

1. Legal Ad

Documents: [PB LGL AD 2-10-15.PDF](#)

2. Agenda

Documents: [PB AGENDA 2-10-15.PDF](#)

3. PB Memo 58 Fore Street

Documents: [58 FORE PB MEMO.PDF](#)

3.I. Report Attachments - 58 Fore Street

Documents: [REPORT ATTACHMENTS.PDF](#)

3.II. Applicants Submittal

Documents: [APPLICANTS SUBMITTAL \(SUPPLEMENTAL MATERIALS SINCE THE NOVEMBER WORKSHOP.PDF](#)

3.III. Public Comment 58 Fore Street

Documents: [PUBLIC COMMENT 58 FORE STREET.PDF](#)

4. PB REPORT

Documents: [PLANNING BOARD REPORT - PARK DANFORTH.PDF](#)

4.I. Staff Review - 777 Stevens Avenue - Park Danforth

Documents: [STAFF REVIEW.PDF](#)

4.II. Applicant Submittal

Documents: [APPLICANT SUBMITTAL.PDF](#)

4.III. Plans - 777 Stevens Avenue - Park Danforth

Documents: [PLANS.PDF](#)

5. PB Report And Attachments

Documents: [783 FOREST AVENUE.PDF](#)

**LEGAL ADVERTISEMENT
PORTLAND PLANNING BOARD MEETING**

The Portland Planning Board will hold a meeting on Tuesday, February 10, 2015, Room 209, 2nd Floor, City Hall, 389 Congress Street. **Public comments will be taken at both meetings.**

Workshop – 4:30 p.m.

- i. 58 Fore Street; Zoning Map Amendment; CPB2, LLC. and CPB2 Management, LLC., Applicants. The Board will consider a zoning map amendment to rezone the Waterfront Special Use Zone (WSUZ) which includes the property at 58 Fore Street (known as the Portland Company Complex) and adjoining parcels along the waterfront, to the B-6 Eastern Waterfront Mixed Zone and the Eastern Waterfront Port Zone (EWPZ). The proposal includes extending the B-6 Height Overlay Map over the site. The proposed map amendments would eliminate the WSUZ zone. The application includes proposed text amendments to the Shoreland regulations and to add permitted uses in both the B-6 and EWPZ zones.

Public Hearing – 7:00 p.m.

- i. 777 Stevens Avenue; Level III Site Plan and Subdivision; Park Danforth, Applicant. The Board will consider a Level III application for site plan and subdivision review for an addition to the facility at 777 Stevens Avenue. The proposal is to add 54 elderly independent living units at the site along with structure parking for 40 vehicles under the four and five story addition. The proposed building footprint is 21,777 sq. ft. with a total proposed floor area of 94,236 sq. ft. Surface parking lots are proposed along with access from Arbor Street, Forest Avenue and Stevens Avenue.
- ii. 783 Forest Avenue; Conditional Use; Changiz Fard, Applicant. The Board will consider conditional use and site plan amendment applications for a used car dealership for approximately 13 vehicles plus 6 parking spaces for employees and customers, located on a developed site with an existing small building and parking lot. The amendments include narrowing the existing two curb cuts and other associated improvements.

STUART O'BRIEN, CHAIR - PORTLAND PLANNING BOARD

Stuart G. O'Brien, Chair
Elizabeth Boepple, Vice Chair
Sean Dundon
Bill Hall
Carol Morrisette
Jack Soley
Timothy Dean

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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 FOLLOWING MEETINGS:**

JANUARY 20, 2015:

Workshop: Boepple, Dean, Hall, Morrisette and Soley present; O'Brien and Dundon absent.

Public Hearing: Boepple, Dean, Hall, Morrisette and Soley present; O'Brien and Dundon absent.

FEBRUARY 3, 2015:

Public Hearing: Meeting Canceled at the request of applicant.

4. **REPORT OF DECISIONS AT THE FOLLOWING MEETINGS:**

JANUARY 20, 2015:

- i. India Street Sustainable Neighborhood Plan, City of Portland, Applicant: Morrisette moved and Soley seconded that the India Street Sustainable Neighborhood Plan as presented on January 20, 2015 be amended to remove the statement, "In those instances where the India Street Sustainable Neighborhood Plan overlaps with the Eastern Waterfront Master Plan, the India Street Sustainable Neighborhood Plan shall take precedence" from the Plan and that the Plan be recommended to City Council to be adopted into the City of Portland Comprehensive Plan. The Board voted: 5-0, O'Brien and Dundon absent.

5. NEW BUSINESS

- i. 777 Stevens Avenue; Level III Site Plan and Subdivision; Park Danforth, Applicant. The Board will consider a Level III application for site plan and subdivision review for an addition to the facility at 777 Stevens Avenue. The proposal is to add 55 elderly independent living units at the site along with structure parking for 39 vehicles under the four and five story addition. The proposed building footprint is 21,777 sq. ft. with a total proposed floor area of 94,236 sq. ft. Surface parking lots are proposed along with access from Arbor Street, Forest Avenue and Stevens Avenue.
- ii. 783 Forest Avenue; Conditional Use; Changiz Fard, Applicant. The Board will consider conditional use and site plan amendment applications for a used car dealership for approximately 13 vehicles plus 6 parking spaces for employees and customers, located on a developed site with an existing small building and parking lot. The amendments include narrowing the existing two curb cuts and other associated improvements.

STUART O'BRIEN, CHAIR - PORTLAND PLANNING BOARD



Memorandum

Planning and Urban Development Department

Planning Division

To: Chair O'Brien and Members of the Portland Planning Board

From: Christine Grimando, Senior Planner

Date: February 6, 2015

Project #: PEZ.2014-153

CBLs: 018 A001001, 018 A002, 018 A003, 018 A013, 019 A014, 446 A001, 446 A003, 446 A004, 002 X001, 002 A018

Re: Zoning Map and Text Amendments for 58 Fore Street

Meeting Date: February 10, 2015

I. INTRODUCTION

The applicant, CPB2 LLC, is requesting zoning map and text amendments for property at 58 Fore Street, the site of the Portland Company complex. Established in 1846 for the manufacture of railroad equipment, it continued and evolved as an industrial complex, manufacturing steel through 1978. It is now occupied by a variety of tenants. The property is currently zoned Waterfront Special Use Zone (WSUZ), and includes warehouses, storage buildings, and a marina with associated parking and laydown areas. The request for a zoning map amendment also encompasses State of Maine Property, two City-owned parking areas, and submerged lands. The zones being requested in place of WSUZ are the B-6 Eastern Waterfront Mixed Zone, and the Eastern Waterfront Port Zone (EWPZ). There are also proposed text amendments for the B-6, EWPZ and Shoreland Overlay zones, and an amendment to the B-6 Building Height Overlay & Building Envelopes map.

This application has been before the Planning Board for a workshop in October, a workshop and site walk in November, and will be heard on February 10th for a third workshop. Full Zoning and Comprehensive Plan analysis can be found in the October and November memos, Attachment 1 and 2, respectively. Full application materials from the applicant submitted for prior workshops, as well as related historic and Comprehensive Plan documents, are stored here: <http://www.portlandmaine.gov/1341/58-Fore-Street-Portland-Company>

The Eastern Waterfront Building Height Study can be found at the above link or accessed directly here: <http://www.portlandmaine.gov/DocumentCenter/Home/View/3378>

Applicant: CPB2 LLC

Property Owner: CPB2 LLC

Consultants: Woodard & Curran & Bernstein Shur

Public Notice: Public notice of the workshop appeared in the Portland Press Herald on February 2nd and February 3, 2015, was posted on the web site and was sent by mail or e-mail to 371 property owners and interested citizens.

A neighborhood meeting was held on September 16, and notes and documentation from that meeting were attached as part of the October workshop packet and can be referenced here:

<http://www.portlandmaine.gov/AgendaCenter/ViewFile/Agenda/10212014-649?html=true>. Written public comment that has been received to date is included (Public Comment PC1 through 16).

II. Background

Current Uses. The property is currently occupied by a range of uses, including a full service marina, parking, warehouses, boat storage, a blacksmith facility and some accessory office space. The property is also bisected by a 50' wide strip of Maine State property land that encompasses both the Maine Narrow Gauge Railway and a public, multi-use trail that is an extension of the Eastern Promenade, maintained by Portland Trails and the City of Portland. The application also includes two adjacent City-owned lots.

Surrounding Uses. The property is contiguous with active waterfront uses to the west, bordered by the Ocean Gateway Terminal and the Maine State Pier, both serving deep water dependent large vessels, including cruise ships. To the east is the Eastern Promenade. The neighborhood to the immediate north is residential, with Waterville, St. Lawrence and Atlantic Streets perpendicular to the Fore Street-side boundary of the property, and abutted by Munjoy South apartments. Also to the north but immediately west of this residential area is the India Street neighborhood, which contains residential uses and a diverse mix of commercial uses – Shipyard Brewery, parking garages, the shops of India Street, a Marriot Residence Inn, and the Eastern Cemetery.



Figure 1, Existing Zoning

Zoning Context. The immediately adjacent zones to 58 Fore Street are R-6 (Residential) to the east and north, ROS (Recreation and Open Space) to the east, B-6 to the west, and EWPZ to the west and south. The southern edge of the property is partially in the Shoreland Zone, and partially in a flood zone.

III. PROPOSED MAP AMENDMENT

Current Zoning:	Waterfront Special Use Zone (WSUZ), Shoreland Overlay
Proposed Zoning:	B-6, Eastern Waterfront Port Zone (EWPZ), Shoreland Overlay
Current Uses:	Warehouses, storage buildings, marina, associated parking. State of Maine Property, currently utilized by the Maine Narrow Gauge Railroad and a section of the paved, public Eastern Promenade Trail maintained by Portland Trails/City of Portland. The City Property includes gravel and paved parking areas.
Proposed Uses:	None proposed at this time

Total Parcel Area: Approximately 12 acres, + submerged lands
Area to be Rezoned: Approximately 12 acres, + submerged lands

IV. PROPOSED MAP AMENDMENT

Waterfront Compatibility

The Comprehensive Plan supports rezoning this parcel to a combination of a mixed-use zone and a waterfront zone, as is currently proposed. The questions that have arisen have primarily focused not on whether this property should be rezoned, but how to implement new zoning in such a way so as to retain viable waterfront area into the future. This has implications for the specific uses proposed, but most significantly in where the boundary between the two zones is drawn.

The original application showed the boundary of the EWPZ closer than 75 feet from the shore line. There is Eastern Waterfront Master Plan language recommending that land within 75' of mean high water should give priority to compatible water-dependent and maritime uses. After this recommendation was highlighted, the application included an amended map showing the Eastern Waterfront Port Zone and B-6 zone boundary drawn at the 75 foot line.



Figure 2, Proposed Zoning

The Board asked that Bill Needelman, Waterfront Coordinator, weigh in on anticipated waterfront implications of the rezoning. His February 3rd memo on waterfront implications is included as Attachment 3, and he will be able to attend the February 10th workshop in the event the Board would like to discuss waterfront implications of the proposed rezoning greater detail.

In response to this memo, the applicant has proposed a text change to 14-303, regarding the setback from pier line. In the WSUZ the required setback from any pier is 5 feet, and in the EWPZ the required setback from any pier is 25. The applicant had proposed to retain this 5 foot setback on the property, changing the EWPZ setback from pier edge requirement. Bill Needelman's memo raised the issue of a more extensive range of uses in the EWPZ presenting a potential conflict, and the applicant has responded to this concern with a modified text amendment of the setback from pier line applying to marine offices, rather than for all possible activities in the EWPZ (Figure 3).

Sec. 14-303. Dimensional requirements

4. Setback from pier line: Notwithstanding the above requirements, a minimum setback of twenty-five (25) feet from the edge of any pier, wharf or working edge of the hardened shoreline shall be required for any structure, provided that marine offices, as defined in Section 14-301(b)(12), may be located up to five (5) feet from the edge of any pier, wharf or working edge of the hardened shoreline. The setback area may be utilized for water-dependent uses and public uses and activities, subject to the provisions of sections 14-300.1 (no adverse impact) and 14-301.1 (conditional use provisions), and shall not be utilized for restaurant, drinking, or other non water-dependent uses or for off-street parking. The edge of any pier, wharf or bulkhead shall include any attached apron(s).

Figure 3

The February 3rd memo outlines the importance of retaining sufficient land for active waterfront uses, and finds that the zone boundaries as proposed are generally consistent with Comprehensive Plan policy with the trail/rail corridor in its current location. In the event there is a proposal in the future to re-align this corridor, compatibility with this area for marine dependent and related activities would need to be revisited at that time.

Another item that has been previously discussed in regard to waterfront compatibility is the proposal to allow marinas as a permitted use rather than a conditional use, as currently permitted in the EWPZ. The applicant responded to staff concerns about the overall suitability of this standard for the EWPZ by limiting marinas as a permitted use to the easterly portion of the zone, to correspond with the Portland Company site, where a marina is currently operated. This is a satisfactory resolution of this concern.

Comparison of Waterfront Zones

Both the WSUZ and the EWPZ contain a prohibition on activities that have adverse impacts on marine uses (Sec. 14-320.5.5 & Sec. 14-300.1), including uses that will displace an existing water-dependent use; uses that will reduce existing commercial vessel berthing space; uses, structures or activities that will unreasonably interfere with the activities and operation of existing water-dependent uses or significantly impede access to vessel berthing or other access to the water by water-dependent uses; or the siting of uses that will substantially reduce or inhibit existing public access to marine or tidal waters.

