner. Pull boxes are anticipated to be placed at corners, and conduit is anticipated to be encased in concrete within the City of Portland ROW. Within the building, the secondary distribution line will run within the basement slab at the ground level, up a support column to the first floor ceiling, and finally into the mechanical closet.

Furthermore, overhead wires crossing the proposed development are anticipated to be removed as part of this project. Electric services currently existing within Vernon Place are anticipated to be redirected from the existing CMP manhole within the Vernon Place corridor, onto the utility poles adjacent to the project, and then reconnecting to each existing Vernon Place service. Please see the Utility Plan (attached).

On behalf of the client we are requesting the following information:

1. Any additional information, such as additional utility mapping confirming single and three-phase power locations within Vernon Place, Avon Street and Congress Street.

2. Any easements for overhead services currently crossing the proposed development.
3. Alternative connection locations from the development to the existing system.
4. CMP's proposed infrastructure improvements within the project vicinity.
5. CMP's ability to serve the project.
6. Any input on the proposed location of the transformer and offsets. If required, other options such as in-ground mounting within the sidewalk location may be explored.
7. Whether CMP allows for secondary distribution line to be run within the basement of the facility, up support columns, and/or within ceiling conduit.
8. Access requirements to the CMP meters.
9. Metering options to reduce the necessary wall space.

I have attached a preliminary utility plan to facilitate your review. The project is anticipated to be three-phase. Electrical loading computations and final metering will be performed by the electrical engineer, at a later date. Please let me know if you have any further questions or comments.

Sincerely,



Michael A. Guethle

Design Engineer
Acorn Engineering, Inc.

cc: Will Savage – Acorn Engineering, Inc.
Jonathan Cully – Redfern Properties, LLC
Ryan Senatore – Ryan Senatore Architecture



A C O R N Engineering, Inc. • PO Box 3372 • Portland • Maine • 04104
Voice: 207-775-2655 • Fax: 207-358-7979 • www.acorn-engineering.com



4/27/2015

Michael Guethle, E.I.T.
Engineer

Acorn Engineering, Inc
PO Box 3372
Portland, Maine 04104
Sent via email to: mguethle@acorn-engineering.com

RE: Ability to Serve Letter for 667 Congress Street project, Portland, ME.

Dear Mr. Guethle:

CMP has the ability to serve the proposed project located at 667 Congress Street in Portland, Maine, in accordance with our CMP Handbook (web link below). We can provide you the desired pad or pole mounted transformers per your request and city approval, in accordance with our CMP Standards Handbook. If you have any questions on the process, or need help in completion of the documents, please feel free to contact me.

New Service Milestones

- Call 1-800-565-3181 to establish a new account and an SAP work order.
- Submit any electronic drawings (PDF (preferred) or DWG files) of the site layout and proposed electrical connections if you have them.
- Submit Load information. Please complete this CMP spreadsheet using load information
- Submit the easement information worksheet. Please complete this CMP form and either email or fax back to us.
- Preliminary meetings with CMP to determine the details of job
- Field planner design appointment to cost out job and develop CMP Invoice.
- Submit invoice for payment.
- Easements signed and payment received.
- Job scheduled for completion after the electrical inspection has been received.

This process can take several months, depending upon several factors including transformer delivery, potential substation upgrades, return of completed paperwork, and other jobs in the system that may be ahead of yours. In addition, contact with the other utilities, including telephone and cable, should be commenced as soon as practical. They may have additional work or charges in addition to the CMP work required to bring your project on line.

162 Canco Road Portland, ME 04103
Tel (800) 750-4000
207-842-2367 office
207-458-0382 cell
207-626-4082 fax

www.cmpco.com



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For your convenience, here is a link to the CMP Website which contains our Handbook with details on most service requirements:

[CMP Handbook of Standard Requirements](http://www.cmpco.com/MediaLibrary/3/6/Content%20Management/YourAccount/PDFs%20and%20Docs/handbook.pdf)

(<http://www.cmpco.com/MediaLibrary/3/6/Content%20Management/YourAccount/PDFs%20and%20Docs/handbook.pdf>)

If you have any questions, please contact me.

Regards,

A handwritten signature in black ink that reads "Jamie Cough".

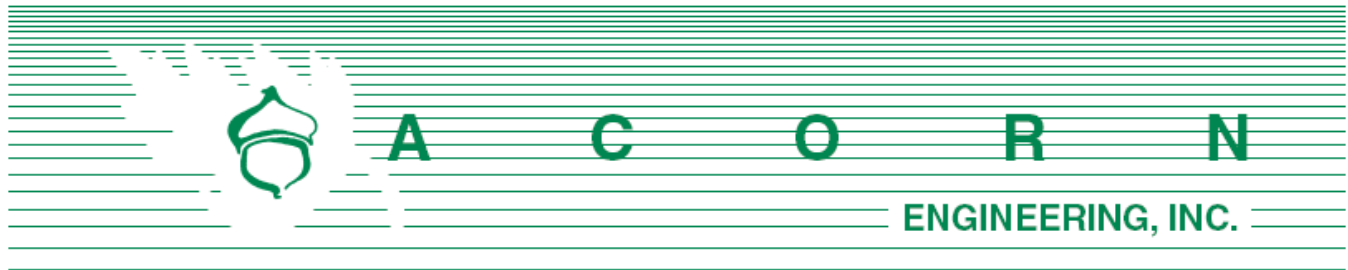
Jamie Cough
Energy Services Advisor
Central Maine Power Company
162 Canco Road
Portland, ME 04103
207-842-2367 office
207-458-0382 cell
207-626-4082 fax

162 Canco Road Portland, ME 04103
Tel (800) 750-4000
207-842-2367 office
207-458-0382 cell
207-626-4082 fax

www.cmpco.com



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Department of Public Services
 Attn: Frank J. Brancely, B.A, M.A.
 55 Portland Street
 Portland, Maine 04101

April 22, 2015

Subject: 667 Congress Street Development - Redfern Properties, LLC – Portland
 Re: Ability to Serve

Dear Mr. Brancely,

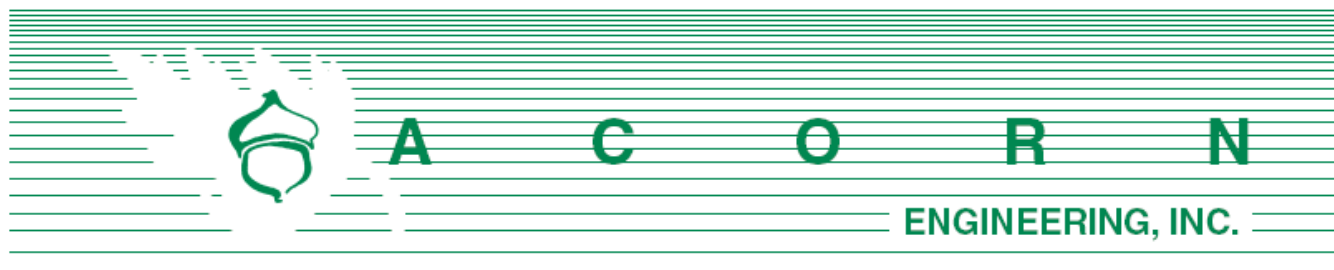
On behalf of Redfern Properties, LLC, we are pleased to submit the following request for the Department of Public Services' ability to serve the proposed development. 667 Congress Street is a 132-unit vertical urban infill development located near Longfellow Square in Portland. The proposed building is anticipated to be 8 stories tall; the first story will comprise of a retail space and an indoor parking facility; and the second through eighth stories will contain a total of 132 rental units within the building. A basement-level parking lot will also be included in the design.

The proposed redevelopment project is located at 667 Congress Street (Map, Book, Lot 46 C020 and C019) bordered by Congress Street, Vernon Place, and Avon Street in Portland, Maine. There is an existing smoke shop/variety store building and parking lot located within the project location which is to be demolished as part of the proposed project. The smoke shop/variety store will be incorporated into the new building.

Based upon the Section 4 of the Maine Subsurface Water Disposal Rules, the project anticipates the following design flows:

Conservative Estimate of Anticipated Design Flows				
Development	Unit Size	Number of Units	Gallons per Day per Unit	Total Gallons per Day
Existing flow to be removed				
Restaurant: With Food Prepared	Per Meal Prep	100	1	100
Restaurant: Employees	Per Employee	12	12	144
Proposed flow				
Restaurant: With Food Prepared	Per Meal Prep	150	1	150
Restaurant: Employees	Per Employee	12	12	144
Residential Units	≤2 – Bedroom	132	180	23,760
Net Change				23,810

*Values based on STATE OF MAINE: SUBSURFACE WASTEWATER DISPOSAL RULES, most recent edition



The proposed project is anticipated to add a net water usage from the development of approximately 24,000 gallons per day (GPD). It should be noted that these values were developed using conservative estimates from the State of Maine Subsurface Wastewater Disposal Rules. The anticipated flow assumes a conservative water usage estimate; a higher food preparation value was used as an estimated flow for the restaurant, and many of the proposed apartments are 1-bedroom apartments or studio apartments. For these reasons, the actual water usage for this location may be lower.

Separate services are proposed for the commercial property and the residential units. For the residential units, the developer has proposed a new 8-inch sewer service for the development that would tie into the existing sewer within Avon Street. The developer is also proposing an individual six-inch service for the commercial property, including a 4-inch service for kitchen waste leading from an internal grease interceptor.

Grease Waste Interceptor Sizing						
Number of Meals/Peak Hour		Waste Flow Rate	Retention Time	Storage Factor	Calculated Size	Manufactured Size
Capacity	Meal Factor	Single Service	Single	10 HRS	(gallons)	(gallons)
15	1.33	2	1.5	1.25	74.8125	100

*Based on values from Uniform Plumbing Code Formula

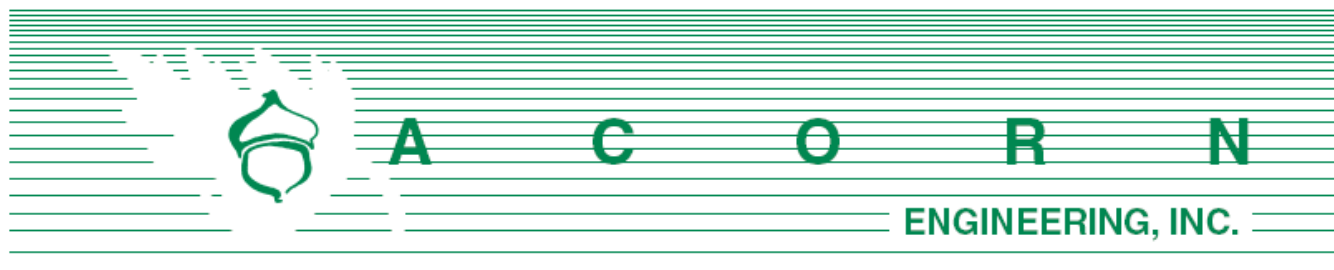
**Extrapolating between storage factors for 11A-9P hours

The grease interceptor calculations are based upon coordination with the future owners of the proposed facility.

On behalf of the client we are requesting the following information:

1. Any additional information, such as additional utility mapping within the adjacent roadway corridors.
2. Currently, we are proposing a grease interceptor within the kitchen location appurtenant to a sampling manhole within the Congress Street corridor. We are aware that Maine Subsurface Wastewater Disposal Rules does not allow for an industrial external grease interceptor less than 750 gallons. Can DPS please comment on the potential for an internal grease interceptor, as well as the potential to not include a sampling/control manhole?
3. Alternative connection locations from the development to the existing system.
4. DPS's proposed infrastructure improvements including combined sewer separations within the project vicinity.
5. DPS's ability to serve the project.

I have attached a preliminary utility plan to facilitate your review. Please let me know if you have any further questions or comments.



Sincerely,

Michael A. Guethle

Design Engineer
Acorn Engineering, Inc.

cc: Will Savage – Acorn Engineering, Inc.
Jonathan Cully – Redfern Properties, LLC
Ryan Senatore – Ryan Senatore Architecture



CITY OF PORTLAND WASTEWATER CAPACITY APPLICATION

Department of Public Services,
55 Portland Street,
Portland, Maine 04101-2991

Date: 4/22/2015



Mr. Frank J. Brancely,
Senior Engineering Technician,
Phone #: (207) 874-8832,
Fax #: (207) 874-8852,
E-mail: fjb@portlandmaine.gov

1. Please, Submit Utility, Site, and Locus Plans.

Site Address: 667 Congress Street

Chart Block Lot Number: Refer to Letter

Proposed Use: Commercial, Apartments

Previous Use: Commercial/Retail

Existing Sanitary Flows: 244 GPD

Existing Process Flows: 0 GPD

Description and location of City sewer that is to receive
the proposed building sewer lateral.

Refer to the attached plan

Site Category | Commercial (see part 4 below) | ☒
Industrial (complete part 5 below) | ☐
Governmental | ☐
Residential | ☒
Other (specify) | ☐

(Clearly, indicate the proposed connections, on the submitted plans)

2. Please, Submit Contact Information.

City Planner's Name: Shukria Wiar Phone: 756-8083

Owner/Developer Name: Jonathan Culley- Redfern Properties, LLC

Owner/Developer Address: P.O. Box 8816, Portland, Maine 04104

Phone: 207-776-9715 Fax: _____ E-mail: jonathan@redfernproperties.com

Engineering Consultant Name: Acorn Engineering, Inc.

Engineering Consultant Address: PO Box 3372, Portland, Maine 04104

Phone: 207-775-2655 Fax: _____ E-mail: wsavage@acorn-engineering.com

**(Note: Consultants and Developers should allow +/- 15 days, for capacity status,
prior to Planning Board Review)**

3. Please, Submit Domestic Wastewater Design Flow Calculations.

Estimated Domestic Wastewater Flow Generated: 23,810 GPD

Peaking Factor/ Peak Times: Diurnal Residential Flow Pattern

Specify the source of design guidelines: (i.e. "Handbook of Subsurface Wastewater Disposal in Maine,"
"Plumbers and Pipe Fitters Calculation Manual," Portland Water District Records, Other (specify)
STATE OF MAINE SUBSURFACE WASTEWATER DISPOSAL RULES

**(Note: Please submit calculations showing the derivation of your design flows,
either on the following page, in the space provided, or attached, as a separate sheet)**

4. Please, Submit External Grease Interceptor Calculations.

Total Drainage Fixture Unit (DFU) Values:

8

Size of External Grease Interceptor:

100 gallons

Retention Time:

1.5 hours

Peaking Factor/ Peak Times:

1 / 11:00AM-2:00PM, 5:00PM-8:00PM

(Note: In determining your restaurant process water flows, and the size of your external grease interceptor, please use The Uniform Plumbing Code. Note: In determining the retention time, sixty (60) minutes is the minimum retention time. Note: Please submit detailed calculations showing the derivation of your restaurant process water design flows, and please submit detailed calculations showing the derivation of the size of your external grease interceptor, either in the space provided below, or attached, as a separate sheet)

5. Please, Submit Industrial Process Wastewater Flow Calculations

N/A

Estimated Industrial Process Wastewater Flows Generated:

GPD

Do you currently hold Federal or State discharge permits?

Yes

No

Is the process wastewater termed categorical under CFR 40?

Yes

No

OSHA Standard Industrial Code (SIC):

<http://www.osha.gov/oshstats/sicser.html>

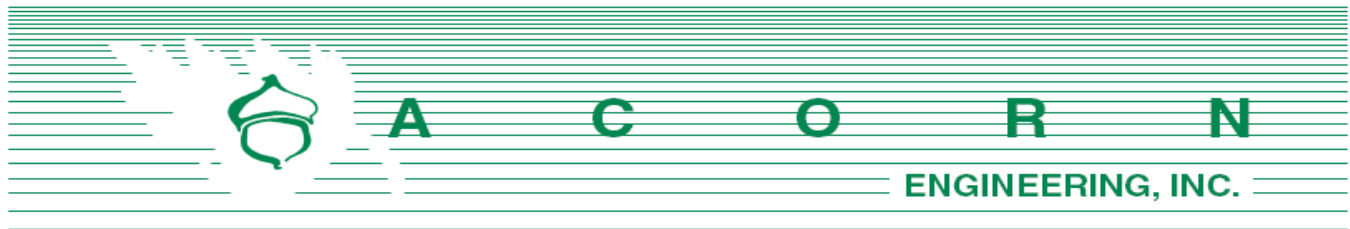
Peaking Factor/Peak Process Times:

(Note: On the submitted plans, please show where the building's domestic sanitary sewer laterals, as well as the building's industrial-commercial process wastewater sewer laterals exits the facility. Also, show where these building sewer laterals enter the city's sewer. Finally, show the location of the wet wells, control manholes, or other access points; and, the locations of filters, strainers, or grease traps)

(Note: Please submit detailed calculations showing the derivation of your design flows, either in the space provided below, or attached, as a separate sheet)

Notes, Comments or Calculation

Please refer to the attached letter with calculations, and plan



Fairpoint Communications
Attn: John Caprio
5 Davis Farm Road
Portland, Maine 04103

April 22, 2015

Subject: 667 Congress Street Development - Redfern Properties, LLC – Portland
Re: Ability to Serve

John Caprio,

On behalf of Redfern Properties, LLC, we are pleased to submit the following request for Fairport Communication's ability to serve the proposed development. 667 Congress Street is a 132-unit vertical urban infill development located near Longfellow Square in Portland. The proposed building is anticipated to be 8 stories tall; the first story will comprise of a retail space and an indoor parking facility; and the second through eighth stories will contain a total of 132 rental units within the building. A basement-level parking lot will also be included in the design.

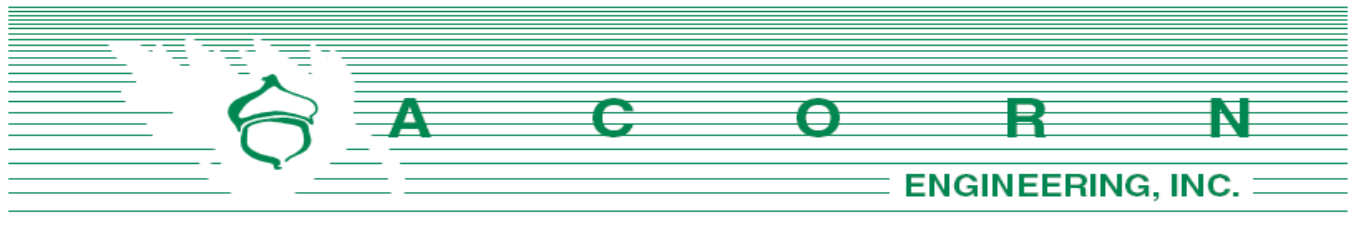
The proposed redevelopment project is located at 667 Congress Street (Map, Book, Lot 46 C020 and C019) bordered by Congress Street, Vernon Place, and Avon Street in Portland, Maine. There is an existing smoke shop/variety store building and parking lot located within the project location which is to be demolished as part of the proposed project. The smoke shop/variety store will be incorporated into the new building.

The developer plans to serve the proposed building with an underground landline telephone service. At this time we have proposed that the new service be established from the existing services overhead within Vernon Place. From the utility poles, the service would then be redirected underground into a transformer, located at the western property corner. Pull boxes are anticipated to be placed at corners, and conduit is anticipated to be encased in concrete within the City of Portland ROW. Within the building, the service will run within the basement slab at the ground level, up a support column to the first floor ceiling, and finally into the mechanical closet.

Furthermore, the project anticipates rerouting the existing overhead telephone, electric and communications wires currently crossing the development to the Vernon Place corridor. Communications services currently existing within Vernon Place are anticipated to be redirected from the existing communications line within the Vernon Place corridor, as indicated on the Utility Plan (attached). Overhead wires crossing the proposed development, as well as overhead wires and utility poles within Vernon Place are anticipated to be removed as part of this project.

On behalf of the client we are requesting the following information:

1. Any additional information, such as additional utility mapping within Vernon Place.
2. Any easements for overhead services currently crossing the proposed development.
3. Alternative connection locations from the development to the existing communication system.
4. Fairpoint's proposed infrastructure improvements within the project vicinity.



5. Fairpoint's ability to serve the project.
6. Whether Fairpoint allows for service to be run within the basement of the facility, up support columns, and/or within ceiling conduit.

We have attached a preliminary utility plan to facilitate your review. Please let me know if you have any further questions or comments.

Sincerely,

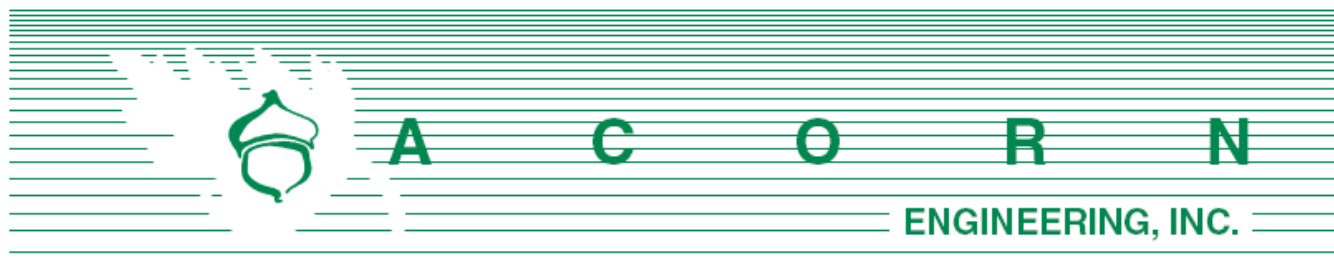
A handwritten signature in black ink, which appears to read 'Michael A. Guethle', is positioned below the word 'Sincerely,'.

Michael A. Guethle

Design Engineer
Acorn Engineering, Inc.

cc: Will Savage – Acorn Engineering, Inc.
Jonathan Cully – Redfern Properties, LLC
Ryan Senatore – Ryan Senatore Architecture





Portland Water District
Attn: MEANS Department
225 Douglas Street
Portland, Maine 04104

April 22, 2015

Subject: 667 Congress Street Development - Redfern Properties, LLC – Portland
Re: Ability to Serve

To whom it may concern:

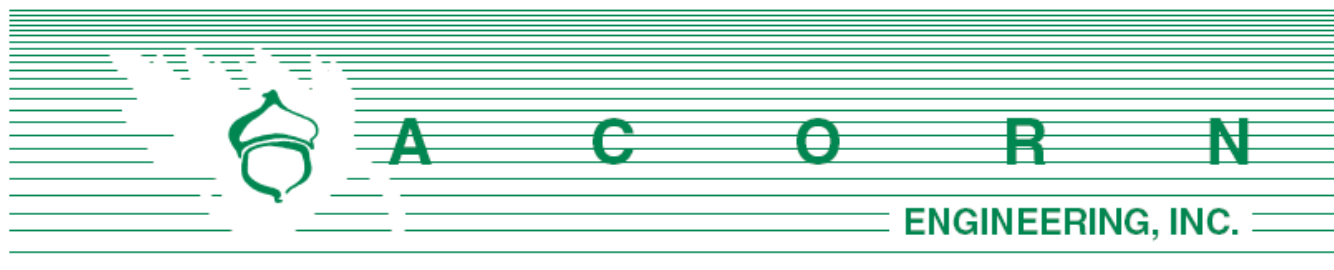
On behalf of Redfern Properties, LLC, we are pleased to submit the following request for Portland Water ability to serve the proposed development. 667 Congress Street is a 132-unit vertical urban infill development located near Longfellow Square in Portland. The proposed building is anticipated to be 8 stories tall; the first story will comprise of a retail space and an indoor parking facility; and the second through eighth stories will contain a total of 132 rental units within the building. A basement-level parking lot will also be included in the design.

The proposed redevelopment project is located at 667 Congress Street (Map, Book, Lot 46 C020 and C019) bordered by Congress Street, Vernon Place, and Avon Street in Portland, Maine. There is an existing smoke shop/variety store building and parking lot located within the project location which is to be demolished as part of the proposed project. The smoke shop/variety store will be incorporated into the new building.

Based upon the Section 4 of the Maine Subsurface Water Disposal Rules, the project anticipates the following design flows:

Development	Unit Size	Number of Units	Gallons per Day per Unit	Total Gallons per Day
Existing flow to be removed				
Restaurant: With Food Prepared	Per Meal Prep	100	1	100
Restaurant: Employees	Per Employee	12	12	144
Proposed flow				
Restaurant: With Food Prepared	Per Meal Prep	150	1	150
Restaurant: Employees	Per Employee	12	12	144
Residential Units	≤2 – Bedroom	132	180	23,760
Net Change				23,810

*Values based on STATE OF MAINE: SUBSURFACE WASTEWATER DISPOSAL RULES, most recent edition



The proposed project is anticipated to add a net water usage from the development of approximately 24,000 gallons per day (GPD). It should be noted that these values were developed using conservative estimates from the State of Maine Subsurface Wastewater Disposal Rules. The anticipated flow assumes a conservative water usage estimate; a higher food preparation value was used as an estimated flow for the restaurant, and many of the proposed apartments are 1-bedroom apartments or studio apartments. For these reasons, the actual water usage for this location may be lower.

Separate services are proposed for the commercial property and the residential units. For the residential units, the developer has proposed a new 8-inch fire line service for the development that would tie into the existing water main in Congress Street with a redundant connection within Avon Street, as well as a four-inch domestic service in Congress Street. The developer is also proposing an individual one-inch service for the commercial property. I have attached a preliminary utility plan to facilitate your review.

On behalf of the client we are requesting the following information:

1. Any additional information, such as additional utility mapping within Vernon Place.
2. Alternative connection locations from the development to the existing system.
3. PWD's proposed infrastructure improvements within the project vicinity.
4. PWD's ability to serve the project.

Please let me know if you have any further questions or comments.

Sincerely,

Michael A. Guethle

Design Engineer
Acorn Engineering, Inc.

cc: Will Savage – Acorn Engineering, Inc.
Jonathan Cully – Redfern Properties, LLC
Ryan Senatore – Ryan Senatore Architecture



Portland Water District

FROM SEBAGO LAKE TO CASCO BAY

June 11, 2015

Acorn Engineering, Inc.
P. O. Box 3372
Portland, ME 04104

Attn: Michael Guethle
Re: 667 Congress Street - Portland
Ability to Serve with PWD Water

Dear Mr. Guethle:

The Portland Water District has received your request for an Ability to Serve Determination for the noted site submitted on April 22, 2015. Based on the information provided, we can confirm that the District will be able to serve the proposed project as further described in this letter.

Conditions of Service

The following conditions of service apply:

- If the existing service will no longer be used as a result of the development then it must be retired per PWD standards. This includes shutting the corporation valve and cutting the pipe from the water main.
- As the water mains in Congress Street and Avon Street are more than 50 years old, both fire services and the 4" domestic service will require a tapping valve at the main and a second gate valve at street line.
- A redundant fire protection service has been requested. The Utility Plan indicates an 8-inch fire service on both Congress Street and Avon Street. The connection on Avon Street should be revised to a 6" X 6" tapping sleeve with a 6-inch gate valve, a 2-foot section of 6-inch ductile iron pipe and a 6" X 8" increaser. A testable double check valve assembly will be required at the building entrance on each service and each connection shall be treated as an individual fire service with separate billing accounts.
- Water District approval of water infrastructure plans will be required for the project prior to construction. As your project progresses, we advise that you submit any preliminary design plans to MEANS for review of the water main and water service line configuration. We will work with you to ensure that the design meets our current standards.

Existing Site Service

According to District records, the project site does currently have existing water service. A 3/4-inch diameter copper water service line, located as shown on the attached water service card, provides water service to this site. Please refer to the "Conditions of Service" section of this letter for requirements related to the use of this service.



Water System Characteristics

According to District records, there is a 16-inch diameter cast iron water main on the north side of Congress Street, a 6" cast iron water main on the east side of Vernon Court, a 6" cast iron water main on the west side of Avon Street and a public fire hydrant located at the site.

The current data from the nearest hydrant with flow test information is as follows:

Hydrant Location: Congress Street at Avon Street
Hydrant Number: POD-HYD00089
Last Tested: 8/8/2014
Static Pressure: 66 psi
Residual Pressure: 64 psi
Flow: 1,162 GPM

Public Fire Protection

You have not indicated whether this project will include the installation of new public hydrants to be accepted into the District water system. It is your responsibility to contact the Portland Fire Department to ensure that this project is adequately served by existing and/or proposed hydrants.

Domestic Water Needs

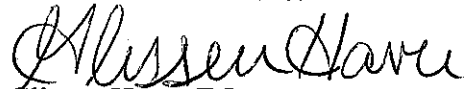
The data noted above indicates there should be adequate pressure and volume of water to serve the domestic water needs of your proposed project. Based on the high water pressure in this area, we recommend that you consider the installation of pressure reducing devices that comply with state plumbing codes.

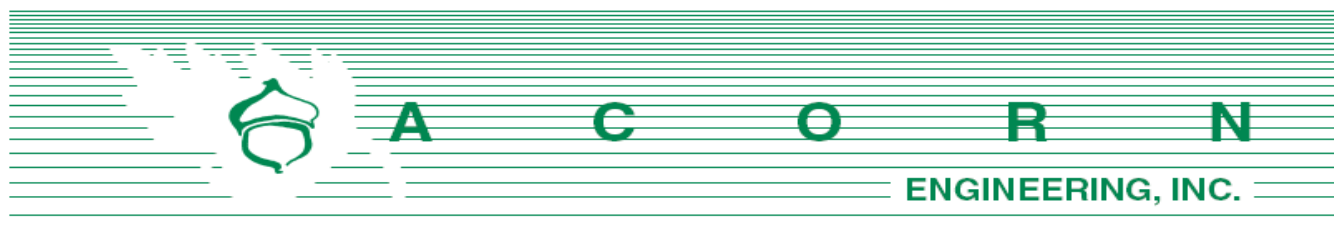
Private Fire Protection Water Needs

You have indicated that this project will require water service to provide private fire protection to the site. Please note that the District does not guarantee any quantity of water or pressure through a fire protection service. Should private fire protection be required, please share these results with your sprinkler system designer so that they can design the fire protection system to best fit the noted conditions. If the data is out of date or insufficient for their needs, please contact the MEANS Division to request a hydrant flow test and we will work with you to get more complete data.

If the District can be of further assistance in this matter, please let us know.

Sincerely,
Portland Water District


Glissen Havu, E.I.
Design Engineer



Time Warner Cable
Attn: Mark Pelletier
5 Davis Farm Road
118 Johnson Road
Portland, Maine 04102

April 22, 2015

Subject: 667 Congress Street Development - Redfern Properties, LLC – Portland
Re: Ability to Serve

Mark Pelletier,

On behalf of Redfern Properties, LLC, we are pleased to submit the following request for Time Warner Cable's ability to serve the proposed development. 667 Congress Street is a 132-unit vertical urban infill development located near Longfellow Square in Portland. The proposed building is anticipated to be 8 stories tall; the first story will comprise of a retail space and an indoor parking facility; and the second through eighth stories will contain a total of 132 rental units within the building. A basement-level parking lot will also be included in the design.

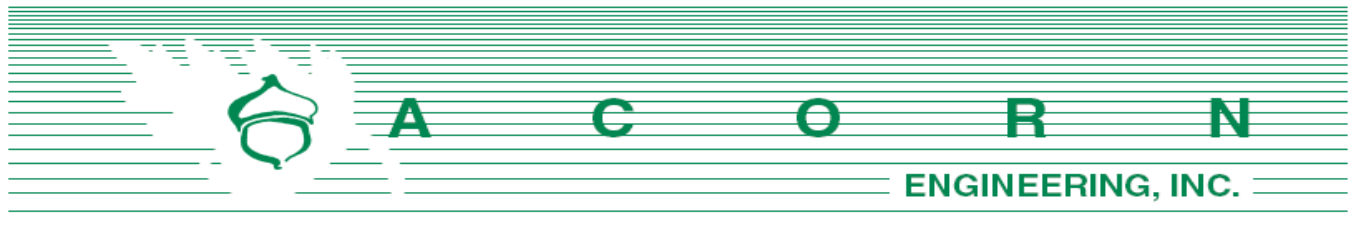
The proposed redevelopment project is located at 667 Congress Street (Map, Book, Lot 46 C020 and C019) bordered by Congress Street, Vernon Place, and Avon Street in Portland, Maine. There is an existing smoke shop/variety store building and parking lot located within the project location which is to be demolished as part of the proposed project. The smoke shop/variety store will be incorporated into the new building.

The developer plans to serve the proposed building with an underground communications service. At this time we have proposed that the new service be established from the existing services overhead within Vernon Place. From the utility poles, the service would then be redirected underground into a transformer, located at the western property corner. Pull boxes are anticipated to be placed at corners, and conduit is anticipated to be encased in concrete within the City of Portland ROW. Within the building, the service will run within the basement slab at the ground level, up a support column to the first floor ceiling, and finally into the mechanical closet.

Furthermore, the project anticipates rerouting the existing overhead telephone, electric and communications wires currently crossing the development to the Vernon Place corridor. Communications services currently existing within Vernon Place are anticipated to be redirected from the existing communications line within the Vernon Place corridor, as indicated on the Utility Plan (attached). Overhead wires crossing the proposed development, as well as overhead wires and utility poles within Vernon Place are anticipated to be removed as part of this project.

On behalf of the client we are requesting the following information:

1. Any additional information, such as additional utility mapping within Vernon Place.
2. Any easements for overhead services currently crossing the proposed development.
3. Alternative connection locations from the development to the existing communication system.
4. Time Warner Cable's proposed infrastructure improvements within the project vicinity.



5. Time Warner Cable's ability to serve the project.
6. Whether Time Warner allows for service to be run within the basement of the facility, up support columns, and/or within ceiling conduit.

I have attached a preliminary utility plan to facilitate your review. Please let me know if you have any further questions or comments.

Sincerely,

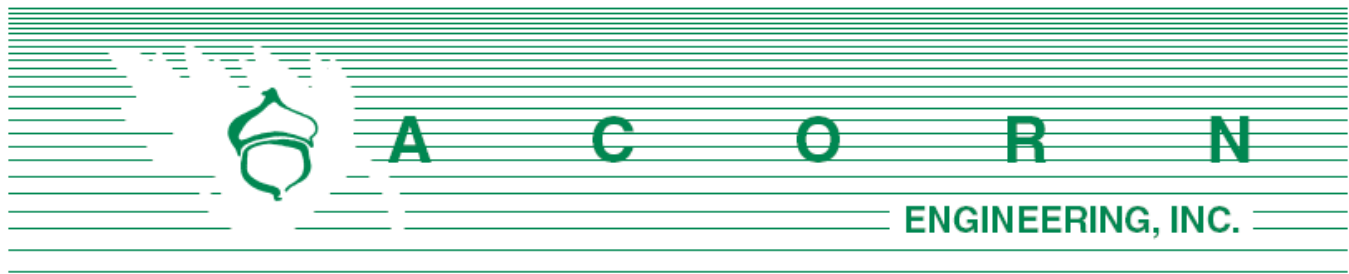
A handwritten signature in black ink, appearing to read 'Michael A. Guethle'.

Michael A. Guethle

Design Engineer
Acorn Engineering, Inc.

cc: Will Savage – Acorn Engineering, Inc.
Jonathan Cully – Redfern Properties, LLC
Ryan Senatore – Ryan Senatore Architecture





Unitil Service Corp.
Attn: Kelly Fowler
P.O. Box 3586
Portland, Maine 04104

April 22, 2015

Subject: 667 Congress Street Development - Redfern Properties, LLC – Portland
Re: Ability to Serve

Kelly Fowler,

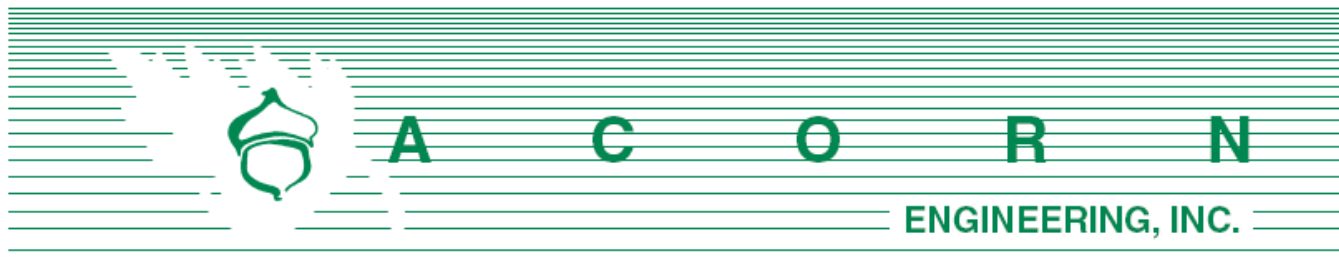
On behalf of Redfern Properties, LLC, we are pleased to submit the following request for Unitil's ability to serve the proposed development. 667 Congress Street is a 132-unit vertical urban infill development located near Longfellow Square in Portland. The proposed building is anticipated to be 8 stories tall; the first story will comprise of a retail space and an indoor parking facility; and the second through eighth stories will contain a total of 132 rental units within the building. A basement-level parking lot will also be included in the design.

The proposed redevelopment project is located at 667 Congress Street (Map, Book, Lot 46 C020 and C019) bordered by Congress Street, Vernon Place, and Avon Street in Portland, Maine. There is an existing smoke shop/variety store building and parking lot located within the project location which is to be demolished as part of the proposed project. The smoke shop/variety store will be incorporated into the new building.

The developer plans to serve the proposed building with a gas service. At this time we have proposed that the new service be established from the existing underground line within Vernon Place, and into the mechanical closet for the development. I have attached a preliminary utility plan to facilitate your review. Gas loading computations, delivery pressure, total number of meters, and other site information will be performed by the contractor's mechanical engineer, at a later date. Please let me know if you have any further questions or comments.

On behalf of the client we are requesting the following information:

1. Any additional information, such as additional utility mapping within Vernon Place.
2. Alternative connection locations from the development to the existing system.
3. Unitil's proposed infrastructure improvements within the project vicinity.
4. Unitil's ability to serve the project.



Sincerely,

A handwritten signature in black ink, appearing to read 'Michael A. Guethle'.

Michael A. Guethle

Design Engineer
Acorn Engineering, Inc.

cc: Will Savage – Acorn Engineering, Inc.
Jonathan Cully – Redfern Properties, LLC
Ryan Senatore – Ryan Senatore Architecture





April 28, 2015

Michael A. Guethle
PO Box 3372
Portland, ME 04101

Re: Ability to Serve 667 Congress Street Development – Redfern Properties, LLC - Portland

Dear Mr. Guethle:

Thank you for your interest in using natural gas for the above referenced project.

Unitil has natural gas infrastructure in the vicinity of this project to provide gas service. There is a 2" low pressure main on Vernon Place, a 4" low pressure main on Avon Street and an 8" low pressure main on Congress Street. The evaluation to complete the design, determine which main to provide service from, estimate the costs to serve and determine what the customer contribution may be, if any, can be completed once Unitil receives the completed design, gas load information, and other project information. Unitil welcomes the opportunity for further discussions regarding this project.

If you have any further questions or require additional information, please contact me directly at (207) 541-2505 or at fowler@unitil.com.

Sincerely,

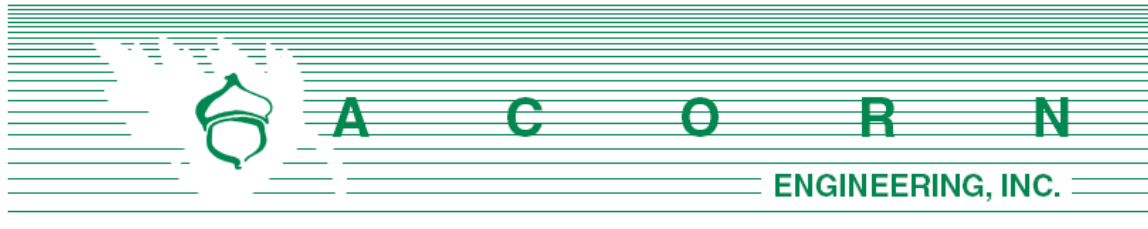
A handwritten signature in blue ink that reads "Kelly Fowler". The signature is fluid and cursive, with the first name "Kelly" and last name "Fowler" clearly distinguishable.

Kelly Fowler
Sr. Business Development Representative
Unitil Corporation
(o) 207-541-2505 (f) 207-541-2565

ME GAS CUSTOMER ENERGY SOLUTIONS

1075 Forest Avenue
Portland, ME 04103-3586

T 207-541-2508 www.unitil.com



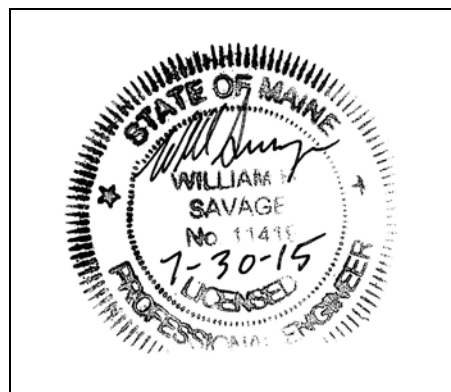
STORMWATER MANAGEMENT REPORT

Prepared For:

**Redfern Properties, LLC
667 Congress Street Redevelopment
Portland, Maine 04101**

Prepared By:

**Acorn Engineering, Inc.
PO Box 3372
Portland, Maine 04104**



July 2015

INTRODUCTION

Acorn Engineering, Inc. has been retained by Redfern Properties, LLC to provide civil engineering services for the proposed development of Joe's Variety Store. The proposed redevelopment project is located at 665 Congress Street (Map, Book, Lot 46 C020 and C019) bordered by Congress Street, Vernon Place, and Avon Street in Portland, Maine. The existing commercial building and parking lot are to be redeveloped to include:

- 1 Commercial Spaces on the first floor (approximately 4500 SF).
- 139 Residential Units on seven floors.
- 44 Parking Spaces on the first floor off of Commercial Street and 37 spaces located below in a lower level parking garage.

A stormwater analysis will be prepared to demonstrate that the project will meet the following requirements of the City of Portland (the City):

- City of Portland Land Use Ordinance Chapter 14, Article V. Site Plan Section 14-523. Required Approvals and Applicability (F) Level III Site Plan Review.
- City of Portland Technical Manual – Section 5 – Portland Stormwater Management Standards and Maine DEP Chapter 500 Stormwater Management Amended January 11, 2015.

On May 12th representatives of Acorn Engineering met with Frank Rubino onsite to discuss the condition existing sewer main with Avon St. Under Frank's supervision the City of Portland – Department of Public Services tv'd approximately 246 lf of the existing 10" vitrified clay pipe starting at the intersection with Deering St working south. Overall the condition of the existing sewer main was found to be in good condition with relatively few cracks. A copy of the video inspection and observation and report with still images was provided for Acorn Engineering documenting the results.

Acorn has also coordinated with Woodard & Curran Deering Street Reconstruction Plans Sheets 4 and 7, dated 3/23/2015. Specifically the separation of the combined sewer with the construction of CB12A and Pipe 9D within Avon Street. Should field conditions change the inverts of CB12A we would request that the City provide the applicant with a set of As-Built Plans.

EXISTING CONDITIONS

The proposed redevelopment project is located at 667 Congress Street (Map, Book, Lot 46 C020 and C019) bordered by Congress Street, Vernon Place, and Avon Street in Portland, Maine. There is an existing smoke shop/variety store building and parking lot located within the project location which are to be demolished as part of the proposed project.

The City of Portland has rezoned the entire parcel as a B-3 zone due to its proximity to Commercial Street and Downtown Portland.

Abutting Uses:

- North R-6 Zone – Single and Multi-Family Residential



- East B-3 Zone – Green Hand Bookshop, Parking Lot
- Southwest B-3 Zone – Boda/Bangkok Thai
- Northwest R-6 Zone – Single and Multi-Family Residential
- South B-3 Zone – Video Expo, Empire Theater, Barber Shop

The existing project area is made up of a single paved and gravel parking area with a single, existing building. The distribution of surfaces is as follows:

- Paved Surface: 81%
- Existing Building: 14%
- Gravel with Limited Overgrowth: 5%

All surfaces are impervious with an existing grade ranging from approximately 0-10%.

Based on the most recent survey data, all surface runoff can be defined in two subcatchments ending in the existing catch basins located in the Northeast and Northwest corners of the property. The majority of runoff, about 96%, flows from the existing building, parking lot, and eastmost border to the newly proposed catchbasin and separated storm drain piping on Avon Street. The remaining runoff, about 4%, consists of flow from the westmost border along an overgrown gravel area to the catch basin at the end of Vernon Place. This catch basin also flows to the newly built catch basin on Avon St.

The project team is not aware of the presence of any existing significant natural features located on the site. Given the urban setting and existing impervious surfaces, a field inventory of significant natural feature was not undertaken. The project is also not located within a watershed classified as an Urban Impaired Stream.

PROPOSED DEVELOPMENT

The 667 Congress Street Redevelopment is an eight floor, 139-unit residential and commercial building with parking garage features on the basement and first floors. Both the basement and first floor will include mechanical and electrical facilities for development as well as two elevator shafts located at the North and South ends of the building.

The parking lot grading topography will be kept between 1% to 2% slopes directing stormwater towards internal floor drains on the eastern and western sides of the development; all stormwater flow, including snowmelt, from the first floor parking will be redirected to the basement floor and then connected to the existing municipal system. The majority of the first floor parking will be covered by the proposed building while the perimeter parking will be open (no roof). The drainage collection points are located as not to direct surface below the proposed building. The basement parking will be covered by the first floor parking with the exception of the basement entrance ramp.

Due to proposed basement grades the existing 12" RCP pipe along the northern property line will need to be rebuilt to lower the elevations. The work will be coordinated with recently completed catch basin along Avon St.

No landscape is anticipated and all undeveloped areas are assumed to be covered with mulch. Currently, only overgrown weeds cover a very small section of non-paved impervious gravel adjacent to a guardrails and signage.



The development is anticipated to be served by the Portland Water District, underground power/cable/communications, natural gas and the municipal sewer system. Solid waste and recycling will be contracted through a private waste disposal and recycling provider.

GENERAL STANDARDS - WATER QUALITY

It is our understanding that the project will not be required to meet the General Standards because of the exception set forth in the City of Portland Technical Manual – Section 5 – Portland Stormwater Management Standards and Maine DEP Chapter 500, B. General Standards (3) Exception from the general standards, (e).

“Stormwater Management Law project including redevelopment. For a project requiring a Stormwater Management Law permit that includes redevelopment of impervious area that was in existence as of November 16, 2005 (the effective date of Chapter 500 revisions), the redevelopment of that impervious area is not required to meet General standards provided the department determines that the new use of the existing impervious area is not likely to increase stormwater impacts resulting from the proposed project’s stormwater runoff beyond the level of impact already caused by the runoff from the existing impervious area. The requirements of Appendix D must still be met, if applicable.”

Although additional stormwater treatment is not required, the project has been designed to improve upon the existing condition for the following reasons:

- The significant change in land use from surface parking to the building/covered parking.
- The stabilization of the existing gravel areas with pavement or landscaping.
- The elimination surface stormwater flows directly to the municipal sewer.
- The installation of catch basins with catch basin hoods to mitigate transport of oil, floating debris, and larger suspended particles into the storm drain piping.
- The installation of catch basins which incorporates a deeper 3-ft (2 ft typ.) sump to store items listed above until routine cleaning is performed.

FLOODING STANDARD – WATER QUANTITY

To review the Section E. Flooding Standard, the proposed development was modeled using HydroCAD to verify that the post-development conditions do not exceed the pre-development conditions. A 24-hour SCS Type III storm distribution for the 2, 10, and 25 year storm events were used. The corresponding rainfall amounts for these storms are 3.00”, 4.70”, and 5.50” respectively. Rainfall amounts from the Maine DEP Volume III: BMPs Technical Design Manual Chapter 2 Stormwater Hydrology Table 2-1 Rev. 4/10/92.

Due to the numerous variables, and inherent inaccuracies with the modeling program used to calculate stormwater runoff it is custom at Acorn Engineering, Inc. to round to the nearest whole number. However due to the small size of the project the stormwater runoff shall be rounded to the nearest tenth of a cubic feet per second (cfs). Given the relatively small watershed areas, urban setting, and predominance of impervious area, a 5 minute time of concentration (T_c) was applied to each subcatchment for both the pre and post-development conditions.

Pre-development Calculations



The pre-development condition was modeled as two subcatchments. Subcatchment 1 is tributary to the catch basin at the end of Vernon Place. Subcatchment 2 is tributary to the newly constructed catch basin on Avon Street at the Northeast end of the property line.

- Subcatchment 1, Existing Northwest Subcatchment – Area (337 SF, 0.02 acres) tributary to the existing municipal sewer (POI#1) on Avon Street.
- Subcatchment 2, Existing Northeast Subcatchment – Area (20,856 sf, 0.58 acres) tributary to the existing municipal storm drain catch basin on Avon Street. This storm drain is then tributary to the municipal sewer (POI#1) also located on Avon Street.

The surface flows tributary to the municipal storm sewer are also included below. A Pre-development Watershed Map developed for this project can be viewed in Attachment A, and a copy of the HydroCAD calculations is included within Attachment D of this report. Peak flow rates for the storm events are as follows:

Table 1 – Pre-Development Peak Stormwater Flows			
Drainage Area	2 – Year Storm Event (cfs)	10 – Year Storm Event (cfs)	25 – Year Storm Event (cfs)
Subcatchment 1	.1	.1	.1
Subcatchment 2	1.7	2.7	3.1
Point of Interest #1	1.8	2.8	3.3

Post-development Calculations:

The post-development condition was modeled as one subcatchment with the same point of interest, as all stormwater is anticipated to leave the site through one location and connect to the recently completed 15” storm drain within Avon. The proposed Grading and Drainage Plan was designed to maintain the historical area tributary to the municipal storm sewer on Avon Street.

- Subcatchment 1 – Area (0.60 acres) tributary to the existing municipal sewer within Avon Street

The post development calculations assumed that there was no land change; all surfaces on the property will remain impervious and therefore did not result in a net stormwater increase. The post-development conditions now convey all stormwater flows to the municipal sewer on Avon Street (POI #1). The following table represents comparison of predevelopment and post-development condition peak runoff rates at the respective point of interest.

Table 2 – Comparison of Peak Flows						
Drainage Area	2 – Year Storm Event (cfs)		10 – Year Storm Event (cfs)		25 – Year Storm Event (cfs)	
	Pre	Post	Pre	Post	Pre	Post
POI #1	1.8	1.8	2.8	2.8	3.3	3.3



As shown in Table 2, the post development peak flows shall remain at or below the predevelopment levels. A Post-development Watershed Map developed for this project can be viewed in Attachment B, and a copy of the HydroCAD calculations is included within Attachment D, of this report.

Pipe sizes were generated using the rational method.

SOILS

Onsite soil information includes the following:

- Summit Geoengineering Services – Soil Boring Logs, dated March 31st, 2015 and April 15th, 2015. A formal Geotechnical Report has also been prepared by Summit Geoengineering Services for the project, dated May 2015.
- Soil Conservation Service Medium Intensity Soil Survey for Cumberland County.

Given the soils information, listed above, and the fact that greater than 50% of the proposed development site is currently developed, it is Acorn Engineering's professional opinion that a more intense hydric soil boundary delineation is not required because the waiver requirements set forth in the City of Portland Technical Manual – Section 7 – Soil Survey, Rev. 6/17/11 are met.

The area within and surrounding the project includes soils types listed in the table below. The susceptibility of soils to erosion is indicated on a relative "K" scale of values over a range of 0.02 to 0.69. Higher "K" values indicate more erodible soils.

Table 1 - "K" Value		
Soils Type	Subsurface	Substratum
Hinckley	.17	.17

The soil "K" values for the soils, listed above, indicate a low susceptibility to erosion. The site's susceptibility to erosion is from the Soil Conservation Service Medium Intensity Soil Survey for Cumberland County. The site's soils map from the Soil Conservation Service Medium Intensity Soil Survey for Cumberland County is included as Attachment C.

Conclusion

The proposed development was designed to meet the requirements implemented by the MDEP under the Stormwater Management Statute (38 M.R.S.A. § 420-D) as well as the City of Portland Technical Manual – Section 5 – Portland Stormwater Management Standards. The proposed project as envisioned shall improve upon the existing stormwater management.

Attachments

Attachment A: Pre Development Watershed Map
 Attachment B: Post Development Watershed Map
 Attachment C: Soils Map
 Attachment D: HydroCAD Calculations
 Attachment E: Summit Geoengineering Services – Soil Boring Logs, dated May 2015

GENERAL NOTES:

- 1. REFER TO STORMWATER REPORT FOR MORE INFORMATION
- 2. GIVEN THE URBAN SETTING, SMALL WATERSHED AREA AND PREDOMINANCE OF IMPERVIOUS AREAS A 5 MINUTE TIME OF CONCENTRATION WAS USED FOR BOTH THE PRE-DEVELOPMENT AND POST-DEVELOPMENT CONDITIONS.

1

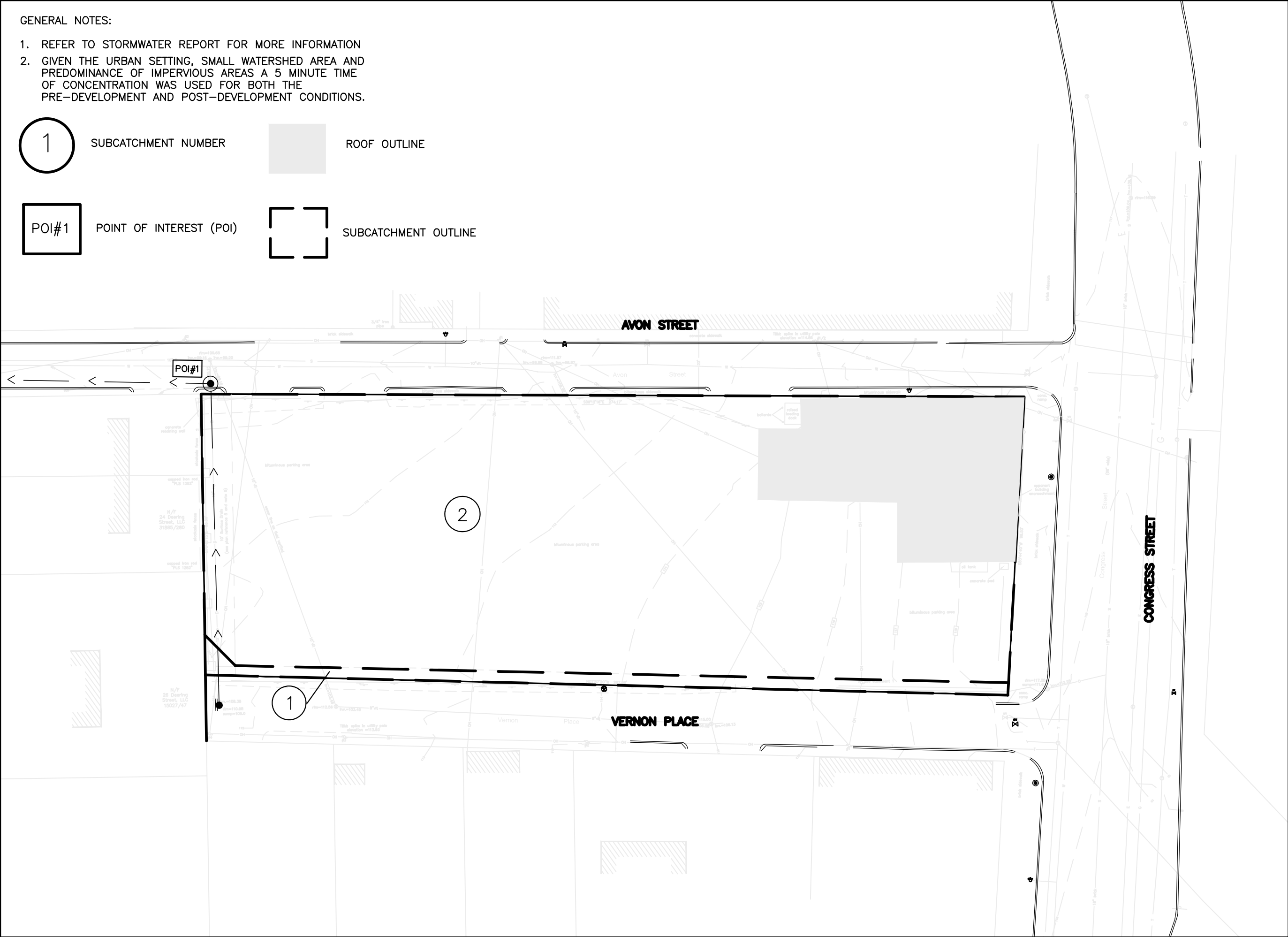
SUBCATCHMENT NUMBER

ROOF OUTLINE

POI#1

POINT OF INTEREST (POI)

SUBCATCHMENT OUTLINE



ISSUED FOR	BY DATE
REVISION	REV. DATE

DRAWING NAME:	PRE-DEVELOPMENT STORMWATER PLAN
PROJECT NAME:	667 CONGRESS ST. REDEVELOPMENT
CLIENT:	REDFERN PROPERTIES, LLC. P.O. BOX 8816, PORTLAND, MAINE 04104



ACORN
ENGINEERING, INC.

P.O. BOX 3372
PORTLAND, MAINE 04104
(207) 775-2655

FILE:	1060_CIVIL
DATE:	7/29/15
JN:	1080
SCALE:	1"=20'
DESIGN BY:	WHS
DRAWN BY:	
CHECKED BY:	WHS

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

DRAWING NO.
PRE

GENERAL NOTES:

1. REFER TO STORMWATER REPORT FOR MORE INFORMATION
2. GIVEN THE URBAN SETTING, SMALL WATERSHED AREA AND PREDOMINANCE OF IMPERVIOUS AREAS A 5 MINUTE TIME OF CONCENTRATION WAS USED FOR BOTH THE PRE-DEVELOPMENT AND POST-DEVELOPMENT CONDITIONS.

1

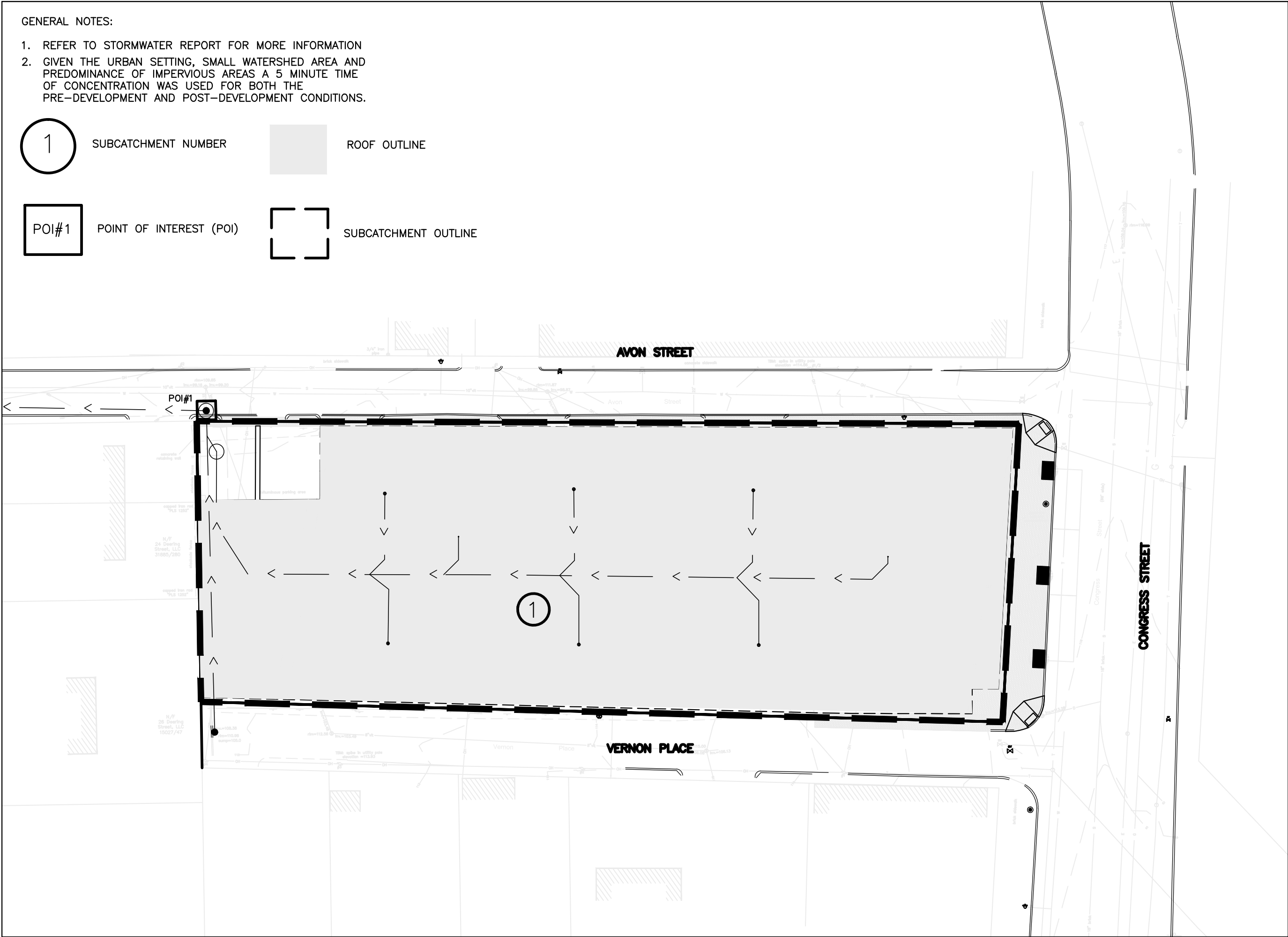
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ROOF OUTLINE

POI#1

POINT OF INTEREST (POI)

SUBCATCHMENT OUTLINE



ISSUED FOR	BY DATE
REVISION	REV. DATE

DRAWING NAME: POST-DEVELOPMENT WATER QUALITY PLAN	PROJECT NAME: 667 CONGRESS ST. REDEVELOPMENT	CLIENT: REDFERN PROPERTIES, LLC. P.O. BOX 8816, PORTLAND, MAINE 04104
--	---	---



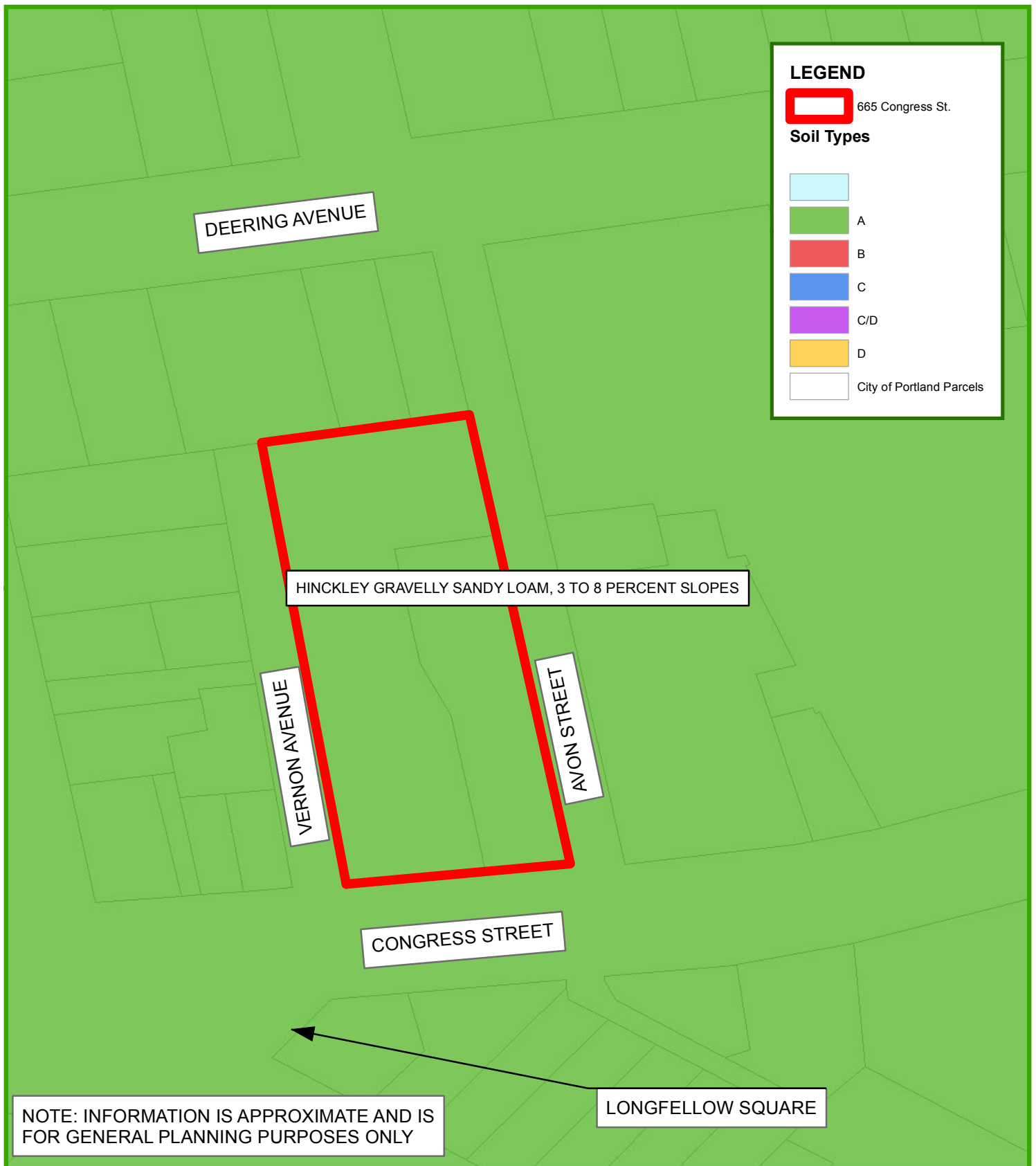
ACORN
ENGINEERING, INC.

P.O. BOX 3372
PORTLAND, MAINE 04104
(207) 775-2655

FILE: 1060_CIVIL
DATE: 7/29/15
JN: 1080
SCALE: 1"=20'
DESIGN BY: WHS
DRAWN BY:
CHECKED BY: WHS

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DRAWING NO.
POST

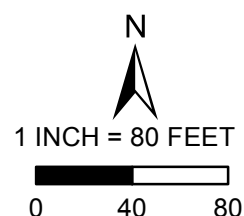


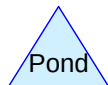
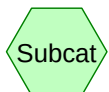
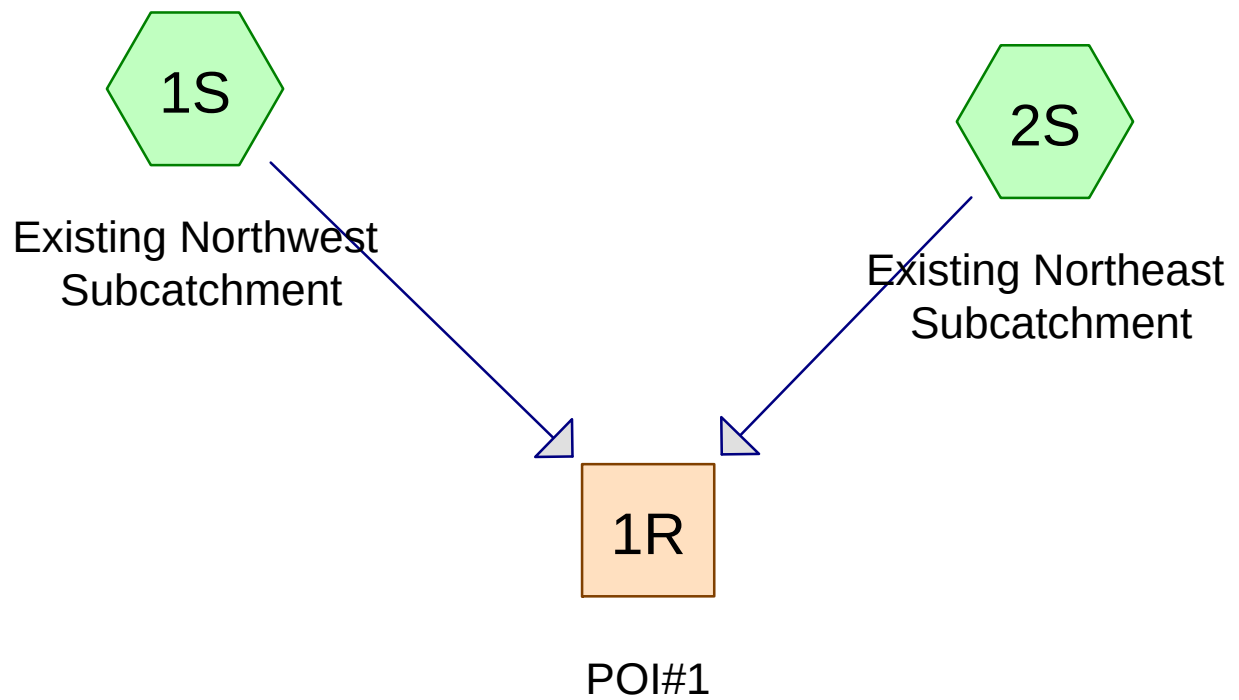
665 CONGRESS STREET DEVELOPMENT SOILS ADJACENT TO DEVELOPMENT

665 CONGRESS STREET, PORTLAND, MAINE

Data Sources: MEGIS, City of Portland, Acorn Engineering, Inc.

Date: 4/8/2015 by Acorn Engineering, Inc. for Redfern Properties, LLC





Drainage Diagram for JSH Pre-Development 7-24-15
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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.028	96	Gravel (1S,2S)
0.084	98	Building (2S)
0.487	98	Pavement (1S,2S)
0.599		TOTAL AREA

JSH Pre-Development 7-24-15

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Soil Listing (all nodes)

Area (acres)	Soil Goup	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.599	Other	1S, 2S
0.599		TOTAL AREA

JSH Pre-Development 7-24-15*Type III 24-hr 2-year Rainfall=3.00"*

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Printed 7/27/2015

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Time span=5.00-20.00 hrs, dt=0.04 hrs, 376 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Existing NorthwestRunoff Area=0.024 ac 33.33% Impervious Runoff Depth>2.50"
Tc=5.0 min CN=97 Runoff=0.07 cfs 0.005 af**Subcatchment2S: Existing Northeast**Runoff Area=0.575 ac 97.91% Impervious Runoff Depth>2.59"
Tc=5.0 min CN=98 Runoff=1.71 cfs 0.124 af**Reach 1R: POI#1**Inflow=1.78 cfs 0.129 af
Outflow=1.78 cfs 0.129 af**Total Runoff Area = 0.599 ac Runoff Volume = 0.129 af Average Runoff Depth = 2.59"**
4.67% Pervious = 0.028 ac 95.33% Impervious = 0.571 ac

Summary for Subcatchment 1S: Existing Northwest Subcatchment

Runoff = 0.07 cfs @ 12.07 hrs, Volume= 0.005 af, Depth> 2.50"

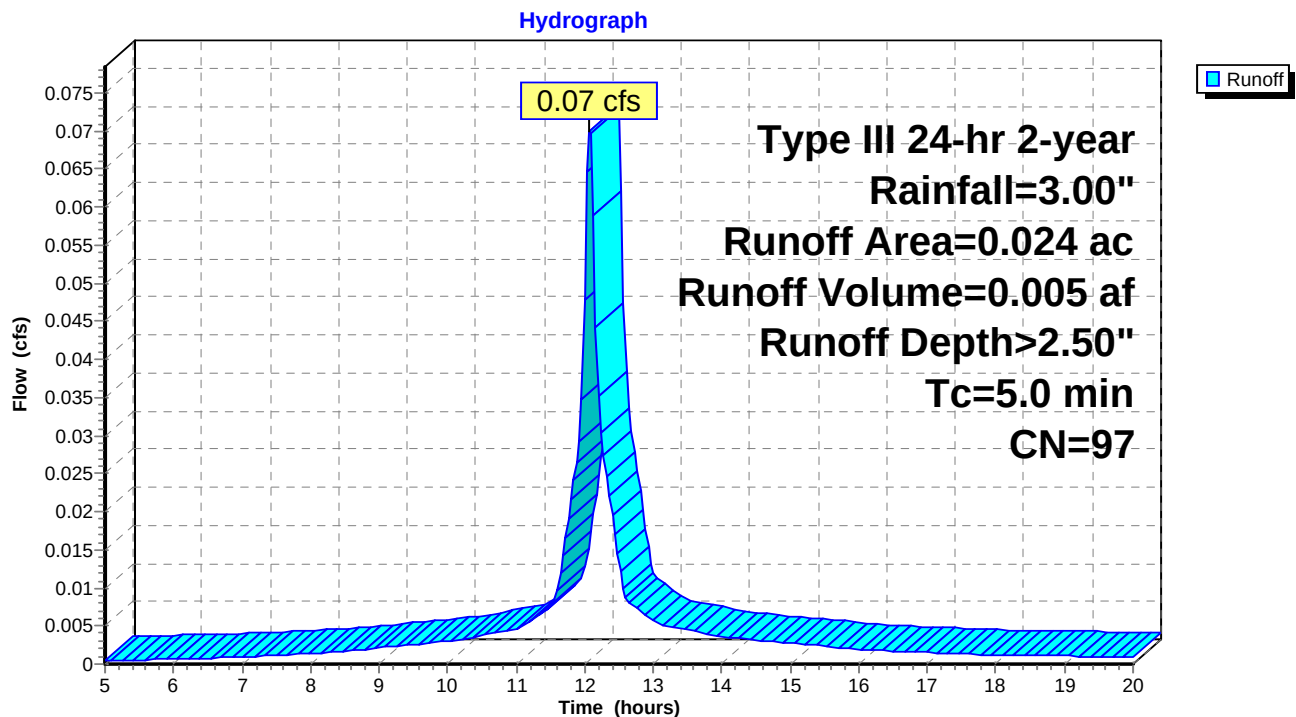
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.04 hrs

Type III 24-hr 2-year Rainfall=3.00"

Area (ac)	CN	Description
* 0.008	98	Pavement
* 0.000	98	Building
* 0.016	96	Gravel
0.024	97	Weighted Average
0.016		Pervious Area
0.008		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Minimum 5

Subcatchment 1S: Existing Northwest Subcatchment



Summary for Subcatchment 2S: Existing Northeast Subcatchment

Runoff = 1.71 cfs @ 12.07 hrs, Volume= 0.124 af, Depth> 2.59"

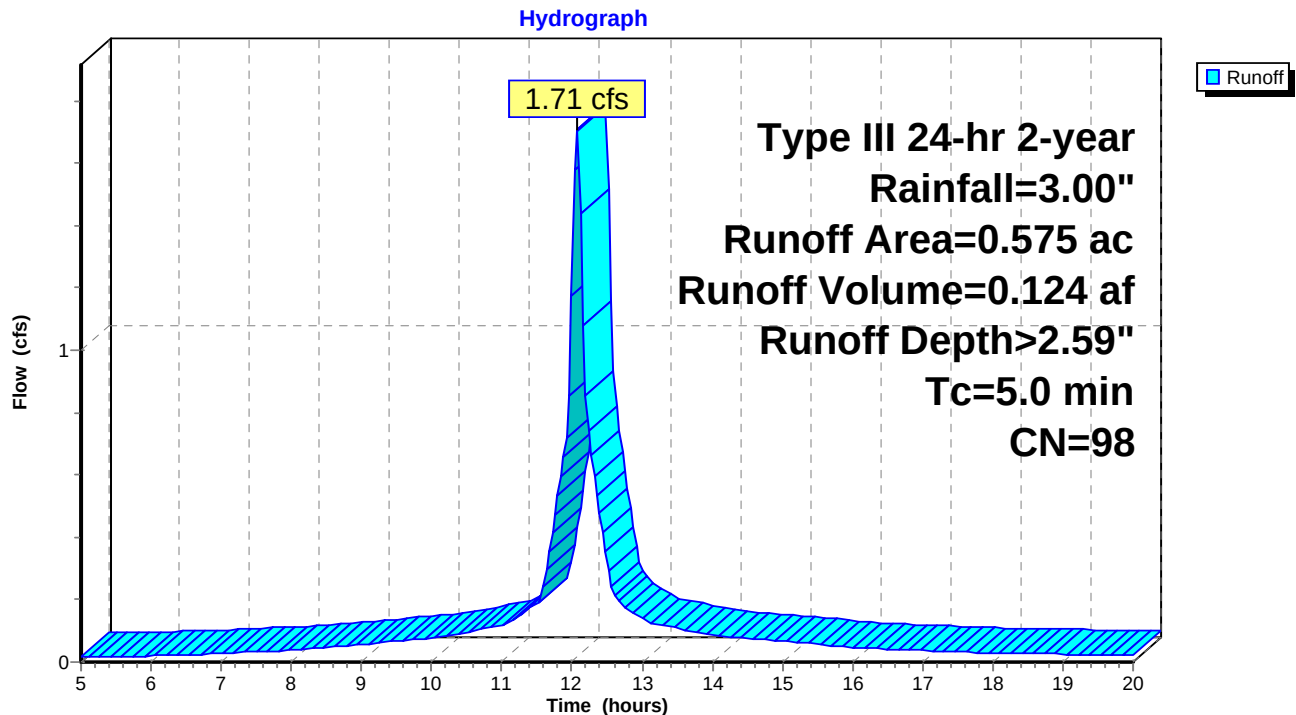
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.04 hrs

Type III 24-hr 2-year Rainfall=3.00"

Area (ac)	CN	Description
* 0.012	96	Gravel
* 0.084	98	Building
* 0.479	98	Pavement
0.575	98	Weighted Average
0.012		Pervious Area
0.563		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Minimum 5

Subcatchment 2S: Existing Northeast Subcatchment

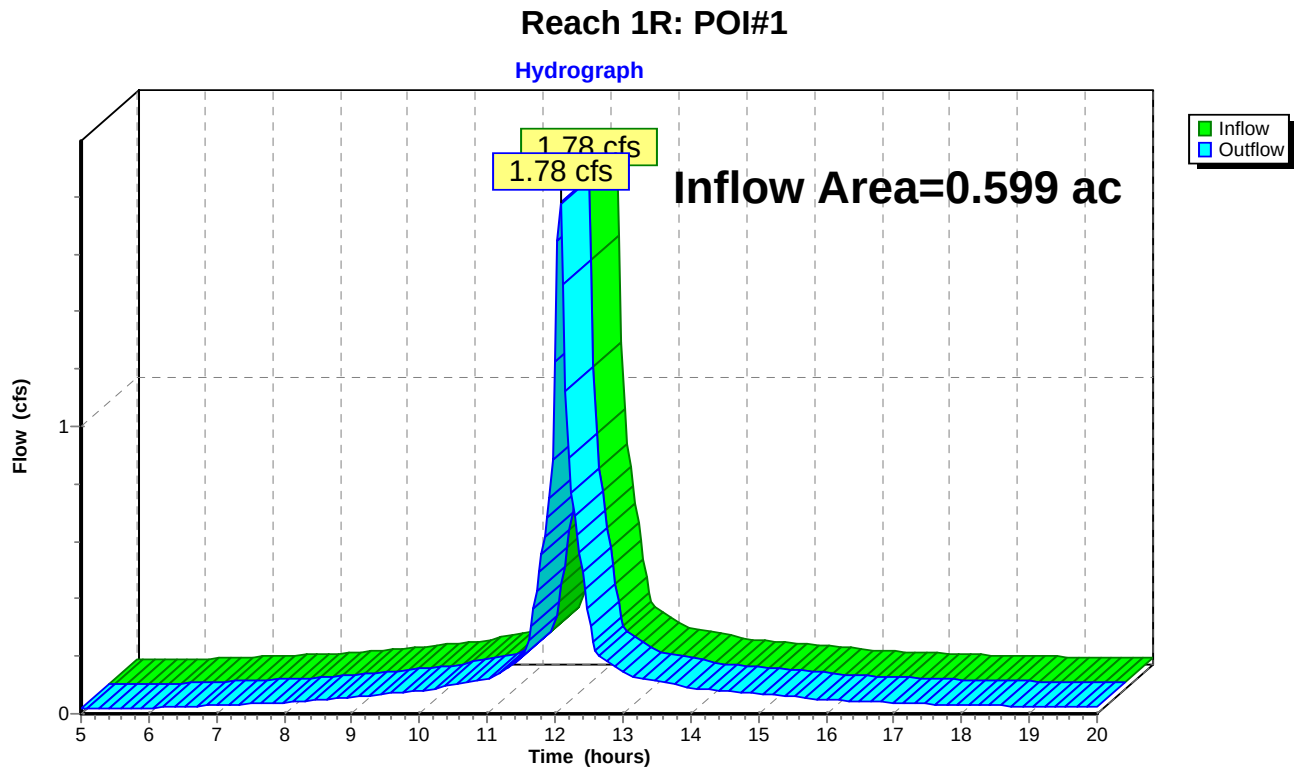


Summary for Reach 1R: POI#1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.599 ac, 95.33% Impervious, Inflow Depth > 2.59" for 2-year event
Inflow = 1.78 cfs @ 12.07 hrs, Volume= 0.129 af
Outflow = 1.78 cfs @ 12.07 hrs, Volume= 0.129 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.04 hrs



JSH Pre-Development 7-24-15*Type III 24-hr 10-year Rainfall=4.70"*

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Time span=5.00-20.00 hrs, dt=0.04 hrs, 376 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Existing NorthwestRunoff Area=0.024 ac 33.33% Impervious Runoff Depth>4.07"
Tc=5.0 min CN=97 Runoff=0.11 cfs 0.008 af**Subcatchment2S: Existing Northeast**Runoff Area=0.575 ac 97.91% Impervious Runoff Depth>4.14"
Tc=5.0 min CN=98 Runoff=2.70 cfs 0.199 af**Reach 1R: POI#1**Inflow=2.81 cfs 0.207 af
Outflow=2.81 cfs 0.207 af**Total Runoff Area = 0.599 ac Runoff Volume = 0.207 af Average Runoff Depth = 4.14"**
4.67% Pervious = 0.028 ac 95.33% Impervious = 0.571 ac

Summary for Subcatchment 1S: Existing Northwest Subcatchment

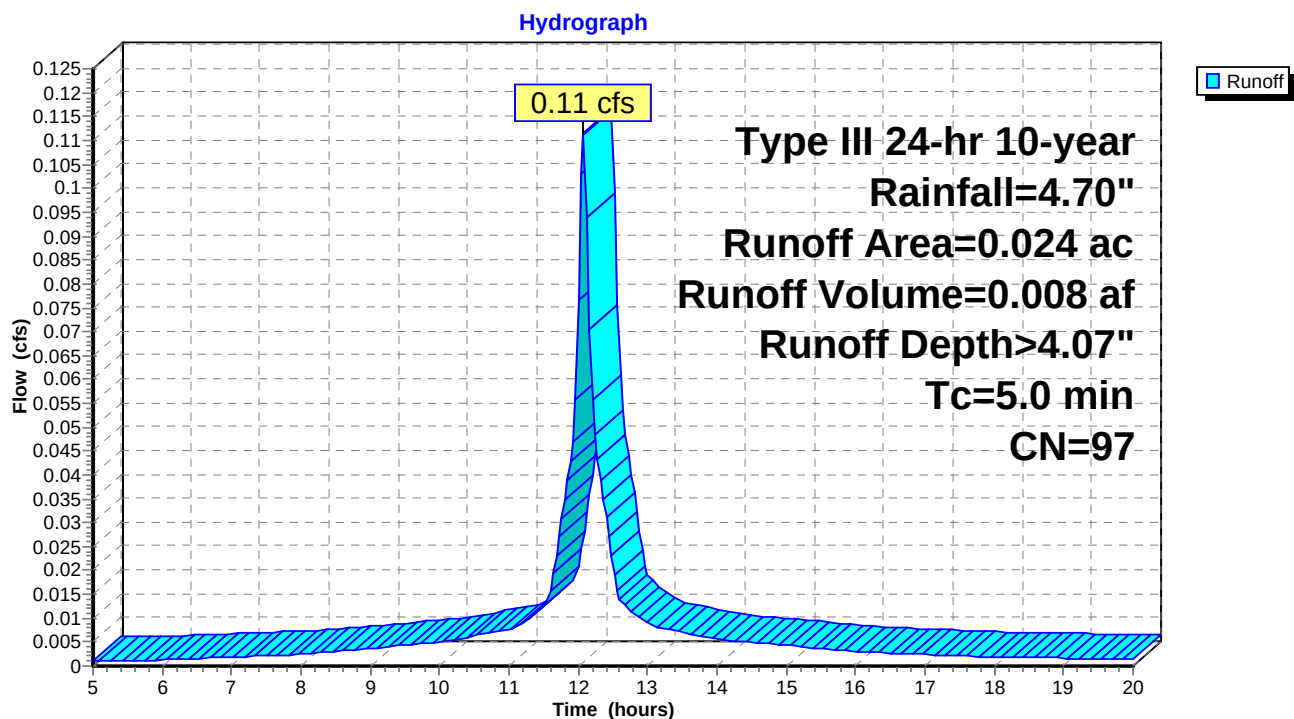
Runoff = 0.11 cfs @ 12.07 hrs, Volume= 0.008 af, Depth> 4.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.04 hrs