The WSUZ distinguishes allowed uses according to their location north and south of the railway tracks, being somewhat more permissive north of-, reserving the shoreward side of the tracks for marine-dependent space. The uses permitted north of those tracks fall under the following conditions: *in (a) buildings in existence on January 4, 1993, or (b) one (1) new structure per parcel, which parcel was in existence on January 4, 1993, of up to five thousand (5,000) square feet in total floor area. No construction of a new structure of more than five thousand (5,000) square feet in total floor area or in excess of one (1) per parcel for uses other than those specified in subsections (1) through (3) above is allowed without approval of a conditional use ...*No residential construction is allowed either as a permitted use or as a conditional use.

In conjunction with the standard conditions of approval for all conditional uses (Section 14-474), conditional uses in the EWPZ are allowed provided the uses do not impede or preclude existing or potential water-dependent development within the zone, will allow for adequate right-of-way access to the water, and are compatible with marine uses, in addition to the following additional conditional use standards:

- a. *Marine compatibility:* The proposed use shall be compatible with existing and potential marine uses in the vicinity, as required by section 14-304(n) and (o) (compatibility of non-marine uses with marine uses and functional utility of piers and access to the water's edge); and
- b. *Parking and traffic circulation:*
 - i. Parking and traffic circulation plan: All applications for conditional use in the EWPZ shall submit a parking and circulation plan for review and approval by the Planning Board. The parking and circulation plan shall show the location of all existing and proposed structures, travel ways and parking under the common ownership and/or control of the subject pier or property. The plan shall demonstrate that the parking and circulation of the conditional use does not interfere with the functional marine utility of the property and otherwise meets the standards and conditions of the EWPZ.

As with other zones, uses not enumerated are not permitted. Additionally, the following uses are specified as prohibited: residential uses, amusement/theme parks, bulk freight facilities, on-site gambling casinos not accessory to and located aboard either a ferry or inter-port cruise ship.

In sum, neither the WSUZ nor the EWPZ allow residential uses or non- marine related unless clearly

ancillary to waterfront needs. They tackle this issue through different tools – the WSUZ allowing a greater range of non- marine-dependent uses north of the rail line that splits the zone and through limits on new construction. EWPZ regulates uses through a narrow list of combined possible uses and strong language regarding the necessary marine compatibility of non-marine uses. The emphasis in the list of permitted uses for EWPZ is on marine-dependent uses, with most marine-related uses being conditionally allowed.

Dimensional Requirements Summary

The October memo contained a version of this table with an error in the EWPZ pier setback, now corrected below.

Table 1

	WSUZ	EWPZ	B-6
Min. Lot Size	None	None	None
Min. Street Frontage	None	None	
Min. Front Yard	None	None	
Min. Rear Yard	None required unless adjacent to a residential zone; if adjacent to a residential zone, twenty-five (25) feet.	None	None
Min. Side Yard	None required unless adjacent to a residential zone; if adjacent to a residential zone, twenty-five (25) feet.	None	
Max. Setback from Street Line			10 ft., excepting parking garages, public trans. facilities, and subject to the building height envelopes of Eastern Waterfront Building Height Overlay Map. See Sec. 14-272 c.2 for exemptions.
Min. Length of Building Wall required to be located along street frontage of lot			70% of lot street frontage or 25% of building perimeter. For buildings fronting on 2+ streets, building wall on one street may be decreased so long as it is proportionally increased on others and the building wall on the secondary street is not reduced to less than 25 ft.
Min. Setback from Pier Line	5 feet from the edge of any pier, wharf or bulkhead. The setback may be utilized for activities related to the principal uses carried on in the structure, subject to 14-313/14-314, but shall not be utilized for off-street parking. The edge of any pier, wharf or bulkhead shall include any attached apron(s).	25 feet from the edge of any pier, wharf or bulkhead. The setback may be utilized for activities related to the principal uses carried on in the structure, subject to 14-313/14-314, but shall not be utilized for off-street parking. The edge of any pier, wharf or bulkhead shall include any attached apron(s).	
Max. Structure Height	45-100 ft. (see Sec. 14-320.9.e)	45 ft, except for cranes and gantries, rooftop appurtenances (see Sec. 14-303.e for full exemptions)	65 ft. or as otherwise governed by a Building Height Overlay Map
Minimum Building Height for New Construction			3 floors of habitable space above the average adjacent grade within 25 ft. of any public street. See Sec. 14-272 c.3.g for exemptions.
Max. Lot Coverage			100%
Max. Impervious Surface		100%	

Full listing of allowed uses are detailed in the October memo for this application (Attachment 1). The applicant has submitted a color coded, comparative table of allowed uses, included as Attachment E.

Building Height Overlay and Building Envelopes Map

Illustration 33 of the Eastern Waterfront Building Height Study (Figure 4) is the document that has informed the creation of the B-6 Building Height Overlay map. It shows an opening between the building envelopes, through the center of the Portland Co. site, and is referred to in the Height Study as the Portland Company Alignment. The location of this alignment is the service alley that presently runs between buildings on the site. The alignment as depicted on Illustration 33 is outside of the key building envelopes boundary, indicating that it should be preserved from further development.

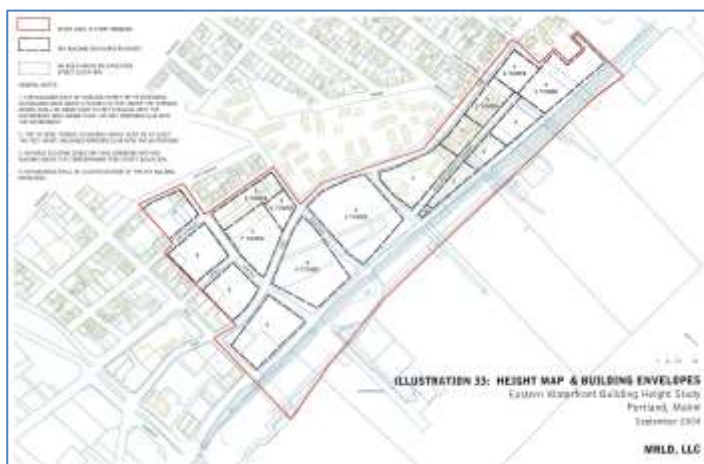


Figure 4, Illustration 33

The proposed height overlay map (Attachments H & J) depicts the building envelopes touching, but with a seam between them along the centerline of the corridor between the existing buildings, accompanied by a map note that indicates there shall be a break of buildings between the building envelopes. This insures this corridor from being spanned by single buildings, but does not specify the distance between buildings. The reasons for this are several - close scrutiny of Illustration 33 shows the Portland Co. alignment running through a portion of an existing building; the intended dimensions of the alignment are not specified; there is an historic preservation process, both in terms of the potential designation of the site or portions of the site, which if approved would lead to the requirement for Certificate of Appropriateness review by the Historic Preservation Board when a development proposal is brought forward, that will allow for evaluation of the precise area best retained between buildings; and, the anticipated Master Development Plan requires the Planning Board to review it for consistency with City Comprehensive Plan. The break between the building envelopes in the area of this alignment is a rational implementation of zoning based on the policy recommendations of Illustration 33, and one that leaves some discretion to the tools available to both the Historic Preservation Board and the Planning Board to determine the final dimensions and physical characterizations of this area.

Average Grade. A question was asked at the November workshop about the implications of the two methods of calculating average grade that are accepted as legitimate by the City for the purposes of calculating building height. The two methods are 1) either using the elevations of four building corners or 2) using measurements taken at regular intervals around a building. The applicant has submitted a letter (Attachment G) addressing resulting differences between the two methods. The measurements taken at four corners result in higher building heights, the extent of difference depending on the extent of the grade change between the points. The applicant has compared measurements around an entire building envelope from the Height Overlay map, where the grade changes are significant, and the difference between the two methods was approximately 6 feet. The letter points out that the applicant has used the four corner method to portray anticipated building heights at Fore Street to show maximum anticipated heights, and that the proposed Height Overlay map includes a maximum cap of 35 feet at Fore Street, adding to greater predictability along this important corridor.

Visualizing Heights. At the November workshop the applicant submitted multiple sections to illustrate the height implications of the zoning map amendment on the property (Figure 5).

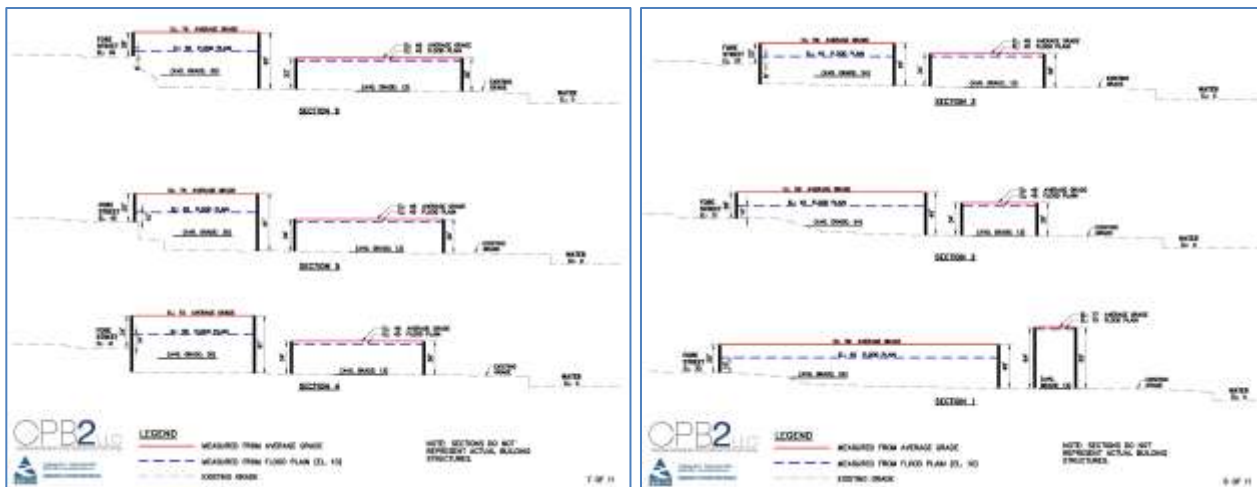


Figure 5, Height Measurement Comparison Examples

At the November 18th meeting the Board requested additional visuals to better understand the height implications of the project both from Fore Street looking south, and from the southern portion of the property looking towards Fore Street. An excerpt of the response to that request is included in Figure 6 and the full visuals are included as Attachment D. The section below layers existing buildings on Fore Street (north side of street), maximum building envelopes under the B-6 Height Overlay, buildings at 58 Fore Street that are visible at Fore Street, a dashed line marking the 35 foot height maximum proposed at Fore Street, and the heights and location of existing utility poles. View corridors are depicted, as well.

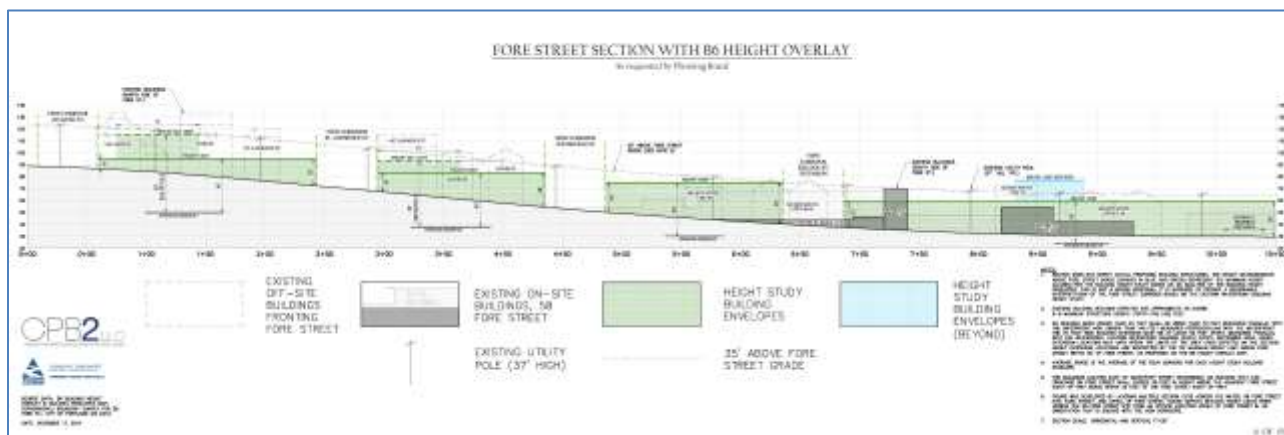


Figure 6, Fore Street Section

Water Depths

A question was raised at the previous workshop about near shore water depths. A nautical chart of the area is below and included as Attachment C.

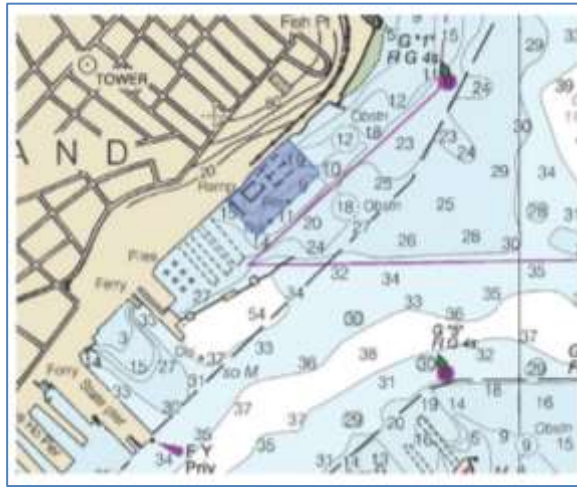


Figure 7, Chart Depths

V. PROPOSED TEXT AMENDMENTS

The application includes text amendments to the following sections of the Land Use Code:

- **Sec. 14-48. Establishment of Zones (Division 1)**

Reference to WSUZ is struck.