Type III 24-hr 10-year Rainfall=4.70"

Area (ac)	CN	Description
* 0.008	98	Pavement
* 0.000	98	Building
* 0.016	96	Gravel
0.024	97	Weighted Average
0.016		Pervious Area
0.008		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Minimum 5

Subcatchment 1S: Existing Northwest Subcatchment

Summary for Subcatchment 2S: Existing Northeast Subcatchment

Runoff = 2.70 cfs @ 12.07 hrs, Volume= 0.199 af, Depth> 4.14"

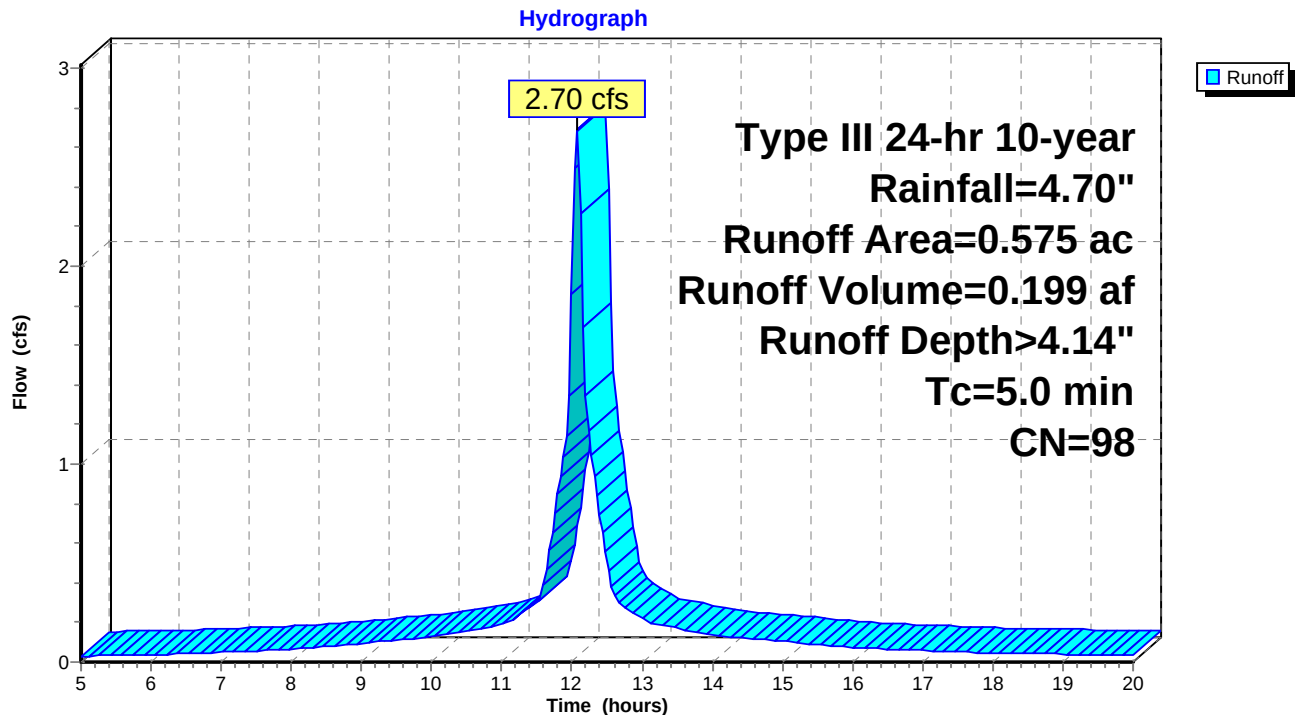
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.04 hrs

Type III 24-hr 10-year Rainfall=4.70"

Area (ac)	CN	Description
* 0.012	96	Gravel
* 0.084	98	Building
* 0.479	98	Pavement
0.575	98	Weighted Average
0.012		Pervious Area
0.563		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Minimum 5

Subcatchment 2S: Existing Northeast Subcatchment

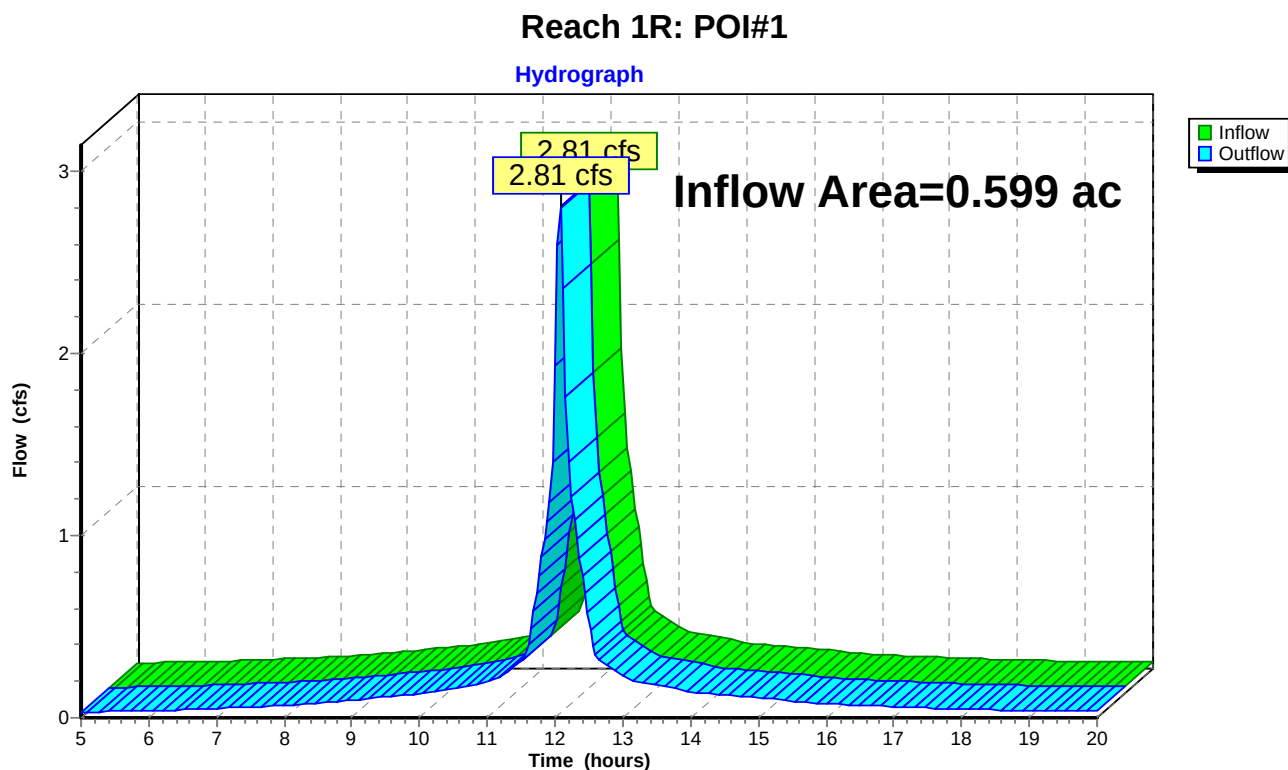


Summary for Reach 1R: POI#1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.599 ac, 95.33% Impervious, Inflow Depth > 4.14" for 10-year event
Inflow = 2.81 cfs @ 12.07 hrs, Volume= 0.207 af
Outflow = 2.81 cfs @ 12.07 hrs, Volume= 0.207 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.04 hrs



JSH Pre-Development 7-24-15*Type III 24-hr 25-year Rainfall=5.50"*

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Time span=5.00-20.00 hrs, dt=0.04 hrs, 376 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Existing NorthwestRunoff Area=0.024 ac 33.33% Impervious Runoff Depth>4.80"
Tc=5.0 min CN=97 Runoff=0.13 cfs 0.010 af**Subcatchment2S: Existing Northeast**Runoff Area=0.575 ac 97.91% Impervious Runoff Depth>4.87"
Tc=5.0 min CN=98 Runoff=3.16 cfs 0.234 af**Reach 1R: POI#1**Inflow=3.29 cfs 0.243 af
Outflow=3.29 cfs 0.243 af**Total Runoff Area = 0.599 ac Runoff Volume = 0.243 af Average Runoff Depth = 4.87"**
4.67% Pervious = 0.028 ac 95.33% Impervious = 0.571 ac

Summary for Subcatchment 1S: Existing Northwest Subcatchment

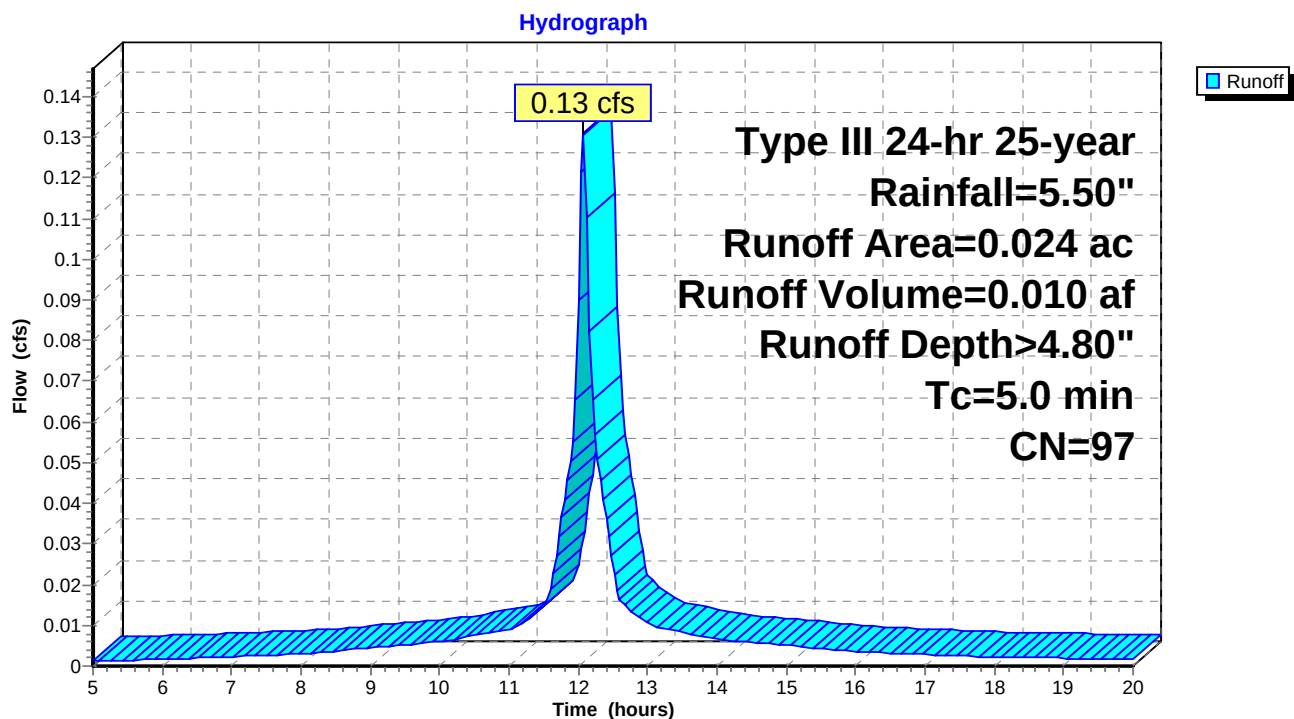
Runoff = 0.13 cfs @ 12.07 hrs, Volume= 0.010 af, Depth> 4.80"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.04 hrs

Type III 24-hr 25-year Rainfall=5.50"

Area (ac)	CN	Description
* 0.008	98	Pavement
* 0.000	98	Building
* 0.016	96	Gravel
0.024	97	Weighted Average
0.016		Pervious Area
0.008		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Minimum 5

Subcatchment 1S: Existing Northwest Subcatchment

Summary for Subcatchment 2S: Existing Northeast Subcatchment

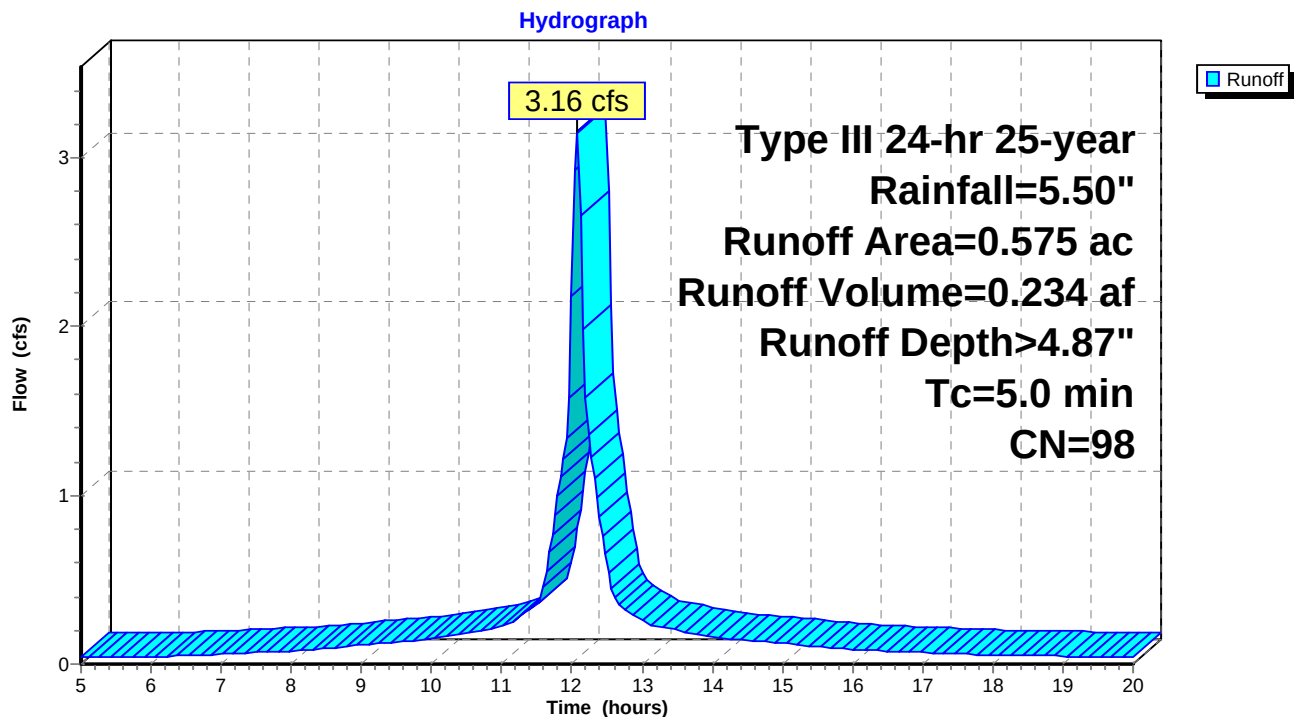
Runoff = 3.16 cfs @ 12.07 hrs, Volume= 0.234 af, Depth> 4.87"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.04 hrs

Type III 24-hr 25-year Rainfall=5.50"

Area (ac)	CN	Description
* 0.012	96	Gravel
* 0.084	98	Building
* 0.479	98	Pavement
0.575	98	Weighted Average
0.012		Pervious Area
0.563		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry, Minimum 5

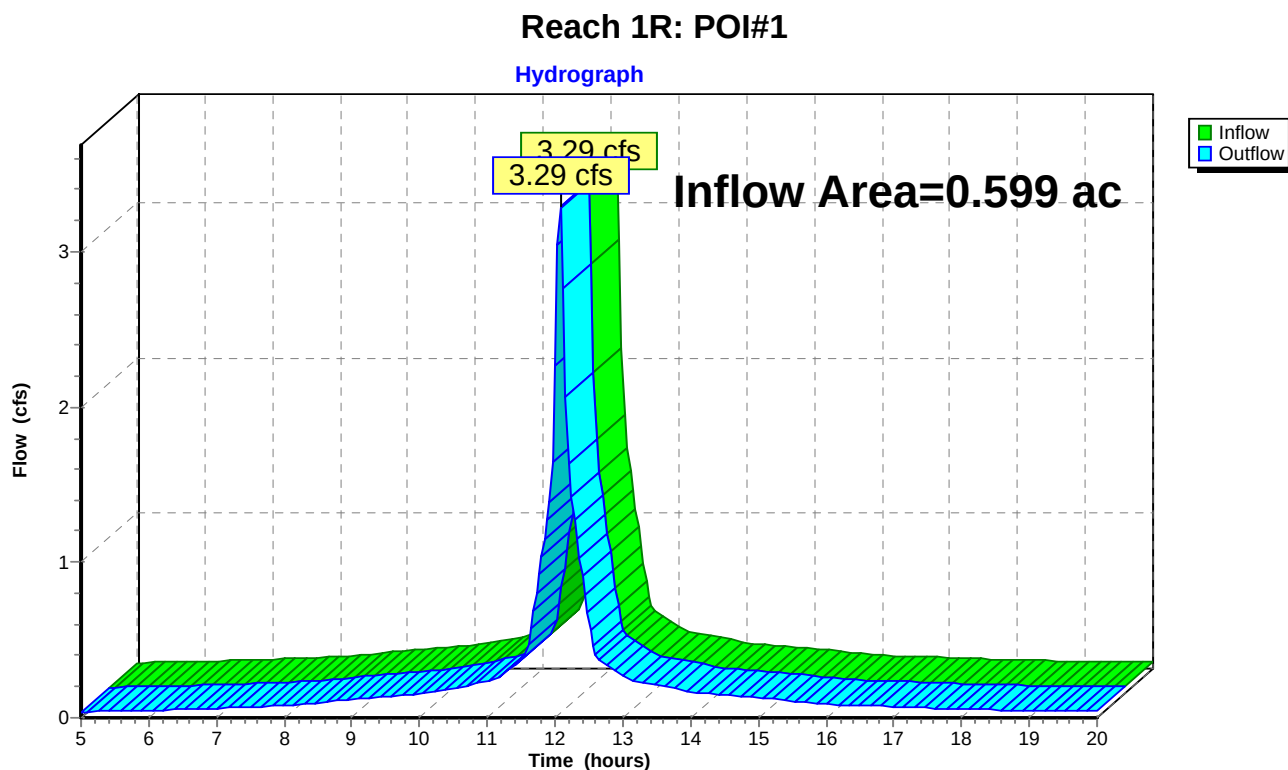
Subcatchment 2S: Existing Northeast Subcatchment

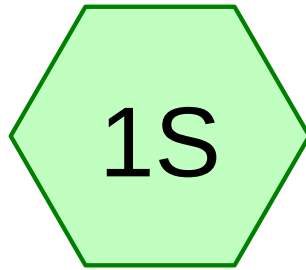
Summary for Reach 1R: POI#1

[40] Hint: Not Described (Outflow=Inflow)

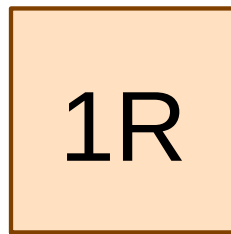
Inflow Area = 0.599 ac, 95.33% Impervious, Inflow Depth > 4.87" for 25-year event
Inflow = 3.29 cfs @ 12.07 hrs, Volume= 0.243 af
Outflow = 3.29 cfs @ 12.07 hrs, Volume= 0.243 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.04 hrs

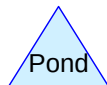
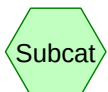




667 Congress Proposed



POI#1



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Page 2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.599	98	Building & Parking (1S)
0.599		TOTAL AREA

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Page 3

Soil Listing (all nodes)

Area (acres)	Soil Goup	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.599	Other	1S
0.599		TOTAL AREA

JSH Post-Development 7-24-15

Type III 24-hr 2-year Rainfall=3.00"

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Time span=5.00-20.00 hrs, dt=0.04 hrs, 376 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: 667 Congress Proposed Runoff Area=0.599 ac 100.00% Impervious Runoff Depth>2.59"
Tc=5.0 min CN=98 Runoff=1.78 cfs 0.129 af

Reach 1R: POI#1

Inflow=1.78 cfs 0.129 af

Outflow=1.78 cfs 0.129 af

Total Runoff Area = 0.599 ac Runoff Volume = 0.129 af Average Runoff Depth = 2.59"
0.00% Pervious = 0.000 ac 100.00% Impervious = 0.599 ac

JSH Post-Development 7-24-15

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Type III 24-hr 2-year Rainfall=3.00"

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Summary for Subcatchment 1S: 667 Congress Proposed

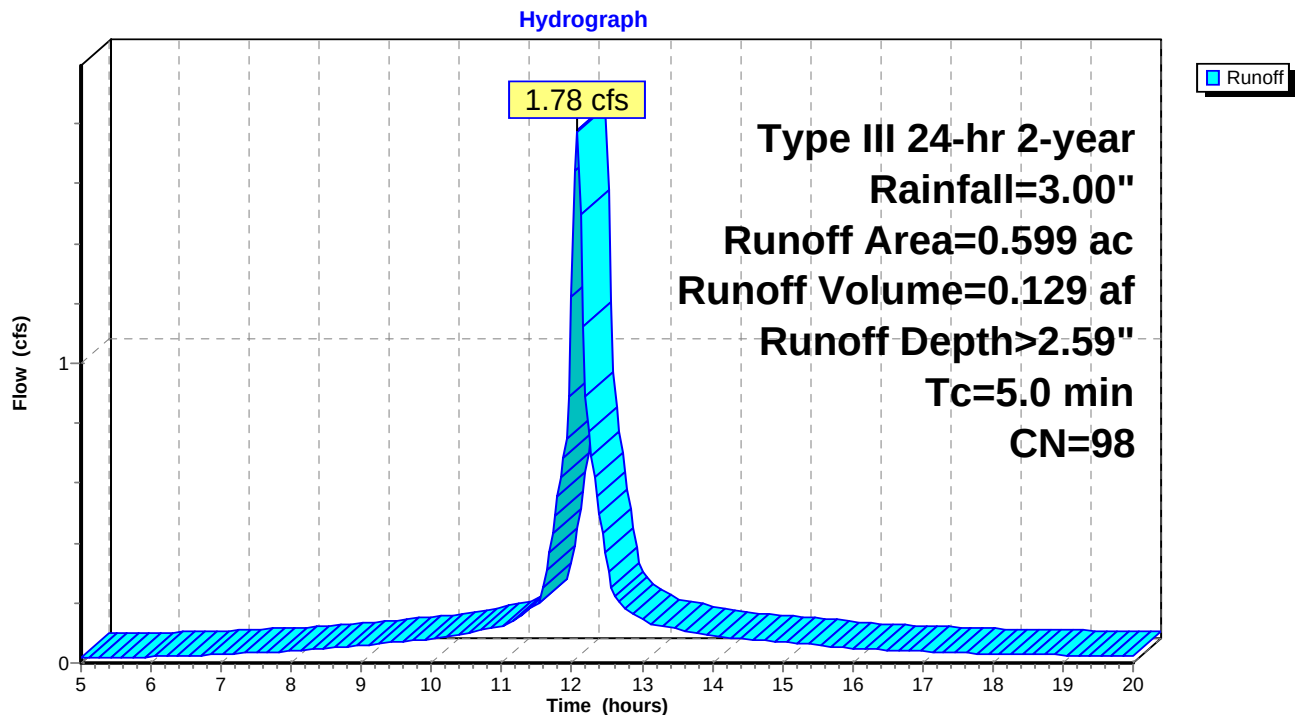
Runoff = 1.78 cfs @ 12.07 hrs, Volume= 0.129 af, Depth> 2.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.04 hrs

Type III 24-hr 2-year Rainfall=3.00"

Area (ac)	CN	Description
* 0.599	98	Building & Parking
0.599		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

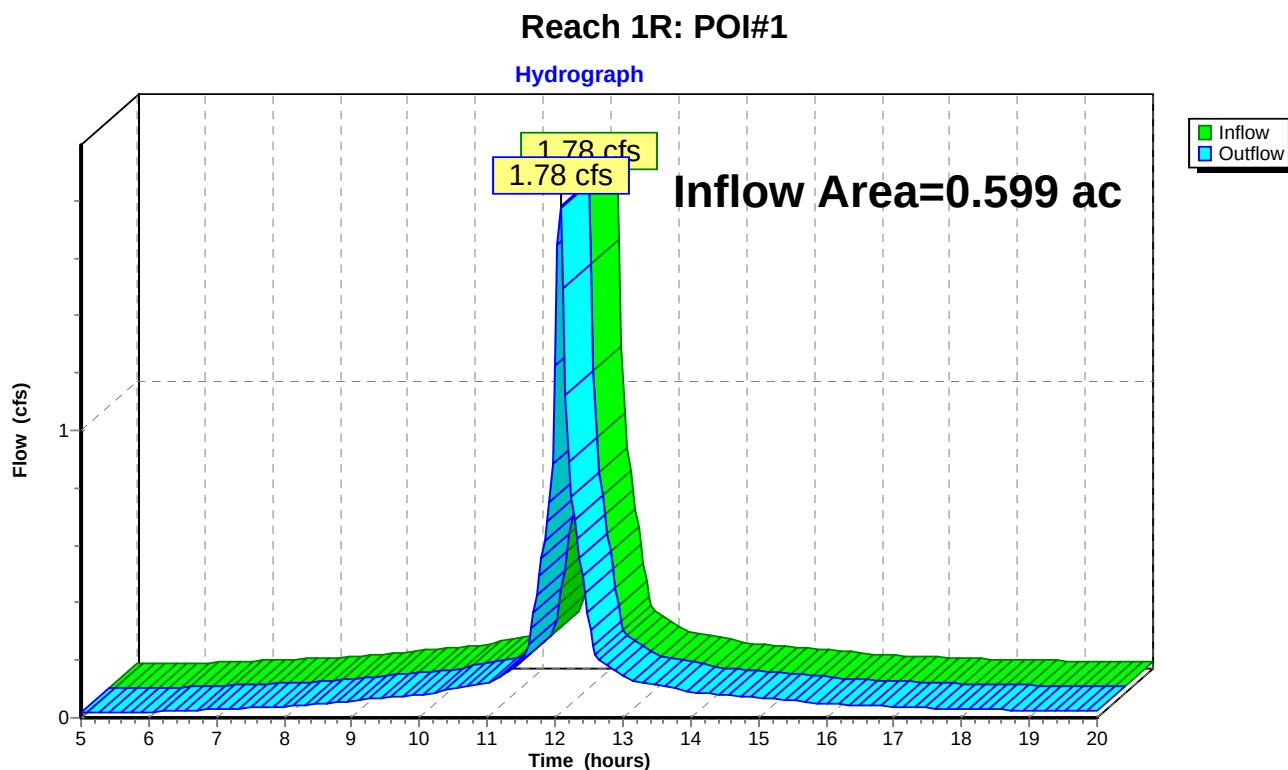
Subcatchment 1S: 667 Congress Proposed

Summary for Reach 1R: POI#1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.599 ac, 100.00% Impervious, Inflow Depth > 2.59" for 2-year event
Inflow = 1.78 cfs @ 12.07 hrs, Volume= 0.129 af
Outflow = 1.78 cfs @ 12.07 hrs, Volume= 0.129 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.04 hrs



JSH Post-Development 7-24-15

Type III 24-hr 10-year Rainfall=4.70"

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Time span=5.00-20.00 hrs, dt=0.04 hrs, 376 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: 667 Congress Proposed Runoff Area=0.599 ac 100.00% Impervious Runoff Depth>4.14"
Tc=5.0 min CN=98 Runoff=2.81 cfs 0.207 af

Reach 1R: POI#1

Inflow=2.81 cfs 0.207 af

Outflow=2.81 cfs 0.207 af

Total Runoff Area = 0.599 ac Runoff Volume = 0.207 af Average Runoff Depth = 4.14"
0.00% Pervious = 0.000 ac 100.00% Impervious = 0.599 ac

Summary for Subcatchment 1S: 667 Congress Proposed

Runoff = 2.81 cfs @ 12.07 hrs, Volume= 0.207 af, Depth> 4.14"

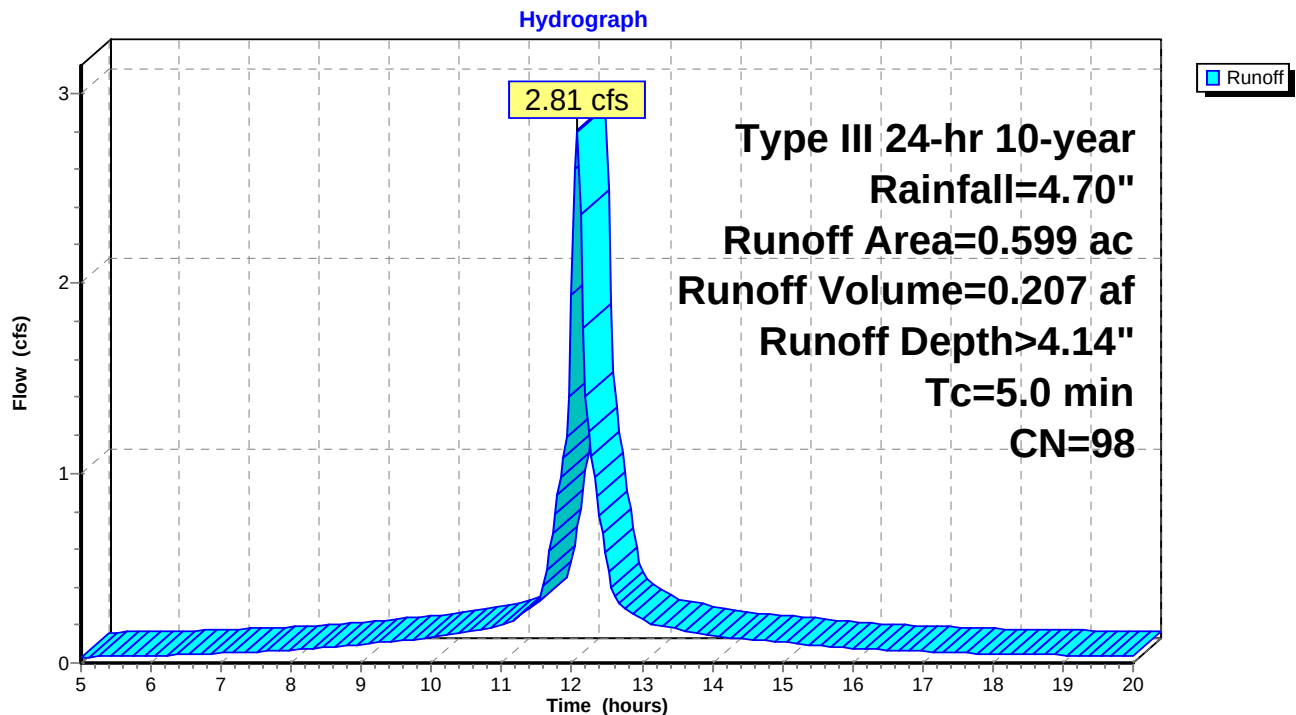
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.04 hrs

Type III 24-hr 10-year Rainfall=4.70"

Area (ac)	CN	Description
* 0.599	98	Building & Parking
0.599		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 1S: 667 Congress Proposed

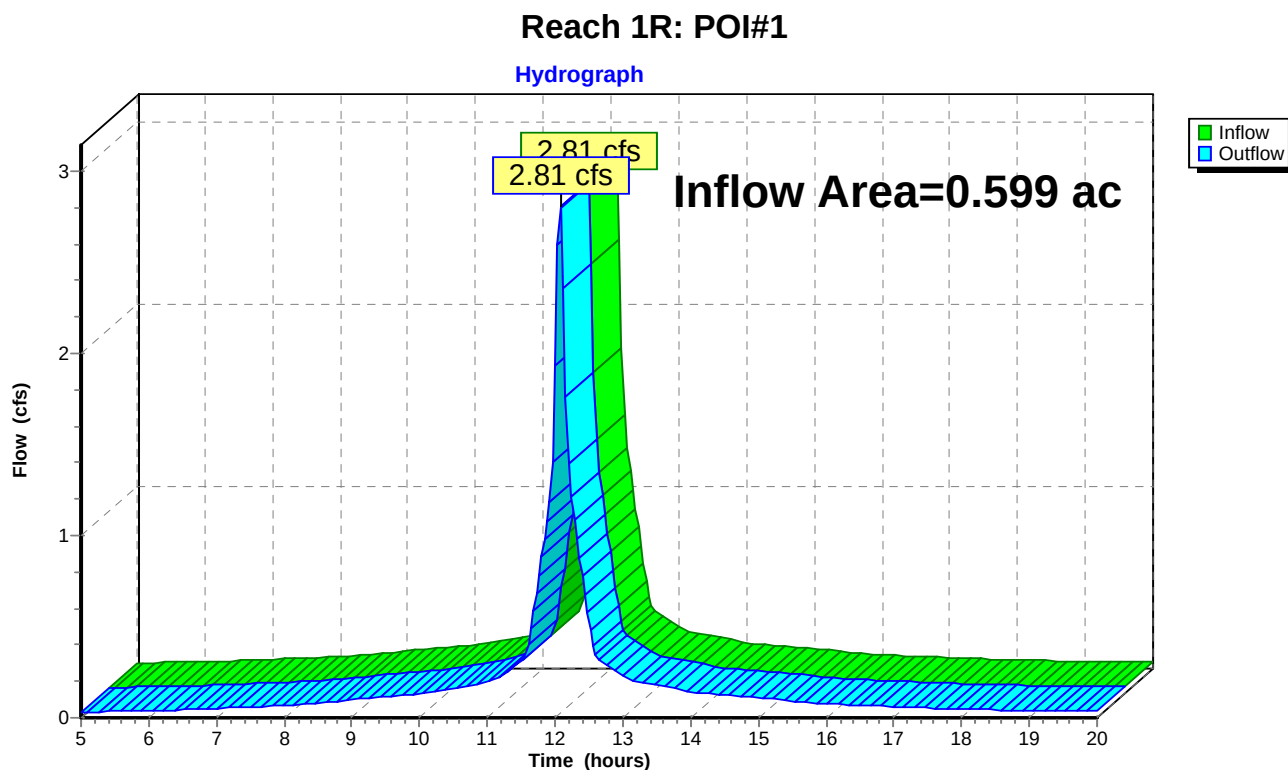


Summary for Reach 1R: POI#1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.599 ac, 100.00% Impervious, Inflow Depth > 4.14" for 10-year event
 Inflow = 2.81 cfs @ 12.07 hrs, Volume= 0.207 af
 Outflow = 2.81 cfs @ 12.07 hrs, Volume= 0.207 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.04 hrs



JSH Post-Development 7-24-15

Type III 24-hr 25-year Rainfall=5.50"

Prepared by {enter your company name here}

Printed 7/30/2015

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Page 10

Time span=5.00-20.00 hrs, dt=0.04 hrs, 376 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: 667 Congress Proposed Runoff Area=0.599 ac 100.00% Impervious Runoff Depth>4.87"
Tc=5.0 min CN=98 Runoff=3.29 cfs 0.243 af

Reach 1R: POI#1

Inflow=3.29 cfs 0.243 af

Outflow=3.29 cfs 0.243 af

Total Runoff Area = 0.599 ac Runoff Volume = 0.243 af Average Runoff Depth = 4.87"
0.00% Pervious = 0.000 ac 100.00% Impervious = 0.599 ac

Summary for Subcatchment 1S: 667 Congress Proposed

Runoff = 3.29 cfs @ 12.07 hrs, Volume= 0.243 af, Depth> 4.87"

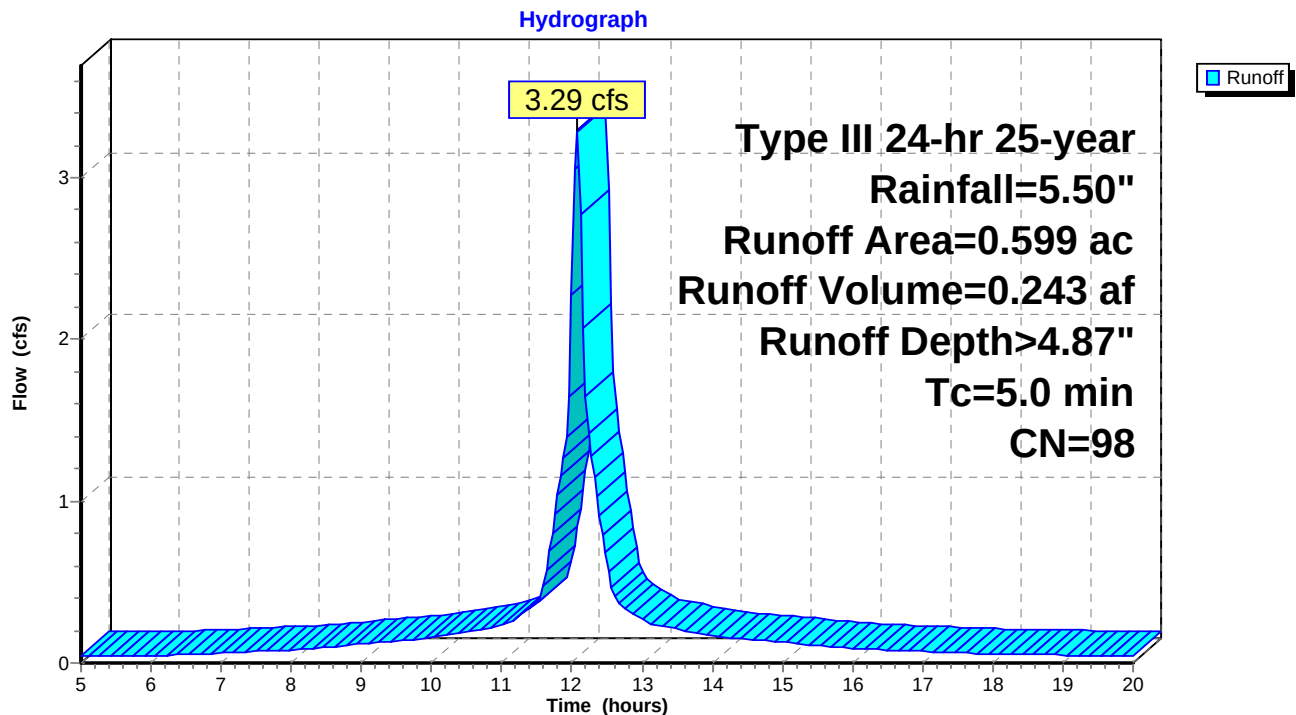
Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.04 hrs

Type III 24-hr 25-year Rainfall=5.50"

Area (ac)	CN	Description
* 0.599	98	Building & Parking
0.599		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					Direct Entry,

Subcatchment 1S: 667 Congress Proposed

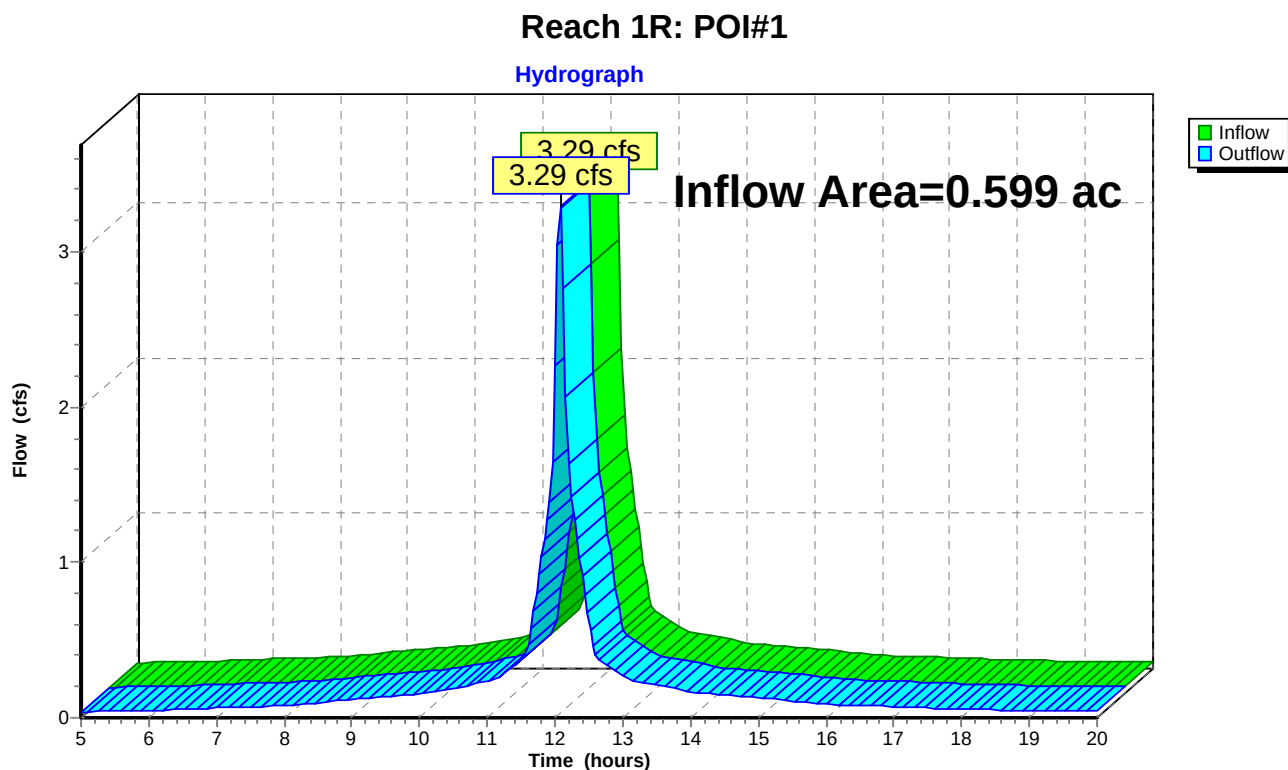


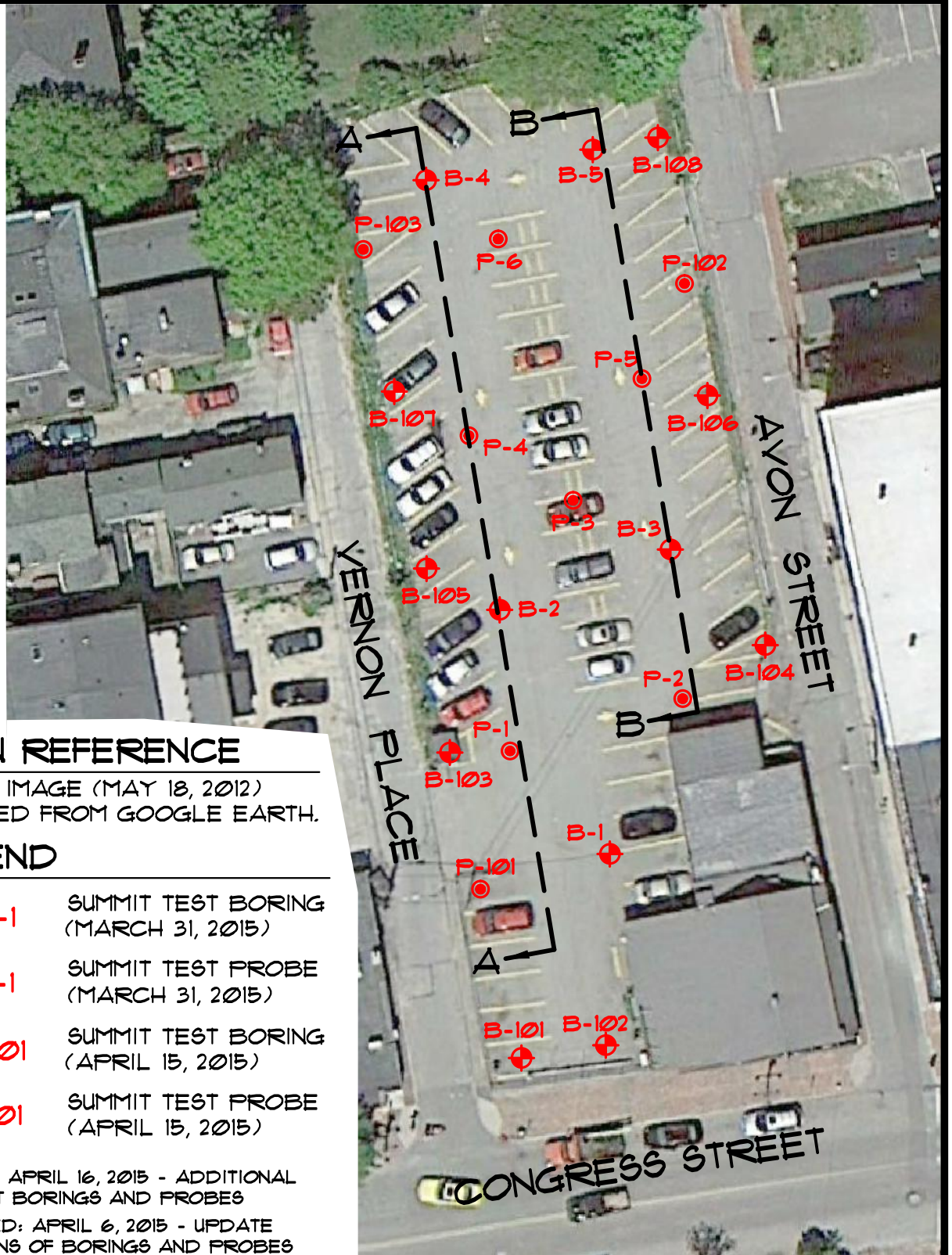
Summary for Reach 1R: POI#1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.599 ac, 100.00% Impervious, Inflow Depth > 4.87" for 25-year event
 Inflow = 3.29 cfs @ 12.07 hrs, Volume= 0.243 af
 Outflow = 3.29 cfs @ 12.07 hrs, Volume= 0.243 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.04 hrs





PLAN REFERENCE

AERIAL IMAGE (MAY 18, 2012)
OBTAINED FROM GOOGLE EARTH.

LEGEND

-  B-1 SUMMIT TEST BORING (MARCH 31, 2015)
-  P-1 SUMMIT TEST PROBE (MARCH 31, 2015)
-  B-101 SUMMIT TEST BORING (APRIL 15, 2015)
-  P-101 SUMMIT TEST PROBE (APRIL 15, 2015)

REVISED: APRIL 16, 2015 - ADDITIONAL
TEST BORINGS AND PROBES

REVISED: APRIL 6, 2015 - UPDATE
LOCATIONS OF BORINGS AND PROBES

SUBSURFACE EXPLORATION LOCATION PLAN PROPOSED BUILDING SITE

665 CONGRESS STREET - PORTLAND, MAINE

PREPARED FOR

REDFERN PROPERTIES

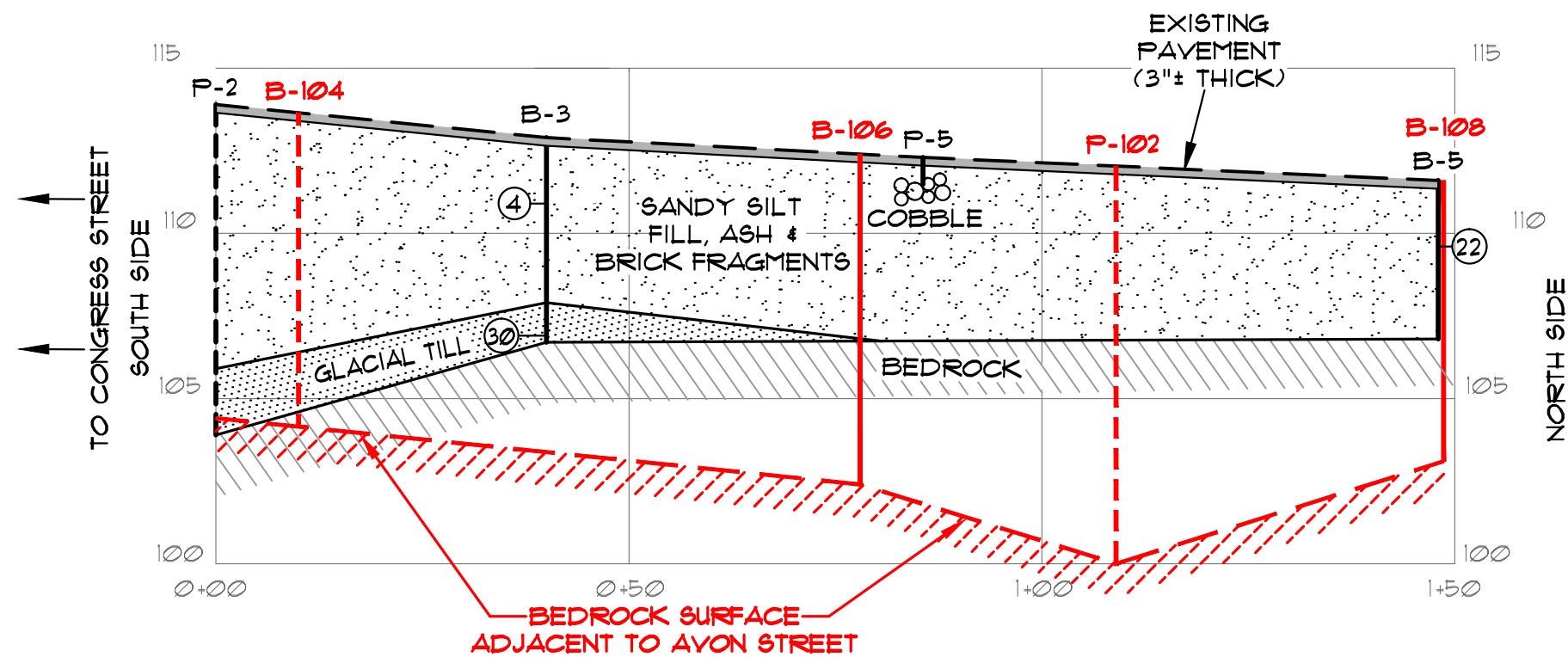
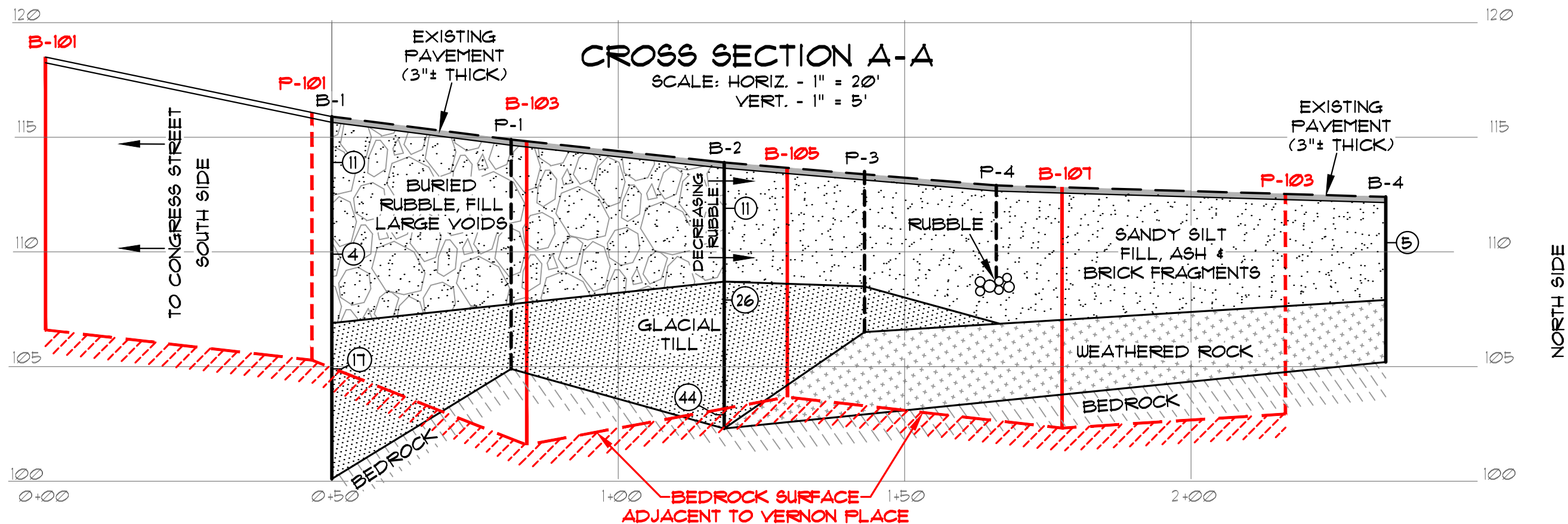
145 LISBON ST. - SUITE 601
LEWISTON, ME 04240
Tel.: (207) 576-3313

173 PLEASANT STREET
ROCKLAND, ME 04841
Tel.: (207) 318-7761

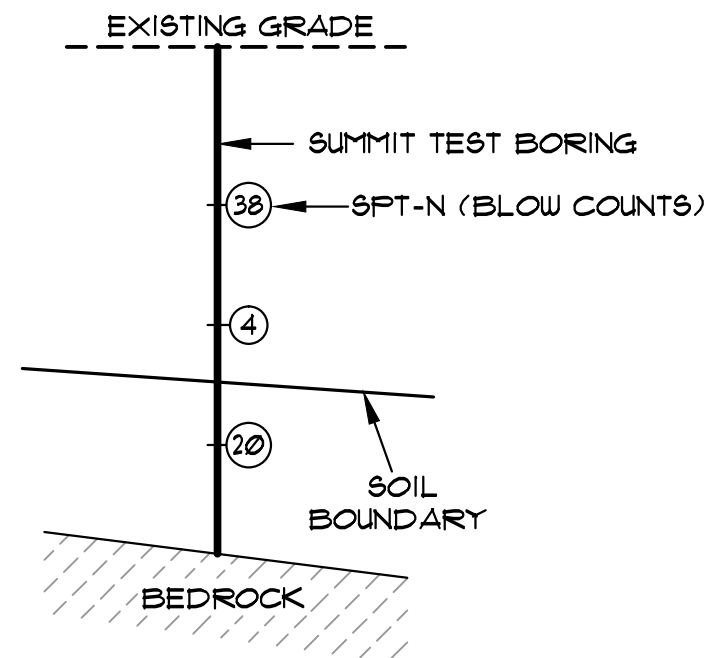
SUMMIT

GEOENGINEERING SERVICES
www.summitgeoeng.com

DATE: 4-1-2015	DRAWN BY: KRF	CHECKED BY: UMP
JOB: 15040	SCALE: 1" = 40'	FILE: 15040 BOR



LEGEND



REVISED: APRIL 20, 2015 - CORRECTED SCALE OF CROSS SECTION B-B AND ADDED RED LINES
REVISED: APRIL 6, 2015 - UPDATE LOCATIONS AND ELEVATIONS OF BORINGS AND PROBES

PROJECT: PROPOSED BUILDING SITE 665 CONGRESS STREET - PORTLAND, MAINE	CLIENT: REDFERN PROPERTIES	
	SCALE: AS NOTED DATE: APRIL 2, 2015	DRAWN BY: KRF APPR BY: WAP
TITLE: INTERPRETIVE SOIL PROFILES	173 PLEASANT STREET ROCKLAND, ME 04841 Tel: (207) 318-7161	
145 LISBON ST. - SUITE 601 LEWISTON, ME 04240 Tel: (207) 516-3313	SUMMIT GEOENGINEERING SERVICES	
PROJ.#: 15040 FIGURE: 1		



EXPLORATION COVER SHEET

The exploration logs are prepared by the geotechnical engineer from both field and laboratory data. Soil descriptions are based upon the Unified Soil Classification System (USCS) per ASTM D2487 and/or ASTM D2488 as applicable. Supplemental descriptive terms for estimated particle percentage, color, density, moisture condition, and bedrock may also be included to further describe conditions.

Drilling and Sampling Symbols:

SS = Split Spoon Sample
UT = Thin Wall Shelby Tube
SSA = Solid Stem Auger
HSA = Hollow Stem Auger
RW = Rotary Wash
SV = Shear Vane
PP = Pocket Penetrometer
RC = Rock Core Sample

Hyd = Hydraulic Advancement of Drilling Rods
Push = Direct Push of Drilling Rods
WOH = Weight of Hammer
WOR = Weight of Rod
PI = Plasticity Index
LL = Liquid Limit
W = Natural Water Content
USCS = Unified Soil Classification System

Water Level Measurements:

Water levels indicated on the boring logs are the levels measured in the boring at the times indicated. In pervious soils, the indicated elevations are considered reliable groundwater levels. In impervious soils, the accurate determination of groundwater elevations may not be possible, even after several days of observations. Groundwater monitoring wells may be required to record accurate depths and fluctuation.

Gradation Description and Terminology:

Boulders:	Over 12 inches	Trace:	Less than 5%
Cobbles:	12 inches to 3 inches	Little:	5% to 15%
Gravel:	3 inches to No.4 sieve	Some:	15% to 30%
Sand:	No.4 to No. 200 sieve	Silty, Sandy, etc.:	Greater than 30%
Silt:	No. 200 sieve to 0.005 mm		
Clay:	less than 0.005 mm		

Density of Granular Soils and Consistency of Cohesive Soils:

CONSISTENCY OF COHESIVE SOILS		DENSITY OF GRANULAR SOILS	
SPT N-value blows/ft	Consistency	SPT N-value blows/ft	Relative Density
0 to 2	Very Soft	0 to 4	Very Loose
2 to 4	Soft	5 to 10	Loose
5 to 8	Firm	11 to 30	Compact
9 to 15	Stiff	31 to 50	Dense
16 to 30	Very Stiff	>50	Very Dense
>30	Hard		

						SOIL BORING LOG			Boring #: B-1		
						Project: Proposed Apartment Building			Project #: 15040		
						Location: 665 Congress St.			Sheet: 1 of 1		
						City, State: Portland, ME			Chkd by:		
Drilling Co: Summit Geoengineering Services						Boring Elevation: 115.9'					
Driller: C. Coolidge, P.E.						Reference: Site Survey by Titcomb Associates					
Summit Staff: M. Hardison, E.I.						Date started: 3/31/2015 Date Completed: 3/31/2015					
DRILLING METHOD			SAMPLER			ESTIMATED GROUND WATER DEPTH					
Vehicle: Tracked			Length: 24" SS			Date	Depth	Elevation	Reference		
Model: AMS Power Probe			Diameter: 2"OD/1.5"ID			3/31/2015	-		None observed		
Method: 2-1/2" H.S.A.			Hammer: 140 lb								
Hammer Style: Auto			Method: ASTM D1586								
Depth (ft.)						SAMPLE DESCRIPTION			Geological/ Test Data	Geological Stratum	
	No.	Pen/Rec (in)	Depth (ft)	blows/6"	N ₆₀						
1						2" to 2.5" of Pavement				PAVEMENT	
2	S-1	24/4	1 to 3	6		Dark tan Gravelly SAND, little Silt, compact, humid, SP-SM				0.2' FILL	
3				*		* Spoon sampler skewed horizontally, unable to collect blow counts. Likely due to encountered rubble				2.0'	
4						Auger advancement produced no cuttings, likely rubble fill with large voids					
5	S-2	24/3	5 to 7	WH		Light gray Sandy GRAVEL, cobble pieces, little white Ash trace Silt, very loose, humid, GP					
6				1							
7				3							
8				1							
9											
10	S-3	24/20	10 to 12	6		Olive green SILT, little Clay and Sand, trace Gravel, compact, humid, ML			PP = 8,000 to 9,000 psf	9.0' GLACIAL TILL	
11				8							
12				9							
13				12							
14											
15	S-4	24/9	15 to 17	6		Same as above, slightly mottled					
16				50/3"							
17						End of Exploration at 15.8', Auger and Spoon refusal				15.8' BEDROCK	
18											
19											
20											
21											
22											
23											
24											
25											
26											
27											
Granular Soils		Cohesive Soils		% Composition ASTM D2487		NOTES: PP = Pocket Penetrometer, MC = Moisture Content LL = Liquid Limit, PI = Plastic Index <u>Bedrock Joints</u> Shallow = 0 to 35 degrees Dipping = 35 to 55 degrees Steep = 55 to 90 degrees Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200				Soil Moisture Condition	
Blows/ft.	Density	Blows/ft.	Consistency							Dry: S = 0% Humid: S = 1 to 25% Damp: S = 26 to 50% Moist: S = 51 to 75% Wet: S = 76 to 99% Saturated: S = 100%	
0-4	V. Loose	<2	V. soft	< 5% Trace 5-15% Little 15-30% Some > 30% With							
5-10	Loose	2-4	Soft								
11-30	Compact	5-8	Firm								
31-50	Dense	9-15	Stiff								
>50	V. Dense	16-30	V. Stiff								
		>30	Hard								

						SOIL BORING LOG			Boring #: B-2		
						Project: Proposed Apartment Building			Project #: 15040		
						Location: 665 Congress St.			Sheet: 1 of 1		
						City, State: Portland, ME			Chkd by:		
Drilling Co: Summit Geoengineering Services						Boring Elevation: 114 ft					
Driller: C. Coolidge, P.E.						Reference: Site Survey by Titcomb Associates					
Summit Staff: M. Hardison, E.I.						Date started: 3/31/2015 Date Completed: 3/31/2015					
DRILLING METHOD			SAMPLER			ESTIMATED GROUND WATER DEPTH					
Vehicle: Tracked			Length: 24" SS			Date	Depth	Elevation	Reference		
Model: AMS Power Probe			Diameter: 2"OD/1.5"ID			3/31/2015	-		None observed		
Method: 2-1/2" H.S.A.			Hammer: 140 lb								
Hammer Style: Auto			Method: ASTM D1586								
Depth (ft.)						SAMPLE DESCRIPTION			Geological/ Test Data	Geological Stratum	
	No.	Pen/Rec (in)	Depth (ft)	blows/6"	N ₆₀						
1						2" to 2.5" of Pavement				PAVEMENT	
2	S-1	24/20	1 to 3	3		Dark brown Gravelly SAND, little Silt and black/white Ash, loose to compact, frozen, SP-SM				0.2' FILL	
3				6							
4				5							
5				3							
6	S-2	24/22	5 to 7	10		Same as above				5.2' GLACIAL TILL	
7				13		Olive green slightly mottled SILT, little Sand, trace Clay and Gravel, compact, damp, ML					
8				13							
9				14							
10	S-3	24/16	10 to 12	8		Same as above, heavily mottled seam at 10.8', dense			PP = 4,000 to 7,000 psf		
11				12		End of Exploration at 11.6', Spoon refusal					
12				32							
13				50/1"							
14										11.6' BEDROCK	
15											
16											
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											
27											
Granular Soils		Cohesive Soils		% Composition ASTM D2487		NOTES: PP = Pocket Penetrometer, MC = Moisture Content LL = Liquid Limit, PI = Plastic Index <u>Bedrock Joints</u> Shallow = 0 to 35 degrees Dipping = 35 to 55 degrees Steep = 55 to 90 degrees Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200				Soil Moisture Condition Dry: S = 0% Humid: S = 1 to 25% Damp: S = 26 to 50% Moist: S = 51 to 75% Wet: S = 76 to 99% Saturated: S = 100%	
Blows/ft.	Density	Blows/ft.	Consistency								
0-4	V. Loose	<2	V. soft	< 5% Trace 5-15% Little 15-30% Some > 30% With							
5-10	Loose	2-4	Soft								
11-30	Compact	5-8	Firm								
31-50	Dense	9-15	Stiff								
>50	V. Dense	16-30	V. Stiff								
		>30	Hard								

						SOIL BORING LOG			Boring #: B-3		
						Project: Proposed Apartment Building			Project #: 15040		
						Location: 665 Congress St.			Sheet: 1 of 1		
						City, State: Portland, ME			Chkd by:		
Drilling Co: Summit Geoengineering Services						Boring Elevation: 112.9 ft					
Driller: C. Coolidge, P.E.						Reference: Site Survey by Titcomb Associates					
Summit Staff: M. Hardison, E.I.						Date started: 3/31/2015 Date Completed: 3/31/2015					
DRILLING METHOD			SAMPLER			ESTIMATED GROUND WATER DEPTH					
Vehicle: Tracked			Length: 24" SS			Date	Depth	Elevation	Reference		
Model: AMS Power Probe			Diameter: 2"OD/1.5"ID			3/31/2015	-		None observed		
Method: 2-1/2" H.S.A.			Hammer: 140 lb								
Hammer Style: Auto			Method: ASTM D1586								
Depth (ft.)						SAMPLE DESCRIPTION			Geological/ Test Data	Geological Stratum	
	No.	Pen/Rec (in)	Depth (ft)	blows/6"	N ₆₀						
1						3" to 3.5" of Pavement				PAVEMENT	
2	S-1	24/12	1 to 3	4		Dark brown SILT, large brick fragment in spoon, small brick fragment in spoon tip, loose, humid, ML * blow count due to brick fragment				0.3' FILL	
3				11*							
4				4							
5				2							
6	S-2	24/12	5 to 7	12		Olive green SILT, little Sand, trace Clay and Gravel, compact, humid, ML			PP = 5,000 psf	5' +/- GLACIAL TILL	
7				18		End of Exploration at 6.2', Spoon and Auger refusal				6.2' BEDROCK	
8				50/3"							
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											
27											
Granular Soils		Cohesive Soils		% Composition ASTM D2487		NOTES: PP = Pocket Penetrometer, MC = Moisture Content LL = Liquid Limit, PI = Plastic Index <u>Bedrock Joints</u> Shallow = 0 to 35 degrees Dipping = 35 to 55 degrees Steep = 55 to 90 degrees Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches Gravel = < 3 inch and > No 4, Sand = < No 4 and > No 200, Silt/Clay = < No 200				Soil Moisture Condition Dry: S = 0% Humid: S = 1 to 25% Damp: S = 26 to 50% Moist: S = 51 to 75% Wet: S = 76 to 99% Saturated: S = 100%	
Blows/ft.	Density	Blows/ft.	Consistency								
0-4	V. Loose	<2	V. soft	< 5% Trace 5-15% Little 15-30% Some > 30% With							
5-10	Loose	2-4	Soft								
11-30	Compact	5-8	Firm								
31-50	Dense	9-15	Stiff								
>50	V. Dense	16-30	V. Stiff								
		>30	Hard								

						SOIL BORING LOG			Boring #: B-4		
						Project: Proposed Apartment Building			Project #: 15040		
						Location: 665 Congress St.			Sheet: 1 of 1		
						City, State: Portland, ME			Chkd by:		
Drilling Co: Summit Geoengineering Services						Boring Elevation: 112.5 ft					
Driller: C. Coolidge, P.E.						Reference: Site Survey by Titcomb Associates					
Summit Staff: M. Hardison, E.I.						Date started: 3/31/2015 Date Completed: 3/31/2015					
DRILLING METHOD			SAMPLER			ESTIMATED GROUND WATER DEPTH					
Vehicle: Tracked			Length: 24" SS			Date	Depth	Elevation	Reference		
Model: AMS Power Probe			Diameter: 2"OD/1.5"ID			3/31/2015	-		None observed		
Method: 2-1/2" H.S.A.			Hammer: 140 lb								
Hammer Style: Auto			Method: ASTM D1586								
Depth (ft.)						SAMPLE DESCRIPTION			Geological/ Test Data	Geological Stratum	
	No.	Pen/Rec (in)	Depth (ft)	blows/6"	N ₆₀						
1						2.5" of Pavement				PAVEMENT	
2	S-1	24/10	1 to 3	2		Brown Sandy SILT, little fine Gravel and black Ash, loose, humid, ML				0.2' FILL	
3				2							
4				3							
5	S-2	24/2	4.5 to 6.5	50/5"		Auger cuttings show increasing ash content with depth and some brick fragments					
6						Weathered rock fragments in spoon tip					
7						Augered through weathered rock to competent refusal				4.5' WEATHERED ROCK	
8						End of Exploration at 7.2', Auger refusal				7.2' BEDROCK	
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											
27											
Granular Soils		Cohesive Soils		% Composition ASTM D2487		NOTES: PP = Pocket Penetrometer, MC = Moisture Content LL = Liquid Limit, PI = Plastic Index <u>Bedrock Joints</u> Shallow = 0 to 35 degrees Dipping = 35 to 55 degrees Steep = 55 to 90 degrees Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200				Soil Moisture Condition Dry: S = 0% Humid: S = 1 to 25% Damp: S = 26 to 50% Moist: S = 51 to 75% Wet: S = 76 to 99% Saturated: S = 100%	
Blows/ft.	Density	Blows/ft.	Consistency								
0-4	V. Loose	<2	V. soft	< 5% Trace 5-15% Little 15-30% Some > 30% With							
5-10	Loose	2-4	Soft								
11-30	Compact	5-8	Firm								
31-50	Dense	9-15	Stiff								
>50	V. Dense	16-30 >30	V. Stiff Hard								

						SOIL BORING LOG			Boring #: B-5				
						Project: Proposed Apartment Building			Project #: 15040				
						Location: 665 Congress St.			Sheet: 1 of 1				
						City, State: Portland, ME			Chkd by:				
Drilling Co: Summit Geoengineering Services						Boring Elevation: 112.5 ft							
Driller: C. Coolidge, P.E.						Reference: Site Survey by Titcomb Associates							
Summit Staff: M. Hardison, E.I.						Date started: 3/31/2015 Date Completed: 3/31/2015							
DRILLING METHOD			SAMPLER			ESTIMATED GROUND WATER DEPTH							
Vehicle: Tracked			Length: 24" SS			Date		Depth		Elevation		Reference	
Model: AMS Power Probe			Diameter: 2"OD/1.5"ID			3/31/2015		-				None observed	
Method: 2-1/2" H.S.A.			Hammer: 140 lb										
Hammer Style: Auto			Method: ASTM D1586										
Depth (ft.)						SAMPLE DESCRIPTION				Geological/ Test Data		Geological Stratum	
	No.	Pen/Rec (in)	Depth (ft)	blows/6"	N ₆₀								
1						2.5" of Pavement					PAVEMENT		
2	S-1	24/8	1 to 3	15		Dark brown to black Sandy SILT, little Gravel and black and white Ash, ML					0.2' FILL		
3				6									
4				2									
5	S-2	24/1	4.8 to 6.8	50/3"		Dense drilling at 4.8' Rock in spoon tip					4.8' BEDROCK		
6						End of Exploration at 4.8', Spoon and Auger refusal							
7													
8													
9													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													
21													
22													
23													
24													
25													
26													
27													
Granular Soils		Cohesive Soils		% Composition ASTM D2487		NOTES: PP = Pocket Penetrometer, MC = Moisture Content LL = Liquid Limit, PI = Plastic Index <u>Bedrock Joints</u> Shallow = 0 to 35 degrees Dipping = 35 to 55 degrees Steep = 55 to 90 degrees Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200						Soil Moisture Condition Dry: S = 0% Humid: S = 1 to 25% Damp: S = 26 to 50% Moist: S = 51 to 75% Wet: S = 76 to 99% Saturated: S = 100%	
Blows/ft.	Density	Blows/ft.	Consistency										
0-4	V. Loose	<2	V. soft	< 5% Trace 5-15% Little 15-30% Some > 30% With									
5-10	Loose	2-4	Soft										
11-30	Compact	5-8	Firm										
31-50	Dense	9-15	Stiff										
>50	V. Dense	16-30	V. Stiff										
		>30	Hard										

						SOIL BORING LOG			Boring #: B-101	
						Project: Proposed Apartment Building			Project #: 15040	
						Location: 665 Congress St.			Sheet: 1 of 1	
						City, State: Portland, ME			Chkd by:	
Drilling Co: Great Works Test Boring						Boring Elevation: 118.5 ft				
Driller: Jeff Lee						Reference: Site Survey by Titcomb Associates				
Summit Staff: M. Hardison, E.I.						Date started: 4/15/2015 Date Completed: 4/15/2015				
DRILLING METHOD			SAMPLER			ESTIMATED GROUND WATER DEPTH				
Vehicle: Tracked			Length: 24" SS			Date	Depth	Elevation	Reference	
Model: Mobile B-53			Diameter: 2"OD/1.5"ID			4/15/2015	-		None observed	
Method: 4" Solid Stem Auger			Hammer: 140 lb							
Hammer Style: R&C			Method: ASTM D1586							
Depth (ft.)						SAMPLE DESCRIPTION			Geological/ Test Data	Geological Stratum
	No.	Pen/Rec (in)	Depth (ft)	blows/6"	N ₆₀					
1	S-1	24/4	0.5 to 2.5	4		3" Pavement Brown Silty SAND, loose, humid, SM				0.25' FILL
2				3						
3				3						
4										
5						Possible rubble encountered at 4' during drilling				
6										
7										
8										
9						Brown Silty SAND, trace Gravel, compact humid, SM				
10										
11										
12										
13	S-2	24/4	5 to 7	7		Brown Silty SAND, trace Gravel, compact humid, SM				
14				7						
15				7						
16				7						
17						Dark olive green SILT, little Sand and Gravel, trace Clay, dense/very stiff, slightly mottled, humid, ML			PP = *1,000 to *3,000 psf	10.0' +/- GLACIAL TILL
18										
19										
20										
21	S-3	24/12	10 to 12	4		Dark olive green SILT, little Sand and Gravel, trace Clay, dense/very stiff, slightly mottled, humid, ML				
22				8						
23				30						
24				50/5						
25						* = Specimen failed via tension crack, low clay content End of Exploration at 11.9', Auger and Spoon refusal				11.9' BEDROCK
26										
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						SOIL BORING LOG			Boring #: B-102		
						Project: Proposed Apartment Building			Project #: 15040		
						Location: 665 Congress St.			Sheet: 1 of 1		
						City, State: Portland, ME			Chkd by:		
Drilling Co: Great Works Test Boring						Boring Elevation: 118.7 ft					
Driller: Jeff Lee						Reference: Site Survey by Titcomb Associates					
Summit Staff: M. Hardison, E.I.						Date started: 4/15/2015 Date Completed: 4/15/2015					
DRILLING METHOD			SAMPLER			ESTIMATED GROUND WATER DEPTH					
Vehicle: Tracked			Length: 24" SS			Date	Depth	Elevation	Reference		
Model: Mobile B-53			Diameter: 2"OD/1.5"ID			4/15/2015	-		None observed		
Method: 4" Solid Stem Auger			Hammer: 140 lb								
Hammer Style: R&C			Method: ASTM D1586								
Depth (ft.)						SAMPLE DESCRIPTION			Geological/ Test Data	Geological Stratum	
	No.	Pen/Rec (in)	Depth (ft)	blows/6"	N ₆₀						
1	S-1	24/4	0.5 to 2.5	4		3" Pavement Dark brown Silty SAND, little Gravel, Gravel pieces in spoon tip, loose, dry, SM			0.25'	PAVEMENT	
2				5							
3				3							
4						Rubble fill, large voids apparent from open hole inspection Auger encountered refusal at 4.9' during drilling. Moved over 1' and attempted to drill past, refusal encountered in second hole at 3.2' End of Exploration at 4.9', Auger refusal on rubble			4.9'		
5											
6											
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27											
Granular Soils		Cohesive Soils		% Composition ASTM D2487		NOTES: PP = Pocket Penetrometer, MC = Moisture Content LL = Liquid Limit, PI = Plastic Index <u>Bedrock Joints</u> Shallow = 0 to 35 degrees Dipping = 35 to 55 degrees Steep = 55 to 90 degrees Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200				Soil Moisture Condition	
Blows/ft.	Density	Blows/ft.	Consistency								
0-4	V. Loose	<2	V. soft	< 5% Trace 5-15% Little 15-30% Some > 30% With						Dry: S = 0% Humid: S = 1 to 25% Damp: S = 26 to 50% Moist: S = 51 to 75% Wet: S = 76 to 99% Saturated: S = 100%	
5-10	Loose	2-4	Soft								
11-30	Compact	5-8	Firm								
31-50	Dense	9-15	Stiff								
>50	V. Dense	16-30	V. Stiff								
		>30	Hard								

						SOIL BORING LOG			Boring #: B-103		
						Project: Proposed Apartment Building			Project #: 15040		
						Location: 665 Congress St.			Sheet: 1 of 1		
						City, State: Portland, ME			Chkd by:		
Drilling Co: Great Works Test Boring						Boring Elevation: 115.0 ft					
Driller: Jeff Lee						Reference: Site Survey by Titcomb Associates					
Summit Staff: M. Hardison, E.I.						Date started: 4/15/2015 Date Completed: 4/15/2015					
DRILLING METHOD			SAMPLER			ESTIMATED GROUND WATER DEPTH					
Vehicle: Tracked			Length: 24" SS			Date	Depth	Elevation	Reference		
Model: Mobile B-53			Diameter: 2"OD/1.5"ID			4/15/2015	-		None observed		
Method: 4" Solid Stem Auger			Hammer: 140 lb								
Hammer Style: R&C			Method: ASTM D1586								
Depth (ft.)						SAMPLE DESCRIPTION			Geological/ Test Data	Geological Stratum	
	No.	Pen/Rec (in)	Depth (ft)	blows/6"	N ₆₀						
1	S-1	24/8	0.5 to 2.5	4		3" Pavement Brown to dark brown SAND, trace silt, large brick fragment in top 4" of sample, brick fragment in spoon tip, loose, humid, SP				0.25' FILL	
2				6							
3				7							
4				9							
5											
6	S-2	24/6	5 to 7	5		same as above, no brick fragment, some white Ash					
7				7							
8				15							
9				15							
10											
11	S-3	24/20	10 to 12	14		Olive green SILT, little Gravel, Sand, and Clay, cobble pieces fro 10.5 to 11.0', humid, dense/hard, ML			PP = 6,000 to > 9,000 psf	9.0' +/- GLACIAL TILL	
12				24							
13				20							
14				20							
15											
16						End of Exploration at 14.5', Auger refusal				14.5' BEDROCK	
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											
27											
Granular Soils		Cohesive Soils		% Composition ASTM D2487		NOTES: PP = Pocket Penetrometer, MC = Moisture Content LL = Liquid Limit, PI = Plastic Index <u>Bedrock Joints</u> Shallow = 0 to 35 degrees Dipping = 35 to 55 degrees Steep = 55 to 90 degrees Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200				Soil Moisture Condition	
Blows/ft.	Density	Blows/ft.	Consistency								
0-4	V. Loose	<2	V. soft	< 5% Trace 5-15% Little 15-30% Some > 30% With						Dry: S = 0% Humid: S = 1 to 25% Damp: S = 26 to 50% Moist: S = 51 to 75% Wet: S = 76 to 99% Saturated: S = 100%	
5-10	Loose	2-4	Soft								
11-30	Compact	5-8	Firm								
31-50	Dense	9-15	Stiff								
>50	V. Dense	16-30	V. Stiff								
		>30	Hard								

						SOIL BORING LOG			Boring #: B-104		
						Project: Proposed Apartment Building			Project #: 15040		
						Location: 665 Congress St.			Sheet: 1 of 1		
						City, State: Portland, ME			Chkd by:		
Drilling Co: Great Works Test Boring						Boring Elevation: 113.1 ft					
Driller: Jeff Lee						Reference: Site Survey by Titcomb Associates					
Summit Staff: M. Hardison, E.I.						Date started: 4/15/2015 Date Completed: 4/15/2015					
DRILLING METHOD			SAMPLER			ESTIMATED GROUND WATER DEPTH					
Vehicle: Tracked			Length: 24" SS			Date	Depth	Elevation	Reference		
Model: Mobile B-53			Diameter: 2"OD/1.5"ID			4/15/2015	-		None observed		
Method: 4" Solid Stem Auger			Hammer: 140 lb								
Hammer Style: R&C			Method: ASTM D1586								
Depth (ft.)						SAMPLE DESCRIPTION			Geological/ Test Data	Geological Stratum	
	No.	Pen/Rec (in)	Depth (ft)	blows/6"	N ₆₀						
1						4" Pavement				PAVEMENT	
2						Augered to 5', relatively easy drilling (no rubble)				0.3' FILL	
3											
4											
5											
6	S-1	24/18	5 to 7	7		Olive green SILT, little Gravel, Sand, and Clay, mottled, damp, compact/very stiff, cobble pieces at 6.5'; ML			PP = 5,000 to 7,000 psf	5.0' +/- GLACIAL TILL	
7				7							
8				17							
9				23							
10						End of Exploration at 9.5'; Auger refusal				8.5' WEATHERED ROCK	
11											
12											
13											
14											
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16											
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23											
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26											
27											
Granular Soils		Cohesive Soils		% Composition ASTM D2487		NOTES: PP = Pocket Penetrometer, MC = Moisture Content LL = Liquid Limit, PI = Plastic Index <u>Bedrock Joints</u> Shallow = 0 to 35 degrees Dipping = 35 to 55 degrees Steep = 55 to 90 degrees Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200				Soil Moisture Condition Dry: S = 0% Humid: S = 1 to 25% Damp: S = 26 to 50% Moist: S = 51 to 75% Wet: S = 76 to 99% Saturated: S = 100%	
Blows/ft.	Density	Blows/ft.	Consistency								
0-4	V. Loose	<2	V. soft	< 5% Trace 5-15% Little 15-30% Some > 30% With							
5-10	Loose	2-4	Soft								
11-30	Compact	5-8	Firm								
31-50	Dense	9-15	Stiff								
>50	V. Dense	16-30	V. Stiff								
		>30	Hard								

						SOIL BORING LOG			Boring #: B-105		
						Project: Proposed Apartment Building			Project #: 15040		
						Location: 665 Congress St.			Sheet: 1 of 1		
						City, State: Portland, ME			Chkd by:		
Drilling Co: Great Works Test Boring						Boring Elevation: 113.8 ft					
Driller: Jeff Lee						Reference: Site Survey by Titcomb Associates					
Summit Staff: M. Hardison, E.I.						Date started: 4/15/2015 Date Completed: 4/15/2015					
DRILLING METHOD			SAMPLER			ESTIMATED GROUND WATER DEPTH					
Vehicle: Tracked			Length: 24" SS			Date	Depth	Elevation	Reference		
Model: Mobile B-53			Diameter: 2"OD/1.5"ID			4/15/2015	-		None observed		
Method: 4" Cased Wash			Hammer: 140 lb								
Hammer Style: R&C			Method: ASTM D1586								
Depth (ft.)						SAMPLE DESCRIPTION			Geological/ Test Data	Geological Stratum	
	No.	Pen/Rec (in)	Depth (ft)	blows/6"	N ₆₀						
1						3" Pavement				PAVEMENT	
2						Augered to refusal for Rock Core				0.25'	
3											
4											
5											
6											
7											
8											
9											
10	ROCK CORE DATA									9.1' +/- WEATHERED ROCK	
	RUN	DEPTH	RUN	RECOVERY	RQD	Moderately weathered, very thinly spaced vertical joints, very hard, light to medium gray SCHIST				10.0' BEDROCK	
11	C-1a	10 to 13.3	40"	70%	0%						
12											
13											
14	C-1b	13.3 to 15	20"	100%	80%	Same as above, moderately spaced joints					
15						End of Exploration at 15.0', rock core terminated				15.0'	
16											
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											
27											
Granular Soils		Cohesive Soils		% Composition		NOTES: PP = Pocket Penetrometer, MC = Moisture Content LL = Liquid Limit, PI = Plastic Index <u>Bedrock Joints</u> Shallow = 0 to 35 degrees Dipping = 35 to 55 degrees Steep = 55 to 90 degrees Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches Gravel = < 3 inch and > No 4, Sand = < No 4 and > No 200, Silt/Clay = < No 200				Soil Moisture Condition	
Blows/ft.	Density	Blows/ft.	Consistency	ASTM D2487							
0-4	V. Loose	<2	V. soft		< 5% Trace					Dry: S = 0%	
5-10	Loose	2-4	Soft		5-15% Little					Humid: S = 1 to 25%	
11-30	Compact	5-8	Firm		15-30% Some					Damp: S = 26 to 50%	
31-50	Dense	9-15	Stiff		> 30% With					Moist: S = 51 to 75%	
>50	V. Dense	16-30	V. Stiff							Wet: S = 76 to 99%	
		>30	Hard							Saturated: S = 100%	