- **B-6 Eastern Waterfront Mixed Zone (Division 15.1)**

The following permitted uses are proposed to be added to the B-6 zone:

- Private clubs or nonprofit social and recreational facilities, as defined in 14-47.
- Educational facilities.
- Temporary events, provided that all such events on a lot do not exceed a combined total of (60) days per year and that the total floor area utilized for such uses does not exceed seventy thousand (70,000) square feet at any one (1) time.
- Museums and art galleries.
- A new use of underground fuel storage in B-6

An exemption from the noise standard has been modified to include temporary activities, festivals, events and concerts.

Mediation is proposed to be changed to *Meditation* – staff and the applicant view this as correction of an existing typo.

- **Eastern Waterfront Port Zone (Division 17.5)**

The following changes to the use standards are proposed:

- A permitted marine use that references a maximum fuel storage of 20,000 gallons has been substituted with similar language that appears in other zones, and provides for similar functions, except that the maximum of 20,000 gallons has been removed.
- Marinas are proposed as a permitted use east of the Ocean Gateway facility (referenced by deed). Marinas are currently a conditional use – the application proposes they remain conditional west of Ocean Gateway.
- To be added: Marine office, including but not limited to offices of owners of marinas, wharves or their agents, and naval architects, and seafood brokers.
- To be added: A facility for non-profit organizations whose facility may include offices,

classrooms, equipment, equipment rentals, storage, and bathrooms for the public.

- **Waterfront Special Use Zone (Division 18.7)**

The body of section is struck, replaced by *Reserved*.

- **Signs (Division 22)**

References to WSUZ are struck.

- **Shoreland Regulations (Division 26)**

References to WSUZ are struck, and references to B-6 are inserted. The October submission of text changes includes references to reduced minimum setbacks in the B-6 from 75 ft. to 25 ft. As the zone boundary currently proposed in this application places the B-6 edge no closer than 75 ft to the shore line, the changes initially included for sections Sec. 14-449(a)1.a, 14-449(a)(1) – 3rd paragraph, Sec. 14-449(j)1.a, and Sec. 14-449(k)1 are no longer needed or reflective of the location of the B-6 zone as shown in Figure 2.

Fuel Storage

Fuel storage is addressed in three ways in the proposed text amendments.

1. Fuel storage in the WSUZ is eliminated, along with all other reference to this zone. The WSUZ zone currently allows for the following at 58 Fore Street: *Harbor and marine supplies and services, chandleries, and ship supply such as fueling and bunkering of vessels.*
2. The B-6 zone proposes a new use: *Underground marine fuel storage provided that fuel storage structures shall be used solely for the purpose of fueling vessels.* As a mixed-use zone adjacent to the Eastern Waterfront Port zone, this is a waterfront compatible use.
3. The proposed text amendments to the Eastern Waterfront Port Zone removes the current limitation of 20,000 gallons of fuel storage, and replaces it with the language currently in the WSUZ, the current zone of this site: ~~*Marine fuel storage and dispensing provided that on-site fuel storage structures shall be used solely for the purpose of fueling vessels and shall be limited, cumulatively, to 20,000 gallons of storage capacity within the zone;*~~ *Harbor and marine supplies and services, chandleries, and ship supply such as fueling and bunkering of vessels;*

The Board requested additional information on the suitability of these changes. The applicant has provided a consultant opinion from Petroleum Marine Consultants (Attachment B) regarding the fuel storage capacity needs of a deep water marina that will accommodate both small and large transient vessels, which sites anticipated fuel capacity needs well in excess of 20,000 gallons.

The proposed change is not a net change to fuel storage standards for this area, since it aligns with the fuel storage standard of the current zone. Nor does it hamper the functioning of the EWPZ. Any large fuel storage additions proposed for the property would be included in an application to the Planning Board, and subject full site plan and safety reviews. Staff sees no issues with the proposed fueling standards.

A draft of the proposed changes and a summary sheet of the same are included as attachments (Attachments J and K). Detailed attention is given to Fuel Storage standards below, and the full text of a modified pier setback in EWPZ is included in **IV**, Waterfront Compatibility, above.

Other Text Amendments

Staff has included additional text amendments not in the original submission made by the applicant. These are changes to the B-6 dimensional standards, exempting the new, eastern portion of the B-6 zone from the following requirements that don't fit well the particular conditions of 58 Fore Street: a three story building minimum stories of habitable space within 25 feet of any public street (14-272.g), and a requirement that

70% of building wall or 25% of building perimeter be located along the street frontage of the lot (14-272.d). The three story minimum runs counter to the B-6 Building Height Overlay & Building Envelopes map requirements. For a parcel this size, where multiple interior buildings could be constructed, requiring a 70% of building wall be along street frontage would require all buildings constructed on the site line Fore Street.

VI. HISTORIC PRESERVATION

At the November 18th workshop the Planning Board requested that the next meeting include an update on Historic Preservation. As touched on in previous documents, in September 2014 Greater Portland Landmarks made a request to the Historic Preservation Board that the site be nominated as a local historic district. Planning staff met with the Historic Preservation Board in September to request that they delay this process until after the rezoning process is complete. The Historic Preservation Board has delayed reviewing the request until review of the rezoning application has been completed. The Historic Preservation Board sent a letter to the Planning Board in October stating the Board's agreement to have the rezoning and the designation process taken in sequence, provided that there is a clear understanding that the rezoning will not superseded or compromise Historic Preservation Board review. These letters were in your October 21st meeting materials, and are reattached here as Attachment 4 and 5. When the request to designate the property is considered, there will be a nomination process that involves the Historic Preservation Board, the Planning Board, and the City Council for a final determination.

There have been several studies conducted of this property in anticipation of this application and concurrent with it:

- *Inventory of Historic Buildings*, January 2014, prepared by Tremont Preservation Services, commissioned by the applicant.
- *Evaluation of Existing Buildings*, March 28, 2014, prepared by Becker Structural Engineers, commissioned by the applicant.
- *Portland Company Historic Significant and Integrity*, Sutherland Conservation & Consulting, 2014, commissioned by the Department of Planning & Urban Development. This report can be viewed in full here: <http://www.portlandmaine.gov/DocumentCenter/Home/View/6507>
 - A site walk led by Sutherland Conservation & Consulting was conducted on Dec. 7th to accompany this report, as were several presentations on the findings.

In addition to the completed studies, an independent conditions assessment is underway, conducted by Resurgence Engineering and Preservation, Inc., to supplement the *Evaluation of Existing Buildings* report listed above. The assessment began at the end of December, and a final report is anticipated soon. It was commissioned in equal parts by the applicant, Department of Planning & Urban Development, and Greater Portland Landmarks.

No action is required by the Planning Board on Historic Preservation issues at this time.

VII. Discussion Items

Heights at Fore Street

Though the issues of interest and concern to the public in regard to the rezoning of this site have been varied, the issues of building heights and resulting view impacts, particularly looking past Fore Street towards Casco Bay, have been a central topic (as it has been for Planning staff and the Planning Board). There will be a presentation at the February 10th Workshop showing a digital massing model of the site. Considerable effort and thought went in to the creation of the model, and the representatives of the Keep the Soul of Portland in the Portland Company group have requested time to present this dynamic visual. The Board has been forwarded pdfs and links to the model as part of public comment. The live presentation of this information will allow the presenters to give context and on what the model depicts, and answer any questions the Board

may have. The model does not depict building envelopes for this property, and is exclusively focused on maximum, combined massing – many dimensional, design, and other zoning requirements will shape the eventual built form and overall appearance of this site. The applicant has responded to the 3-D model (Attachment F), and raised questions about the soundness of the methodology used in the massing exercise. February 10th workshop should afford an opportunity to clarify and contextualize the presentation.

Contract Zone

Over the course of the review of this application, written and verbal comments have been submitted regarding the preference for this site to be the subject of a contract zone, rather than pursue zoning amendments and subsequent applications for a Master Development Plan and Site Plan. Though a contract zone is a valid option the applicant might have pursued, the contract zone as a tool precedes the Master Development Plan option, which was developed to allow for multi-year, phased build out of larger properties. The Master Development Plan process allows for flexibility in the development program in the event needs change, the economy shifts, or any number of other factors that might arise for a large, multifaceted project. If the project were to remain in the Waterfront Special Use Zone, the contract zone provisions for that zone are very restrictive, and would not allow for a combination of mixed-use and waterfront uses on the property, and would itself require a zone text change for a departure from narrow the range of uses allowed there. These are some considerations of why a contract zone would not necessarily be an advantage over the current application. Lastly, choosing to apply for a contract zone for this property would be a voluntary and alternate application process than what the applicant has chosen to pursue.

VIII. NEXTS STEPS

Staff is recommending that following the February 10th workshop, this application's third, that this application for zoning map and text amendments be scheduled for a public hearing.

IX. ATTACHMENTS

Report Attachments

1. October Memo
2. November Memo
3. Waterfront Memo
4. GPL Correspondence
5. HP Memo
6. B-6 Supplemental Edits

Applicant's Submittal (Supplemental materials since the November workshop)

- A. December 17 cover letter
- B. Marine Fuel Storage
- C. Nautical Chart
- D. Fore and Water Sections
- E. Chart of Permitted Uses
- F. Soul of Portland Response
- G. Average Grade
- H. Building Height Overlay
- I. Building Height Overlay - Ortho
- J. October Text Amendment Summary
- K. October Full Amendments

Public Comment

- PC 1. A. Adams
- PC 2. Vestal/Soul of Portland
- PC 3. Macomber

PC 4. Burwell
PC 5. Vestal
PC 6. Ingalls
PC 7. Agopian
PC 8. Snyder
PC 9. Snyder
PC 10. Greater Portland Landmarks
PC 12. Pressier
PC 13. Burwell
PC 14. Macomber
PC 15. Ansheles
PC 16. Postcards



Memorandum

Planning and Urban Development Department

Planning Division

To: Chair O'Brien and Members of the Portland Planning Board

From: Christine Grimando, Senior Planner

Date: October 8, 2014

Project #: PEZ.2014-153

CBLs: 018 A001001, 018 A002, 018 A003, 018 A013, 019 A014, 446 A001, 446 A003, 446 A004, 002 X001, 002 A018

Re: Zoning Map and Text Amendments for 58 Fore Street

Meeting Date: October 21, 2014

I. INTRODUCTION

The applicant, CPB2 LLC, is requesting zoning map and text amendments for property at 58 Fore Street, the site of the Portland Company complex. Established in 1846 for the manufacture of railroad equipment, it continued as the Portland Company, and as an industrial center, continuing to manufacture steel into 1978. It is now occupied by a variety of tenants. The property is currently zoned Waterfront Special Use Zone (WSUZ), and includes warehouses, storage buildings, and a marina with associated parking and laydown areas. The request for a zoning map amendment also encompasses State of Maine Property, two City-owned parking areas, and submerged lands. The zones being requested in place of WSUZ are the B-6, Eastern Waterfront Mixed Zone, and the Eastern Waterfront Port Zone (EWPZ). There are also proposed text amendments for the B-6, EWPZ and Shoreland Overlay zones.

Applicant: CPB2 LLC

Property Owner: CPB2 LLC

Consultants: Woodard & Curran, David Senus/ Bernstein Shur

Public Notice: Public notice of the workshop appeared in the Portland Press Herald on October 13 and October 14, 2014, was posted on the web site and was sent by mail or e-mail to 234 property owners and interested citizens.

A neighborhood meeting was held on September 16, and notes and documentation from that meeting are attached ([Applicant's Submittal G](#)). Written public comment is included in the packet ([Public Comment PC1 through 3](#)).

II. Background

Current Uses. The property is currently occupied by a range of uses, including a full service marina, parking, warehouses, boat storage, a blacksmith facility and some accessory office space. The property is also bisected by a 50' wide strip of Maine State property land that encompasses both the Maine Narrow

Gauge Railway and a public, multi-use trail that is an extension of the Eastern Promenade, maintained by Portland Trails and the City of Portland. The application also includes two adjacent City-owned lots.

Surrounding Uses. The property is contiguous with active waterfront uses to the west, bordered by the Ocean Gateway Terminal, and east of that, at the foot of Commercial and Franklin Streets, the Maine State Pier, both serving deep water dependent large vessels, including cruise ships. To the east is the Eastern Promenade. The neighborhood to the immediate north is residential, with Waterville, St. Lawrence and Atlantic Streets perpendicular to the Fore Street-side boundary of the property, and abutted by Munjoy South apartments. Also to the north but immediately west of this residential area is the India Street neighborhood, which contains residential uses and a diverse mix of commercial uses – Shipyard Brewery, parking garages, the shops of India Street, a Marriot Residence Inn, and the Eastern Cemetery.

Zoning Context. The immediately adjacent zones to 58 Fore Street are R-6 (Residential) to the east and north, ROS (Recreation and Open Space) to the east, B-6 to the west, and EWPZ to the west and south. The property is also partially in the Shoreland Zone, and partially in a flood zone.



Figure 1

III. PROPOSED DEVELOPMENT

The applicant has not submitted a development proposal for the property. They are requesting that the zoning map and text changes be evaluated independent of a development proposal. Though not how zoning amendments are customarily presented to the Planning Board, presenting an accompanying development concept with the zoning changes is information requested in the application form, but is not a submission requirement by ordinance. The applicant has submitted an existing conditions plan to accompany the application in lieu of a development plan.