						SOIL BORING LOG			Boring #: B-106		
						Project: Proposed Apartment Building			Project #: 15040		
						Location: 665 Congress St.			Sheet: 1 of 1		
						City, State: Portland, ME			Chkd by:		
Drilling Co: Great Works Test Boring						Boring Elevation: 112.0 ft					
Driller: Jeff Lee						Reference: Site Survey by Titcomb Associates					
Summit Staff: M. Hardison, E.I.						Date started: 4/15/2015 Date Completed: 4/15/2015					
DRILLING METHOD			SAMPLER			ESTIMATED GROUND WATER DEPTH					
Vehicle: Tracked			Length: 24" SS			Date	Depth	Elevation	Reference		
Model: Mobile B-53			Diameter: 2"OD/1.5"ID			4/15/2015	-		None observed		
Method: 4" Cased Wash			Hammer: 140 lb								
Hammer Style: R&C			Method: ASTM D1586								
Depth (ft.)						SAMPLE DESCRIPTION			Geological/ Test Data	Geological Stratum	
	No.	Pen/Rec (in)	Depth (ft)	blows/6"	N ₆₀						
1						3" Pavement				PAVEMENT	
2						Augered to refusal for Rock Core					
3											
4						Dense drilling from approximately 2' to 8', frequent rubble or cobble					
5											
6											
7											
8											
9											
10	ROCK CORE DATA										
	RUN	DEPTH	RUN	RECOVERY	RQD					BEDROCK	
11	C-2	10 to 15	60"	66%	33%	Moderately weathered, very thinly spaced joints, very hard light gray to blue SCHIST					
12						most fractures range from 45° to vertical					
13											
14											
15											
16	C-3	15 to 19	48"	96%	65%	Same as above, most joints and fractures are vertical					
17											
18											
19											
20						End of Exploration at 19.0', rock core terminated				19.0'	
21											
22											
23											
24											
25											
26											
27											
Granular Soils		Cohesive Soils		% Composition ASTM D2487		NOTES: PP = Pocket Penetrometer, MC = Moisture Content LL = Liquid Limit, PI = Plastic Index <u>Bedrock Joints</u> Shallow = 0 to 35 degrees Dipping = 35 to 55 degrees Steep = 55 to 90 degrees Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches Gravel = < 3 inch and > No 4, Sand = < No 4 and > No 200, Silt/Clay = < No 200				Soil Moisture Condition	
Blows/ft.	Density	Blows/ft.	Consistency							Dry: S = 0% Humid: S = 1 to 25% Damp: S = 26 to 50% Moist: S = 51 to 75% Wet: S = 76 to 99% Saturated: S = 100%	
0-4	V. Loose	<2	V. soft	< 5% Trace 5-15% Little 15-30% Some > 30% With							
5-10	Loose	2-4	Soft								
11-30	Compact	5-8	Firm								
31-50	Dense	9-15	Stiff								
>50	V. Dense	16-30	V. Stiff								
		>30	Hard								

						SOIL BORING LOG			Boring #: B-107		
						Project: Proposed Apartment Building			Project #: 15040		
						Location: 665 Congress St.			Sheet: 1 of 1		
						City, State: Portland, ME			Chkd by:		
Drilling Co: Great Works Test Boring						Boring Elevation: 112.9 ft					
Driller: Jeff Lee						Reference: Site Survey by Titcomb Associates					
Summit Staff: M. Hardison, E.I.						Date started: 4/15/2015 Date Completed: 4/15/2015					
DRILLING METHOD			SAMPLER			ESTIMATED GROUND WATER DEPTH					
Vehicle: Tracked			Length: 24" SS			Date	Depth	Elevation	Reference		
Model: Mobile B-53			Diameter: 2"OD/1.5"ID			4/15/2015	-		None observed		
Method: 4" Solid Stem Auger			Hammer: 140 lb								
Hammer Style: R&C			Method: ASTM D1586								
Depth (ft.)						SAMPLE DESCRIPTION			Geological/ Test Data	Geological Stratum	
	No.	Pen/Rec (in)	Depth (ft)	blows/6"	N ₆₀						
1	S-1	24/6	0.5 to 2.5	3		4" Pavement Dark brown Sandy SILT, trace Ash and Brick fragments, loose, dry, ML				0.3' FILL	
2				4							
3				4							
4				3							
5											
6	S-2	24/24	5 to 7	7		Olive green SILT, slight mottling, litte fine Sand, trace Gravel and Clay, compact/very stiff, humid, ML				5.0' +/- GLACIAL TILL	
7				10							
8				14							
9				14							
10											
11						Soft rock encountered during augering, drilled 1.5' into rock to hard refusal				9.0' +/- WEATHERED ROCK	
12											
13						End of Exploration at 10.5', Auger refusal				10.5' BEDROCK	
14											
15											
16											
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											
27											
Granular Soils		Cohesive Soils		% Composition ASTM D2487		NOTES: PP = Pocket Penetrometer, MC = Moisture Content LL = Liquid Limit, PI = Plastic Index <u>Bedrock Joints</u> Shallow = 0 to 35 degrees Dipping = 35 to 55 degrees Steep = 55 to 90 degrees Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200				Soil Moisture Condition Dry: S = 0% Humid: S = 1 to 25% Damp: S = 26 to 50% Moist: S = 51 to 75% Wet: S = 76 to 99% Saturated: S = 100%	
Blows/ft.	Density	Blows/ft.	Consistency								
0-4	V. Loose	<2	V. soft	< 5% Trace 5-15% Little 15-30% Some > 30% With							
5-10	Loose	2-4	Soft								
11-30	Compact	5-8	Firm								
31-50	Dense	9-15	Stiff								
>50	V. Dense	16-30	V. Stiff								
		>30	Hard								

						SOIL BORING LOG			Boring #: B-108		
						Project: Proposed Apartment Building			Project #: 15040		
						Location: 665 Congress St.			Sheet: 1 of 1		
						City, State: Portland, ME			Chkd by:		
Drilling Co: Great Works Test Boring						Boring Elevation: 110.2 ft					
Driller: Jeff Lee						Reference: Site Survey by Titcomb Associates					
Summit Staff: M. Hardison, E.I.						Date started: 4/15/2015 Date Completed: 4/15/2015					
DRILLING METHOD			SAMPLER			ESTIMATED GROUND WATER DEPTH					
Vehicle: Tracked			Length: 24" SS			Date	Depth	Elevation	Reference		
Model: Mobile B-53			Diameter: 2"OD/1.5"ID			4/15/2015	-		None observed		
Method: 4" Solid Stem Auger			Hammer: 140 lb								
Hammer Style: R&C			Method: ASTM D1586								
Depth (ft.)						SAMPLE DESCRIPTION			Geological/ Test Data	Geological Stratum	
	No.	Pen/Rec (in)	Depth (ft)	blows/6"	N ₆₀						
1	S-1	24/10		8		4" Pavement				PAVEMENT	
2				9		Tan fine to coarse SAND, little silt, compacy, humid, SW-SM				0.3'	
3				8		large Brick fragment and white ASH				1.1' +/-	
4				3						FILL	
5											
6	S-2	24/4		*50/6"		Light brown Gravelly SAND, cobble piece in spoon tip, humid, SP					
7						* high blow count due to cobble in fill					
8											
9						End of Exploration at 8.5', Auger refusal				8.5'	
10										BEDROCK	
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											
27											
Granular Soils		Cohesive Soils		% Composition ASTM D2487		NOTES: PP = Pocket Penetrometer, MC = Moisture Content LL = Liquid Limit, PI = Plastic Index <u>Bedrock Joints</u> Shallow = 0 to 35 degrees Dipping = 35 to 55 degrees Steep = 55 to 90 degrees Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200				Soil Moisture Condition Dry: S = 0% Humid: S = 1 to 25% Damp: S = 26 to 50% Moist: S = 51 to 75% Wet: S = 76 to 99% Saturated: S = 100%	
Blows/ft.	Density	Blows/ft.	Consistency								
0-4	V. Loose	<2	V. soft	< 5% Trace 5-15% Little 15-30% Some > 30% With							
5-10	Loose	2-4	Soft								
11-30	Compact	5-8	Firm								
31-50	Dense	9-15	Stiff								
>50	V. Dense	16-30	V. Stiff								
		>30	Hard								

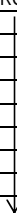
						SOIL PROBE LOG			Boring #: P-1		
						Project: Proposed Apartment Building			Project #: 15040		
						Location: 665 Congress St.			Sheet: 1 of 1		
						City, State: Portland, ME			Chkd by:		
Drilling Co: Summit Geoengineering Services						Boring Elevation: 114.9 ft					
Driller: C. Coolidge, P.E.						Reference: Site Survey by Titcomb Associates					
Summit Staff: M. Hardison, E.I.						Date started: 3/31/2015 Date Completed: 3/31/2015					
DRILLING METHOD			SAMPLER			ESTIMATED GROUND WATER DEPTH					
Vehicle: Tracked			Length: N/A			Date	Depth	Elevation	Reference		
Model: AMS Power Probe			Diameter: N/A			3/31/2015					
Method: 2-1/2" H.S.A.			Hammer: N/A								
Hammer Style: Auto			Method: N/A								
Depth (ft.)						SAMPLE DESCRIPTION			Geological/ Test Data	Geological Stratum	
	No.	Pen/Rec (in)	Depth (ft)	blows/6"	N ₆₀						
1				PROBE		2.5" of Pavement				PAVEMENT	
2						Dense drilling at 3', likely rubble Auger advancement produced no cuttings, large voids apparent from hole inspection, likely rubble fill				0.2' FILL	
3											
4											
5											
6											
7											
8											
9											
10				↓						9.0' +/- WEATHERED ROCK	
11						End of Probe at 10.0', Auger Refusal				10.0' BEDROCK	
12											
13											
14											
15											
16											
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											
27											
Granular Soils		Cohesive Soils		% Composition ASTM D2487		NOTES: PP = Pocket Penetrometer, MC = Moisture Content LL = Liquid Limit, PI = Plastic Index <u>Bedrock Joints</u> Shallow = 0 to 35 degrees Dipping = 35 to 55 degrees Steep = 55 to 90 degrees Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches Gravel = < 3 inch and > No 4, Sand = < No 4 and > No 200, Silt/Clay = < No 200				Soil Moisture Condition	
Blows/ft.	Density	Blows/ft.	Consistency							Dry: S = 0% Humid: S = 1 to 25% Damp: S = 26 to 50% Moist: S = 51 to 75% Wet: S = 76 to 99% Saturated: S = 100%	
0-4	V. Loose	<2	V. soft	< 5% Trace 5-15% Little 15-30% Some > 30% With							
5-10	Loose	2-4	Soft								
11-30	Compact	5-8	Firm								
31-50	Dense	9-15	Stiff								
>50	V. Dense	16-30	V. Stiff								
		>30	Hard								

						SOIL PROBE LOG			Boring #: P-2		
						Project: Proposed Apartment Building			Project #: 15040		
						Location: 665 Congress St.			Sheet: 1 of 1		
						City, State: Portland, ME			Chkd by:		
Drilling Co: Summit Geoengineering Services						Boring Elevation: 113.9 ft					
Driller: C. Coolidge, P.E.						Reference: Site Survey by Titcomb Associates					
Summit Staff: M. Hardison, E.I.						Date started: 3/31/2015 Date Completed: 3/31/2015					
DRILLING METHOD			SAMPLER			ESTIMATED GROUND WATER DEPTH					
Vehicle: Tracked			Length: N/A			Date	Depth	Elevation	Reference		
Model: AMS Power Probe			Diameter: N/A			3/31/2015					
Method: 2-1/2" H.S.A.			Hammer: N/A								
Hammer Style: Auto			Method: N/A								
Depth (ft.)						SAMPLE DESCRIPTION			Geological/ Test Data	Geological Stratum	
	No.	Pen/Rec (in)	Depth (ft)	blows/6"	N ₆₀						
1				PROBE		2.5" of Pavement				PAVEMENT	
2						Auger cuttings: tan Sandy SILT, some brick fragments,				0.2' FILL	
3											
4											
5											
6											
7											
8											
9											
10				↓						9.0' +/- WEATHERED ROCK	
11						End of Probe at 10.0', Auger refusal				10.0' BEDROCK	
12											
13											
14											
15											
16											
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											
27											
Granular Soils		Cohesive Soils		% Composition ASTM D2487		NOTES: PP = Pocket Penetrometer, MC = Moisture Content LL = Liquid Limit, PI = Plastic Index <u>Bedrock Joints</u> Shallow = 0 to 35 degrees Dipping = 35 to 55 degrees Steep = 55 to 90 degrees Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200				Soil Moisture Condition	
Blows/ft.	Density	Blows/ft.	Consistency								
0-4	V. Loose	<2	V. soft	< 5% Trace 5-15% Little 15-30% Some > 30% With						Dry: S = 0% Humid: S = 1 to 25% Damp: S = 26 to 50% Moist: S = 51 to 75% Wet: S = 76 to 99% Saturated: S = 100%	
5-10	Loose	2-4	Soft								
11-30	Compact	5-8	Firm								
31-50	Dense	9-15	Stiff								
>50	V. Dense	16-30	V. Stiff								
		>30	Hard								

						SOIL PROBE LOG			Boring #: P-3		
						Project: Proposed Apartment Building			Project #: 15040		
						Location: 665 Congress St.			Sheet: 1 of 1		
						City, State: Portland, ME			Chkd by:		
Drilling Co: Summit Geoengineering Services						Boring Elevation: 112.8 ft					
Driller: C. Coolidge, P.E.						Reference: Site Survey by Titcomb Associates					
Summit Staff: M. Hardison, E.I.						Date started: 3/31/2015 Date Completed: 3/31/2015					
DRILLING METHOD			SAMPLER			ESTIMATED GROUND WATER DEPTH					
Vehicle: Tracked			Length: N/A			Date	Depth	Elevation	Reference		
Model: AMS Power Probe			Diameter: N/A			3/31/2015					
Method: 2-1/2" H.S.A.			Hammer: N/A								
Hammer Style: Auto			Method: N/A								
Depth (ft.)						SAMPLE DESCRIPTION			Geological/ Test Data	Geological Stratum	
	No.	Pen/Rec (in)	Depth (ft)	blows/6"	N ₆₀						
1				PROBE		3.5" of Pavement				PAVEMENT	
2						Dense drilling at 8", moved over and started new hole				0.3' FILL	
3						Auger cuttings: Dark tan SAND, little Silt and Gravel					
4											
5											
6						Auger cuttings: similar to above, little Clay				5.0' +/- GLACIAL TILL	
7										7.0' +/- WEATHERED ROCK	
8						Auger cuttings: light tan fine SAND (rock dust)					
9											
10				↓		End of Probe at 9.9', Auger refusal				9.9' BEDROCK	
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											
27											
Granular Soils		Cohesive Soils		% Composition ASTM D2487		NOTES: PP = Pocket Penetrometer, MC = Moisture Content LL = Liquid Limit, PI = Plastic Index <u>Bedrock Joints</u> Shallow = 0 to 35 degrees Dipping = 35 to 55 degrees Steep = 55 to 90 degrees Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200				Soil Moisture Condition	
Blows/ft.	Density	Blows/ft.	Consistency							Dry: S = 0% Humid: S = 1 to 25% Damp: S = 26 to 50% Moist: S = 51 to 75% Wet: S = 76 to 99% Saturated: S = 100%	
0-4	V. Loose	<2	V. soft	< 5% Trace 5-15% Little 15-30% Some > 30% With							
5-10	Loose	2-4	Soft								
11-30	Compact	5-8	Firm								
31-50	Dense	9-15	Stiff								
>50	V. Dense	16-30	V. Stiff								
		>30	Hard								

						SOIL PROBE LOG			Boring #: P-4		
						Project: Proposed Apartment Building			Project #: 15040		
						Location: 665 Congress St.			Sheet: 1 of 1		
						City, State: Portland, ME			Chkd by:		
Drilling Co: Summit Geoengineering Services						Boring Elevation: 112.9 ft					
Driller: C. Coolidge, P.E.						Reference: Site Survey by Titcomb Associates					
Summit Staff: M. Hardison, E.I.						Date started: 3/31/2015 Date Completed: 3/31/2015					
DRILLING METHOD			SAMPLER			ESTIMATED GROUND WATER DEPTH					
Vehicle: Tracked			Length: N/A			Date	Depth	Elevation	Reference		
Model: AMS Power Probe			Diameter: N/A			3/31/2015					
Method: 2-1/2" H.S.A.			Hammer: N/A								
Hammer Style: Auto			Method: N/A								
Depth (ft.)						SAMPLE DESCRIPTION			Geological/ Test Data	Geological Stratum	
	No.	Pen/Rec (in)	Depth (ft)	blows/6"	N ₆₀						
1				PROBE		3.5" of Pavement				PAVEMENT	
2						Auger refusal at 2', moved over and started new hole				0.3'	
3						Encountered dense drilling at 2' again in second hole, drilled past it. Dense drilling encountered again at 4'. Likely rubble					
4						End of Probe at 4.0', Auger refusal					
5											
6										RUBBLE	
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											
27											
Granular Soils		Cohesive Soils		% Composition ASTM D2487		NOTES: PP = Pocket Penetrometer, MC = Moisture Content LL = Liquid Limit, PI = Plastic Index <u>Bedrock Joints</u> Shallow = 0 to 35 degrees Dipping = 35 to 55 degrees Steep = 55 to 90 degrees Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200				Soil Moisture Condition	
Blows/ft.	Density	Blows/ft.	Consistency							Dry: S = 0% Humid: S = 1 to 25% Damp: S = 26 to 50% Moist: S = 51 to 75% Wet: S = 76 to 99% Saturated: S = 100%	
0-4	V. Loose	<2	V. soft	< 5% Trace 5-15% Little 15-30% Some > 30% With							
5-10	Loose	2-4	Soft								
11-30	Compact	5-8	Firm								
31-50	Dense	9-15	Stiff								
>50	V. Dense	16-30	V. Stiff								
		>30	Hard								

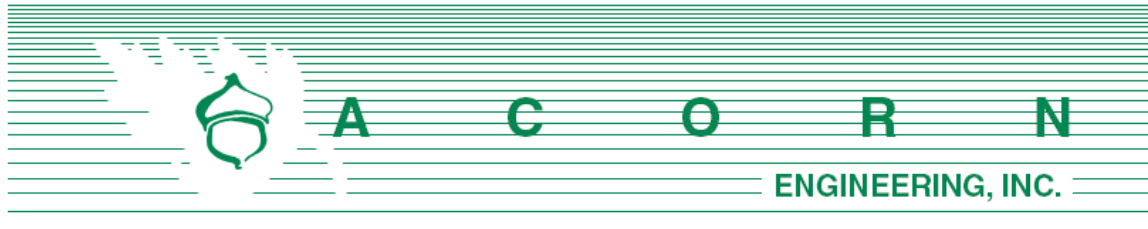
						SOIL PROBE LOG			Boring #: P-5		
						Project: Proposed Apartment Building			Project #: 15040		
						Location: 665 Congress St.			Sheet: 1 of 1		
						City, State: Portland, ME			Chkd by:		
Drilling Co: Summit Geoengineering Services						Boring Elevation: 112.3 ft					
Driller: C. Coolidge, P.E.						Reference: Site Survey by Titcomb Associates					
Summit Staff: M. Hardison, E.I.						Date started: 3/31/2015 Date Completed: 3/31/2015					
DRILLING METHOD			SAMPLER			ESTIMATED GROUND WATER DEPTH					
Vehicle: Tracked			Length: N/A			Date	Depth	Elevation	Reference		
Model: AMS Power Probe			Diameter: N/A			3/31/2015					
Method: 2-1/2" H.S.A.			Hammer: N/A								
Hammer Style: Auto			Method: N/A								
Depth (ft.)						SAMPLE DESCRIPTION			Geological/ Test Data	Geological Stratum	
	No.	Pen/Rec (in)	Depth (ft)	blows/6"	N ₆₀						
1				PROBE ↓		3" of Pavement Auger refusal at 9", moved over and started new hole, encountered same refusal. Likely cobble End of Probe at 0.8', Auger refusal				PAVEMENT	
2										0.3'	
3										0.8'	COBBLE
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											
16											
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21											
22											
23											
24											
25											
26											
27											
Granular Soils		Cohesive Soils		% Composition ASTM D2487		NOTES: PP = Pocket Penetrometer, MC = Moisture Content LL = Liquid Limit, PI = Plastic Index <u>Bedrock Joints</u> Shallow = 0 to 35 degrees Dipping = 35 to 55 degrees Steep = 55 to 90 degrees Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200				Soil Moisture Condition	
Blows/ft.	Density	Blows/ft.	Consistency								
0-4	V. Loose	<2	V. soft	< 5% Trace 5-15% Little 15-30% Some > 30% With		Dry: S = 0% Humid: S = 1 to 25% Damp: S = 26 to 50% Moist: S = 51 to 75% Wet: S = 76 to 99% Saturated: S = 100%					
5-10	Loose	2-4	Soft								
11-30	Compact	5-8	Firm								
31-50	Dense	9-15	Stiff								
>50	V. Dense	16-30	V. Stiff								
		>30	Hard								

						SOIL PROBE LOG			Boring #: P-6		
						Project: Proposed Apartment Building			Project #: 15040		
						Location: 665 Congress St.			Sheet: 1 of 1		
						City, State: Portland, ME			Chkd by:		
Drilling Co: Summit Geoengineering Services						Boring Elevation: 112.3 ft					
Driller: C. Coolidge, P.E.						Reference: Site Survey by Titcomb Associates					
Summit Staff: M. Hardison, E.I.						Date started: 3/31/2015 Date Completed: 3/31/2015					
DRILLING METHOD			SAMPLER			ESTIMATED GROUND WATER DEPTH					
Vehicle: Tracked			Length: N/A			Date	Depth	Elevation	Reference		
Model: AMS Power Probe			Diameter: N/A			3/31/2015					
Method: 2-1/2" H.S.A.			Hammer: N/A								
Hammer Style: Auto			Method: N/A								
Depth (ft.)						SAMPLE DESCRIPTION			Geological/ Test Data	Geological Stratum	
	No.	Pen/Rec (in)	Depth (ft)	blows/6"	N ₆₀						
1				PROBE		2.5" of Pavement				PAVEMENT	
2						Auger cuttings: Black Sandy SILT, frequent brick fragments, little Clay and black Ash			0.2'	FILL	
3											
4											
5											
6											
7						End of Probe at 5.0', Auger refusal			5.0'	BEDROCK	
8											
9											
10											
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											
27											
Granular Soils		Cohesive Soils		% Composition ASTM D2487	NOTES: PP = Pocket Penetrometer, MC = Moisture Content LL = Liquid Limit, PI = Plastic Index <u>Bedrock Joints</u> Shallow = 0 to 35 degrees Dipping = 35 to 55 degrees Steep = 55 to 90 degrees Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200					Soil Moisture Condition	
Blows/ft.	Density	Blows/ft.	Consistency							Dry: S = 0% Humid: S = 1 to 25% Damp: S = 26 to 50% Moist: S = 51 to 75% Wet: S = 76 to 99% Saturated: S = 100%	
0-4	V. Loose	<2	V. soft	< 5% Trace 5-15% Little 15-30% Some > 30% With							
5-10	Loose	2-4	Soft								
11-30	Compact	5-8	Firm								
31-50	Dense	9-15	Stiff								
>50	V. Dense	16-30 >30	V. Stiff Hard								

						SOIL PROBE LOG			Boring #: P-101		
						Project: Proposed Apartment Building			Project #: 15040		
						Location: 665 Congress St.			Sheet: 1 of 1		
						City, State: Portland, ME			Chkd by:		
Drilling Co: Great Works Test Boring						Boring Elevation: 116.4 ft					
Driller: Jeff Lee						Reference: Site Survey by Titcomb Associates					
Summit Staff: M. Hardison, E.I.						Date started: 4/15/2015 Date Completed: 4/15/2015					
DRILLING METHOD			SAMPLER			ESTIMATED GROUND WATER DEPTH					
Vehicle: Tracked			Length: N/A			Date	Depth	Elevation	Reference		
Model: Mobile B-53			Diameter: N/A			4/15/2015	-		None observed		
Method 4" Solid Stem Auger			Hammer: N/A								
Hammer Style: R&C			Method: N/A								
Depth (ft.)						SAMPLE DESCRIPTION			Geological/ Test Data	Geological Stratum	
	No.	Pen/Rec (in)	Depth (ft)	blows/6"	N ₆₀						
				PROBE		3" Pavement				PAVEMENT	
1						Very difficult drilling, frequent rubbe encountered, refusal encountered in first hole at 4.5', moved over 1' to start new hole				0.25' +/- FILL	
2											
3											
4											
5											
6											
7											
8											
9						Smoother drilling started around 9', assumed transizion zone into native till				9' +/- GLACIAL TILL	
10											
11				↓		End of Probe at 10.8', Auger refusal				10.8' BEDROCK	
12											
13											
14											
15											
16											
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											
27											
Granular Soils		Cohesive Soils		% Composition ASTM D2487	NOTES: PP = Pocket Penetrometer, MC = Moisture Content LL = Liquid Limit, PI = Plastic Index <u>Bedrock Joints</u> Shallow = 0 to 35 degrees Dipping = 35 to 55 degrees Steep = 55 to 90 degrees Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200					Soil Moisture Condition	
Blows/ft.	Density	Blows/ft.	Consistency							Dry: S = 0% Humid: S = 1 to 25% Damp: S = 26 to 50% Moist: S = 51 to 75% Wet: S = 76 to 99% Saturated: S = 100%	
0-4	V. Loose	<2	V. soft	< 5% Trace 5-15% Little 15-30% Some > 30% With							
5-10	Loose	2-4	Soft								
11-30	Compact	5-8	Firm								
31-50	Dense	9-15	Stiff								
>50	V. Dense	16-30	V. Stiff								
		>30	Hard								

						SOIL PROBE LOG			Boring #: P-102		
						Project: Proposed Apartment Building			Project #: 15040		
						Location: 665 Congress St.			Sheet: 1 of 1		
						City, State: Portland, ME			Chkd by:		
Drilling Co: Great Works Test Boring						Boring Elevation: 111.9 ft					
Driller: Jeff Lee						Reference: Site Survey by Titcomb Associates					
Summit Staff: M. Hardison, E.I.						Date started: 4/15/2015 Date Completed: 4/15/2015					
DRILLING METHOD			SAMPLER			ESTIMATED GROUND WATER DEPTH					
Vehicle: Tracked			Length: 24" SS			Date	Depth	Elevation	Reference		
Model: Mobile B-53			Diameter: 2"OD/1.5"ID			4/15/2015	-		None observed		
Method 4" Solid Stem Auger			Hammer: 140 lb								
Hammer Style: R&C			Method: ASTM D1586								
Depth (ft.)						SAMPLE DESCRIPTION			Geological/ Test Data	Geological Stratum	
	No.	Pen/Rec (in)	Depth (ft)	blows/6"	N ₆₀						
				PROBE		3" Pavement				PAVEMENT	
1						Smooth drilling throughout fill layer (no rubble/cobbles) Increased resistance at 4.8, potential till or soft rock					
2											
3											
4											
5											
6											
7											
8											
9											
10											
11						End of Probe at 12.1', Auger refusal				12.1' BEDROCK	
12				↓							
13											
14											
15											
16											
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											
27											
Granular Soils		Cohesive Soils		% Composition ASTM D2487		NOTES: PP = Pocket Penetrometer, MC = Moisture Content LL = Liquid Limit, PI = Plastic Index <u>Bedrock Joints</u> Shallow = 0 to 35 degrees Dipping = 35 to 55 degrees Steep = 55 to 90 degrees Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200				Soil Moisture Condition Dry: S = 0% Humid: S = 1 to 25% Damp: S = 26 to 50% Moist: S = 51 to 75% Wet: S = 76 to 99% Saturated: S = 100%	
Blows/ft.	Density	Blows/ft.	Consistency								
0-4	V. Loose	<2	V. soft	< 5% Trace 5-15% Little 15-30% Some > 30% With							
5-10	Loose	2-4	Soft								
11-30	Compact	5-8	Firm								
31-50	Dense	9-15	Stiff								
>50	V. Dense	16-30	V. Stiff								
		>30	Hard								

						SOIL PROBE LOG			Boring #: P-103		
						Project: Proposed Apartment Building			Project #: 15040		
						Location: 665 Congress St.			Sheet: 1 of 1		
						City, State: Portland, ME			Chkd by:		
Drilling Co: Great Works Test Boring						Boring Elevation: 112.3 ft					
Driller: Jeff Lee						Reference: Site Survey by Titcomb Associates					
Summit Staff: M. Hardison, E.I.						Date started: 4/15/2015 Date Completed: 4/15/2015					
DRILLING METHOD			SAMPLER			ESTIMATED GROUND WATER DEPTH					
Vehicle: Tracked			Length: 24" SS			Date	Depth	Elevation	Reference		
Model: Mobile B-53			Diameter: 2"OD/1.5"ID			4/15/2015	-		None observed		
Method: 4" Solid Stem Auger			Hammer: 140 lb								
Hammer Style: R&C			Method: ASTM D1586								
Depth (ft.)						SAMPLE DESCRIPTION			Geological/ Test Data	Geological Stratum	
	No.	Pen/Rec (in)	Depth (ft)	blows/6"	N ₆₀						
				PROBE		4" Pavement				PAVEMENT	
1						Relatively easy drilling, no rubbe/cobbles encountered				0.3'	
2											
3											
4											
5											
6											
7											
8											
9											
10				↓		End of Probe at 9.6', Auger refusal				9.6' BEDROCK	
11											
12											
13											
14											
15											
16											
17											
18											
19											
20											
21											
22											
23											
24											
25											
26											
27											
Granular Soils		Cohesive Soils		% Composition ASTM D2487		NOTES: PP = Pocket Penetrometer, MC = Moisture Content LL = Liquid Limit, PI = Plastic Index <u>Bedrock Joints</u> Shallow = 0 to 35 degrees Dipping = 35 to 55 degrees Steep = 55 to 90 degrees Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200				Soil Moisture Condition	
Blows/ft.	Density	Blows/ft.	Consistency								
0-4	V. Loose	<2	V. soft	< 5% Trace 5-15% Little 15-30% Some > 30% With		Dry: S = 0% Humid: S = 1 to 25% Damp: S = 26 to 50% Moist: S = 51 to 75% Wet: S = 76 to 99% Saturated: S = 100%					
5-10	Loose	2-4	Soft								
11-30	Compact	5-8	Firm								
31-50	Dense	9-15	Stiff								
>50	V. Dense	16-30	V. Stiff								
		>30	Hard								



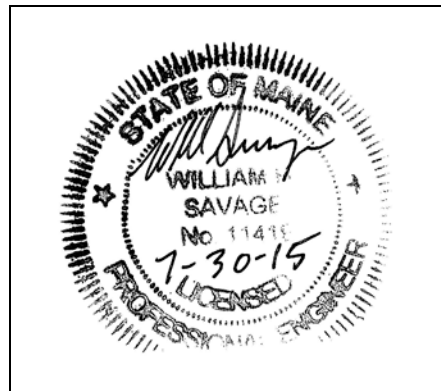
EROSION & SEDIMENTATION **CONTROL REPORT**

Prepared For:

**Redfern Properties, LLC
667 Congress Street Redevelopment
Portland, Maine 04101**

Prepared By:

**Acorn Engineering, Inc.
PO Box 3372
Portland, Maine 04104**



July 2015

INTRODUCTION

Acorn Engineering, Inc. has been retained by Redfern Properties, LLC to provide civil engineering services for the proposed development of Joe's Variety Store. The proposed redevelopment project is located at 667 Congress Street (Map, Book, Lot 46 C020 and C019) bordered by Congress Street, Vernon Place, and Avon Street in Portland, Maine. The existing commercial building and parking lot are to be redeveloped to include:

- 1 Commercial Space on the first floor (approximately 4500 SF).
- 139 Residential Units on the upper seven floors.
- 44 Parking Spaces on the first floor off of Commercial Street and 37 spaces located below in a lower level parking garage.

The following Erosion and Sedimentation Control Report was developed in accordance with the City of Portland Technical Manual – Section 5 – Portland Stormwater Management Standards and the Maine DEP Chapter 500 Stormwater Management Appendix A and B (1), Amended January 11, 2015. This narrative also meets the standards required in the Maine DEP's Erosion & Sediment Control BMP's Manual, dated March 2003.

1.0 EXISTING CONDITIONS

The proposed redevelopment project is located at 667 Congress Street (Map, Book, Lot 46 C020 and C019) bordered by Congress Street, Vernon Place, and Avon Street in Portland, Maine. There is an existing smoke shop/variety store building and parking lot located within the project location which are to be demolished as part of the proposed project.

The City of Portland has rezoned the entire parcel as a B-3 zone due to its proximity to Commercial Street and Downtown Portland.

Abutting Uses:

- | | |
|-------------|--|
| ➤ North | R-6 Zone – Single and Multi-Family Residential |
| ➤ East | B-3 Zone – Green Hand Bookshop, Parking Lot |
| ➤ Southwest | B-3 Zone – Boda/Bangkok Thai |
| ➤ Northwest | R-6 Zone – Single and Multi-Family Residential |
| ➤ South | B-3 Zone – Video Expo, Empire Theater, Barber Shop |

The existing project area is made up of a single paved and gravel parking area with a single, existing building. The distribution of surfaces is as follows:

- Paved Surface: 81%
- Existing Building: 14%
- Gravel with Limited Overgrowth: 5%

All surfaces are impervious with an existing grade ranging from approximately 0-10%.

1.1 Existing Soils

Onsite soil information includes the following:

- Summit Geoengineering Services – Soil Boring Logs, dated March 31st, 2015 and April 15th, 2015. A formal Geotechnical Report has also been prepared by Summit Geoengineering Services for the project, dated May 2015.
- Soil Conservation Service Medium Intensity Soil Survey for Cumberland County.

According to Summit Services, the soil at the site generally consists of pavement overlying fill overlying glacial till overlying weathered bedrock overlying bedrock. The pavement at the site was present at the location of all drilled borings and probes and ranged from 2.5” to 4.0” in thickness. The fill layer was encountered below all paved areas and ranged from loose to compact and humid to frozen. The glacial till layer was detected in primarily the Southwest corner and ranged from humid to damp and compact to dense. The weathered bedrock was encountered in the center of the property and was between 1.0 to 2.9 feet thick.

Given the soils information, listed above, and the fact that greater than 50% of the proposed development site is currently developed, it is Acorn Engineering’s professional opinion that a more intense hydric soil boundary delineation is not required because the waiver requirements set forth in the City of Portland Technical Manual – Section 7 – Soil Survey, Rev. 6/17/11 are met.

The area within and surrounding the project includes soils types listed in the table below. The susceptibility of soils to erosion is indicated on a relative “K” scale of values over a range of 0.02 to 0.69. Higher “K” values indicate more erodible soils.

Table 1 - “K” Value		
Soils Type	Subsurface	Substratum
Hinckley	.17	.17

The soil “K” values for the soils, listed above, indicate a low susceptibility to erosion. The site’s susceptibility to erosion is from the Soil Conservation Service Medium Intensity Soil Survey for Cumberland County.

1.2 Existing Erosion Problems

Currently, the site is comprised of a developed paved and gravel parking lot with a single building.

1.3 Critical Areas

Critical areas that would require special attention during construction are the areas adjacent to the municipal stormwater system. This includes, but is not limited to, the catch basins located in the Northeast and Northwest corners of the property.

1.4 Protected Natural Resource



The client is not aware of the presence of any existing significant natural features located on the site as listed in Section 14-526 (b) 1. of the Land Use Code. The project is not located within a watershed classified as an Urban Impaired Stream by the Maine DEP.

1.5 Previous Construction Activity (5 years)

Acorn Engineering, Inc. is not aware of any construction related activities within the project limits within the past 5 years.

1.6 Timber Harvesting

Acorn Engineering, Inc. is not aware of any timber harvesting within the past five years.

2.0 EROSION CONTROL MEASURES AND SITE STABILIZATION

As part of the site development, the following temporary and permanent erosion and sedimentation control devices shall be implemented. Devices shall be installed as described in this report or within the plan set. See the Maine Erosion and Sediment Control Handbook for Construction: Best Management Practices for further reference.

2.1 Temporary Erosion Control Measures

The following temporary erosion and sedimentation control measures are planned for the project's construction period:

2.1.1 Crushed stone stabilized construction entrances shall be placed at all access points to the project site where there are disturbed areas. The following specifications shall be followed at a minimum:

- Stone size shall be 2-3 inches, or reclaimed or recycled concrete equivalent.
- The thickness of the entrance stone layer shall be no less than 6 inches.
- The entrance shall not be less than 20 feet wide, however not less than the full width of points where ingress or egress occurs. The length shall not be less than 50 feet in length.
- Geotextile fabric (woven or non-woven) shall be placed over the entire entrance area.
- The entrance/exit shall be maintained to the extent that it will prevent the tracking of sediment onto public road ways.

2.1.2 Siltation fence or erosion control berm shall be installed down gradient of any disturbed areas to trap runoff borne sediments until permanent stabilization is achieved. The silt fence or erosion control berm shall be installed per the details provided in the plan set and inspected before and immediately after each rainfall and at least daily during prolonged rainfall. Repairs shall be made if there are any signs of erosion or sedimentation below the fence line or berm. If there are signs of undercutting at the center or the edges, or



impounding of large volumes of water behind the fence or berm, the barrier shall be replaced with a stone check dam.

- 2.1.3 Hay mulch including hydro seeding is intended to provide cover for denuded or seeded areas until revegetation is established. Mulch placed between April 15th and November 1st on slopes of less than 15 percent shall be covered by fabric netting and anchored with staples in accordance with the manufacturer's recommendation. Mulch placed between November 1st and April 15th on slopes equal to or steeper than 8 percent and equal to or flatter than 2:1 shall use mats or fabric netting and anchored with staples in accordance with the manufacturer's recommendation.
- 2.1.4 At any time of the year, all slopes greater than 3:1 shall be stabilized with Double Net Erosion Control Blanket Bionet SC150BN by North American Green or Approved Equal, or Erosion Control Mix Slope Protection as detailed within the plans.
- 2.1.5 Vernon Place, Avon Street, and Congress Street shall be swept to control mud and dust from the construction site as necessary. Add additional stone to the stabilized construction entrance to minimize the tracking of material off the site and onto the surrounding roadways.
- 2.1.6 During demolition, clearing and grubbing operations, stone check dams shall be installed at any areas of concentrated flow. The maximum height of the check dam shall not exceed 2 feet. The center of the check dam shall be 6 inches below the outer edges of the dam. The contractor shall mulch the side slopes and install stone check dams for all newly excavated ditch lines within 24 hours of their creation.
- 2.1.7 Silt fence stake spacing shall not exceed 6 feet unless the fence is supported with 14 gauge wire in which case the maximum spacing shall not exceed 10 feet. The silt fence shall be "toed" into the ground.
- 2.1.8 Stormdrain inlet protection shall be provided to stormdrains through the use of any of the following: hay bale drop inlet structures, silt fence drop inlet sediment filter, gravel and wire mesh drop inlet sediment filter, or curb inlet sediment filter. Barriers shall be inspected after every rainfall event and repaired as necessary. Sediments shall be removed when accumulation has reached ½ the design height.
- 2.1.9 Dust control shall be accomplished by the use of any of the following: water, calcium chloride, stone, or an approved MDEP product. Dust control shall be applied as needed to accomplish dust control.
- 2.1.10 Temporary loam, seed, and mulching shall be used in areas where no other erosion control measure is used. Application rates for seeding are provided at the end of this report.
- 2.1.11 Stockpiles shall be stabilized within 7 days of formation unless a scheduled rain event occurs prior to the 7 day window, in which case the stockpile shall be stabilized prior to the rain event. Methods of stabilization shall be mulch, erosion control mix, or erosion control blankets/mats. Silt fence or a wood waste compost filter berm shall be placed downhill of any soil stockpile location.
- 2.1.12 For disturbance between November 1 and April 15, please refer to winter stabilization plan in this report and the Maine Erosion and Sediment Control BMP manual for further information.



- 2.1.13 It is of the utmost importance that stormwater runoff and potential sediment from the construction site be diverted around the proposed underdrains until the trench is backfilled.

2.2 Permanent Erosion Control Measures

The following permanent erosion control measures are intended for post disturbance areas of the project.

- 2.2.1 All disturbed areas during construction, not subject to other proposed conditions, shall receive a minimum 4" of loam, limed, and mulched. Erosion control blankets or mats shall be placed over the mulch in areas noted in paragraph 4.1 of this report.
- 2.2.2 All stormwater devices shall be installed and tributary areas stabilized prior receiving stormwater.
- 2.2.3 Refer to the Maine Erosion and Sediment Control BMP manual for additional information.

3.0 EROSION AND SEDIMENTATION CONTROL PLAN

- 3.1 The Erosion and Sedimentation Control Plan is included within the plan set.

4.0 DETAILS AND SPECIFICATIONS

- 4.1 Erosion Control Details and Specifications are included in the plan set.

5.0 STABILIZATION PLAN FOR WINTER CONSTRUCTION

Winter Construction consists of earthwork disturbance between the dates of November 1 and April 15. If a construction site is not stabilized with pavement, a road gravel base, 75% mature vegetation cover or riprap by November 15, then the site shall be protected with over-winter stabilization. Any area not stabilized with pavement, vegetation, mulching, erosion control mix, erosion control mats, riprap, or gravel base on a road shall be considered open.

The contractor shall limit the work area to areas that work will occur in during the subsequent 15 days and so that it can be mulched one day prior to a snow event. The contractor shall stabilize work areas prior to opening additional work areas to minimize areas without erosion control measures.

The following measures shall be implemented during winter construction periods:

5.1 Sediment Barriers

During frozen conditions, sediment barriers may consist of erosion control mix berms or any other recognized sediment barriers as frozen soil prevents the proper installation of hay bales or silt fences.

5.2 Mulching



All areas shall be considered to be denuded until seeded and mulched. Hay and straw mulch shall be applied at a rate of 150 lb. per 1,000 square feet or 3 tons/acre (twice the normal accepted rate of 75-lbs./1,000 s.f. or 1.5 tons/acre) and shall be properly anchored. Erosion control mix must be applied with a minimum 4 inch thickness. Mulch shall not be spread on top of snow. The snow shall be removed down to a one-inch depth or less prior to application. After each day of final grading, the area shall be properly stabilized with anchored hay or straw or erosion control matting. An area shall be considered to have been stabilized when exposed surfaces have been either mulched or adequately anchored so that ground surface is not visible through the mulch. Between the dates of November 1 and April 15, all mulch shall be anchored by either mulch netting, tracking or wood cellulose fiber. The cover will be considered sufficient when the ground surface is not visible through the mulch. After November 1st, mulch and anchoring of all exposed soil shall occur at the end of each final grading workday.

5.3 Soil Stockpiling

Stockpiles of soil or subsoil shall be mulched for over winter protection with hay or straw at twice the normal rate or with a four-inch layer of erosion control mix. This shall be done within 24 hours of stocking and re-established prior to any rainfall or snowfall.

5.4 Seeding

Between the dates of October 15th and April 1st, loam or seed shall not be required. During periods of above freezing temperatures finished areas shall be fine graded and either protected with mulch or temporarily seeded and mulched until such time as the final treatment can be applied. If the date is after November 1st and if the exposed area has not been loamed, final grading with a uniform surface, then the area may be dormant seeded at a rate of 3 times higher than specified for permanent seed and then mulched.

Dormant seeding may be placed prior to the placement of mulch or erosion control blankets. If dormant seeding is used for the site, all disturbed areas shall receive 4" of loam and seed at an application rate of 5 lbs/1,000 s.f. All areas seeded during the winter shall be inspected in the spring for adequate catch. All areas insufficiently vegetated (less than 75% catch) shall be revegetated by replacing loam, seed and mulch. If dormant seeding is not used for the site, all disturbed areas shall be revegetated in the spring.

5.5 Over winter stabilization of disturbed soils

By September 15th, all disturbed soils on areas having a slope less than 15% shall be seeded and mulched. If the disturbed areas are not stabilized by this date, then one of the following actions shall be taken to stabilize the soil for late fall and winter:

- Stabilize the soil with temporary vegetation – By October 1st, seed the disturbed soil with winter rye at a seeding rate of 3lbs per 1,000 s.f., lightly mulch the seeded



soil with hay or straw at 75 lbs per 1,000 s.f., and anchor the mulch with plastic netting. Monitor growth of the rye over the next 30 days. If the rye fails to grow at least three inches or fails to cover at least 75% of the disturbed soil before November 1st, then mulch the area for over-winter protection.

- Stabilize the soil with sod – Stabilize the disturbed soil with properly installed sod by October 1st. Proper installation includes pinning the sod onto the soil with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, and watering the sod to promote root growth into the disturbed soil.
- Stabilize the soil with mulch – By November 15th, mulch the disturbed soil by spreading hay or straw at a rate of at least 150 lbs per 1,000 s.f. on the area so that no soil is visible through the mulch. Immediately after applying the mulch, anchor the mulch with plastic netting to prevent wind from moving the mulch off the disturbed soil.

5.6 Over winter stabilization of disturbed slopes

All stone-covered slopes shall be constructed and stabilized by November 15th. All slopes to be vegetated shall be seeded and mulched by September 1st. A slope is considered a grade greater than 15%. If a slope to be vegetated is not stabilized by September 1st, then one of the following action shall be taken to stabilize the slope for late fall and winter:

- Stabilize the soil with temporary vegetation and erosion control mats – By October 1st the disturbed slope shall be seeded with winter rye at a seeding rate of 3 lbs per 1,000 s.f. and then install erosion control mats or anchored mulch over the seeding. If the rye fails to grow at least three inches or fails to cover at least 75% of the slope by November 1st, then the contractor shall cover the slope with a layer of erosion control mix or with stone riprap.
- Stabilize the soil with sod – The disturbed slope shall be stabilized with properly installed sod by October 1st. Proper installation includes the contractor pinning the sod onto the slope with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, and watering the sod to promote root growth into the disturbed soil. The contractor shall not use late-season sod installation to stabilize slopes having a grade greater than 3H:1V or having groundwater seeps on the slope face.
- Stabilize the soil with erosion control mix – Erosion control mix shall be properly installed by November 15th. The contractor shall not use erosion control mix to stabilize slopes having grades greater than 2H:1V or having groundwater seeps on the slope face.
- Stabilize the soil with stone riprap – Place a layer of stone riprap on the slope by November 15th. A registered professional engineer shall be hired to determine the stone size needed for stability on the slope and to design a filter layer for underneath the riprap.



6.0 INSPECTION AND MAINTENANCE

A person with knowledge of erosion and stormwater control, including the standards and conditions in the permit, shall conduct periodic visual inspections of installed erosion control measures. The frequency of inspection shall occur at least once every two weeks, as well as after a “storm event”. A “storm event” shall consist 0.5 inches of rain within a 24 hour period. The following Erosion and Sediment Control - Best Management Practices (BMP's) shall be inspected in the manner as described.

6.1 Sediment Barriers

Hay bale barriers, silt fences and filter berms shall be inspected and repaired for the following if there are any signs of erosion or sedimentation below them. If there are signs of undercutting at the center or the edges of the barrier, or impounding of large volumes of water behind them, sediment barriers shall be replaced with a temporary check dam. Should the fabric on a silt fence or filter barrier decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, the fabric shall be replaced promptly. Sediment deposits should be removed when deposits reach approximately one-half the height of the barrier. Filter berms should be reshaped as needed. Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required should be dressed to conform to the existing grade, prepared and seeded.

6.2 Stabilized Stone Construction Entrances

The exit shall be maintained in a condition that will prevent tracking of sediment onto public rights-of-way. When the control pad becomes ineffective, the stone shall be removed along with the collected soil material and redistributed on site in a stable manner. The entrance should then be reconstructed. The contractor shall sweep or wash pavement at exits, which have experienced mud-tracking on to the pavement or traveled way. When washing is required, it shall be done on an area stabilized with aggregate, which drains into an approved sediment trapping device. All sediment shall be prevented from entering storm drains, ditches, or waterways.

6.3 Mulched Areas

All mulches must be inspected periodically, in particular after rainstorms, to check for rill erosion. If less than 90% of the soil surface is covered by mulch, additional mulch shall be immediately applied. Nets must be inspected after rain events for dislocation or failure. If washouts or breakage occur, re-install the nets as necessary after repairing damage to the slope. Where mulch is used in conjunction with ornamental plantings, inspect periodically throughout the year to determine if mulch is maintaining coverage of the soil surface. Repair as needed.

6.4 Dust Control

When temporary dust control measures are used, repetitive treatment shall be applied as needed to accomplish control.



6.5 Stormwater Appurtenances

All underdrains, storm drains, and catch basins need to be operating effectively and free of debris.

6.6 Erosion and Sedimentation Control Inspections:

Acorn Engineering has personnel qualified to conduct Erosion and Sedimentation Control Inspections. For further information contact:

Contact: Will Savage, PE
Telephone: (207) 775-2655

Qualifications:

- Maine Professional Engineering License #11419
- Maine DEP - Certified in Maintenance & Inspection of Stormwater BMP's Cert #14
- Certified Erosion, Sediment and Storm Water Inspector (CESSWI) Cert #0293
- Certified Professional in Erosion and Sediment Control (CPESC) Cert. #4620

The Contractor has sole responsibility for complying with the Erosion and Sedimentation Report/Plan, including control of fugitive dust. The Contractor shall be responsible for any monetary penalties resulting from failure to comply with these standards.

7.0 IMPLEMENTATION SCHEDULE

The following implementation sequence is intended to maximize the effectiveness of the above described erosion control measures. Contractors should avoid overexposing disturbed areas and limit the amount of stabilization area.

1. Install a stabilized construction entrance in all locations where construction traffic will enter and exit the site.
2. Install perimeter silt fence or erosion control berm.
3. Install all other erosion control devices as necessary throughout the remainder of this schedule.
4. Commence installation of drainage infrastructure.
5. Prioritize the downhill retaining and foundation walls to contain runoff within the site while providing an engineered outlet with siltation barrier to the municipal stormwater system within Avon.
6. Commence earthwork operations, wall and foundation installation.
7. Commence installation of utilities.
8. Continue earthwork and grading to subgrade as necessary for construction.
9. Complete installation of drainage infrastructure, as well as other utility work.
10. Complete remaining earthwork operations.
11. Install sub-base and base gravels in paved areas.
12. Install paving, curbing and brickwork.
13. Loam, lime, fertilize, seed and mulch disturbed areas and complete all landscaping.



14. Once the site is stabilized, 90% catch of grass has been obtained, or mulching of landscape areas is complete remove all temporary erosion control measures.
15. Touch up areas without a vigorous catch of grass with loam and seed.
16. Complete site signage and striping.
17. Execute proper maintenance of all temporary and permanent erosion control measures throughout the project.

The above implementation sequence should be generally followed by the site contractor. However, the contractor may construct several items simultaneously. The contractor shall submit to the owner a schedule of the completion of the work. If the contractor is to commence the construction of more than one item above, they shall limit the amount of exposed areas to those areas in which work is expected to be undertaken during the following 30 days.

The contractor shall re-vegetate disturbed areas as rapidly as possible. All areas shall be permanently stabilized within 7 days of final grading or before a storm event. The contractor shall incorporate planned inlets and drainage systems as early as possible into the construction phase.

8.0 CONCLUSION

The above erosion control narrative is intended to minimize the development impact by implementing temporary and permanent erosion control measures. The contractor shall also refer to the Maine Erosion and Sediment Control BMP manual for additional information.

9.0 ATTACHMENTS

- Temporary Seeding Plan



TEMPORARY SEEDING PLAN

Site Preparation

The seeded areas shall be feasibly graded out to provide the use of equipment for seedbed preparation, seeding, mulch application, and mulch anchoring. If necessary, the site may require additional temporary erosion control measures outlined in the Erosion Control report.

Seedbed Preparation

Fertilizer shall be applied to the site at a rate of 13.8 pounds per 1,000 square feet. The composition of the fertilizer shall be 10-10-10 (N-P₂O₅-K₂O) or equivalent.

Limestone shall be applied to the site at a rate of 138 pounds per 1,000 square feet.

Seeding

The composition and amount of temporary seed applied to a site shall be determined by the following table:

Seed	Pounds / 1,000 S.F.	Recommended Seeding Dates
Winter Rye	2.57	Aug-15 to Oct-1
Oats	1.84	Apr-1 to Jul-1 Aug-15 to Sep-15
Annual Ryegrass	0.92	Apr-1 to Jul-1
Sudangrass	0.92	May-15 to Aug-15
Perennial	0.92	Aug-15 to Sep-15

Mulching

Mulch shall be applied at a rate of 70 lbs – 90 lbs per 1,000 square feet. The mulch shall be installed at a minimum depth of 4 inches. The seeded area shall be mulched immediately after seed is applied. Mulching during the winter season shall be double the normal amount.

Conclusion

Please refer to the Maine Erosion and Sediment Control BMP manual for additional information pertaining to temporary seeding and mulching.



Solid Waste Disposal

The owner, Redfern Properties, LLC, or their property management company shall be responsible for contracting with a private hauler for removal of solid waste and recyclable material generated from the 139 residential units and 1 commercial spaces. Acorn Engineering, Inc. has reached out to waste management facilities to obtain potential quotes and feasibility statements from solid waste companies. The proposed solid waste room is as noted on the Site Plan (C-10) and include:

- One 2-cubic yard container serviced 4x weekly (trash)
- One 2-cubic yard containers serviced 4x weekly (recycling)

OR

- Four 2-cubic yard containers serviced 4x weekly (trash only)
- Four 2-cubic yard containers serviced 4x weekly (recycling only)

Pickup will occur as indicated above (or as otherwise necessary) to maintain a clean waste storage area. The solid waste containers will be fully enclosed within the first floor of the development, and screened from the public view.



Written Request for Waivers

The existing commercial building and parking lot on 667 Congress St (Map, Book, Lot 46 C020 and C019) are to be redeveloped into a 139-unit residential and single unit commercial building with covered parking on the basement and first floors (81 total parking spaces). The existing business, Joe's Variety Store, will remain on the first floor with the upper seven floors consisting of studio, single bedroom, and double bedroom apartments for rent.

The following is a list of known project related waivers.

1. **City Standard Parking Size** – The applicant is requesting a waiver to increase the number of Compact Parking Spaces per Standard Parking Spaces (9' X 18'). Of the proposed 81 spaces, 41% are Standard spaces and 59% may be defined as Compact Parking. According to the Technical Standards the maximum allowable Compact spaces for this space is 16. However, in order to adhere to the required parking spaces for residential units, there must be more compact parking within the covered lots.

Circulation of vehicles within the site has been performed using AutoTurn, a vehicle circulation CAD accessory, and simulations that include these design waivers have shown circulation to be possible.

2. **City Minimum Driveway Width** – The applicant is requesting a waiver for the required 20' wide driveway; the proposed driveway is 18' wide at the overhead door but is otherwise 20' wide after entering the building.
3. **Parking Lot Landscaping** – The applicant is requesting a waiver to the parking lot landscaping requirements to not include the suggested 33 trees for the 81 parking spaces; due to the covered nature of the parking lots in both the basement and first floor (too limited of open air on first floor for tree or shrub growth), it is not feasible to landscape these features. Therefore, the applicant is prepared to contribute an amount proportionate to the cost of required parking lot trees to the City of Portland Tree Fund.



4. **Street Trees** – The applicant is seeking a waiver to the street trees requirements. Due to limited sidewalk space along the Avon Street and Vernon Place street fronts, there will not be street trees along these walls. There will be 3 trees spaced between 30 – 45 feet along Congress Street as illustrated further in the preliminary drawings. In all, the design decreases the total required street trees from 16 to 3. However, this is an increase in total trees on the property from the original zero. The equivalent of 13 trees will be contributed to the City of Portland Tree Fund.





August 27, 2015

Shukria Wiar
Planner
City of Portland, Planning Division
389 Congress Street, 4th Floor
Portland, ME 04101

RE: 667 Congress Street Apartment Project

Dear Shukria Wiar:

Redfern Properties and its affiliates are well known to NBT Bank. I have worked with Redfern for nearly 10 years and have been directly involved in the financing of numerous successful projects. NBT Bank is providing financing for Redfern's current apartment project at 89 Anderson Street and is interested in entertaining financing for 667 Congress Street. We are looking forward to more substantive conversations as this project materializes.

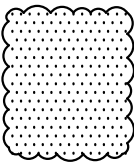
Please feel free to contact me should you need any additional information. I can be reached at (207) 808-4486.

Sincerely,

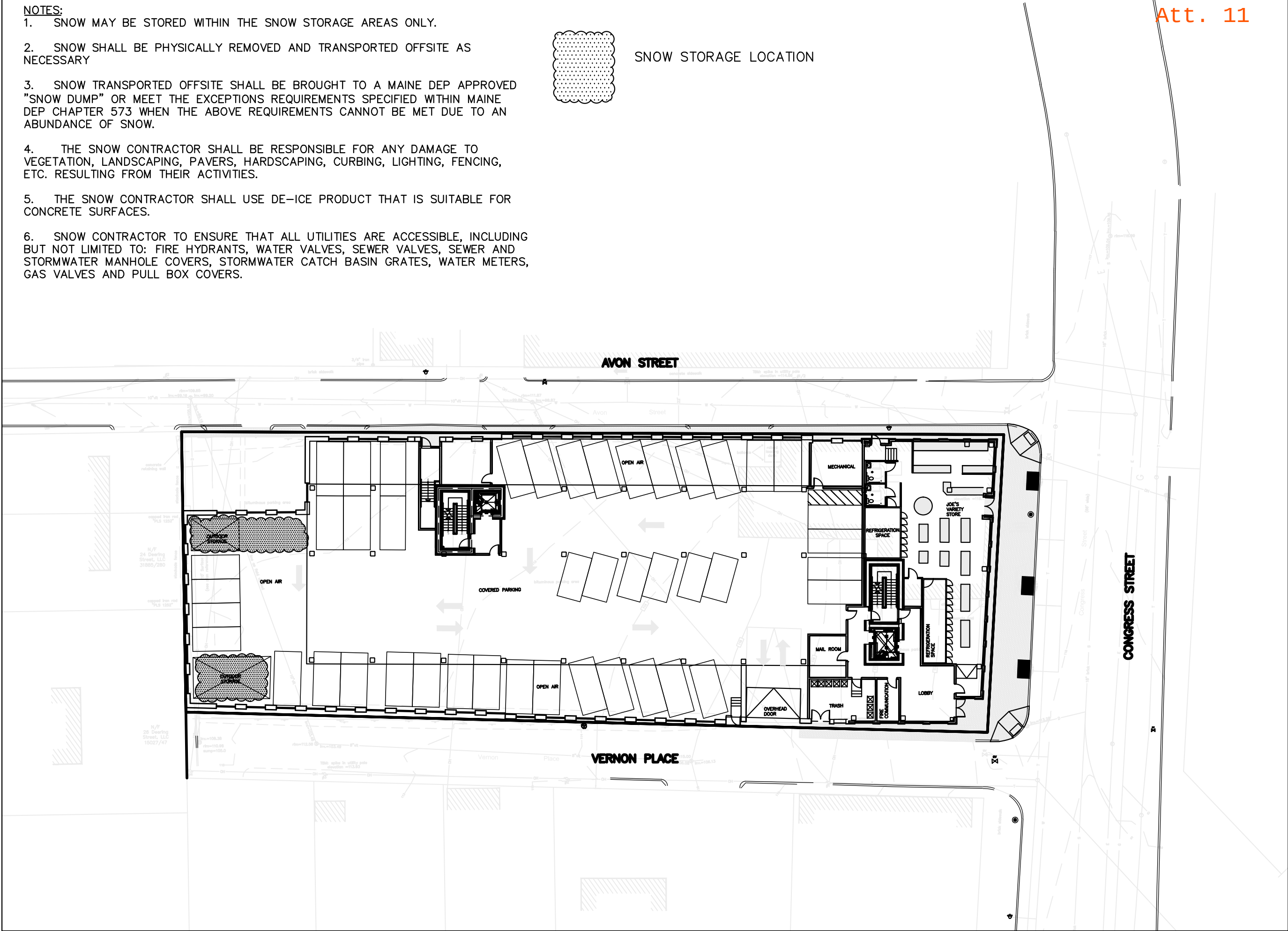
A handwritten signature in dark ink, appearing to read "Joe Delano", with a large, stylized flourish extending to the right.

Joe Delano
Vice President
NBT Bank Maine

- NOTES:
1. SNOW MAY BE STORED WITHIN THE SNOW STORAGE AREAS ONLY.
 2. SNOW SHALL BE PHYSICALLY REMOVED AND TRANSPORTED OFFSITE AS NECESSARY
 3. SNOW TRANSPORTED OFFSITE SHALL BE BROUGHT TO A MAINE DEP APPROVED "SNOW DUMP" OR MEET THE EXCEPTIONS REQUIREMENTS SPECIFIED WITHIN MAINE DEP CHAPTER 573 WHEN THE ABOVE REQUIREMENTS CANNOT BE MET DUE TO AN ABUNDANCE OF SNOW.
 4. THE SNOW CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO VEGETATION, LANDSCAPING, PAVERS, HARDCAPING, CURBING, LIGHTING, FENCING, ETC. RESULTING FROM THEIR ACTIVITIES.
 5. THE SNOW CONTRACTOR SHALL USE DE-ICE PRODUCT THAT IS SUITABLE FOR CONCRETE SURFACES.
 6. SNOW CONTRACTOR TO ENSURE THAT ALL UTILITIES ARE ACCESSIBLE, INCLUDING BUT NOT LIMITED TO: FIRE HYDRANTS, WATER VALVES, SEWER VALVES, SEWER AND STORMWATER MANHOLE COVERS, STORMWATER CATCH BASIN GRATES, WATER METERS, GAS VALVES AND PULL BOX COVERS.



SNOW STORAGE LOCATION



Att. 11

ISSUED FOR	BY DATE
REVISION	REV. DATE

DRAWING NAME:	SNOW STORAGE PLAN
PROJECT NAME:	667 CONGRESS ST. REDEVELOPMENT
CLIENT:	REDFERN PROPERTIES, LLC. P.O. BOX 8816, PORTLAND, MAINE 04104



ACORN
ENGINEERING, INC.

P.O. BOX 3372
PORTLAND, MAINE 04104
(207) 775-2655

FILE:	1060_CIVIL
DATE:	7/29/15
JN:	1080
SCALE:	1"=20'
DESIGN BY:	WHS
DRAWN BY:	
CHECKED BY:	WHS

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

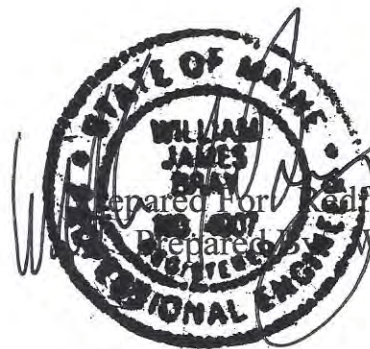
DRAWING NO.
SNOW

TRAFFIC IMPACT STUDY

FOR

PROPOSED

**667 CONGRESS STREET
APARTMENTS**



Prepared For: Redfern Properties, LLC
Prepared By: William J. Bray, P.E.

August 2015

INTRODUCTION

Redfern Properties, LLC is proposing construction of an eight-story building at 667 Congress Street on a parcel of property bordered by Congress Street, Avon Street, and Vernon Place. The proposed project site currently includes Joe's Smoke Shop, a 3,673 square foot variety store located at the Congress Street/Avon Street corner of the parcel and surface parking encumbers the remainder of the property. The proposed project will provide a total of 139 apartment units that will include 34 efficiency units, 97 one-bedroom units, and 8 two-bedroom units. The basement floor provides a total of 37 parking spaces and will be accessed from Avon Street. A total of 44 spaces are proposed on the first floor of the building and will be accessed from Vernon Place. The proposed project also proposes a minor increase in floor area (approximately 856 square feet) to Joe's Smoke Shop.

It is anticipated that construction of the proposed project will be completed in early 2017.

The purpose of this study is to examine existing traffic conditions in the general vicinity of the proposed project, estimate the total number of site trips generated by the project, and make a determination as to whether the existing transportation system can safely accommodate the added traffic demand generated by the project.

EXISTING CONDITIONS

Existing Traffic: Manual turning movement counts were conducted during the week of May 5th at three study intersections per direction received from the City's Traffic Peer Review Consultant. The intersections included the following locations:

1. Congress Street/Avon Street
2. Congress Street/Vernon Place
3. Avon Street/Deering Street

All vehicular traffic entering each intersection was recorded in 15-minute intervals between the hours of 7:00 to 9:00 AM and between 3:00 to 6:00 PM (Copies of the field data summary sheets are attached). In addition, pedestrian and bicycle data was gathered at each location both directionally and by time of day. From a summary of the data, it was determined that the morning peak hour occurs between 8:00 and 9:00 AM at each study area location and the PM peak hour falls between 4:45 and 5:45 at both Avon Street locations and earlier (3:45 to 4:45 PM) at the Congress Street/Vernon Place intersection.

Traffic data collected during the month of May requires an adjustment to reflect "peak" travel conditions during the summer months of July and August. MaineDOT provides factors for adjusting traffic data collected during other periods of time. MaineDOT utilizes highway classifications of I, II, or III for all State and Local roadways. Group I roadways are defined as urban roadways or those roads that typically see commuter traffic and experience little fluctuation from week to week throughout the year. Group II roadways or arterial roads are those that see a combination of commuter and recreational traffic and; therefore, experience moderate fluctuations during the year. Group III roads or recreational roadways are typically used for recreational purposes and experience significant seasonal fluctuations. MaineDOT has designated the section of Congress Street, Avon Street, and Deering Street adjacent to the site as a Group 1 roadway, which requires the collected traffic data to be adjusted by a factor of approximately 1.057. Figures 1 and 2 illustratively depict the estimated 2015 PM design hour traffic conditions for the study intersections.

Bicycle and pedestrian volume totals recorded during the vehicular peak hour(s) at each study location are summarized in the following tables:

Bicycle Volumes
(Street Peak Hour)

<u>Intersection/Approach</u>	<u>AM Peak Hour</u>	<u>PM Peak Hour</u>
Congress St./Avon St.		
- Congress Street NB	17	20
- Congress Street SB	11	24
- Avon St.	2	3
Congress St./Vernon Pl.		
- Congress St. NB	13	13
- Congress St. SB	6	4
- Vernon Pl.	0	0
Avon St./Deering St.		
- Deering St. NB	4	1
- Deering St. SB	0	1
- Avon St. EB	1	4
- Avon St. WB	1	1

Overall, bicycle travel through the study intersections was somewhat moderate during both peak travel periods with slightly higher volumes recorded in the afternoon versus the morning peak. The highest volumes of bicycle trips were recorded traveling along the Congress Street corridor (a total of 44 two-way trips) in the evening peak hour with much lower volumes recorded on the secondary roadways during the same time period.

Pedestrian Volumes
(Street Peak Hour)

<u>Intersection/Approach</u>	<u>AM Peak Hour</u>	<u>PM Peak Hour</u>
Congress St./Avon St.		
- Crossing Congress North Approach	26	44
- Crossing Congress South Approach	8	4
- Crossing Avon Street	95	204
Congress St./Vernon Pl.		
- Crossing Congress North Approach	18	23
- Crossing Congress South Approach	0	0
- Crossing Vernon Place	68	119
Avon St./Deering St.		
- Crossing Avon East Approach	20	21
- Crossing Deering North Approach	11	6
- Crossing Deering South Approach	9	17
- Crossing Avon West Approach	22	11

The volume of pedestrian movements recorded at each of the three study intersections was as expected, highest crossing the side street approaches at both Congress Street intersections. A total of 204 pedestrians crossed Avon Street at Congress Street in the evening peak hour and a total of 95 pedestrian trips were recorded for the same location in the morning peak hour. Slightly lower pedestrian movements were counted at the Vernon

Place/Congress Street intersection and significantly lower volumes were measured at the Avon Street/Deering Street intersection.

Existing Safety: The Maine Department of Transportation's (MaineDOT) Accident Records Section provided the latest three-year (2012 through 2014) crash data for the Study Area road sections and intersections. Their report is presented as follows:

2012 -2014 Traffic Accident Summary

<u>Location</u>	<u>Total Crashes</u>	<u>Critical Rate Factor</u>
1. Congress Street @ Avon Street	5	1.05
2. Congress Street @ Vernon Place	3	0.61
3. Congress Street @ State Street	25	0.81
4. Avon Street @ Deering Street	1	1.17
5. Congress Street btw. Avon St. and Vernon Pl.	1	0.55
6. Avon Street btw. Congress St. and Deering St.	1	1.60

The MaineDOT considers any roadway intersection or segment a high crash location if both of the following criteria are met:

- **8 or more accidents**
- **A Critical Rate Factor greater than 1.00**

As the data presented in the table shows, the incidence of traffic crashes occurring on the identified street network is below MaineDOT's threshold criteria for identification of a high crash location.

SITE TRAFFIC

Site Trip Generation: Trip generation for the proposed 139 apartment units was based upon trip tables presented in the eighth edition of the Institute of Transportation Engineers (ITE) "**TRIP GENERATION**" handbook. Trip generation of the increased building area to Joe's Smoke Shop variety store was estimated based upon actual manual traffic counts performed during both "peak" commuter time periods at the existing store site. Joe's Smoke Shop, located in a very densely populated section of the City of Portland, attracts a significant volume of "walk-in" trips from area residents versus the typical high percentage of automobile trips; therefore, trip rate information presented in the ITE publication inappropriately reflects actual conditions experienced at the existing neighborhood store. The following trip generation estimates were developed for both uses within the proposed building:

Apartment Units

Land-Use Code 223 – Mid-Rise Apartment (139 units)

Street Peak Hour – AM Peak = 0.30 trips/per unit

Street Peak Hour – PM Peak = 0.39 trips/per unit

Based upon the ITE trip rate information the proposed 139 apartment units can be expected to generate a total of **42** trips during the AM peak hour and a total of **54** trips during the PM peak hour.

Joe's Smoke Shop Variety Store

A manual traffic count was conducted at Joe's Smoke Shop variety store on Monday, August 9 between the hours of 7:00 and 9:00 AM and 3:00 to 6:00 PM. All vehicle, bicycle, and pedestrian trips entering and exiting the existing variety store were recorded in 15-minute intervals between the noted hours (Copies of the data is

attached). From a summary of the data, a “morning” and “afternoon” peak hour was determined for the store. The AM peak hour occurs between 7:45 and 8:45 AM and the evening peak hour falls between 4:15 and 5:15 PM. During the AM peak hour a total of 16 vehicle trips were recorded parking on Congress Street entering/exiting the store and during the evening peak hour a total 21 trips were observed entering/exiting the store.

Based upon the collected traffic data, it was determined that the existing 3,673 square foot Joe’s Smoke Shop variety store generates approximately 4.36 vehicle trips per 1,000 square feet of floor area in the morning peak hour and 5.72 vehicle trips in the evening peak hour.

The proposed development project will increase the floor area of Joe’s Smoke Shop by an additional 856 square feet of floor area, which based upon the exiting trip rates, will result in an increase of 4 vehicle trips in the morning peak hour and 5 trips during the afternoon peak hour.

Total Development Trip Generation

The proposed 667 apartment building project can be expected to generate a total of 46 vehicle trips in the AM peak hour and 59 trips during the PM peak hour.

Site Trip Distribution: The Institute of Transportation Engineers handbook provides the following directional distribution rates for an apartment unit for both peak hour time periods. Those rates are presented as follows:

AM Peak Hour	= 31% of trip enter site/69% exit
PM Peak Hour	= 58% of trips enter site/42% exit

Based upon the noted directional distribution patterns, 14 trips during the morning peak hour and 31 trips in the evening peak hour generated by the apartment units will enter the site and the remaining trips (28 AM trips and 23 PM trips) will exit the site.

Existing vehicle trip distribution patterns measured at Joe’s Smoke Shop during both peak travel periods show generally an even split in distribution, with equal volumes entering and exiting the existing store.

Site Trip Assignment: In developing a travel forecast model for the proposed apartment building project the parking demand requirements of the proposed site and location of proposed tenant parking must be fully considered. A recent parking study completed by Gorrill-Palmer, Inc. in March of 2014 concluded that an average parking demand rate of 0.48 spaces per apartment unit appropriately meets the parking demand requirements of an apartment complex with the majority of the units either single bedroom or efficiency style units. The earlier Gorrill-Palmer report conservatively applied a parking demand rate of 0.70 spaces per unit in the conduct of their study. Accordingly, the traffic analysis completed for the proposed 667 Congress Street apartment project applied a similar per unit parking rate of 0.70 spaces per unit in developing the travel forecast for the project, resulting in a total parking demand requirement of 97 spaces.

NOTE: A detailed local parking utilization survey will be completed at a later date to more accurately define the appropriate parking demand of the proposed apartment project.

The proposed apartment building design provides a total of 81 parking spaces with 37 of the spaces located in the basement level of the building and the remaining 44 spaces on the first floor of the building. Three of the 81 total spaces are reserved for Joe’s Smoke Shop resulting in a total of 78 spaces reserved for tenants of the building. Development of the trip assignment model assumes that the remaining 19 parking spaces (97 – 78) are located in undetermined locations nearby to the project site; and/or the actual parking demand of the project will be reduced by encouraging building tenants utilization of other modes of transportation other than

automobile travel. The building design presently includes a total of 56 covered bicycle spaces; a U share parking space and 2 to 4 motorcycle parking spaces; each special design feature, will assist in reducing the overall automobile usage of building tenants. Vehicle trips generated by the proposed project were assigned to the roadway system based upon the following percentages:

	<u>AM Peak Hour</u>	<u>PM Peak Hour</u>
Avon Street Site Garage Entrance	35%	35%
Vernon Place Site Garage Entrance	39%	39%
Congress Street Curb Spaces – Joe’s Smoke Shop	9%	9%
Undetermined Locations Adjacent to Project Site	17%	17%

Figures 3 and 4 are line diagrams that depict the projected travel patterns of the site traffic for the AM and PM peak hours, respectively.

FUTURE TRAFFIC

Annual Growth: The Traffic Impact Study has been prepared based upon a projected build-out year of 2017. MaineDOT’s historical traffic data for the noted sections of Congress Street near State Street would suggest the appropriateness of 3 to 4% percent annual growth rate. To project a conservative assessment of traffic impact, the 2015 design hour traffic volumes were increased by an annual growth rate of 4% per year to estimate 2017 travel conditions.

Other Development Traffic: Traffic generated by projects that have been approved by the Local Planning Board and/or the Maine Department of Transportation, yet are not opened, must be included in the estimate of pre-development traffic. At the direction of the City’s Development Review Services Manager, trips generated by the proposed Avesta Housing’s 37 unit apartment project at 17 Carleton Street were appropriately added to the base travel conditions forecast for Congress Street at both Avon Street and Vernon Place.

2017 Pre-Development Traffic: The 2015 design hour traffic projections shown on Figures 1 and 2 were increased by an annual growth rate of 4% per year to approximate 2017 travel conditions at each of the three study intersections. Figures 5 and 6 are line diagrams that present the 2017 Pre-Development AM and PM peak hour traffic forecasts for the three study intersections.

2017 Post-Development Traffic: Estimated 2017 Pre-Development traffic forecasts prepared for each study intersection, as depicted on Figures 5 and 6, were combined with the site traffic projections highlighted on Figures 3 and 4 to create estimated 2017 Post-Development traffic estimates for the study intersections. Figures 7 (AM Peak Hour) and 8 (PM Peak Hour) are line diagrams that present the estimated 2017 Post-Development traffic conditions for the study intersections.

MOBILITY ANALYSIS

A capacity analysis of the 2017 Pre and Post-Development traffic conditions were performed for the three study intersections utilizing the Synchro and SimTraffic computer models. Levels of Service rankings are similar to the academic grading system, where an “A” is very good with little delay and “F” represents very poor conditions.

The following table summarizes the relationship between delay and Level of Service for an unsignalized intersection:

Level of Service Criteria for Unsignalized Intersections

<u>Level of Service</u>	<u>Total Control Delay (sec/veh)</u>
A	Up to 10.0
B	10.1 to 15.0
C	15.1 to 25.0
D	25.1 to 35.0
E	35.1 to 50.0
F	Greater than 50.0

The result of the capacity analysis is presented in the following table:

Level of Service Summary **2017 Pre and Post-Development Conditions**

<u>Intersection/Approach</u>	<u>2017 Pre-Development</u>				<u>2017 Post-Development</u>			
	<u>AM Peak Hour</u>		<u>PM Peak Hour</u>		<u>AM Peak Hour</u>		<u>PM Peak Hour</u>	
	<u>Delay (sec.)</u>	<u>LOS</u>	<u>Delay (sec.)</u>	<u>LOS</u>	<u>Delay (sec.)</u>	<u>LOS</u>	<u>Delay (sec.)</u>	<u>LOS</u>
1. Congress Street @ Avon Street								
- Congress Street EB	1 second	A	1 second	A	1 second	A	1 second	A
- Congress Street WB	1 second	A	1 second	A	1 second	A	1 second	A
2. Congress Street @ Vernon Place								
- Congress Street EB	1 second	A	1 second	A	1 second	A	1 second	A
- Congress Street WB	1 second	A	1 second	A	1 second	A	1 second	A
- Vernon Place	5 second	A	5 second	A	5 second	A	6 second	A
3. Deering Street @ Avon Street								
- Deering Street EB	1 second	A	1 second	A	1 second	A	1 second	A
- Deering Street WB	1 second	A	1 second	A	1 second	A	1 second	A
- Avon Street	3 second	A	3 second	A	4 second	A	3 second	A

The results of the analyses shows that all approaches at each study intersection operates at the highest or “best” level of service.

SUMMARY

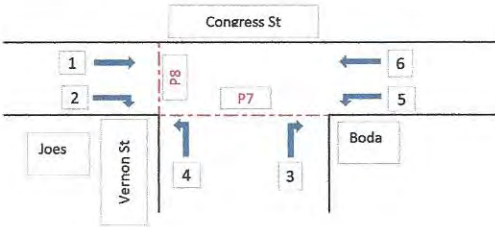
1. The proposed 139 unit apartment building project (that includes 34 efficiency, 97 one-bedroom, and 8 two-bedroom units) can be expected to generate approximately **42** vehicle trips during the morning peak commuter hour and a slightly higher volume of **54** vehicles in the evening peak hour. Additionally, the proposed minor expansion to Joe’s Smoke Shop results in a minor increase in peak hour trips with **4** trips projected for the morning peak hour and a total of **5** trips in the evening peak hour. The minor volume of increased vehicle trips generated by Joe’s Smoke Shop store are expected to continue utilizing the curb side parking spaces on Congress Street for access to the existing variety store.
2. The proposed apartment building design provides a total of 81 on-site parking spaces with 37 of the spaces located in the basement level of the building and the remaining 44 spaces on the first floor. Three of the 81 total spaces are reserved for Joe’s Smoke Shop resulting in a total of 78 spaces remaining for use by tenants of the building.

3. MaineDOT's Traffic Safety Bureau's latest three-year safety report (2012 through 2014) for the identified sections of Congress Street, Deering Street, and Avon Street shows that all roadway segments and intersections experience fewer traffic crashes than the threshold criteria for identification of a high crash location.
4. The detailed intersection mobility assessment completed for 2017 Pre and Post-Development travel conditions documents that traffic generated by the proposed Redfern Properties, LLC apartment project has no measurable impact on traffic operations at each of the study intersections. Traffic is projected to operate at the highest or "*best*" level of service (Level of Service A) under either travel condition.
5. A detailed Transportation Demand Management Plan will be prepared for the proposed apartment building project in accordance with the City of Portland's requirements and submitted at a later date.
6. A detailed parking survey of similar residential apartment buildings in the City of Portland will be conducted to determine an appropriate parking demand rate for the proposed project. The City's Traffic Peer Review Engineer will be consulted in establishing the survey procedures, etc.



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**INTERSECTION PLAN
 WITH NUMBERED MOVEMENTS:**



Portland
 Intersection: Congress St & Vernon St
 Date: 5/5/15
 Day of Week: Tuesday
 Weather: Sunny
 Remarks:

C= Bicycle Movement
 P= Pedestrian Movement

Count Summary Movement

Start	End	1	2	3	4	5	6	7	8	9	10	11	12	Total	P7	P8	C1	C6
7:00	7:15	34	0	1	0	0	65	0	0	0	0	0	0	100	5	1	2	2
Truck Count		3	0	0	0	0	3							6				
Semi Count		0	0	0	0	0	0							0				
Bus Count		2	0	0	0	0	1							3				
7:15	7:30	46	1	1	1	0	75	0	0	0	0	0	0	124	8	2	3	0
Truck Count		1	0	0	0	0	0							1				
Semi Count		2	0	0	0	0	1							3				
Bus Count		1	0	0	0	0	3							4				
7:30	7:45	72	0	0	1	2	98	0	0	0	0	0	0	173	20	6	4	2
Truck Count		5	0	0	0	0	3							8				
Semi Count		0	0	0	0	0	0							0				
Bus Count		1	0	0	0	0	1							2				
7:45	8:00	52	0	1	0	1	84	0	0	0	0	0	0	138	11	1	0	6
Truck Count		2	0	0	0	0	4							6				
Semi Count		0	0	0	0	0	1							1				
Bus Count		3	0	0	0	0	3							6				
8:00	8:15	52	1	0	0	1	101	0	0	0	0	0	0	155	11	1	0	7
Truck Count		0	0	0	0	0	2							2				
Semi Count		0	0	0	0	0	0							0				
Bus Count		3	0	0	0	0	3							6				
8:15	8:30	55	0	1	0	2	104	0	0	0	0	0	0	162	25	4	1	1
Truck Count		3	0	0	0	0	2							5				
Semi Count		0	0	0	0	0	0							0				
Bus Count		1	0	0	0	0	2							3				
8:30	8:45	66	1	4	1	1	89	0	0	0	0	0	0	162	13	5	1	2
Truck Count		2	0	0	0	0	2							4				
Semi Count		0	0	0	0	0	0							0				
Bus Count		0	0	0	0	0	3							3				
8:45	9:00	51	1	3	2	7	100	0	0	0	0	0	0	164	19	4	2	3
Truck Count		0	0	0	0	0	0							0				
Semi Count		0	0	0	0	0	0							0				
Bus Count		3	0	0	0	0	3							6				

PEAK HOUR COUNT

TIME: 8:00 TO: 9:00

236	3	8	3	11	411	0	0	0	0	0	0	672
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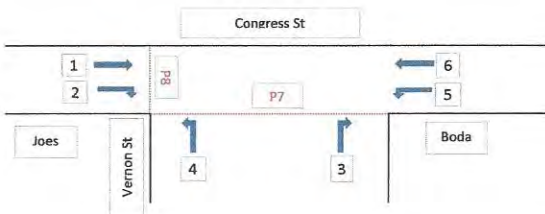
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Adjusted
 Volume



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**INTERSECTION PLAN
WITH NUMBERED MOVEMENTS:**



Portland
Intersection: Congress St/Vernon St
Date: 5/5/15
Day of Week: Tuesday
Weather: Cloudy & Warm
Remarks:

C=Bicycle Movement
P=Pedestrian Movement

Count Summary Movement

Start	End	1	2	3	4	5	6	7	8	9	10	11	12	Total	P7	P8	C1	C2	C4	C5	C6
3:00	3:15	81	0	3	1	1	84	0	0	0	0	0	0	170	25	2	3	1	1	0	3
Truck Count		0	0	0	0	0	4							4							
Semi Count		0	0	0	0	0	0							0							
Bus Count		3	0	0	0	0	0							3							
3:15	3:30	81	1	1	1	0	92	0	0	0	0	0	0	176	34	3	6	0	0	0	2
Truck Count		0	0	0	0	0	2							2							
Semi Count		0	0	0	0	0	0							0							
Bus Count		2	0	0	0	0	4							6							
3:30	3:45	77	1	0	0	1	84	0	0	0	0	0	0	163	34	4	6	0	0	0	0
Truck Count		1	0	0	0	0	1							2							
Semi Count		0	0	0	0	0	0							0							
Bus Count		5	0	0	0	0	1							6							
3:45	4:00	76	0	1	1	2	83	0	0	0	0	0	0	163	31	5	4	0	1	0	5
Truck Count		2	0	0	0	0	0							2							
Semi Count		0	0	0	0	0	0							0							
Bus Count		3	0	0	0	0	3							6							
4:00	4:15	82	2	0	3	0	89	0	0	0	0	0	0	176	27	6	5	0	0	0	5
Truck Count		1	0	0	0	0	0							1							
Semi Count		0	0	0	0	0	0							0							
Bus Count		2	0	0	0	0	2							4							
4:15	4:30	84	0	0	0	2	89	0	0	0	0	0	0	175	37	7	3	0	0	0	5
Truck Count		1	0	0	0	0	0							1							
Semi Count		0	0	0	0	0	0							0							
Bus Count		1	0	0	0	0	1							2							
4:30	4:45	81	1	2	0	1	90	0	0	0	0	0	0	175	24	5	6	0	0	1	5
Truck Count		3	0	0	0	0	0							3							
Semi Count		2	0	0	0	0	0							2							
Bus Count		1	0	0	0	0	3							4							
4:45	5:00	69	0	2	3	1	88	0	0	0	0	0	0	163	19	4	6	0	0	0	7
Truck Count		0	0	0	0	0	2							2							
Semi Count		0	0	0	0	0	1							1							
Bus Count		2	0	0	0	0	1							3							
5:00	5:15	79	2	1	0	3	81	0	0	0	0	0	0	166	36	5	4	0	0	0	5
Truck Count		0	0	0	0	0	2							2							
Semi Count		0	0	0	0	0	0							0							
Bus Count		2	0	0	0	0	2							4							
5:15	5:30	82	2	2	0	1	86	0	0	0	0	0	0	173	48	3	6	0	0	0	1
Truck Count		1	0	0	0	0	3							4							
Semi Count		0	0	0	0	0	0							0							
Bus Count		2	0	0	0	0	1							3							
5:30	5:45	79	2	4	3	4	91	0	0	0	0	0	0	183	47	6	7	0	0	0	4
Truck Count		1	0	0	0	0	1							2							
Semi Count		0	0	0	0	0	0							0							
Bus Count		1	0	0	0	0	0							1							
5:45	6:00	73	2	0	1	2	90	0	0	0	0	0	0	168	30	7	8	1	0	0	1
Truck Count		2	0	0	0	0	0							2							
Semi Count		0	0	0	0	0	0							0							
Bus Count		2	0	0	0	0	3							5							

PEAK HOUR COUNT

TIME: 3:45 TO: 4:45

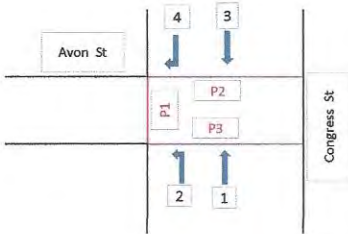
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Adjusted Volume
358 3 3 4 5 361



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**INTERSECTION PLAN
 WITH NUMBERED MOVEMENTS:**



Portland
 Intersection: Congress St/Avon St
 Date: 5/6/15
 Day of Week: Wednesday
 Weather: Sunny
 Remarks:

C= Bicycle Movement
 P= Pedestrian Movement

Count Summary Movement

Start	End	1	2	3	4	5	6	7	8	9	10	11	12	Total	P1	P2	P3	C1	C2	C3	C4
7:00	7:15	51	1	25	2	0	0	0	0	0	0	0	0	79	14	3	1	4	0	4	0
Truck Count		1	0	2	0									3							
Semi Count		0	0	1	0									1							
Bus Count		1	0	1	0									2							
7:15	7:30	60	1	40	0	0	0	0	0	0	0	0	0	101	21	7	2	4	0	3	0
Truck Count		1	0	2	0									3							
Semi Count		2	0	0	0									2							
Bus Count		3	0	1	0									4							
7:30	7:45	90	2	71	1	0	0	0	0	0	0	0	0	164	23	4	1	5	0	3	0
Truck Count		1	0	3	1									5							
Semi Count		0	0	0	0									0							
Bus Count		2	0	1	0									3							
7:45	8:00	88	1	39	0	0	0	0	0	0	0	0	0	128	16	6	5	3	0	2	0
Truck Count		2	0	1	0									3							
Semi Count		0	0	0	0									0							
Bus Count		2	0	1	0									3							
8:00	8:15	90	7	62	0	0	0	0	0	0	0	0	0	159	23	4	2	2	0	3	1
Truck Count		2	0	1	0									3							
Semi Count		0	0	0	0									0							
Bus Count		2	0	5	0									7							
8:15	8:30	116	0	55	0	0	0	0	0	0	0	0	0	171	25	4	0	6	1	1	0
Truck Count		1	1	4	0									6							
Semi Count		0	0	0	0									0							
Bus Count		2	0	1	0									3							
8:30	8:45	111	5	60	1	0	0	0	0	0	0	0	0	177	26	7	3	5	0	4	0
Truck Count		2	2	1	0									5							
Semi Count		1	0	0	0									1							
Bus Count		2	0	0	0									2							
8:45	9:00	96	4	58	1	0	0	0	0	0	0	0	0	159	21	11	3	4	0	4	0
Truck Count		3	0	4	0									7							
Semi Count		2	0	0	0									2							
Bus Count		3	0	3	0									6							

PEAK HOUR COUNT

TIME: 8:00 TO: 9:00

433	19	254	2	0	0	0	0	0	0	0	0	0	0	708
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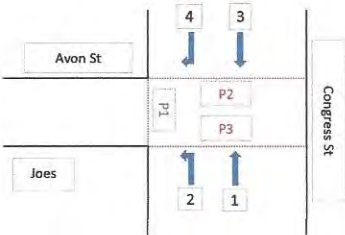
Adjusted Volume: 458 20 268 2 0 0 0 0 0 0 0 0 0 0

Adjusted
 Volume



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**INTERSECTION PLAN
 WITH NUMBERED MOVEMENTS:**



Portland
 Intersection: Congress St/Avon St
 Date: 5/6/15
 Day of Week: Wednesday
 Weather: Nice
 Remarks:

C=Bicycle Movement
 P=Pedestrian Movement

Count Summary Movement

Start	End	1	2	3	4	5	6	7	8	9	10	11	12	Total	P1	P2	P3	C1	C2	C3	C4
3:00	3:15	85	2	76	2	0	0	0	0	0	0	0	0	165	54	10	2	1	0	5	0
	Truck Count	0	0	1	0									1							
	Semi Count	0	0	0	0									0							
	Bus Count	1	0	2	0									3							
3:15	3:30	95	3	83	1	0	0	0	0	0	0	0	0	182	46	14	7	3	0	3	1
	Truck Count	1	0	0	0									1							
	Semi Count	0	0	0	0									0							
	Bus Count	5	0	2	0									7							
3:30	3:45	93	2	73	4	0	0	0	0	0	0	0	0	172	43	7	3	6	0	6	0
	Truck Count	0	0	0	0									0							
	Semi Count	0	0	0	0									0							
	Bus Count	0	0	3	0									3							
3:45	4:00	101	5	71	0	0	0	0	0	0	0	0	0	177	47	13	4	3	0	5	0
	Truck Count	1	0	0	0									1							
	Semi Count	0	0	0	0									0							
	Bus Count	2	0	3	0									5							
4:00	4:15	85	1	78	2	0	0	0	0	0	0	0	0	166	53	6	0	2	0	3	0
	Truck Count	2	0	3	0									5							
	Semi Count	0	0	0	0									0							
	Bus Count	1	0	2	0									3							
4:15	4:30	88	2	74	0	0	0	0	0	0	0	0	0	164	49	8	1	2	0	4	0
	Truck Count	1	0	1	1									3							
	Semi Count	1	0	0	0									1							
	Bus Count	2	0	2	0									4							
4:30	4:45	84	6	75	1	0	0	0	0	0	0	0	0	166	46	12	1	2	0	11	0
	Truck Count	3	0	0	0									3							
	Semi Count	0	0	0	0									0							
	Bus Count	3	0	0	0									3							
4:45	5:00	90	4	78	1	0	0	0	0	0	0	0	0	173	38	10	2	4	0	6	0
	Truck Count	2	0	0	0									2							
	Semi Count	0	0	0	0									0							
	Bus Count	2	0	0	0									2							
5:00	5:15	100	3	89	3	0	0	0	0	0	0	0	0	195	60	13	0	8	0	9	0
	Truck Count	0	0	2	0									2							
	Semi Count	0	0	0	0									0							
	Bus Count	1	0	0	0									1							
5:15	5:30	108	4	95	1	0	0	0	0	0	0	0	0	208	65	15	1	5	0	4	0
	Truck Count	1	0	1	0									2							
	Semi Count	0	0	0	0									0							
	Bus Count	2	0	0	0									2							
5:30	5:45	85	2	80	0	0	0	0	0	0	0	0	0	167	41	6	1	4	2	5	0
	Truck Count	3	0	0	0									3							
	Semi Count	0	0	0	0									0							
	Bus Count	1	0	1	0									2							
5:45	6:00	87	1	81	1	0	0	0	0	0	0	0	0	170	55	23	3	3	1	6	0
	Truck Count	0	0	0	0									0							
	Semi Count	0	0	0	0									0							
	Bus Count	1	0	1	0									2							

PEAK HOUR COUNT

TIME: 4:45 TO: 5:45

395	13	346	5	0	0	0	0	0	0	0	0	0	759
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Adjusted
 Volume

418 14 366 5 0 0 0 0 0 0 0 0 0



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**INTERSECTION PLAN
 WITH NUMBERED MOVEMENTS:**



Portland
 Intersection: Deering St/Avon St
 Date: 5/6/15
 Day of Week: Wednesday
 Weather: Sunny
 Remarks: 7:30-7:45 2 Cyclists went the wrong way on Avon St
7:45-8:00 1 Cyclist went the wrong way on Avon St
8:15-8:30 1 Cyclist went the wrong way on Avon St

C= Bicycle Movement
 P= Pedestrian Movement

Count Summary Movement

Start	End	1	2	3	4	5	6	7	8	9	10	11	12	Total	P8	P9	P10	P11	C2	C5	C6	C7
7:00	7:15	6	0	0	2	1	6	1	0	0	0	0	0	16	3	0	1	0	0	0	0	0
	Truck Count	0	0	0	0	0	0	1						1								
	Semi Count	0	0	0	0	0	0	0						0								
	Bus Count	0	0	0	0	0	0	0						0								
7:15	7:30	5	0	1	0	1	3	0	0	0	0	0	0	10	2	1	6	3	0	0	0	1
	Truck Count	0	0	0	0	0	0	0						0								
	Semi Count	0	0	0	0	0	0	0						0								
	Bus Count	0	0	0	0	0	0	0						0								
7:30	7:45	4	2	0	1	4	9	0	0	0	0	0	0	20	4	3	6	3	0	0	0	0
	Truck Count	0	0	1	0	0	0	0						1								
	Semi Count	0	0	0	0	0	0	0						0								
	Bus Count	0	0	0	0	0	0	0						0								
7:45	8:00	8	1	0	0	4	9	1	0	0	0	0	0	23	4	3	9	4	0	0	0	0
	Truck Count	0	0	0	0	0	0	0						0								
	Semi Count	0	0	0	0	0	0	0						0								
	Bus Count	0	0	0	0	0	0	0						0								
8:00	8:15	7	1	0	3	2	6	3	0	0	0	0	0	22	7	3	6	3	0	0	0	1
	Truck Count	0	0	0	0	0	0	0						0								
	Semi Count	0	0	0	0	0	0	0						0								
	Bus Count	0	0	0	0	0	0	0						0								
8:15	8:30	8	0	0	0	3	6	0	0	0	0	0	0	17	6	2	5	2	1	1	1	1
	Truck Count	1	0	0	0	0	0	1						2								
	Semi Count	0	0	0	0	0	0	0						0								
	Bus Count	0	0	0	0	0	0	0						0								
8:30	8:45	4	3	0	4	9	7	0	0	0	0	0	0	27	4	2	7	2	0	0	1	0
	Truck Count	0	0	0	0	1	0	2						3								
	Semi Count	0	0	0	0	0	0	0						0								
	Bus Count	0	0	0	0	0	0	0						0								
8:45	9:00	2	1	0	2	3	21	1	0	0	0	0	0	30	3	1	4	1	0	0	2	0
	Truck Count	0	0	0	0	0	0	0						0								
	Semi Count	0	0	0	0	0	0	0						0								
	Bus Count	0	0	0	0	0	0	0						0								

PEAK HOUR COUNT

TIME: 8:00 TO: 9:00

22	5	0	9	18	40	7	0	0	0	0	0	101
----	---	---	---	----	----	---	---	---	---	---	---	-----

Adjusted Volumes: 34 5 0 10 19 42 7 0 0 0 0 0



Portland
 Intersection: Deering St/Avon St
 Date: 5/6/15
 Day of Week: Wednesday
 Weather: Nice
 Remarks: 4:15-4:30 1 Cyclist went the wrong way on Avon St
5:00-5:15 1 Cyclist went the wrong way on Avon St

C=Bicycle Movement
P=Pedestrian Movement

Count Summary Movement																								
Start	End	1	2	3	4	5	6	7	8	9	10	11	12	Total	P8	P9	P10	P11	C1	C2	C4	C5	C6	C7
3:00	3:15	6	2	0	3	3	5	0	0	0	0	0	0	19	0	0	3	2	0	0	0	0	0	0
Truck Count		0	0	0	0	0	0	0							0									
Semi Count		0	0	0	0	0	0	0							0									
Bus Count		0	0	0	0	0	0	0							0									
3:15	3:30	7	3	0	2	4	8	2	0	0	0	0	0	26	3	4	3	4	1	0	0	0	0	1
Truck Count		0	0	0	0	0	0	0							0									
Semi Count		0	0	0	0	0	0	0							0									
Bus Count		0	0	0	0	0	0	0							0									
3:30	3:45	4	3	2	1	3	9	1	0	0	0	0	0	23	4	4	3	2	0	0	0	0	1	0
Truck Count		0	0	0	0	0	0	0							0									
Semi Count		0	0	0	0	0	0	0							0									
Bus Count		0	0	0	0	0	0	0							0									
3:45	4:00	3	2	0	1	5	11	4	0	0	0	0	0	26	3	5	0	3	0	0	0	0	0	0
Truck Count		0	0	0	0	0	0	0							0									
Semi Count		0	0	0	0	0	0	0							0									
Bus Count		0	0	0	0	0	0	0							0									
4:00	4:15	5	2	0	1	6	12	2	0	0	0	0	0	28	7	5	6	1	0	1	0	0	0	2
Truck Count		0	0	0	0	0	1	0							1									
Semi Count		0	0	0	0	0	0	0							0									
Bus Count		0	0	0	0	0	0	0							0									
4:15	4:30	2	1	0	0	1	8	1	0	0	0	0	0	13	6	3	5	1	0	0	0	0	0	1
Truck Count		0	0	0	0	0	0	0							0									
Semi Count		0	0	0	0	0	0	0							0									
Bus Count		0	0	0	0	0	0	0							0									
4:30	4:45	3	6	1	1	1	6	4	0	0	0	0	0	22	7	5	4	1	0	0	0	0	2	0
Truck Count		0	0	0	0	0	0	0							0									
Semi Count		0	0	0	0	0	0	0							0									
Bus Count		0	0	0	0	0	0	0							0									
4:45	5:00	5	3	0	2	9	13	1	0	0	0	0	0	33	3	5	2	1	0	0	0	0	0	0
Truck Count		0	0	0	0	0	0	0							0									
Semi Count		0	0	0	0	0	0	0							0									
Bus Count		0	0	0	0	0	0	0							0									
5:00	5:15	5	5	3	2	2	5	2	0	0	0	0	0	24	5	5	9	3	0	0	0	0	0	0
Truck Count		1	0	0	0	0	0	0							1									
Semi Count		0	0	0	0	0	0	0							0									
Bus Count		0	0	0	0	0	0	0							0									
5:15	5:30	5	0	2	3	5	7	0	0	0	0	0	0	22	7	2	3	1	1	0	0	0	1	0
Truck Count		0	0	0	0	0	0	0							0									
Semi Count		0	0	0	0	0	0	0							0									
Bus Count		0	0	0	0	0	0	0							0									
5:30	5:45	7	4	0	1	8	9	1	0	0	0	0	0	30	6	5	5	1	0	1	2	0	0	0
Truck Count		0	0	0	0	0	0	0							0									
Semi Count		0	0	0	0	0	0	0							0									
Bus Count		0	0	0	0	0	0	0							0									
5:45	6:00	5	1	1	0	4	13	2	0	0	0	0	0	26	8	6	6	5	0	0	1	0	0	0
Truck Count		0	0	0	0	0	0	0							0									
Semi Count		0	0	0	0	0	0	0							0									
Bus Count		0	0	0	0	0	0	0							0									

PEAK HOUR COUNT								TIME: 4:45		TO: 5:45	
23	12	5	8	24	34	4	0	0	0	0	110

Adjusted
Volume

24 13 5 9 25 36 4 0 0 0 0

Turn by Turn Traffic Data Services

P.O. Box 1203
Westbrook, Maine 04098

Joes Smoke Shop: Congress St Portland
Monday August 10, 2015
Sunny
Count by: Dawn-Marie Fahey

File Name : Portland, Joes Smoke Shop 081015
Site Code : 00001234
Start Date : 8/10/2015
Page No : 5

	Exit From East		Enter From West		
Start Time	Thru	App. Total	Thru	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1					
Peak Hour for Entire Intersection Begins at 07:45 AM					
07:45 AM	2	2	3	3	5
08:00 AM	2	2	2	2	4
08:15 AM	1	1	2	2	3
08:30 AM	3	3	1	1	4
Total Volume	8	8	8	8	16
% App. Total	100		100		
PHF	.667	.667	.667	.667	.800

Turn by Turn Traffic Data Services

P.O. Box 1203
Westbrook, Maine 04098

Portland: Joes Smoke Shop
Monday August 10, 2015
Sunny
Count by: Patrick Frie

File Name : Portland, Joes Smoke Shop 081015 pm
Site Code : 00000003
Start Date : 8/10/2015
Page No : 5

Start Time	Exit From East		Entrance From West		Int. Total
	Thru	App. Total	Thru	App. Total	
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1					
Peak Hour for Entire Intersection Begins at 04:15 PM					
04:15 PM	4	4	4	4	8
04:30 PM	2	2	3	3	5
04:45 PM	2	2	2	2	4
05:00 PM	3	3	1	1	4
Total Volume	11	11	10	10	21
% App. Total	100		100		
PHF	.688	.688	.625	.625	.656

Default title from Map Document



● Nodes - 3

Date: 7/29/2015
Time: 7:09:41 AM

0.00 0.01 0.02 0.03 0.04
Miles

Maine Department Of Transportation - Traffic Engineering, Crash Records Section

Crash Summary I

Nodes																	
Node	Route - MP		Node Description	U/R	Total Crashes	Injury K	Crashes A	Crashes B	Crashes C	Percent Annual M Injury	Ent-Veh	Crash Rate	Critical Rate	CRF			
19060	0560160 - 1.58		Int of AVON ST, CONGRESS ST	2	5	0	0	1	1	3	40.0	4.301	0.39	0.37	1.05		
												Statewide Crash Rate:		0.14			
19082	0560160 - 1.60		Int of CONGRESS ST VERNON PL	2	3	0	0	0	0	3	0.0	4.563	0.22	0.36	0.00		
												Statewide Crash Rate:		0.14			
16818	0560160 - 1.63		Int of CONGRESS ST, STATE ST	9	25	0	0	2	3	20	20.0	9.904	0.84	1.03	0.00		
												Statewide Crash Rate:		0.66			
19083	0560755 - 0.05		End of VERNON PL	2	0	0	0	0	0	0	0.0	0.072	0.00	-0.10	0.00		
												Statewide Crash Rate:		0.14			
19061	0560030 - 0.07	0509481	POR,DEERING,AVON ST.	2	1	0	0	0	1	0	100.0	0.477	0.70	0.60	1.17		
												Statewide Crash Rate:		0.14			
Study Years: 3.00					NODE TOTALS:		34	0	0	3	5	26	23.5	19.317	0.59	0.61	0.96

Maine Department Of Transportation - Traffic Engineering, Crash Records Section

Crash Summary Report

Report Selections and Input Parameters

REPORT SELECTIONS

☒ Crash Summary I ☒ Section Detail ☒ Crash Summary II ☐ 1320 Public ☐ 1320 Private ☒ 1320 Summary

REPORT DESCRIPTION

Congress St Avon St area in Portland

REPORT PARAMETERS

Year 2012, Start Month 1 through Year 2014 End Month: 12

Route: 0560160	Start Node: 19060 End Node: 16818	Start Offset: 0 End Offset: 0	☐ Exclude First Node ☐ Exclude Last Node
Route: 0560755	Start Node: 19082 End Node: 19083	Start Offset: 0 End Offset: 0	☒ Exclude First Node ☐ Exclude Last Node
Route: 0560030	Start Node: 19061 End Node: 19060	Start Offset: 0 End Offset: 0	☐ Exclude First Node ☒ Exclude Last Node

Maine Department Of Transportation - Traffic Engineering, Crash Records Section

Crash Summary I

Sections

Sections																	
Start Node	End Node	Element	Offset Begin - End	Route - MP	Section U/R Length	Total Crashes	K	Injury Crashes				Percent Injury	Annual HMVM	Crash Rate	Critical Rate	CRF	
19060	19082	3122302	0 - 0.02	0560160 - 1.58	0.02	2	1	0	0	0	0	1	0.0	0.00087	385.20	695.12	0.00
Int of AVON ST, CONGRESS ST				RD INV 05 60160										Statewide Crash Rate: 190.29			
16818	19082	3121769	0 - 0.03	0560160 - 1.60	0.03	2	0	0	0	0	0	0	0.0	0.00140	0.00	619.93	0.00
Int of CONGRESS ST, STATE ST				RD INV 05 60160										Statewide Crash Rate: 190.29			
19082	19083	194796	0 - 0.05	0560755 - 0	0.05	2	0	0	0	0	0	0	0.0	0.00007	0.00	1370.57	0.00
Int of CONGRESS ST, VERNON PL				RD INV 05 60755										Statewide Crash Rate: 359.82			
19060	19061	194773	0 - 0.08	0560030 - 0.07	0.08	2	1	0	0	0	0	1	0.0	0.00013	2492.47	1553.10	1.60
Int of AVON ST, CONGRESS ST				RD INV 05 60030										Statewide Crash Rate: 359.82			
Study Years: 3.00				Section Totals:		0.18	2	0	0	0	0	2	0.0	0.00247	270.14	564.95	0.48
				Grand Totals:		0.18	36	0	0	3	5	28	22.2	0.00247	4862.56	760.90	6.39

CURB-SIDE TRIPS
 JOE'S SMOKE SHOP
 8 ENTER 8 EXIT
 458
 20

475
 12

CONGRESS STREET

268
 2

265
 3

3
 6

ONE WAY

AVON STREET

VERNON PLACE

SITE
 BASEMENT
 GARAGE ENTRANCE

SITE
 1ST FLOOR
 GARAGE ENTRANCE

10
 7
 0

42
 19

DEERING STREET

24
 5

2015 DESIGN HOUR TRAFFIC
 AM PEAK HOUR

FIGURE 1

687 CONGRESS STREET APARTMENT BLDG
 PORTLAND, MAINE
 DATE: AUGUST 12, 2013
 FIGURE: 1

TRAFFIC SOLUTIONS
 235 BANCROFT STREET, PORTLAND, MAINE 04102-1720

E:\LAND PROJECTS\34000\344250 TRAFFIC SOLUTIONS\687 CONGRESS ST APARTMENT\687CONGRESS ST.DWG

418
14

11 ENTER 10 EXIT

CURB-SIDE TRIPS
JOE'S SMOKE SHOP

428
5

CONGRESS STREET

366
5

ONE WAY

363
3

4
3

AVON STREET

VERNON PLACE

SITE
BASEMENT
GARAGE ENTRANCE

SITE
1ST FLOOR
GARAGE ENTRANCE

9
4
5

36
25

DEERING STREET

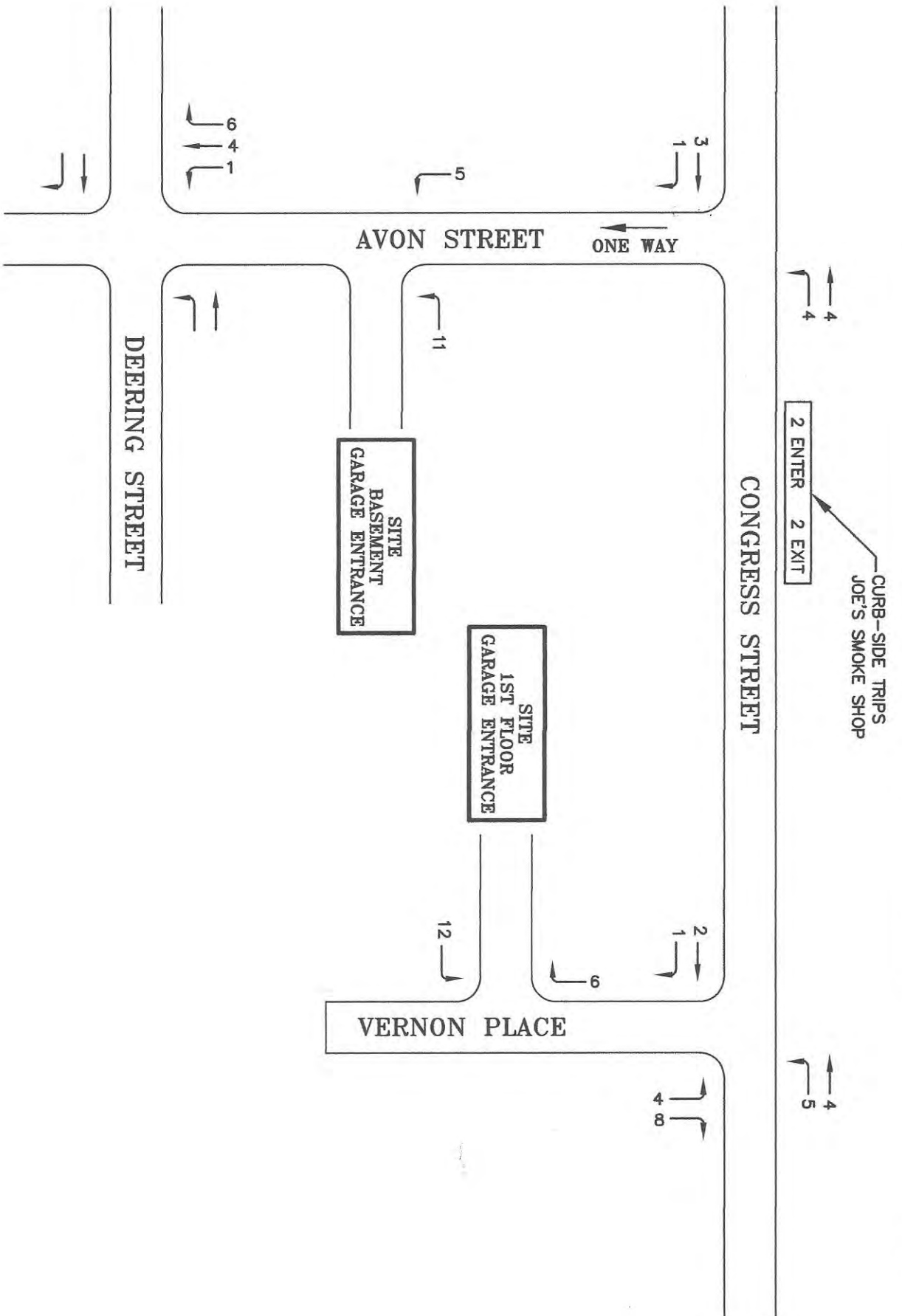
24
13

2015 DESIGN HOUR TRAFFIC

PM PEAK HOUR

FIGURE 2

SITE TRAFFIC ASSIGNMENT AM PEAK HOUR FIGURE 3



CURB-SIDE TRIPS
JOE'S SMOKE SHOP
3 ENTER 2 EXIT

CONGRESS STREET

AVON STREET

ONE WAY

SITE
BASEMENT
GARAGE ENTRANCE

SITE
1ST FLOOR
GARAGE ENTRANCE

VERNON PLACE

DEERING STREET

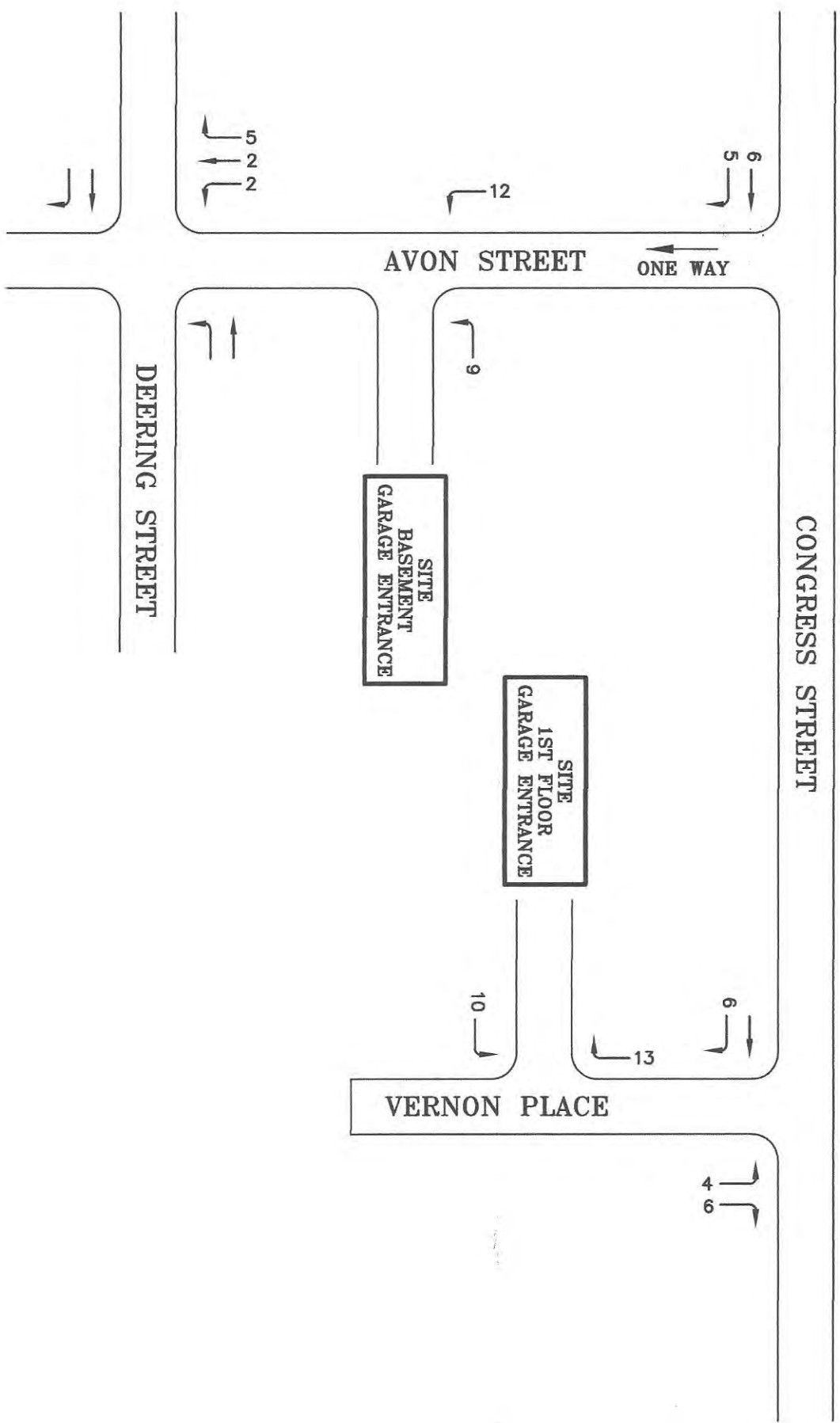
SITE TRAFFIC ASSIGNMENT

PM PEAK HOUR

FIGURE 4

Project Name and Location
687 CONGRESS STREET APARTMENT BLDG
PORTLAND, MAINE
DATE: AUGUST 12, 2015

TRAFFIC SOLUTIONS
235 BANCROFT STREET, PORTLAND, MAINE 04102-1720



CURB-SIDE TRIPS
JOE'S SMOKE SHOP
8 ENTER 8 EXIT

495
22

513
13

CONGRESS STREET

AVON STREET
ONE WAY

VERNON PLACE

DEERING STREET

SITE
BASEMENT
GARAGE ENTRANCE

SITE
1ST FLOOR
GARAGE ENTRANCE

289
2

289
3

3
10

11
8
0

45
21

26
5

2017 PRE-DEVELOPMENT TRAFFIC
AM PEAK HOUR
FIGURE 5

Project Name and Address
687 CONGRESS STREET APARTMENT BLDG
PORTLAND, MAINE
DATE: AUGUST 12, 2015

TRAFFIC SOLUTIONS
235 BANCROFT STREET, PORTLAND, MAINE 04102-1720
E:\LAND PROJECTS\34000\34429 TRAFFIC SOLUTIONS\687 CONGRESS ST\TRAFFIC\687CONGRESS ST.DWG

CURB-SIDE TRIPS
JOE'S SMOKE SHOP
11 ENTER 10 EXIT

462
5

CONGRESS STREET

395
5

ONE WAY

AVON STREET

10
4
5

39
27

DEERING STREET

26
14

SITE
BASEMENT
GARAGE ENTRANCE

SITE
1ST FLOOR
GARAGE ENTRANCE

392
3

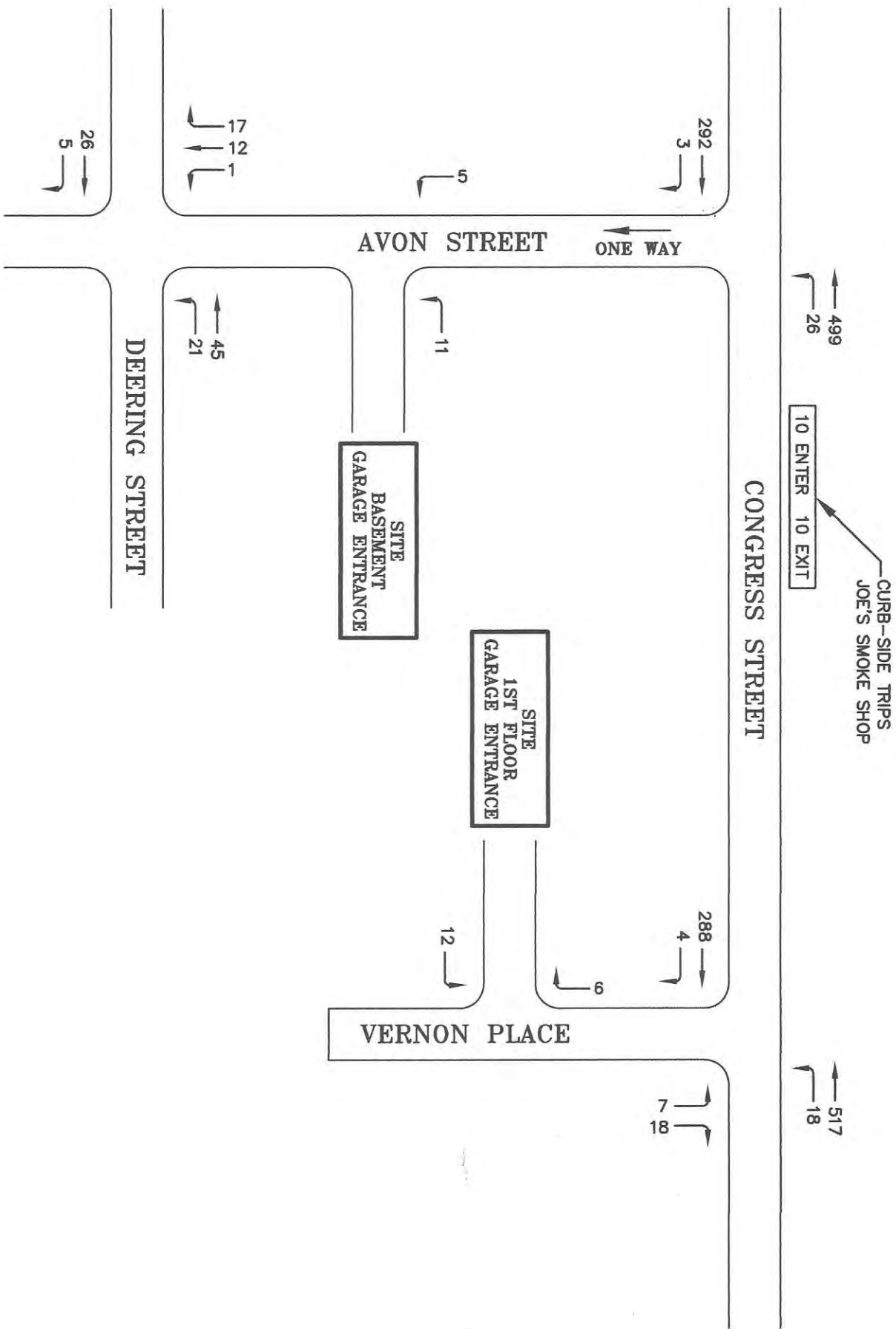
4
3

VERNON PLACE

2017 PRE-DEVELOPMENT TRAFFIC

PM PEAK HOUR

FIGURE 6



2017 POST-DEVELOPMENT TRAFFIC
AM PEAK HOUR
FIGURE 7

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	7:25	7:25	7:25	7:25	7:25	7:25
End Time	8:30	8:30	8:30	8:30	8:30	8:30
Total Time (min)	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	905	930	907	884	898	904
Vehs Exited	902	929	911	883	895	904
Starting Vehs	3	2	5	6	5	3
Ending Vehs	6	3	1	7	8	4
Travel Distance (mi)	135	140	136	132	135	136
Travel Time (hr)	4.9	5.1	5.0	4.8	5.0	5.0
Total Delay (hr)	0.3	0.3	0.3	0.3	0.3	0.3
Total Stops	36	39	48	32	47	39
Fuel Used (gal)	4.3	4.5	4.3	4.2	4.4	4.4

Interval #0 Information Seeding

Start Time 7:25
End Time 7:30
Total Time (min) 5
Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time 7:30
End Time 8:30
Total Time (min) 60
Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	905	930	907	884	898	904
Vehs Exited	902	929	911	883	895	904
Starting Vehs	3	2	5	6	5	3
Ending Vehs	6	3	1	7	8	4
Travel Distance (mi)	135	140	136	132	135	136
Travel Time (hr)	4.9	5.1	5.0	4.8	5.0	5.0
Total Delay (hr)	0.3	0.3	0.3	0.3	0.3	0.3
Total Stops	36	39	48	32	47	39
Fuel Used (gal)	4.3	4.5	4.3	4.2	4.4	4.4

3: Congress & Avon Performance by approach

Approach	EB	WB	All
Denied Del/Veh (s)	0.0	0.3	0.1
Total Del/Veh (s)	0.3	0.2	0.3

4: Avon & Deering Performance by approach

Approach	EB	WB	NB	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.1
Total Del/Veh (s)	0.7	0.1	3.2	1.0

7: Congress & Vernon Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.4	0.0	0.1	0.3
Total Del/Veh (s)	0.5	0.1	5.3	0.4

Total Network Performance

Denied Del/Veh (s)	0.3
Total Del/Veh (s)	0.9

Intersection: 3: Congress & Avon

Movement	EB
Directions Served	LT
Maximum Queue (ft)	70
Average Queue (ft)	7
95th Queue (ft)	36
Link Distance (ft)	80
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: Avon & Deering

Movement	EB	NB
Directions Served	LT	LTR
Maximum Queue (ft)	13	32
Average Queue (ft)	1	14
95th Queue (ft)	5	39
Link Distance (ft)	294	424
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 7: Congress & Vernon

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	57	36
Average Queue (ft)	3	9
95th Queue (ft)	24	32
Link Distance (ft)	387	126
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 0

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	7:25	7:25	7:25	7:25	7:25	7:25
End Time	8:30	8:30	8:30	8:30	8:30	8:30
Total Time (min)	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	973	955	918	928	885	931
Vehs Exited	970	953	921	925	887	929
Starting Vehs	3	4	8	3	7	3
Ending Vehs	6	6	5	6	5	4
Travel Distance (mi)	146	143	138	138	131	139
Travel Time (hr)	5.5	5.4	5.1	5.2	5.0	5.2
Total Delay (hr)	0.4	0.4	0.4	0.4	0.4	0.4
Total Stops	80	69	63	68	73	70
Fuel Used (gal)	5.0	4.7	4.6	4.6	4.4	4.6

Interval #0 Information Seeding

Start Time 7:25
End Time 7:30
Total Time (min) 5
Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time 7:30
End Time 8:30
Total Time (min) 60
Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	973	955	918	928	885	931
Vehs Exited	970	953	921	925	887	929
Starting Vehs	3	4	8	3	7	3
Ending Vehs	6	6	5	6	5	4
Travel Distance (mi)	146	143	138	138	131	139
Travel Time (hr)	5.5	5.4	5.1	5.2	5.0	5.2
Total Delay (hr)	0.4	0.4	0.4	0.4	0.4	0.4
Total Stops	80	69	63	68	73	70
Fuel Used (gal)	5.0	4.7	4.6	4.6	4.4	4.6

3: Congress & Avon Performance by approach

Approach	EB	WB	All
Denied Del/Veh (s)	0.0	0.2	0.1
Total Del/Veh (s)	0.4	0.2	0.3

4: Avon & Deering Performance by approach

Approach	EB	WB	NB	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.1
Total Del/Veh (s)	0.7	0.0	3.8	1.3

7: Congress & Vernon Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.4	0.0	0.1	0.3
Total Del/Veh (s)	0.6	0.1	5.1	0.6

Total Network Performance

Denied Del/Veh (s)	0.3
Total Del/Veh (s)	1.2

Intersection: 3: Congress & Avon

Movement	EB
Directions Served	LT
Maximum Queue (ft)	52
Average Queue (ft)	7
95th Queue (ft)	33
Link Distance (ft)	80
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: Avon & Deering

Movement	EB	NB
Directions Served	LT	LTR
Maximum Queue (ft)	10	31
Average Queue (ft)	1	19
95th Queue (ft)	6	43
Link Distance (ft)	294	424
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 7: Congress & Vernon

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	54	53
Average Queue (ft)	5	19
95th Queue (ft)	27	46
Link Distance (ft)	387	126
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 0

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	4:25	4:25	4:25	4:25	4:25	4:25
End Time	5:30	5:30	5:30	5:30	5:30	5:30
Total Time (min)	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	905	930	907	884	898	904
Vehs Exited	902	929	911	883	895	904
Starting Vehs	3	2	5	6	5	3
Ending Vehs	6	3	1	7	8	4
Travel Distance (mi)	135	140	136	132	135	136
Travel Time (hr)	4.9	5.1	5.0	4.8	5.0	5.0
Total Delay (hr)	0.3	0.3	0.3	0.3	0.3	0.3
Total Stops	36	39	48	32	47	39
Fuel Used (gal)	4.3	4.5	4.3	4.2	4.4	4.4

Interval #0 Information Seeding

Start Time 4:25
End Time 4:30
Total Time (min) 5
Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time 4:30
End Time 5:30
Total Time (min) 60
Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	Avg
Vehs Entered	905	930	907	884	898	904
Vehs Exited	902	929	911	883	895	904
Starting Vehs	3	2	5	6	5	3
Ending Vehs	6	3	1	7	8	4
Travel Distance (mi)	135	140	136	132	135	136
Travel Time (hr)	4.9	5.1	5.0	4.8	5.0	5.0
Total Delay (hr)	0.3	0.3	0.3	0.3	0.3	0.3
Total Stops	36	39	48	32	47	39
Fuel Used (gal)	4.3	4.5	4.3	4.2	4.4	4.4

3: Congress & Avon Performance by approach

Approach	EB	WB	All
Denied Del/Veh (s)	0.0	0.3	0.1
Total Del/Veh (s)	0.3	0.2	0.3

4: Avon & Deering Performance by approach

Approach	EB	WB	NB	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.1
Total Del/Veh (s)	0.7	0.1	3.2	1.0

7: Congress & Vernon Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.4	0.0	0.1	0.3
Total Del/Veh (s)	0.5	0.1	5.3	0.4

Total Network Performance

Denied Del/Veh (s)	0.3
Total Del/Veh (s)	0.9

Intersection: 3: Congress & Avon

Movement	EB
Directions Served	LT
Maximum Queue (ft)	70
Average Queue (ft)	7
95th Queue (ft)	36
Link Distance (ft)	80
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 4: Avon & Deering

Movement	EB	NB
Directions Served	LT	LTR
Maximum Queue (ft)	13	32
Average Queue (ft)	1	14
95th Queue (ft)	5	39
Link Distance (ft)	294	424
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 7: Congress & Vernon

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	57	36
Average Queue (ft)	3	9
95th Queue (ft)	24	32
Link Distance (ft)	387	126
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 0

Summary of All Intervals

Run Number	1	2	3	4	5	Avg
Start Time	4:25	4:25	4:25	4:25	4:25	4:25
End Time	5:30	5:30	5:30	5:30	5:30	5:30
Total Time (min)	65	65	65	65	65	65
Time Recorded (min)	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1
Vehs Entered	1013	1058	1049	1001	1005	1025
Vehs Exited	1011	1062	1044	1005	1000	1024
Starting Vehs	3	6	2	7	5	4
Ending Vehs	5	2	7	3	10	5
Travel Distance (mi)	151	158	158	151	150	154
Travel Time (hr)	5.7	6.0	6.0	5.7	5.6	5.8
Total Delay (hr)	0.4	0.5	0.5	0.4	0.4	0.4
Total Stops	64	67	83	62	52	64
Fuel Used (gal)	5.0	5.3	5.3	5.0	4.9	5.1

Interval #0 Information Seeding

Start Time	4:25
End Time	4:30
Total Time (min)	5
Volumes adjusted by Growth Factors.	
No data recorded this interval.	

Interval #1 Information Recording

Start Time	4:30
End Time	5:30
Total Time (min)	60
Volumes adjusted by Growth Factors.	

Run Number	1	2	3	4	5	Avg
Vehs Entered	1013	1058	1049	1001	1005	1025
Vehs Exited	1011	1062	1044	1005	1000	1024
Starting Vehs	3	6	2	7	5	4
Ending Vehs	5	2	7	3	10	5
Travel Distance (mi)	151	158	158	151	150	154
Travel Time (hr)	5.7	6.0	6.0	5.7	5.6	5.8
Total Delay (hr)	0.4	0.5	0.5	0.4	0.4	0.4
Total Stops	64	67	83	62	52	64
Fuel Used (gal)	5.0	5.3	5.3	5.0	4.9	5.1

3: Congress & Avon Performance by approach

Approach	EB	WB	All
Denied Del/Veh (s)	0.0	0.4	0.2
Total Del/Veh (s)	0.4	0.3	0.4

4: Avon & Deering Performance by approach

Approach	EB	WB	NB	All
Denied Del/Veh (s)	0.1	0.1	0.0	0.1
Total Del/Veh (s)	0.8	0.1	3.4	1.3

7: Congress & Vernon Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.4	0.0	0.1	0.2
Total Del/Veh (s)	0.6	0.1	6.5	0.5

Total Network Performance

Approach	EB	WB	SB	All
Denied Del/Veh (s)				0.4
Total Del/Veh (s)				1.2

Intersection: 3: Congress & Avon

Movement	EB	WB
Directions Served	LT	TR
Maximum Queue (ft)	72	8
Average Queue (ft)	10	0
95th Queue (ft)	43	6
Link Distance (ft)	80	235
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	1	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 4: Avon & Deering

Movement	EB	NB
Directions Served	LT	LTR
Maximum Queue (ft)	13	36
Average Queue (ft)	1	20
95th Queue (ft)	6	45
Link Distance (ft)	294	424
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 7: Congress & Vernon

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	60	36
Average Queue (ft)	6	13
95th Queue (ft)	35	38
Link Distance (ft)	387	126
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 1

Gorrill-Palmer Consulting Engineers, Inc.

Mr. Robert Metcalf
 March 26, 2014
 Page 3 of 4

on the safety of this intersection due to its low trip generation and the majority of the traffic will park off site.

Parking Assessment

The City ordinance suggests one parking space per housing unit which would result in the Applicant needing to provide a total of 18 spaces. Providing more parking than needed results in loss of open space and increases stormwater impacts, and underutilization of valuable urban land. At the same time, providing too little parking would have adverse impacts on residents and the surrounding neighborhood. The applicant's goal through the parking demand analysis process is to find the appropriate ratio of parking spaces. Our office has data suggesting actual parking demand will be well below one space per unit for affordable housing. To estimate the parking demand for the proposed project, Gorrill-Palmer Consulting Engineers, Inc. reviewed our files for relevant parking studies we have completed and determined that two were relevant to this project and are summarized below:

- Island View Apartments in Portland- This inventory was performed on July 12, 2004 from 6:00 to 9:00 PM. Island View Apartments is a 70-unit apartment building on the corner of Walnut and North Streets in Portland. It contains a total of 84 parking spaces, 29 of which are designated visitor parking only, and 2 of which are handicap. In the peak half-hour period, a maximum of 49 parking spaces were occupied. This translates to a demand of 0.70 parking spaces per dwelling unit.
- As part of studies for similar projects in the past, our office examined the parking occupancy of apartment buildings in downtown Portland with dedicated parking lots, either behind or within the building as part of another application. Our office completed parking occupancy counts from 10-11 PM (within the peak period, based on ITE and ULI data) at 53 Danforth Street, 645 Congress Street, and Walker Terrace (at the corner of Congress and Walker Street) on Tuesday, October 26, 2010. See summary below.
- In addition, we referenced the parking supply for Franklin Towers and Oak Street Lofts. Franklin Towers has 200 units, and based upon aerial data, a parking supply of 56 spaces. Oak Street Lofts has 37 units, and 16 parking spaces, although it should be noted that half of these spaces (eight) are for motorcycles. For the purposes of this letter, it is assumed that peak demand at both of these facilities is at 100 percent occupancy.

Based on the occupancy counts, the following parking demand was determined:

53 Danforth:	43 units, 29 spaces occupied	=	0.67 spaces/unit
645 Congress:	56 units, 28 spaces occupied	=	0.50 spaces/unit
Walker Terrace:	40 units, 20 spaces occupied	=	0.50 spaces/unit
Oak Street Lofts:	37 units, 16 spaces occupied*	=	0.43 spaces/unit
Franklin Towers:	200 units, 58 spaces occupied**	=	0.29 spaces/unit
AVERAGE:			0.48spaces/unit

*Assumes 100% occupancy at Oak Street.

Gorrill-Palmer Consulting Engineers, Inc.

Mr. Robert Metcalf
March 26, 2014
Page 4 of 4

**** Assumes 58 spaces based upon aerial imagery, and 100% occupancy at Franklin Towers.**

This information indicates an average need for 0.48 spaces per apartment within the Portland Peninsula.

Based on the level of demand at the above referenced studies, it is the opinion of Gorrill Palmer that appropriate parking demand for the proposed 134 Washington Avenue Efficiencies is 0.70 spaces per unit, translating to a demand for 13 spaces. Of these 13 spaces, 2 would be provided on site and 11 off site through the City's in lieu fee process.

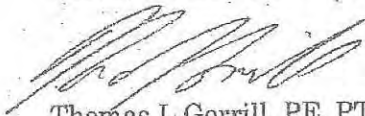
Our office completed an on street parking assessment within a 360 foot radius of the project on Monday March 24, 2014 at 11:30 PM. This radius is within a 2 minute walk to the site. This information showed there are 73 spaces available and 24 were occupied at that time, presumably by residents.

Closing

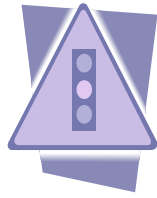
Please contact this office with any questions.

Sincerely,

Gorrill-Palmer Consulting Engineers, Inc.



Thomas L Gorrill, PE, PTOE
Principal

**Traffic Solutions***William J. Bray, P.E.*

235 Bancroft Street

Portland, ME 04102

(207) 774-3603

(207) 400-6890 mobile

trafficsolutions@maine.rr.com**MEMORANDUM**

TO: Will Savage, Acorn Engineering, Inc.

FROM: Bill Bray, P.E., Traffic Consultant

DATE: July 30, 2015

SUBJECT: 667 Congress Street – Traffic and Parking Assessment Requirements

Based upon my understanding, the proposed 667 Congress Street project is a 139-unit infill development located near Longfellow Square in Portland. The current site proposal calls for an eight-story building with first floor commercial retail space (Joe's Smoke Shop) and the remaining floors reserved for the proposed residential apartment units. There are two-levels of underground parking contemplated with approximately 81 spaces dedicated to building tenants. The first floor of the proposed parking will outlet onto Vernon Place and the second floor will outlet onto Avon Street. The proposed project will rebuild the existing sidewalk along the Congress Street frontage of the project and will construct a wider sidewalk along the full length of Avon Street.

An informal meeting was held with Thomas Errico, P.E., the City's Traffic Peer Review Consultant, to determine the scope of effort required to permit the proposed project. Mr. Errico advised the need for a detailed traffic impact study that measures the post-development traffic impact of the proposed project on the following roadway intersections:

1. Congress Street @ Avon Street
2. Avon Street @ Deering Street
3. Congress Street @ Vernon Place

Manual traffic counts have been collected at the noted intersections during both the morning and afternoon "peak" commuter hours and the data summarized to reflect existing "peak" travel conditions. Trip generation estimates and the assignment of those trips to the roadway network will be prepared for the proposed project based upon national data; current roadway safety trends will be reviewed and evaluated for the study area intersections; intersection operations and level of service measurements will be determined for each study intersection for both a pre and post-development travel condition. This effort will be summarized in the preparation of a detailed traffic impact study for the proposed project. A separate parking demand assessment will be conducted at multiple existing residential properties in the City of Portland to determine an appropriate parking space requirement per residential unit for the proposed project. Finally, in accordance with the City Ordinance, a detailed Transportation Demand Management plan will be prepared for the proposed project that details what efforts will be employed by the apartment complex in reducing vehicle miles traveled and parking demand of the proposed project.

667 Congress Street
Neighborhood Meeting Certification

I, Jonathan Culley, of Redfern Properties LLC hereby certify that a neighborhood meeting was held on August 26, 2015 at our office at Reiche School Community Room, 166 Brackett Street, Portland at 6:00pm.

I also certify that on August 11, 2015, invitations were mailed to the following:

1. All addresses on the mailing list provided by the Planning Division which includes property owners within 500 feet of the proposed development or within 1000 feet of a proposed industrial subdivision or industrial zone change.
2. Residents on the "interested parties" list.
3. A digital copy of the notice was also provided to the Planning Division at jmy@portlandmaine.gov and Shukria Wiar shukriaw@portlandmaine.gov the assigned planner, to be forwarded to those on the interested citizen list who receive e-mail notices.

Signed,


_____ 8/27/2015

Attached to this certification are:

1. Copy of the invitation sent
2. Sign-in sheet
3. Meeting minutes



P.O. Box 8816
Portland, ME 04104
Office: 207-221-5746
Fax: 207-221-2822
www.redfernproperties.com

August 11, 2015

Dear Neighbor:

Please join us for a neighborhood meeting to discuss our plans for a new development at 667 Congress St. in Portland, the site of Joe's Super Variety. The project consists of ground floor commercial space, which will be the new home of Joe's Super Variety and 139 residential rental apartments on Floors 2-8. This meeting pertains to our Level III Site Plan Application.

Meeting Location:	Reiche School Community Room, 166 Brackett St., Portland
Meeting Date:	Wednesday, August 26th
Meeting Time:	6:00pm

The City Code requires that property owners within 500 feet of the proposed development and residents on an "interested parties list", be invited to participate in a neighborhood meeting. A sign-in sheet will be circulated and minutes of the meeting will be taken. Both the sign-in sheet and minutes will be submitted to the Planning Board.

If you have any questions, please contact me at 207-776-9715 or jonathan@redfernproperties.com. I hope to see you at the meeting.

Sincerely,

A handwritten signature in blue ink, appearing to read "Jonathan Culley".

Jonathan Culley
Redfern Properties LLC

SIGN-IN SHEET

667 Congress Street Apartment Project

Neighborhood Meeting related to Level III Site Plan Application

August 26, 2015, 6pm

Reiche School Community Room

Name

Address

Email (Optional)

Com

GMA 1

Name Pat O'Donnell

442 Cumberland

patodanell 6c

PHYLLIS ROGER

160 PINE ST.

Michelle Souliere

The Green Hand Bookshop
1401 Congress St.

michelle.souliere@gmail.com

Loren Coleman

Int'l Cryptozoology Museum
11 Avon Street

lcoleman@maine.rr.com

Ed Resnaisky

115 CLARK ST., PTH, ME

Edward Resnisky@yahoo.com

Kenn Guimond

660 Congress St.

Guimondgroup@Aol.com

Michael Kiley

18⁷ rue Street

M.Kelly@WABoston.com

Jedeth West

15 September 2017

WESTSI@MMC.ORG

Stellen Schrift

11 25/10/1957

SOS Media Collection

Frank Rogers

11 25/10/1957

FRASER & NEAVE

667 Congress Street

Neighborhood Meeting – Level III Site Plan Application

Meeting held August 26, 2015, 6pm at Reiche School Community Room (166 Brackett St.), Portland

Meeting Minutes:

Please note that minutes are not verbatim, but we have made our best efforts to reflect meaning and intent.

The meeting began at 6:03pm. Jonathan Culley, principal of Redfern Properties introduced himself and the design team consisting of Ryan Senatore of Ryan Senatore Architecture, Civil Engineer Will Savage of Acorn Engineering.

Culley explained the City of Portland's approval process, that this evening's meeting is related to the Level III Site Plan Application, which focuses on the more technical aspects of the project such as traffic, parking, stormwater, architectural design, landscaping, etc. He noted separate Historic Preservation Board approval process and the upcoming meeting with the Historic Board on September 2nd. Culley noted that a Planning Board workshop has been scheduled for September 29th, 2015.

Culley described the project in general and then turned the floor over to Ryan Senatore. Ryan showed a series of building plans, elevations, and renderings and discussed architectural themes and elements.

Will Savage of Acorn Engineering discussed site improvements including grading, storm water plans, utilities plans, and parking lot configuration.

Culley then turned the discussion to parking, acknowledging that there were some parking concerns amongst neighbors. Culley talked about the most progressive urban planning models and how smart-growth planning focuses on less parking in urban neighbors, emphasizing walkability and transit. He discussed what the City of Minneapolis is doing to reduce parking and thus reduce the cost of housing. He referenced a University of Connecticut study that concluded that the most vibrant urban areas are characterized by less parking and not more.

Culley then described three approaches that the project would take to minimize parking demand amongst tenants:

1. Public and private car share - tenants in building have 1 shared electric car. The private car share would be the first of its kind in Portland.
2. Unbundling rent from parking fees -separate costs for parking; encourages individual cost-benefit analysis
3. Subsidize monthly metro cards for tenants who opt out of parking

The floor was then opened for questions.

Q: Is there a plan for restaurant parking? Have there been any conversations with the local owners who currently lease the lot yet?

A: Traffic analysis team is looking into existing long term leases for the current owners; there are also continued conversations with these owners and research on leasing opportunities

Q: (Continued emphasis that redevelopment will put strain on on-street parking demand especially for restaurant patrons)

Q: Landlord -owns multiple properties in the surrounding area and primary concern is parking and explained that it is hard to rent apartments without offering parking.

Q: Are there any plans to go deeper or higher with parking garage? (adding another floor of parking)

A: No this is cost prohibitive and not feasible given the size of the lot.

Will Savage referenced a Gorrill Palmer study which determined that one-bedroom apartments on average consumed 0.48 parking spaces.

Q: Comment by Property Manager with the opposite experience. Never had a problem renting units without parking spaces and often had tenants without cars.

Q: Will there be an active entrance off of Avon?

A: Yes, there is both the basement parking level entrance and a side tenant entrance with a façade, attempting to engage Avon Street.

Q: Is there a possibility of installing a heated sidewalk along Avon?

A: It is not currently in the plans but there could be continued research (all heat in the building is provided by air source heat pumps)

Q: Will the transportation committee have to approve project?

A: The Department of Public Services (DPS) reviews our plans as part of the Site Plan Review. The City also hires a traffic engineer to review our plans. So transportation issues are part of the Site Plan Review process by the Planning Board.

Q: What will be used as a vendor drop-off location for Joe's?

A: It is planned that there will be continued use of Congress Street for vendors; the street is wider than either Vernon and Avon and will better accommodate the drop-offs. However, there are dropdowns along Vernon for vendors if need be.

Q: Will the tenants be paying for heat?

A: Yes (electricity). Heat is provided by electric mini-split heat pumps.

Q: What is the definition of market rent and what will be the cost of these units?

ANS: Market rent is defined by the supply and demand of the area, but we foresee studios at around \$1100/month and 1bedrooms at \$1400/month.

Q: Will you be addressing sidewalks on Avon St.? Will there be continued access to businesses on Avon Street during construction?

A: We are considering options for Avon St. Currently Avon St. is less than 15' wide and this is not optimal. We will be considering the idea of a Woonerf or Complete Street with integrated sidewalks. We will certainly work with business owners and the City to maintain access to businesses.

Q: What is the security planned for the building?

A: Has not been finalized yet but tentatively there will be key fobs at each of the pedestrian entrances as well as key entrances for the garages. There will also be new lighting along both Avon and Vernon, as well as security cameras both inside and outside the building.

Q: 1. What is the predicted construction schedule?

2. What is the noise impact ordinance requirements for the area?

A: We are aiming to have PC construction break ground by December 2015 and complete the project within a 15 month construction program (completion in spring 2017). We will also be complying with city ordinances including quiet hours between 5pm -7am for B-3 zones (Will)

Q: Is Joe's planning on changing their store at all?

A: Yes, we believe that Joe's will be altering their product offerings slightly to appeal to the changing neighborhood.

The meeting was adjourned at 6:46pm.



FIRE RISK MANAGEMENT, INC

1 Front St., Bath, ME 04530
207/442-7200 [221-1295 (fax)]
www.fireriskmgmt.com

Att. 14

Date: 11 September, 2015

Memo Report

From: W. Mark Cummings, P.E.
To: Mr. Will Savage; Acorn Engineering
Mr. Ryan Senator; Ryan Senator Architecture

Subject: Response to City of Portland Plan Review Comments; ICW 667 Congress St.

As requested, Fire Risk Management, Inc. (FRM) has reviewed the set of comments received from the City of Portland regarding the plans for the building to be constructed at 667 Congress St. The focus for this specific response are two of the comments provided by Chief Keith Gautreau of the Fire Prevention Bureau; specifically dealing with the fire water flow requirements and some concern over the width of Avon St.; which runs adjacent to the east side of the building

Background

The proposed design for the new construction at 667 Congress St. consists of a high rise (8-story) building that will primarily consist of apartments (Residential, R2 occupancy); albeit some office and retail spaces are to be located on the lower floor levels, along with an open parking garage. The building will be constructed to meet the requirements for classification as Type IB (per IBC) construction; or Type II (222), per NFPA.

In his comments, Chief Gautreau requests verification that the City's water supply system, along with the installed hydrant locations will be sufficient to support the fire water flow requirements of this new building. Additionally, he points out the fact that Avon St., which runs parallel to the east side of the building is only about 14 ft. in width; smaller than minimum width allowed by NFPA 1, the *Fire Code*[®], for a fire access lane or that which is allowed by the City's Technical Manual [20 ft. minimum for NFPA and 16 ft. minimum per the City's Technical Manual].

Discussion

Chapter 18 of NFPA 1 is used to determine the required fire flow that will be needed to support manual firefighting efforts within a building; based on the building's size and construction type. The base requirement for this building's size (area of all floors) and construction type, a fire flow of 2500 gpm for a minimum duration of 2 hours would be required. Due to its construction type, only the area of the three (3) largest contiguous floors are used to determine the total fire flow requirement. However, since the building is to be protected throughout, this requirement can be further reduced to only 1000 gpm for 2 hours. If quick response (QR) sprinklers are to be specified, the minimum flow requirement can then be further reduced to 650 gpm. Although an existing fire hydrant is located immediately adjacent to the building, at the corner of Avon and Congress Streets, due to its close proximity, within the minimum of 40 ft. that is typically allowed by NFPA 1, it was not specifically considered for use in supporting manual firefighting operations involving this building. However, a number of other hydrants are located nearby, which appear to be within 250 ft. of the proposed building location. These include hydrants at the corners of Congress and Park Streets, Congress and State Streets, and Deering and Avon Streets. This, coupled with the hydraulic data regarding the City's water supply system for this area, it is felt that the existing water supply system, including hydrant locations, should be more than adequate to provide sufficient water to meet the required fire flow demands of this building.

Chief Gautreau is correct in his concern regarding the width of Avon St. and its potential use as a fire access lane. However, based on a review of the site plan, coupled with the requirements contained in NFPA 1 for Fire Department access, Avon St. would not be required for use as a fire access lane for this building to be in compliance with all NFPA 1 requirements. The primary access requirements outlined within NFPA 1 that impact the locations and proximity of fire access lanes to a building include the maximum distance to an exterior door and the maximum distance from any portion of the building's exterior wall. A fire access lane must be within 50 ft. of an exterior door and, due to the fact that the building is fully protected by an automatic fire sprinkler system, can be no more than 450 ft. from any portion of the building's exterior walls. Both these metrics can be accommodated by access along Congress St. alone. Equally, the corner of Deering and Avon Streets is within 450 ft. of much of the building as well; at least its north, east, and south sides. As such, it is not necessary to designate Avon St. as a fire access lane for this building to be in compliance with the NFPA 1 requirements for Fire Department access.

Summary and Recommendations

Based on my review, the City's water supply system, including existing hydrant locations, should be more than adequate to support the fire flow requirements for the new building. Equally, the Fire Department access requirements of NFPA 1 can readily be accommodated for this building through the use of only Congress St. as the fire access lane; albeit use of Deering St. to support access to some portions of the building would also be within these requirements. However, depending on the other requirements for the building, if it is possible to increase the width of Avon St. to at least 16 ft., it is certainly something that should be strongly considered. Anytime Fire Department access to a structure can be improved, this does nothing more than improve the overall fire safety of the building and that of the life safety for the building's occupants. Increasing the width of this street would not be "required" to comply with code requirements, but is encouraged for consideration.

If you have any questions regarding what has been outlined above, please don't hesitate to contact me.


W. Mark Cummings, P.E.
Principal Fire Protection Engineer



Traffic Solutions
William J. Bray, P.E.
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Portland, ME 04102
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trafficsolutions@maine.rr.com

September 14, 2015

Parking Assessment Proposed 667 Congress Street Apartments Portland, Maine

INTRODUCTION

Redfern Properties, LLC is proposing construction of an eight-story apartment building at 667 Congress Street on a parcel of property bordered by Congress Street, Avon Street, and Vernon Place. The subject property is located on the peninsula within the Downtown Business Zone (B-3). Joe's Smoke Shop, a 3,673 square foot neighborhood variety store, presently occupies the Congress Street/Avon Street corner of the proposed site and the remainder of the site is a paved parking lot with a total of 63 spaces.

The proposed project will provide a total of 139 apartment units that will include 34 efficiency units, 97 one-bedroom units, and 8 two-bedroom units. The proposed building design provides a total of 81 parking spaces with 37 of the spaces located in the basement level of the building and the remaining 44 spaces on the first floor of the building. Three of the 81 total spaces are reserved for Joe's Smoke Shop resulting in a total of 78 spaces reserved for tenants of the building. In addition, secured covered space is reserved for bicycle parking (total space for 56 bicycles), a U-Share vehicle parking space, and two to four motorcycle parking spaces.

The City's Zoning Ordinance presently requires one parking space for each proposed residential unit on the peninsula (Sec. 14-332.1 (k)). This requirement conflicts with if a development resides within the B-3 Zone then there is no off-street parking requirement for changes of use (14-332.1(e)). A number of recent parking assessments and evaluations completed for similar Portland Peninsular development projects have concluded that parking demand rates significantly less are far more appropriate. As defined in Section 14-332 of the City's ordinance, *"the planning board may establish a parking requirement that is less than the normally required number of spaces upon a finding of unique conditions that result in a lesser parking demand"*.

This document provides a summary review of recent parking utilization information assimilated for other recent peninsular development projects and augments that information with current peak parking data gathered at two apartment complexes on the Portland Peninsular. The data sources are summarized and a per unit parking demand rate is recommended for the proposed 139-unit apartment project.

PARKING DEMAND

A January 16, 2015 memorandum from Planning Staff to Members of the Planning Board proposing text amendments to the R-6 Residential Zone cites information presented in a housing study conducted by the Greater Portland Council of Governments that the percentage of households on the peninsular with 0 to 1 vehicle is 77% greater than the national average of 44%. The documents further states that, *“current trends can be found in several recent assessments for specific development proposals which have assessed the average need of the peninsular to be 0.48 spaces per apartment unit. Though parking space demand will vary across households, this assessment has been affirmed, and peer reviewed, in several recent studies that have accompanied development proposals to the Planning board”*.

One study referenced in the noted memorandum is a March 26, 2014 study conducted by Gorrill-Palmer Consulting Engineers for the proposed 134 Washington Avenue Efficiencies project, where the study concluded based upon the collection of detailed parking occupancy counts, the appropriateness of a 0.48 parking space per apartment unit. The data presented in the report is repeated as follows:

53 Danforth Street: 43 total units ÷ 29 spaces occupied	= 0.67 spaces/unit
645 Congress Street: 56 units ÷ 28 spaces occupied	= 0.50 spaces/unit
Walker Terrace: 40 units ÷ 20 spaces occupied	= 0.50 spaces/unit
Oak Street Lofts: 37 units ÷ 16 spaces occupied	= 0.43 spaces/unit
Franklin Towers: 200 units ÷ 58 spaces occupied	= <u>0.29 spaces/unit</u>
AVERAGE:	= 0.48 spaces/unit

A second study dated June 2013 completed by Gorrill-Palmer, Inc. (GPI) for the 409 Cumberland Avenue Avesta Housing apartment project presented the results of their prior study findings as highlighted above and included additional parking occupancy data collected at the Island View Apartments, a 70-unit apartment complex located at the intersection of North and Walnut Streets. The apartment site contains a total of 84 parking spaces, with 29 of those spaces designated visitor parking. The supplemental parking information presented in the GPI study showed an average parking demand at this facility of 0.70 spaces/unit.

The combined findings of both parking study assessments would suggest the appropriateness of an average parking demand rate of 0.52 spaces $[0.67 + 0.50 + 0.50 + 0.43 + 0.29 + 0.70 \div 6] = \underline{\underline{0.52 \text{ spaces/unit}}}$.

Parking occupancy data was recently collected at two Portland Peninsular apartment complexes, with one of the sites previously included in the GPI studies, to both validate and augment the earlier parking data. Parking occupancy counts were collected during both the early evening and early morning hours of the week of September 6, 2015 for time periods spanning three days. The two properties surveyed included: 1) 53 Danforth Street and 2) 409 Cumberland Avenue. Specific information related to the number and mix of apartment units are presented for each property as follows:

- 53 Danforth Street, located on Danforth Street near the intersection of High Street, is a 43 single and two-bedroom apartment complex that provides both covered and open parking lot spaces for the tenants of the building.
- 409 Cumberland Avenue, located on the corner of Cumberland Avenue and Forest Avenue, is a 57 unit apartment complex with a mix of efficiency, one, and two-bedroom units serviced with a limited number of both covered and open lot parking spaces for building tenants.

The following table 1 presents the results of the parking occupancy study:

Table 1
Parking Occupancy Study Summary

<u>Apartment Site Location</u>	<u>Number of Units</u>	<u>September 10 Occupancy Data</u>	<u>September 11 Occupancy Data</u>		<u>September 12 Occupancy Data</u>	<u>Average Hourly Vehicles Parked</u>	<u>Average Parking Demand Rate</u>
		<u>7:00 PM to 8:00 PM</u>	<u>3:00 AM to 4:00 AM</u>	<u>7:00 PM to 8:00 PM</u>	<u>4:00 AM to 5:00 AM</u>		
409 Cumberland Avenue	57	13	15	11	15	13.5	0.24 spaces
53 Danforth Street	43	17	22	27	21	21.75	0.51 spaces

The average parking occupancy rates (highlighted in red in the above table) determined from the results of the most recent parking study were combined with the data previously collected by GPI and a revised parking rate was calculated based upon the expanded data. The expanded parking data results in a slightly lower average parking demand rate of 0.48 spaces per unit or the same parking rate calculated by GPI in their March 26, 2014 parking assessment report.

The majority of the local parking survey data was collected generally during time periods that are considered representative of peak parking demand time periods. However, to conservatively estimate the peak parking demand requirements of the proposed 667 Congress Apartment project, the calculated average parking demand rate 0.48 spaces per unit was increased by an additional 20% to a peak parking rate of 0.58 spaces per unit.

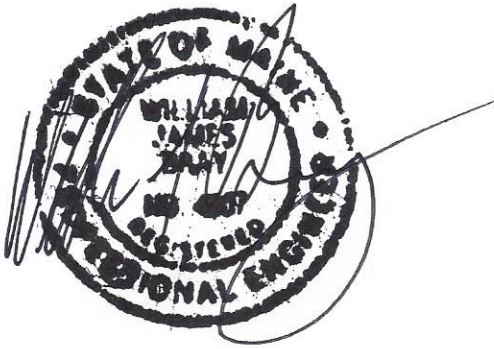
Accordingly, the proposed 667 Congress Street project generates a peak parking demand of **81** parking spaces [0.58 x 139 = 81 spaces].

SUMMARY

- The City in a January 2015 report to the Planning Board suggested the appropriateness of a reduced parking demand rate for peninsular apartment projects. The report references a recent study completed by the Greater Portland Council of Governments, which cites that United States census data shows that a very high percentage (approximately 77%) of households on the Portland Peninsular with 0-1 automobiles is considerably greater than the national average of 44%. Further, the report references several recent development parking assessments that determined the average parking demand requirement is likely near 0.48 spaces per unit.
- Gorrill-Palmer, Inc. prepared detailed parking assessment and evaluation reports for two recent apartment projects on the peninsular with the results showing a peak parking demand of 0.52 spaces per unit.
- Parking data recently collected at two apartment buildings on the Portland Peninsular during the month of September, when combined with the earlier GPI data, shows an average parking rate per unit of 0.48 spaces is reasonable for apartment projects located on the Portland Peninsular. The earlier parking studies conducted by GPI generally apartment projects that have a much greater number of 1 and 2 bedroom units than the proposed 667 Congress Street project. Approximately 20% (34 units) of the total number of units

proposed are efficiency units and it is fully anticipated that tenants in these units will likely use public transportation and/or other modes of transportation.

- The referenced PARKING GENERATION publication concludes that, generally, peak parking demand for a high rise apartment building occurs between midnight and 5:00 AM. The majority of the parking survey data was collected during time periods prior to the early morning hours; therefore, to conservatively estimate the peak parking requirements of the proposed 139 unit apartment building the calculated per unit parking rate of 0.48 spaces was increased by roughly 20% to 0.58 spaces.
- Accordingly, the peak parking demand of the proposed apartment project is estimated at 81 spaces. A total of 78 parking spaces are provided on-site or three spaces less than the calculated parking demand of the project. The proposed apartment building design includes a U-Share parking space on the first floor of the proposed parking garage, which based upon Section 14.332 Parking paragraph a.3.b.a of the City's Zoning Ordinance grants a parking space credit equal to eight parking spaces. As a result, the proposed on-site parking supply exceeds the calculated parking demand of the 139 unit apartment project.
- The existing private leases within the existing parking lot will be discontinued with the sale of the property. The Project Team is not aware of any existing parking lease agreements required as a condition for a development or business permit with the City.

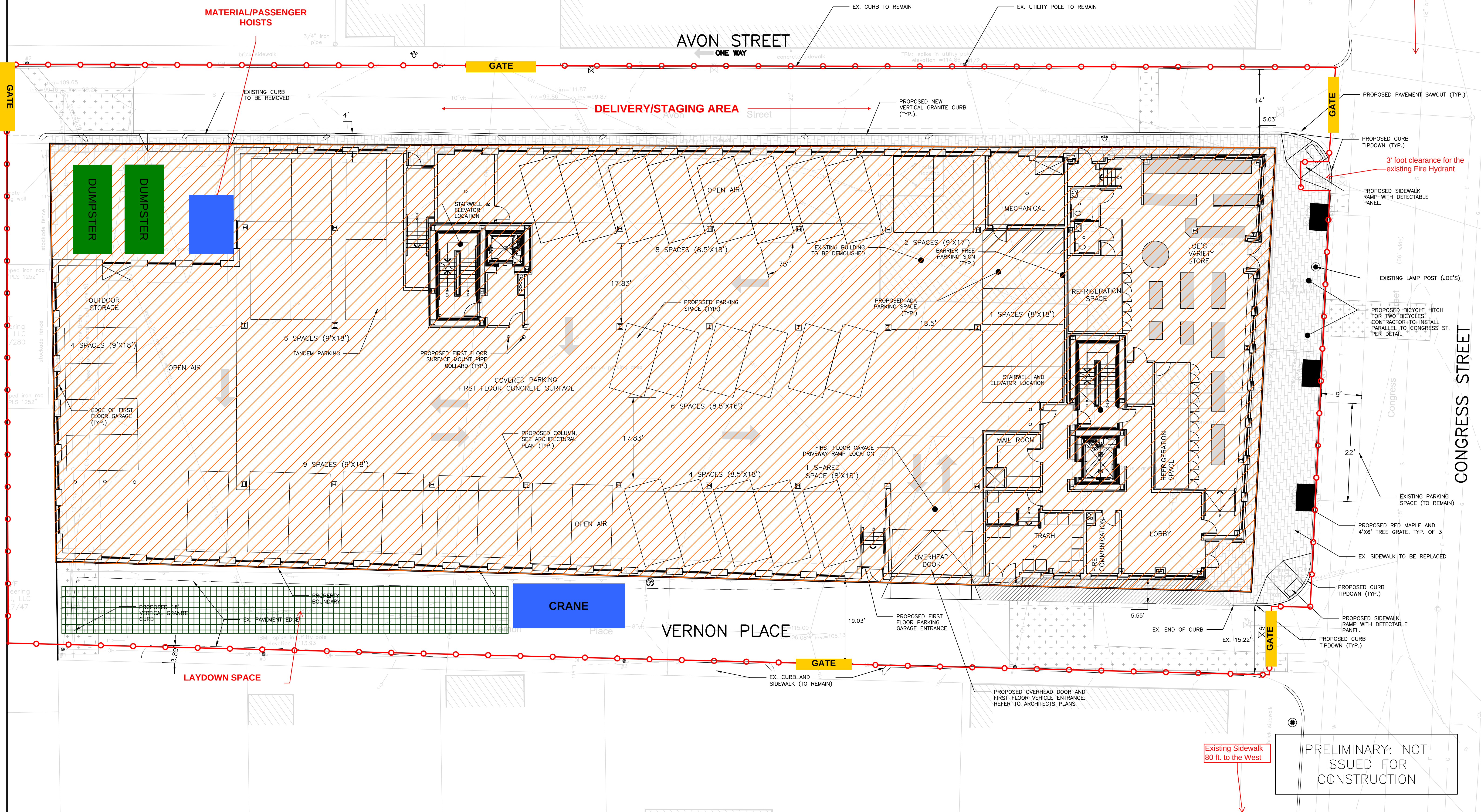


1. ACORN ENGINEERING, INC. SITE PLAN: FIRST FLOOR USED AS A BASE DRAWING.
REFER TO ACORN'S DRAWING FOR COMPLETE SITE IMPROVEMENTS

667 Congress Street Apartments
Site Logistic Plan
Portland, ME
(9.11.15)

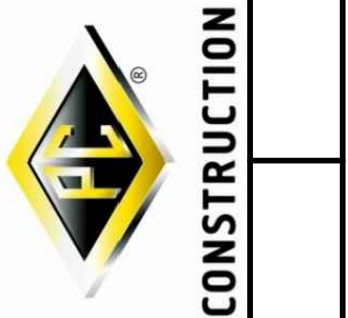


Reference the Site Logistics Narrative dated 9.11.15 for additional information.



ISSUED FOR	BY
	DATE
REVISION	REV.
	DATE

CONSTRUCTION MANAGEMENT PLAN
DRAWINGS NAME: 667 CONGRESS STREET REDEVELOPMENT
PROJECT NAME: REDFERN PROPERTIES, LLC.
CLIENT: P.O. BOX 8616 PORTLAND, MAINE 04104



FILE:	1060_CONGRESS
DATE:	4/6/2015
WIN:	1060
SCALE:	1"=10'
DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	

DRAWING NO.
CMP



667 Congress Street Apartments **Site Logistic Narrative** **Portland, ME**

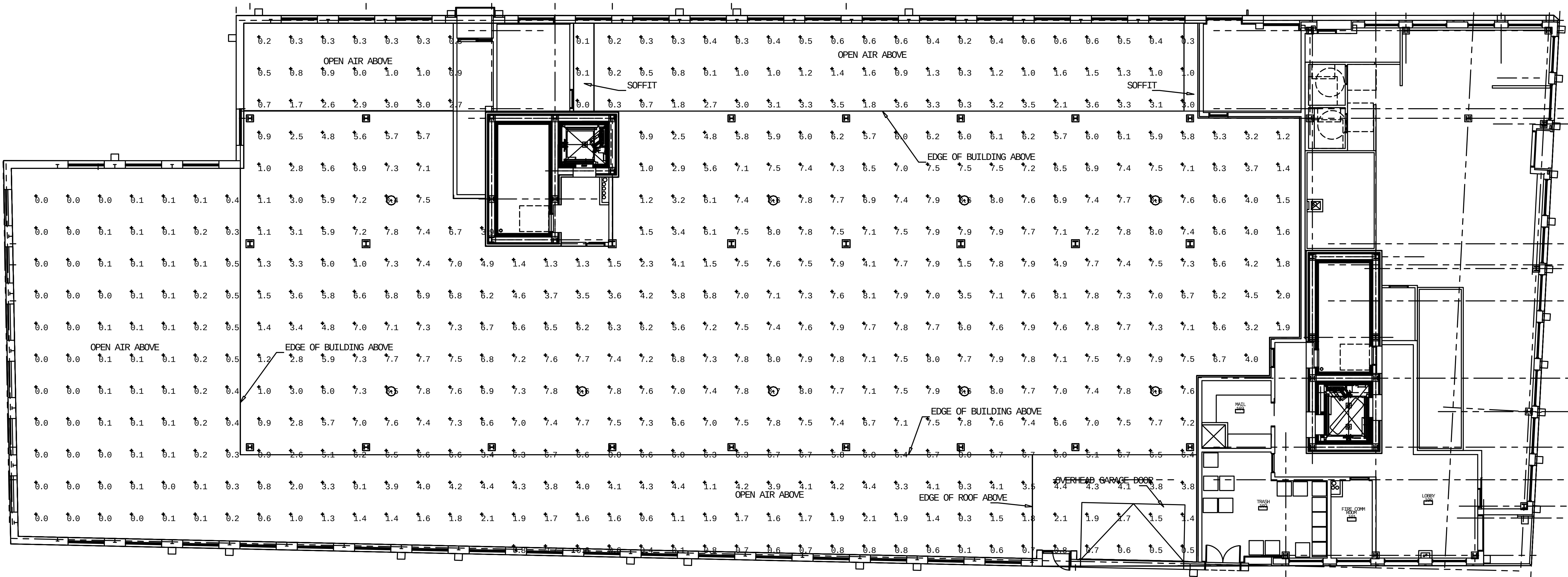
Reference the attached 667 Congress Site Logistic Plan dated 9/11/15 for an overview of the 667 Congress Street project.

The construction approach for the 667 Congress Street project will be to start work on south end of the site along Congress St. and move north towards Deering St. The construction fence will extend to close both lanes of Avon Street and Vernon Place, the sidewalk along Congress Street, and north of the property line along the north end of the site. Temporary lane closures on Congress St will be required for utility tie-ins. Flagging and traffic control will be provided during all temporary lane closures. Safety and directional signage will be provided as necessary for pedestrian traffic. The gates shown at Avon St and Vernon Place are not intended to be secure, if so a Portland Fire Department Knox padlock will be used to allow access for the Fire Department. A Hot Work Permit from the Fire Department will be obtained for all cutting and welding operations.

The construction trailers will be located in a nearby off-site location and all PC Construction emergency contact information will be posted on-site. The closed lanes along Avon Street will be used as a staging area and delivery lane for materials and equipment. The project dumpsters will be located on the northeast corner of the project to allow for easy access to the delivery lane and the material and passenger hoists. The crane will be located in Vernon Place and the closed lanes will be used as laydown and staging space. All construction will comply 2009 NFPA 1 Chapter 16 Safeguards during Building Construction, Alteration, and Demolition Operations. There will be no on-site parking available for subcontractors, all subcontractors will be expected to use carpools/vans to the site and/or park in legal street parking spaces.

Key issues to be addressed include:

- Public Safety
- Coordination with City of Portland, Neighbors, and Utilities
- Coordination with FAA Requirements
- Ground Water Control/Treatment
- Waste Management and Site Clean-up
- Traffic and Pedestrian Management
- Coordination of Material Deliveries
- Laydown of Material Storage and Office Trailers
- Dust Control
- Clean Streets Surrounding the Project



JOB NAME: 667 CONGRESS STREET
APEX LIGHTING SOLUTIONS
REFLECTANCES:N/A
WORKPLANE/CALC PLANE: @ FLOOR
CEILING HEIGHT:10FT

Luminaire Schedule				
Qty	Label	LLF	Description	Lumens/Lamp
9	SL1	0.850	Kenall TekDek TD17-xx-5S-TA-GW-75L-50K7-DCC	N.A.

Calculation Summary					
Label	Avg	Max	Min	Avg/Min	Max/Min
GARAGE CALC @ FLOOR	4.04	8.7	0.0	N.A.	N.A.

GENERAL DISCLAIMER:

Calculations have been performed according to IES standards and good practice. Some differences between measured values and calculated results may occur due to tolerances in calculation methods, testing procedures, component performance, measurement techniques and field conditions such as voltage and temperature variations. Input data used to generate the attached calculations such as room dimensions, reflectances, furniture and architectural elements significantly affect the lighting calculations. If the real environment conditions do not match the input data, differences will occur between measured values and calculated values.

* LLF Determined Using Current Published Lamp Data

NOTE TO REVIEWER:

Total Light Loss Factor (LLF) applied at time of design is determined by applying the Lamp Lumen Depreciation (LLD) from current lamp manufacturer's catalog, a Luminaire Dirt Depreciation Factor (LDD) based on IES recommended values and a Ballast Factor (BF) from current ballast specification sheets. Application of an incorrect Light Loss Factor (LLF) will result in forecasts of performance that will not accurately depict actual results.