IV. PROPOSED MAP AMENDMENT

Current Zoning:	Waterfront Special Use Zone (WSUZ), Shoreland Overlay
Proposed Zoning:	B-6, Eastern Waterfront Port Zone (EWPZ), Shoreland Overlay
Current Uses:	Warehouses, storage buildings, marina, associated parking. State of

Maine Property, currently utilized by the Maine Narrow Gauge Railroad and a section of the paved, public Eastern Promenade Trail maintained by Portland Trails/City of Portland. The City Property includes gravel and paved parking areas.

Proposed Uses: None proposed at this time
Total Parcel Area: Approximately 12 acres, + submerged lands
Area to be Rezoned: Approximately 12 acres, + submerged lands



Figure 2

V. PROPOSED TEXT AMENDMENTS

The application includes text amendments to the following sections of the Land Use Code:

- **Sec. 14-48. Establishment of Zones (Division 1)**
Reference to WSUZ is struck.
- **B-6 Eastern Waterfront Mixed Zone (Division 15.1)**
The following permitted uses are proposed to be added to the B-6 zone:
 - Private clubs or nonprofit social and recreational facilities, as defined in 14-47.
 - Educational facilities.
 - Temporary events, provided that all such events on a lot do not exceed a combined total of (60) days per year and that the total floor area utilized for such uses does not exceed seventy thousand (70,000) square feet at any one (1) time.
 - Museums and art galleries.

An exemption from the noise standard has been modified to include temporary activities, festivals, events and concerts.

Mediation is proposed to be changed to *Meditation* – staff and the applicant view this as correction of an existing typo.

- **Eastern Waterfront Port Zone (Division 17.5)**

The following changes to the use standards are proposed:

- A permitted marine use that references a maximum fuel storage of 20,000 gallons has been substituted with similar language that appears in other zones, and provides for similar functions, except that the maximum of 20,000 gallons has been removed.
- Marinas are proposed as a permitted use east of the Ocean Gateway facility (referenced by deed). Marinas are currently a conditional use – the application proposes they remain conditional west of Ocean Gateway.
- To be added: Marine office, including but not limited to offices of owners of marinas, wharves or their agents, and naval architects, and seafood brokers.
- To be added: A facility for non-profit organizations whose facility may include offices, classrooms, equipment, equipment rentals, storage, and bathrooms for the public.

- **Waterfront Special Use Zone (Division 18.7)**

The body of section is struck, replaced by *Reserved*.

- **Signs (Division 22)**

References to WSUZ are struck.

- **Shoreland Regulations (Division 26)**

References to WSUZ are struck, and references to B-6 are inserted. These changes to the Shoreland zone reduce minimum setbacks for the B-6 zone from 75ft to 25 ft for structures, roads and driveways.

The applicant has submitted a summary of the proposed changes, and the text edits in the context of their respective sections. Both are included as Applicant's Submittal C and D, respectively. Attachments C and D were part of a submission made on October 9th, and supersede the original submission. The key differences in the October 9th submission are: a new use of underground fuel storage in B-6 and a reduced setback from pier line east of Ocean Gateway, as well as some modifications of the original wording in the text changes. The Oct. 9th submission also included a modified zoning map, with a change in where the B-6/EWPZ is drawn, with a modest amount more area devoted to B-6, and a submission of a proposed amendment to the B-6 height and building envelope overlay.

VI. ZONING ANALYSIS

Purpose of WSUZ, B6, EWPZ. The purpose of the WSUZ is defined by its constraints, as a zone sandwiched between high density residential to the north, parkland to the east, and industrial uses to the west, and the need to be compatible between these diverse land uses. It sets minimum expectations for development in the zone to be compatible with water-related and water-dependent uses, and that uses be compelled to contribute to maintenance and improvement of waterfront infrastructure.

The purpose of the B-6, eastern waterfront mixed zone is to establish a zoning district for the upland portion of the eastern waterfront area. The B-6 zone encourages this district to acquire a distinctly urban form through development that emphasizes a quality pedestrian experience, promotes public transit, and demonstrates exemplary urban design. The zone promotes a range of uses to achieve twenty-four hour urban vitality and shared use of parking infrastructure as recommended in the Eastern Waterfront Master plan for redevelopment. The B-6 is described as a zone that abuts a waterfront zone, not as having a water-dependent purpose itself.

The purpose of the EWPZ is more explicit in its purpose as a waterfront zone than the WSUZ, and quite detailed. It exists to nurture a wide range of deepwater-dependent industry and commerce. Piers, uplands, and circulation patterns consistent with the transportation needs of marine facilities are mentioned, as well as the encouragement of non-marine uses that support deepwater activities, provided that they do not conflict or

compete for limited space with existing or anticipated deepwater-dependent needs. It's primary emphasis, however, is on the berthing and support of large vessels. The purpose statement ends on a recognized hierarchy of uses:

- (a) *The first priority of this zone is to protect and nurture existing and potential deepwater dependent uses (those uses requiring a minimum of 15 feet of water depth);*
- (b) *The second priority is to allow shallow water-dependent and other permitted marine uses, so long as they do not interfere with deepwater dependent uses, either directly by displacement or indirectly by placing incompatible demands on the zone's infrastructure; and*
- (c) *Other uses specified herein are allowed only if they do not interfere with and are not incompatible with higher priority uses.*

The full text of the purpose statements is included in Attachment 4.

Comparison of Allowed Uses. Both the WSUZ and the EWPZ contain a prohibition on uses that have adverse impacts on marine uses (Sec. 14-320.5.5 & Sec. 14-300.1), including uses that will displace an existing water-dependent use; uses that will reduce existing commercial vessel berthing space; uses, structures or activities that will unreasonably interfere with the activities and operation of existing water-dependent uses or significantly impede access to vessel berthing or other access to the water by water-dependent uses; or the siting of uses that will substantially reduce or inhibit existing public access to marine or tidal waters. B-6, being an upland zone, does not contain a parallel section.

The WSUZ distinguishes allowed uses according to their location north and south of the railway tracks. The marine-related and marine-dependent uses allowed on both sides of the tracks in the WSUZ include a full slate of uses:

Marine	Marine products, wholesaling, distribution and retailing
	Marine repair services and machine shops
	Tugboat, fireboat, pilot boat and similar services
	Harbor and marine supplies and services, chandlery, and ship supply such as fueling and bunkering of vessels
	Marine industrial welding and fabricating
	Shipbuilding and facilities for construction, maintenance and repair of vessels
	Commercial marine transport and excursion services, including ferries, captained charter services, sport fishing and water taxis
	Cargo handling facilities, including docking, loading and related storage
	Boat repair yards
	Boat storage facilities, including rack storage facilities
	Seafood processing
	Seafood packing and packaging
	Seafood loading and seafood distribution
	Fabrication, storage and repair of fishing equipment
	Ice-making services
	Facilities for marine construction and salvage
	Facilities for marine pollution control, oil spill cleanup, and servicing of marine sanitation devices
	Fabrication of marine-related goods
	Fishing and commercial vessel berthing
	Noncommercial berthing
	Marine office, including but not limited to offices of owners of wharves or their agents, and naval architects, and seafood brokers

	Public landings
	Marinas
	Intermodal transportation facilities
Public	Pedestrian and bicycle trails
Industrial	Industrial uses which meet the performance standards of the I-2 zone

The uses permitted north of those tracks fall under the following conditions: in (a) buildings in existence on January 4, 1993, or (b) one (1) new structure per parcel, which parcel was in existence on January 4, 1993, of up to five thousand (5,000) square feet in total floor area. No construction of a new structure of more than five thousand (5,000) square feet in total floor area or in excess of one (1) per parcel for uses other than those specified in subsections (1) through (3) above is allowed without approval of a conditional use ...No residential construction is allowed either as a permitted use or as a conditional use.

Commercial	Professional, business, and general offices;
	Business service establishments
	Restaurants, provided that food service and consumption shall be the primary function of the restaurant
	Cabinet and carpentry shops
	Cold storage facilities
	Museums and art galleries
Other	Accessory uses customarily incidental and subordinate to the location, function and operation of permitted uses or temporary exhibition uses, provided that all such exhibition uses on a lot do not exceed a combined total of sixty (60) days per year and that the total floor area utilized for such uses does not exceed seventy thousand (70,000) square feet at any one (1) time;
	Parking: Parking shall be permitted as long as it does not impede access to water by existing or potential marine uses
	Institutional uses including marine research, education and laboratory facilities. Such uses shall not include any type of overnight accommodations.
Public	Wind energy systems, as defined and allowed in Article X, Alternative Energy.
	Utility substations, including sewage collection and pumping stations, water pumping stations, transformer stations, telephone electronic equipment enclosures and other similar structures, provided that such structures are located more than one hundred (100) feet from the water
	Municipal uses
Industrial	Landscaped pedestrian parks, plazas and similar outdoor pedestrian spaces, including without limitation pedestrian and bicycle trails.

Conditional Uses are as follows:

Conditional Uses	Warehousing and wholesaling
	Any use permitted in section 14-320.6(d)2, 4, 5 or 6, (e), (f) or (g), in one (1) new structure of more than five thousand (5,000) square feet, but not more than ten thousand (10,000) square feet in total floor area per parcel.*
	Temporary wind anemometer towers
	Wind energy systems, as defined and allowed in Article X, Alternative Energy.

EWPZ permits the following uses:

Marine Passenger	Intermodal marine passenger facilities
	Cruise ship home port and port of call berthing and support
	International and domestic ferries
Marine Commercial	Transient and long-term commercial berthing
	Marine-related warehousing
	Marine related construction, manufacturing, fabrication, salvage and repair
	Storage and repair of fishing equipment
	Ship and other marine vessel construction, building, servicing, and repair
	Boat and marine equipment storage
	Marine fuel storage and dispensing provided that on-site fuel storage structures shall be used solely for the purpose of fueling vessels and shall be limited, cumulatively, to 20,000 gallons of storage capacity within the zone
	Public, non-profit, or commercial marine transportation and excursion services, including captained charter services, sport fishing and water taxis
	Ship and off-shore support services, including but not limited to tug boats, pilot boats, and chandleries
	Facilities for marine pollution control, oil spill cleanup, and servicing of marine sanitation devices
Commercial	Professional, business, government, and general office located in upper floors of structures existing as of September 18, 2006.
	Temporary events, except festivals as otherwise governed under section 14-301I3 below.
	Buildings, piers and lands within the EWPZ may be used for temporary public and private events including but not limited to exhibitions, conferences, meetings, and trade shows under the following conditions:
	a. Temporary events occupying more than 10,000 square feet of building or outdoor space shall not exceed a combined total of sixty (60) days between May 1st to October 31st;
	b. No temporary event may continue for more than 14 days of continuous operation;
	c. Any temporary event that anticipates more than 5,000 people in attendance on any single day must provide and be subject to a parking management plan. The parking management plan must be submitted for the review and approval of the public works authority at least 60 days prior to the first day of the event.
	Festivals subject to City license
	Street vendors licensed pursuant to Chapter 19 as a result of a competitive bid process conducted pursuant to Chapter 2 of the City Code
Public	Fire, police and emergency services
	Governmental agency emergency operations/crisis centers;
	Research, military and visiting attraction vessel berthing
	Landscaped pedestrian parks, plazas and other similar outdoor pedestrian spaces, including without limitation pedestrian and/or bicycle trails

Other	Wind energy systems, as defined and allowed in Article X, Alternative Energy.
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In conjunction with the standard conditions of approval for all conditional uses (Section 14-474), conditional uses in the EWPZ are allowed provided the uses impede or preclude existing or potential water-dependent development within the zone, will allow for adequate right-of-way access to the water, are compatible with marine uses, in addition to the following additional conditional use standards:

- a. *Marine compatibility:* The proposed use shall be compatible with existing and potential marine uses in the vicinity, as required by section 14-304(n) and (o) (compatibility of non-marine uses with marine uses and functional utility of piers and access to the water's edge); and
- b. *Parking and traffic circulation:*
 - i. *Parking and traffic circulation plan:* All applications for conditional use in the EWPZ shall submit a parking and circulation plan for review and approval by the planning board. The parking and circulation plan shall show the location of all existing and proposed structures, travel ways and parking under the common ownership and/or control of the subject pier or property. The plan shall demonstrate that the parking and circulation of the conditional use does not interfere with the functional marine utility of the property and otherwise meets the standards and conditions of the EWPZ.

Marine	Marine products, wholesaling and retailing
	Ice-making services
	Marine freight facilities providing service for, and/or intermodal transfer of, container and breakbulk freight
	Marine educational facilities
	Seafood retailing, wholesaling, packaging and shipping
	Seafood processing for human consumption, subject to the performance standards of the IL zone set forth in section 14-236 in addition to the performance standards of section 14-304
	Commercial marinas serving commercial and recreation boats, provided that such facilities are located in areas that do not conflict with the navigation and handling of deepwater dependent vessels accessing existing or potential deepwater berthing
	Fish byproducts processing, provided that:
	a. Any fish byproducts processing facility has a valid rendering facility license under chapter 12 of the Portland city code; and b. Any fish byproducts facility shall employ current and appropriate odor control technology to eliminate or minimize detectable odors from such a process, and in no case shall odors exceed the odor limitation performance standards of the IM zone (section 14-252); and c. The processing other material wastes or byproducts shall not be deemed a lawful accessory use Permitted herein.
Commercial	Structured parking available to the general public
	Professional, business, government and general offices uses in upper floors of structures constructed after September 18, 2006
	Passenger support services supporting a marine passenger use listed under 14- 301(a)(marine passenger). Total ground floor area occupied by any combination of the following uses (regardless of ownership) shall not exceed 35% of the gross floor area of the principle associated marine passenger use and no more than 35,000 sf cumulative within the EWPZ:
	i. Retail;

	ii. Restaurants/food service other than street vendors;
	iii. Retail service;
	iv. Passenger information services.
Industrial (subject to IM performance standards)	Non-marine related warehousing in structures existing as of September 18, 2006
	Facilities for combined marine and general construction
	Low impact industrial uses as permitted in the IL zone in structures existing as of September 18, 2006, excluding all auto repair service facilities
Public	Utility substations: Public utility substations, including but not limited to electrical transformers, sewage and stormwater pumps and telecommunication switching stations, are permitted under the following conditions:
	a. The facility is located more than 100 feet from the water's edge;
	b. The facility occupies no more than 50 square feet of structure above ground;
	c. The facility provides no dedicated on-site parking and all subsurface elements of the facility are installed and operated such that land occupied by the facility is otherwise useable and made available for marine related uses, including but not limited to parking, travel ways, and/or storage; and
	d. The facility shall be sized, sited and screened to minimize visual impact and prominence from public ways.
	Maritime museums, limited to 5,000 square feet of ground floor footprint.
Parking for non-marine uses	No parking shall be allowed in this zone for non-marine uses unless the applicant can demonstrate that the number of parking spaces on-site exceeds the number of parking spaces needed to accommodate the demand for marine and water-dependent uses that are permitted as permitted and conditional marine uses which are or may be located on the subject property. The remainder of parking required, if any, for such non-marine uses shall be provided off-site.
Other	Temporary wind anemometer towers
	Wind energy systems, as defined and allowed in Article X, Alternative Energy

As with other zones, uses not enumerated are not permitted. Additionally, the following uses are specified as prohibited: residential uses, amusement/theme parks, bulk freight facilities, on-site gambling casinos not accessory to and located aboard either a ferry or inter-port cruise ship.

The B-6 zone allows the following uses:

Commercial	Professional, business and general offices
	Restaurants and other eating and drinking establishments
	Hotels and inns limited to no more than 150 rooms
	Craft and specialty shops, including the on-premises production of handcrafted goods
	Retail and retail service establishments, excluding those with gas pumps
	Theatres
	Banking services, excluding vehicular drive-up services*
	Cabinet and carpentry shops

	Personal services
	Business services
	Offices of business trades people
	Miscellaneous repair services, excluding all types of automotive repair except for automobile repair and service establishments
	Telecommunication and broadcast and receiving facilities*
	Brew pubs and microbreweries without associated bottling facilities; and brewpubs and microbreweries with associated bottling facilities limited to 5,000 bottles per year output.
	Electronic data storage
	Marine products wholesaling and retailing
	Harbor and marine supplies and services, chandlery and ship supply
	Bakeries, coffee roasters, and commercial kitchens with building footprints limited to fifteen thousand (15,000) square feet of contiguous building space.
	Printing establishments.
Residential	Attached dwellings including row houses, two-family and multifamily dwellings
	Handicapped family units
	Combined living/working spaces, including but not limited to artist residences with studio space
	Mixed use residential and commercial structures
Public	Utility substations, including sewage collection and pumping stations, water pumping stations, transformer stations, telephone electronic equipment enclosures and other similar structures
	Landscaped pedestrian parks, plazas and other similar outdoor pedestrian spaces
	Pedestrian and multi-use trails
Other	Studios for artists, photographers and craftspeople including but not limited to, painters, sculptors, dancers, graphic artists and musicians
	Accessory uses customarily incidental and subordinate to the location, function and operation of permitted uses*
	Health clubs, martial arts and mediation facilities
	Intermodal transportation facilities
	Nursery schools, kindergartens, and daycare facilities or home babysitting services
	Wind energy systems, as defined and allowed in Article X, Alternative Energy

B-6 conditional uses include meeting and exhibition facilities up to a total of 20,000 gross sf; wholesaling, providing the wholesale operation is associated with an onsite retail establishment and that the wholesaling component of the facility occupies a building footprint of less than 15,000 square feet; drive-up banking facilities located in the interior of parking structures, subject to multiple criteria; surface and structured parking, subject to multiple criteria, including ground floor commercial requirements for structured lots; and temporary wind anemometer towers.

As with other zones, uses not enumerated are not permitted. Additionally, the B-6 use requirements specifically prohibit ground mounted telecommunication towers; waste, scrap, and/or byproduct storage and processing facilities; auto service stations; and drive-up facilities, excepting bank drive-ups in interior parking structures.

In sum, neither the WSUZ nor the EWPZ allow residential uses or anything but ancillary non-residential, non-marine uses. They tackle this issue through different tools – the WSUZ allowing a greater range of non-marine-dependent uses north of the rail line that splits the zone and through limits on new construction, and EWPZ through a narrower list of combined possible uses and strong language regarding the necessary marine compatibility of non-marine uses. The emphasis in the list of permitted uses for EWPZ is on marine-dependent uses, with most marine-related uses being conditionally allowed. The allowed uses of the B-6 zone read like many other mixed-use urban zones, with no particular marine emphasis, except for its noted adjacency, and upland-intended application.

Dimensional Requirements Summary:

	WSUZ	EWPZ	B-6
Min. Lot Size	None	None	None
Min. Street Frontage	None	None	
Min. Front Yard	None	None	
Min. Rear Yard	None required unless adjacent to a residential zone; if adjacent to a residential zone, twenty-five (25) feet.	None	None
Min. Side Yard	None required unless adjacent to a residential zone; if adjacent to a residential zone, twenty-five (25) feet.	None	
Max. Setback from Street Line			10 ft., excepting parking garages, public trans. facilities, and subject to the building height envelopes of Eastern Waterfront Building Height Overlay Map. See Sec. 14-272 c.2 for exemptions.
Min. Length of Building Wall required to be located along street frontage of lot			70% of lot street frontage or 25% of building perimeter. For buildings fronting on 2+ streets, building wall on one street may be decreased so long as it is proportionally increased on others and the building wall on the secondary street is not reduced to less than 25 ft.
Min. Setback from Pier Line	5 feet from the edge of any pier, wharf or bulkhead. The setback may be utilized for activities related to the principal uses carried on in the structure, subject to 14-313/14-314, but shall not be utilized for off-street parking. The edge of any pier, wharf or bulkhead shall include any attached apron(s).	5 feet from the edge of any pier, wharf or bulkhead. The setback may be utilized for activities related to the principal uses carried on in the structure, subject to 14-313/14-314, but shall not be utilized for off-street parking. The edge of any pier, wharf or bulkhead shall include any attached apron(s).	
Max. Structure Height	45-100 ft. (see Sec. 14-320.9.e)	45 ft, except for cranes and gantries, rooftop appurtenances (see Sec. 14-303.e for full exemptions)	65 ft. or as otherwise governed by a Building Height Overlay Map
Minimum Building Height for New Construction			3 floors of habitable space above the average adjacent grade within 25 ft. of any public street. See Sec. 14-272 c.3.g for exemptions.
Max. Lot Coverage			100%
Max. Impervious Surface		100%	

VII. POLICY ANALYSIS

Comprehensive Plan Volume 1 (2002/2004) gives an overview of the years of waterfront planning efforts of the City, and addresses redevelopment of Waterfront East specifically. It outlines four redevelopment principles for development in this area (these four principles are restated in the Eastern Waterfront Masterplan): Character and Impact of Development, with particular emphasis on compatibility with surrounding areas – residential, maritime, and natural environment; Mixed-use as a component of an active, vibrant urban area; maintaining Maritime Resources; and Economically Responsible Development that benefits the city and the region. Volume 1 references the Eastern Waterfront Masterplan (adopted 2002 and

amended 2004 & 2006). The study boundary is shown in red in Figure 3 below (also [Attachment 1](#)), which is the specific policy document for this area, which also consists, by reference, of two other documents: the Eastern Waterfront Design Guidelines and the Eastern Waterfront Building Height Study.

The Eastern Waterfront Masterplan makes specific reference to the Portland Company property:

The Portland Company complex, a mid-nineteenth century manufacturing facility, occupies the easterly end of the Eastern Waterfront. As an early manufacturing center, the site is home to several large brick and granite industrial buildings of architectural significance with potential for adaptive reuse. The Portland Company property is currently designated as eligible for inclusion in the National Register of Historic Places.

The property is highly developed, but in need of significant structural and cosmetic repair. Importantly, the complex is the only private property in the study area with direct water access. Currently, the Portland Company houses a variety of commercial uses, including a marina, boatyard, boat repair, general office, exhibition space, and the Narrow Gauge Railroad Museum.

Future parking enhancements and better vehicular and pedestrian access to the central redevelopment area will better integrate the Portland Company complex with the Eastern Waterfront and the Commercial Street business district, spurring the adaptive reuse and restoration of the historic structures.

Development Considerations

- *Historic 19th Century industrial complex.*
- *Promote the continuation of boat yard and yacht support services.*
- *Encourage the adaptive reuse and sensitive rehabilitation of historic structures.*
- *Increase connections to Commercial Street and promote shared parking with abutting uses.*
- *Expand recreational boating and active public use of the water.*

The applicant provides a summary of the alignment of their project with the Eastern Waterfront Masterplan in section 2.4 of their application. The application accurately cites support in that document for zoning changes that foster upland mixed use development as well as water dependent and marine uses in this area.

In discussion of Marine Compatibility, in section IX., below, the specific location of the B-6/EWPZ boundary as it relates to marine resources is highlighted. The Eastern Waterfront Masterplan makes specific reference to priority areas for water dependent uses: *Maritime Resources: Development in the eastern waterfront on piers, bulkheads, and on land within 75 feet of mean high water line will give priority to compatible water-dependent and maritime uses.* Though this application is generally consistent, this is one specific area that warrants a detailed discussion of consistency of the Comprehensive Plan with the proposed zone boundaries.

The Eastern Waterfront Design Guidelines will be a pertinent policy document when a development proposal is brought forward, but doesn't have bearing on the zoning application. The Eastern Waterfront Building Height Study (Height Study), however, has implications for the proposed zone change. The Height Study does not only include maximum height recommendations, but incorporates other tools for preserving and enhancing view corridors for a topographically varied area of Portland. It includes recommendations for street extensions and greater connectivity with the surrounding neighborhoods, maintaining view corridors through the delineation of building envelopes, as well as areas where "towers" could be built – areas where the maximum height could be exceeded – provided that those towers met particular spacing and dimensional requirements.

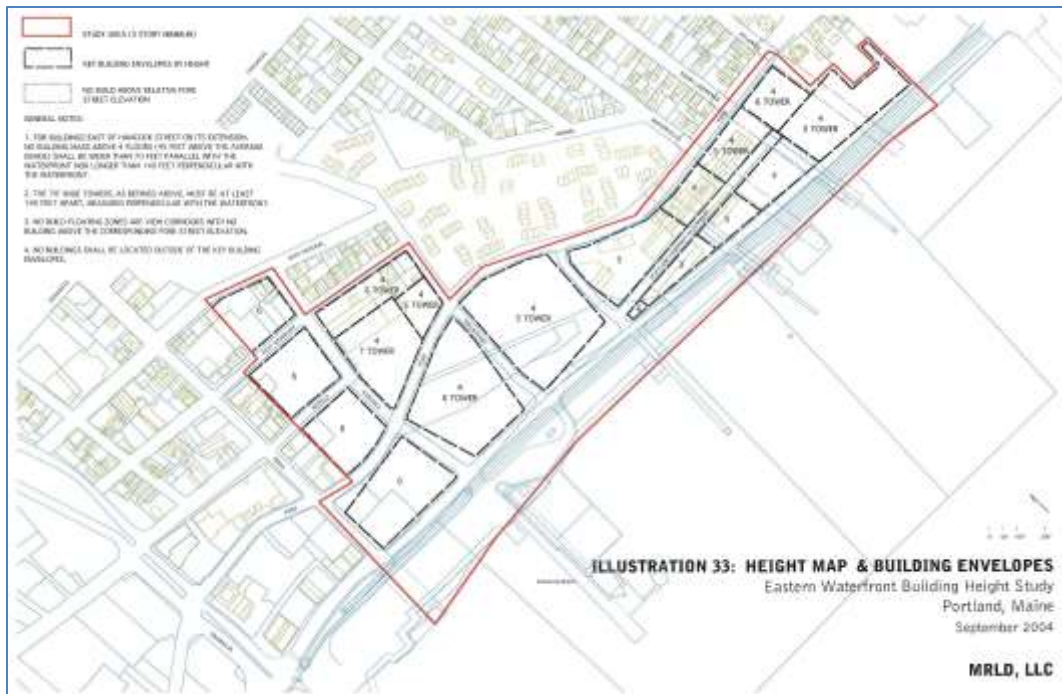


Figure 3, Eastern Waterfront Building Height Study, Illustration 33.

The B-6 Building Height Overlay & Building Envelopes was adopted in 2004 as a direct outgrowth of the policy recommendations of the Height Study, and regulates heights and building areas within the current B-6 boundaries (Figure 4 and Attachment 2). The B-6 zone and the Height Study are currently in alignment. A simultaneously amended B-6 Building Height Overlay and B-6 zone extent would maintain Comprehensive Plan consistency.