For proper comparison of photometric layouts, it is essential that you insist all designers use correct Light Loss Factors.



446 SMITH STREET
MIDDLETOWN, CT 06457
TELEPHONE 860.632.8766
FACSIMILE 860.632.8236
WWW.APEXLTG.COM

PROJECT TITLE:

667 CONGRESS STREET

DRAWING TITLE:

GARAGE LIGHTING
PHOTOMETRIC CALCULATIONS

FILE NAME: 667 GARAGE CALC 9-9-15.DWG

SCALE : 1/8"=1'-0"

DATE: 9/10/15

DRAWN BY: CHV

SHEET:

GL-1

TEKDEK™ BASE

Luminaires for Parking Garages

TD17B SERIES

PRODUCT FEATURES:

- » Textured tertiary lens for glare reduction and up-light feature to eliminate "cave-effect"
- » Optical patterns designed for covered parking structures
- » Outputs ranging from 4,394 lm to 10,258 lm
- » Compatible with TekLink™ lighting control technology
- » Patented thermal management, and Optical Patents pending
- » 10 Year limited product warranty



PROJECT INFORMATION

Job Name _____

Fixture Type _____

Catalog Number _____

Approved by _____

SPECIFICATIONS

HOUSING: Marine-grade die-cast aluminum and UV-stabilized polycarbonate construction. Standard TGIC polyester power coat finish on aluminum components with five-step pre-treatment to withstand 1,000 hour salt spray test per ASTM B117. See Ordering Information for available finishes. Closed-cell silicone gasketing seals all housing component interfaces. Die-cut closed-cell neoprene self-adhesive gasket seals housing to mounting surface (DTS).

MOUNTING: Direct-to-surface (DTS) mounting over recessed junction box, Trunnion Mount (TK) or pendant-mounted (PM) via 3/4" rigid sealed conduit. See Ordering Information for selection. Housing access secured via tamper-resistant Torx™ fasteners.

OPTICAL: Type II, V-Narrow and V-Square roadway distributions available. UV-stabilized, high-impact resistant injection-molded clear textured 100% DR acrylic or polycarbonate tertiary lens.

ELECTRICAL: Serviceable high-brightness LED array. See Ordering Information for color temperature and CRI options. 70 CRI minimum. 120-277 VAC, 347VAC and 480VAC 50/60Hz single-phase input; constant-current dimming driver; <20% THD, >0.90 PF. Minimum 90% electrical efficiency. 0-10V dimming protocol with 10-100% range, 2mA source current. Replaceable surge suppressor rated to 20kA/kV per IEEE/ANSI C62.41 Cat. A. EMC compliant with FCC 47 CFR Part 15, Class B.

PHOTOMETRICS: Photometry tested to the IESNA LM-79-08 standard by an ILAC/ISO17025 accredited laboratory. For photometric data, please go to www.kenall.com.

WARRANTY: Limited ten (10) year warranty. Peace of Mind Guarantee™ when ordered and installed with direct-to-surface (DTS) mounting and polycarbonate lens (TP).

LISTINGS: Luminaire is certified to UL Standards by Intertek Testing Laboratory for Wet Location. IP65 rating per IEC 60598. Suitable for installation into -30°C to 40°C ambient environments, unless otherwise noted. Product listed on DesignLights Consortium® Qualified Product List. Check the latest version [here](#) for listed configuration details.



ORDERING INFORMATION (Ex: TD17B-PM-5N-TP-DB-52L-40K8-DCC-DV)

Model	Mounting	Dist. Type	Lens Type	Finish	Lamp Power	Lamp Color	Driver Type	Voltage	Options	Accessories	TekLink	Controls Kit
TD17B							DCC					< >

Mounting

DTS*	Direct-to-Surface
PM	Pendant Mount
TK	Trunnion Kit
QM	Quick Mount System

Distribution Type

2	Type II
2HSS	Type II, House-side shield
5N	Type V – Narrow Round
5S	Type V – Wide Square

Lens Type

TP*	Textured Polycarbonate
TA	Textured Acrylic

Finish

DB	Dark Bronze
FG	Forest Green
GW	Reflectance White
LG	Light Gray
MB	Matte Black
MW	Matte White
SL	Silver
CC	Custom Color (Consult factory)

Lamp Power

52L	52W LED
79L	79W LED
112L	112W LED

Lamp Color

30K8	3000K/80CRI min
35K8	3500K/80CRI min
40K8	4000K/80CRI min
40K7	4000K/70CRI min
50K7	5000K/70CRI min
57K7	5700K/70CRI min

Driver Type

DCC	0-10V Dimming Constant Current
------------	--------------------------------

Voltage

DV	120-277 Volts (50/60Hz)
347	347 Volts (60Hz)
480•	480 Volts (60Hz)

Options

LEL‡•†	Emergency Battery Pack (0°C minimum ambient)
GTD•	Generator Transfer Device
BG	Bird Guard (click here for details)
FS	Single Fuse & Holder
PH	Phillips Fasteners
A1••	A1 Construction Override

Accessories

DS	Debris Shield
-----------	---------------

TekLink

TL50§†	TL50 Control System
TL1000•	TL1000 Wired Control System
TL2000•	TL2000 Wireless Control System

Please consult Kenall Applications when ordering Controls

Controls Kit

< >	Factory Assigned Internal Code
-----	--------------------------------

* Required for Peace of Mind Guarantee®

‡ Available only with 52L lamp

• A1 Construction (See page 3)

▼ A2 Construction (see page 3)

§ A3 Construction (see page 3)

† A2 Construction when LEL option and TL50 ordered together (see page 3)

▪ For surface conduit option or matching other fixtures on schedule that have options with A1 construction



www.kenall.com

P: 800-4-Kenall

F: 262-891-9701

10200 55th Street Kenosha, Wisconsin 53144

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TD17B-052715

TEKDEK™ BASE

Luminaires for Parking Garages

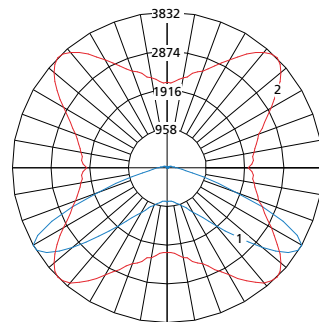
TD17B SERIES

PERFORMANCE

Lamp Code	Initial Delivered Lumens, By Optic Type (lm)						Efficacy (lm/W)	Input Power (W)	Estd. L70 LED Life (Hrs)
	2-TA	2-TP	5S-TA	5S-TP	5N-TA	5N-TP			
52L-57K7	5,196	5,088	5,810	5,690	6,261	6,132	86 - 106	59	90,000
52L-50K7	5,196	5,088	5,810	5,690	6,261	6,132	86 - 106	59	90,000
52L-40K7	5,196	5,088	5,810	5,690	6,261	6,132	86 - 106	59	90,000
52L-40K8	4,724	4,625	5,282	5,172	5,691	5,574	78 - 96	59	90,000
52L-35K8	4,487	4,394	5,018	4,914	5,407	5,296	74 - 92	59	90,000
52L-30K8	4,487	4,394	5,018	4,914	5,407	5,296	74 - 92	59	90,000
79L-57K7	7,371	7,218	8,311	8,139	8,956	8,772	80 - 100	90	75,000
79L-50K7	7,371	7,218	8,311	8,139	8,956	8,772	80 - 100	90	75,000
79L-40K7	7,371	7,218	8,311	8,139	8,956	8,772	80 - 100	90	75,000
79L-40K8	6,701	6,562	7,556	7,399	8,142	7,975	73 - 90	90	75,000
79L-35K8	6,366	6,234	7,178	7,029	7,735	7,576	69 - 86	90	75,000
79L-30K8	6,366	6,234	7,178	7,029	7,735	7,576	69 - 86	90	75,000
112L-57K7	8,396	8,223	9,519	9,322	10,258	10,047	67 - 84	122	60,000
112L-50K7	8,396	8,223	9,519	9,322	10,258	10,047	67 - 84	122	60,000
112L-40K7	8,396	8,223	9,519	9,322	10,258	10,047	67 - 84	122	60,000
112L-40K8	7,633	7,476	8,654	8,475	9,325	9,133	61 - 76	122	60,000
112L-35K8	7,252	7,102	8,221	8,051	8,859	8,677	58 - 73	122	60,000
112L-30K8	7,252	7,102	8,221	8,051	8,859	8,677	58 - 73	122	60,000

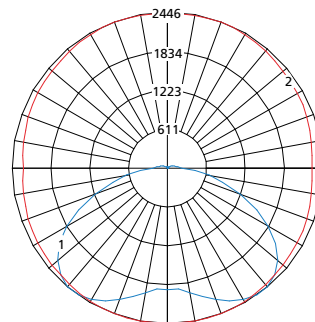
Displayed information is for selected luminaires only. Information subject to change without notice. Visit www.kenall.com for .ies files and additional information.

Model: TD17B-XX-5S-TA-GW-112L-40K7-DCC-DV



Max Candela = 3832 Located At Horizontal Angle = 45, Vertical Angle = 60
 1 - Vertical Plane Through Horizontal Angles (45 - 225) (Through Max. Cd.)
 2 - Horizontal Cone Through Vertical Angle (60) (Through Max. Cd.)

Model: TD17B-XX-5N-TA-GW-112L-40K7-DCC-DV



Max Candela = 2446 Located At Horizontal Angle = 70, Vertical Angle = 40
 1 - Vertical Plane Through Horizontal Angles (70 - 250) (Through Max. Cd.)
 2 - Horizontal Cone Through Vertical Angle (40) (Through Max. Cd.)

LUMEN AMBIENT TEMPERATURE (LAT) FACTORS

Avg. Ambient Temperature	10°C	15°C	20°C	25°C	30°C	35°C	40°C
Lumen Output Factor	1.03	1.02	1.01	1	0.99	0.98	0.97



www.kenall.com

P: 800-4-Kenall

F: 262-891-9701

10200 55th Street Kenosha, Wisconsin 53144

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TD17B-052715

Urban Outdoor Wall Sconce



Description:

Urban Outdoor Wall Sconce is available in a Black, White, ~~Graphite~~ or ~~Bronze~~ finish. Available as a ~~small, medium or large~~. 12/16/20 watt, 120 volt, 3000K LED lamp is included. ~~Small: 7 inch width x 10 inch height x 2 inch depth. Medium: 7 inch width x 16 inch height x 2 inch depth. Large: 8 inch width x 22 inch height x 2 inch depth.~~ ADA compliant, low profile design. Wet location listed and Dark Sky friendly.

Shown in: Bronze

List Price: \$311.25
Our Price: \$249.00

Shade Color: N/A
Body Finish: ~~Bronze~~
Lamp: 1 x LED/16W/120V
Wattage: 16W
Dimmer: Low Voltage Electronic
Dimensions: ~~16"H x 7"W x 2"D~~

Fax: (773) 883-6131

Phone: 866-954-4489

Address: 1718 W. Fullerton Ave. Chicago IL 60614

www.Lightology.com

Product Number: MFR202088			
Company:		Fixture Type:	Date: Jul 22, 2015
Project:		Approved By:	

#1343WC-URBAN-007L1-BZDS

Written Request for Waivers

The existing commercial building and parking lot on 667 Congress St (Map, Book, Lot 46 C020 and C019) are to be redeveloped into a 139-unit residential and single unit commercial building with covered parking on the basement and first floors (81 total parking spaces). The existing business, Joe's Variety Store, will remain on the first floor with the upper seven floors consisting of studio, single bedroom, and double bedroom apartments for rent.

The following is a list of known project related waivers.

1. **City Standard Parking Size** – The applicant is requesting a waiver to increase the number of Compact Parking Spaces per Standard Parking Spaces (9' X 18'). Of the proposed 81 spaces, 64% are Standard spaces (52 spaces) and 36% may be defined as Compact Parking (29 spaces). According to the Technical Standards the maximum allowable Compact spaces for this space is 16. However, in order to adhere to the required parking spaces for residential units, there must be more compact parking within the covered lots.

Circulation of vehicles within the site has been performed using AutoTurn, a vehicle circulation CAD accessory. The produced simulations show circulation to be possible; refer to the attached drawings of the simulations for additional information.

2. **City Minimum Driveway Width** – The applicant is requesting a waiver for the required 20' wide driveway; the proposed driveway is 18' wide at the overhead door but is otherwise 20' wide after entering the building.
3. **Parking Lot Landscaping** – The applicant is requesting a waiver to the parking lot landscaping requirements to not include the suggested 33 trees for the 81 parking spaces; due to the covered nature of the parking lots in both the basement and first floor (too limited of open air on first floor for tree or shrub growth), it is not feasible to landscape these features. However, after onsite discussions with Jeff Tarling, City Arborist, green walls are proposed along the exterior walls of the parking garage on Avon Street and Vernon Place.



After continued discussions with Jeff Tarling, the applicant is prepared to contribute an amount proportionate to the cost of required parking lot trees minus that already spent on green spaces to the City of Portland Tree Fund.

4. **Street Trees** – The applicant is seeking a waiver to the street trees requirements for multi-family residential properties. Due to the large proposed building footprint and limited sidewalk space along the Avon Street and Vernon Place street fronts, it is not feasible to place the required 139 trees for every residential unit on-site. Instead, there will be three trees spaced approximately thirty feet apart along the Congress Street frontage (refer to site plans); this represents the maximum amount of trees able to fit on the property. In all, the design decreases the total required street trees from 139 to 3. However, this is an increase in total trees on the property from the original one.

Like abovementioned, there is additional proposed landscaping including shrubs along Vernon Place and the rear property line, plantings along Avon Street, and raised urban planters along Congress Street in addition to the parking garage green walls. The exact location of landscaped areas is outlined in the attached Landscaping Plan.

5. **Minimum Requirements for Street Improvements** – The applicant is seeking a waiver for the required curb and sidewalk improvements along Vernon Place and Avon Street; the city requires new sidewalk with granite curbing for the entirety of the existing unimproved street.

Along Vernon Place, the current plans propose sidewalk improvements such as construction of a brick sidewalk with granite curbing that tips down to a flush, stamped pavement sidewalk continuing to the first floor garage entrance allowing for an alternative to Congress Street for Joe's vendor drop-offs. The remaining building edge along Vernon Place will be landscaped in most areas of existing grass. Although a sidewalk will be not be constructed along its entirety, Vernon Place is a dead-end street with limited foot traffic and, under the proposed plans, will be improved significantly given the current conditions.



It is proposed that Avon Street be widened from the existing 14' to 16' per request (Captain Gauteau 8/21/15) in place of an improved sidewalk along both sides of the street; the remaining space between the building edge and new/reset granite curb will be replaced with assorted plantings. The existing sidewalk along the Trelawny building is planned to remain.



TRANSPORTATION DEMAND
MANAGEMENT PLAN

FOR

PROPOSED

“667 Congress Street Apartments”

Prepared For: Redfern Properties, LLC
Prepared By: William J. Bray, P.E.

September, 2015

TRANSPORTATION DEMAND MANAGEMENT (TDM) PLAN

Project Description

Redfern Properties, LLC is proposing construction of an eight-story apartment building at 667 Congress Street on a parcel of property bordered by Congress Street, Avon Street, and Vernon Place. The subject property is located on the peninsula within the Downtown Business Zone (B-3). Joe's Smoke Shop, a 3,673 square foot neighborhood variety store, presently occupies the Congress Street/Avon Street corner of the proposed site and the remainder of the site is a paved parking lot with a total of 63 spaces.

The proposed project will provide a total of 139 apartment units that will include 34 efficiency units, 97 one-bedroom units, and 8 two-bedroom units. The proposed building design provides a total of 81 parking spaces with 37 of the spaces located in the basement level of the building and the remaining 44 spaces on the first floor of the building. Three of the 81 total spaces are reserved for Joe's Smoke Shop resulting in a total of 78 spaces for tenants of the building. In addition, secured covered space is reserved for bicycle parking (total space for 52 bicycles), 4 exterior bicycle parking along Congress Street, and a private auto share service, and three motorcycle parking spaces.

Transportation Narrative

The proposed project's location on Congress Street between both Congress and Longfellow Squares provides numerous multi-modal transportation opportunities for tenants of the proposed apartment building. From the perspective of automobile transportation, the Project's location is well suited with easy and direct access to Commercial Street and the Casco Bay Bridge to the south, other destinations along the Congress Street corridor both east and west of the proposed site, and direct roadway interchange connections to Interstate 295 (I-295) both north and south. An extensive and well maintained sidewalk system provides building tenants with both convenient and safe walking routes to virtually all points of destination on the Portland Peninsula, including: employment opportunities, recreational facilities, daytime and evening entertainment venues, Maine Medical Center and Mercy Hospital campuses, parks, cultural centers, restaurants, public library, and other amenities.

The project location is only a few City blocks from the Casco Bay Ferry Terminal and METRO Bus provides their highest frequency of service to the Congress Street corridor via: 1) Route 1 - Congress Street; 2) Route 8 - Peninsula Loop and; 3) Routes 9A/9B - Crosstown Loop. Refer to the attached METRO routing information as an appendix to the report.

A combination of rental incentives: proposed group rate METRO ticket program, the extensive sidewalk network along the Congress Street corridor, and the encouraged and promoted use of other modal transportation opportunities will ensure successful compliance with the City's transportation and sustainability goals.

Transportation Coordinator

The Building Management Company retained by Redfern Properties will serve as the TDM coordinator for the property. The management team will be fully versed in the transportation services available to perspective tenants of the building. Each new building tenant, in a pre-lease interview with the property management team, will receive a packet containing information on the availability of transportation (all modes) services.

Parking Demand Calculation

The City's Zoning Ordinance presently requires one parking space for each proposed residential unit on the peninsula (Sec. 14-332.1 (k)). This requirement conflicts with if a development resides within the B-3 Zone then there is no off-street parking requirement for changes of use (14-332.1(e)). A number of recent parking assessments and evaluations completed for similar Portland Peninsula development projects have concluded that parking demand rates significantly less are far more appropriate. As defined in Section 14-332 of the City's ordinance, *"the planning board may establish a parking requirement that is less than the normally required number of spaces upon a finding of unique conditions that result in a lesser parking demand"*.

A detailed parking study completed in support of the proposed project and submitted under separate cover, clearly documents that the peak parking demand rate for an apartment building with a “high” percentage of efficiency and 1-bedroom units is considerably less than the one space requirement. The detailed parking study concluded that a per unit parking demand rate of 0.58 spaces per unit was appropriate.

Accordingly, the peak parking demand of the proposed apartment project is estimated at 81 spaces. A total of 78 parking spaces are provided on-site or three spaces less than the calculated parking demand of the project. The proposed apartment building design includes a private auto share service with a preferred parking space location close to the elevator on the first floor of the proposed parking garage; Section 14.332 Parking paragraph a.3.b.a of the City’s Zoning Ordinance grants a parking space credit equal to eight parking spaces for an on-site shared vehicle program. As a result, the calculated peak parking demand of the proposed 667 Congress Street Apartments is met and exceeded by a total of five parking spaces.

Parking Description

The proposed building design provides a total of 81 parking spaces with 37 of the spaces located in the basement level of the building and the remaining 44 spaces on the first floor of the building. Three of the 81 total spaces are reserved for Joe’s Smoke Shop resulting in a total of 78 spaces reserved for tenants of the building. In addition, secured covered space is reserved for bicycle parking (total space for 52 bicycles), 4 exterior bicycle parking along Congress Street, a private auto share service, and a minimum of three scooter/motorcycle parking spaces. A total of (22) 2-hour metered parking spaces exist on Congress Street between Longfellow and Congress Squares with operational hours of 9AM to 6:00PM, additionally, (10) 30-minute commercial loading zone spaces and (4) 15-minute loading parking spaces are found curbside within the same designated section of Congress Street.

Parking and Trip Reduction Strategies

Unbundling Rent and Parking Fees: Studies have shown that simply charging tenants separately for rent and parking significantly reduces parking demand. When presented with the cost/benefit decision, tenants often choose not to buy parking, opting for less convenient and less costly parking options or choosing to go carless.

Bicycle Facilities: A total of 56 bicycle spaces are provided in the building design conforming to the City’s Site Plan requirements. The 52 enclosed bicycle racks will be located on the basement level within a secure room. The bicycle racks will be wall or floor mounted and be manufactured by Dero (or approved equivalent). Four (4) additional bicycle spaces will be provided along Congress Street for residents and the general public. Local and regional bicycle route and facility information will be available to tenants at the proposed building transportation services “kiosk” located in the building entry area.

METRO Bus Service: Each building tenant will receive, in their tenant packet, a ten-ride METRO bus pass and a copy of METRO’s bus route schedule information. METRO bus service information will be strategically posted throughout the building and located on the transportation service “kiosk” in the building entry areas. Redfern Properties is currently working with METRO to develop a bulk purchasing transit pass program for tenants of the building.

Private Auto Share Service: The proposed 667 Congress Street Apartments site will provide a private auto share service on the first floor of the proposed parking garage. This will be a preferred parking space near the elevator, pedestrian and vehicular entrance. Redfern Properties will purchase an electric car for the shared use of tenants. This program will follow the model of other apartment communities and should be self-sustaining.

Scooter/Motorcycle Parking: At least three spaces are provided within the proposed parking garage for designated scooter and motorcycle parking. Additional space opportunities are possible if needed based upon tenant use.

Pedestrian Facilities: The TDM Coordinator will work with building tenants in promoting walkability to “key” places of significance including: Casco Bay Transit, Cross Insurance Arena, Portland Public Library, Public

Museum, Hadlock Field, Expo Recreational Facilities, Hospitals, local restaurants, and other cultural facilities etc. To aid in this endeavor, a detailed map of the Portland Peninsular will be strategically located in the building entry area that identifies “key” destination points and the approximate distances in reaching them on foot.

Recreational Trails: The destination map located on the transportation “kiosk” will identify the extensive network of public trails on the peninsular with the goal of encouraging greater use.

Tenant Information Packet (Transportation Related Services): Each building tenant will receive a welcoming package that includes the following transportation services information:

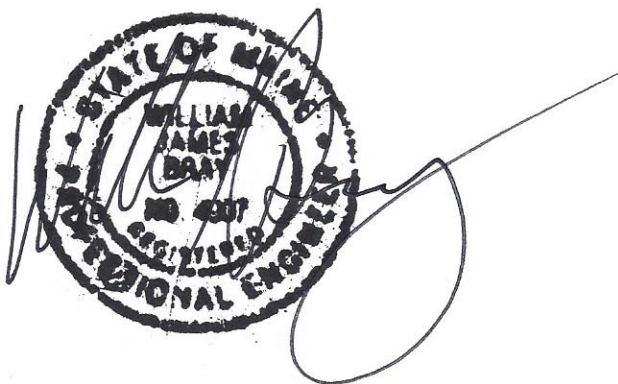
- METRO Bus - Routes and Schedules
- South Portland Bus – Routes and Schedules
- Casco Bay Transit – Boat Schedules
- RTP Service Availability with contact information
- Bicycle Short and Long Distance Routing Information
- Rideshare Information on existing programs including contact information
- Portland Trails System Map
- Private auto share service (program information)

The building transportation “kiosk”, located in the entry area of the proposed building, will have copies of all transportation services information including tri-fold brochures from all major transportation service providers.

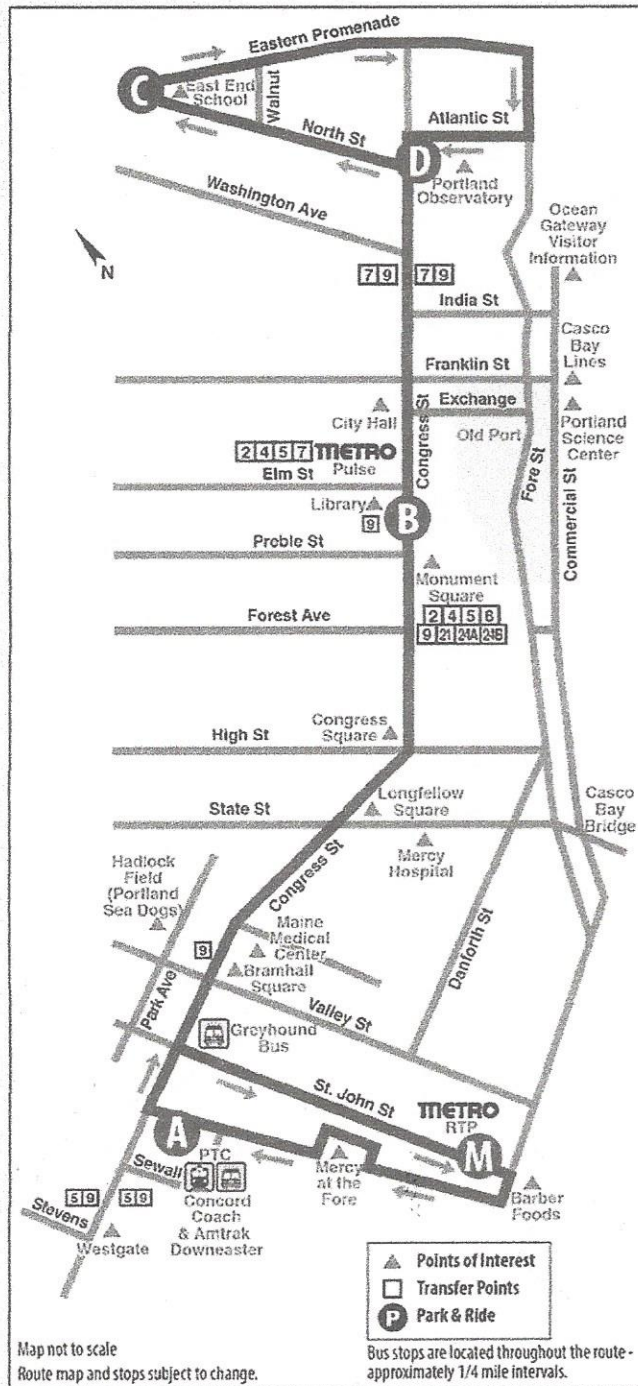
Tenant Survey/Monitoring

The Building Management Company serving as the TDM Coordinator for the property will conduct an annual survey with all building tenants that identifies and quantifies transportation practices of building tenants including the frequency and utilization rates of other modes of transportation; tenant concerns, issues, and transportation services needs. The survey and tenant questionnaire format and information search will be developed in concert with the City’s TDM Manager and modified as directed. The survey results will be summarized with the results shared with each building tenant. A copy of the survey results will be posted on the transportation “kiosk” located in the entry area of the proposed building.

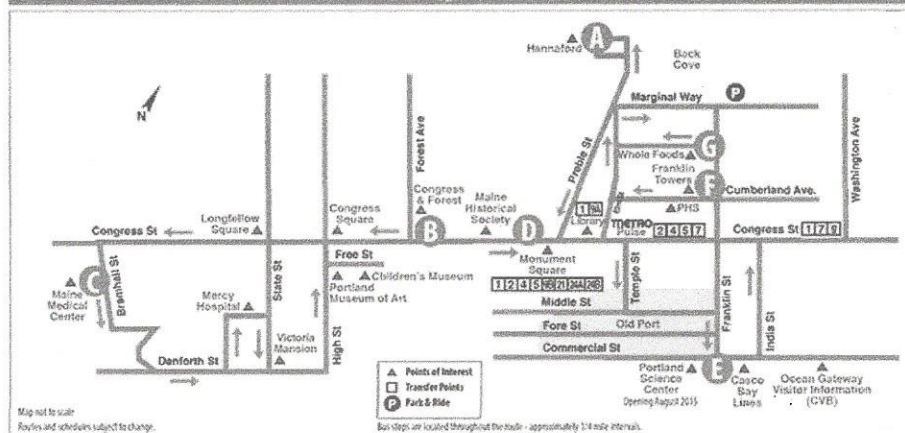
Further, the building management team will also measure, during a “typical” day of the year, both parking space occupancy and turnover rates of the 78 designated parking spaces in the proposed building parking areas. A summary of the data will provide critical information in determining the adequacy of the property parking supply and whether the level of tenant parking is adequate to meet the needs of the tenants. The property management team will consider whether adjustments to the TDM plan are required; such as, providing additional or increased incentives to tenants to use other modes of transportation, conduct more frequent tenant meetings where special emphasis is placed on other modal travel opportunities, modification to building parking space allocation increasing the number of scooter or motorcycle and/or bicycle parking opportunities, etc.



METRO ROUTE 1 Congress Street



METRO ROUTE 8 Peninsula Loop



MONDAY THROUGH FRIDAY

PENINSULA LOOP to CASCO BAY LINES

Hannaford Plaza A	Congress & Forest B	Maine Medical C	Monument Square D	Casco Bay Lines E	Franklin Towers F	Whole Foods G	Hannaford Plaza A
				6:40			
7:05	6:44	6:50	7:02	7:10	7:17	7:25	7:35
7:35	7:10	7:20	7:32	7:40	7:47	7:55	8:05
8:05	7:40	7:50	8:02	8:10	8:17	8:25	8:35
8:35	8:10	8:20	8:32	8:40	8:47	8:55	9:05
9:05	8:40	8:50	9:02	9:10	9:17	9:25	9:35
9:35	9:10	9:20	9:32	9:40	9:47	9:55	10:05
10:05	9:40	9:50	10:02	10:10	10:17	10:25	10:35
10:35	10:10	10:20	10:32	10:40	10:47	10:55	11:05
10:55	10:40	10:50	11:02	11:10	11:17	11:25	11:35
11:05	11:10	11:20	11:32	11:40	11:47	11:55	12:05
11:35	11:40	11:50	12:02	12:10	12:17	12:25	12:35
12:05	12:10	12:20	12:32	12:40	12:47	1:00	1:10
12:40	12:45	12:55	1:10	1:19	1:27	1:35	1:45
1:10	1:15	1:25	1:40	1:49	1:57	2:05	2:15
1:45	1:50	2:00	2:15	2:24	2:32	2:40	2:50
2:15	2:20	2:30	2:45	2:54	3:02	3:10	3:20
2:50	2:55	3:05	3:20	3:29	3:37	3:45	3:55
3:20	3:25	3:35	3:50	3:59	4:07	4:15	4:25
3:55	4:00	4:10	4:25	4:34	4:42	4:50	5:00
4:25	4:30	4:40	4:55	5:04	5:12	5:20	5:30
5:00	5:05	5:15	5:30	5:39	5:47	5:55	6:00
5:30	5:35	5:45	6:00	6:09	6:15		
6:00	6:05						

SATURDAY

PENINSULA LOOP to CASCO BAY LINES

Hannaford Plaza A	Congress & Forest B	Maine Medical C	Monument Square D	Casco Bay Lines E	Franklin Towers F	Whole Foods G	Hannaford Plaza A
8:35	8:40	8:50	9:02	9:10	9:17	9:25	9:35
9:35	9:40	9:50	10:02	10:10	10:17	10:25	10:35
10:35	10:40	10:50	11:02	11:10	11:17	11:25	11:35
11:35	11:40	11:50	12:02	12:10	12:17	12:25	12:35
12:35	12:40	12:50	1:02	1:10	1:17	1:25	1:35
1:35	1:40	1:50	2:02	2:10	2:17	2:25	2:35
2:35	2:40	2:50	3:02	3:10	3:17	3:25	3:35
3:35	3:40	3:50	4:02	4:10	4:17	4:25	4:35
4:35	4:40	4:50	5:02	5:10	5:17	5:25	5:35
5:35	5:40	5:50	6:02	6:10	6:17		

SUNDAY

PENINSULA LOOP to CASCO BAY LINES

Hannaford Plaza A	Congress & Forest B	Maine Medical C	Monument Square D	Casco Bay Lines E	Franklin Towers F	Whole Foods G	Hannaford Plaza A
9:35	9:40	9:50	10:02	10:10	10:17	10:25	10:35
10:35	10:40	10:50	11:02	11:10	11:17	11:25	11:35
11:35	11:40	11:50	12:02	12:10	12:17	12:25	12:35
12:35	12:40	12:50	1:02	1:10	1:17	1:25	1:35
1:35	1:40	1:50	2:02	2:10	2:17	2:25	2:35
2:35	2:40	2:50	3:02	3:10	3:17	3:25	3:35
3:35	3:40	3:50	4:02	4:10	4:17	4:25	4:35



Visiting Portland?

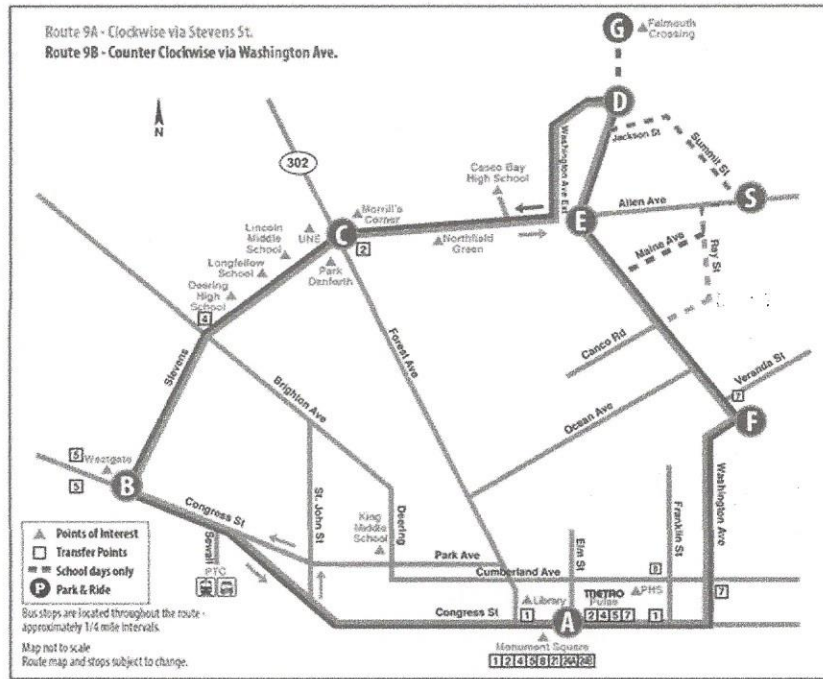
Hop on METRO Route 8 for an affordable, accessible and scenic ride throughout downtown Portland. Travel from Ocean Gateway and the Waterfront.

See the Longfellow Statue and Victoria Mansion along Portland's historic West End.

Travel through the Old Port to Casco Bay Lines Ferry Terminal to attractions, shopping and dining along Portland's waterfront.

METRO ROUTE 9A

METRO ROUTE 9B



MONDAY THROUGH FRIDAY

CROSSTOWN LOOP VIA STEVENS AVENUE

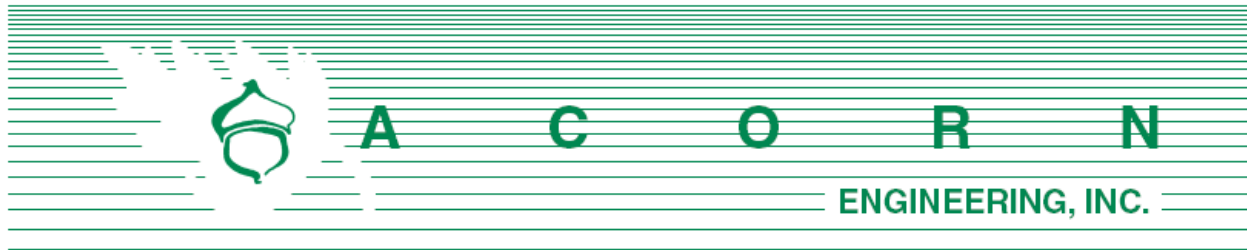
Library A	Westgate B	Morrill's Corner C	Washington Auburn D	Summit St./ Allen Ave S	Allen's Corner E	Washington Veranda F	Library A
5:35	5:50	6:00	6:10		6:13	6:23	6:35
6:05	6:20	6:30	6:40		6:43	6:53	7:05
6:15*	6:30*	6:40*	6:50*	6:55*		7:05*	7:25*
6:35	6:50	7:00	7:10		7:13	7:23	7:35
6:45*	7:00*	7:10*	7:20*	7:25*		7:43*	7:55*
7:05	7:20	7:30	7:40		7:43	7:53	8:05
7:25*	7:40*	7:50*	8:00*		8:03*	8:13*	8:35*
7:35	7:50	8:00	8:10		8:13	8:23	8:35
8:05	8:20	8:30	8:40		8:43	8:53	9:05
8:35	8:50	9:00	9:10		9:13	9:23	9:35
9:35	9:50	10:00	10:10		10:13	10:23	10:35
10:35	10:50	11:00	11:10		11:13	11:23	11:35
11:35	11:50	12:00	12:10		12:13	12:23	12:35
12:35	12:50	1:00	1:10		1:13	1:23	1:35
1:35	1:50	2:00	2:10		2:13	2:23	2:35
2:05	2:20	2:30	2:40		2:43	2:53	3:05
2:20*	2:35*	2:45*	2:55*	3:10*		3:25*	3:35*
2:35	2:50	3:00	3:10		3:13	3:23	3:35
2:45*	3:00*	3:10*	3:20*	3:30*		3:45*	3:55*
3:05	3:20	3:30	3:40		3:43	3:53	4:05
3:35	3:50	4:00	4:10		4:13	4:23	4:35
4:05	4:20	4:30	4:40		4:43	4:53	5:05
4:35	4:50	5:00	5:10		5:13	5:23	5:35
5:05	5:20	5:30	5:40		5:43	5:53	6:05
5:35	5:50	6:00	6:10		6:13	6:23	6:35
6:35	6:50	7:00	7:10		7:13	7:23	7:35
7:35	7:50	8:00	8:10		8:13	8:23	8:35
8:35	8:50	9:00	9:10		9:13	9:23	9:35
9:35	9:50	10:00	10:10		10:13	10:23	10:35

*trips operate on school days only. On early release days, trips will operate one hour earlier.

SATURDAY

CROSSTOWN LOOP VIA STEVENS AVENUE

Library A	Westgate B	Morrill's Corner C	Washington Auburn D	Allen's Corner S	Washington Veranda F	Library A
7:35	7:50	8:00	8:10	8:13	8:23	8:35
8:35	8:50	9:00	9:10	9:13	9:23	9:35
9:35	9:50	10:00	10:10	10:13	10:23	10:35
10:35	10:50	11:00	11:10	11:13	11:23	11:35
11:35	11:50	12:00	12:10	12:13	12:23	12:35
12:35	12:50	1:00	1:10	1:13	1:23	1:35
1:35	1:50	2:00	2:10	2:13	2:23	2:35
2:35	2:50	3:00	3:10	3:13	3:23	3:35
3:35	3:50	4:00	4:10	4:13	4:23	4:35
4:35	4:50	5:00	5:10	5:13	5:23	5:35
5:35	5:50	6:00	6:10	6:13	6:23	6:35
6:35	6:50	7:00	7:10	7:13	7:23	7:35
7:35	7:50	8:00	8:10	8:13	8:23	8:35
8:35	8:50	9:00	9:10	9:13	9:23	9:35
9:35	9:50	10:00	10:10	10:13	10:23	10:35



Shukria Wiar - Planner
Planning Division, City of Portland
389 Congress Street
Portland, ME 04101

October 13, 2015

Subject: 667 Congress Street Redevelopment
Comment Response Letter: Final Application

On behalf of Redfern Properties, LLC, Acorn Engineering, Inc. (Acorn) is pleased to respond to the comments to the 667 Congress Street Redevelopment Final Application that have been provided by multiple reviewers.

It is our opinion that many of the comments that were provided are of such nature that they either do not require a response, or have been adequately addressed at the 9/29/15 Planning Board Meeting or in a prior submission. The responses to any such comments have been omitted from this letter.

To facilitate the review, comments are provided below in italics followed by Acorn Engineering, Inc.'s response.

Tom Errico – 9/23/2015 E-mail

Comment – *The plans note that the sidewalk on Vernon Place will not have curbing. I will review this with DPS staff. Status: I continue to review design treatments for Vernon Place given its unique function. As noted below, the applicant shall complete the formal waiver process for curb and sidewalk. The City needs to be comfortable with the design and function of Vernon Place with the added project traffic (traffic volumes will increase substantially from current conditions). Specifically accommodating pedestrians safely, vehicle movements, DPS maintenance equipment and their ability to turn around safely, landscaping, drainage, and access/egress movements into and out of the garage and the driveways on the west side of the street.*

Response – In recognition of comments received at our 9/28/15 Meeting with Planning Staff, Fire Department and Traffic Peer Review Engineer, Acorn has added a 4' wide sidewalk with vertical curb within Vernon Place. The sidewalk will extend between the pedestrian entrance to the First Floor Parking facility and Congress Street in order to provide separation between the vehicular traffic and pedestrian traffic. The overall existing roadway width in areas with a proposed sidewalk was increased from 14.18' to 16.8'. Further to the North on Vernon Place the roadway width will be increased from 14.95' to 18.5'. This additional width will improve upon the existing circulation and access/egress into the driveways along the west side of Vernon Place.

Comment – *The alignment of the sidewalk ramps on Congress Street will need to direct pedestrians to the appropriate path of travel from an ADA perspective. Adjustments will need to be incorporated. Status: The ramp at corner of the Avon Street is unacceptable and alignment for walking parallel to Congress Street shall be provided. I would also note that the ramp at Vernon Place may need to change following the final configuration of the street.*

Response – Acorn has provided a revised design for pedestrian ramps at these locations. The ramps are designed to be parallel to the ROW line at the proposed development along Congress Street and have been relocated for the current proposed roadway configuration.

Comment – *The width of the sidewalk along Avon Street abutting the property is noted as between 3 and 5 feet wide. I need to review specific details regarding this sidewalk to ensure appropriate accessibility is provided. Status: Given the narrow width of the street and sidewalk, I recommend that a fully shared street be considered (curbs to be removed or relocated to buildings on both sides of the street with special surface pavement treatment). This would allow for improved or desired emergency access, easier maintenance, and would allow for a multi-modal street that would provide for all users in a safe and calmed environment.*

Response – We have further refined and revised the Avon Street corridor. The project team is now proposing a number of traffic calming measures including raised pedestrian crosswalk with curb extension located half-way along Avon Street, outside of the proposed side tenant entrance. A curb extension is also proposed at the Congress Street crosswalk with Avon. In recognition of the Captain Gautreau's concerns and following discussions from our 9/28/15 Meeting with Planning Staff, Fire Department and Traffic Peer Review Engineer the street width adjacent to the Trelawny building has been increased by approx. 25%, from 14' to 18' width. Elsewhere the roadway width was increased from 14' to 16' width. Furthermore the applicant is proposing to increase the aerial clear width between buildings by removing the two existing utility poles with street lights and relocate the utilities subsurface with lighting mounted to the applicant's building.

Comment – *The applicant should identify any parking circulation aisle waiver requirements.*

Response – Because the majority of parking need is residential, the proposed lot is defined as a low turnover lot and can therefore support a more compact layout than a typical public parking lot. The proposed layout includes for a 75-degree angle at parking spaces, with the recommended one-way drive aisle width of 17.83'. The City's Technical Manual does not have a standard aisle width associated with a 75 degree parking space; this being the case, the parking lot layout was designed using criteria published by Carl Walker, Inc., an engineering firm that specializes in parking structure design. With this being the case, the applicant is requesting this flexibility in the form of a waiver for a 17.83'-wide one-way drive aisle width.

Comment – *The applicant should provide information on how the tandem parking spaces will be managed.*

Response – Tandem parking spaces will be coordinated by the Building Management Company retained by Redfern Properties and serve as the Transportation Demand Management (TDM) coordinator in accordance with Traffic Solutions' TDM Plan, dated September 2015.



Comment -- *The applicant should confirm that one handicapped parking space meets ADA or other required standards.*

Response – ADA parking spaces have been increased to a total of 4 ADA parking spaces with preferred locations adjacent to ADA accessible points of entry.

David Margolis-Pineo – 9/22/2015 E-mail

Comment -- *The design of all corner sidewalk ramps will require approval of the City's Bike/Ped Coordinator, Bruce Hyman. The current shown ramp alignment does not appear acceptable.*

Response – Please see previous comment regarding sidewalk ramps.

Comment -- *It appears that the proposed building foundation and underdrain system may be encroaching the street right of way. If so an easement/license will be required from the City and shown on the Recording Plat.*

Response – The building foundation and underdrain system as presently designed will not encroach upon the street right of way. The applicant is proposing to grant three easements to the City including:

- Roadway easement to the City
- Pedestrian easement to the City
- Drainage easement to the City

One easement will be requested from the City for the construction of a wall anchor system (also referred to as a soil nail wall). Wall anchors are routinely used in high-density structures in Boston, and a similar temporary soil nail system was installed at Maine Medical Center along Charles Street. The system provides temporary shoring until the basement wall structure is built, but will remain in place after project completion. Whereas the soils nails are only needed temporarily during construction, future excavation for utility work in the location of the soil nails would not hinder the building walls. This ability to remove the wall anchors after construction for future utility work is included within the Subdivision Plat. Please refer to the included Subdivision Plat for additional information.

Comment -- *Any underground or overhead utilities which feed adjacent infrastructure which cross but are not related to this development shall have easements recorded and shown on the Recording Plat.*

Response – A Subdivision Plat has been provided as part of this submission that indicates existing and proposed easements for the development, which includes easements for utilities.

Comment -- *A stamped Recording Plat is required with plan set.*

Response – A Subdivision Plat stamped by a Professional Land Surveyor has been provided as part of this submission.



Comment – *The existing sewer on Congress St is a combined sewer. Therefore a backflow preventer on the proposed 6" sewer lateral is required.*

Response – Per Note 5 on Sheet C-20 regarding sewer utilities, a backflow preventer is to be placed by M.E.P. (Mechanical/Electrical/Plumbing Engineer) within the building at this and all other sewer connections.

David Senus (Civil Engineering) – E-mail on 9/18/15

Comment – *Based on comments received from the City Department of Public Services, the Applicant has revised the outlet from the Oil/Water Separator to connect to the sanitary sewer in Avon Street. The flow into the Oil/Water Separator is intended to solely include drainage from the floor drains from the two covered parking deck areas; however, on Sheet C30 it appears that an underdrain connection is proposed into the floor drain system. All underdrains should be connected into the separated storm drain system.*

Response – Roof drains and foundation drains have been revised to connect into the separate storm drain system.

Comment – *Sheet C31 shows the floor drain locations for the upper parking deck. These locations are reflected on Sheet C30 as "first floor downspouts". Are these downspouts discharging to the surface of the lower parking deck or connecting directly into the lower parking area floor drain system? If connecting directly, this should be depicted on C30.*

Response – The First Floor downspouts are proposed to connect into the lower parking area floor drain system; this is now clearly reflected within Sheet C-30.

Thank you very much for your detailed review of the proposed development. Please let me know if you have any additional questions or comments.

Sincerely,



William H. Savage, P.E.
Principal - Project Manager
Acorn Engineering, Inc.

Attachments:

1. Updated – Written Request for Waivers, dated 10/13/15
2. Acorn Engineering – Plan Set, Issued For "Final Application" and dated 10/13/15



Written Request for Waivers

The existing commercial building and parking lot on 667 Congress St (Map, Book, Lot 46 C020 and C019) are to be redeveloped into a 139-unit residential and single unit commercial building with covered parking on the basement and first floors (81 total parking spaces). The existing business, Joe's Variety Store, will remain on the first floor with the upper seven floors consisting of studio, single bedroom, and double bedroom apartments for rent.

The following is a list of known project related waivers.

1. **City Standard Parking Size** – The applicant is requesting a waiver to increase the number of Compact Parking Spaces per Standard Parking Spaces (9' X 18'). Of the proposed 81 spaces, 68% are Standard spaces (55 spaces) and 32% may be defined as Compact Parking (26 spaces). According to the Technical Standards the maximum allowable Compact spaces for this space is 16. However, in order to adhere to the required parking spaces for residential units, there must be more compact parking within the covered lots.

Circulation of vehicles within the site has been performed using AutoTurn, a vehicle circulation CAD accessory. The produced simulations show circulation to be possible; refer to the previously submitted circulation drawings of the simulations for additional information.

2. **City Minimum Driveway Width** – The applicant is requesting a waiver for the required 20' wide driveway; the proposed driveway is 18' wide at the overhead door but is otherwise 20' wide after entering the building.
3. **Parking Lot Landscaping** – The applicant is requesting a waiver to the parking lot landscaping requirements to not include the suggested 33 trees for the 81 parking spaces; due to the covered nature of the parking lots in both the basement and first floor (too limited of open air on first floor for tree or shrub growth), it is not feasible to landscape these features.

However, after onsite discussions with Jeff Tarling, City Arborist, green walls are proposed along the exterior walls of the parking garage along Vernon Place, and three green walls along the rear property line.

After continued discussions with Jeff Tarling, the applicant is prepared to contribute an amount proportionate to the cost of required parking lot trees minus that already spent on total landscaping to the City of Portland Tree Fund.

4. **Street Trees** – The applicant is seeking a waiver to the street trees requirements for multi-family residential properties. Due to the large proposed building footprint and limited sidewalk space along the Avon Street and Vernon Place street fronts, it is not feasible to place the required 139 trees for every residential unit on-site. Instead, there will be three trees spaced approximately thirty feet apart along the Congress Street frontage (refer to



site plans); this represents the maximum amount of trees able to fit on the property. In all, the design decreases the total required street trees from 139 to 3. However, this is an increase in total trees on the property from the original one.

5. **Minimum Requirements for Street Improvements** – The applicant is seeking a waiver for the required curb and sidewalk improvements along Vernon Place and Avon Street; the city requires new sidewalk with granite curbing for the entirety of the existing unimproved street.

Along Vernon Place, the current plans propose sidewalk improvements such as construction of a brick sidewalk with granite curbing that tips down to a flush brick sidewalk continuing to the first floor garage entrance allowing for an alternative to Congress Street for pedestrians. The remaining building edge along Vernon Place will be landscaped in most areas of existing gravel/guardrail.

It is proposed that Avon Street be widened from the existing 14' to 18' per request (Captain Gautreau 9/28/15) in place of an improved sidewalk along both sides of the street in all locations adjacent to the Trelawny building, and at least 16' in other locations (such as the sidewalk). The existing sidewalk along the Trelawny building is planned to remain.

6. **Minimum Drive Aisle Width** – The applicant is seeking a waiver for the required minimum drive aisle width; the city has no requirement for drive aisle width for angled, 75-degree parking.

Because the majority of parking need is residential, the proposed lot is defined as a low turnover lot and can therefore support a more compact layout than a typical public parking lot. The proposed layout includes for a 75-degree angle at parking spaces, with the recommended one-way drive aisle width of 17.83'. The City's Technical Manual does not have a standard aisle width associated with a 75 degree parking space; this being the case, the parking lot layout was designed using criteria published by Carl Walker, Inc., an engineering firm that specializes in parking structure design. With this being the case, the applicant is requesting this flexibility in the form of a waiver for a 17.83'-wide one-way drive aisle width.



From: William Savage <wsavage@acorn-engineering.com>
To: "Shukria Wiar (shukriaw@portlandmaine.gov)" <shukriaw@portlandmaine.gov>, 'Dave Senus' <dsenus@woodardcurran.com>, "'David Margolis-Pineo(DMP@portlandmaine.gov)'" <DMP@portlandmaine.gov>
CC: "Marieke Sparrow-Pepin (msparrow-pepin@pcconstruction.com)" <msparrow-pepin@pcconstruction.com>, "Jonathan Culley(jonathan@redfernproperties.com)" <jonathan@redfernproperties.com>, 'Catherine Culley' <catherine@redfernproperties.com>, Michael Guethle <mguethle@acorn-engineering.com>, Olivia Dawson <odawson@acorn-engineering.com>
Date: 10/13/2015 2:20 PM
Subject: 667 Congress - Wall Anchor
Attachments: 667 Congress - Soil Nail Information.pdf; SOE - Layout.pdf

Shukria,

PC Construction has proposed to use wall anchors to secure the basement walls during construction. Below is a quick summary of wall anchors (also referred to as soil nails) from PC Construction:

- * The soil nails would be installed per the proposed/attached plan (SOE - Layout) around the south end of site.
- * The system provides temporary shoring until the structure is built, but will remain in place after project completion. Future utility work can excavate through the no longer necessary soil anchor. (This would be recorded within the Plat).
- * Soil nails are installed 4-5' O.C. and can be adjusted to accommodate existing or future conditions.
- * There will be 2-3 layers of soil nails pending the location of existing rock, the soil nails are installed in five foot lifts.
- * The first layer of soil nails typically starts 2-3 feet down from the ground surface.
- * The soil nails are typically installed at 15 degrees from horizontal grade and can have a maximum angle of 30 degree if required to accommodate existing or future conditions.
- * The soil nails will extend 12-15 feet from the face of the basement foundation walls.
- * Utility verification and standard operating procedure for utility conflicts: If a utility is discovered on site that has not been previously identified, the subcontractor will coordinate with PC and the sitework subcontractor to ascertain the exact location of the utility, and will verify that the soil nails will miss the utilities in accordance with the utility policy/diagram attached.
- * The design of the support of excavation system will be designed and stamped by a Professional Engineer of the State of Maine.
- * Easement precedents and local examples: Soil anchors are routinely used in Boston. A similar temporary soil nail system was installed at Maine Medical Center along Charles St. along with permanent micropiles.

Please note the attached drawings are not specific to the 667 Congress St project and are for reference only.

1. Soil Nail Detail Sketch
2. Utility Clearance Diagram
3. Soil Nailing Excavation Support Procedure

It's my understanding David Margolis-Pineo is on vacation this week. Given the technical aspect I have cc'd Dave Senus. I would be happy to hold a conference call or meet with you to answer any questions or concerns you may have so that the City is comfortable with our approach with a technology that is routinely applied in the urban environment.

Best,

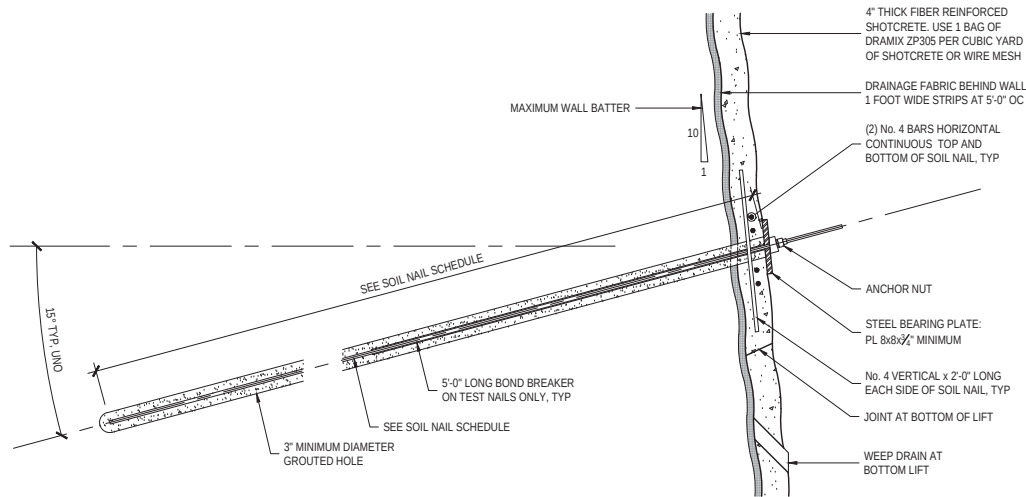
Will Savage, PE
Principal

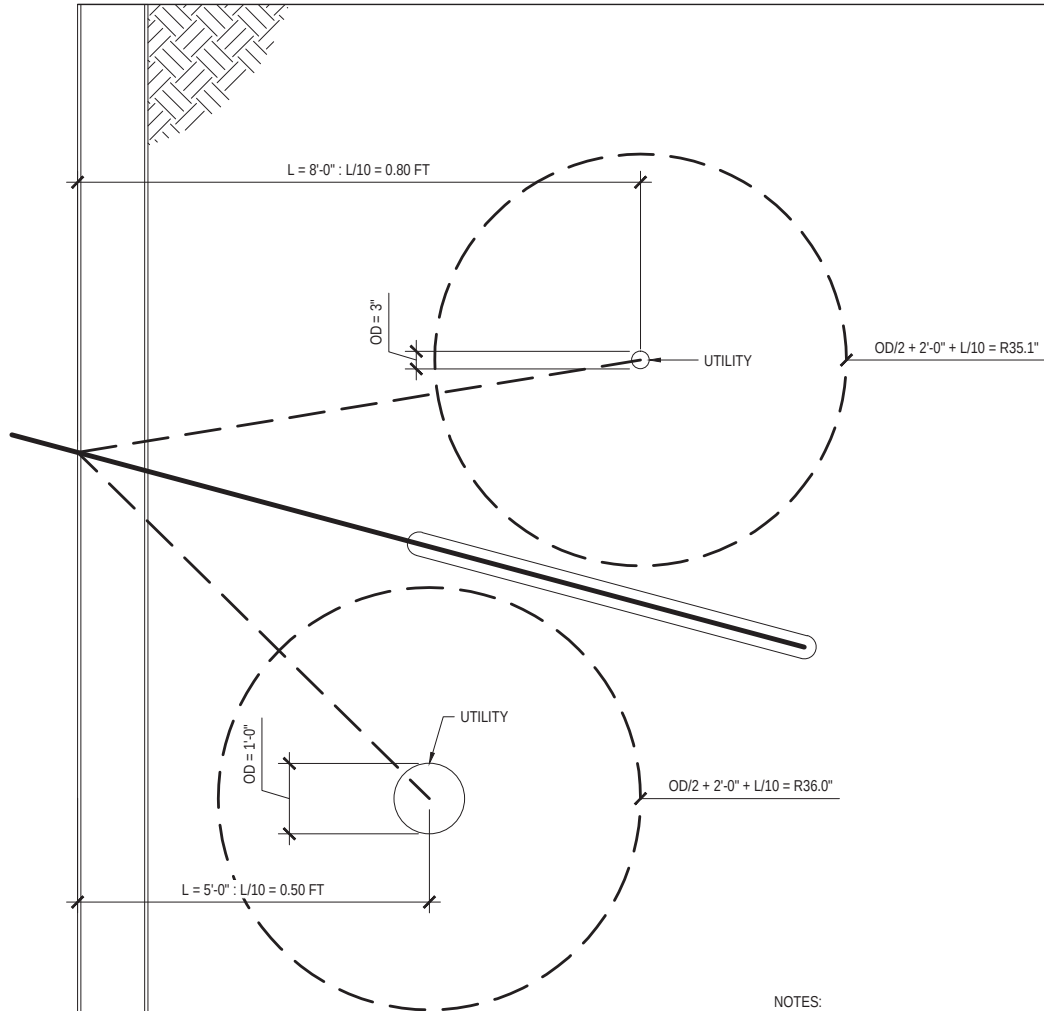
Licensed in Maine

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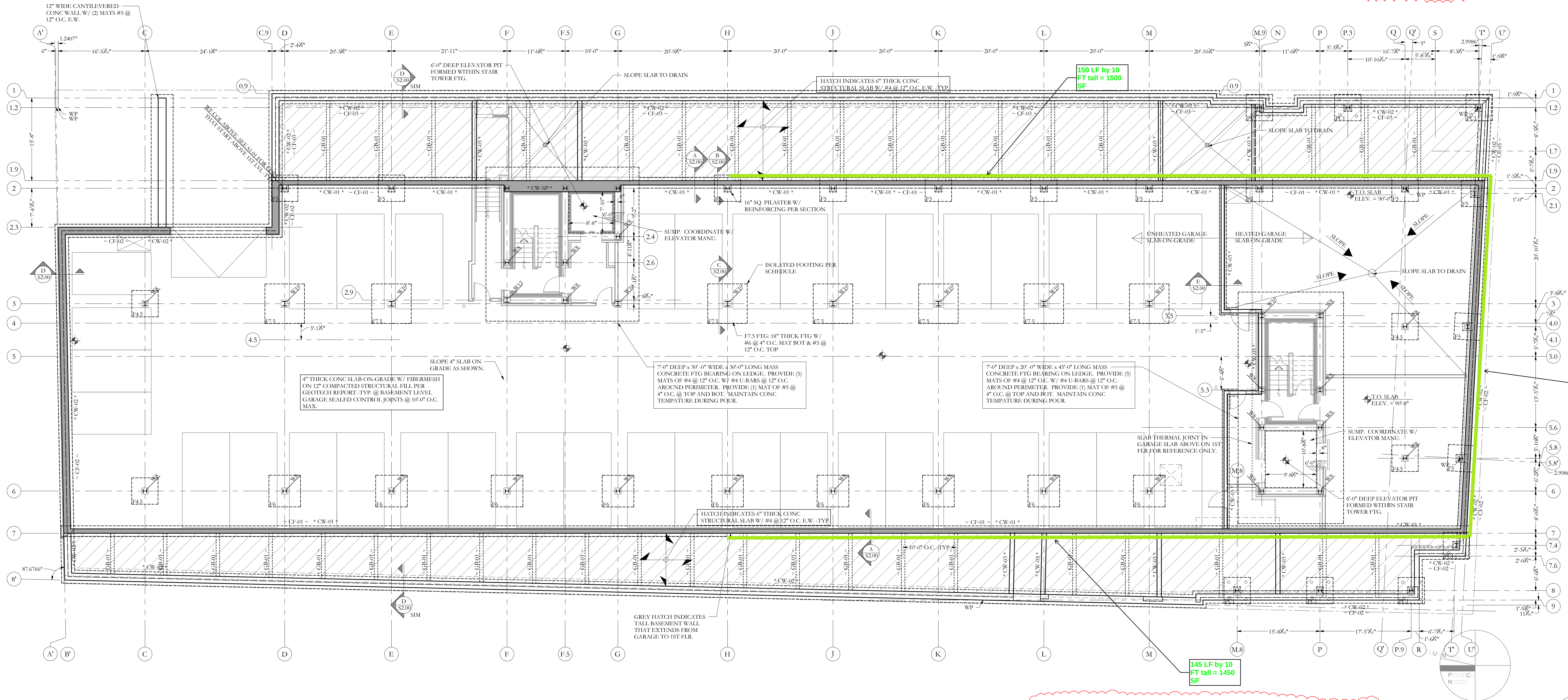


NOTES:

1. IN GENERAL, A RADIUS OF CLEARANCE SHOULD BE MAINTAINED AROUND THE UTILITY.
2. THIS RADIUS CONSIST OF THE SUM OF THE FOLLOWING
 - 2.1. HALF OF THE OUTSIDE DIAMETER (OD)
 - 2.2. 2'-0" GENERAL CLEARANCE TO AVOID UTILITY DISTURBANCE.
 - 2.3. AN ADDITIONAL 1'-0" PER 10'-0" OF HORIZONTAL DISTANCE, L, FROM THE FACE OF WALL TO THE UTILITY (L/10).
3. THEREFORE, $R = OD/2 + 2'-0" + L/10$

SOIL NAILING EXCAVATION SUPPORT PROCEDURE:

1. EXCAVATE SITE TO TOP OF SOIL NAIL WALL ELEVATION, SLOPING SOIL AS REQUIRED (BY OTHERS). PROVIDE SLOPING AND/OR TRENCHING AT TOP OF WALL TO DIVERT SURFACE WATER RUN-OFF (BY OTHERS).
2. IF REQUIRED, REVISE SOIL NAIL LOCATIONS OR ANGLES TO MISS UTILITIES.
3. EXCAVATE TO A MAXIMUM OF 5-FOOT HIGH (10V:1H) LIFT (BY OTHERS). IF THE EXCAVATION FACE WILL NOT STAND AT REQUIRED INCLINATION, REDUCE THE LIFT HEIGHT OR SLOT THE EXCAVATION AT THE DIRECTION OF SFC'S SUPERINTENDENT. SLOTTING THE EXCAVATION IS ACCOMPLISHED BY EXCAVATING THE FACE IN ALTERNATING 8 TO 10 FOOT WIDE SEGMENTS TO BUTTRESS THE SOIL. AFTER THE SLOTS ARE SOIL NAILED, THE SOIL BERM IS EXCAVATED AND THE FACE OF THE EXCAVATION BETWEEN THE SLOTS IS SOIL NAILED. MAINTAIN A THIRTY (30) FOOT WIDE (MINIMUM) FIRM, DRY, LEVEL BENCH AT EACH WORKING ELEVATION.
4. INSTALL DRAINAGE STRIPS , VERTICAL REINFORCEMENT AND HORIZONTAL REINFORCEMENT PRIOR TO PLACEMENT OF SHOTCRETE. INSTALL WEEP DRAINS AFTER PLACEMENT OF SHOTCRETE



FOUNDATION PLAN

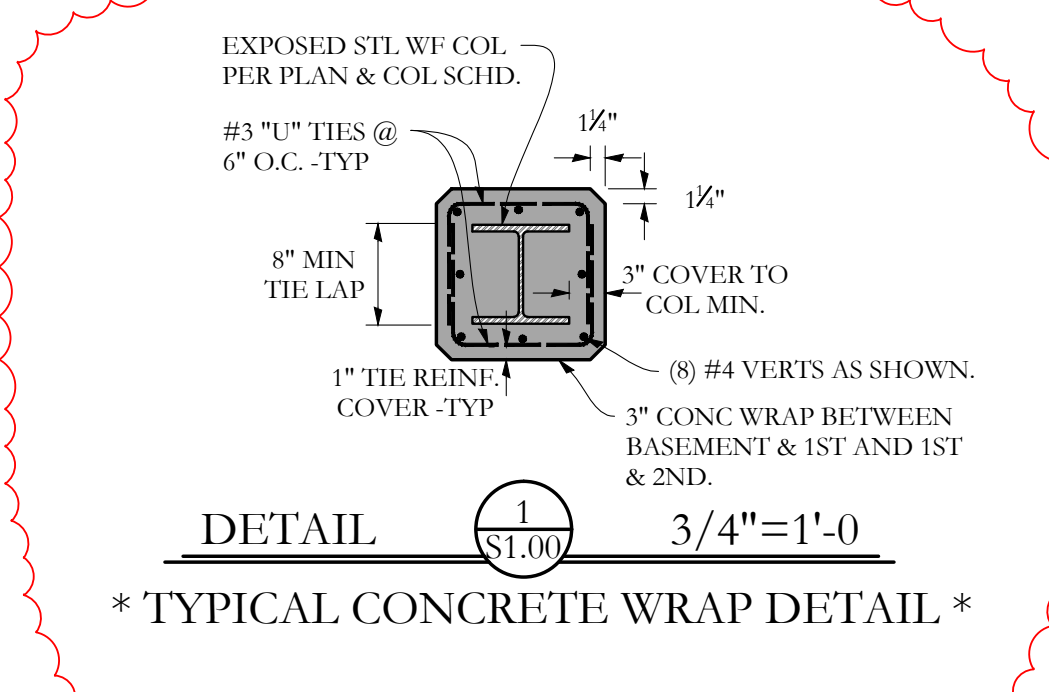
- NOTES:
- SEE SHEET S-10 FOR GENERAL STRUCTURAL NOTES AND ADDITIONAL INFORMATION.
 - COORDINATE ALL THRU SLAB PLUMBING & CHASIS ETC. W/ ARCH & MECHANICAL DRAWINGS - TYP.
 - VERIFY ROOFTOP MECHANICAL EQUIPMENT WEIGHTS PRIOR TO CONSTRUCTION.
 - ALL ELEVATIONS BASED OFF REFERENCE ELEVATION 100'-0" EQUAL TO USGS 118'-0"
 - COORDINATE ALL BASEMENT & GARAGE TOP OF SLAB/GRADING ELEVATIONS GRADING WITH CIVIL.

CONCRETE WALL SCHEDULE			
MARK	SIZE	WALL REINFORCING	NOTES
CW-01	10" WIDE x CONT.	#4 @ 16" O.C. E.W. MID DEPTH	TYPICAL TALL WALL AT BASEMENT GARAGE RETAINING SOIL.
CW-02	16" WIDE x CONT.	(2) MATS: #4 @ 12" O.C. E.W. ONE 16" WIDE @ BASE W/ 8" LEDGE FOR BRICK VENEER	6" BELOW GRADE.
CW-03	8" WIDE x CONT.	#4 @ 18" O.C. E.W. MID DEPTH	TYPICAL MALLOW FROSTED PROTECTED WALL.
CW-SP	24" WIDE x 22'-0" LONG	SPECIALLY REINFORCED	CONC. WALL TO BE USED AS LATERAL FORCE RESISTING ELEMENT FROM BRACED TOWER ABOVE.

NOTE:

- ALL CONC. WALLS SHALL HAVE MIN (2) #5 CONT. HORIZ. REINF. @ TOP & BOT - TYP.
- ADDITIONAL REINFORCING IS ALSO INDICATED IN PLANS AND SECTION

CONCRETE FOOTING SCHEDULE			
MARK	SIZE	FTG REINFORCING	BEAR FTG ON:
-CF-01-	24" WIDE x 12" THICK x CONT.	(3) #5 CONT. - TYP. #5 HOOK DOWELS @ 32"	LEAN CONCRETE PAD (AS NEEDED) ON SOLID BEDROCK.
-CF-02-	30" WIDE x 12" THICK x CONT.	(3) #5 CONT. - TYP. #5 HOOK DOWELS @ 24" O.C. PER SECTION	THICK CONCRETE PAD (AS NEEDED) ON SOLID BEDROCK.
-CF-03-	30" WIDE x 12" THICK x CONT.	(4) #5 CONT. - #4 HOOK DOWELS @ 24" O.C. PER SECTION	GLACIAL TILL OR COMPACTED STRUCTURAL FILL ON GLACIAL TILL PER GEOTECH.
-CF-04-	16" WIDE x 10" THICK x CONT.	(3) #5 CONT. - #4 HOOK DOWELS @ 32" O.C. PER SECTION	GLACIAL TILL OR COMPACTED STRUCTURAL FILL ON GLACIAL TILL PER GEOTECH.
-CF-05-	8" WIDE x 14" DEEP GRADE BEAM	(4) #5 CONT. @ BOTTOM & (4) #4 CONT. @ TOP	FILL. GRADE BEAM SPANS FROM CONC. WALL TO CONC. WALL.
145	4'-0" SQ. x 12" THICK ISOLATED FTG	#4 @ 12" O.C. E.W. TOP MAT & #5 @ 12" O.C. BOT MAT	GLACIAL TILL OR COMPACTED STRUCTURAL FILL ON GLACIAL TILL PER GEOTECH.
15	3'-0" SQ. x 14" THICK ISOLATED FTG	#5 @ 12" O.C. E.W. TOP MAT & #5 @ 6" O.C. BOT MAT	LEAN CONCRETE PAD (AS NEEDED) ON SOLID BEDROCK.
16	6'-0" SQ. x 10" THICK ISOLATED FTG	#5 @ 12" O.C. E.W. TOP MAT & #5 @ 6" O.C. BOT MAT	LEAN CONCRETE PAD (AS NEEDED) ON SOLID BEDROCK.
175	7'-0" SQ. x 18" THICK ISOLATED FTG	#5 @ 12" O.C. E.W. TOP MAT & #6 @ 4" O.C. BOT MAT	LEAN CONCRETE PAD (AS NEEDED) ON SOLID BEDROCK.
PC1	4'-0" SQ. x 24" THICK PILE CAP.	#5 @ 12" O.C. E.W. TOP MAT & BOT MAT	(5) 50 TON STE. PILES



PROGRESS DRAWINGS
Not for Construction
AUG. 2/ST. 2015

2015 RYAN SENATORE ARCHITECTURE
565 CONGRESS STREET
PORTLAND, MAINE 04101
207-450-6414
senatorearchitecture.com

C:\NSU\LAN S\1
STRUCTURAL
Portland, ME 04101
2015

FOUNDA
PLAN

S1.00



CONSTRUCTION

667 Congress Street Landscaping

Job #: 15015
 Project Size: 650 SF
 Detail - With Taxes and Insurance ,Indirect Costs are Spread

Estimator: T. Riordan, J. Picoraro, M. Tanis
 Group 1: Major ItemCode Groups

Item Code	Description	Quantity	UM	Total UnitCost	Total Cost
02 - SITEWORK					
2600.055	Proofroll Subgrade - Stone Paving	53	SY	0.64	34
2610.130	Install Base (L) - Stone Paving	12	CY	55.46	682
2610.134	Base - Granular Aggregate Base (M) - Stone Paving	12	CY	28.98	356
2610.200	Install Stone Paving (L)	6	CY	68.93	424
2610.206	Crushed Stone (M) - Paving	6	CY	28.98	178
2700.117	Grading for Curbs	70	LF	17.72	1,240
2700.118	Granite Curbs	70	LF	54.94	3,846
2700.119	Granite Edging	260	LF	65.93	17,141
2700.120	Mulch/Topsoil of of Planting Areas	10	CY	256.71	2,567
2710.121	Pine Shrubs (L)	7	EA	346.91	2,428
2710.122	Pine Shrubs (M)	7	EA	173.89	1,217
2710.200	Vertical Growth Plantings (L)	40	EA	60.64	2,426
2710.201	Vertical Growth Plantings (M)	40	EA	28.98	1,159
2710.239	Plantings - 12' - 16' Maple Tree (L)	3	EA	808.55	2,426
2710.240	Plantings - 12' - 16' Maple Tree (M)	3	EA	2,898.09	8,694
2710.280	Greenscreen Assemblies	594	SF	76.92	45,688
2710.285	Landscaping Back of Building **ALLOWANCE	1	LS	5,494.02	5,494
**					
* Total 02 - SITEWORK		650	SF	147.69	96,000
Total Estimate					96,000

667 CONGRESS STREET REDEVELOPMENT

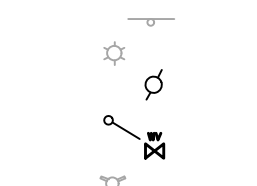
REDFERN PROPERTIES, LLC
PORTLAND, MAINE

Plan 1

LEGEND:

EXISTING

REFER TO THE
EXISTING
CONDITIONS PLAN
FOR ADDITIONAL
INFORMATION



1. THE CONTRACTOR SHALL CALL THE APPROPRIATE UTILITY COMPANIES AND DIG SAFE AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION FOR UTILITIES. OTHERWISE IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION OF UNDERGROUND UTILITIES AND LOCATE ANY POTENTIAL CONFLICTS WITH THE APPROVED PLANS PRIOR TO CONSTRUCTION.
2. THE CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE OF ALL EROSION CONTROL MEASURES SHOWN ON THE PLAN. IF DEEMED NECESSARY BY THE OWNER OR OWNER'S REPRESENTATIVE, ADDITIONAL EROSION CONTROL MEASURES SHALL BE INSTALLED AT NO ADDITIONAL COST TO THE OWNER.
3. THE CONTRACTOR SHALL PREPARE THEIR OWN MATERIAL SCHEDULE BASED ON THE PLANS AND FIELD VERIFICATION BY THE CONTRACTOR. ALL MATERIAL SCHEDULES SHOWN WITHIN THE PLAN SET ARE FOR GENERAL INFORMATION ONLY.
4. ALL CONSTRUCTION METHODS, TESTING AND MATERIALS SHALL CONFORM TO THE MAINE DEPARTMENT OF TRANSPORTATION SPECIFICATIONS, THE CITY OF PORTLAND AND SERVING UTILITY REQUIREMENTS, IF ANY. IN CASES WHERE THESE CONFLICT THE MOST STRINGENT SPECIFICATION SHALL APPLY AT NO ADDITIONAL COST TO THE OWNER.
5. THE SITE CONTRACTOR SHALL MAINTAIN A SET OF DRAWINGS WHICH SHALL RECORD THE ACTUAL LOCATION, DIMENSIONS, ELEVATIONS, MATERIALS OF THEIR WORK, INDICATING THEREON ALL VARIATIONS FROM THE CONTRACT DRAWINGS. THE CONTRACTOR SHALL PROVIDE THE OWNER WITH ONE COMPLETE SET OF REPRODUCIBLE RECORD DRAWINGS STAMPED "AS-BUILT".
6. THE CONTRACTOR WILL REMAIN SOLELY AND COMPLETELY RESPONSIBLE FOR ENFORCEMENT OF AND COMPLIANCE WITH 1) ALL CONTRACT PLANS AND SPECIFICATIONS, 2) APPLICABLE INTERNATIONAL BUILDING CODE REQUIREMENTS, AND 3) ALL SITE WORKING CONDITIONS AND SAFETY REQUIREMENTS, DAY AND NIGHT, FOR BOTH PERSONS AND PROPERTY, IN EACH CASE BOTH BY THE CONTRACTOR AND ITS SUBCONTRACTORS. THESE INCLUDE ALL OSHA, NIOSH, U.S. EPA AND ANY OTHER APPLICABLE GOVERNMENTAL REGULATIONS.
7. EXISTING CONDITIONS, BOUNDARY SURVEY AND TOPOGRAPHIC FROM THE PLAN TITLED EXISTING CONDITIONS SURVEY BY TITCOMB SURVEYING FOR REDFERN PROPERTIES, DATED APRIL 6TH, 2015.
8. SUBSURFACE DATA HAVE BEEN OBTAINED BY SUMMIT GEOENGINEERING SERVICES, INC. AND SHALL BE INCLUDED IN THE CONTRACT DOCUMENTS.
9. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ACCESS TO THE SITE AND ALL ADJACENT PROPERTIES AT ALL TIMES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY MARKINGS, SIGNAGE AND INCIDENTALS TO MAINTAIN A SAFE VEHICLE AND PEDESTRIAN ACCESS THOUGH THE LIFE OF THE PROJECT. THE CONTRACTOR SHALL NOTIFY THE PORTLAND PUBLIC SAFETY DIVISION ROUTINELY REGARDING TEMPORARY IMPACTS OR CHANGES TO SITE ACCESS CONDITIONS.
10. CONSTRUCTION MANAGEMENT PLAN DATED SEPTEMBER 11TH, 2015 BY THE PC CONSTRUCTION SHALL BE REFERRED TO FOR ANTICIPATED PROJECT SCHEDULE AND CLOSURES. TRAFFIC CONTROL SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
11. CONTRACTOR TO DETERMINE SOIL CLASSIFICATION INDEPENDENTLY FOR TRENCH, SHORING, AND OTHER SIMILAR CONSTRUCTION MEANS AND METHODS APPLICATIONS.

3. THE CONTRACTOR SHALL SUBMIT IN WRITING ANY REQUESTS TO MODIFY THE CONTRACT DOCUMENTS.
2. ALL SHOP AND ERECTION DRAWINGS SHALL BE CHECKED AND STAMPED BY THE GENERAL CONTRACTOR PRIOR TO SUBMISSION FOR ENGINEER'S REVIEW. ANY UNCHECKED OR NON-STAMPED SUBMITTALS WILL BE RETURNED WITHOUT REVIEW.
3. CONTRACTOR SHALL THOROUGHLY INSPECT AND SURVEY EXISTING STRUCTURES AND SITE TO VERIFY CONDITIONS THAT AFFECT THE WORK SHOWN ON THE DRAWINGS. CONTRACTOR TO NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO PROCEEDING.
4. DETAILS SHOWN APPLY TO ALL SIMILAR CONDITIONS UNLESS OTHERWISE INDICATED.
5. ALTHOUGH ALL DUE DILIGENCE HAS BEEN APPLIED TO MAKE THE DRAWINGS AS COMPLETE AS POSSIBLE, NOT ALL DETAILS ARE ILLUSTRATED, NOR IS EVERY EXCEPTION CONDITION ADDRESSED WITHIN THE CONTRACT DOCUMENTS.
6. ALL PROPRIETARY CONNECTIONS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
7. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR THE COORDINATION OF ALL WORK, INCLUDING DIMENSION AND LAYOUT VERIFICATION, MATERIALS COORDINATION, SHOP DRAWING REVIEW, AND THE WORK OF ANY SUBCONTRACTORS.
8. UNLESS OTHERWISE SPECIFICALLY INDICATED, THE DRAWINGS DO NOT DESCRIBE OR DIRECT MEANS OR METHODS OF CONSTRUCTION.
9. THE CONTRACTOR, IN THE PROPER SEQUENCE, SHALL PERFORM OR SUPERVISE ALL WORK NECESSARY TO ACHIEVE THE FINAL COMPLETED STRUCTURE, AND TO PROTECT THE STRUCTURE, WORKMEN, AND OTHERS DURING THE CONSTRUCTION. SUCH WORK SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, SHORING FOR CONSTRUCTION EQUIPMENT, SHORING FOR EXCAVATION, FORMWORK, SCAFFOLDING, SAFETY DEVICES AND PROGRAMS OF ALL KINDS, SUPPORT AND BRACING FOR CRANES AND OTHER ERECTION EQUIPMENT.
10. DO NOT BACKFILL AGAINST RETAINING WALLS UNTIL SUPPORTING SLABS AND FLOOR FRAMING ARE IN PLACE AND SECURELY ANCHORED, UNLESS ADEQUATE BRACING IS PROVIDED.
11. TEMPORARY BRACING SHALL REMAIN IN PLACE UNTIL ALL FLOORS, WALLS, ROOFS AND OTHER SUPPORTING ELEMENTS ARE IN PLACE.
12. THE ENGINEER BEARS NO RESPONSIBILITY FOR THE ABOVE ITEMS, AND OBSERVATION VISITS TO THE SITE DO NOT IN ANY WAY INCLUDE INSPECTION OF THEM.

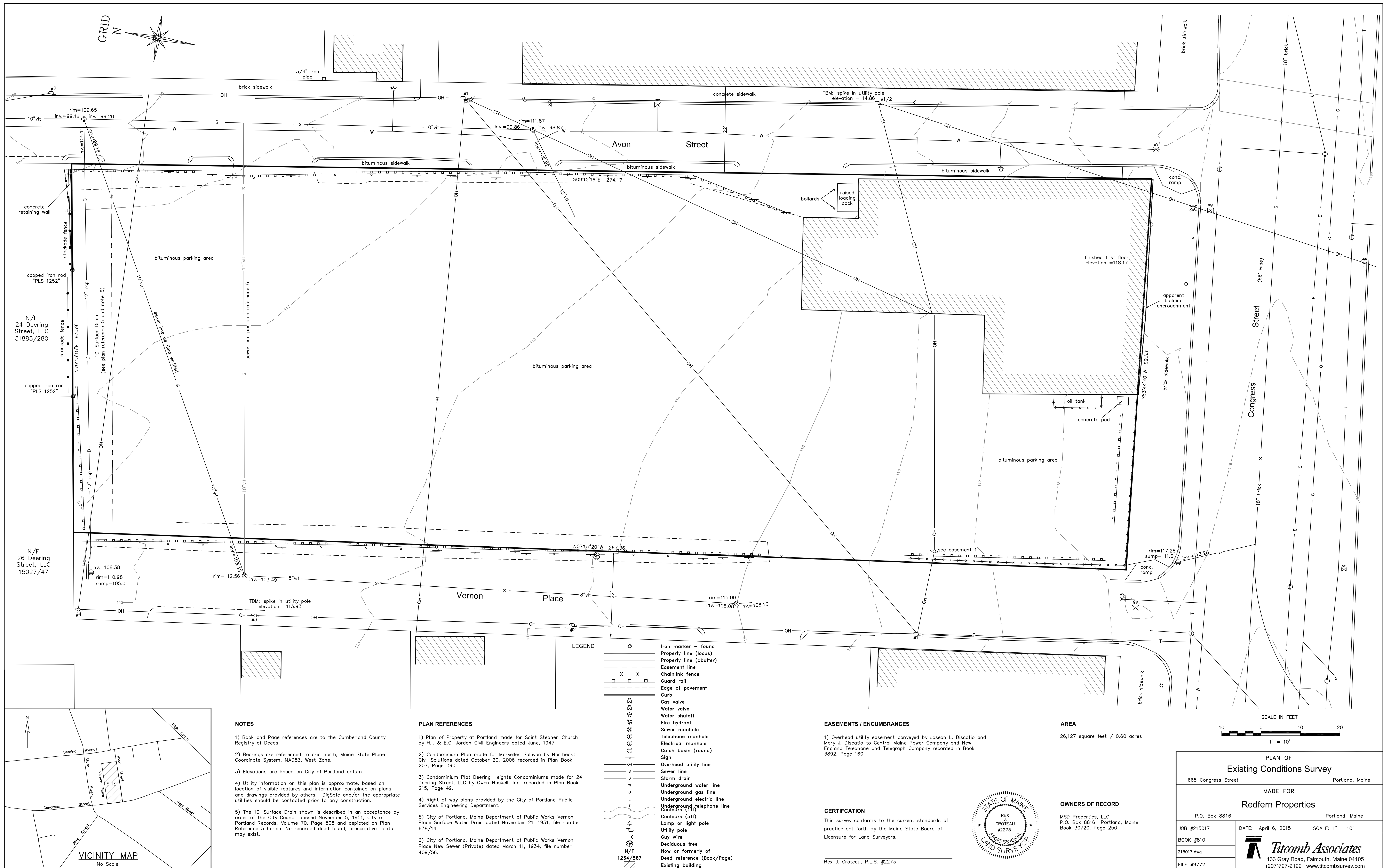
1. ALL SITE SOILS-RELATED WORK AND FOOTING EXCAVATIONS PRIOR TO PLACING FORMS, AS WELL AS SITE DRAINAGE, SHALL BE REVIEWED BY THE PROJECT GEOTECHNICAL ENGINEER.
2. NORMAL REVIEWS BY LOCAL BUILDING DEPARTMENT.
3. NOTIFY 48 HOURS PRIOR TO REQUIRED REVIEW.
4. REQUIRED SPECIAL INSPECTIONS PER I.B.C. SECTION 1705.6 BY AN APPROVED SPECIAL INSPECTOR RETAINED BY OWNER. CONTRACTOR TO COORDINATE SPECIAL INSPECTIONS.
5. SPECIAL INSPECTOR SHALL BE A QUALIFIED PERSON WHO SHALL DEMONSTRATE COMPETENCE, TO THE SATISFACTION OF THE BUILDING OFFICIAL, FOR INSPECTION OF THE PARTICULAR TYPE OF CONSTRUCTION OR OPERATION REQUIRING SPECIAL INSPECTION.