The Height Study, and Illustration 33, do not extend to the southerly boundary of where this application extends the B-6 to, leaving a gap between the Height Study and the developable area of the proposed B-6 zone.

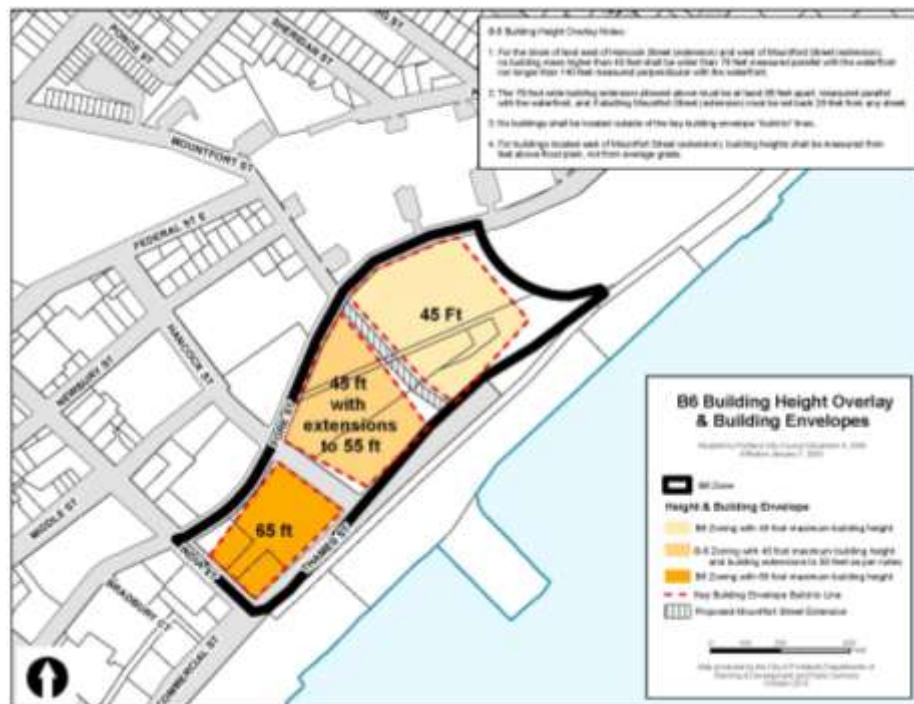
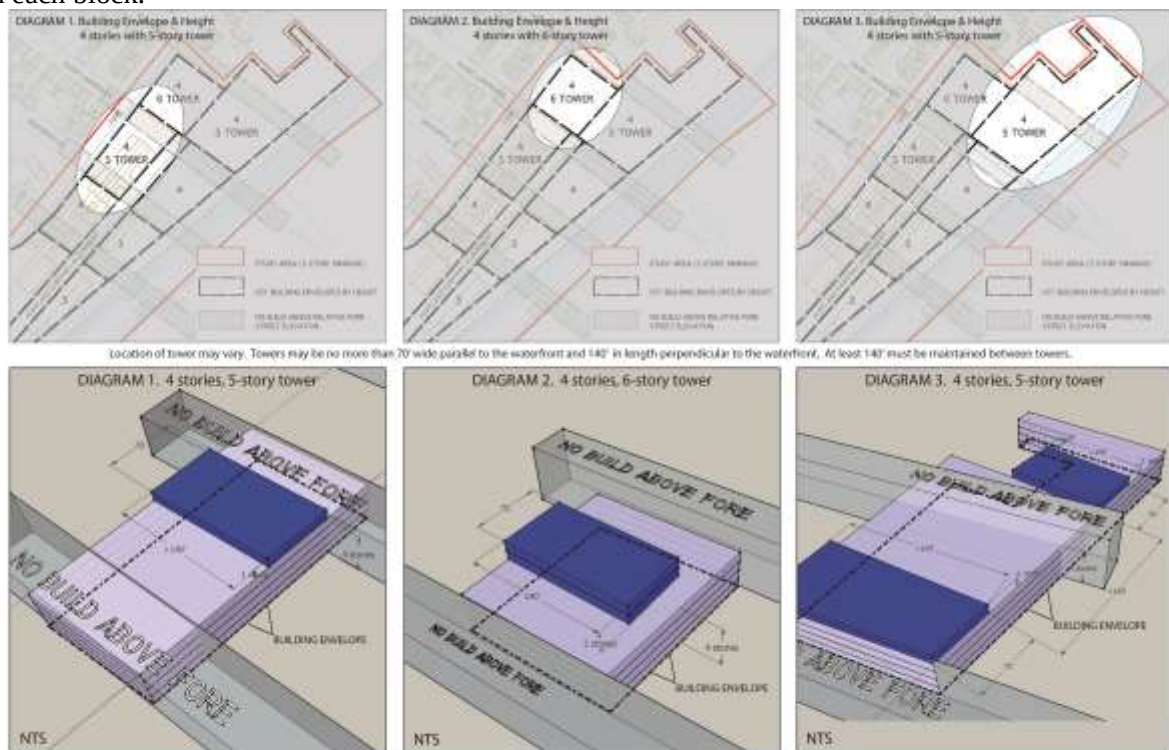


Figure 4

VIII. DISCUSSION

Height. The B-6 Building Height Overlay & Building Envelopes map is the regulatory fulfillment of one geographic area, just the west of the Portland Company land, of Illustration 33 (Figure 3 above and Attachment 1). An extension of the B-6 zone will require a continuation of the B-6 Building Height Overlay & Building Envelopes map in order for an expansion of B-6 to be compliant with Comprehensive Plan policy. Planning staff has had discussion about the height/building envelopes component of this proposal, and the applicant has submitted a proposal for discussion. B-6 currently allows for 65 ft. maximum feet, except that the B-6 zone (Sec. 14-272) currently states that *Notwithstanding sections 1. and 2. above, new structures located in the blocks located south of Fore Street and north of Commercial Street and its extension, shall build to the key building envelopes shown on the Eastern Waterfront Building Height Overlay Map.* An extension of the zone outside the boundary of the Height Overlay map would default to the maximum allowed height of 65 feet because the map stops before 58 Fore Street, creating a gap between the Height Study, which as an adopted component of the Eastern Waterfront Masterplan is an element of the Comprehensive Plan, and enacted Zoning. Staff recommends that the B-6 Building Height Overlay & Building Envelopes map be amended concurrently with an amendment to the zoning map, so that Comprehensive Plan consistency is maintained.

The conversion of the Height Study recommendations to the B-6 Building Height Overlay involved some interpreting of terms used in the Height Study. The Height Study makes recommendations for # of stories, and elsewhere in the document defines a story as 11 feet. The B-6 Building height Overlay therefore reflects this as maximum number of feet, so that a recommendation for 4 stories (or floors) was implemented as 45 feet. The Height Study uses the term “towers” to describe areas where the maximum height can be exceeded. These towers have both dimensional and locational limits, so as to avoid blocking identified view corridors and monolithic, uniform building heights. Towers were recommended to be no wider than 70’ parallel with the waterfront nor longer than 140’ perpendicular, and no closer than 140 feet apart. Because this language is potentially confusing, we have prepared a diagram below, and included as Attachment 2, which depicts the opportunity for a tower in the various blocks presented in Illustration 33, showing the dimensional limits for towers in each block.



The B-6 Building Height Overlay drops the tower terminology, but adopts the recommended dimensional and spacing standards. Building envelopes and view corridors are carried over, as well. The building envelope east of Mountfort St. was not implemented with height extensions above 4 stories, as originally recommended. This same building envelope has a different means of calculating height than the other envelopes – maximum building height is calculated from feet above floodplain in deference to the steep grades of this eastern section of the study area, rather than the standard measurement from average surrounding grade. As can be seen from the topographic map of the area (Figure 5 and [Applicant's submission Plan 1](#)), the difference in resulting building heights when measured from average grade versus feet above flood plain could be significant.

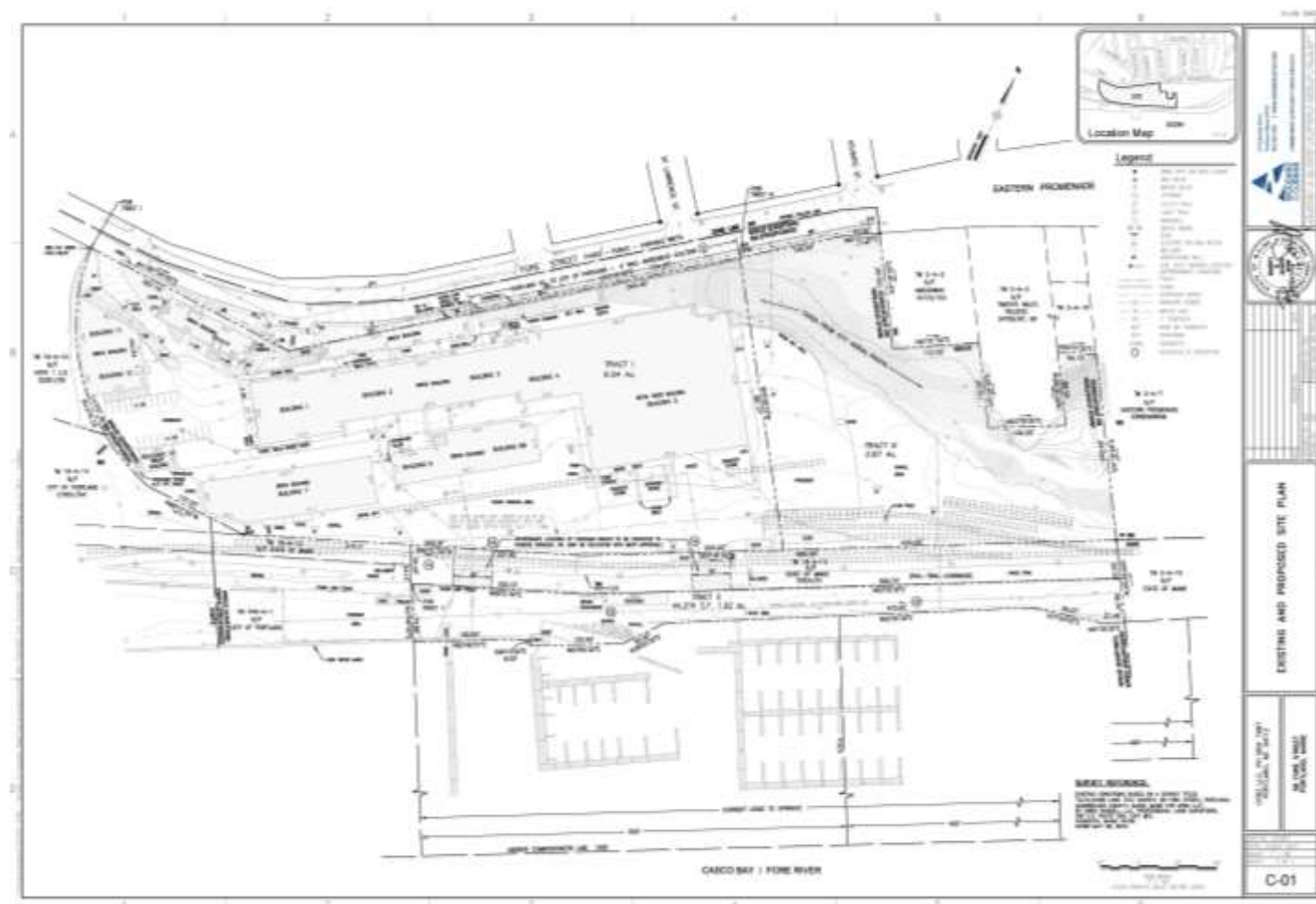


Figure 5

Height Study recommendations east of the B-6 Height Overlay continue to the eastern limits of the Portland Company complex, with a northern boundary on Fore Street and a southern boundary stopping north of the rail/trail ROW. It includes protected view corridors, and recommended heights ranging from 3-6 stories (minimum 3, and maximums are tower inclusive).

On October 9th a supplement to the original submission was made to include a proposal for an amended B-6 Height Overlay & Building Envelopes map (Figure 6 and [Applicant's submission Plan 2](#)). The applicant's proposed height map does not carry over the height measurement above flood plain east of Mountfort Street extension to the 58 Fore Street site. Given the topography of the site, a measurement from average adjoining grade could result in substantially higher building forms than were predicated for this area, as we read the plan. This is an issue for further discussion.