1. ALL ROUTINE MAINTENANCE ACTIVITIES SHALL BE CONDUCTED IN SUCH A WAY TO LIMIT THE AMOUNT OF DISTURBED AREA AT ONE TIME TO THE EXTENT PRACTICABLE.
2. PRIOR TO THE START OF ANY CLEARING/LAND DISTURBING ACTIVITIES, THE CONTRACTOR SHALL INSTALL APPLICABLE EROSION CONTROL DEVICES SUCH AS PERIMETER SILT FENCE, AND OTHER APPLICABLE MEASURES. IN THE EVENT THE CONTRACTOR IS NOT SURE A EROSION CONTROL MEASURE SHOULD BE IMPLEMENTED, THE CONTRACTOR SHALL CONTACT THE ENGINEER OF RECORD TO CONFIRM IMPLEMENTATION OF ANY EROSION CONTROL DEVICES.
3. ALL GROUND AREAS GRADED FOR CONSTRUCTION SHALL BE GRADED, LOAMED, SEEDED AND MULCH SHALL BE

1. THE EXISTING ASPHALT SHOULD BE STRIPPED AND EITHER PROCESSED ONSITE, REMOVED FROM THE SITE OR DISPOSED OF ONSITE.
2. REFER TO THE BORING LOGS OBTAINED BY SUMMIT GEOENGINEERING SERVICES FOR REDFERN PROPERTIES, LLC. FOR ADDITIONAL INFORMATION.
3. ALL DISPOSAL OF DEMOLITION DEBRIS OR WASTE SHALL BE IN ACCORDANCE WITH ALL LOCAL, STATE, & FEDERAL REGULATIONS. CONTRACTORS SHALL PROVIDE OWNER WITH APPROPRIATE "BILLS OF LADING" DEMONSTRATING PROPER DISPOSAL OF ALL MATERIALS.
4. SITE DEMOLITION SHALL NOT OCCUR UNTIL PROPER ABATEMENT PROCEDURES HAVE OCCURRED. ABATEMENT, IF NECESSARY SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

DRAWING NO.
C-02

FINAL: ISSUED FOR
CONSTRUCTION

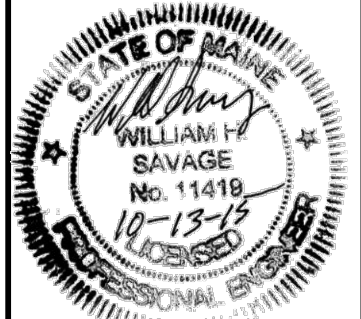


REVISION	REV.
	DATE

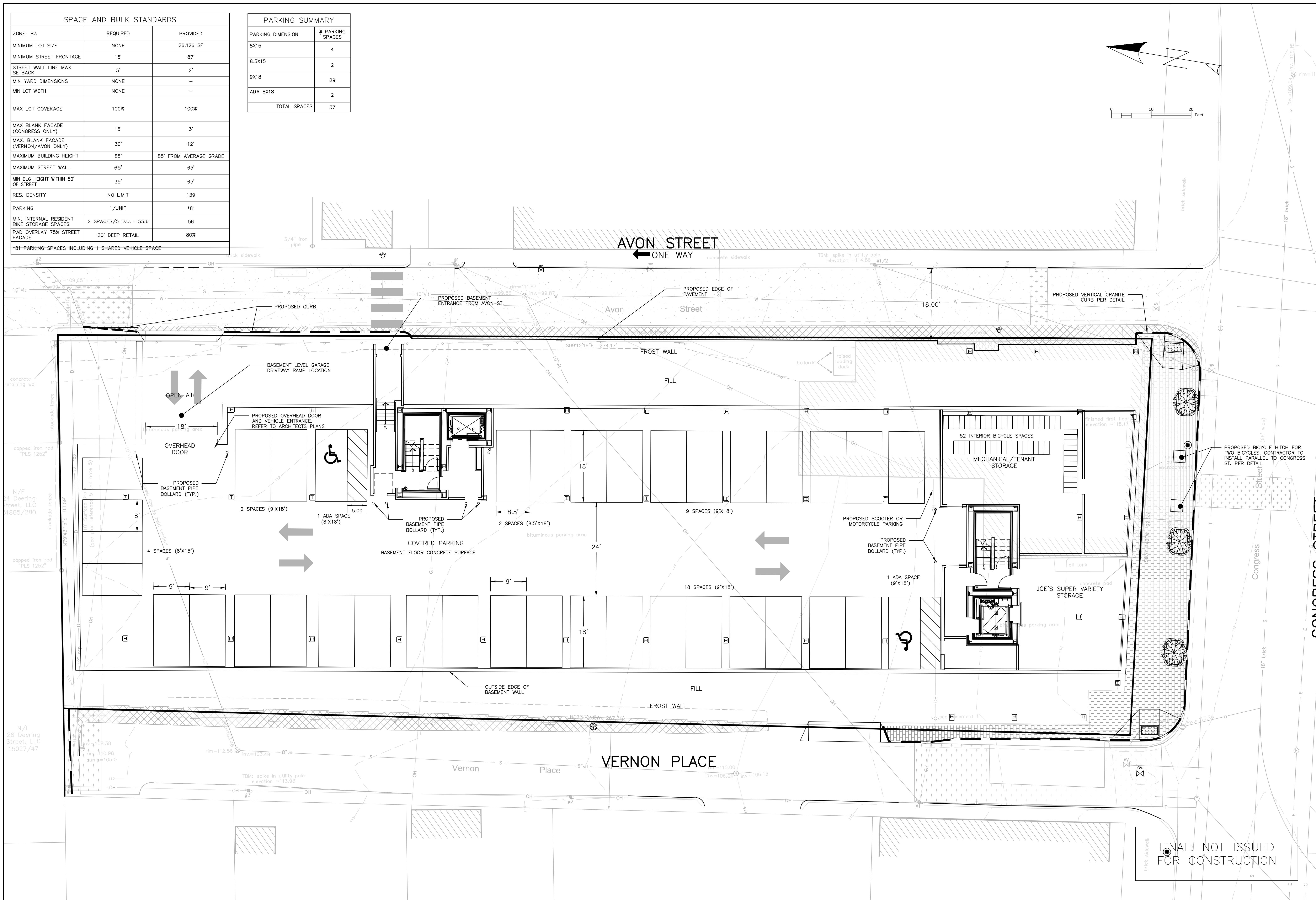
SITE PLAN: BASEMENT

DRAWING NAME	 A C O R N ENGINEERING, INC.	
	PROJECT NAME	667
CLIENT	THIS PLAN SHALL NOT BE MOVED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY ALTERATIONS, REVISIONS, OR ADDITIONS SHALL BE THE RESPONSIBILITY OF THE CLIENT AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.	
58 DANFORTH STREET, PORTLAND, MAINE 04102 (207) 775-2555	ACORN ENGINEERING, INC. 58 DANFORTH STREET, PORTLAND, MAINE 04102 (207) 775-2555	

FILE:	1060_CONGRESS
DATE:	4/6/2015
JN:	1060
SCALE:	1"=10'
DESIGNED BY:	MAG
DRAWN BY:	MAG
CHECKED BY:	WHS



DRAWING NO.
C-10

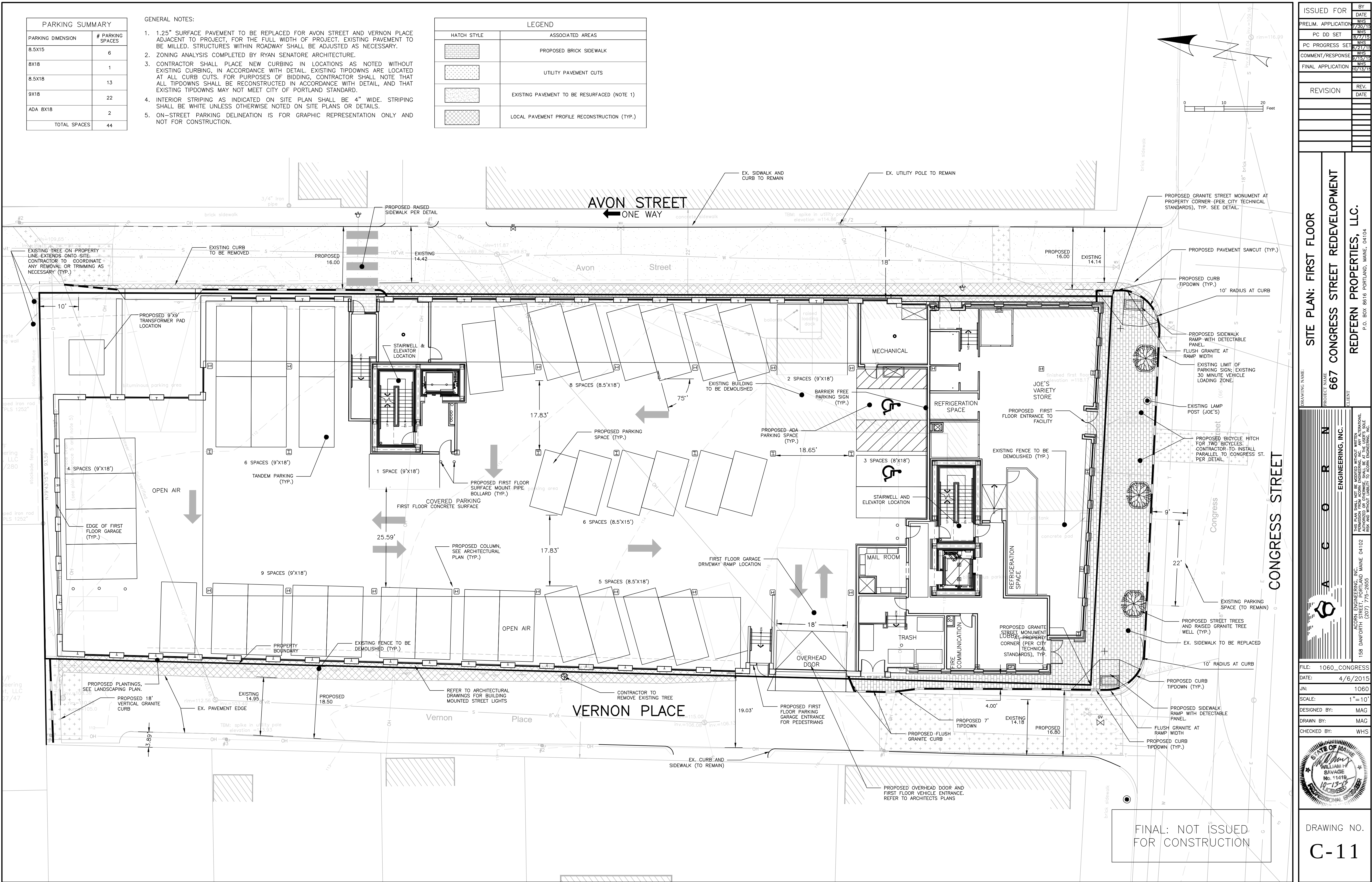


PARKING SUMMARY	
PARKING DIMENSION	# PARKING SPACES
8.5X15	6
8X18	1
8.5X18	13
9X18	22
ADA 8X18	2
TOTAL SPACES	44

GENERAL NOTES:

- 1.25" SURFACE PAVEMENT TO BE REPLACED FOR AVON STREET AND VERNON PLACE ADJACENT TO PROJECT, FOR THE FULL WIDTH OF PROJECT. EXISTING PAVEMENT TO BE MILLED. STRUCTURES WITHIN ROADWAY SHALL BE ADJUSTED AS NECESSARY.
- ZONING ANALYSIS COMPLETED BY RYAN SENATORE ARCHITECTURE.
- CONTRACTOR SHALL PLACE NEW CURBING IN LOCATIONS AS NOTED WITHOUT EXISTING CURBING, IN ACCORDANCE WITH DETAIL. EXISTING TIPDOWNS ARE LOCATED AT ALL CURB CUTS. FOR PURPOSES OF BIDDING, CONTRACTOR SHALL NOTE THAT ALL TIPDOWNS SHALL BE RECONSTRUCTED IN ACCORDANCE WITH DETAIL, AND THAT EXISTING TIPDOWNS MAY NOT MEET CITY OF PORTLAND STANDARD.
- INTERIOR STRIPING AS INDICATED ON SITE PLAN SHALL BE 4" WIDE. STRIPING SHALL BE WHITE UNLESS OTHERWISE NOTED ON SITE PLANS OR DETAILS.
- ON-STREET PARKING DELINEATION IS FOR GRAPHIC REPRESENTATION ONLY AND NOT FOR CONSTRUCTION.

LEGEND	
HATCH STYLE	ASSOCIATED AREAS
	PROPOSED BRICK SIDEWALK
	UTILITY PAVEMENT CUTS
	EXISTING PAVEMENT TO BE RESURFACED (NOTE 1)
	LOCAL PAVEMENT PROFILE RECONSTRUCTION (TYP.)



ISSUED FOR	BY
PRELIM. APPLICATION	WHS
PC DD SET	WHS
PC PROGRESS SET	WHS
COMMENT/RESPONSE	WHS
FINAL APPLICATION	WHS

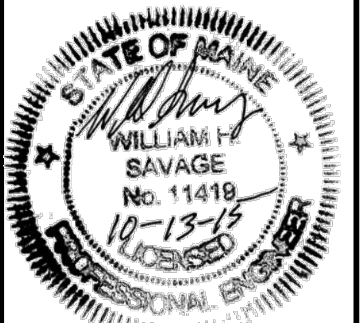
REVISION	REV.	DATE
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SITE PLAN: FIRST FLOOR
667 CONGRESS STREET REDEVELOPMENT
REDFERN PROPERTIES, LLC.

DRAWING NAME
PROJECT NAME
CLIENT

ACORN ENGINEERING, INC. MAINE 04102
155 DANFORTH (207) 779-2555
ACORN ENGINEERING, INC. MAINE 04102
155 DANFORTH (207) 779-2555
THIS PLAN AND ANY INFORMATION CONTAINED HEREIN ARE THE PROPERTY OF ACORN ENGINEERING, INC. AND ARE NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN PERMISSION OF ACORN ENGINEERING, INC.

FILE: 1060_CONGRESS
DATE: 4/6/2015
JN: 1060
SCALE: 1"=10'
DESIGNED BY: MAG
DRAWN BY: MAG
CHECKED BY: WHS

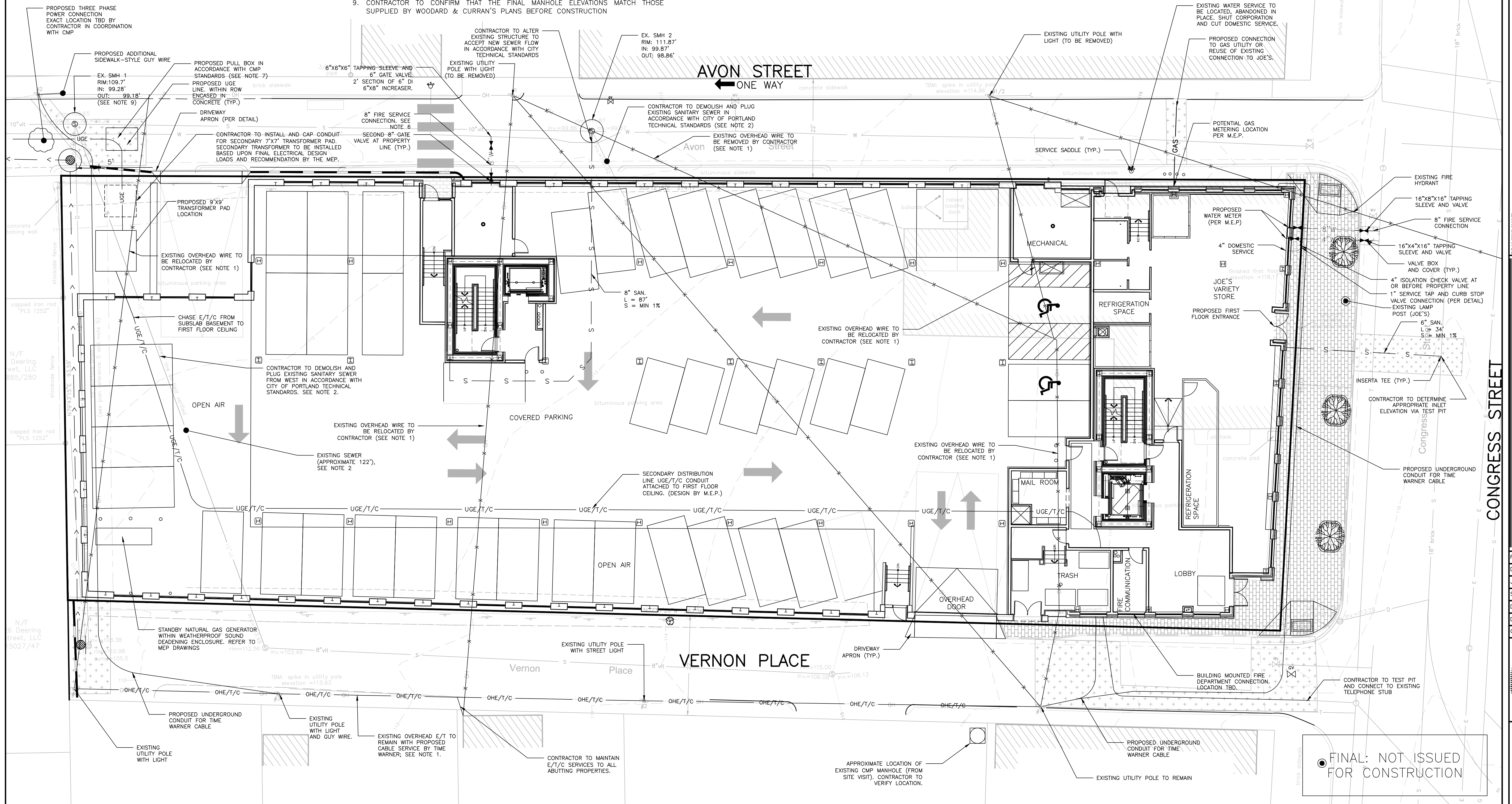


DRAWING NO.
C-11

1. CONTRACTOR SHALL COORDINATE WITH TIME WARNER TO PROVIDE CABLE TO RESIDENCES ON VERNON PLACE IN PLACE OF OVERHEAD SERVICE WIRES CROSSING THE PROPOSED DEVELOPMENT. OVERHEAD WIRES SHALL BE REROUTED SUBSURFACE TO THE NORTH END OF THE PROPERTY TO THE EXISTING POLE AND THEN RUN OVERHEAD ON THE EXISTING POLE ALONG VERNON PLACE. ADDITIONAL GUY WIRING WITH ANCHORAGES WILL BE REQUIRED.
2. CONTRACTOR SHALL EITHER FILL ABANDONED SEWER WITHIN THE SITE AND VERNON STREET WITH FLOWABLE FILL OR EXCAVATE AND DISPOSE OF OFFSITE OR COMBINATION.
3. CONTRACTOR IS TO BE CAUTIONED THAT CERTAIN LOCATIONS AND/OR ELEVATIONS OF EXISTING UTILITIES HAVE BEEN PROVIDED THROUGH UTILITY COORDINATION OR OTHER OBSERVATIONS. INFORMATION IS NOT TO BE RELIED UPON AS EXACT OR COMPLETE. CONTRACTOR TO FIELD VERIFY AND COORDINATE WITH UTILITY COMPANY AND DIG SAFE NO LESS THAN 72 HOURS PRIOR TO ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF ALL UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS INDICATED IN THE CONTRACT DOCUMENTS. CONTRACTOR TO NOTIFY ENGINEER OF ANY DIFFERENTIATIONS FROM EXISTING CONDITIONS, INCLUDING UTILITY SURVEY, PRIOR TO ANY CHANGES.
4. FOR ALL UTILITIES, ACORN ENGINEERING DESIGN LIMITS EXTEND TO OUTSIDE WALL OF BUILDING. METERING OF UTILITIES TO BE COMPLETED BY M.E.P. UNLESS SPECIFIED OTHERWISE.

5. SEWER: SEWER UTILITIES WITHIN CITY STREET RIGHT OF WAY TO BE CONSTRUCTED IN ACCORDANCE WITH CITY OF PORTLAND TECHNICAL STANDARDS. WASTE FROM KITCHEN OF PROPOSED JOE'S VARIETY STORE SHALL CONVEY WASTE TO A GREASE TRAP. M.E.P. TO PLACE VALVE FOR BACKFLOW PREVENTION INSIDE OF BUILDING FOR EACH SEWER CONNECTION. CONTACT ENGINEER IF FIELD CONDITIONS FROM INVERT VARY FROM DESIGN.
6. WATER UTILITIES: ALL 4" AND 8" WATER PIPE SHALL BE DUCTILE IRON PIPE UNLESS OTHERWISE APPROVED. FINAL PIPE SIZING TO BE PROVIDED BY MEP ENGINEER. INTERNAL METERING, BACKFLOW PREVENTION (PER PWD, A TESTABLE DOUBLE CHECK VALVE ASSEMBLY WILL BE REQUIRED AT THE BUILDING ENTRANCE), AND PRESSURE REDUCERS, IF REQUIRED, TO BE COMPLETED BY M.E.P. ENGINEER. DOMESTIC WATER PIPE SIZES WILL DETERMINE THE FINAL WATER METERING OPTIONS. METER MAY BE SMALLER THAN THE DIAMETER OF THE WATER MAIN. WATER METERING, PRESSURE REDUCER AND BACKFLOW PREVENTION TO BE IN ACCORDANCE WITH THE PORTLAND WATER DISTRICT STANDARDS.
7. ELECTRIC, TELEPHONE, AND COMMUNICATIONS UTILITIES: DESIGN TO BE FINALIZED BY M.E.P. ENGINEER. ELECTRICAL LOAD TO BE DETERMINED BY M.E.P. ENGINEER. METER LOCATION BY M.E.P. ALL ELECTRIC CONSTRUCTION SHALL CONFORM TO CMP GUIDEBOOK OF STANDARD REQUIREMENTS, MOST RECENT EDITION. USE T/C AND USE WITHIN CITY OF PORTLAND R.O.W. SHALL BE ENCASED IN CONCRETE. PULL BOXES AND PEDESTAL LOCATIONS TO BE DETERMINED BY FAIRPOINT AND TIME WARNER PRIOR TO CONSTRUCTION . CONTRACTOR TO COORDINATE.
8. GAS UTILITIES: PROJECT GAS LOAD AND INTERNAL GAS UTILITY DESIGN TO BE FINALIZED BY M.E.P. ENGINEER. GAS METERS TO BE LOCATED BY M.E.P.
9. CONTRACTOR TO CONFIRM THAT THE FINAL MANHOLE ELEVATIONS MATCH THOSE SUPPLIED BY WOODARD & CURRAN'S PLANS BEFORE CONSTRUCTION

SEWER STRUCTURE SCHEDULE				
STRUCTURE	INTERIOR DIAMETER	RIM	INV. IN	INV. OUT
SMH-1	4'	109.7'	99.28'	99.18'
SMH-2	4'	111.87'	99.87'	99.86'

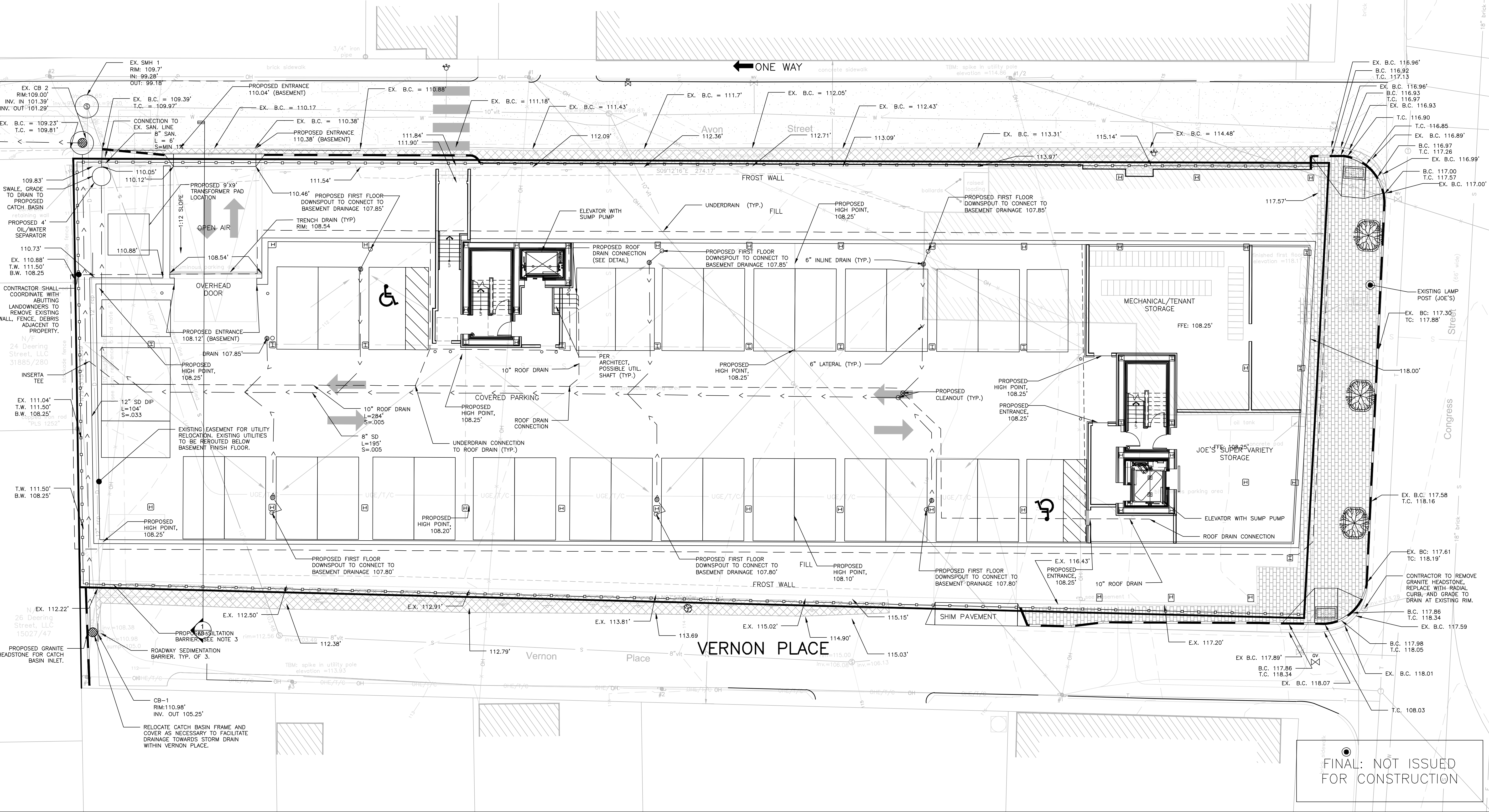


GENERAL NOTES:

1. REFER TO STRUCTURAL ENGINEER'S PLANS FOR WALL DESIGN. DESIGN OF TEMPORARY SOIL RESTRAINT MEASURES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR IF NECESSARY FOR CONSTRUCTION.
2. CONTRACTOR SHALL PLACE CATCH BASIN INLET PROTECTION ON CATCH BASINS AND FIELD INLETS DOWN-GRADIENT OF ALL NON-STABILIZED SURFACES, PER DETAIL.
3. LOCATION OF PROPOSED SEDIMENTATION BARRIER IS INDICATED ON PLAN. CONTRACTOR TO ENSURE THAT SEDIMENTATION BARRIER IS INSTALLED ALONG THE DOWN-GRADIENT LOCATION OF DISTURBANCE, PER DETAIL.
4. CONTRACTOR SHALL INSTALL CONSTRUCTION ENTRANCE AT ALL LOCATIONS OF INGRESS AND EGRESS DURING CONSTRUCTION TO THE SITE. SEE DETAIL.
5. CURB TO BE REMOVED, STOCKPILED AND RESET IN ACCORDANCE WITH DETAIL. BROKEN CURB SHALL BE PROPERLY DISPOSED OF AND SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE. IN INSTANCES WHERE CATCH BASIN HEADSTONES ARE TO BE REPLACED WITH TIPDOWNS, CONTRACTOR SHALL PROVIDE NEW GRANITE CURB TIPDOWN AND OTHER CURBING AS NECESSARY. CATCH BASIN HEADSTONES SHOULD ONLY BE REMOVED IF THEY ARE TO HINDER ADA ACCESS TO CURB RAMPS.
6. CONTRACTOR SHALL INSTALL CATCH BASIN HOOD ON ALL CATCH BASINS.
7. CONTRACTOR SHALL ENSURE THAT FOUNDATION DRAINS AND UNDERDRAINS ARE CONSTRUCTED WITH POSITIVE OUTLET TO PROPOSED CONNECTIONS.

8. REFER TO THE ARCHITECTURAL CROSS SECTION PLANS FOR VERTICAL CLEARANCE WITHIN THE PARKING GARAGE INCLUDING BASEMENT, FIRST FLOOR AND VEHICULAR ENTRANCE RAMPS.
9. ALL PROPOSED DRAINS FROM THE 1ST FLOOR ARE TO BE DUCTILE IRON AND DIRECTLY ATTACHED TO THE SUPPORT COLUMN. THE PIPE CAN BE ATTACHED USING ANY MEANS AND METHODS THAT LEAD THE PIPE ALONG THE COLUMN AVOIDS ANY OBSTACLE INCLUDING PARKING SPACES. REFER TO M.E.P. PLANS FOR LOCATIONS.
10. UNLESS SPECIFIED OTHERWISE EXISTING GRADES SHALL MATCH AT PROPOSED BUILDING FOUNDATION OR RETAINING WALL.
11. UNDERDRAIN INSTALLATION SHALL NOT EXTEND BEYOND THE PROPERTY LINE AS DEPICTED FOR CLARITY. UNDERDRAIN SHALL CONNECT TO THE STORMRAIN.
12. EXTERIOR PERIMETER PARKING LOT WALL GRADES SHALL VARY UNLESS OTHERWISE NOTED. INTERIOR BASEMENT SLOPES TO MIRROR FIRST FLOOR SLOPES, WITH THE EXCEPTION OF RAMP LOCATIONS.
13. T.C. TOP OF CURB ASSUMES ALL CURBS WILL BE RECONSTRUCTED OR CONSTRUCTED WITH A 7" REVEAL FROM NOTED EXISTING SPOT GRADES.
14. ALL WORK WITHIN THE CITY STREET RIGHT OF WAY SHALL MEET CITY OF PORTLAND TECHNICAL MANUAL STANDARDS
15. CONTRACTOR TO CONFIRM THAT THE FINAL MANHOLE AND CATCHBASIN ELEVATIONS MATCH THOSE SUPPLIED BY WOODARD & CURRAN'S PLANS BEFORE CONSTRUCTION

CATCH BASIN SCHEDULE				
STRUCTURE	INTERIOR DIAMETER	RIM	INV. IN	INV. OUT
CB-1	4'	110.98'	-	105.25'
CB-2	4'	109.00'	101.39'	101.29'



ISSUED FOR	BY
PRELIM. APPLICATION	WHS
PC DD SET	WHS
PC PROGRESS SET	WHS
COMMENT/RESPONSE	WHS
FINAL APPLICATION	WHS

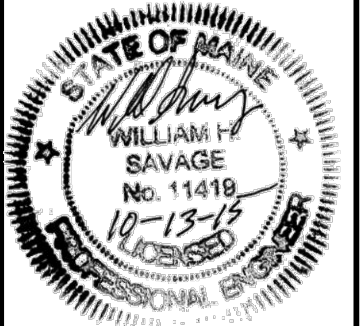
REVISION	REV.
	DATE

DRAWING NAME: GRADING & DRAINAGE PLAN: BASEMENT
PROJECT NAME: 667 CONGRESS STREET REDEVELOPMENT
CLIENT: REDFERN PROPERTIES, LLC.
P.O. BOX 8616 PORTLAND, MAINE, 04104

ACORN ENGINEERING, INC. MAINE 04102
158 DANFORTH (207) 779-2955

REGISTERED PROFESSIONAL ENGINEER
STATE OF MAINE
WILLIAM F. SAVAGE
No. 11419
10-13-12

FILE: 1060_CONGRESS
DATE: 4/6/2015
JN: 1060
SCALE: 1"=10'
DESIGNED BY: MAG
DRAWN BY: MAG
CHECKED BY: WHS



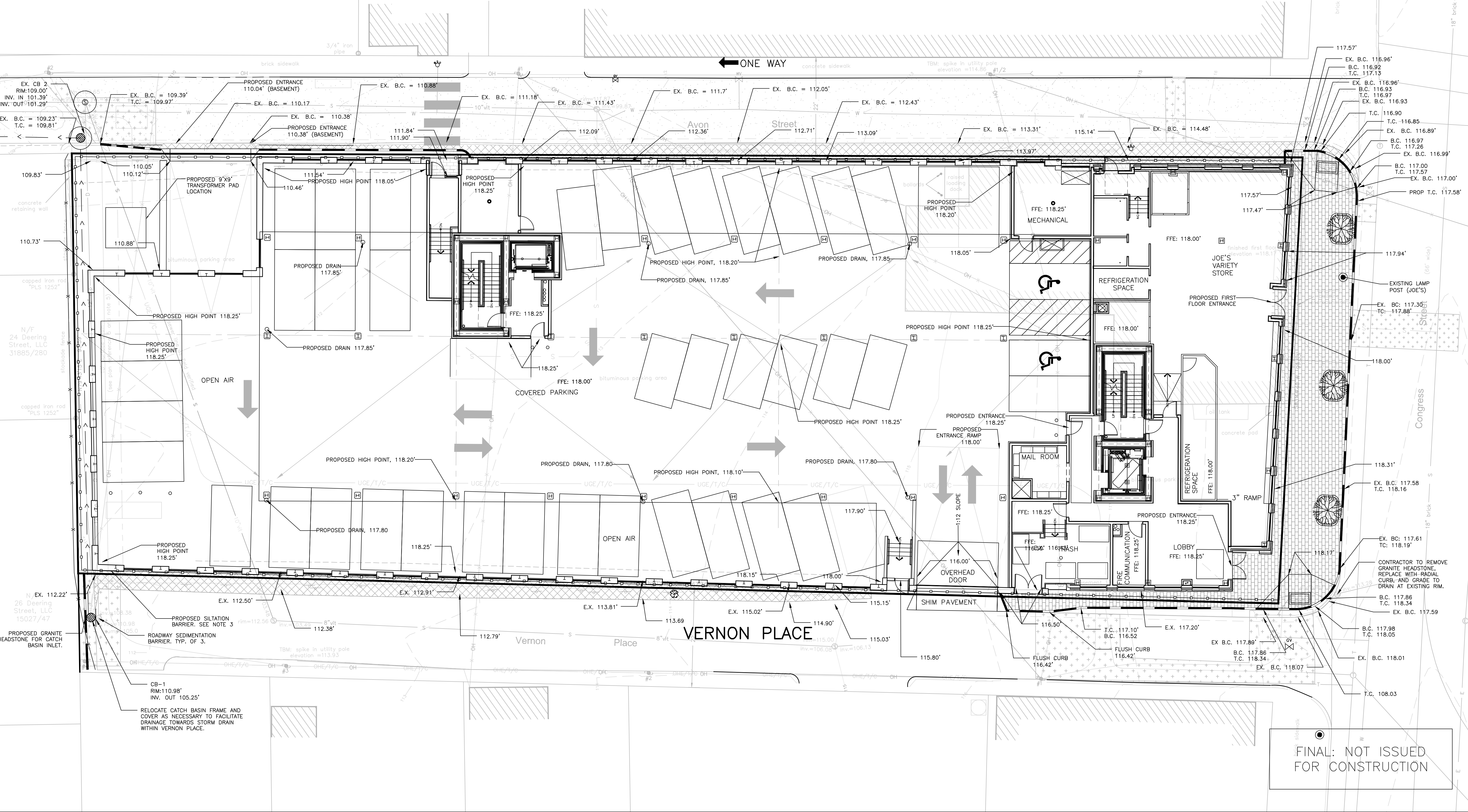
DRAWING NO.
C-30

FINAL: NOT ISSUED
FOR CONSTRUCTION

GENERAL NOTES:

1. REFER TO STRUCTURAL ENGINEER'S PLANS FOR WALL DESIGN. DESIGN OF TEMPORARY SOIL RESTRAINT MEASURES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR IF NECESSARY FOR CONSTRUCTION.
2. CONTRACTOR SHALL PLACE CATCH BASIN INLET PROTECTION ON CATCH BASINS AND FIELD INLETS DOWN-GRADIENT OF ALL NON-STABILIZED SURFACES, PER DETAIL.
3. LOCATION OF PROPOSED SEDIMENTATION BARRIER IS INDICATED ON PLAN. CONTRACTOR TO ENSURE THAT SEDIMENTATION BARRIER IS INSTALLED ALONG THE DOWN-GRADIENT LOCATION OF DISTURBANCE, PER DETAIL.
4. CONTRACTOR SHALL INSTALL CONSTRUCTION ENTRANCE AT ALL LOCATIONS OF INGRESS AND EGRESS DURING CONSTRUCTION TO THE SITE. SEE DETAIL.
5. CURB TO BE REMOVED, STOCKPILED, AND RESET IN ACCORDANCE WITH DETAIL. BROKEN CURB SHALL BE PROPERLY DISPOSED OF AND SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE. IN INSTANCES WHERE CATCH BASIN HEADSTONES ARE TO BE REPLACED WITH TIPDOWNS, CONTRACTOR SHALL PROVIDE NEW GRANITE CURB TIPDOWN AND OTHER CURBING AS NECESSARY. CATCH BASIN HEADSTONES SHOULD ONLY BE REMOVED IF THEY ARE TO HINDER ADA ACCESS TO CURB RAMPS.
6. CONTRACTOR SHALL INSTALL CATCH BASIN HOOD ON ALL CATCH BASINS.
7. CONTRACTOR SHALL ENSURE THAT FOUNDATION DRAINS AND UNDERDRAINS ARE CONSTRUCTED WITH POSITIVE OUTLET TO PROPOSED CONNECTIONS.

8. REFER TO THE ARCHITECTURAL CROSS SECTION PLANS FOR VERTICAL CLEARANCE WITHIN THE PARKING GARAGE INCLUDING BASEMENT, FIRST FLOOR AND VEHICULAR ENTRANCE RAMPS.
9. ALL PROPOSED DRAINS FROM THE 1ST FLOOR ARE TO BE DUCTILE IRON AND DIRECTLY ATTACHED TO THE SUPPORT COLUMN. THE PIPE CAN BE ATTACHED USING ANY MEANS AND METHODS THAT LEAD THE PIPE ALONG THE COLUMN AVOIDS ANY OBSTACLE INCLUDING PARKING SPACES. REFER TO M.E.P. PLANS FOR LOCATIONS.
10. UNLESS SPECIFIED OTHERWISE EXISTING GRADES SHALL MATCH AT PROPOSED BUILDING FOUNDATION OR RETAINING WALL.
11. UNDERDRAIN INSTALLATION SHALL NOT EXTEND BEYOND THE PROPERTY LINE AS DEPICTED FOR CLARITY. UNDERDRAIN SHALL CONNECT TO THE STORMDRAIN.
12. EXTERIOR PERIMETER PARKING LOT WALL GRADES SHALL VARY UNLESS OTHERWISE NOTED. INTERIOR BASEMENT SLOPES TO MIRROR FIRST FLOOR SLOPES, WITH THE EXCEPTION OF RAMP LOCATIONS.
13. T.C. TOP OF CURB ASSUMES ALL CURBS WILL BE RECONSTRUCTED OR CONSTRUCTED WITH A 7" REVEAL FROM NOTED EXISTING SPOT GRADES.
14. ALL WORK WITHIN THE CITY STREET RIGHT OF WAY SHALL MEET CITY OF PORTLAND TECHNICAL MANUAL STANDARDS
15. CONTRACTOR TO CONFIRM THAT THE FINAL MANHOLE AND CATCHBASIN ELEVATIONS MATCH THOSE SUPPLIED BY WOODARD & CURRAN'S PLANS BEFORE CONSTRUCTION



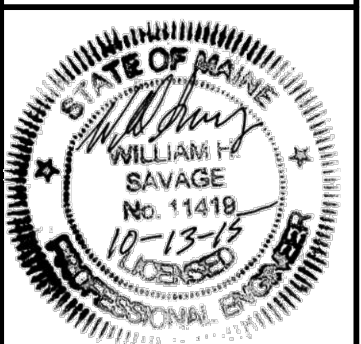
ISSUED FOR	BY
PRELIM. APPLICATION	WHS
PC DD SET	WHS
PC PROGRESS SET	WHS
COMMENT/RESPONSE	WHS
FINAL APPLICATION	WHS

REVISION	REV.
	DATE

DRAWING NAME	GRADING & DRAINAGE PLAN: FIRST FLOOR
PROJECT NAME	667 CONGRESS STREET REDEVELOPMENT
CLIENT	REDFERN PROPERTIES, LLC.

ACORN ENGINEERING, INC.
158 DANFORTH (207) 779-2955

FILE: 1060_CONGRESS
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SCALE: 1"=10'
DESIGNED BY: MAG
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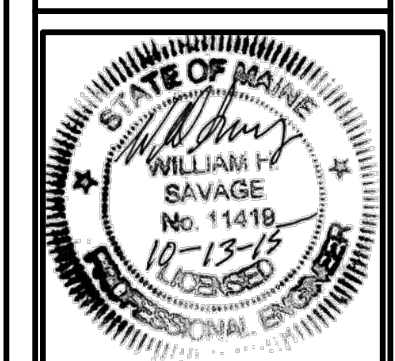


[illegible]

DRAWING NAME:		SITE DETAILS 2	
PROJECT NAME:		667 CONGRESS STREET REDEVELOPMENT	
CLIENT:	REDFERN PROPERTIES, LLC. P.O. BOX 8816 PORTLAND, ME 04104		


A C O R N
ENGINEERING, INC.
 ACORN ENGINEERING, INC.
 58 DANFORTH STREET, PORTLAND MAINE 04102
 (207) 775-2955
 (207) 775-2955
 THIS PLAN SHALL NOT BE MOVED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY ALTERATIONS, AUTHORIZED OR UNAUTHORIZED, SHALL BE THE SOLE RESPONSIBILITY OF THE USER WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

FILE:	1060_DETAILS
DATE:	4/20/2015
JN:	1060
SCALE:	NTS
DESIGNED BY:	WHS
DRAWN BY:	MAG
CHECKED BY:	WHS



DRAWING NO.
C-41

- FINAL: NOT ISSUED
FOR CONSTRUCTION

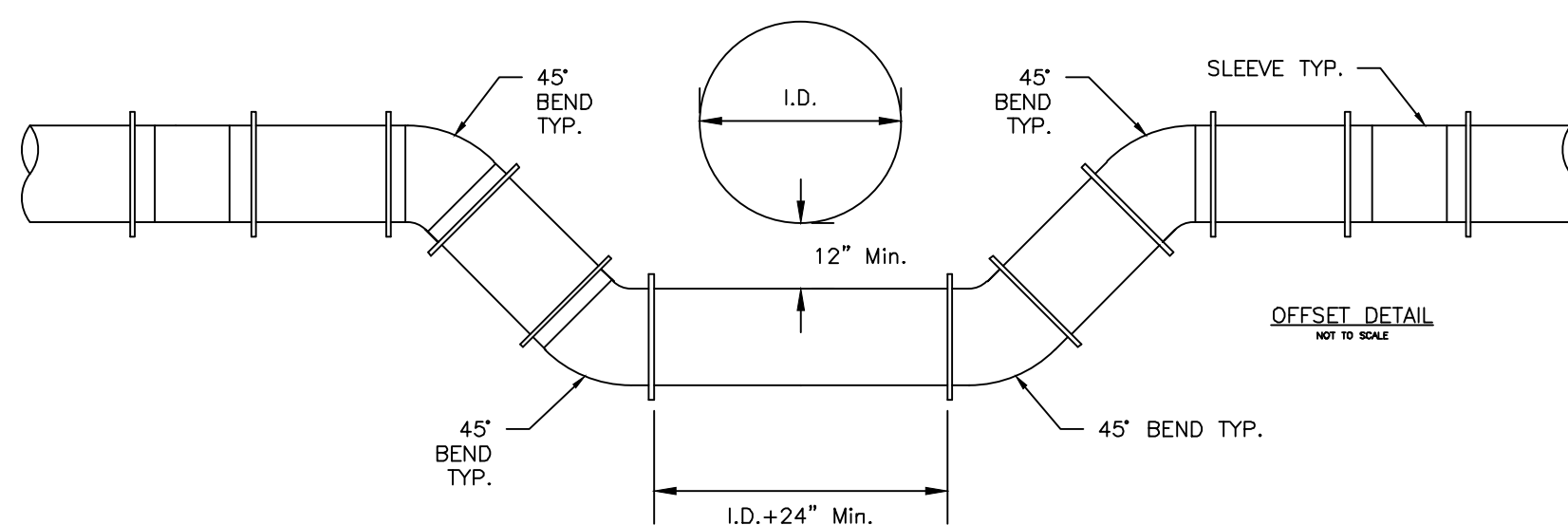
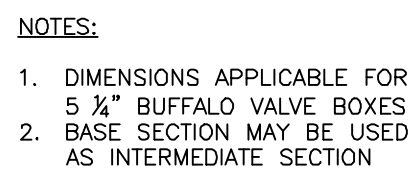


Diagram illustrating a Corporation Stop (Type K) Copper fitting with a Gooseneck. The fitting is labeled "CORPORATION STOP (SEE SPECS.)" and "(TYPE K) COPPER". The curved pipe section is labeled "GOOSENECK".

GOOSENECK (TYPE K COPPER)

ADDITIONAL DIMENSIONS APPLICABLE FOR SIGMA COMPACT BENDS. FOR TYLER COMPACT BENDS, ADD 1/2" TO "D" DIMENSION AND SUBTRACT 1/2" FROM "L" DIMENSION.
ALL OTHER FITTINGS REFER TO MANUFACTURER'S RECOMMENDATIONS.

IF LESS THAN 5'-6" OF COVER IS POSSIBLE ADD 1 INCH OF "BLUE DOWN" RIGID INSULATION FOR EVERY 12" LESS COVER.

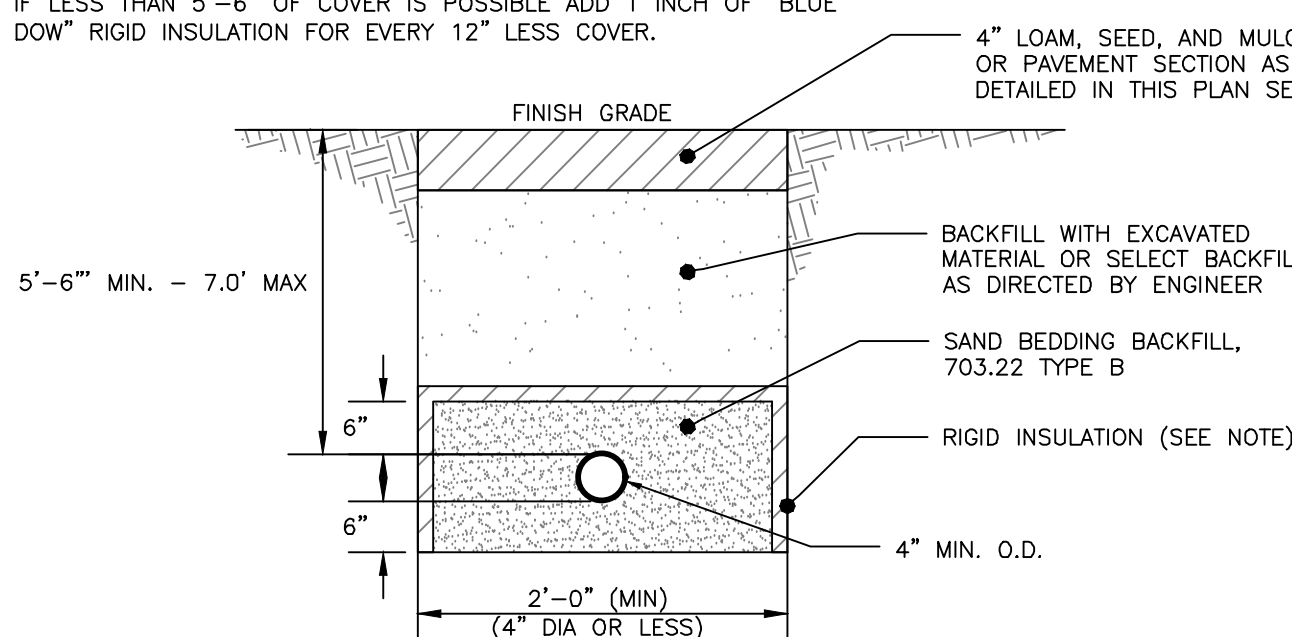


Diagram illustrating the side view of a gate valve assembly. The components labeled are:

- VALVE BOXES (TOP AND BOTTOM SECTIONS)
- GATE VALVE (TYP)
- TAPPING SLEEVE
- EXISTING WATER MAIN
- THRUST BLOCK (SEE THRUST BLOCKING DETAIL)

SIDE VIEW

UNDISTURBED SOIL

PLUG

TEE

KEEP CONCRETE CLEAR OF PIPE JOINT AND BOLTS

REFER TO NOTE 1

END SECTION

POURED IN PLACE THRUST BLOCK OR AS DIRECTED BY THE ENGINEER

UNDISTURBED SOIL

OVERLAP SIDES OF PIPE

BEND

CONCRETE BLOCKING

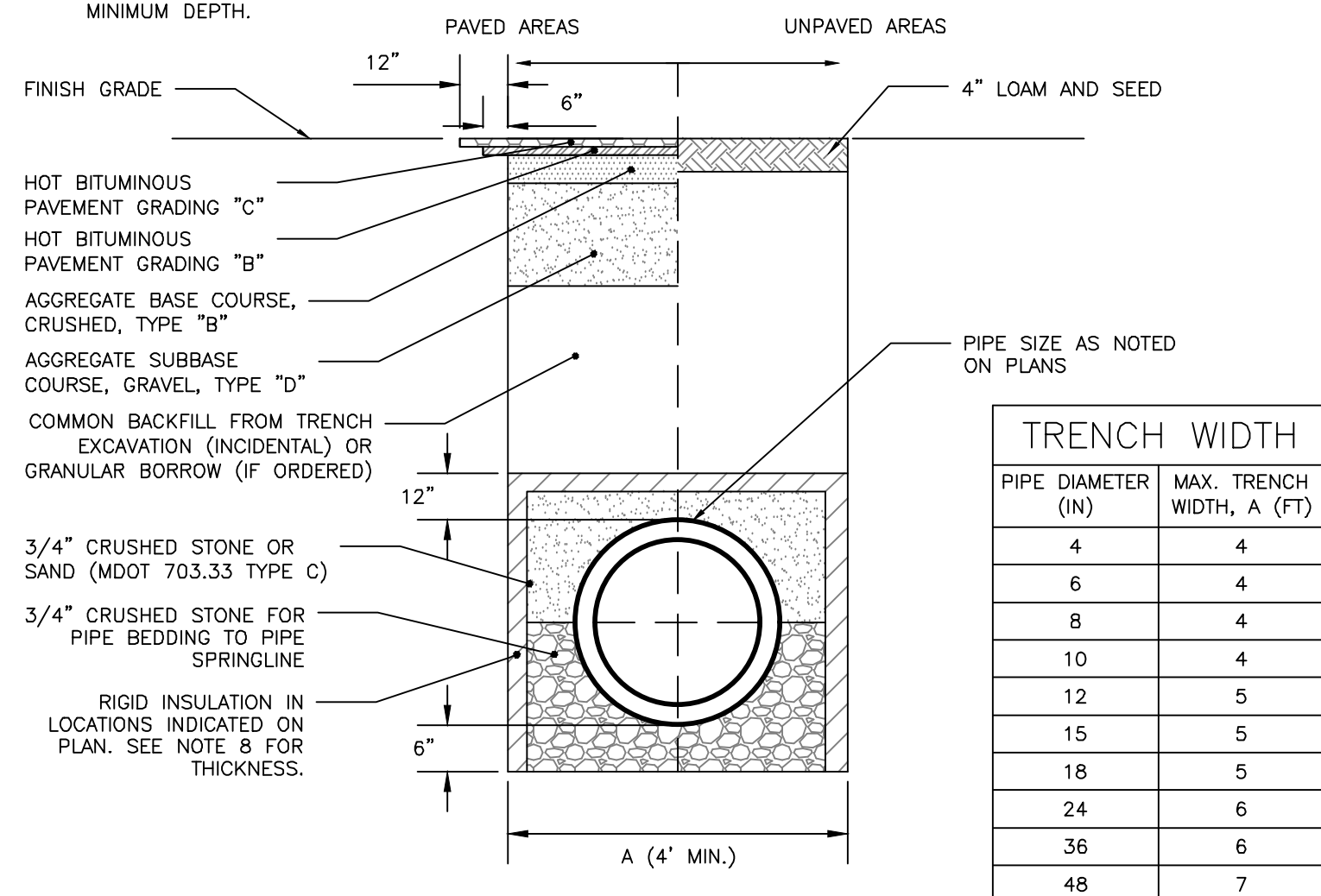
BOTTOM OF TRENCH

PLAN VIEW

KEEP CONCRETE CLEAR OF PIPE JOINT, NUTS, AND BOLTS

FINAL: NOT ISSUED
FOR CONSTRUCTION

1. ANY ALTERNATE TRENCHING METHODS SHALL BE APPROVED IN ADVANCE BY THE CITY.
2. ALL CONSTRUCTION METHODS SHALL CONFORM TO THE CITY OF PORTLAND TECHNICAL STANDARDS FIGURE 200-10.
3. BRACING & SHEETING OR OTHER TRENCH PROTECTION TO BE PROVIDED TO MEET APPLICABLE STATE AND OSHA SAFETY STANDARDS. ALL SUCH TRENCH PROTECTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
4. WHERE APPLICABLE, PERFORATIONS IN STORM DRAIN (PERF-SD) SHALL BE ORIENTED UP.
5. ALL STORM DRAINS SHALL BE PVC SDR 35 MIN PS-46 RATING OR IN ACCORDANCE WITH CITY OF PORTLAND TECHNICAL STANDARDS FIGURE 200-10. SAND SHALL BE SAND #25.
6. IN PAVED AREAS, DEPTHS OF GRAVEL AND HOT MIX ASPHALT PAVEMENT SHALL MATCH THE GREATER OF THE DEPTHS OF THE UNDERLYING SUBGRADE OR THE CITY OF PORTLAND TECHNICAL STANDARDS FIGURE 200-10.
7. THIS DETAIL SHALL BE APPLIED ONLY TO PIPE TRENCHES WITHIN OF THE CITY OF PORTLAND ROW. STORM DRAIN COVER DEPTHS 2" AND 3" SHALL INCLUDE 4" OF RIGID INSULATION. COVER BETWEEN 3" AND 4" SHALL INCLUDE 2" RIGID INSULATION. OTHER UTILITIES: ADD 2" OF RIGID INSULATION FOR EACH FOOT ABOVE MINIMUM DEPTH.

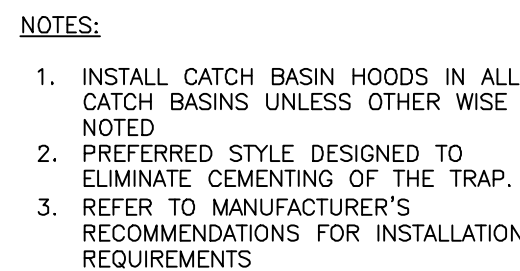


NOTES:

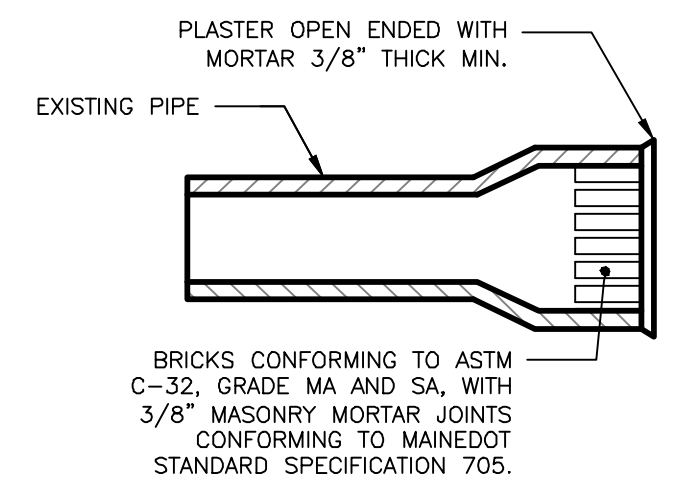
1. IF DEAD END WITH TEE, THRUST BLOCK WOULD BE REQUIRED OR AS DIRECTED BY THE ENGINEER
2. SEE THRUST/RETAINER GLAND SCHEDULE FOR TYPE OF BLOCKING TO BE USED ON BENDS

END SECTION

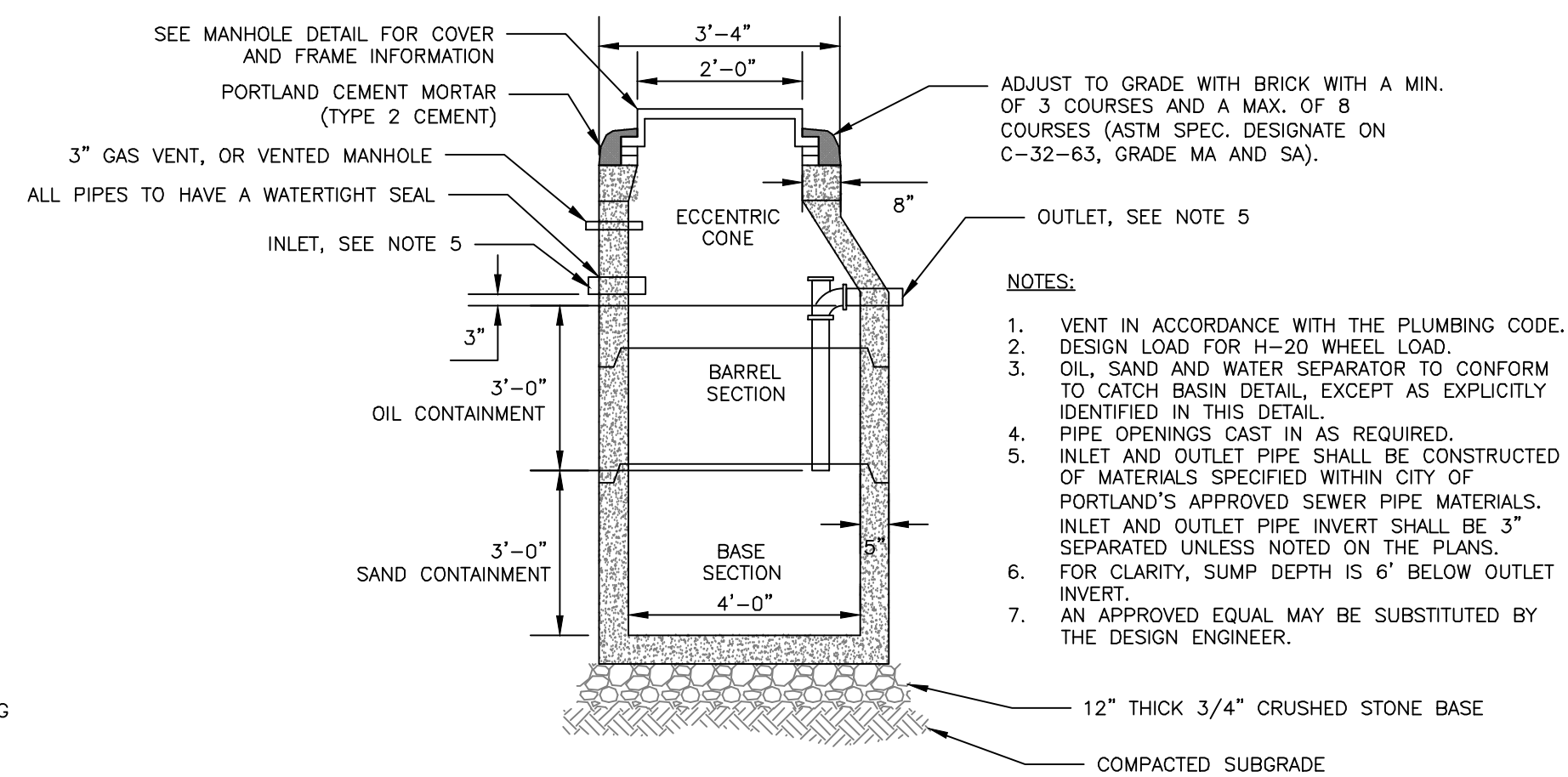
END VIEW



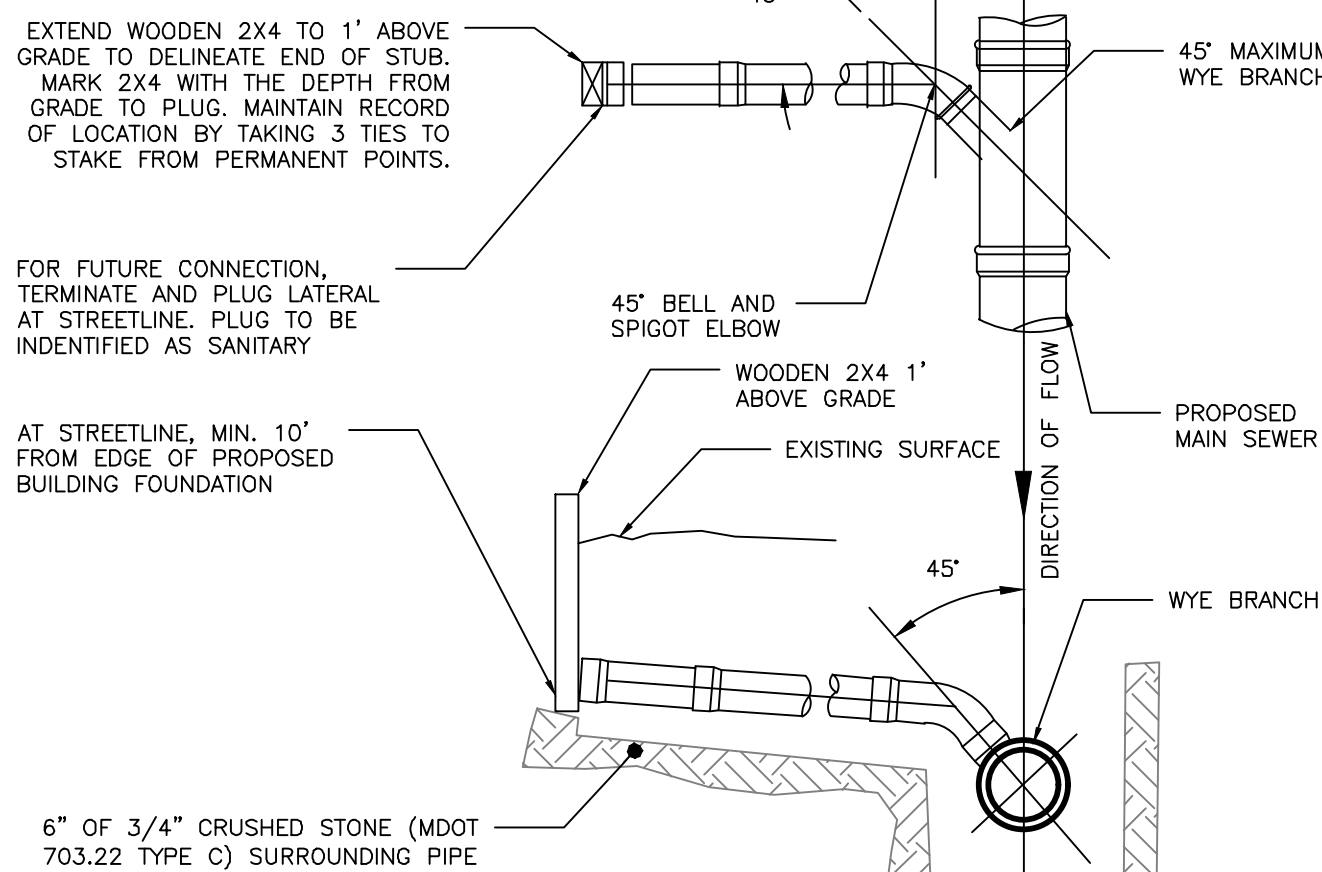
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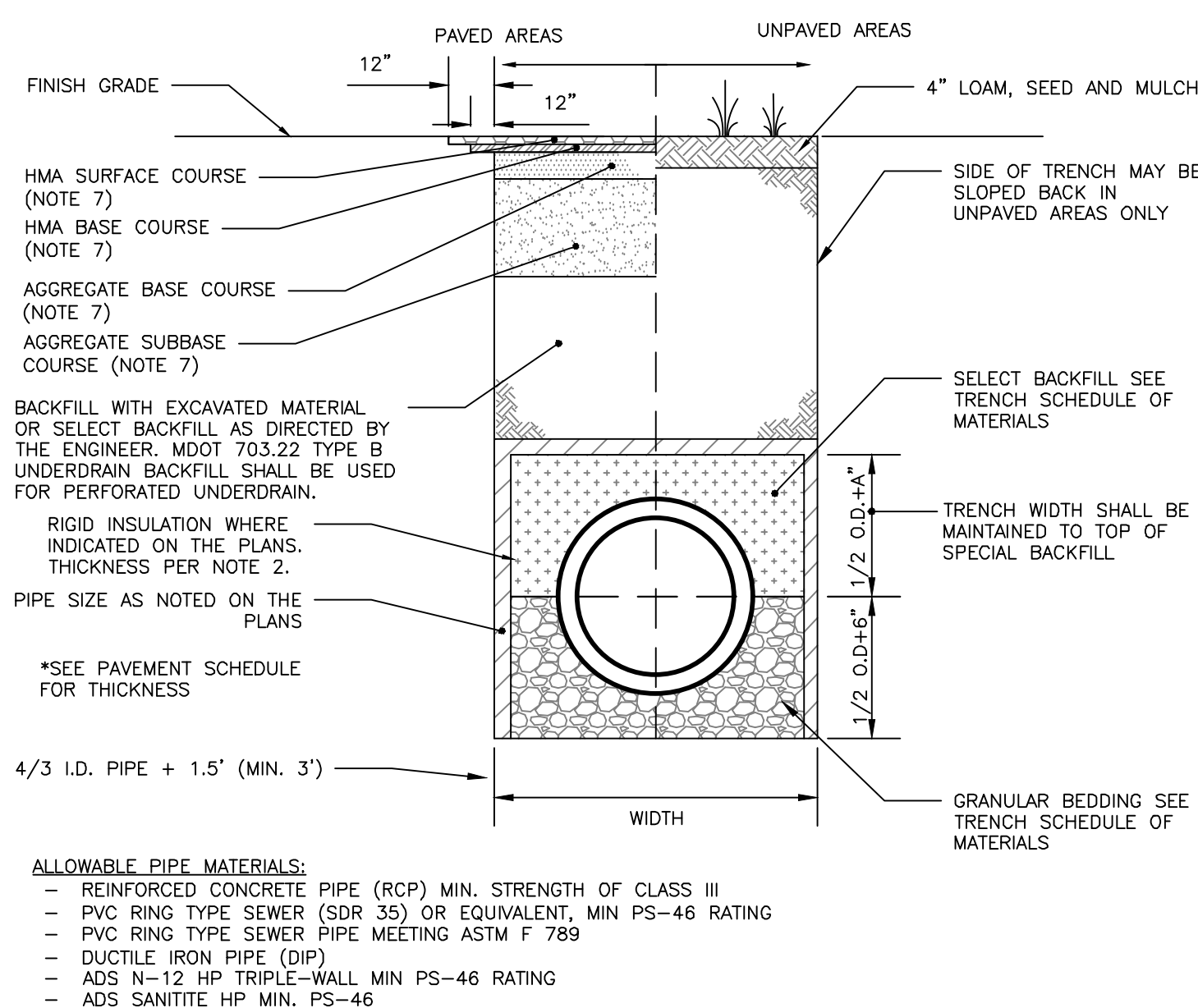
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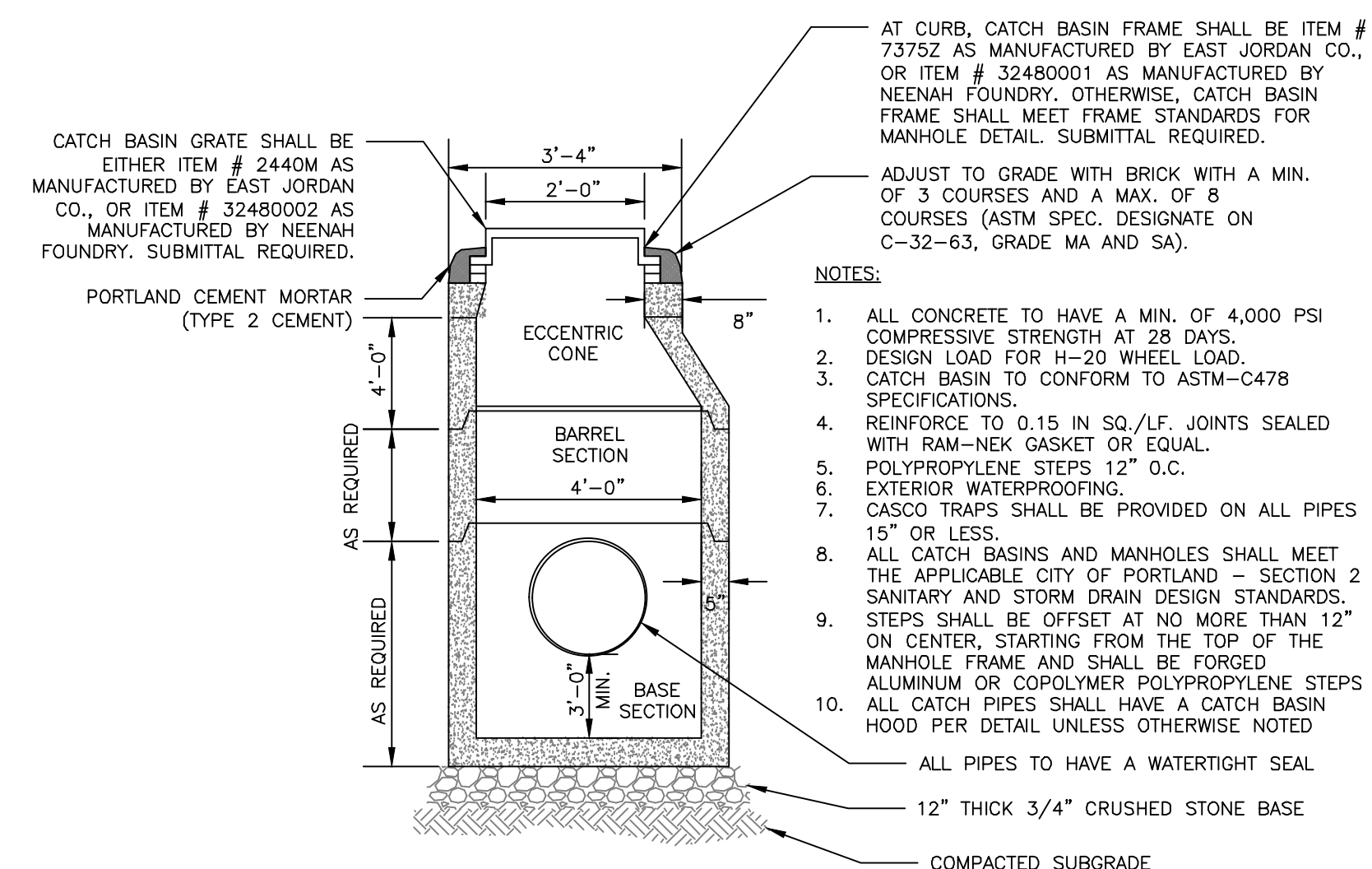
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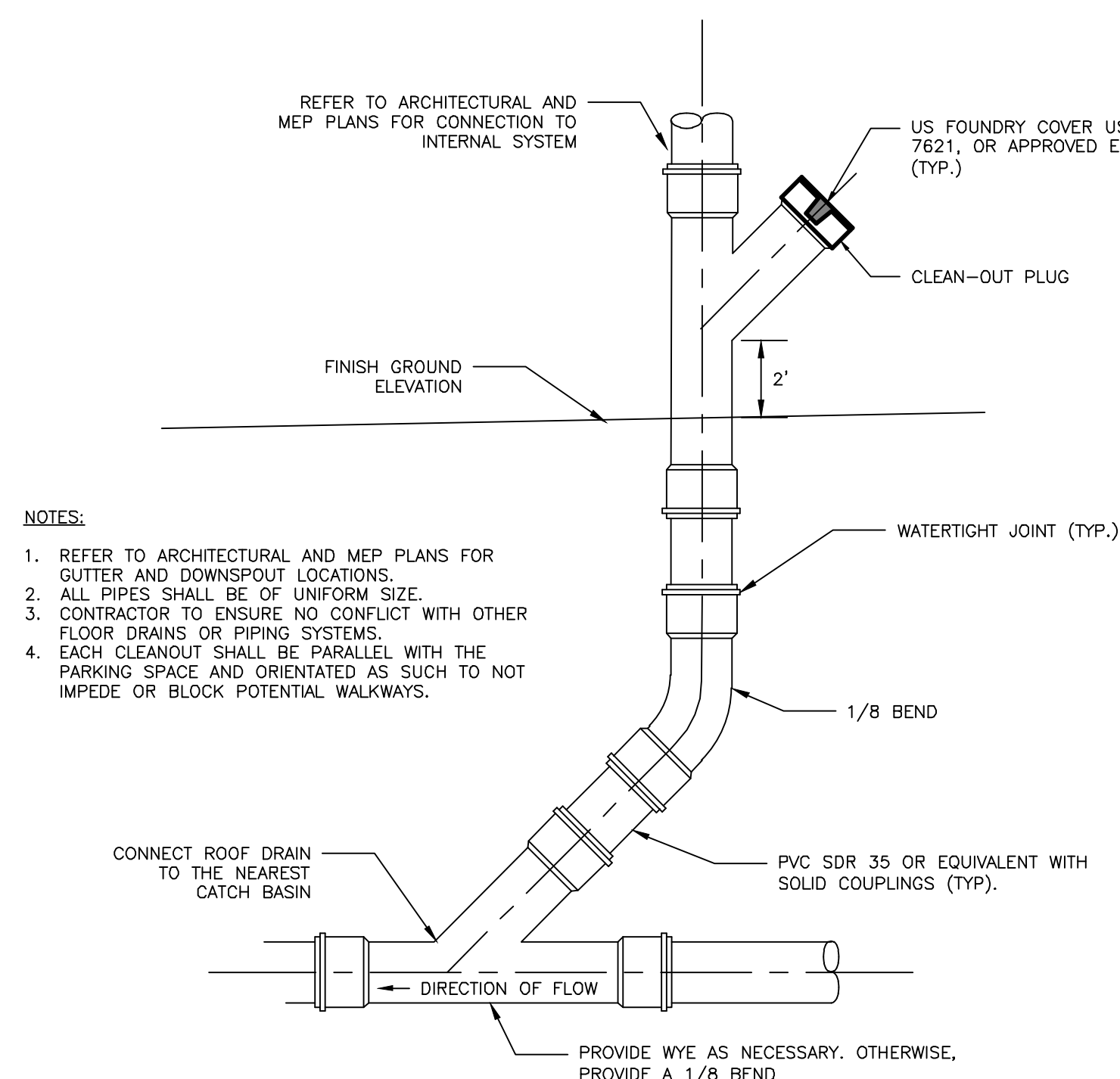
NOT TO SCALE

SCHEDULE OF MATERIALS		
TYPE OF PIPE	GRANULAR BEDDING	SELECT BACKFILL
CMP DUCTILE IRON RCP	MDOT 703.22 TYPE B UD BACKFILL	MDOT 703.22 TYPE B UD BACKFILL
PVC/HDPE	MDOT 703.22 TYPE C 3/4" CRUSHED STONE	MDOT 703.22 TYPE B UD BACKFILL
CMP	MDOT 703.22 TYPE C 3/4" CRUSHED STONE	MDOT 703.22 TYPE C 3/4" CRUSHED STONE

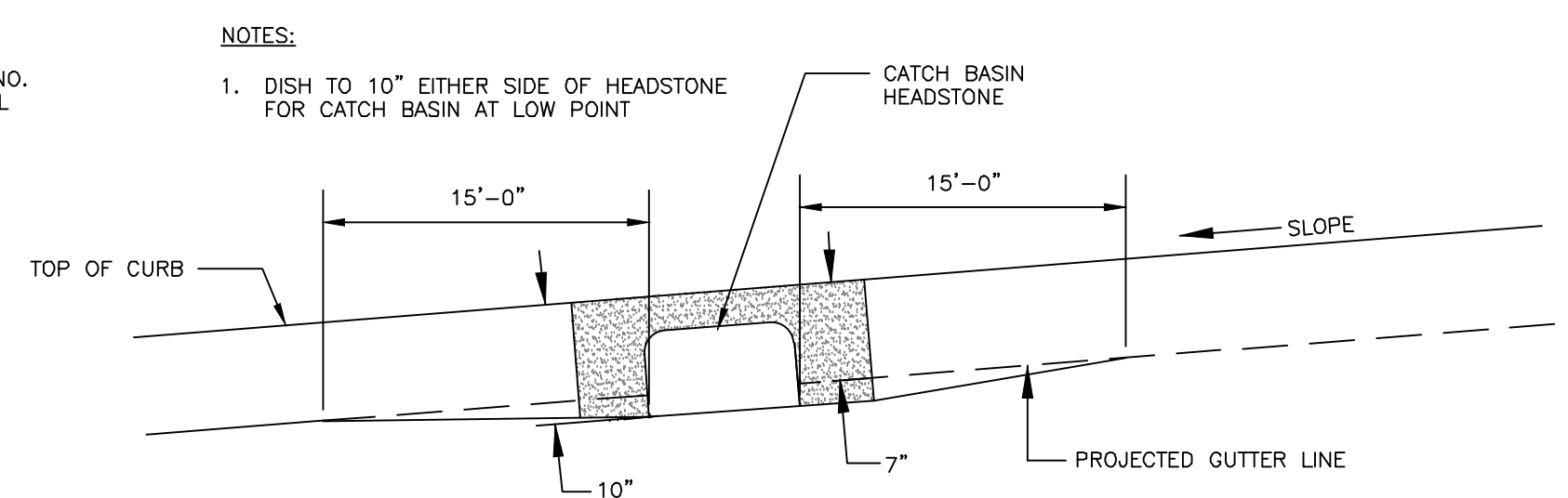
- NOTES:**
1. BRACING AND SHEETING OR OTHER TRENCH PROTECTION TO BE PROVIDED TO MEET APPLICABLE STATE AND O.S.H.A. SAFETY STANDARDS. ALL SUCH TRENCH PROTECTION TO BE THE RESPONSIBILITY OF THE CONTRACTOR.
 2. STORM DRAIN COVER BETWEEN 2' AND 3' SHALL INCLUDE 4" OF RIGID INSULATION. COVER BETWEEN 3' AND 4' SHALL INCLUDE 2" RIGID INSULATION. OTHER UTILITIES ADD 2" OF RIGID INSULATION FOR EACH FOOT ABOVE MINIMUM DEPTH.
 3. INSTALL WARNING TAPE DIRECTLY ABOVE UTILITIES AT THE TOP OF SUBGRADE.
 4. MINIMUM COVER
 - 4.1. 2'-0" – STORM DRAIN
 - 4.2. 5'-0" – SEWER
 5. NO TREES SHALL BE PLANTED WITHIN 5' OF A SEWER PIPE OR SERVICE
- THIS DETAIL SHALL BE APPLIED ONLY TO DRAINAGE PIPE EXPOSED OUTSIDE OF THE CITY OF PORTLAND ROAD. THICKNESS AS NOTED BY SURFACE DETAILS.



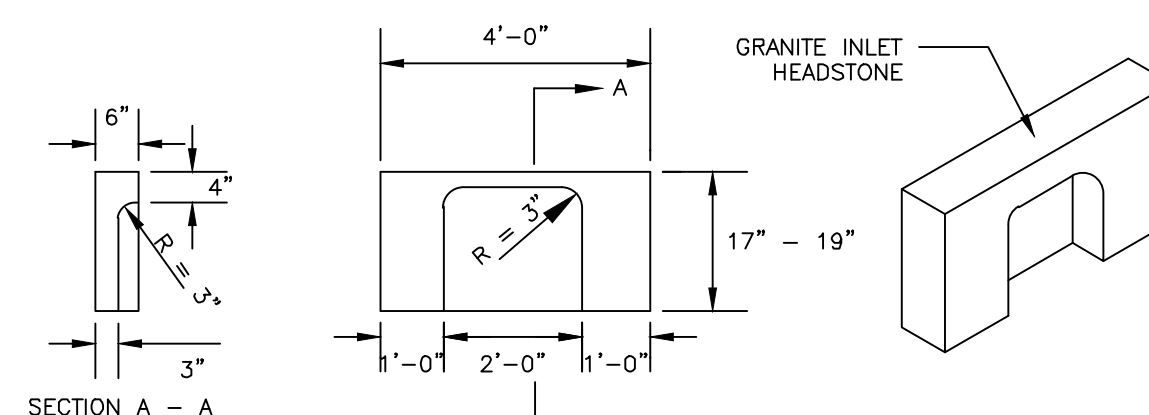
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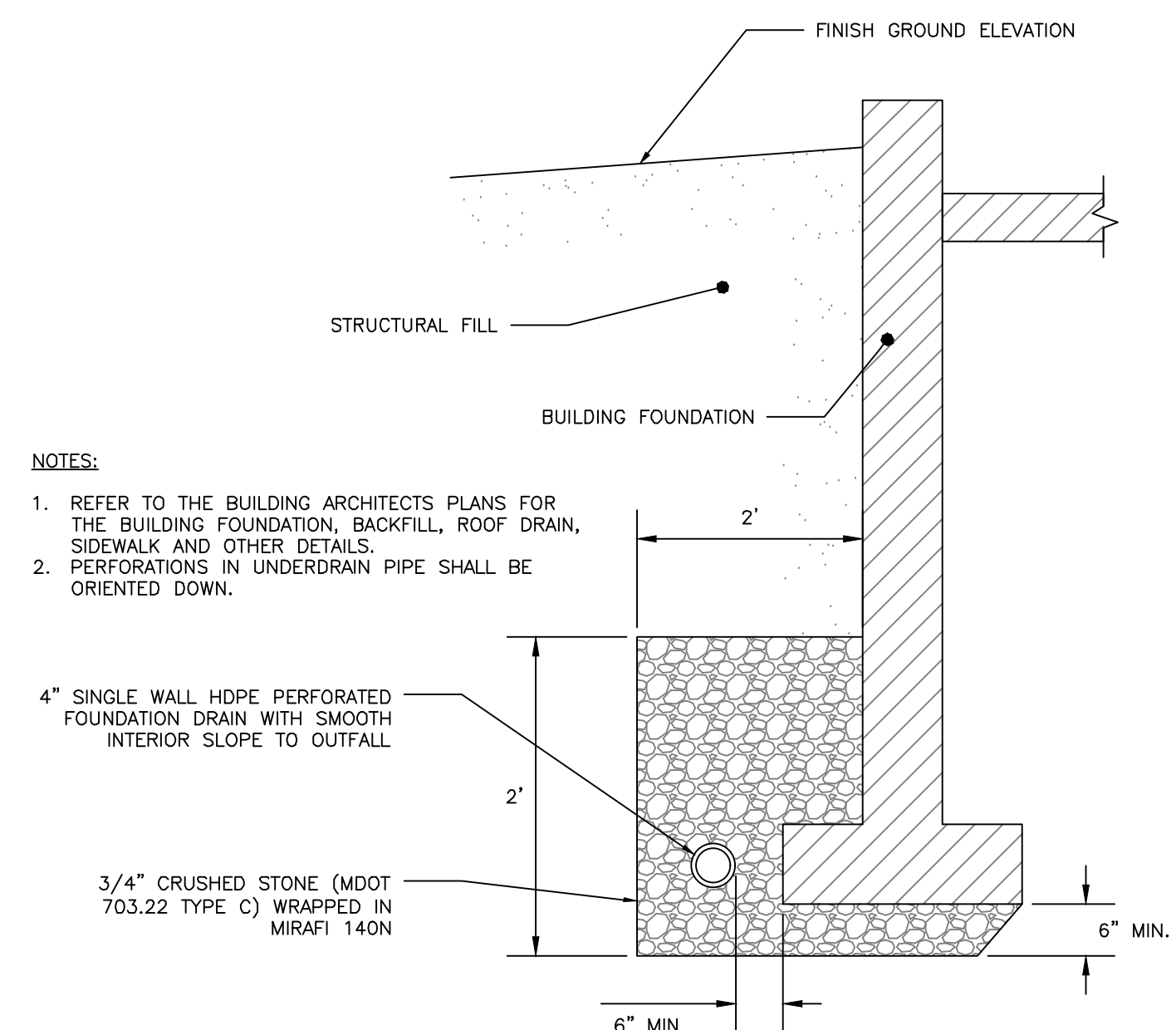
NOT TO SCALE



NOT TO SCALE



NOT TO SCALE



NOT TO SCALE

FINAL: NOT ISSUED
FOR CONSTRUCTION

REVISION	REV.
	DATE

DRAINAGE DETAILS 2

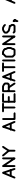
PROJECT NAME

667 CONGRESS STREET REDEVELOPMENT

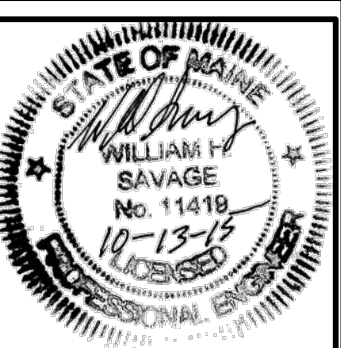
CLIENT

REDFERN PROPERTIES, LLC.