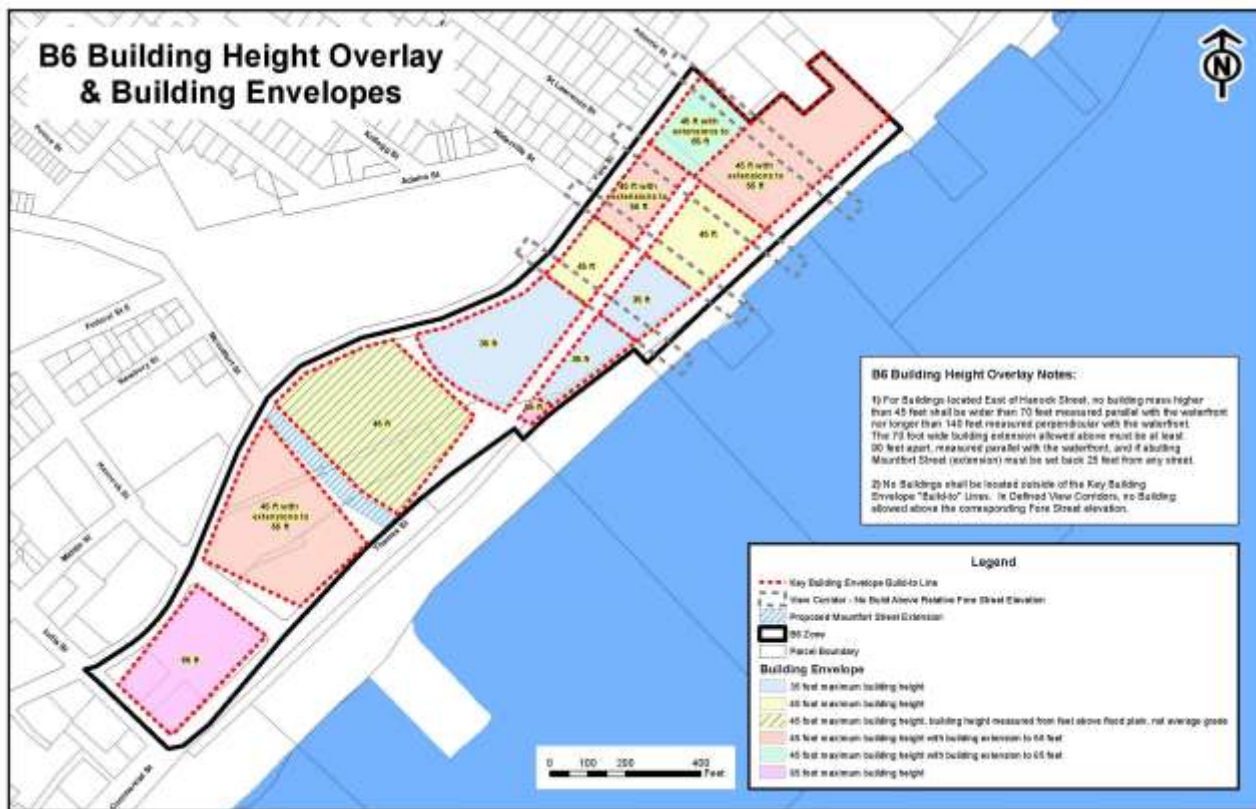


Figure 6

Marine Compatibility. Two topics arose in discussion between Planning staff and Bill Needelman, Waterfront Coordinator, that warrant consideration at the upcoming workshop – 1) the proposed change in EWPZ to have marinas be allowed as a permitted use east of Ocean Gateway, rather than the current conditional use for all marinas in this zone, and 2) the southerly boundary of the B-6 zone.

The conditional use standards for marinas remain pertinent east of Ocean Gateway, as they control for possible interference with the large vessels the EWPZ prioritizes. The EWPZ is primarily concerned with the needs of water-dependent, not water-related, deep water vessel needs, and the conditional use standards work to maintain this balance. As a conditional use, marinas in EWPZ must demonstrate that they *are located in areas that do not conflict with the navigation and handling of deepwater dependent vessels accessing existing or potential deepwater berthing*. They are also subject to marine compatibility standards, as are all conditional uses in this zone.

The proposed B-6 zone boundary is drawn within or at 25' from the water's edge, breaking south of the existing rail ROW. By pulling the southerly edge of the B-6 zone so near to the water, and leaving a relatively narrow band of EWPZ, there remains little area dedicated to marine activity. The proposed southerly B-6 boundary replaces an active waterfront area with a mixed-use, not marine-related area. This aspect of the application constitutes an important policy change for the Board to consider, and should be a discussion item at the October 21st workshop. The B-6 rezoning anticipates the possibility of relocating the rail-trail corridor towards the water's edge, a topic yet to be evaluated by the City, and one with implications for the upland needed to support a water dependent EWPZ. At this stage, the Board should consider whether this State-owned corridor should be rezoned to EWPZ rather than B-6.

Related to the proposed zone boundary are the proposed Shoreland zone changes, which reduce the minimum setback to 25 ft. for B-6. These changes run in tandem with the map change as a whole, and if, through the course of review, another zone boundary is agreed to between B-6 and EWPZ, Shoreland changes will need to be evaluated for consistency with the base zones and approved by DEP.

Historic Preservation

There is no action required on historic preservation or formal role for the Historic Preservation Board at this stage, but the historic significance of the site, and the interests of that Board and the community are such that it warrants mention at the outset of this process.

Prior to and concurrent to the zoning application, there has been significant activity related to the historic significance of the property. Before the submission of the rezoning application, the developer had studies conducted of the historic character of the buildings on site (available in full at this link: <http://www.portlandmaine.gov/1341/58-Fore-Street-Portland-Company>), and a structural assessment of the same. A full survey of the historic significance of the site was conducted, as well, and a review of the structural assessment is under way. Portland Landmarks has requested that the Historic Preservation Board nominate the site for designation as a Historic District (Attachment 5). On this last event, Planning staff has to date recommended that the rezoning request be considered prior to action on the Historic District nomination, so that the issues can be considered sequentially rather than in tandem.

Portland's Historic Preservation submitted correspondence dated October 15, 2014 for the Planning Board's consideration (Attachment 6). The Historic Preservation Board outlines their review standards and process. In addition the Board suggests a joint site walk be scheduled in the near future, which "...would be both efficient and of mutual benefit.

IX. NEXT STEPS

- Provide initial feedback on zoning map and text amendment requests.
- Schedule Site Visit
- Schedule second workshop, if needed.

X. ATTACHMENTS

Report Attachments

1. Illustration 33
2. Diagram of Tower Spacing
3. B-6 Building Height Overlay & Building Envelopes Map
4. WSUZ, EWPZ, B-6 Purpose Statements
5. Portland Landmarks Correspondence
6. Portland Historic Preservation Board Correspondence

Applicant's Submittal

- A. Application
- B. Applicant's Cover Letter – 2014.10.09
- C. Applicant's Revised Text Amendment Summary – 2014.10.09
- D. Full Revised Text Amendments – 2014.10.09
- E. Proposed Zoning Extent – 2014.10.09
- F. DOT Correspondence
- G. Neighborhood Meeting Documentation

Public Comment

- PC1. Paula Guillemette Agopian 10-8-14
- PC2. Everett and Susan Ingalls
- PC3. Karen Snyder 10-12-14
- PC4. Brian Burwell 10-16-14

Plans

- Plan 1. Existing Conditions Plan
- Plan 2. Proposed B-6 Height Overlay – 2014.10.09
- Plan 3. Proposed B-6 Height Overlay w/Aerial – 2014.10.09



Memorandum

Planning and Urban Development Department

Planning Division

To: Chair O'Brien and Members of the Portland Planning Board

From: Christine Grimando, Senior Planner

Date: November 12, 2014

Project #: PEZ.2014-153

CBLs: 018 A001001, 018 A002, 018 A003, 018 A013, 019 A014, 446 A001, 446 A003, 446 A004, 002 X001, 002 A018

Re: Zoning Map and Text Amendments for 58 Fore Street

Meeting Date: November 18, 2014

I. INTRODUCTION

The applicant, CPB2 LLC, is requesting zoning map and text amendments for property at 58 Fore Street, the site of the Portland Company complex. Established in 1846 for the manufacture of railroad equipment, it continued and evolved as an industrial complex, manufacturing steel through 1978. It is now occupied by a variety of tenants. The property is currently zoned Waterfront Special Use Zone (WSUZ), and includes warehouses, storage buildings, and a marina with associated parking and laydown areas. The request for a zoning map amendment also encompasses State of Maine Property, two City-owned parking areas, and submerged lands. The zones being requested in place of WSUZ are the B-6 Eastern Waterfront Mixed Zone, and the Eastern Waterfront Port Zone (EWPZ). There are also proposed text amendments for the B-6, EWPZ and Shoreland Overlay zones, and an amendment to the B-6 Building Height Overlay & Building Envelopes map.

Applicant: CPB2 LLC

Property Owner: CPB2 LLC

Consultants: Woodard & Curran & Bernstein Shur

Public Notice: Public notice of the workshop appeared in the Portland Press Herald on November 10, 2014 on November 11, 2014 was posted on the web site and was sent by mail or e-mail to 264 property owners and interested citizens.

A neighborhood meeting was held on September 16, and notes and documentation from that meeting were attached as part of the October workshop packet and can be referenced here: <http://www.portlandmaine.gov/AgendaCenter/ViewFile/Agenda/10212014-649?html=true> . Written public comment is included in the packet (Public Comment PC1 through 3).

II. Background

Current Uses. The property is currently occupied by a range of uses, including a full service marina,

parking, warehouses, boat storage, a blacksmith facility and some accessory office space. The property is also bisected by a 50' wide strip of Maine State property land that encompasses both the Maine Narrow Gauge Railway and a public, multi-use trail that is an extension of the Eastern Promenade, maintained by Portland Trails and the City of Portland. The application also includes two adjacent City-owned lots.

Surrounding Uses. The property is contiguous with active waterfront uses to the west, bordered by the Ocean Gateway Terminal, and east of that, at the foot of Commercial and Franklin Streets, the Maine State Pier, both serving deep water dependent large vessels, including cruise ships. To the east is the Eastern Promenade. The neighborhood to the immediate north is residential, with Waterville, St. Lawrence and Atlantic Streets perpendicular to the Fore Street-side boundary of the property, and abutted by Munjoy South apartments. Also to the north but immediately west of this residential area is the India Street neighborhood, which contains residential uses and a diverse mix of commercial uses – Shipyard Brewery, parking garages, the shops of India Street, a Marriot Residence Inn, and the Eastern Cemetery.

Zoning Context. The immediately adjacent zones to 58 Fore Street are R-6 (Residential) to the east and north, ROS (Recreation and Open Space) to the east, B-6 to the west, and EWPZ to the west and south. The property is also partially in the Shoreland Zone, and partially in a flood zone.



Figure 1

III. PROPOSED DEVELOPMENT

The applicant is requesting that the zoning map and text changes be evaluated independent of a development proposal. The applicant has submitted an existing conditions plan to accompany the application in lieu of a development plan.

IV. PROPOSED MAP AMENDMENT

Current Zoning:	Waterfront Special Use Zone (WSUZ), Shoreland Overlay
Proposed Zoning:	B-6, Eastern Waterfront Port Zone (EWPZ), Shoreland Overlay
Current Uses:	Warehouses, storage buildings, marina, associated parking. State of Maine Property, currently utilized by the Maine Narrow Gauge

Railroad and a section of the paved, public Eastern Promenade Trail maintained by Portland Trails/City of Portland. The City Property includes gravel and paved parking areas.

Proposed Uses: None proposed at this time
Total Parcel Area: Approximately 12 acres, + submerged lands
Area to be Rezoned: Approximately 12 acres, + submerged lands

V. PROPOSED TEXT AMENDMENTS

The application includes text amendments to the following sections of the Land Use Code:

- **Sec. 14-48. Establishment of Zones (Division 1)**

Reference to WSUZ is struck.

- **B-6 Eastern Waterfront Mixed Zone (Division 15.1)**

The following permitted uses are proposed to be added to the B-6 zone:

- Private clubs or nonprofit social and recreational facilities, as defined in 14-47.
- Educational facilities.
- Temporary events, provided that all such events on a lot do not exceed a combined total of (60) days per year and that the total floor area utilized for such uses does not exceed seventy thousand (70,000) square feet at any one (1) time.
- Museums and art galleries.
- A new use of underground fuel storage in B-6

A reduced setback from pier line east of Ocean Gateway

An exemption from the noise standard has been modified to include temporary activities, festivals, events and concerts.

Mediation is proposed to be changed to *Meditation* – staff and the applicant view this as correction of an existing typo.

- **Eastern Waterfront Port Zone (Division 17.5)**

The following changes to the use standards are proposed:

- A permitted marine use that references a maximum fuel storage of 20,000 gallons has been substituted with similar language that appears in other zones, and provides for similar functions, except that the maximum of 20,000 gallons has been removed.
- Marinas are proposed as a permitted use east of the Ocean Gateway facility (referenced by deed). Marinas are currently a conditional use – the application proposes they remain conditional west of Ocean Gateway.
- To be added: Marine office, including but not limited to offices of owners of marinas, wharves or their agents, and naval architects, and seafood brokers.
- To be added: A facility for non-profit organizations whose facility may include offices, classrooms, equipment, equipment rentals, storage, and bathrooms for the public.

- **Waterfront Special Use Zone (Division 18.7)**

The body of section is struck, replaced by *Reserved*.

- **Signs (Division 22)**

References to WSUZ are struck.

- **Shoreland Regulations (Division 26)**

References to WSUZ are struck, and references to B-6 are inserted. These changes to the Shoreland zone reduce minimum setbacks for the B-6 zone from 75ft to 25 ft for structures, roads and driveways.

VI. ZONING ANALYSIS

Purpose of WSUZ, B6, EWPZ. The purpose of the WSUZ is defined by its constraints, as a zone sandwiched between high density residential to the north, parkland to the east, and industrial uses to the west, and the need to be compatible between these diverse land uses. It sets minimum expectations for development in the zone to be compatible with water-related and water-dependent uses, and that uses be compelled to contribute to maintenance and improvement of waterfront infrastructure.

The purpose of the B-6, eastern waterfront mixed zone is to establish a zoning district for the upland portion of the eastern waterfront area. The B-6 zone encourages this district to acquire a distinctly urban form through development that emphasizes a quality pedestrian experience, promotes public transit, and demonstrates exemplary urban design. The zone promotes a range of uses to achieve twenty-four hour urban vitality and shared use of parking infrastructure as recommended in the Eastern Waterfront Master plan for redevelopment. The B-6 is described as a zone that abuts a waterfront zone, not as having a water-dependent purpose itself.