P.O. BOX 5815 PORTLAND, ME 04104


A C O R N
ENGINEERING, INC.
 158 DANFORTH STREET, SUITE 200, WILMINGTON, MAINE 04102
 (207) 779-2555
 (207) 779-2555
 FROM PLAN ENGINEERING, INC. WITHOUT ALTERATIONS, AUTHORIZED
 WITHOUT LIABILITY TO PLAN ENGINEERING, INC.'S SOLE RISK

FILE:	1060_DETAILS
DATE:	4/20/2015
WIN:	1060
SCALE:	NTS
DESIGNED BY:	WHS
DRAWN BY:	MAG
CHECKED BY:	WHS



DRAWING NO.
C-44



- NOTES:**
1. MANHOLE COVER FOR SEWER MANHOLE SHALL BE ENGRAVED "SEWER", AND SHALL BE EITHER ITEM # 2160A AS MANUFACTURED BY EAST JORDAN CO. OR ITEM # 14960002 AS MANUFACTURED BY NEENAH FOUNDRY. MANHOLE COVER FOR STORM SEWER SHALL BE ENGRAVED "DRAIN", AND SHALL BE EITHER ITEM # 2160A AS MANUFACTURED BY EAST JORDAN CO. OR ITEM # 14960003 AS MANUFACTURED BY NEENAH FOUNDRY.
 2. MANHOLE FRAME SHALL BE EITHER ITEM # 14960001, AS MANUFACTURED BY NEENAH FOUNDRY, OR ITEM # 1960Z, AS MANUFACTURED BY EAST JORDAN CO.
 3. WITHIN CITY OF PORTLAND ROW, STORM DRAIN MANHOLE SHALL CONFORM WITH "STANDARD PRECAST SEWER MANHOLE DETAIL", WITH THE EXCEPTION THAT THE COVER SHALL BE MARKED AS "DRAIN". REFER TO CITY OF PORTLAND TECHNICAL MANUAL, SECTION 2 - SANITARY SEWER AND STORM DRAIN, FIGURE II-1
 4. SUBMITTAL REQUIRED FOR MANHOLES, MANHOLE FRAMES & MANHOLE COVERS



- NOTES:**
1. ALL SANITARY AND STORMWATER/DRAIN MANHOLE COVERS SHALL BE 24" x 5".
 2. ALL SANITARY MANHOLE COVERS AND SHALL HAVE "SEWER" CAST INTO THE COVER.
 3. ALL STORMWATER/DRAIN MANHOLE COVERS SHALL HAVE "DRAIN" CAST INTO THE COVER.
 4. APPROVED MANHOLE FRAMES:
 - 4.1. EAST JORDAN = 16902
 - 4.2. OR APPROVED EQUAL
 5. APPROVED MANHOLE COVERS
 - 5.1. EAST JORDAN = 2160A
 - 5.2. OR APPROVED EQUAL
 6. FRAME AND COVER CONSTRUCTION SHALL BE COMPATIBLE WITH STANDARD PRECAST SEWER MANHOLE DETAIL

FINAL: NOT ISSUED
FOR CONSTRUCTION

1. CROSS SECTION FROM RSA A3-5; REFER TO RSA DRAWING FOR ADDITIONAL BUILDING DETAILS
2. ARCHITECTURAL AND STRUCTURAL CROSS-SECTIONS ARE SUBJECT TO CHANGE. CONTRACTOR TO COORDINATE VARIOUS PROFESSIONAL DRAWINGS AND NOTIFY ACON ENGINEERING ANY CONFLICTS OR DISCREPANCIES.
3. THE OWNER SHALL BE RESPONSIBLE FOR OBTAINING ANY EASEMENT OR TEMPORARY CONSTRUCTION RIGHTS AS NECESSARY BY PRIVATE ADJACENT LAND OWNERS. DURING THE PRE-CONSTRUCTION PHASE THE CONTRACTOR SHALL NOTIFY THE OWNER SHOULD THEIR MEANS AND METHODS REQUIRE AND EASEMENT OR TEMPORARY CONSTRUCTION RIGHTS. THE CONTRACTOR SHALL NOT TRESPASS ANY SOIL BEYOND THE PROPERTY LINE WITHOUT NOTIFYING AND OBTAINING SUCH EASEMENT OR TEMPORARY CONSTRUCTION RIGHT FROM THE OWNER. PRIOR TO THE CONTRACTOR PRICING THE WORK THE CONTRACTOR SHALL REQUEST PROOF OF SUCH EASEMENT OR TEMPORARY RIGHTS. SHOULD EASEMENTS OR TEMPORARY RIGHTS NOT BE AVAILABLE THE CONTRACTOR SHALL INCLUDE COST FOR BRACING AND SHORING AS NECESSARY.
4. GEOTECHNICAL REPORT BY SUMMIT GEOENGINEERING SERVICES DATED MAY 2015 REQUIREMENTS INCLUDE BUT ARE NOT LIMITED TO:
 - 4.1. ALL FROST WALLS SHALL EXTEND MIN 4" BELOW FINAL BASEMENT FLOOR GRADE UNLESS BEDROCK IS DETECTED THEN MIN 2" IS ACCEPTABLE; ACTUAL DEPTH TO BE DETERMINED BY STRUCTURAL ENGINEER
 - 4.2. EXPOSED, LOAD-BEARING NATIVE SOIL TO BE PROFFLOADED WITH A MIN 2 PASSES WITH A 5-TON VIBRATORY ROLLER IN 2 PERPENDICULAR DIRECTIONS
 - 4.3. EXPOSED, LOAD-BEARING BEDROCK IS TO BE CLEARED OF LOOSE AND WEATHERED ROCK
 - 4.4. EXPOSED RUBBLE FILL BELOW FOOTINGS IS TO BE REMOVED DOWN TO THE NATIVE GLACIAL TILL SOIL AND OUTWARDS EQUAL TO A DISTANCE OF THE FOOTING WALL
 - 4.5. VOIDS IN RUBBLE FILL ARE TO BE FILLED WITH 3" CRUSHED STONE OR AN APPROVED ALTERNATIVE
 - 4.6. ROCK ANCHORS SHALL BE INSTALLED PER REPORT IF ADDITIONAL FOUNDATION UPLIFT CAPACITY IS NEEDED
 - 4.7. SLAB SUBGRADE TO BE OBSERVED BY SGS CONTRACTOR TO COORDINATE
5. MAINTAIN MIN 2' COVER ON ALL STORM AND SEWER DRAINS. USE OF ELBOWS TO MINIMIZE ROCK EXCAVATION IS ALLOWED FOR PRIVATE UTILITIES.
6. CONTRACTOR TO TEST PIT TO DETERMINE EXACT ELEVATION OF THE FLOOR DRAIN CONNECTION TO THE EXISTING WATERMAIN.



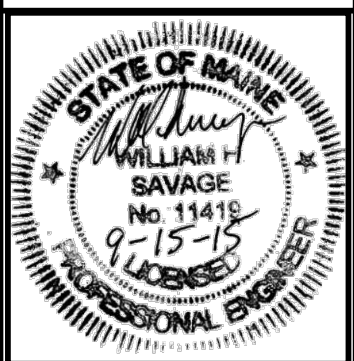
FINAL: NOT ISSUED
FOR CONSTRUCTION

667 CONGRESS STREET REDEVELOPMENT

REDFERN PROPERTIES, LLC.
P.O. BOX 8816 PORTLAND, ME 04104

A C O R N
ENGINEERING, INC.

FILE:	1060_DETAILS
DATE:	8/21/15
JN:	1060
SCALE:	1:50
DESIGNED BY:	WHS
DRAWN BY:	OJD
CHECKED BY:	WHS



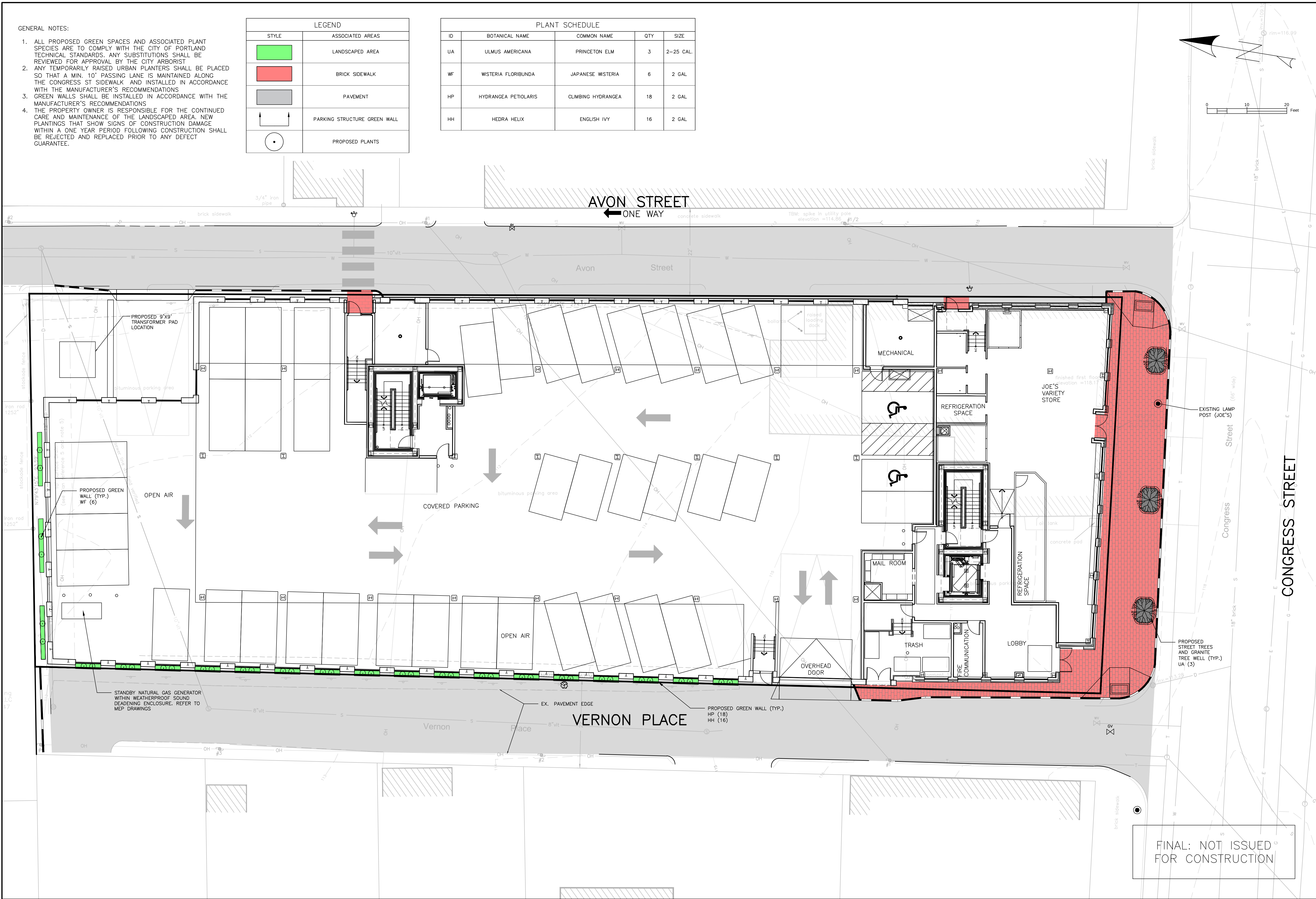
DRAWING NO.
C-50

GENERAL NOTES:

- ALL PROPOSED GREEN SPACES AND ASSOCIATED PLANT SPECIES ARE TO COMPLY WITH THE CITY OF PORTLAND TECHNICAL STANDARDS. ANY SUBSTITUTIONS SHALL BE REVIEWED FOR APPROVAL BY THE CITY ARBORIST
- ANY TEMPORARILY RAISED URBAN PLANTERS SHALL BE PLACED SO THAT A MIN. 10' PASSING LANE IS MAINTAINED ALONG THE CONGRESS ST SIDEWALK AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS
- GREEN WALLS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS
- THE PROPERTY OWNER IS RESPONSIBLE FOR THE CONTINUED CARE AND MAINTENANCE OF THE LANDSCAPED AREA. NEW PLANTINGS THAT SHOW SIGNS OF CONSTRUCTION DAMAGE WITHIN A ONE YEAR PERIOD FOLLOWING CONSTRUCTION SHALL BE REJECTED AND REPLACED PRIOR TO ANY DEFECT GUARANTEE.

LEGEND	
STYLE	ASSOCIATED AREAS
	LANDSCAPED AREA
	BRICK SIDEWALK
	PAVEMENT
	PARKING STRUCTURE GREEN WALL
	PROPOSED PLANTS

PLANT SCHEDULE				
ID	BOTANICAL NAME	COMMON NAME	QTY	SIZE
UA	ULMUS AMERICANA	PRINCETON ELM	3	2-25 CAL.
WF	WISTERIA FLORIBUNDA	JAPANESE WISTERIA	6	2 GAL
HP	HYDRANGEA PETIOLARIS	CLIMBING HYDRANGEA	18	2 GAL
HH	HEDRA HELIX	ENGLISH IVY	16	2 GAL



ISSUED FOR	BY
COMMENT/RESPONSE	DATE
WHS	9/15/16
FINAL APPLICATION	10/13/16

REVISION	REV.
	DATE

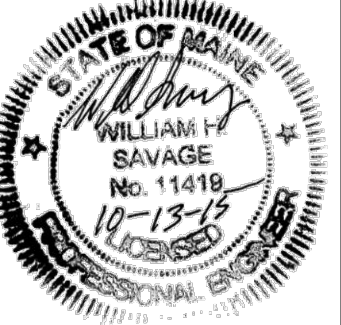
LANDSCAPE PLAN
667 CONGRESS STREET REDEVELOPMENT
REDFERN PROPERTIES, LLC.
P.O. BOX 8616 PORTLAND, MAINE, 04104

DRAWING NAME: LANDSCAPE PLAN
PROJECT NAME: 667 CONGRESS STREET REDEVELOPMENT
CLIENT: REDFERN PROPERTIES, LLC.

ACORN ENGINEERING, INC. ENGINEERING, INC.
155 DANFORTH ST. PORTLAND, ME 04102
(207) 779-2655

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FILE:	1060_CONGRESS
DATE:	9/11/15
JN:	1060
SCALE:	1"=10'
DESIGNED BY:	OJD
DRAWN BY:	OJD
CHECKED BY:	WHS



DRAWING NO.
L-1

FINAL: NOT ISSUED FOR CONSTRUCTION



PLANNING BOARD REPORT PORTLAND, MAINE

SUBDIVISION AND CHANGE OF USE/ RENOVATION OF BUILDING TO CREATE TEN APARTMENTS

415 Cumberland Avenue
Level III Subdivision Plan and Site Plan
Project ID #2015-162 CBL 036 G033001
Patrick Ducas, Applicant

Submitted to: Portland Planning Board Public Hearing Date: October 22, 2015	Prepared by: Jean Fraser, Planner Date: October 27, 2015
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I. INTRODUCTION

The applicant, Patrick Ducas, is requesting approval of a Level III application for development of the existing 3-4 story building at 415 Cumberland Avenue at the corner of Cumberland and Forest Avenues.

The property is located in the B3c zone and currently owned by 415 Cumberland LLC. The previous use was offices, including Hurley Travel. The applicant has a Purchase and Sale Agreement ([Attachment B](#)) and proposes to convert the first, second and top floors to 10 residential apartments (four 2-bedroom and six 1-bedroom) The basement will comprise inside parking for 6 cars, a commercial space and storage for the residential units.



A total of 185 notices of this Hearing were sent to residents within 500 feet and interested citizens. A notice also appeared in the October 19th and 20th, 2015 editions of the *Portland Press Herald*. The applicant held the required Neighborhood Meeting on October 8th, 2015 which was attended by two neighbors ([Attachment G](#)). The Planning office has not received any public comments as of the time of preparing this Report.

II. REQUIRED REVIEWS and REQUESTED WAIVERS

Review	Applicable Standards
Site Plan	Section 14-526 for the proposed multifamily residential development.
Subdivision of overall site	Section 14-497 for the division into 10 residential units.
Waiver Requests	Applicable Standards
Street trees: The applicant proposes to plant two new trees within the front garden area along Cumberland Avenue and there are two existing street trees. The request is to count four trees toward the requirement and to waive the planting of six required trees as there is no space in the ROW.	Site Plan Section 14-526(b)2.b(iii) and Technical Manual, Section 4.6.1: All multi-family development shall provide one street tree per unit. A waiver is permitted where site constraints prevent planting of all the required street trees, with the applicant contributing a proportionate amount to Tree Fund. The City Arborist counts the four trees toward the requirement and supports a waiver of six trees with the recommendation that a \$1200 Tree Fund contribution (Att 3).

III. PROJECT SUMMARY

Existing Zoning:	B3c Business Zone
Proposed Use:	10 Residential Apartments on first, second and third floors
Parcel Size:	6098 sq ft
Total Disturbed Area:	None- all interior improvements
Existing Building footprint:	4,999 sq ft
Proposed Building footprint:	4,999 sq ft
Existing Building floorspace:	15,708 sq ft over 4 stories
Proposed Building floorspace:	15,708 sq ft over 4 stories
Proposed uses:	12,486 sq ft residential including units, storage and parking 1300 sq ft commercial on lowest floor 1922 sq ft common area
Residential Data:	
Existing Res. Units:	None
Proposed Res. Units:	10 apartments
Bedroom Mix:	4 No 2-bedroom units 2 No 1 bedroom units
Parking Spaces:	
Existing:	6 (within garage as part of building)
Proposed:	6 (within garage as part of building) (includes one handicapped space)
Bicycle Parking Spaces:	
Existing:	None
Proposed:	10; 4 required
Estimated Cost of Project:	\$685,000
Uses in Vicinity:	The site will provide in-city living for renters, which is near services, such as businesses, institutions, employers and public transportation.

III. PROJECT DESCRIPTION

The existing 3-4-story building is part of a group of 4-5 story buildings that include the YMCA at the corner of Forest and Cumberland Avenues. The part of the building fronting onto Forest Avenue dates from the 1860's and the rear section is recent.

The only open site area is a sliver along the west side which allows for a fire escape (see photos submitted by the applicant in [Plan P5](#)) and an open but fenced area at the north side which has a access easement over it for the YMCA and can be reached via the garage curb cut.



The existing use has been commercial with storage and the proposals retain 1300 sq ft of commercial space on the ground floor with the remainder converted to 10 residential units and supporting storage (1650 sq ft) and garage parking for 6 cars.

The proposals are described in [Attachment E](#) and illustrated in [Plans P2 to P5](#); the site plan aspects of the proposals are:

- Use of part of the rear (north) open easement area for trash storage in 10 separate bins;
- Landscape enhancement in the front gardens, including two additional street trees;
- Provision of (at least) 4 bicycle parking spaces under the fire escape on the west elevation;
- Improvement of the crosswalk ramp panel;
- Upgrading of utilities with sidewalk reinstatement as required.

IV. RIGHT, TITLE AND INTEREST AND FINANCIAL CAPACITY

a. The owner of the property is 415 Cumberland LLC and the applicant has a Purchase and Sale Agreement to purchase the property (Attachment B) which demonstrates their right, title and interest in the property. The YMCA has an access easement over a small area to the north of the property, as detailed in Attachment D.

b. The estimated cost of the development is \$685,000 (see Attachment A data sheet) and the applicant has confirmed the funds are partly from personal equity (Ducas Construction Inc) as well as bank finance, and bank letters from Bangor Savings Bank and Gorham Savings Bank have been submitted to document the available finance for this project (Attachment C).

V. ZONING ASSESSMENT

The proposed units are proposed to be market rate apartments and are permitted as “residential multi family” uses in the B3c zone. Part of the ground floor remains commercial, which is permitted as a business use in the B3c zone. The site is not within the PAD Overlay Zone. The project is exempt from providing any additional dedicated parking for the project under the zoning ordinance as a change of use in the B3c Downtown Business Zone. The proposal does not include any alterations to the existing footprint of the building nor its height. The staff finds the application to be in conformance with the B-3c zone, and notes that the trash storage is regulated in the *External effects* section 14-221.1.

VI. DEVELOPMENT REVIEW

A. SUBDIVISION and SITE PLAN SUBMISSION REQUIREMENTS (Section 14-497 & Section 14-527)

All requirements have been met. The subdivision plat (Plan P2.) has been reviewed by the Department of Public Services (DPS) Surveyor, the Legal Department and the Fire Department staff (Attachments 1, 4 and 5). The Legal Department and DPS Surveyor have requested clarification regarding the easements and other survey information; the draft plat in Plan P2 will need to be revised to address these comments.

A recommended condition of approval calls for a revised plat to be submitted for review by the Planning Authority, Department of Public Services and Associate Corporation Counsel prior to the signature of the Planning Board.

It is understood that the apartments are being created for rental so there are no Condominium Documents submitted. A suggested subdivision condition of approval requires the submission of such documents if the nature of the units is changed in the future.

B. SUBDIVISION REVIEW

The proposed development has been reviewed by staff for conformance with the relevant review standards of Portland’s Subdivision Ordinance and applicable regulations. Staff comments are listed below.

1. Will Not Result in Undue Water and Air Pollution (Section 14-497 (a) I), and Will Not Result in Undue Soil Erosion (Section 14-497 (a) 4)
Staff finds the proposed project is in conformance with this standard.
2. Sufficient Water Available (Section 14-497 (a) 2 and 3)
The applicant has spoken to the Portland Water District and understands that there is adequate capacity and there is the possibility that the immediate supply infrastructure will have to be upgraded as part of the proposals (Attachment F). The applicant does not yet own the property, so the capacity letter from PWD is suggested to be the subject of a condition of approval.
3. Will Not Cause Unreasonable Traffic Congestion (Section 14-497 (a) 5)
Please see paragraph C1 below. The staff finds the proposal will not cause unreasonable traffic congestion.
4. Will Provide for Adequate Sanitary Sewer and Stormwater Disposal (Section 14-497 (a) 6), and Will Not Cause an Unreasonable Burden on Municipal Solid Waste and Sewage (Section 14-497 (a) 7)
Staff finds the project in conformance with this standard subject to confirmation regarding the roof drains; please see paragraph C2 below.
5. Scenic Beauty, Natural, Historic, Habitat and other Resources (Section 14-497 (a) 8)
The proposed project will not have an adverse effect on the scenic or natural beauty of the area, thus the proposed project is in conformance with this standard.

6. Comprehensive Plan (Section 14-497 (a) 9)

The following statement is housing policy that is relevant to this proposal and the staff finds the proposed project is in conformance with this standard.

The first policy of Housing: Sustaining Portland's Future is to ensure an adequate and diverse supply of housing for all. Objectives under that policy include the following:

- Ensure the construction of a diverse mix of housing types that offers a continuum of options across all income levels, which are both renter and owner-occupied. The list of potential housing options under this objective include:
 - ii. Housing units for decreasing household sizes, such as young professionals, empty nesters, single parent households and senior citizens.
 - v. Higher density housing, such as row houses, small lots, reuse of non-residential buildings, and mixed use buildings.
- Encourage higher density housing for both rental and home ownership opportunities, particularly located near services, such as schools, businesses, institutions, employers and public transportation.
- Evaluate and update current zoning, as needed, to encourage higher density multi-family developments and mixed use projects that incorporate housing, particularly along major public transportation routes, near services areas, and in redevelopment or infill areas, where appropriate.
- Encourage housing within and adjacent to the downtown. Evaluate and update current zoning and building codes, as needed, to facilitate new housing and redevelopment opportunities....

7. Financial Capability (Section 14-497 (a) 10)

Please see above under Section V.

C. **SITE PLAN STANDARDS** (Section 14-526)

The proposed development has been reviewed by staff for conformance with the relevant review standards of Portland's site plan ordinance and applicable regulations. Staff comments are listed below.

1. Transportation Standards

- a. Impact on Surrounding Street Systems
- b. Access and Circulation
- c. Public Transit Access
- d. Parking
- e. Transportation Demand Management (TDM)

STAFF COMMENT: The proposed project is not anticipated to have any significant adverse effect on regional traffic, and the parking needs have been addressed by the retention of the 6 existing parking spaces in the garage which have an existing curb cut that is satisfactory. A recent aspect of the review of pedestrian access relates to compliance with current ADA requirements and the applicant has submitted a note confirming compliance (Attachment I).

A satisfactory enclosed and screened trash storage is provided near the existing curb cut in Forest Avenue (see Attachment H and Plan P2 for details). This location is near the YMCA and the applicant will need to ensure that these meet the zoning requirement that no dust nor fumes are created. A suggested condition of approval requires details of the proposed bike parking to be submitted for review and approval in order to meet the bicycle parking ordinance requirement for 4 spaces.

The Public Transit and TDM standards do not apply to this project.

2. Environmental Quality Standards

- a. Preservation of Significant Natural Features
- b. Landscaping and Landscape Preservation
- c. Water Quality, Storm Water Management and Erosion Control

STAFF COMMENT: There is little scope for additional planting but the City Arborist (Attachment 3) has suggested enhancement of the planting at the front of the building and that this could include two additional trees which would also be credited as street trees. The City Arborist supports the waiver for six of the ten required street trees, and requests a contribution of \$1200 in lieu of these six trees.

The reuse of the building does not require any upgrading to meet current stormwater requirements, but the DPS in their Wastewater Capacity letter ([Attachment 1](#)) has requested that all rainwater downpipes be directed to the sidewalk or street level and not be connected to the sewer. The applicant is checking on whether a central roof drain is connected to the sewer and the suggested condition requires that if there is a connection that the proposals to redirect that drainage be submitted for review and approval.

3. Public Infrastructure and Community Safety Standards

- a. Consistency with Master Plans
- b. Public Safety and Fire Prevention
- c. Availability and Adequate Capacity of Public Utilities

STAFF COMMENT: The sidewalks along the frontage are in good condition but the Department of Public Services has requested that the ramp panel within the tipdown at the corner crosswalk be replaced and the applicant is willing to make this improvement (as noted on the draft Plat/Site Plan in [Plan P2](#)). A suggested condition of approval includes this item in the request for detailed plans of work in the Right Of Way.

Captain Keith Gautreau of the Fire Department has reviewed the project and confirms that all site plan concerns have been addressed ([Attachment 2](#)). He identifies 911 and street addressing as a particular concern because the entrances to the building are on two streets, and this has been highlighted in a suggested condition of approval.

The wastewater capacity letter has been received ([Attachment 1](#)) and the applicant understands that adequate water supply will be available ([Attachment F](#)). A suggested condition of approval requires the submission of the Portland Water District capacity letter. The applicant understands that he may need to upgrade on-site water and sewer infrastructure roughly where these are currently located, but details have not been submitted. A suggested condition of approval requires submission of details for any utility work, and associated reinstatement of the ROW/sidewalk where those are disturbed, for review and approval by the Planning Authority.

4. Site Design Standards

- a. Massing, Ventilation and Wind Impact
- b. Shadows
- c. Snow and Ice Loading
- d. View Corridors
- e. Historic Resources
- f. Exterior Lighting
- g. Noise and Vibration
- h. Signage and Wayfinding
- i. Zoning Related Design Standards

STAFF COMMENT: The building is an existing structure with few exterior modifications. It is not located within an Historic District and is more than 100 feet from the boundary of the Congress Street Historic District, though it is nearby. The proposals include (see [Attachment H](#)) a security light in the area of the trash storage and a suggested condition requires that this meet the City's Technical Standards. The other standards do not apply to this project.

The proposals are for a multi-family development and therefore must meet the following standards:

TWO-FAMILY, SPECIAL NEEDS INDEPENDENT LIVING UNITS, MULTIPLE-FAMILY, LODGING HOUSES, BED AND BREAKFASTS, AND EMERGENCY SHELTERS:

(1) STANDARDS. Two-family, special needs independent living units, multiple-family, lodging houses, bed and breakfasts, and emergency shelters shall meet the following standards:

a. Proposed structures and related site improvements shall meet the following standards:

- 1. *The exterior design of the proposed structures, including architectural style, facade materials, roof pitch, building form and height, window pattern and spacing, porches and entryways, cornerboard and trim details, and facade variation in projecting or recessed building elements, shall be designed to complement and enhance the nearest residential neighborhood. The design of exterior facades shall provide positive visual interest by incorporating appropriate architectural elements;*

2. *The proposed development shall respect the existing relationship of buildings to public streets. New development shall be integrated with the existing city fabric and streetscape including building placement, landscaping, lawn areas, porch and entrance areas, fencing, and other streetscape elements;*

Staff comment: These standards do not apply as the development is within an existing building.

3. *Open space on the site for all two-family, special needs independent living unit, bed and breakfast and multiple-family development shall be integrated into the development site. Such open space in a special needs independent living unit or a multiple-family development shall be designed to complement and enhance the building form and development proposed on the site. Open space functions may include but are not limited to buffers and screening from streets and neighboring properties, yard space for residents, play areas, and planting strips along the perimeter of proposed buildings;*

Staff comment: There is little opportunity for additional planting, and the proposal to upgrade the front planted area generally addresses this standard.

4. *The design of proposed dwellings shall provide ample windows to enhance opportunities for sunlight and air in each dwelling in principal living areas and shall also provide sufficient storage areas;*

Staff comment: This standard appears to be met.

5. *The scale and surface area of parking, driveways and paved areas are arranged and landscaped to properly screen vehicles from adjacent properties and streets;*

Staff comment: The parking is within an enclosed building and the vehicles are screened.

VII. STAFF RECOMMENDATION

Subject to the proposed motions and conditions of approval listed below, Planning Division staff recommends that the Planning Board approve the proposed subdivision and site plan for ten units within the existing building at 415 Cumberland Avenue.

VIII. PROPOSED MOTIONS FOR THE BOARD TO CONSIDER

A. WAIVER

On the basis of the application, plans, reports and other information submitted by the applicant, findings and recommendations, contained in the Planning Board Report for the public hearing on October 27, 2015 for application #2015-162 (415 Cumberland Avenue) relevant to Portland's Technical and Design Standards and other regulations, and the testimony presented at the Planning Board hearing:

- i. The Planning Board (**waives/does not waive**) *Section 14-526 (b) (2) (b) (iii) Street Trees*, in respect of 4 of the 10 required street trees due to the lack of space, subject to the applicant making a contribution of \$1200 to the City of Portland Tree Fund (prior to the issuance of a building permit) towards the installation and maintenance of three urban street trees in the vicinity of the site.

B. SUBDIVISION REVIEW

On the basis of the application, plans, reports and other information submitted by the applicant, findings and recommendations contained in the Planning Board Report for the public hearing on October 27, 2015 for application #2015-162 (415 Cumberland Avenue) relevant to the Subdivision regulations, and the testimony presented at the Planning Board hearing, the Planning Board finds that the plan (**is/is not**) in conformance with the subdivision standards of the land use code subject to the following condition of approval:

- i. That the Subdivision Plat shall be finalized to the satisfaction of the Planning Authority, Corporation Counsel, and Department of Public Services, and include confirmation regarding the street tree requirements, clarification of easements, and other information along with relevant notes and conditions prior to submission for Planning Board signature; and
- ii. That in the event the property is converted to a condominium, that the recorded condominium documents shall be copied to the Planning Authority.

C. SITE PLAN REVIEW

On the basis of the application, plans, reports and other information submitted by the applicant; findings and recommendations contained in the Planning Board Report for the public hearing on October 27, 2015 for application #2015-162 (415 Cumberland Avenue) relevant to the site plan regulations; and the testimony presented at the planning board hearing, the planning board finds that the plan (**is/is not**) in conformance with the site plan standards of the land use code, subject to the following conditions of approval:

- i. That the applicant shall submit a revised site plan/plat that shows the location and design of the 4 bicycle parking spaces, the proposed planting in the front garden area including 2 street trees on the site, and the replacement ADA ramp panel in the ROW at the corner of Forest Avenue and Cumberland Avenue (to meet the City's Technical Standards for any work in the ROW), for review and approval by the Planning Authority prior to the issuance of a building permit; and
- ii. That the applicant shall submit plans showing the proposals for: A) Any modifications to the roof drainage to meet the Wastewater Capacity Letter conditions (that all roof drainage be directed to the sidewalk or street level); and B) All upgrades to the existing water and sewer utilities at the existing locations, including restoration of the sidewalk (to meet the City's Technical Standards for any work in the ROW); both for review and approval prior to the issuance of a building permit; and
- iii. That the applicant shall submit the capacity letter in respect of water supply prior to the issuance of a building permit; and
- iv. That any exterior lighting shall meet the to meet the City's Site Lighting Standards in Section 12 of the Technical Manual, and the trash storage area shall meet the B3c *External Effects* standards; and
- v. That the applicant shall address the comments of the Fire Department dated 10.7.15 regarding the development of street addresses and their marking on the structure prior to the issuance of a certificate of occupancy; and
- vi. That a separate "change of use" permit shall be obtained from the Inspections Division.

Attachments:

Planning Board Report Attachments

1. DPS Comments on Plat & within Wastewater Capacity Letter
2. Fire Department comments site plan
3. City Arborist final comments 10.22.2015
4. Legal comments (Plat) 10.19.2015
5. Fire Department comments (Plat) 10.15.2015

Plans

- Plan P1 Boundary Survey
Plan P2 Draft Subdivision Plat (also Site Plan)
Plan P3 Architectural cover sheet
Plan P4 Floor Plans of proposed Apartments
Plan P5 Elevations (photos)

Public comments (none received)

Applicant's Submittal

- A. Application
- B. Evidence of RTI (P&S Agreement)
- C. Financial Capacity Information
- D. Deed with YMCA Access Easement
- E. Development Narrative & Code Summaries
- F. Water and Sewer Capacity
- G. Neighborhood Meeting Certificate
- H. Further Information from applicant
- I. ADA Compliance

From: William Clark
To: Jean Fraser
CC: David Margolis-Pineo; Jennifer Thompson
Date: 10/22/2015 2:22 PM
Subject: Re: Fwd: 415 Subdivision Plat for PB - signoffs needed (2015-162) - Plan Needs Attention
Attachments: Cumberland Ave No 415 Draft Plat 10.14.15 Survey Review 10 22 2015.PDF

Hi Jean,

Examination of plan and deeds shows it needs attention and should not be approved. Plan review markup is attached. I am glad Jen made comments as to the easements.

1. Easements need to be correctly defined on the plan with bearings and distances. The easements were drafted in 1925 before the YMCA building was constructed, and need to reflect what is on the ground. The Condominium Association will need to have the easements defined and the nature of the easements stated.
2. Incorrect Easement Deed Reference. CCRD Deed Book 3019, Page 133 is for a Tax Lien Discharge in Cumberland , Maine.
3. Text "Existing Easement Area book 1212, Page 217" points to the easement area for easement in Deed Book 1212, Page 215.
4. Coordinates are not correct for the two points listed along Forest Ave.
5. Elevations are not correct for the two points listed along Forest Ave.
6. Need to set property corners.
7. Coordinate System. NAD83?
The City of Portland coordinate system is NAD83 HARN Maine State Plane: West Zone (FIPS 1802) US Survey Feet
8. Vertical Datum. Which City of Portland official benchmark was used?
9. "Lotus Map". I believe this should be "Locus Map".

Thanks,

Bill

William Clark, PLS
Senior Project Engineer
Engineering
Department of Public Services
City of Portland
55 Portland St.
Portland, ME 04101
207 874 8847

>>> Jean Fraser October 21, 2015 5:21 PM >>>

Hi

From: David Margolis-Pineo
To: Patrick Ducas
CC: Barbara Barhydt; Benjamin Pearson; Helen Donaldson; Jean Fraser; Jef...
Date: 10/20/2015 10:20 AM
Subject: Wastewater Capacity Application Approval for 415 Cumberland Ave
Attachments: David Margolis-Pineo.vcf

October 20, 2015

Patrick Ducas (patrickd@ducasconstruction.com)
17 Chestnut Street
Portland, ME 04101

RE: The Capacity to Handle Wastewater Flows from 415 Cumberland Ave

Dear Mr. Ducas:

The Department of Public Services, which includes the Water Resource Division, has reviewed and determined that the downstream sewers from 415 Cumberland Ave has the capacity to convey the estimated 1,440 gallons per day of wastewater which will be generated from this multi family housing project. It is understood that no sources of stormwater runoff, roof drainage, or any other non-contaminated water shall be introduced to the wastewater collection system from this development. If roof drainage is currently discharging to the sanitary sewer system, we are requesting that the roof discharge be redirected to sidewalk or street level.

If the City can be of further assistance, please call me at 874-8850 or 400-6695.

Sincerely,

CITY OF PORTLAND

David Margolis-Pineo

David Margolis-Pineo
Deputy City Engineer

Anticipated Wastewater Flows from the proposed Multi Family Housing:

Six- One Bedroom Units @ 120 gpd/Unit = 720 gpd

Four – Two Bedroom Unit @ 180 gpd/Unit = 720 gpd

Total = 1,440 gpd

CC: Jeffrey Levine, Director, Department of Planning and Urban Development, City of Portland
Barbara Barhydt, Development Review Services Mgr., Dep't. of Planning and Urban Development, City of Portland
Nell Donaldson, Department of Planning and Urban Development, City of Portland
Shukria Wiar, Planner, Department of Planning and Urban Development, City of Portland
Jean Fraser, Planner, Department of Planning and Urban Development, City of Portland
Nancy Gallinaro, Water Resources Manager
Benjamin N. Pearson, E.I., Industrial Pretreatment Coordinator, City of Portland
John Emerson, Wastewater Coordinator, City of Portland
David Margolis-Pineo
Deputy City Engineer

Department of Public Services
55 Portland St.
Portland, ME 04101
Office 207-874-8850
Fax 207-874-8852
Cell 207-400-6695
dmp@portlandmaine.gov

MEMORANDUM

To: FILE
From: Jean Fraser
Subject: Application ID: 2015-162
Date: 10/22/2015

Comments Submitted by: Keith Gautreau/Fire on 10/7/2015

Life Safety requirements for the change of use will be addressed in the Building Permit process.

Comments Submitted by: Keith Gautreau/Fire on 10/7/2015**Premises Identification**

The main entrance of the building must be the address for the property. This should be consistent with 911, tax assessor, Inspections Division and future mailing address.

Street addresses shall be marked on the structure and shall be as approved by the City E-911 Addressing Officer.

If the building entry faces a different street, both the street name and number should be large enough to read from the street.

Address numbers must be a minimum of 4 inches high.

The number should be in Arabic numerals rather than spelled out (for example, "130" instead of "One Hundred and Thirty").

Color: Addresses should be in a color that contrasts with the background.

Whenever possible, should be illuminated.

Comments Submitted by: Keith Gautreau/Fire on 10/7/2015

There are two hydrants within 200' from the propose site which is more than adequate.

Comments Submitted by: Keith Gautreau/Fire on 10/7/2015

Access to the site is good at it sits on the corner of Forest Ave. & Cumberland Ave.

From: Jeff Tarling
To: Jean Fraser
Date: 10/22/2015 2:36 PM
Subject: Fwd: RE: 415 Cumberland Ave

Jean -

In review of the proposed improvements for 415 Cumberland Avenue, landscape improvements would include the small planter landscape area between the walk and building. This area appears to already meet the landscape standards as 'pre-existing' but offers opportunity for improvement due to the change in use. The recent landscape plan revision is an improvement as shown. Contribution to the Tree Fund would place trees nearby on Forest Avenue between Cumberland & Forest Ave where several open tree wells exist. The street trees would credit the two existing and the two proposed trees with a contribution request of 6 x \$200.

Thanks,

Jeff Tarling
City Arborist

From: Jennifer Thompson
To: Jean Fraser
Date: 10/19/2015 3:00 PM
Subject: Re: 415 Subdivision Plat for PB - signoffs needed (2015-162)

Hi Jean - I think the easements could be better delineated and described. Maybe "YMCA access easement" or something to that effect. Or "easement 1" and "easement 2" with corresponding headings in the notes where they are better described? I'm not sure what Book 3019/page 133 is referring to. Is that a 3rd easement? If so, it should likely also be referenced in the notes. Also, are there parking requirements? I also think the notes could indicate that this is a 10 unit subdivision. If there are not proposed to be any conditions, then I think that's all I've got.

From: Keith Gautreau
To: Jean Fraser
Date: 10/15/2015 2:59 PM
Subject: Re: 415 Subdivision Plat for PB - signoffs needed (2015-162)

Hi Jean,

I have submitted comments in UI for the project. But consider this email as a sign off on the Subdivision Plat for the Fire Dept.

Let me know if you require anything else.

Keith

>>> Jean Fraser 10/15/2015 2:56 PM >>>
Hello

This project is the conversion of offices into 10 residential units and requires a subdivision plat. The Plat will be reviewed and approved by the Planning Board on Nov 10th, but if I could get your signoffs on this within a week then the street tree note re a waiver/contribution could be added and the mylar could be signed at the PB meeting (not the end of the world if this can't happen). Its a relatively simple project and the attached plat reflects my input; I won't be recommending any subdivision conditions.

The plat needs Legal, DPS (including surveying), and Fire sign off- either via an e-mail to me or by comment into UI.

Many thanks

Jean

(The revised plat and the original submitted version are in e-plan too)

Portland, Maine



Yes. Life's good here.

Jeff Levine, AICP, Director
Planning & Urban Development Department

Electronic Signature and Fee Payment Confirmation

Notice: Your electronic signature is considered a legal signature per state law.

By digitally signing the attached document(s), you are signifying your understanding this is a legal document and your electronic signature is considered a **legal signature** per Maine state law. You are also signifying your intent on paying your fees by the opportunities below.

I, the undersigned, intend and acknowledge that no Site Plan or Historic Preservation Applications can be reviewed until payment of appropriate application fees are **paid in full** to the Inspections Office, City of Portland Maine by method noted below:

☒

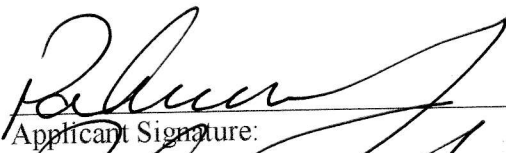
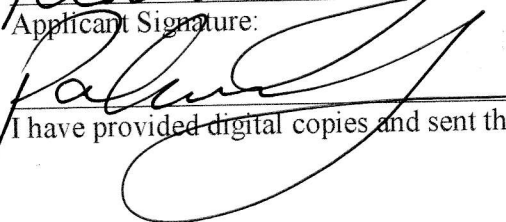
Within 24-48 hours, once my complete application and corresponding paperwork has been electronically delivered, I intend to **call the Inspections Office** at 207-874-8703 and speak to an administrative representative and provide a credit/debit card over the phone.

☐

Within 24-48 hours, once my application and corresponding paperwork has been electronically delivered, I intend to **call the Inspections Office** at 207-874-8703 and speak to an administrative representative and provide a credit/debit card over the phone.

☐

I intend to deliver a payment method through the U.S. Postal Service mail once my application paperwork has been electronically delivered.


Applicant Signature: _____

I have provided digital copies and sent them on: _____

9-17-15

Date: _____

9-17-15

Date: _____

NOTE:

All electronic paperwork must be delivered to buildinginspections@portlandmaine.gov or by physical means i.e. a thumb drive or CD to the Inspections Office, City Hall, 3rd Floor, Room 315.

389 Congress Street * Portland Maine 04101-3509 * Phone: (207) 874-8703 * Fax: (207) 874-8716
<http://www.portlandmaine.gov/planning/buildinsp.asp> * E-Mail: buildinginspections@portlandmaine.gov



Level III – Preliminary and Final Site Plans Development Review Application Portland, Maine

Planning and Urban Development Department
Planning Division

Portland's Planning and Urban Development Department coordinates the development review process for site plan, subdivision and other applications under the City's Land Use Code. Attached is the application form for a Level III: Preliminary or Final Site Plan. Please note that Portland has delegated review from the State of Maine for reviews under the Site Location of Development Act, Chapter 500 Stormwater Permits, and Traffic Movement Permits.

Level III: Site Plan Development includes:

- New structures with a total floor area of 10,000 sq. ft. or more except in Industrial Zones.
- New structures with a total floor area of 20,000 sq. ft. or more in Industrial Zones.
- New temporary or permanent parking area(s) or paving of existing unpaved parking areas for more than 75 vehicles.
- Building addition(s) with a total floor area of 10,000 sq. ft. or more (cumulatively within a 3 year period) except in Industrial Zones.
- Building addition(s) with a total floor area of 20,000 sq. ft. or more in Industrial Zones.
- A change in the use of a total floor area of 20,000 sq. ft. or more in any existing building (cumulatively within a 3 year period).
- Multiple family development (3 or more dwelling units) or the addition of any additional dwelling unit if subject to subdivision review.
- Any new major or minor auto business in the B-2 or B-5 Zone, or the construction of any new major or minor auto business greater than 10,000 sq. ft. of building area in any other permitted zone.
- Correctional prerelease facilities.
- Park improvements: New structures greater than 10,000 sq. ft. and/or facilities encompassing 20,000 sq. ft. or more (excludes rehabilitation or replacement of existing facilities); new nighttime outdoor lighting of sports, athletic or recreation facilities not previously illuminated.
- Land disturbance of 3 acres or more (includes stripping, grading, grubbing, filling or excavation).

Portland's development review process and requirements are outlined in the Land Use Code (Chapter 14) which is available on our website:

Land Use Code: <http://me-portland.civicplus.com/DocumentCenter/Home/View/1080>

Design Manual: <http://me-portland.civicplus.com/DocumentCenter/View/2355>

Technical Manual: <http://me-portland.civicplus.com/DocumentCenter/View/2356>

Planning Division
Fourth Floor, City Hall
389 Congress Street
(207) 874-8719

Office Hours
Monday thru Friday
8:00 a.m. – 4:30 p.m.

PROJECT NAME: 415 Cumberland Ave

PROPOSED DEVELOPMENT ADDRESS:

415 Cumberland Ave, Portland Maine 04101

PROJECT DESCRIPTION:

Renovation of the existing building, and conversion from office space into a 10 unit multi-family.

CHART/BLOCK/LOT: 036-G033

PRELIMINARY PLAN _____ (date)
FINAL PLAN 9-17-15 (date)

CONTACT INFORMATION:

Applicant – must be owner, Lessee or Buyer Name: Patrick Ducas - (LLC to be named at later time) Business Name, if applicable: Address: 17 Chestnut Street City/State : Portland, ME Zip Code: 04101	Applicant Contact Information Work # 207-536-0838 Home# Cell # 207-939-9448 Fax# e-mail: patrickd@ducasconstruction.com
Owner – (if different from Applicant) Name: 415 Cumberland Ave LLC Address: City/State : Portland, ME Zip Code: 04101	Owner Contact Information Work # Home# Cell # 207-517-3400 Fax# e-mail: jschair@gmail.com
Agent/ Representative Name: Sellers Agent - Malone Commercial Brokers Address: 5 Moulton Street # 3 City/State : Portland, ME Zip Code: 04101	Agent/Representative Contact information Work # Cell # 207-318-8888 e-mail: peterh@malonecb.com
Billing Information Name: Patrick Ducas Address: 17 Chestnut Street City/State : Portland, ME Zip Code: 04101	Billing Information Work # Cell # 207-939-9448 Fax# e-mail: patrickd@ducasconstruction.com

Engineer Name: Address: City/State : Zip Code:	Engineer Contact Information Work # Cell # Fax# e-mail:
Surveyor Name: Down East Survey Address: P.O. Box 6234 City/State : China Village, ME Zip Code: 04926	Surveyor Contact Information Work # Cell # 207-592-2735 Fax# e-mail: bluesbro@roadrunner.net
Architect Name: Alpha Architects Address: 17 Chestnut Street City/State : Portland, ME Zip Code: 04101	Architect Contact Information Work # 207-761-9500 Cell # Fax# e-mail: mark@alphaarchitects.com
Attorney Name: Jensen Baird Gardner & Henry Address: 10 Free Street City/State : Portland, ME Zip Code: 04101	Attorney Contact Information Work # 207-775-7271 Cell # Fax# e-mail: cmccormack@JBGH.com; REpstein@jbggh.com

APPLICATION FEES:

Check all reviews that apply. (Payment may be made by Credit Card, Cash or Check payable to the City of Portland.)

Level III Development (check applicable reviews) ☒ Less than 50,000 sq. ft. (\$500.00) ☐ 50,000 - 100,000 sq. ft. (\$1,000) ☐ 100,000 – 200,000 sq. ft. (\$2,000) ☐ 200,000 – 300,000 sq. ft. (\$3,000) ☐ over \$300,00 sq. ft. (\$5,000) ☐ Parking lots over 11 spaces (\$1,000) ☐ After-the-fact Review (\$1,000.00 plus applicable application fee) Plan Amendments (check applicable reviews) ☐ Planning Staff Review (\$250) ☐ Planning Board Review (\$500) The City invoices separately for the following: • Notices (\$.75 each) • Legal Ad (% of total Ad) • Planning Review (\$40.00 hour) • Legal Review (\$75.00 hour) Third party review fees are assessed separately. Any outside reviews or analysis requested from the Applicant as part of the development review, are the responsibility of the Applicant and are separate from any application or invoice fees.	Other Reviews (check applicable reviews) ☐ Traffic Movement (\$1,000) ☐ Stormwater Quality (\$250) ☒ Subdivisions (\$500 + \$25/lot) # of Lots x \$25/lot = ☐ Site Location (\$3,000, except for residential projects which shall be \$200/lot) # of Lots x \$200/lot = ☐ Other ☒ Change of Use ☐ Flood Plain ☐ Shoreland ☐ Design Review ☐ Housing Replacement ☐ Historic Preservation
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APPLICATION SUBMISSION:

1. All site plans and written application materials must be submitted electronically on a CD or thumb drive with each plan submitted as separate files, with individual file which can be found on the **Electronic Plan and Document Submittal** page of the City's website at <http://me-portland.civicplus.com/764/Electronic-Plan-and-Document-Submittal>
2. In addition, one (1) paper set of the plans (full size), one (1) paper set of plans (11 x 17), paper copy of written materials, and the application fee must be submitted to the Building Inspections Office to start the review process.

The application must be complete, including but not limited to the contact information, project data, application checklists, wastewater capacity, plan for fire department review, and applicant signature. The submissions shall include one (1) paper packet with folded plans containing the following materials:

1. One (1) full size site plans that must be folded.
2. One (1) copy of all written materials or as follows, unless otherwise noted:
 - a. Application form that is completed and signed.
 - b. Cover letter stating the nature of the project.
 - c. All Written Submittals (Sec. 14-525 2. (c), including evidence of right, title and interest.
3. A stamped standard boundary survey prepared by a registered land surveyor at a scale not less than one inch to 50 feet.
4. Plans and maps based upon the boundary survey and containing the information found in the attached sample plan checklist.
5. One (1) set of plans reduced to 11 x 17.

Please refer to the application checklist (attached) for a detailed list of submission requirements.

APPLICANT SIGNATURE:

I hereby certify that I am the Owner of record of the named property, or that the owner of record authorizes the proposed work and that I have been authorized by the owner to make this application as his/her authorized agent. I agree to conform to all applicable laws of this jurisdiction. In addition, if a permit for work described in this application is issued, I certify that the Planning Authority and Code Enforcement's authorized representative shall have the authority to enter all areas covered by this permit at any reasonable hour to enforce the provisions of the codes applicable to this permit.

This application is for a Level III Site Plan review. It is not a permit to begin construction. An approved site plan, a Performance Guarantee, Inspection Fee, Building Permit, and associated fees will be required prior to construction. Other Federal, State or local permits may be required prior to construction, which are the responsibility of the applicant to obtain.

Signature of Applicant: 	Date: 9-17-15
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PROJECT DATA

The following information is required where applicable, in order to complete the application.

Total Area of Site	6,098	sq. ft.
Proposed Total Disturbed Area of the Site	0	sq. ft.
If the proposed disturbance is greater than one acre, then the applicant shall apply for a Maine Construction General Permit (MCGP) with DEP and a Stormwater Management Permit, Chapter 500, with the City of Portland.		
Impervious Surface Area		
Impervious Area (Total Existing)	0	sq. ft.
Impervious Area (Total Proposed)	0	sq. ft.
Building Ground Floor Area and Total Floor Area		
Building Footprint (Total Existing)	4,999	sq. ft.
Building Footprint (Total Proposed)	4,999	sq. ft.
Building Floor Area (Total Existing)	15,708	sq. ft.
Building Floor Area (Total Proposed)	15,708	sq. ft.
Zoning		
Existing	B3c	
Proposed, if applicable	N/A	
Land Use		
Existing		
Proposed		
Residential, If applicable		
# of Residential Units (Total Existing)	0	
# of Residential Units (Total Proposed)	10	
# of Lots (Total Proposed)	0	
# of Affordable Housing Units (Total Proposed)	0	
Proposed Bedroom Mix		
# of Efficiency Units (Total Proposed)	0	
# of One-Bedroom Units (Total Proposed)	6	
# of Two-Bedroom Units (Total Proposed)	4	
# of Three-Bedroom Units (Total Proposed)	0	
Parking Spaces		
# of Parking Spaces (Total Existing)	6	
# of Parking Spaces (Total Proposed)	6	
# of Handicapped Spaces (Total Proposed)	1	
Bicycle Parking Spaces		
# of Bicycle Spaces (Total Existing)	0	
# of Bicycle Spaces (Total Proposed)	10	
Estimated Cost of Project		
	\$685,000	

PRELIMINARY PLAN (Optional) - Level III Site Plan			
Applicant Checklist	Planner Checklist	# of Copies	GENERAL WRITTEN SUBMISSIONS CHECKLIST
x		1	Completed Application form
x		1	Application fees
x		1	Written description of project
x		1	Evidence of right, title and interest
N/A		1	Evidence of state and/or federal approvals, if applicable
x		1	Written assessment of proposed project's compliance with applicable zoning requirements
x		1	Summary of existing and/or proposed easement, covenants, public or private rights-of-way, or other burdens on the site
N/A		1	Written requests for waivers from site plan or technical standards, if applicable.
x		1	Evidence of financial and technical capacity
N/A		1	Traffic Analysis (may be preliminary, in nature, during the preliminary plan phase)
Applicant Checklist	Planner Checklist	# of Copies	SITE PLAN SUBMISSIONS CHECKLIST
x		1	Boundary Survey meeting the requirements of Section 13 of the City of Portland's Technical Manual
x		1	Preliminary Site Plan including the following: (information provided may be preliminary in nature during preliminary plan phase)
x			Proposed grading and contours;
x			Existing structures with distances from property line;
x			Proposed site layout and dimensions for all proposed structures (including piers, docks or wharves in Shoreland Zone), paved areas, and pedestrian and vehicle access ways;
x			Preliminary design of proposed stormwater management system in accordance with Section 5 of the Technical Manual (note that Portland has a separate applicability section);
x			Preliminary infrastructure improvements;
N/A			Preliminary Landscape Plan in accordance with Section 4 of the Technical Manual;
x			Location of significant natural features (including wetlands, ponds, watercourses, floodplains, significant wildlife habitats and fisheries or other important natural features) located on the site as defined in Section 14-526 (b) (1);
x			Proposed buffers and preservation measures for significant natural features, as defined in Section 14-526 (b) (1);
x			Location , dimensions and ownership of easements, public or private rights of way, both existing and proposed;
x			Exterior building elevations.

FINAL PLAN - Level III Site Plan			
Applicant Checklist	Planner Checklist	# of Copies	GENERAL WRITTEN SUBMISSIONS CHECKLIST (* If applicant chooses to submit a Preliminary Plan, then the * items were submitted for that phase and only updates are required)
x		1	* Completed Application form
x		1	* Application fees
x		1	* Written description of project
x		1	* Evidence of right, title and interest
N/A		1	* Evidence of state and/or federal permits
x		1	* Written assessment of proposed project's specific compliance with applicable Zoning requirements
x		1	* Summary of existing and/or proposed easements, covenants, public or private rights-of-way, or other burdens on the site
x		1	* Evidence of financial and technical capacity
x		1	Construction Management Plan
N/A		1	A traffic study and other applicable transportation plans in accordance with Section 1 of the technical Manual, where applicable.
x		1	Written summary of significant natural features located on the site (Section 14-526 (b) (a))
N/A		1	Stormwater management plan and stormwater calculations
N/A		1	Written summary of project's consistency with related city master plans
		1	Evidence of utility capacity to serve
x		1	Written summary of solid waste generation and proposed management of solid waste
x		1	A code summary referencing NFPA 1 and all Fire Department technical standards
x		1	Where applicable, an assessment of the development's consistency with any applicable design standards contained in Section 14-526 and in City of Portland Design Manual
N/A		1	Manufacturer's verification that all proposed HVAC and manufacturing equipment meets applicable state and federal emissions requirements.

Applicant Checklist	Planner Checklist	# of Copies	SITE PLAN SUBMISSIONS CHECKLIST (* If applicant chooses to submit a Preliminary Plan, then the * items were submitted for that phase and only updates are required)
x		1	* Boundary Survey meeting the requirements of Section 13 of the City of Portland's Technical Manual
x		1	Final Site Plans including the following:
x			Existing and proposed structures, as applicable, and distance from property line (including location of proposed piers, docks or wharves if in Shoreland Zone);
x			Existing and proposed structures on parcels abutting site;
x			All streets and intersections adjacent to the site and any proposed geometric modifications to those streets or intersections;
x			Location, dimensions and materials of all existing and proposed driveways, vehicle and pedestrian access ways, and bicycle access ways, with corresponding curb lines;
N/A			Engineered construction specifications and cross-sectional drawings for all proposed driveways, paved areas, sidewalks;
N/A			Location and dimensions of all proposed loading areas including turning templates for applicable design delivery vehicles;
N/A			Existing and proposed public transit infrastructure with applicable dimensions and engineering specifications;
x			Location of existing and proposed vehicle and bicycle parking spaces with applicable dimensional and engineering information;
N/A			Location of all snow storage areas and/or a snow removal plan;
N/A			A traffic control plan as detailed in Section 1 of the Technical Manual;
x			Proposed buffers and preservation measures for significant natural features, where applicable, as defined in Section 14-526(b)(1);
x			Location and proposed alteration to any watercourse;
N/A			A delineation of wetlands boundaries prepared by a qualified professional as detailed in Section 8 of the Technical Manual;
N/A			Proposed buffers and preservation measures for wetlands;
N/A			Existing soil conditions and location of test pits and test borings;
N/A			Existing vegetation to be preserved, proposed site landscaping, screening and proposed street trees, as applicable;
N/A			A stormwater management and drainage plan, in accordance with Section 5 of the Technical Manual;
N/A			Grading plan;
N/A			Ground water protection measures;
x			Existing and proposed sewer mains and connections;

- Continued on next page -

x		Location of all existing and proposed fire hydrants and a life safety plan in accordance with Section 3 of the Technical Manual;
x		Location, sizing, and directional flows of all existing and proposed utilities within the project site and on all abutting streets;
x		Location and dimensions of off-premises public or publicly accessible infrastructure immediately adjacent to the site;
N/A		Location and size of all on site solid waste receptacles, including on site storage containers for recyclable materials for any commercial or industrial property;
x		Plans showing the location, ground floor area, floor plans and grade elevations for all buildings;
N/A		A shadow analysis as described in Section 11 of the Technical Manual, if applicable;
x		A note on the plan identifying the Historic Preservation designation and a copy of the Application for Certificate of Appropriateness, if applicable, as specified in Section Article IX, the Historic Preservation Ordinance;
N/A		Location and dimensions of all existing and proposed HVAC and mechanical equipment and all proposed screening, where applicable;
N/A		An exterior lighting plan in accordance with Section 12 of the Technical Manual;
N/A		A signage plan showing the location, dimensions, height and setback of all existing and proposed signs;
x		Location, dimensions and ownership of easements, public or private rights of way, both existing and proposed.

CONTRACT FOR THE SALE OF COMMERCIAL REAL ESTATE

RECEIVED from Patrick Ducas and/or assigns whose mailing address is 17 Chestnut Street, Portland, ME 04101 (hereinafter called "Purchaser"), this 4 day of August, 2015, the sum of Fifteen Thousand and 00/100 Dollars (\$15,000.00) as earnest money deposit toward purchase and sale of certain real estate owned by 415 Cumberland, LLC (hereinafter called the "Seller") and located at 415 Cumberland Avenue in the city/town of Portland, County of Cumberland, State of Maine, described as follows: 15,260 Square Feet of mixed use building on 0.134 acres and being more fully described at said County Registry of Deeds in Book 30443, Page 133, upon the terms and conditions indicated below.

1. PERSONAL PROPERTY: The following items of personal property are included in this sale (if applicable): building plans, blue prints, maintenance records, historical documents and any and all building related items of significance.
2. PURCHASE PRICE: The total Purchase Price is Eight Hundred Fifteen Thousand and 00/100 Dollars (\$815,000.00), with payment made as follows:

Earnest money to be delivered on or before : <u>within Three (3) days of the fully executed contract:</u>	\$ <u>15,000.00</u>
Other: _____	\$ <u>N/A</u>
Other: _____	\$ <u>N/A</u>
Balance due at closing, in immediately-available funds:	\$ <u>800,000.00</u>
3. EARNEST MONEY/ACCEPTANCE: Malone Commercial Brokers ("Escrow Agent") shall hold the earnest money in a non-interest bearing account and act as escrow agent until closing. This offer shall be valid until August 7, 2015 at 5:00 (☐ AM X PM). In the event of Seller's non-acceptance of this offer, the earnest money shall be returned promptly to Purchaser.
4. TITLE: Within 30 days of the Effective Date (the "Title Review Period"), Purchaser shall notify Seller in writing (the "Title Objection Notice") of any matters affecting title to the property that are objectionable to Purchaser in Purchaser's sole discretion ("Title Defects"). Purchaser shall be deemed to have waived the right to object to any matter affecting title as of the Effective Date, except for any mortgage, tax lien, mechanics' lien, judgment lien, or other liens encumbering the property (for which no objection is required), if Purchaser fails to specifically identify such matters in the Title Objection Notice unless such defect occurs after the Title Review Period (each matter not objected to being a "Permitted Encumbrance"). Within seven (7) days of Seller's receipt of the Title Objection Notice, Seller shall notify Purchaser in writing whether or not Seller elects to cure any of the matters identified in the Title Objection Notice. If Seller elects to cure certain Title Defects, Seller shall use good faith efforts to cure such Title Defects and shall have a period of not more than thirty (30) days after notice of Seller's election within which to cure any such Title Defects (the "Title Cure Period"), and the Closing Date shall be extended until five (5) days after the expiration of the Title Cure Period. Seller agrees that, after the Effective Date, it shall not permit or suffer encumbrance of the property with any liens, easements, leases or other encumbrances without Purchaser's prior written consent, except that Purchaser shall not unreasonably withhold or delay its consent to new leases or to monetary liens that will be discharged at Closing. On or before the Closing Date, Seller shall remove at its sole cost any such matters affecting the title to the property suffered or created by or consented to by Seller after the Effective Date that are not approved in writing by Purchaser. If Seller elects not to cure any Title Defects or if Title Defects which Seller elects to cure are not cured within the Title Cure Period, then Purchaser shall elect, by written notice to Seller on or before the Closing Date, as the same may be extended, either (i) to accept title to the property subject to such uncured Title Defects without reduction of the purchase price and without any liability on the part of Seller therefor, in which case such Title Defects shall be Permitted Encumbrances, or (ii) to terminate this Contract, whereupon the earnest money immediately shall be returned to Purchaser and neither party shall have any further obligations under this Contract.
5. DEED: In return for payment in full of the purchase price, Seller shall convey the property on October 8, 2015 or such later date as may be required to accommodate Purchaser's contingency periods described herein, as well as any extensions thereof (the "Closing Date") to Purchaser by Maine Statutory Short-Form Quitclaim with Covenant Deed (the "Deed"), and the parties agree to execute and deliver on the Closing Date such other documents that are customary and/or reasonably necessary to complete the conveyance. It is a condition to Purchaser's obligations hereunder that the deed shall convey good and marketable title to the property and title to the property shall be free and clear of all liens and encumbrances except for the following matters and otherwise in compliance with the requirements of this Contract: (i) zoning restrictions and land use laws and regulations and permits and approvals issued pursuant thereto; (ii) current taxes and assessments attributable to periods from and after the Closing, which Purchaser shall be liable to pay; (iii) leases and occupancies disclosed to Purchaser pursuant to Section 11 below; and (iv) any Permitted Encumbrance.
6. LEASES/TENANT SECURITY DEPOSITS: This Contract shall be conditioned upon either (1) Purchaser's receipt of estoppel certificates from all tenants in possession as of the Closing Date in customary form and substance reasonably satisfactory to Purchaser or (2) delivery of the property by the Seller free and clear of all tenants, occupants, and leasehold interests. If requested by Purchaser prior to closing, Seller agrees at closing to transfer to Purchaser, and Purchaser shall assume from Seller, by proper

assignment thereof, all Seller's rights under the current leases to the property and any and all security deposits held by Seller pursuant to said leases.

7. **POSSESSION/OCCUPANCY:** Possession/occupancy of property shall be given to Purchaser on the Closing Date subject only to the leases and tenancies disclosed to Purchaser pursuant to Section 11 below, unless otherwise agreed by both parties in writing or pursuant to Section 6. Furthermore, prior to the Closing Date, Seller shall provide Purchaser reasonable access to the property to conduct inspections and other due diligence activities.
8. **RISK OF LOSS:** Until transfer of title, the risk of loss or damage to the property by fire or otherwise is assumed by Seller unless otherwise agreed in writing. The property shall at closing be in substantially the same condition as of the Effective Date, excepting reasonable use and wear. If the property is materially damaged or destroyed prior to closing, Purchaser may either terminate this Contract and be refunded the earnest money deposit, or close this transaction and accept the property in its as-is condition together with an assignment of the Seller's right to any insurance proceeds relating thereto.
9. **PRORATIONS:** The following items shall be prorated as of the Closing Date:
 - a. Real Estate Taxes based on the municipality's tax year. Seller is responsible for any unpaid taxes for prior years.
 - b. Fuel
 - c. Metered utilities, such as water and sewer, shall be paid by the Seller through the date of closing;
 - d. Purchaser and Seller shall each pay one-half of the transfer tax as required by the laws of the State of Maine.
 - e. Rents, estimated monthly common area maintenance charges, estimated monthly property tax payments, and all other additional revenue received by Seller pursuant to leases of the property.
10. **DUE DILIGENCE:** Purchaser is advised to seek information from professionals regarding any specific issue of concern. Purchaser acknowledges receipt of property disclosure form attached hereto. Neither Seller nor the Real Estate Licensees identified below make any representations or warranties regarding the condition, permitted use or value of Seller's real or personal property. Purchaser's obligation to close under this Contract is conditioned upon Purchaser's satisfaction with its investigations of the property, as indicated below:

TYPE OF INSPECTION:	YES:	NO:	RESULTS REPORTED:		TYPE OF INSPECTION:	YES:	NO:	RESULTS REPORTED:
a. General Building	X		Within <u>30</u> days		i. Lead Paint		X	Within ___ days
b. Sewage Disposal	X		Within 30 days		j. Pests		X	Within ___ days
c. Water Quality		X	Within ___ days		k. ADA		X	Within ___ days
d. Radon Air Quality	X		Within 30 days		l. Wetlands		X	Within ___ days
e. Radon Water Quality		X	Within ___ days		m. Environmental Scan	X		Within 30 days
f. Asbestos Air Quality	X		Within 30 days		n. Zoning	X		Section 11 (Permit Contingency Period)
g. Code Conformance	X		Section 11 (Permit Contingency Period)		o. Insurance	X		Within <u>30</u> days
h. Flood Plain		X	Within ___ days		p. Full Feasibility Study	X		Section 11 (Permit Contingency Period)

The use of days is intended to mean from the Effective Date of the Contract. All investigations will be done by professionals chosen and paid for by Purchaser. If the result of any elected investigation is unsatisfactory to Purchaser, Purchaser may declare this Contract null and void by notifying Seller in writing within the specified number of days set forth above next to the elected investigation, and the earnest money shall be returned to Purchaser. If Purchaser does not notify Seller that any of Purchaser's elected investigations are unsatisfactory within the time periods set forth above next to the elected investigations, this contingency is waived by Purchaser. In the absence of any investigations(s) elected above, Purchaser is relying completely upon Purchaser's own opinion as to the condition of the property. Purchaser agrees to restore any disturbance to the property caused by Purchaser's investigations, and Purchaser agrees to indemnify and hold Seller harmless for any claims, damages, losses or costs, including without limitation reasonable attorneys' fees, incurred or suffered by Seller as a result of Purchaser's investigations of the property, which indemnification obligation shall survive termination or closing under this Contract.

11. **PERMIT CONTINGENCY PERIOD.** Purchaser, commencing upon the Effective Date, shall have a period of sixty (60) days thereafter (the "Permit Contingency Period") in which to apply for and obtain any and all necessary local, state and federal permits and approvals, including site plan approvals, zoning approvals, building permits, and Part 1 and Part 2 approvals from the National Park Service, as well as certifications from the Maine Historic Preservation Commission that the property is a "certified historic structure" for rehabilitation purposes and that the proposed rehabilitation is consistent with the U.S. Secretary of the Interior's

Standards for Rehabilitation subject only to conditions satisfactory to Purchaser (collectively, the "Permits and Approvals"), for Purchaser to redevelop the Property such that it is eligible for Federal and state historic tax credits and to utilize the Property for the operation of a residential rental apartment complex (the "Proposed Use"). Purchaser shall be responsible for any and all costs in applying for and obtaining all Permits and Approvals.

Seller acknowledges that qualifying for Federal and state historic tax credits are a critical part of the financing Purchaser will seek for the development of the property. Following the Effective Date, Seller agrees to make no change to the property, or undertake no restoration thereof (including without limitation any actions to restore the Property to the same condition it is now) in any manner inconsistent with the qualification of the Property, and the development thereof, for such historic tax credits as determined by Purchaser in Purchaser's reasonable discretion.

If Purchaser is unable to obtain its Permits and Approvals for the Proposed Use on terms and conditions reasonably acceptable to Purchaser, Purchaser may terminate this Contract prior to the expiration of the Permit Contingency Period by providing written notice thereof to Seller or Seller's legal counsel and thereafter the Earnest Money shall be returned to Purchaser and this Contract shall be deemed null and void.

Seller shall cooperate fully with Purchaser in the execution of any and all applications required by Purchaser in the pursuit of any Permits and Approvals; provided, however, that Seller need not participate or cooperate with Purchaser in obtaining any historic tax credit related approvals. Seller shall assign and transfer to Purchaser at the Closing any Permits and Approvals obtained by Seller with respect to the Property.

Any failure of Purchaser to provide such termination notice as and when required under this Section 11 shall be deemed a waiver of this contingency.

12. REVIEW OF LEASES AND INCOME AND EXPENSE INFORMATION: Seller represents: (a) that below is a complete list of all tenants occupying the property under leases or other tenancy arrangements or agreements (the "Leases"), (b) that the Leases are in full force and effect, (c) that to Seller's knowledge, all tenants under the Leases are in full compliance therewith and (d) that Seller is not in violation of its obligations under the Leases. Seller agrees to provide Purchaser within five (5) days of the Effective Date of this Contract complete copies of all Leases, including any amendments, and income and expense information concerning the property. Purchaser shall have 30 days from the date Purchaser has been provided all Leases and income and expense information to review same, and if the result of the review is unsatisfactory to Purchaser, Purchaser may declare the Contract terminated and the earnest money shall be immediately refunded to Purchaser and thereafter neither party shall have any further obligation under this Contract. Seller represents and warrants that income and expense information provided to Purchaser will be true, accurate and complete in all material respects when given. Seller shall obtain a tenant estoppel certificate from all tenants in possession as of the Closing Date in form and substance reasonably satisfactory to Purchaser and/or Purchaser's lender for each Lease at or prior to Closing. Between the Effective Date and the closing, Seller shall not materially modify, voluntarily terminate or enter into new leases or tenancy arrangements or agreements and shall obtain Purchaser's written consent to any material modification or termination of Leases and to any new lease that Seller proposes to enter into with respect to the property, Purchaser's consent not to be unreasonably withheld, conditioned or delayed. In the event that Seller materially modifies or terminates any Leases or enters into a new Lease without Purchaser's consent, Purchaser's sole remedy shall be to terminate this Contract and receive an immediate refund of the earnest money and thereafter neither party shall have any further obligation under this Contract. Failure of Purchaser to timely notify Seller of its termination of the Contract pursuant to any of its foregoing rights to do so under this Section 12 shall be deemed to be a waiver of the applicable right under this Section 12 to terminate the Contract. At the closing, Seller shall deliver written notice to the tenants and occupants of the property of the transfer of the property, and of the tenants' security deposits, to Purchaser. List tenants: Aquarius Ballroom Dance.

13. FINANCING: Notwithstanding anything to the contrary contained in this Contract, Purchaser's obligation to close hereunder is conditioned upon Purchaser's obtaining within Forty Five (45) days from the Effective Date of this Contract (the "Commitment Date") a written commitment (the "Commitment") from a lender for a mortgage loan of not less than 80% of the purchase price and fit up costs at an initial interest rate not to exceed 5.00% per annum, amortized over a period of not less than Twenty (20) years and otherwise on terms reasonably acceptable to Purchaser. Purchaser shall make application for such financing within five (5) days of the Effective Date, shall diligently pursue such financing, and shall keep Seller informed of all stages of the application and approval process. In the event the Purchaser is unable to obtain the Commitment and Purchaser notifies Seller thereof by the Commitment Date, then Escrow Agent shall immediately return the earnest money to Purchaser, this Contract shall terminate, and neither party shall be under any further obligation under this Contract. It shall be a further condition of Purchaser's obligation to close hereunder that the Commitment shall not lapse, be terminated and/or withdrawn prior to the Closing Date for any reason whatsoever, including but not limited to the property failing to appraise at or above the Purchase Price, or any such other level acceptable to Purchaser and Purchaser's lender sufficient to support the Commitment, or due to conditions in the Commitment which cannot be satisfied. In the event the Commitment shall lapse, be terminated and/or withdrawn by Purchaser's lender for any reason (other than at the request of Purchaser) at any time prior to the Closing Date, Purchaser shall within Five (5) days of Purchaser's receipt of notice of lapse, termination and/or withdrawal notify Seller of same, and upon such notification Purchaser may, at Purchaser's option, elect to

terminate this Contract and thereafter the earnest money immediately shall be returned to Purchaser and neither party shall have any further obligation under this Contract. If Purchaser does not timely notify Seller that it has failed to obtain the Commitment or that the Commitment has lapsed, terminated and/or been withdrawn, then Purchaser shall be in default of this Contract at the election of Seller. This contingency benefits Purchaser only, and only Purchaser may waive it by providing written notice to Seller specifically waiving this condition and contingency or any part thereof.

14. AGENCY DISCLOSURE: Purchaser and Seller acknowledge that they have been informed that N/A ("Transaction Broker") is acting as a transaction broker in this transaction and does not have a client relationship with either Purchaser or Seller. N/A ("Selling Agent") is acting as a N/A agent in this transaction and is representing N/A and that Malone Commercial Brokers ("Listing Agent") is acting as a Listing agent in this transaction and is representing Seller (Transaction Broker, Selling Agent and Listing Agent are referred to elsewhere herein as "Licensees").
15. DEFAULT: If the sale of the property as contemplated hereunder is not consummated solely by reason of Purchaser's default hereunder, provided that Seller is then ready, willing and able to consummate the sale of the property as contemplated by this Contract and provided further that all conditions to Purchaser's obligation to consummate such purchase have been satisfied or waived by Purchaser, Seller's sole recourse against Purchaser shall be to terminate this Contract and receive the earnest money as full and complete liquidated damages for the breach of this Contract, it being agreed between the parties that the actual damages to Seller in the event of such breach are difficult to ascertain and/or prove and the earnest money is a reasonable estimate and forecast of such actual damages. The parties acknowledge that the payment of the earnest money is not intended as a forfeiture or penalty, but is intended to constitute liquidated damages to Seller. In the event of an undisputed default by either party, the Escrow Agent may deliver the earnest money to the party entitled to it under this Contract, with written notice to both parties pursuant to Maine Real Estate Commission regulations. If a dispute arises between Purchaser and Seller as of the existence of a default hereunder and said dispute is not resolved by the parties within thirty (30) days, the Escrow Agent may elect to file an action in interpleader and deposit the earnest money in the court to resolve said dispute, or otherwise disburse the earnest money pursuant to Maine Real Estate Commission regulations. Purchaser and Seller, jointly and severally, shall indemnify Escrow Agent for all costs, losses, expenses, and damages, including reasonable attorneys' fees, incurred by the Escrow Agent in connection with said action and/or in connection with any dispute relating to this Contract and/or the earnest money.
16. MEDIATION: Any dispute or claim arising out of or relating to this Contract or the property addressed in this Contract shall be submitted to mediation in accordance with the Maine Residential Real Estate Mediation Rules of the Maine Association of Dispute Resolution Professionals or its successor organization. This clause shall survive the closing of this transaction.
17. PRIOR STATEMENTS: This Contract sets forth the entire agreement between the parties, and there are no other representations, agreements or understandings with respect to the subject matter of this Contract. This Contract shall be construed according to the laws of the State of Maine.
18. HEIRS/ASSIGNS: This Contract shall extend to and be obligatory upon heirs, personal representatives, successors, and assigns of Seller and assigns of Buyer.
19. COUNTERPARTS: This Contract may be signed on any number of identical counterparts, including telefax copies and electronically transmitted copies with the same binding effect as if all of the signatures were on one instrument.
20. EFFECTIVE DATE: This Contract is a binding contract when signed by both Seller and Purchaser and when that fact has been communicated to all parties or to their agents. Time is of the essence of this Contract. Seller or Licensees are given permission by the parties to complete the Effective Date blank below with the date of the last signature of the parties, and that date shall be the Effective Date for all purposes under this Contract, and if that blank is not completed, then the Effective Date shall be the date of the last signature of the parties. Except as expressly set forth to the contrary in this Contract, the use of the term "days" in this Contract, including all addenda made a part hereof, shall mean calendar days. Deadlines in this Contract, including all addenda, expressed as "within x days" or the like shall be counted from the Effective Date, unless another starting date is expressly set forth, beginning with the first day after the Effective Date, or such other established starting date, and ending at 5:00 pm, Eastern Time, on the last day counted.
21. CONFIDENTIALITY: Buyer and Seller authorize the disclosure of the information herein to the real estate licensees, attorneys, lenders, appraisers, inspectors, investigators and others involved in the transaction necessary for the purpose of closing this transaction. Buyer and Seller authorize the lender and/or closing agent preparing the closing statement to release a copy of the closing statement to the parties and their licensees prior to, at and after the closing.
22. A copy of this Contract is to be received by all parties and, by signature, receipt of a copy is hereby acknowledged. If not fully understood, consult an attorney.

23. Seller acknowledges that the laws of the State of Maine provide that every buyer of real property located in Maine must withhold a withholding tax equal to 2 1/2 % of the consideration unless Seller furnishes to Purchaser a certificate by the Seller stating, under penalty of perjury, that Seller is a resident of the State of Maine or the transfer is otherwise exempt from withholding.
24. OPTION TO EXTEND CONTINGENCY PERIODS. Seller and Purchaser hereby agree that Purchaser may extend the Permit Contingency Period (the "Approval Contingency Period") by one (1) thirty (30) day period by providing written notice to Seller within five (5) days of the expiring Permit Contingency Period, and paying to Seller a non-refundable sum of \$2,000 (an "Extension Payment"); provided, however, that in the event the Purchaser eventually consummates the transaction contemplated by this Contract, any Extension Payments paid to Seller shall be applied to the Purchase Price. Any Approval Contingency Period shall be subject to the same terms and provisions set forth in Section 11, including but not limited to the Purchaser's right to terminate the Contract and have the Earnest Money returned if Purchaser is unable to obtain its Permits and Approvals for the Proposed Use on terms and conditions reasonably acceptable to Purchaser.
25. ADDENDA: This Contract has addenda containing additional terms and conditions. Yes ☐ No ☒.
26. OTHER PROVISIONS: The owner will have the ability to continue to show the property and accept back-up offers; provided, however, that Seller shall not be entitled to terminate this agreement in order to pursue said back-up offers, but may only pursue such back-up offers in the event Purchaser elects to terminate this Contract as outlined herein.

The parties agree that none of the above are collateral agreements. It is the intent of the parties that except as expressly set forth in this Contract, all covenants, representations, statements and obligations of both parties herein shall not survive closing.

Patrick Ducas

Legal Name of Purchaser

572-17-6453

Tax ID #

By:

Signature

Name/Title, there unto duly authorized

Seller accepts and agrees to the terms and conditions set forth in this Contract and agrees to pay the Licensees the commission for services according to the terms of the listing agreement or if there is no listing agreement, the sum of _____ In the event the earnest money is forfeited by Purchaser, it shall be evenly distributed between (1) Licensees and (2) Seller; provided, however, that the Licensees' portion shall not exceed the full amount of the commission specified.

Signed this 17th day of August, 2015.

415 Cumberland, LLC

Legal Name of Seller

46-2033318

Tax ID #

By:

Signature

JUSTIN SCHAIR, MANAGER

Name/Title, thereunto duly authorized

Malone Commercial Brokers

Legal Name of Escrow Agent

Name/Title, thereunto duly authorized

By:

Signature

EFFECTIVE DATE OF THIS CONTRACT: August 17, 2015.



TERM SHEET
415 Cumberland Ave Project – Patrick Ducas
September 2, 2015

Dear Patrick,

Bangor Savings Bank looks forward to the opportunity to work with you on the 415 Cumberland Ave., Portland project. The proposed terms and conditions are provided for discussion purposes only and do not constitute an offer, agreement, or commitment to lend. The actual terms and conditions upon which the Bank might extend credit to the Borrower are subject to the satisfactory completion of due diligence, formal credit approval, satisfactory review of documentation and such other terms and conditions as are determined by the Bank.

BORROWER: 415 Cumberland Ave, LLC or LLC to be formed

AMOUNT: Up to \$1,425,000

CREDIT FACILITY: Construction Loan / Permanent Commercial Mortgage

PURPOSE: Fund the acquisition and renovation of a 15,260 sf mixed use commercial building located at 415 Cumberland Ave., Portland, ME. Upon completion of the project the building will contain 10 residential apartments and one commercial unit for lease. Loan to value no to exceed 75% based on an “as-complete” appraisal acceptable to the Bank.

MATURITY: Six (6) years

AMORTIZATION: Interest only payments for the first 12 months (“Construction Period”), thereafter Monthly P&I payments based on a 20-year amortization schedule

REPAYMENT: Interest only payments for the first 12 months; Monthly P&I payments for the remaining term thereafter

INTEREST RATE: Initially, the Loan shall accrue interest at a variable rate equal to WSJ Prime Rate + 1.00%, adjustable monthly. Commencing with the thirteenth payment, the Loan shall accrue interest at a fixed rate for five (5) years equal to the Bangor Savings Bank fixed rate

equivalent of Libor + 2.50% as of that day.. (As of today, the effective equivalent interest rate on the loan would be 3.60%).

ORIGINATION

FEE: .35% of the Loan Amount

CLOSING

COSTS: Borrower shall be responsible for all closing costs including appraisal, appraisal review, legal, recording, title, etc.

COLLATERAL: A first mortgage on the property located at 415 Cumberland Ave., Portland, Maine

Assignment of all leases and rentals on the property located at 415 Cumberland Ave., Portland, Maine

During the construction phase of the improvements, assignment of the construction contract and a first security interest in plans, approvals and all building related materials.

GUARANTOR: Mr. Patrick Ducas

PREPAYMENT

PENALTY: If loan is refinanced with another financial institution then the following prepayment penalty shall apply: 5% in Year 1, 4% in Year 2, 3% in Year 3, 2% in Year 4, and 1% in year 5.

No prepayment penalty upon sale of property.

LOAN TO

VALUE: The maximum loan to value for the project is seventy-five (75%) percent subject to a current appraisal to be ordered by the Bank, based upon the as-complete and “stabilized” value. Borrower shall pay for cost of appraisal.

FINANCIAL

REPORTING: On an annual basis within 120 days of fiscal year end, the Borrower shall provide the Bank with financial statements prepared by a CPA satisfactory to Bank.

Bank shall receive an updated and detailed Personal Financial Statement on the Guarantor on an annual basis within 120 days of year-end.

Bank shall receive a copy of guarantor’s Personal Federal Tax Return with all schedules along with the tax returns on all entities

in which guarantor has a significant ownership percentage. All tax returns to include K-1 statements and to be received within 120 days of year-end.

On an annual basis, or upon request, Borrower shall provide a copy of current rent rolls and leases for the subject property.

**FINANCIAL
COVENANTS:**

Borrower and Guarantor agree to maintain minimum global debt service coverage ratio of 1.25X during the term of this loan. Unless specified otherwise elsewhere in this letter, said ratio shall be calculated annually based upon CPA prepared year end Business Financial Statements or Federal Income Tax Returns. For purposes of the calculation, debt service coverage ratio is defined as:

$$\frac{(\text{Net Income} + \text{Depreciation/Amortization} + \text{Interest Expense} +/- \text{non-cash items} +/- \text{non-recurring gains or losses})}{\text{Scheduled Annual Principal and Interest Payments}}$$

CONDITIONS:

Subject to satisfactory review of construction budget, project plans, specifications, and construction management contract.

Borrower to provide a signed Construction Management Agreement providing a fixed-price construction contract with all significant sub-contractors, a detailed budget containing acceptable contingencies and timeline for the project along with a list of all subcontractors.

Borrower to establish an operating deposit account with Bangor Savings Bank.

Subject to terms and conditions of a construction loan agreement including establishment and maintenance of construction escrow account with the Bank. Construction advances will be administered by the Bank according to standard construction loan disbursement and inspections procedures including the monitoring of construction by a third-party inspector. Borrower shall pay all construction monitoring fees charged by inspector.

The loans are subject to satisfactory environmental due diligence by the Bank. Borrower shall complete an Environmental Questionnaire. Any required follow-up analysis shall be at the Borrower's expense and shall be performed by a qualified environmental consulting firm retained by the Bank.

Borrower to fund at closing a minimum of nine (9) months debt service to be placed in a reserve account at Bangor Savings Bank.

Guarantor to furnish to the Bank an investment statement no more than 30 days old verifying personal investments under management identified on an 8/26/2015 Personal Financial Statement.

We look forward to discussing this proposal with you and finding a mutually acceptable financing plan for the proposed project.

Sincerely,



Michael P. O'Reilly SVP on behalf of
Chris P. Perry
Vice President
Business Banking

SEEN AND AGREED TO:

Borrower:

415 Cumberland Ave, LLC or Entity to be Formed

By: Patrick Ducas
Its:

Date



CONFIDENTIAL TERMS SHEET

The Terms And Conditions Described Below Are Subject To Satisfactory Submission By The Applicant Of All Information As May Be Required By Gorham Savings Bank For Its Use In Consideration Of The Application, And Subject To Gorham Savings Bank's Satisfactory Due Diligence, Its Internal Credit And Loan Approval Process, And Satisfaction Of Such Other Matters And Issues As It Deems Necessary In Its Sole Discretion. A Financing Commitment, If Issued, Will Be In Writing.

Date: August 27, 2015

Borrower: 415 Cumberland Ave., LLC

Loan Type: Acquisition/Construction/Permanent Financing Term Loan

Loan Purpose: Finance the purchase of real estate located at 415 Cumberland Avenue, Portland, Maine and provide additional funds to renovate the property.

Maximum Amount: Up to \$1,534,277.00

Term: 10 years

Interest Rate: 4.75% fixed for 10 years

Prepayment Penalty: If Borrower shall pay principal in excess of the scheduled amortization of principal under this note within the first five years of any fixed rate period, such excess payment of principal shall be subject to a prepayment premium to the Bank in an amount equal to the excess principal payment amount times 5% during the first year of the fixed rate period, 4% during the second year, 3% during the third year, 2% during the fourth year, and 1% through maturity.

Loan Origination Fee: \$2,500.00

Payment Schedule: Payments of interest-only will be due monthly for 2 years, then principal and interest payments monthly based on a 20-year amortization schedule. Any outstanding principal balance plus any accrued interest will be due and payable at maturity.

Collateral: First priority mortgage on land and buildings located at 415 Cumberland Avenue, Portland, Maine; Assignment of leases and rents; Assignment of state historic tax credits and syndication proceeds; Assignment of construction documents (contracts, permits, approvals, etc.)

- Guarantors: Unlimited personal guaranty of Patrick L. Ducas
- Financial Covenant: The Borrower will maintain a debt service coverage ratio of at least 1.20:1.0 beginning with year 3. The calculation for this ratio will be (Net Income after Tax + Depreciation/Depletion/Amortization + Interest +/- Non-recurring Items +/- Distributions) divided by required (Annual Principal & Interest Payments). Non-Recurring items will include other income/expenses that are not part of the normal ongoing operations of the company, as determined by the Bank.
- Financial Reports:
- Borrower to provide annual federal tax returns.
 - Guarantor to provide annual personal financial statement and federal tax return.
 - Copies of executed leases (when available).
- Other Terms and Conditions:
- Subject to review and acceptance by the Bank of an "as completed" real estate appraisal on the collateral property yielding a maximum loan to value ratio of 80%.
 - Subject to appropriate level of environmental due diligence on the collateral property.
 - Subject to receipt and review of final Project construction budget, time line, permits, approvals, legal opinions, and contracts.
 - Loan disbursements shall be made under a Construction Loan Agreement subject to borrower requisition and supply of mechanic lien waivers.
 - Subject to ongoing inspections to be completed by a qualified third-party.
 - Subject to receipt of a title insurance policy in the amount equal to the loan. The title policy shall include survey coverage and mechanics line coverage coinciding with disbursement of funds.
 - Flood certification on pledged real estate.
 - A 2.5% replacement reserve to be funded monthly.
 - Borrower to establish a debt service escrow account of \$25,000.00 with Bank at closing.
 - During the term of the loan, Borrower and guarantor to maintain their primary deposit relationship with the Bank.

Sincerely,



Roger C. Levesque
Executive Vice President
222-1491

WARRANTY DEED

PAMELA A. HURLEY MOSER, f/k/a Pamela A. Hurley

of Portland, County of Cumberland and State of Maine

for consideration paid, grants to

415 CUMBERLAND, LLC

A Maine limited liability company with an office and place of business located in Portland, County of Cumberland and State of Maine, with WARRANTY COVENANTS, the following described real property in Portland, County of Cumberland and State of Maine:

See Exhibit A attached hereto and made a part hereof

Also hereby conveying all rights, easements, privileges, and appurtenances, belonging to the premises hereinabove described.

WITNESS my hand and seal this 5 day of March, 2013.

WITNESS

TS Campbell
Witness

Pamela A. Hurley-Moser
Pamela A. Hurley Moser

State of Maine
Cumberland, ss.

March 5th, 2013

Personally appeared before me Pamela A. Hurley Moser and acknowledged the foregoing instrument to be her free act and deed.

Before me,

TS Campbell
Notary Public/Attorney-at-Law

MAINE REAL ESTATE TAX PAID

EXHIBIT A

A certain lot or parcel of land with the buildings thereon situated on the westerly corner of Cumberland Avenue and Forest Avenue in Portland, and bounded and described as follows:

Beginning at the intersection of the southwesterly sideline of Forest Avenue with the northwesterly side of Cumberland Avenue; thence northwesterly by said Forest Avenue one hundred twenty-two (122) feet to the land conveyed by Albert S. Rines to the Young Men's Christian Association of the City of Portland by deed dated November 2, 1923 and recorded in the Cumberland County Registry of Deeds in Book 1153, Page 136; thence southwesterly by said land conveyed to the Young Men's Christian Association as aforesaid fifty (50) feet more or less to an angle in said land of the Young Men's Christian Association; thence southeasterly by said land of the Young Men's Christian Association twenty-two (22) feet, more or less, to land now or formerly of Enoch C. Richards; thence southeasterly by said Richard's land one hundred (100) feet, more or less, to Cumberland Avenue; thence northeasterly by said Cumberland Avenue fifty (50) feet, more or less, to the corner and the point of beginning.

Including herein and hereby conveying the right of way and other easements described in deed by the Young Men's Christian Association of Portland to R. Hight Rines, dated September 16, 1925 and recorded in said Registry of Deeds in Book 1212, Page 217.

The above described premises are conveyed subject to the right of way and other easements described in deed of R. Hight Rines to the Young Men's Christian Association of Portland, dated September 16, 1925 and recorded in said Registry of Deeds in Book 1212, Page 215.

For title reference see Deed given by Thomas F. Moser and Mary W. Moser to Pamela A. Hurley, dated August 1995 and recorded in the Cumberland County Registry of Deeds in Book 12089, Page 243.

G:\CLIENTS\H\HURLEY\415Cumberland.Sale\Deed.doc

Received
Recorded Register of Deeds
Mar 05, 2013 02:14:53P
Cumberland County
Pamela E. Lovley

September 10, 2015

City of Portland Planning Division

Re: 415 Cumberland Ave Level 2 Site Plan Review Application

To whom it may concern,

Please use the information provided in this narrative as complimentary material to the boundary survey and architectural floor plans and elevations provided. This narrative serves to clarify the general items required of a Level 2 Site Plan not identified on the provided drawings.

Project Description

The submitted project intent is to convert 415 Cumberland Ave from office space into residential market rate apartments. The building has most recently been used by Hurley Travel and before that Thomas Moser as a furniture gallery.

The developer's intent is to have this building included in the Congress Street Historic District, and submit the building for inclusion on the National Register. If accepted, this building will be historically restored.

The renovation of the building includes minor changes to the exterior façade which will include the installation of new windows where they have been filled in, on the west side of the building and minor repairs to the cornice, freeze and roof trim. In addition new windows will be installed in the clapboarded addition closest to the YMCA on the Forest Ave frontage, to be a close match to the existing double hung windows.

The interior of the building will be substantially gutted to the outside walls, so that the new residential apartments can be built out.

Evidence of right, Title & Interest

Reference attached Exhibit A "Purchase & Sale Agreement"

Evidence of State and Federal Permits

Not Applicable

Project Compliance with Applicable Zoning

The subject property (415 Cumberland Ave) is located within the B3c zone and multi-family housing is a permitted use

Sec. 14-217. Permitted uses. (a) The following uses are permitted in the B-3, B-3b and B- 3c zones: 1. Residential: a. Attached single-family, two-family and multifamily dwellings;

Summary of Existing Easements

There is one known easement that exists. The Yong Men's Christian Association (YMCA) was granted the rights to a small portion of land between the subject property and the YMCA by Albert S Rines in 1923. This easement was recorded in the Cumberland County Registry of Deeds Book 1153, page 136. This deed was later amended in 1925 in book 1212, page 217. This deed was later passed on to Thomas F Moser and Mary W Moser in 1195 in book 12089 page 243.

Reference Exhibit B attached.

Evidence of Financial and Technical Capacity

This building is being purchased by Patrick Ducas who intends to re-develop the property as an investment income property. Patrick has received underwriting approval from several local banks, and will contribute personal equity into the project. In addition, Patrick is the owner of Ducas Construction Inc. a local Portland General Construction firm which will manage the renovation process.

Traffic Study

A traffic study is not required in this zone for this building use.

Storm water Management Plan

The subject property and renovation will make no disturbance to the existing sidewalks, landscaped areas, or hardscapes and therefore will make no impact to the existing stormwater management that exists.

Consistency with City's Master Plan

While we are not aware of any city master plan that serves this area of town, we believe this project will benefit the city in the following ways.

1. It will preserve a historically significant building that is falling into disrepair.
2. It will provide much needed market rate housing.
3. It will create short term employment from the construction jobs, and long term employment for the building management.
4. It will increase the city tax base, due to increased building value.
5. It will set an example that the existing historic building inventory can be re-purposed into effective market rate housing.

Code Summary Analysis for the Proposed Re-Development

Proposed Primary Use Group: R-2 (IBC 2009, 310.1), 11,600 s.f.

Secondary Use Groups: Storage 1650 s.f.
 Parking 1700 s.f.
 Business 1300 s.f.

Construction Type: Type III(A) and Type V(A)

Automatic Sprinkler System: YES

Allowable Height & Area: IBC 2009 Table 503

Type III(A)

Allowable Area: 24,000 s.f. / floor

Existing: 3200 s.f. / floor

Allowable Height 65 feet / 4 stories

Existing: 40' / 4 stories

Type V(A)

Allowable Area: 12,000 s.f. / floor

Existing: 1700 s.f. / floor

Allowable Height: 50 ft / 3 stories

Existing: 30' / 3 stories

Occupancy:

NFPA 6.1.8 Residential

NFPA 6.1.8.1.5 Apartment Buildings

NFPA 6.1.13 Storage (Residential & Parking)

NFPA 6.1.11 Business

NFPA 6.1.14 Multiple

Occupant Load: IBC Table 1004.1.1

Residential: 42 maximum occupants

Business: 13 max

Accessory Storage: 5 max

Garage: 8 max

Total Occupant Load: 68

Egress:

Minimum Number of Exits: IBC 2009 Table 1021.1

1-500 occupants: 2 exits minimum

As Designed: 3 exits provided for all units

Egress Width:

68 occupants / 3 exits = 23 occupants / exit

Doors: $(occ * 0.2) = 23 * 0.2 = 4.6$ inches minimum, 36 provided

Stairs: $(occ * 0.3) = 68 * 0.3 = 20.4$ inches minimum, 48 provided

Travel Distance:

IBC 2009:

Residential: 250' w/ sprinklers

Business: 300' w/ sprinklers

Storage: 400' w/ sprinklers

NFPA: (Table a.31.1)

Residential: 200' apartment door to exit

Smoke Barriers: Not Required

Interior Finish: A, B, or C

Exit Fire Resist: 1 hour

Door Fire Resist: 1 hour

Escape Windows: Not Required

Evidence of Utility Capacity to Serve

The subject property has 3 phase power and ample service to provide for the 10 units.

HVAC Systems

The existing heating systems is a mix of forced hot water serving floor mounted base board heaters, a forced air system and roof top units. Components of this system will be re-purposed to serve the new residential units, and where necessary it will be augmented with new packaged heat pump units. The heating, cooling and ventilation systems are currently being designed, and will be compliant with energy code and emissions requirements.

From: Patrick Ducas <patrickd@ducasconstruction.com>
To: Jean Fraser <JF@portlandmaine.gov>
Date: 10/22/2015 11:11 AM
Subject: FW: 415 Cumberland Avenue - Portland - New Service Information
Attachments: PO - 415 Cumberland Ave - Infrastructure Map - 2015.pdf; Approved Service Tapping Companies.pdf; Service Application Template - 2015.pdf

Jean

Please be advised that I did have a conversation with Portland Water District back on the 14th of October, and they did convey their belief that there is capacity to serve this project in its new use as a subdivision. There are 12" lines on both Forrest and Cumberland which can be tapped. Brian provided the instructions to request an "Ability to Serve" letter and the application process. I have since submitted by letter requesting "Ability to Serve" and am awaiting final/official confirmation.

Thanks

Patrick

From: Brian Johnson [mailto:brianjohnson@pwd.org] On Behalf Of AMAP Means Email
 Sent: Tuesday, October 13, 2015 10:23 AM
 To: Patrick Ducas <patrickd@ducasconstruction.com>
 Subject: 415 Cumberland Avenue - Portland - New Service Information

Patrick,

Attached is a copy of PWD's infrastructure map noting the location and sizes of the public water mains near 415 Cumberland Avenue - Portland. It is possible to make a new service connection into a public main only after proper review and approval by PWD. Below is a description of the general process for having a new service line installed on the public water system.

Ability to Serve Phase

In order for PWD to give an official opinion on serving the water needs of a site, we will require that a request for an Ability to Serve letter be submitted to our office. This letter should be sent to the PWD MEANS Group at the address noted below or via email to means@pwd.org<blocked::mailto:means@pwd.org>. This letter should include the following information:

- 1) The official address of the site (if one exists) and Assessor's Parcel Number
- 2) A locus map indicating the site seeking water or sewer service with the relevant property boundaries visible
- 3) The project scope explaining the existing and proposed use of the site
- 4) Any known existing public or private water or sewer service pipes on the site
- 5) The expected domestic water, fire protection, irrigation and sewer demands of the site
- 6) A listing of any easements that exist or may be required to provide water or sewer service to the site
- 7) A description of any potential future plans for the subject property or for the properties located adjacent to the site seeking service (for example, potential lot subdivisions)

Once we get this information from a potential customer, we will respond with a formal letter within 30 days explaining PWD's opinion on our ability to serve this site with public water.

Please include a mailing address in your request, a hardcopy of the ability to serve determination letter will be sent to that address.

Plan Review Phase

As your project progresses, we advise that you submit any preliminary design plans to the MEANS Division for review of the water service line configuration. We will work with you or your representative to

ensure that the design meets our current standards.

Pre-Construction Phase

Following PWD Site Plan approval, the next step in the process is for the owner to hire a private contractor to install the new service lines at their cost. While PWD does not have any requirements on who may complete the excavation work for a new service line, the actual tap into a main must be completed by a certified contractor. Attached is a listing of contractors who are approved to complete service taps for various pipe sizes.

Service Application Phase

Once a contractor has been selected and the project is ready to go to construction, it will be necessary to again contact PWD's MEANS Group to arrange for an appointment to fill out a service application. We will complete the attached new service application together at the PWD office. To ensure that the eventual utility account will be set up correctly and that all service lines and meters will be properly sized, the following information will be needed at this time:

- 1) Town-assigned street address
- 2) Billing contact information
- 3) Water service diameter
- 4) Expected peak water usage in gallons per minute (not required for a single family home)
- 5) Fixture count tabulation (only required if peak water usage is not known)
- 6) Description of the proposed meter location (if the meter is further than 300 feet from the property line, a meter pit will be required)

PWD will collect the following fees at the time of the service application:

- 1) Application Fee: \$58 per service line
- 2) Inspection Fee: \$181 flat for 2-inch service or smaller (single services only); \$40.00 per hour for services larger than 2-inch*
- 3) Meter Fee: Based on the meter size (typically between \$200 and \$500, but may be higher for some uses)
- 4) Meter Installation Fee: \$63 flat for meters 2-inch and smaller; \$40.00 per hour for meters larger than 2-inch*
- 5) Water Quality Sample: \$161 for domestic services 2-inch and larger
- 6) Highway Opening Fee: Varies (only applicable for connections made into some State Highways)
- 7) Meter Pit Inspection, Fire Service Activation and Private Hydrant Inspection where applicable estimated at \$40.00 per hour

*Time is estimated based on the project scope. The depositor will receive a credit or a bill at project completion based on actual PWD charges.

An exact fee structure will be developed for this project after all design items have been determined.

Construction Phase

PWD is required to provide inspection of all water service work within the public way. After the applicable fees have been collected and the application accepted, your contractor is advised to contact PWD's Scheduler, Thomas Whitney, at 774-5961 x3037 to arrange for a time for a PWD inspector to witness the water service installation work. Please contact us 3-5 days in advance of your desired construction date to ensure that we will have an inspector available.

If at any time during this process you would like to meet to discuss your project further, please contact the MEANS Group to schedule an appointment with a PWD representative.

Have a great day,

Brian

MEANS Group
Main Extensions and New Services
Portland Water District
225 Douglass Street
Portland, ME 04104-3553
P:(207)774-5961 Ext. 3199
F:(207)761-8307
MEANS@pwd.org

Brian Johnson
Asset Management Technician
Portland Water District
Phone: 207-774-5961 x
E-mail: brianjohnson@pwd.org<<mailto:brianjohnson@pwd.org>>
<http://www.pwd.org>

Portland Water District NOTICE & DISCLAIMER Confidentiality Notice:

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PWD CURRENTLY APPROVED TAPPING COMPANIES - 8/5/15

	Business	Certified to Tap Water Mains	Any Size	2"	1"	Telephone	Location
1	A. H. Grover	Stu, Matt, David Potter, Dan Jackson			x	829-3373	Cumberland Center, ME
2	Advantex Construction & Utility Serv's LLC	Craig Morris, Jeff Haskell		x	x	239-9890	Windham, ME
3	Bowdion Excavation	Rodney Bergeron, Jamey Ivers			x	829-3160	North Yarmouth, ME
4	Chase Excavating	Mica Sawyer, Steve L'Heureux		x	x	797-9093	Falmouth, ME
		Will Chase, Chad Chase, Adam Austin			x		
5	CMC Construction	Mark Oliver, Craig Campbell		x	x	799-2896	South Portland, ME
6	Colex LLC	Brad Nikel		x	x	657-3976	New Gloucester, ME
		Zachary Beardsley			x		
7	Construction Services & Irrigation	Glenn Miller		x	x	222-2512	Gorham, ME
8	D & C Construction	Carl Ivers			x	761-9559	Portland, ME
9	Dearborn Brothers Excavating	Tim Landry, Joe Bishop, Don Harris, Brian Nadeau, Steve Webb			x	839-2272	Buxton, ME
10	Dearborn Land Development	Justin Dearborn		x	x	318-0765	Gorham, ME
11	E. J. Prescott	Ray Morang, Josh Steward, Doug Brown, Zach Lovely, William Terry	x			1-800-873-3292	Gardiner, ME
12	Glidden Excavating & Paving	Tim Baker, Carl Andrew, Pat Maloney			x	839-7061	Gorham, ME
13	Gorham Sand & Gravel	James Shaw, Jim Roberts, Mike Dellinger, James Exley, Jon Davis, Dustin Kelley, Trevor Chapman			x	839-2442	Buxton, ME
		Josh Taylor, Arthur Landry			x		
14	John Headley	Special concrete taps	x			781-344-0440	Rockland, MA
15	Keenan Excavating	Frank Keenan, Justin Burby			x	883-7195	South Portland, ME
16	Khief Excavation	Steve Stuart			x	452-2157	Denmark, ME
17	Leavitt Earthworks	Brian Leavitt (2"), Thomas Aiken (1"), Brian Foudriat (1"), Jared Page (1")		x	x	839-5750	Gorham, ME
18	Lefebvre Landscaping	Craig LeFebvre		x	x	839-3473	Gorham, ME
18	Les Wilson & Sons	Dan Harmon			x	854-4583	Westbrook, ME
19	Littlefield & Hall	Ed Littlefield			x	284-6044	Saco, ME
20	MacDonald's Excavation	Tom Gilbert			x	294-1874	Old Orchard Beach
21	Maietta Construction	David Martino, Jimmy Maietta			x	883-9546	Scarborough, ME
		Herbie Brown, Mike Maietta,		x	x		
22	Maine Earth Moving	Chris Sullivan				883-7669	Scarborough, ME
23	Maine Water Works Supply		x			465-2116	Oakland, ME
24	Murray & Sons	Skip Murray, Lou Miller			x	799-3279	Cape Elizabeth, ME
25	Normand Berube Builders	Dale Wilkinson			x	283-3961	Saco, ME
26	O'Brien Brothers / Pompeo Sand & Gravel	John Pompeo		x	x	776-8130	Gorham, ME
27	Pavement Treatments, Inc.	Pat Maloney, Carl Andrews, Derrick Lewis			x	883-8584	Scarborough, ME
28	P K Sand & Gravel	John Simms, Darrell Cox, Ron Bryce, Bruce Wiley			x	693-6765	Naples, ME
29	Peters Construction	Tom Peters, Brenden Poitras			x	318-8523	Buxton, ME
30	R. E. Coleman	Rodney, Bill Brazier, Ed Doubie, Charlie Grubb		x	x	797-3779	Falmouth, ME
31	Risbara Brothers Construction	Marc Risbara, Mike, Jeff Storey, Mike Sanford, Garrett Risbara, Rod Bailey, Mike Price			x	883-5528	Scarborough, ME
32	R. J. Grondin & Sons	Mike Lamb, Rob Wilson, Jamie Harmon, Don Berry, Larry Tucceri, Jason Hinkley, Ken Grondin, Everette Swasey			x	854-1147	Gorham, ME
33	RM Inc	Mike Flaherty			x	332-5463	South Portland, ME
34	Sam Grimaldi & Sons	Sam Gramaldi			x	773-6905	Portland, ME
35	Shaw Brothers	Jeff Fay, Keith Johnson, Justin Dean			x	839-2552	Gorham, ME
36	Shaw Earthworks	Joe Gammon			x	839-7955	Gorham, ME
37	Shea Brothers	Kelly Day			x		South Hiram, ME
38	Smith & Sons	Gary Smith			x	883-1513	Scarborough, ME
		Jake Hall		x			
		Gary Smith Jr.		x	x		
39	South Shore Pipeline	Testing & Chlorination services	x			781-878-1425	Hanover, MA
40	Storey Brothers	Dan Vosine, Jim Storey, Shane Libby			x	829-4292	Cumberland, ME
		Eric Storey		x			
		Rick Storey		x	x		
41	TAS Construction Services	Todd Smith	x			603-234-7010	Pembroke, NH
42	Thayer Excavation Inc	Joe Thayer		x	x	879-9151	South Portland, ME
43	Underground Testing Services	Sean Cambell, Paul Trask, Jay Provencher	x			603-497-5549	Goffstown, NH
44	V & M Construction Service	Mark Verrill, Jasper Crane, Barry Dunlop			x	839-7603	Gorham, ME
45	Webb Construction	Dwight Webb			x	892-2050	Gorham, ME
46	White Brothers	Dennis Smith, Gerry Allaire, Larry Hall			x	854-9173	Westbrook, ME
47	R. N. Wiley Construction	John Mains			x	655-7345	South Casco, ME
48	Williams Earthworks	Danny Williams			x	642-5452	Standish Mine

COMPANIES PERFORMING TRENCHLESS DIRECTIONAL DRILLING WITHIN PWD SERVICE AREA - 1/13/12

	Business	Certified to Bore Water Mains	Telephone	Location	Proof of a valid street opening permit is required or installation will not be permitted.
1	AD Electric	Andy Deditch	375-6616	Buxton, Me.	
2	Broad Cove Associates	Frank Olsen	829-5187	Cumberland Center, ME	
3	ETTI	Scott Kelly	353-5000	Falmouth, ME	
4	Rainmaker Irrigation	William Boyle	878-7890	Gardiner, ME	
5	Thirsty Turf	Josh Doucette	797-3461	Portland, ME	



415 Cumberland Avenue

Scale 0 12.5 25 50 75 100 Feet 1 inch = 50 feet

Portland



PORTLAND WATER DISTRICT
225 Douglass Street
Portland, ME 04104

Legend

- | | | | |
|----------------|--------------------|--------------------|-----------|
| ● Air Valve | ● Connection | ⊕ Combined Service | ● Manhole |
| ⊕ Blow Off | ● Attribute Change | ⊕ Domestic Service | ● CSO |
| ⊕ By Pass | ▲ Reducer | ⊕ Fire Service | → Gravity |
| ⊕ Distribution | ● Hydrant | ⊕ Private Hydrants | → Force |
| ⊕ Transmission | ⊕ Hydrant Control | ⊕ Meter Pits | |



Disclaimer: This map is suitable for preliminary study and analysis and is based on PWD record information. PWD is not liable for any damages whatsoever resulting from inaccurate data or from errors made in the location and marking of its infrastructure.

Drawn By: BSJ

Scale: As Noted

Date: October 13, 2015

PORTLAND WATER DISTRICT WATER SERVICE APPLICATION

Utility Account Number: _____

Date: _____

Service Address: _____

PWD Project Number: _____

[Choose a Town](#)

Project Scope: _____

Account Name: _____

Project Contact: _____

Please contact PWD's MEANS Group to schedule an appointment to complete an application for new water service. MEANS can be reached at (207) 774-5961 ext. 3199 or means@pwd.org

WATER USAGE INFORMATION

Type	Use	Billing Type	Account Billing	Water Flow
☐ Domestic	☐ Commercial	☐ Year-Round	☐ Water	Peak Dom. GPM: _____
☐ Fire Only	☐ Residential	☐ Seasonal	☐ Sewer	Peak Irrig. GPM: # _____
☐ Combined	☐ Industrial	<u>Account Class</u>	☐ Tenant Occupied - Owner	Fire Protection GPM: # _____
☐ Speculative	☐ Governmental	☐ Tax Exempt	☐ Multi-Unit with Single Meter	Peak Total GPM: _____

SERVICE INSTALLATION INFORMATION

Service Size: _____	Directional Drill: ☐ Yes ☐ No
Material: _____	Exist. Services: ☐ Yes ☐ No
Main Pressure: _____ psi	Existing Well: ☐ Yes ☐ No
<u>PUC Ch. 65 Contribution</u>	Plans Submitted: ☐ Yes ☐ No
☐ Yes ☐ No	Amount: \$#####.##

Notes: _____

PRIVATE FIRE PROTECTION

<u>Sprinkler System</u>	<u>Private Hydrants</u>
☐ None	☐ Yes Number: ###
☐ NFPA 13	☐ No
☐ NFPA 13R	<u>Dry Sprinkler System</u>
☐ NFPA 13D	☐ Yes ☐ No

BACKFLOW PREVENTION

Hazard	Device Required
☐ None	☐ None
☐ Low	☐ Air Gap
☐ Moderate	☐ Non-Testable Dual Check
☐ High	☐ Testable DCVA
	☐ RPZ

PWD will register and test device at time of initial activation.
An \$80 testing fee will be applied to the initial account for the first device tested in a building (\$40 for subsequent devices).

Notes: _____

METER SET INFORMATION

Meter Size: _____	Meter Pit Required: ☐ Yes ☐ No
<u>Meter Type</u>	Meter Spool Required: ☐ Yes ☐ No
☐ Badger/Amco	Meter Bypass Allowed: ☐ Yes ☐ No
☐ OMNI R ²	Meter Protected from Freezing: ☐ Yes ☐ No
☐ OMNI C ²	Meter Located in Crawl Space: ☐ Yes ☐ No
☐ OMNI T ²	Meter Accessible to All Users: ☐ Yes ☐ No
☐ OMNI F ²	

DEPOSIT

Deposit Required Based on Estimated Costs*

<u>Service Installation Deposit</u>				
Service Application Fee:	FLAT	x	\$58.00	= \$58.00
Service Inspection:		x		=
Highway Opening Fee:		x		=
Other:		x		=
<u>Account Activation Deposit</u>				
Meter Cost:		x		=
Meter Pit Inspection:				=
Meter Installation:		x		=
Water Sample:		x		=
Fire Service Activation:		x		=
Private Hydrant Inspection:		x		=
Other:		x		=
TOTAL				=

Actual Fee Based on PWD Costs Incurred*

<u>Service Installation Deposit</u>				
Service Application Fee:		x	\$58.00	=
Service Inspection:		x		=
Highway Opening Fee:		x		=
Other:		x		=
<u>Account Activation Deposit</u>				
Meter Cost:		x		=
Meter Pit Inspection:				=
Meter Installation:		x		=
Water Sample:		x		=
Fire Service Activation:		x		=
Private Hydrant Inspection:		x		=
Other:		x		=
TOTAL				=

* Project deposit is an estimate only of PWD fees. A refund or bill will be at project completion based on actual PWD charges. Installation Deposit will be reconciled within 90 days of pipe installation acceptance. Activation Deposit will be reconciled within 90 days of Account Activation.

REQUIREMENTS BETWEEN APPLICATION AND ACTIVATION

- ☐ **Inspection Scheduling:** Contact AMaP Scheduler (207-774-5961 x3037) at least five days in advance of installation.
- ☐ **Service Retirement:** Existing service(s) must be retired as a condition of acceptance of new service line installation.
- ☐ **Meter Pit Review:** Submit cut sheet of meter pit structure to MEANS@pwd.org for review prior to purchase.
- ☐ **Meter Pit Inspection:** Contact AMaP Scheduler (207-774-5961 x3037) at least five days in advance of installation.
- ☐ **Water Sample:** Contact AMaP Scheduler (207-774-5961 x3037) at least five days in advance to collect water sample.
- ☐ **Fire Service Flushing:** If required, contact AMaP Scheduler (207-774-5961 x3037) at least five days in advance to flush.

- ☐ **Private Hydrant Inspection:** Contact Customer Service (207-761-8310) at least five days in advance of activation.
- ☐ **Meter Spool Sign-out:** Visit Customer Service with copy of Service Application.
- ☐ **Residential Sprinkler Design Review:** Submit sprinkler plan to MEANS@pwd.org for review prior to activation request.
- ☐ **Service Activation:** Contact Customer Service (207-761-8310) at least five days in advance of activation.
- ☐ **Well Disconnection:** Private wells must be disconnected as a condition of meter installation.
- ☐ **Sewer Service:** Contact Systems Chief Operator (207-774-5961 x3105) to schedule the sewer installation inspection.

Note: PETITIONER is responsible for disseminating information to all Subcontractors. The District will work with the PETITIONER in locating its infrastructure based upon the records and information available to it. Be advised that the District SHALL NOT BE LIABLE for any damages whatsoever resulting from errors made in the location and marking of its infrastructure.

PETITIONER: _____

Petitioner Signature: _____

Address: _____

PWD Representative: _____ PAID ☐

Note: The PETITIONER will receive any refund or bill generated from a reconciliation of PWD costs compared to the deposit amount. If the DEPOSITOR is a different entity than the PETITIONER, both parties must sign this form and note which fees will be the responsibility of the DEPOSITOR.

Depositor to receive bill or refund on these fees: ☐ Service Installation Fees ☐ Account Activation Fees ☐ None

Depositor Signature: _____

Petitioner Signature: _____

-----PWD USE ONLY-----

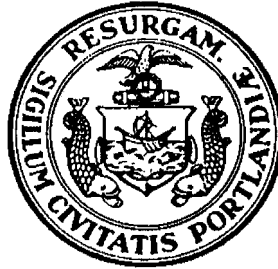
<u>Asset Creation</u>	<u>Quantity</u>	<u>Asset IDs</u>	<u>Work Orders</u>	<u>Completed</u>
Water Service Line Parent/Child ☐	1		SVINNW - ☐ A-SAMP - ☐ MTINNW - ☐	
Service Valve				
Backflow Preventer			WBFAT - ☐	
Private Hydrant			A-INSP - ☐	
Meter Pit			A-INSP - ☐	
Sewer Service Line				

<u>Asset Retirement</u>	<u>FC #</u>	<u>Asset IDs</u>	<u>Work Orders</u>	<u>Completed</u>

<u>Utility Account Alerts</u>	<u>Req'd</u>	<u>Completed</u>		<u>Inspector Package Items</u>	<u>Completed</u>
Water Sample	☐	☐		Account Created ☐	
Service Retirement	☐	☐		Deposits Entered ☐	
Meter Spool	☐	☐		Budget Numbers ☐	
Meter Sizing Calculations	☐	☐		Site Plan Included ☐	
Residential Sprinkler	☐	☐		Main Inspection ☐	
Speculative Service	☐	☐		Meter Pit Detail ☐	
Limited Service Agreement	☐	☐		Application Scanned ☐	
Private Well	☐	☐		Address Verified ☐	
Meter Pit Inspection	☐	☐		Draw into GIS ☐	
Private Hydrant (2 Alerts)	☐	☐		Proposed Data ☐	

CITY OF PORTLAND WASTEWATER CAPACITY APPLICATION

Department of Public Services,
55 Portland Street,
Portland, Maine 04101-2991



Mr. Frank J. Brancely,
Senior Engineering Technician,
Phone #: (207) 874-8832,
Fax #: (207) 874-8852,
E-mail: fjb@portlandmaine.gov

Date: 9-11-15

1. Please, Submit Utility, Site, and Locus Plans.

Site Address: 415 Cumberland Ave, Portland ME 04101

Chart Block Lot Number: 036 - G033

Proposed Use: Multi Family Housing

Previous Use: Office

Existing Sanitary Flows: 349 GPD

Existing Process Flows: N/A GPD

Description and location of City sewer that is to receive
the proposed building sewer lateral.

Site Category
Commercial (see part 4 below)
Industrial (complete part 5 below)
Governmental
Residential
Other (specify)

x

(Clearly, indicate the proposed connections, on the submitted plans)

2. Please, Submit Contact Information.

City Planner's Name: _____ Phone: _____

Owner/Developer Name: Patrick Ducas

Owner/Developer Address: 17 Chestnut Street, Portland ME 04101

Phone: 207-536-0838 Fax: _____ E-mail: patrickd@ducasconstruction.com

Engineering Consultant Name: N/A

Engineering Consultant Address: N/A

Phone: _____ Fax: _____ E-mail: _____

***(Note: Consultants and Developers should allow +/- 15 days, for capacity status,
prior to Planning Board Review)***

3. Please, Submit Domestic Wastewater Design Flow Calculations.

Estimated Domestic Wastewater Flow Generated: 1,440 GPD

Peaking Factor/ Peak Times: _____

Specify the source of design guidelines: (i.e. "Handbook of Subsurface Wastewater Disposal in Maine,"
"Plumbers and Pipe Fitters Calculation Manual," Portland Water District Records, Other (specify)

***(Note: Please submit calculations showing the derivation of your design flows,
either on the following page, in the space provided, or attached, as a separate sheet)***

4. Please, Submit External Grease Interceptor Calculations.

Total Drainage Fixture Unit (DFU) Values:

N/A

Size of External Grease Interceptor:

Retention Time:

Peaking Factor/ Peak Times:

(Note: In determining your restaurant process water flows, and the size of your external grease interceptor, please use The Uniform Plumbing Code. Note: In determining the retention time, sixty (60) minutes is the minimum retention time. Note: Please submit detailed calculations showing the derivation of your restaurant process water design flows, and please submit detailed calculations showing the derivation of the size of your external grease interceptor, either in the space provided below, or attached, as a separate sheet)

5. Please, Submit Industrial Process Wastewater Flow Calculations

Estimated Industrial Process Wastewater Flows Generated:

N/A

GPD

Do you currently hold Federal or State discharge permits?

Yes

No

Is the process wastewater termed categorical under CFR 40?

Yes

No

OSHA Standard Industrial Code (SIC):

<http://www.osha.gov/oshstats/sicser.html>

Peaking Factor/Peak Process Times:

(Note: On the submitted plans, please show where the building's domestic sanitary sewer laterals, as well as the building's industrial-commercial process wastewater sewer laterals exits the facility. Also, show where these building sewer laterals enter the city's sewer. Finally, show the location of the wet wells, control manholes, or other access points; and, the locations of filters, strainers, or grease traps)

(Note: Please submit detailed calculations showing the derivation of your design flows, either in the space provided below, or attached, as a separate sheet)

Notes, Comments or Calculation

long periods of time. As such, these design flows anticipate variations in flow among different establishments of the same class as well as flow variations over time in the same establishment. These design flows also assume wastewater with strengths typical of the class of establishment.

3. Design flow: Each component of the system must be designed and installed to adequately treat and dispose of the amount of wastewater expected to be discharged from the premises to be served. Design flows for private residences are prescribed in Section 4(E) and Table 4A. Design flows for commercial or institutional establishments are prescribed in Section 4(F) and Table 4C.

E. DESIGN FLOWS FOR DWELLING UNITS

1. Single-family dwelling units: The design flows for single-family dwelling units including in-law apartments, connected to subsurface wastewater disposal systems is calculated, based on Table 4A.

**TABLE 4A
DESIGN FLOWS FOR SINGLE FAMILY DWELLING UNITS**

Bedrooms	GPD per dwelling unit
2 or less	180
3	270
4	360
5	450
6	540
Each additional bedroom	90 per bedroom
In-law apartment	120
Primitive disposal field	25
Limited disposal field	100
Bunkhouse	20 per bed

(6) 1 Beds x 120gpd = 720 GPD
(4) 2 beds x 90gpd = 720 GPD
Total projected GDP = 1,440.00 GPD

2. Multiple family dwelling units: The design flow for multiple family dwelling units is calculated at 120 gallons per day per unit for 1-bedroom units, and 90 gallons per day per bedroom for multiple bedroom units.

F. DESIGN FLOWS FOR OTHER FACILITIES

1. General: The design flow must be the maximum flow that may reasonably be expected to be discharged from a residential, commercial, or institutional facility on any day of operation. It must be expressed in gallons per day. The design flow must not be considered as an average daily flow. It incorporates a factor of safety over the average flows to accommodate peak wastewater flows or facilities that discharge greater than the average flows of wastewater either occasionally or on a regular basis. The design flow is calculated as follows:
2. Base flow: To determine base design flow, multiply the design flow per unit/user from the value in Table 4C by the number of units or users.
3. Employee contribution: When employees will be present at the establishment, estimate the maximum number of employees who may be present during a single day of operation. Then multiply the number of employees by the design flow per employee.
4. Design flows: The values listed in Table 4C are minimum requirements for average facilities in the categories listed and the total design flow is the result of the summation of base flow in Section 4(F)(2) and Employee Contribution in Section 4(F)(3). Where actual water use data is available relating to the facility, the Department may approve the use of an alternative design flow. In such a case, the value used for the design flow must meet the requirements in Section 4(G).
5. Non-standard design flows: Design flows which are not based upon Table 4A or Table 4C, or upon water use records, require prior review and approval from the Department.

From: David Margolis-Pineo
To: Patrick Ducas
CC: Barbara Barhydt; Benjamin Pearson; Helen Donaldson; Jean Fraser; Jef...
Date: 10/20/2015 10:20 AM
Subject: Wastewater Capacity Application Approval for 415 Cumberland Ave
Attachments: David Margolis-Pineo.vcf

October 20, 2015

Patrick Ducas (patrickd@ducasconstruction.com)
17 Chestnut Street
Portland, ME 04101

RE: The Capacity to Handle Wastewater Flows from 415 Cumberland Ave

Dear Mr. Ducas:

The Department of Public Services, which includes the Water Resource Division, has reviewed and determined that the downstream sewers from 415 Cumberland Ave has the capacity to convey the estimated 1,440 gallons per day of wastewater which will be generated from this multi family housing project. It is understood that no sources of stormwater runoff, roof drainage, or any other non-contaminated water shall be introduced to the wastewater collection system from this development. If roof drainage is currently discharging to the sanitary sewer system, we are requesting that the roof discharge be redirected to sidewalk or street level.

If the City can be of further assistance, please call me at 874-8850 or 400-6695.

Sincerely,

CITY OF PORTLAND

David Margolis-Pineo

David Margolis-Pineo
Deputy City Engineer

Anticipated Wastewater Flows from the proposed Multi Family Housing:

Six- One Bedroom Units @ 120 gpd/Unit = 720 gpd

Four – Two Bedroom Unit @ 180 gpd/Unit = 720 gpd

Total = 1,440 gpd

CC: Jeffrey Levine, Director, Department of Planning and Urban Development, City of Portland
Barbara Barhydt, Development Review Services Mgr., Dep't. of Planning and Urban Development, City of Portland
Nell Donaldson, Department of Planning and Urban Development, City of Portland
Shukria Wiar, Planner, Department of Planning and Urban Development, City of Portland
Jean Fraser, Planner, Department of Planning and Urban Development, City of Portland
Nancy Gallinaro, Water Resources Manager
Benjamin N. Pearson, E.I., Industrial Pretreatment Coordinator, City of Portland
John Emerson, Wastewater Coordinator, City of Portland
David Margolis-Pineo
Deputy City Engineer

Department of Public Services
55 Portland St.
Portland, ME 04101
Office 207-874-8850
Fax 207-874-8852
Cell 207-400-6695
dmp@portlandmaine.gov

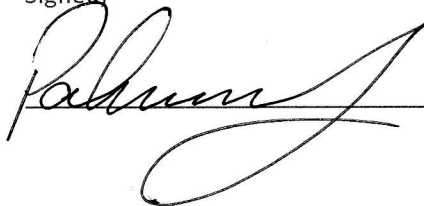
Neighborhood Meeting Certification

I, (Patrick Ducas) hereby certify that a neighborhood meeting was held on (October 8th, 2015) at (Portland Public Library – Meeting Rm # 4) at (5:00pm – 6:00pm).

I also certify that on (date at least ten (10) days prior to the neighborhood meeting), invitations were mailed to the following:

1. All addresses on the mailing list provided by the Planning Division which includes property owners within 500 feet of the proposed development or within 1000 feet of a proposed industrial subdivision or industrial zone change.
2. Residents on the “interested parties” list.
3. A digital copy of the notice was also provided to the Planning Division (jmy@portlandmaine.gov and ldobson@portlandmaine.gov) and the assigned planner to be forwarded to those on the interested citizen list who receive e-mail notices.

Signed



10/13/15 (date)

Attached to this certification are:

1. Copy of the invitation sent
2. Sign-in sheet
3. Meeting minutes

415 Cumberland Avenue Redevelopment

September 25th, 2015

Dear Neighbor:

Please join us for a neighborhood meeting to discuss our plans for the re-development and subdivision of the subject property located at (415 Cumberland Avenue, Portland ME 04101).

Meeting Location: Portland Public Library, Meeting Room # 4

Meeting Date: October 8th, 2015

Meeting Time: 5:00pm to 6:00pm

(The City code requires that property owners within 500 feet (1000 feet for proposed industrial subdivisions and industrial zone changes) of the proposed development and residents on an "interested parties list", be invited to participate in a neighborhood meeting. A sign-in sheet will be circulated and minutes of the meeting will be taken. Both the sign-in sheet and minutes will be submitted to the Planning Board.)

If you have any questions, please call (207-536-0838).

Sincerely,

Patrick Ducas

415 Cumberland Ave - Neighborhood Meeting

Thursday, October 08, 2015

Name	Phone #	E-Mail
1 <u>Jessie McCloskey</u>	<u>773-6517</u>	<u>jmccliskey@maine.n.com</u>
2 <u>Carol Hutchins</u>	<u>756-6709</u>	<u>hutchins card</u> <u>=@hotmail</u> <u>.com</u>
3		
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October 8, 2015

415 Cumberland Ave – Neighborhood Meeting

5:00pm to 6:00pm – Meeting Room #4 Portland Public Library

Meeting Minutes

Attendees

1. Susan McClusky
2. Carol Hutchins

Agenda

1. Developer Introduction

Patrick Ducas introduced himself and the proposed project. Provided history on the building and the new use as a 10 unit apartment building with 1 commercial space.

2. History of Building.

Ducas walked neighborhood participants through the history of the building, noting the change in uses over the course of time. Building started as a single family residence around the 1860's, and then became the Women's Business Club in the 1920's, and then a mixed use commercial office from the 1950's until present day. Recent notable occupants were Thomas Moser and Hurley Travel.

3. Review of unit layouts, level of finish and targeted occupants.

Ducas informed the neighborhood participants that the 10 units would be market rate apartments. There is a mix of 1 and 2 bedroom units, and 6 covered parking spaces.

4. Neighborhood Participants asked about the intended use of the commercial space.

Ducas stated that this would be leased as mid grade commercial space at the fair market rate. It was not currently listed, so no potential occupants could be reviewed.

From: Patrick Ducas <patrickd@ducasconstruction.com>
To: Jean Fraser <JF@portlandmaine.gov>
Date: 10/16/2015 1:06 PM
Subject: 415 Cumberland Ave
Attachments: Cumberland Apts_A2.0.001.Existing Elevations.pdf

Jean

I wanted to follow up with you on our conversation yesterday about how I plan to deal with the following: Trash can location, street trees, exterior lighting, and the utilities.

1. We plan on locating the garbage bins on the exterior of the building in the alley between the YMCA. This property belongs to 415 Cumberland Ave but the YMCA do have an egress easement. We would locate the bins in an enclosure behind the screen/fence. Please refer to the attached elevation for reference - the alley fencing can be seen in 2 separate photos.

2. As far as the requirement for street trees goes, while we do plan to improve the landscaping in the beds along Cumberland Ave we do not plan on adding any sidewalk trees. We agree that the sidewalk frontage on our side of Cumberland Ave is relatively narrow and does not easily allow for tree wells. We would ask that the city take consideration of the trees we plant in our beds when assessing the tree fee.

3. We only plan on adding external site lighting to illuminate the trash bin area. This light will be activated by a motion sensor. We do not plan on adding any other exterior lighting. We will maintain the lights that exist.

4. Our plan is to maintain or upgrade the existing site utilities.

I hope this is a sufficient recap of our discussion and is enough to satisfy PB review questions. Please contact me for any additional information.

Thanks

Patrick Ducas
Ducas Construction
patrickd@ducasconstruction.com<mailto:patrickd@ducasconstruction.com>
Office:207-536-0838
New Cell:207-939-9448
Old Cell: 617-640-8642
www.ducasconstruction.com<http://www.ducasconstruction.com>

From: "Mark Sengelmann" <mark@alphaarchitects.com>
To: "'Jean Fraser'" <JF@portlandmaine.gov>, "'Patrick Ducas'" <patrickd@duca...
CC: "'Kathy Gips'" <kgips@humancentereddesign.org>, "'Mike P. Johnson'" <mpj...
Date: 10/21/2015 2:42 PM
Subject: FW: ADA Not Req'd- 415 Cumberland Ave, Portland

Hi Jean,

The developer, Patrick Ducas, is seeking state and local historic tax credits for this market rate apartment conversion project only. The developer will not receive any state or federal funds for this project only tax credits.

Last week I spoke with Kathy Gips, Director of the New England ADA Center regarding this issue.

Since this project will not receive any federal funds and is not a public accommodation and is therefore exempt from and Federal ADA barrier removal and/or ADA accommodations.

Secondly I spoke with Michael Johnson, the Rehabilitation Tax Incentives Coordinator for the Maine Historic Preservation Commission and Mike told me that this project is not required to meet the ADA. Had the developer elected to take an additional 5% tax credit for low income housing then he would be required to meet the requirements of the ADA.

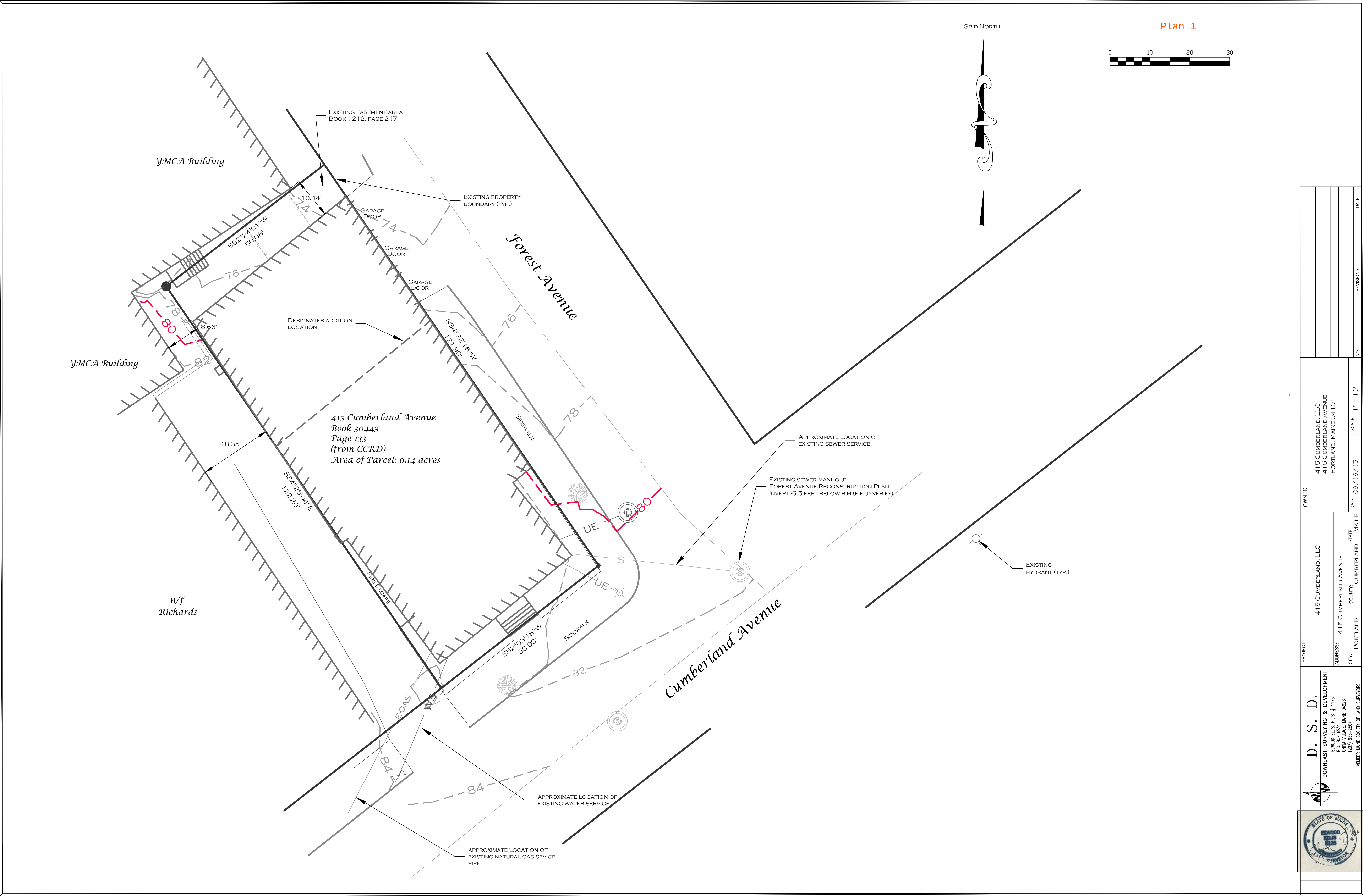
I have cc'd both Kathy Gips and Mike Johnson in case I misrepresented our telecons.

The developer does plan to utilize the lower level office/ commercial space as a public accommodation which will therefore be required to meet the standards of the ADA including an accessible route, interior accommodations and finally the toilet will be upgraded to ADA standards.

Let me know if you have any additional comments on this matter,

Mark

Mark Sengelmann
NCARB Principal
ALPHAarchitects
17 Chestnut Street



				D. S. D.		DOWNEAST SURVEYING & DEVELOPMENT			
				EDWOOD ELLIS, P.L.S. # 1176		EDWOOD ELLIS, P.L.S. # 1176			
				CHINA VILLAGE, MAINE 04926		CHINA VILLAGE, MAINE 04926			
				(207) 868-2507		(207) 868-2507			
				MEMBER MAINE SOCIETY OF LAND SURVEYORS		MEMBER MAINE SOCIETY OF LAND SURVEYORS			
				PROJECT:		415 CUMBERLAND, LLC		OWNER	
				ADDRESS:		415 CUMBERLAND AVENUE		415 CUMBERLAND, LLC	
				CITY:		PORTLAND		415 CUMBERLAND AVENUE	
				COUNTY:		CUMBERLAND		PORTLAND, MAINE 04101	
				STATE:		MAINE			
				DATE:		09/16/15		NO.	
				SCALE:		1" = 10'		REVISIONS	
								DATE	

APT. #	FLOOR LEVEL	FLOOR AREA (SF)
1	1ST	1,354
2	1ST	1,342
3	1ST	673
4	1ST	945
5	2ND	1,104
6	2ND	587
7	2ND	663
8	2ND	673
9	2ND	895
10	PH(3RD)	875
COMMERCIAL	O	1,300
GARAGE	O	1,600
BASEMENT	O	1,650
COMMON AREA	O	1,922

Date Approved: _____

PROPOSED TRASH
BINS (10 BINS)

YMCA Building

*n/f Burnham
Multi-Unit Structure
Map/Lot 36-G-32
Book 11777, Page 320*

n/f MMC Realty
Multi-Unit Structure
Map/Lot 37-E-6
Book 10280, Page 291

1. ZONING BC3 DOWNTOWN BUSINESS.
2. APARTMENT LAYOUT ON FILE AT CITY OF PORTLAND PLANNING OFFICE.
3. BRICK POINTS ENCROACH ON LOT INDICATED AS MAP/LOT 36-G-32 BY LESS THAN 2 INCHES.
4. COORDINATE SYSTEM IS STATE PLANE COORDINATES, WEST ZONE.
5. VERTICAL DATUM IS USGS 1929.
6. NO FLOOD HAZARD AREA AT SITE.
7. UTILITIES SHOWN AS EXISTING.
8. NO EXTERIOR CHANGES PLANNED FOR BUILDING EXCEPT FOR COVERING T-111 ON NORTHERLY END.
9. THE EASEMENTS AS NOTED ARE FOR THE YMCA (1212-215) TO USE PART OF THIS PARCEL TO BUILD AND MAINTAIN A CONCRETE EXTERIOR EGRESS WITH ACCESS TO FOREST AVENUE.
10. IN BOOK 1212 PAGE 217 THE YMCA GRANTS THIS PARCEL USE OF THE PARCEL BELONGING TO THE YMCA BETWEEN THE STRUCTURES SUBJECT TO THE STAIRS AND EGRESS TO FOREST AVENUE.
11. THE FIRE ESCAPE DOES NOT ENCROACH ON THE BURNHAM LOT. THE HVAC UNIT HAS NO RECORDED EASEMENT FROM THE BURNHAM PARCEL.
12. THE FIRST FLOOR RE-USE SPACE IS TO REMAIN AS COMMERCIAL USE.
13. OWNER OF RECORD
415 CUMBERLAND AVE., LLC
14. DEED OF RECORD FROM CUMBERLAND COUNTY REGISTRY OF DEEDS
BOOK 30443, PAGE 133
15. TWO NEW 'STREET' TREES TO BE ADDED IN EXISTING PLANT BEDS BETWEEN BUILDING AND CUMBERLAND AVE. AS SHOWN
16. EXISTING ADA RAMP AT INTERSECTION OF FOREST AVE. AND CUMBERLAND AVE. TO BE REPAIRED OR REPLACED
17. PROJECT PROPOSES TO LOCATE OUTDOOR STORAGE FOR FOUR (4) BICYCLES BELOW THE EXISTING FIRE ESCAPE.

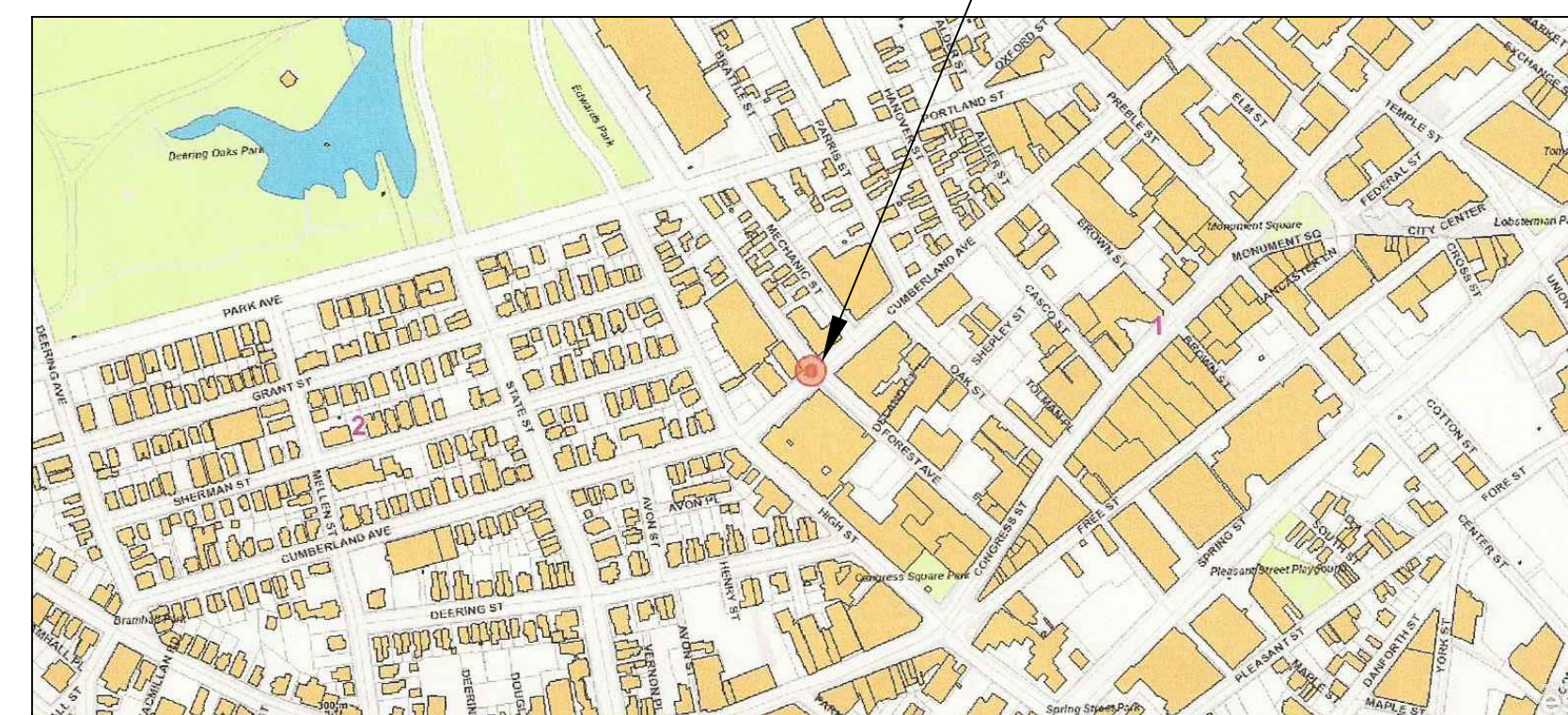
REFERENCE

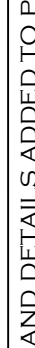
APPROXIMATE LOCATION OF
EXISTING WATER SERVICE

APPROXIMATE LOCATION OF
EXISTING NATURAL GAS SERVICE
PIPE

EXISTING SEWER MANHOLE
- FOREST AVENUE RECONSTRUCTION PLAN
INVERT -6.5 FEET BELOW RIM (FIELD VERIFY)

EXISTING

*LOTUS Map*

	 D. S. D. DOWNEAST SURVEYING & DEVELOPMENT ELWOOD ELLIS, P.L.S. # 1176 1000 WILLOW LANE CHINA VILLAGE, MAINE 04926 (207) 988-2507 MEMBER MAINE SOCIETY OF LAND SURVEYORS	PROJECT: 415 CUMBERLAND, LLC SUBDIVISION PLAT		OWNER 415 CUMBERLAND, LLC 415 CUMBERLAND AVENUE PORTLAND, MAINE 04101	1. NOTES AND DETAILS ADDED TO PLAN 2. ANY REQUIRED PLAN REVISIONS 3. PLAN REQUIRED 10/7/15 10/14/15 10/22/15				
ADDRESS: 415 CUMBERLAND AVENUE		CITY: PORTLAND	COUNTY: CUMBERLAND		STATE: MAINE	DATE: 9/16/15	SCALE: 1" = 10'	NO.	REVISIONS

September 11, 2015

415 Cumberland Ave – Redevelopment

Patrick Ducas

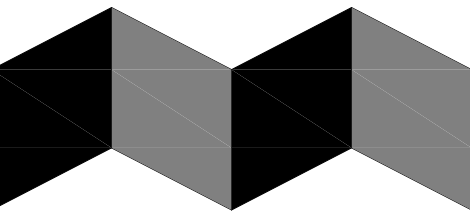
17 Chestnut Street, Portland ME 04101

207-536-0838



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415 Cumberland Street
Portland, ME. 04101

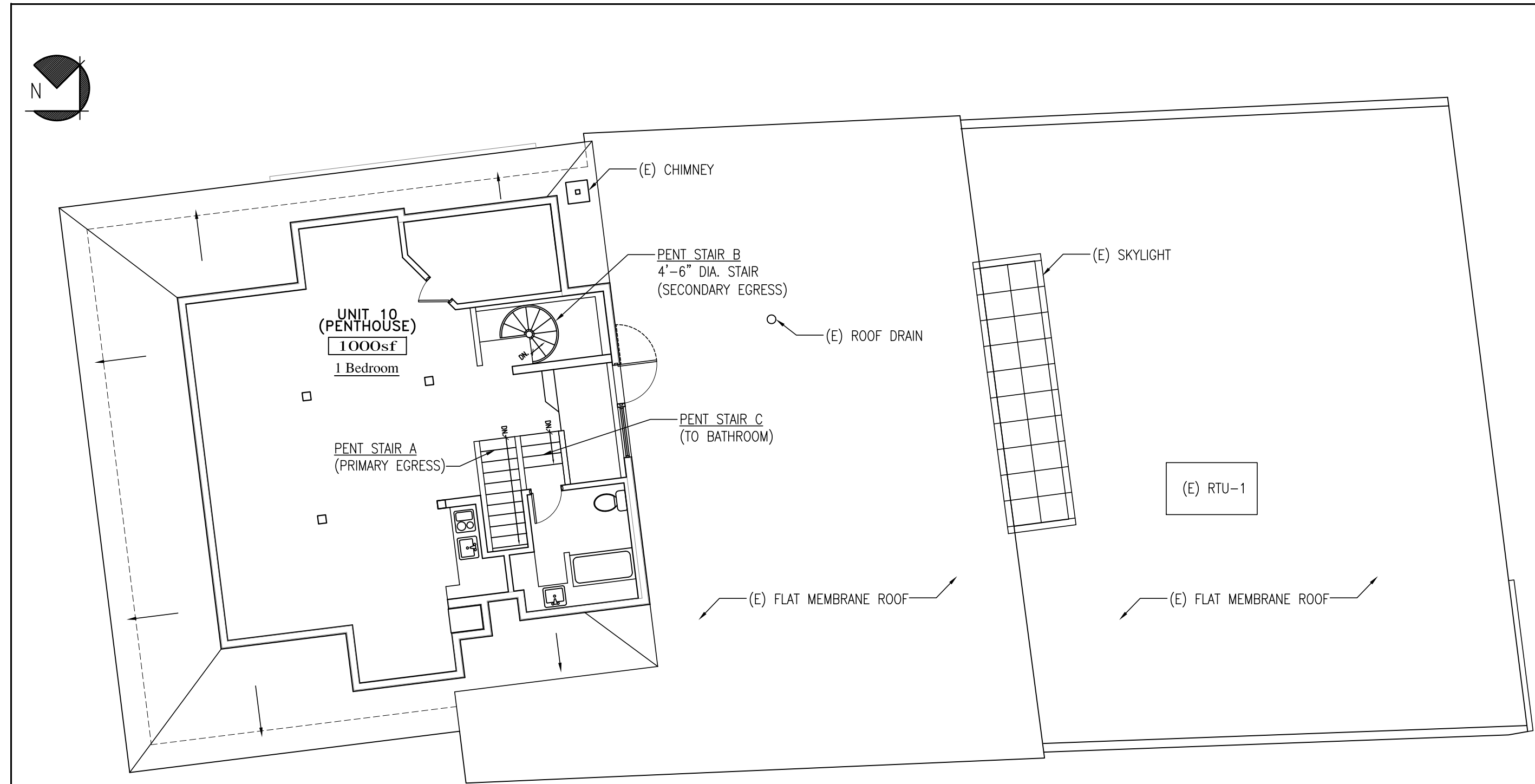
JOB: 15160

ISSUE DATE	
PRELIM	06-01-15
P BOARD	-
SFMO	-
CD's	-
REV. 1	-
PRINT	09-11-15

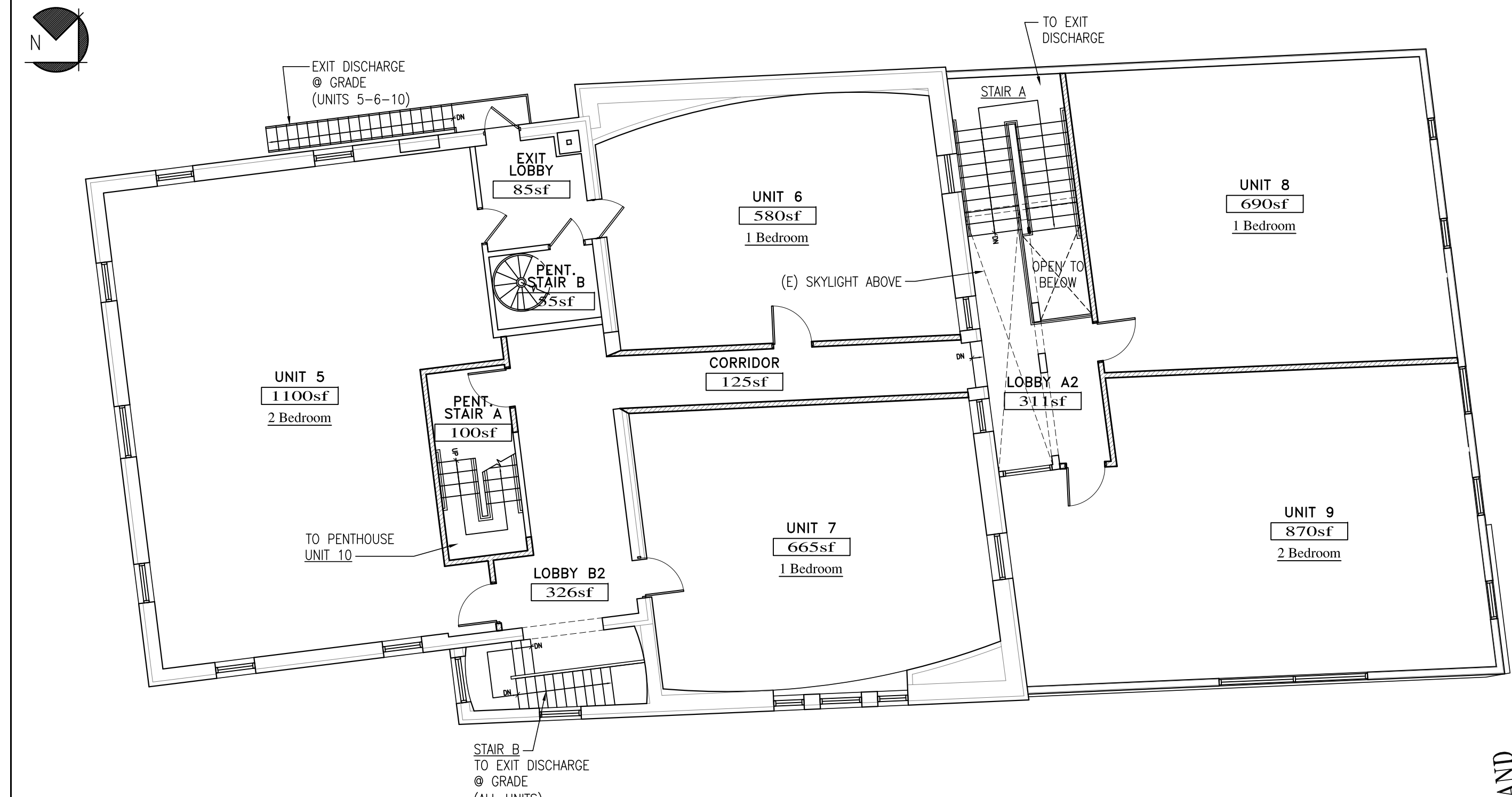
PROPOSED
BASEMENT, 1st FL., 2nd FL.
& PENTHOUSE PLANS

A1.0

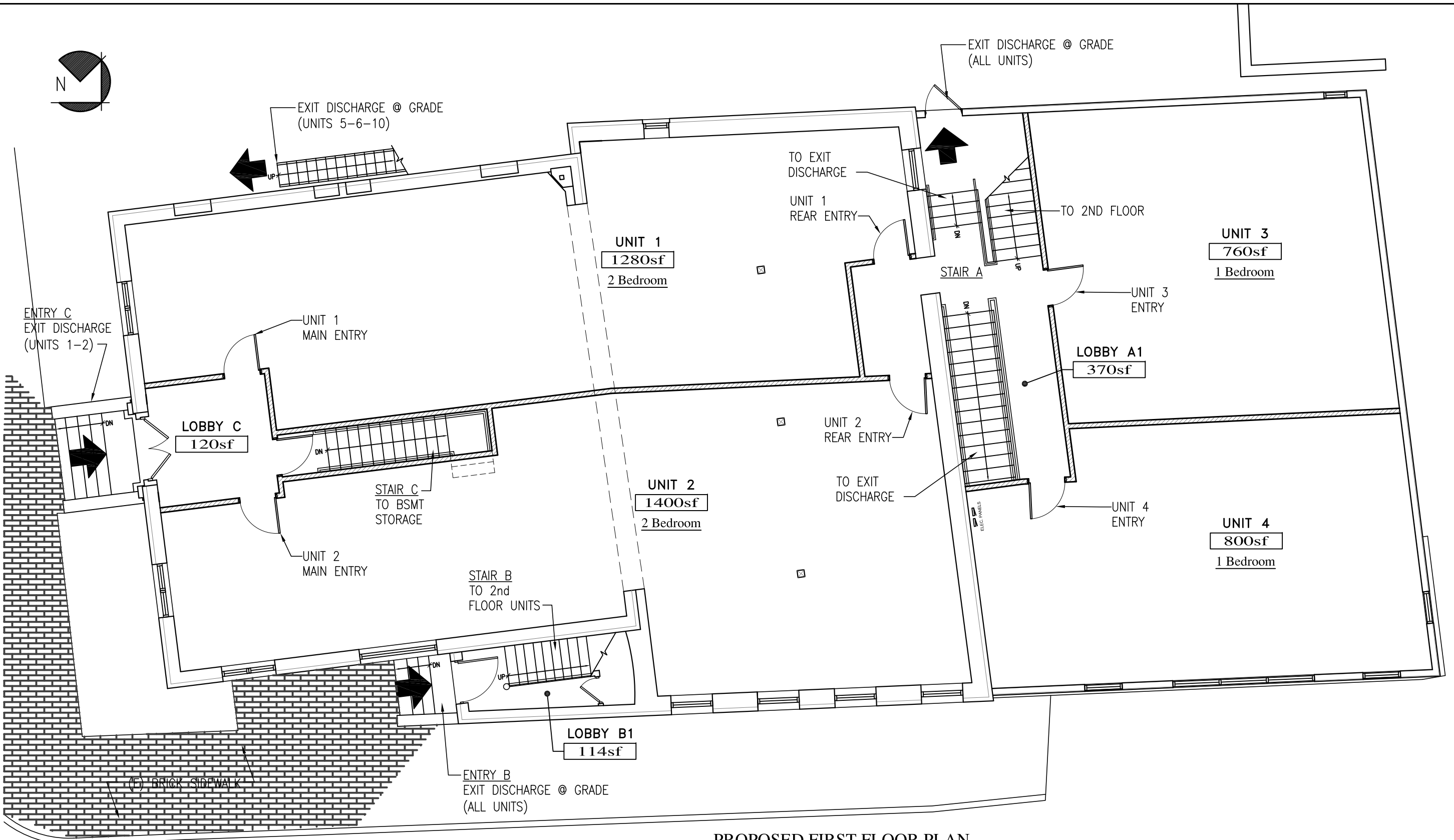
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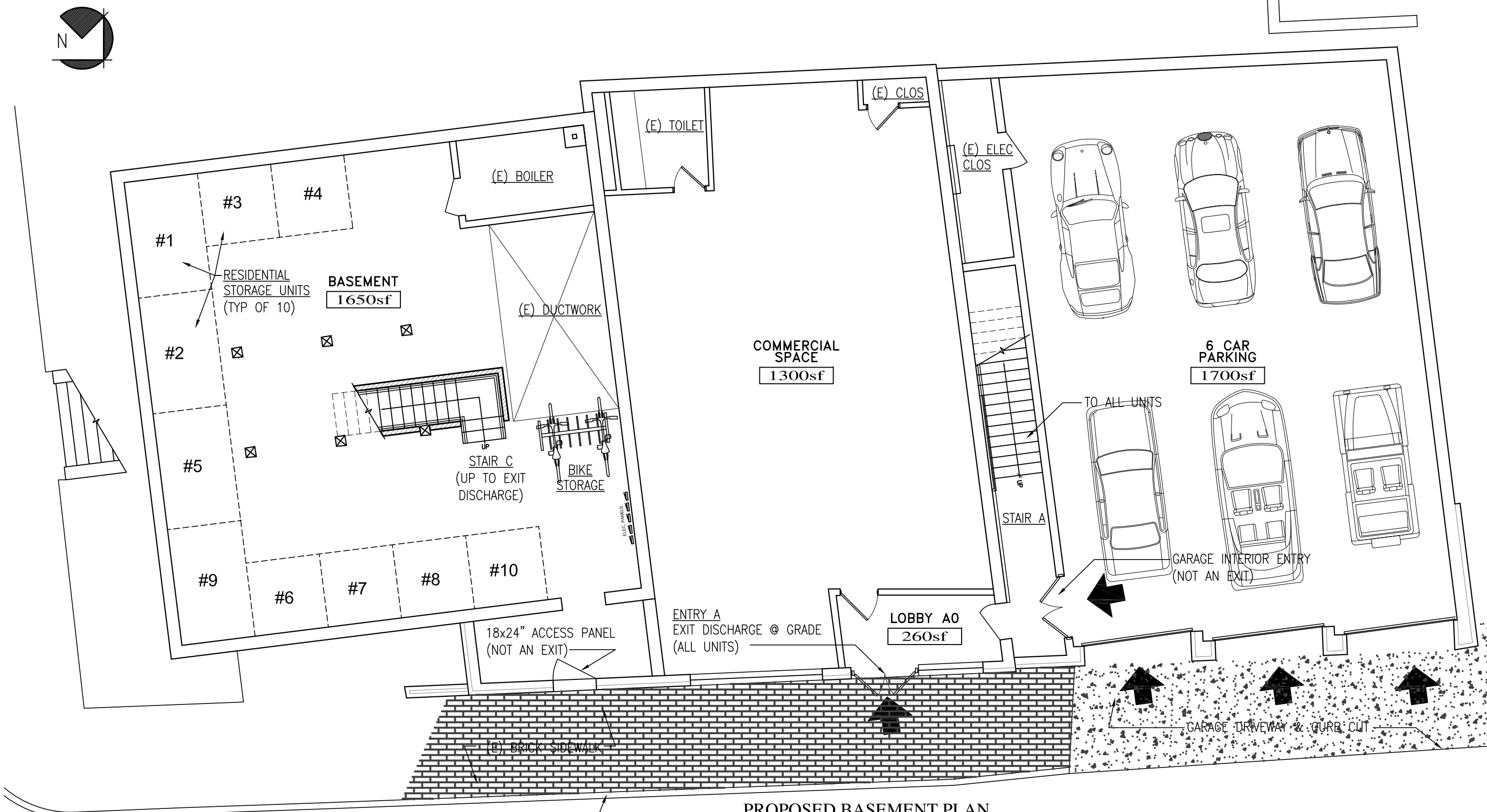
PROPOSED PENTHOUSE PLAN
SCALE: 1/8" = 1'-0"



PROPOSED SECOND FLOOR PLAN
SCALE: 1/8" = 1'-0"
4900sf Gross Area



PROPOSED FIRST FLOOR PLAN
SCALE: 1/8" = 1'-0"
4900sf Gross Area



PROPOSED BASEMENT PLAN
SCALE: 1/8" = 1'-0"
4900sf Gross Area

CUMBERLAND
AVENUE

FOREST
AVENUE

CUMBERLAND
AVENUE

FOREST
AVENUE

EPDM roof membrane, wrap up around blocking & under mtl cap

5/8" OSB Zip sheathing

(2) 2x6's

8" spray foam insul., wrap continuously w/ wall insul.

5/8" gyp. bd., 2 layers @ walls if load-bearing wall, 1 layer @ other walls

2x6 wall , fill cavity w/ spray foam insul. typ.

1/2" ZIP OSB sheathing

5/8" gypsum sheathing

2" airspace

4" nominal brick, ties as noted in UL#371

New High Roof Plan
32' - 1 1/8"

2 Section thru Top Roof @ Masonry wall
1 1/2" = 1'-0"

3/4" hardwd. flr. on 1-1/8" warmbrd.

(2) 2x4's at 16" OC on top of exist. roof

exist. wall & roof construction

Note: this section cut @ angle, distorts width of cut elements

At windows: see struct. drwgs for steel & wood lintels @ windows in masonry wall. Provide add alt. costs for granite lintels or pre-cast conc. lintels to match exist. lintels

see notes above for wall info

flashing & weeps as req'd

new brick on top of exist brick. start from clean brick joint abv. whole exist. brick

New Level 3
21' - 1 7/8"

Existing Roof Level
20' - 9"

1 Wall Section @ new & exist masonry
1 1/2" = 1'-0"

R-VALUE CALCULATIONS

WALLS

	Metal Panel	Brick Veneer
air barrier	0.17	0.17
brick		0.8
5/8" gypsum sheathing	0.56	0.56
1/2" OSB sheathing	0.62	0.62
5.5" closed cell poly insul	34.125	34.125
2 layers 5/8" gyp. Bd.	1.12	1.12
air barrier	0.68	0.68
TOTAL R VALUE	37.275	38.075

ROOFS

	High Roof	Terrace Roofs
air barrier	0.17	0.17
rigid insul - avg. 2.5" th.		10
5/8" OSB sheathing	0.78	
3/4" OSB sheathing		0.93
8" closed cell poly insul	52	52
1 layer 5/8" gyp. Bd.	0.56	0.56
air barrier	0.68	0.68
TOTAL R VALUE	54.19	64.34

WINDOWS

Based on Integrity triple- glazed Wood-Ultrex awning/casement/fixed windows, argon-filled. Energy Star

U =.19
SHGC=.27

provide protection brd under membrane @ planters- typ

provide tapered insul. below membrane @ walking surface only, sloped to drain, min 1/4"/ft

Note: Stormwater from these roofs to be directed to grade @ sidewalk area (not piped to City storm system).

3 Level 2A terrace drainage plan
1/4" = 1'-0"

walking surface: pad-mtd. modular system, typ @ both terraces

ditto notes abv re prot. brd & taper. insul.

4 Upper roof drainage plan
1/4" = 1'-0"

LP

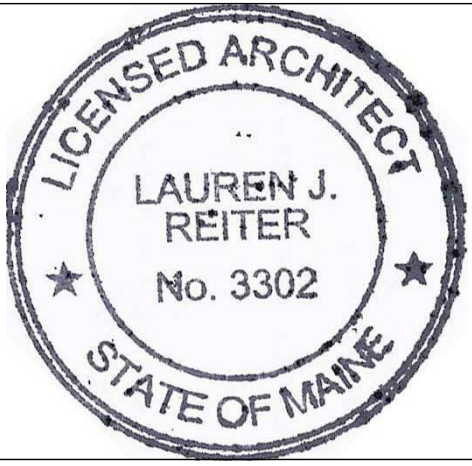
line of wall below

HP

uniform slope of framing & deck below membrane (no tapered insul. req'd)

gutter w/ leader & splash block @ exist. roof

5 Top Roof drainage plan
1/4" = 1'-0"



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PO Box 275, Brooklin ME 04616 tel. 917-502-2225 email: laurenreiter@yahoo.com

Consultants
Becker Structural Engineers

75 York St # 3, Portland, ME 04101 Tel: (207) 879-1838

Revision Schedule

Revision Number	Revision Description	Revision Date
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Issued for permit 8/15/15
Revised for permit 9/14/15

Reiter Residence

35 Pleasant Street /
6 South Street

Portland, Maine 04101

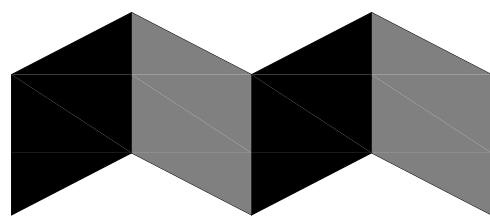
RENOVATION

Wall & Roof Details

Project number	RENOVATION
Date	Issue Date
Drawn by	Author
Checked by	Checker

A109

Scale As indicated



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EXISTING
EXTERIOR
ELEVATIONS

A2.0



CUMBERLAND AVE. ELEVATION
SCALE: N.T.S



CORNER OF CUMBERLAND & FOREST AVE.'S
SCALE: N.T.S



FOREST AVE. ELEVATION
SCALE: N.T.S



FOREST AVE. ELEVATION
SCALE: 1/4" = 1'-0"



FOREST AVE. ELEVATION
SCALE: N.T.S



ALLEY @ YMCA
SCALE: N.T.S



DRIVEWAY SIDE ELEVATION
SCALE: N.T.S



DRIVEWAY SIDE ELEVATION
SCALE: N.T.S

09-11-15