The purpose of the EWPZ is more explicit in its purpose as a waterfront zone than the WSUZ, and quite detailed. It exists to nurture a wide range of deepwater-dependent industry and commerce. Piers, uplands, and circulation patterns consistent with the transportation needs of marine facilities are mentioned, as well as the encouragement of non-marine uses that support deepwater activities, provided that they do not conflict or compete for limited space with existing or anticipated deepwater-dependent needs. It's primary emphasis, however, is on the berthing and support of large vessels. The purpose statement ends on a recognized hierarchy of uses:

- (a) *The first priority of this zone is to protect and nurture existing and potential deepwater dependent uses (those uses requiring a minimum of 15 feet of water depth);*
- (b) *The second priority is to allow shallow water-dependent and other permitted marine uses, so long as they do not interfere with deepwater dependent uses, either directly by displacement or indirectly by placing incompatible demands on the zone's infrastructure; and*
- (c) *Other uses specified herein are allowed only if they do not interfere with and are not incompatible with higher priority uses.*

Comparison of Allowed Uses. Both the WSUZ and the EWPZ contain a prohibition on uses that have adverse impacts on marine uses (Sec. 14-320.5.5 & Sec. 14-300.1), including uses that will displace an existing water-dependent use; uses that will reduce existing commercial vessel berthing space; uses, structures or activities that will unreasonably interfere with the activities and operation of existing water-dependent uses or significantly impede access to vessel berthing or other access to the water by water-dependent uses; or the siting of uses that will substantially reduce or inhibit existing public access to marine or tidal waters. B-6, being an upland zone, does not contain a parallel section.

The WSUZ distinguishes allowed uses according to their location north and south of the railway tracks. The marine-related and marine-dependent uses allowed on both sides of the tracks in the WSUZ include a full slate of uses:

Marine	Marine products, wholesaling, distribution and retailing
	Marine repair services and machine shops

	Tugboat, fireboat, pilot boat and similar services
	Harbor and marine supplies and services, chandleries, and ship supply such as fueling and bunkering of vessels
	Marine industrial welding and fabricating
	Shipbuilding and facilities for construction, maintenance and repair of vessels
	Commercial marine transport and excursion services, including ferries, captained charter services, sport fishing and water taxis
	Cargo handling facilities, including docking, loading and related storage
	Boat repair yards
	Boat storage facilities, including rack storage facilities
	Seafood processing
	Seafood packing and packaging
	Seafood loading and seafood distribution
	Fabrication, storage and repair of fishing equipment
	Ice-making services
	Facilities for marine construction and salvage
	Facilities for marine pollution control, oil spill cleanup, and servicing of marine sanitation devices
	Fabrication of marine-related goods
	Fishing and commercial vessel berthing
	Noncommercial berthing
	Marine office, including but not limited to offices of owners of wharves or their agents, and naval architects, and seafood brokers
	Public landings
	Marinas
	Intermodal transportation facilities
Public	Pedestrian and bicycle trails
Industrial	Industrial uses which meet the performance standards of the I-2 zone

The uses permitted north of those tracks fall under the following conditions: in (a) buildings in existence on January 4, 1993, or (b) one (1) new structure per parcel, which parcel was in existence on January 4, 1993, of up to five thousand (5,000) square feet in total floor area. No construction of a new structure of more than five thousand (5,000) square feet in total floor area or in excess of one (1) per parcel for uses other than those specified in subsections (1) through (3) above is allowed without approval of a conditional use ...No residential construction is allowed either as a permitted use or as a conditional use.

Commercial	Professional, business, and general offices;
	Business service establishments
	Restaurants, provided that food service and consumption shall be the primary function of the restaurant
	Cabinet and carpentry shops
	Cold storage facilities
	Museums and art galleries
Other	Accessory uses customarily incidental and subordinate to the location, function and operation of permitted uses or temporary exhibition uses, provided that all such exhibition uses on a lot do not exceed a combined total of sixty (60) days per year and that the total floor area utilized for such uses does not exceed seventy thousand (70,000) square feet at any one (1) time;

	Parking: Parking shall be permitted as long as it does not impede access to water by existing or potential marine uses
	Institutional uses including marine research, education and laboratory facilities. Such uses shall not include any type of overnight accommodations.
Public	Wind energy systems, as defined and allowed in Article X, Alternative Energy.
	Utility substations, including sewage collection and pumping stations, water pumping stations, transformer stations, telephone electronic equipment enclosures and other similar structures, provided that such structures are located more than one hundred (100) feet from the water
	Municipal uses
Industrial	Landscaped pedestrian parks, plazas and similar outdoor pedestrian spaces, including without limitation pedestrian and bicycle trails.

Conditional Uses are as follows:

Conditional Uses	Warehousing and wholesaling
	Any use permitted in section 14-320.6(d)2, 4, 5 or 6, (e), (f) or (g), in one (1) new structure of more than five thousand (5,000) square feet, but not more than ten thousand (10,000) square feet in total floor area per parcel.*
	Temporary wind anemometer towers
	Wind energy systems, as defined and allowed in Article X, Alternative Energy.

EWPZ permits the following uses:

Marine Passenger	Intermodal marine passenger facilities
	Cruise ship home port and port of call berthing and support
	International and domestic ferries
Marine Commercial	Transient and long-term commercial berthing
	Marine-related warehousing
	Marine related construction, manufacturing, fabrication, salvage and repair
	Storage and repair of fishing equipment
	Ship and other marine vessel construction, building, servicing, and repair
	Boat and marine equipment storage
	Marine fuel storage and dispensing provided that on-site fuel storage structures shall be used solely for the purpose of fueling vessels and shall be limited, cumulatively, to 20,000 gallons of storage capacity within the zone
	Public, non-profit, or commercial marine transportation and excursion services, including captained charter services, sport fishing and water taxis
	Ship and off-shore support services, including but not limited to tug boats, pilot boats, and chandleries
merci al	Facilities for marine pollution control, oil spill cleanup, and servicing of marine sanitation devices
	Professional, business, government, and general office located in upper floors of structures existing as of September 18, 2006.

	Temporary events, except festivals as otherwise governed under section 14-30113 below.
	Buildings, piers and lands within the EWPZ may be used for temporary public and private events including but not limited to exhibitions, conferences, meetings, and trade shows under the following conditions:
	a. Temporary events occupying more than 10,000 square feet of building or outdoor space shall not exceed a combined total of sixty (60) days between May 1st to October 31st;
	b. No temporary event may continue for more than 14 days of continuous operation;
	c. Any temporary event that anticipates more than 5,000 people in attendance on any single day must provide and be subject to a parking management plan. The parking management plan must be submitted for the review and approval of the public works authority at least 60 days prior to the first day of the event.
	Festivals subject to City license
	Street vendors licensed pursuant to Chapter 19 as a result of a competitive bid process conducted pursuant to Chapter 2 of the City Code
Public	Fire, police and emergency services
	Governmental agency emergency operations/crisis centers;
	Research, military and visiting attraction vessel berthing
	Landscaped pedestrian parks, plazas and other similar outdoor pedestrian spaces, including without limitation pedestrian and/or bicycle trails
Other	Wind energy systems, as defined and allowed in Article X, Alternative Energy.

In conjunction with the standard conditions of approval for all conditional uses (Section 14-474), conditional uses in the EWPZ are allowed provided the uses impede or preclude existing or potential water-dependent development within the zone, will allow for adequate right-of-way access to the water, are compatible with marine uses, in addition to the following additional conditional use standards:

- a. *Marine compatibility:* The proposed use shall be compatible with existing and potential marine uses in the vicinity, as required by section 14-304(n) and (o) (compatibility of non-marine uses with marine uses and functional utility of piers and access to the water's edge); and
- b. *Parking and traffic circulation:*
 - i. *Parking and traffic circulation plan:* All applications for conditional use in the EWPZ shall submit a parking and circulation plan for review and approval by the planning board. The parking and circulation plan shall show the location of all existing and proposed structures, travel ways and parking under the common ownership and/or control of the subject pier or property. The plan shall demonstrate that the parking and circulation of the conditional use does not interfere with the functional marine utility of the property and otherwise meets the standards and conditions of the EWPZ.

Marine	Marine products, wholesaling and retailing
	Ice-making services
	Marine freight facilities providing service for, and/or intermodal transfer of, container and breakbulk freight
	Marine educational facilities
	Seafood retailing, wholesaling, packaging and shipping

	Seafood processing for human consumption, subject to the performance standards of the IL zone set forth in section 14-236 in addition to the performance standards of section 14-304
	Commercial marinas serving commercial and recreation boats, provided that such facilities are located in areas that do not conflict with the navigation and handling of deepwater dependent vessels accessing existing or potential deepwater berthing
	Fish byproducts processing, provided that:
	a. Any fish byproducts processing facility has a valid rendering facility license under chapter 12 of the Portland city code; and
	b. Any fish byproducts facility shall employ current and appropriate odor control technology to eliminate or minimize detectable odors from such a process, and in no case shall odors exceed the odor limitation performance standards of the IM zone (section 14-252); and
	c. The processing other material wastes or byproducts shall not be deemed a lawful accessory use Permitted herein.
Commercial	Structured parking available to the general public
	Professional, business, government and general offices uses in upper floors of structures constructed after September 18, 2006
	Passenger support services supporting a marine passenger use listed under 14- 301(a)(marine passenger). Total ground floor area occupied by any combination of the following uses (regardless of ownership) shall not exceed 35% of the gross floor area of the principle associated marine passenger use and no more than 35,000 sf cumulative within the EWPZ:
	i. Retail;
	ii. Restaurants/food service other than street vendors;
	iii. Retail service;
	iv. Passenger information services.
Industrial (subject to IM performance standards)	Non-marine related warehousing in structures existing as of September 18, 2006
	Facilities for combined marine and general construction
	Low impact industrial uses as permitted in the IL zone in structures existing as of September 18, 2006, excluding all auto repair service facilities
Public	Utility substations: Public utility substations, including but not limited to electrical transformers, sewage and stormwater pumps and telecommunication switching stations, are permitted under the following conditions:
	a. The facility is located more than 100 feet from the water's edge;
	b. The facility occupies no more than 50 square feet of structure above ground;
	c. The facility provides no dedicated on-site parking and all subsurface elements of the facility are installed and operated such that land occupied by the facility is otherwise useable and made available for marine related uses, including but not limited to parking, travel ways, and/or storage; and
	d. The facility shall be sized, sited and screened to minimize visual impact and prominence from public ways.
	Maritime museums, limited to 5,000 square feet of ground floor footprint.

Parking for non-marine uses	No parking shall be allowed in this zone for non-marine uses unless the applicant can demonstrate that the number of parking spaces on-site exceeds the number of parking spaces needed to accommodate the demand for marine and water-dependent uses that are permitted as permitted and conditional marine uses which are or may be located on the subject property. The remainder of parking required, if any, for such non-marine uses shall be provided off-site.
Other	Temporary wind anemometer towers
	Wind energy systems, as defined and allowed in Article X, Alternative Energy

As with other zones, uses not enumerated are not permitted. Additionally, the following uses are specified as prohibited: residential uses, amusement/theme parks, bulk freight facilities, on-site gambling casinos not accessory to and located aboard either a ferry or inter-port cruise ship.

The B-6 zone allows the following uses:

Commercial	Professional, business and general offices
	Restaurants and other eating and drinking establishments
	Hotels and inns limited to no more than 150 rooms
	Craft and specialty shops, including the on-premises production of handcrafted goods
	Retail and retail service establishments, excluding those with gas pumps
	Theatres
	Banking services, excluding vehicular drive-up services*
	Cabinet and carpentry shops
	Personal services
	Business services
	Offices of business trades people
	Miscellaneous repair services, excluding all types of automotive repair except for automobile repair and service establishments
	Telecommunication and broadcast and receiving facilities*
	Brew pubs and microbreweries without associated bottling facilities; and brewpubs and microbreweries with associated bottling facilities limited to 5,000 bottles per year output.
	Electronic data storage
	Marine products wholesaling and retailing
	Harbor and marine supplies and services, chandlery and ship supply
	Bakeries, coffee roasters, and commercial kitchens with building footprints limited to fifteen thousand (15,000) square feet of contiguous building space.
	Printing establishments.
Residential	Attached dwellings including row houses, two-family and multifamily dwellings
	Handicapped family units
	Combined living/working spaces, including but not limited to artist residences with studio space
	Mixed use residential and commercial structures
Public	Utility substations, including sewage collection and pumping stations, water pumping stations, transformer stations, telephone electronic equipment enclosures and other similar structures
	Landscaped pedestrian parks, plazas and other similar outdoor pedestrian spaces
	Pedestrian and multi-use trails

Other	Studios for artists, photographers and craftspeople including but not limited to, painters, sculptors, dancers, graphic artists and musicians
	Accessory uses customarily incidental and subordinate to the location, function and operation of permitted uses*
	Health clubs, martial arts and mediation facilities
	Intermodal transportation facilities
	Nursery schools, kindergartens, and daycare facilities or home babysitting services
	Wind energy systems, as defined and allowed in Article X, Alternative Energy

B-6 conditional uses include meeting and exhibition facilities up to a total of 20,000 gross sf; wholesaling, providing the wholesale operation is associated with an onsite retail establishment and that the wholesaling component of the facility occupies a building footprint of less than 15,000 square feet; drive-up banking facilities located in the interior of parking structures, subject to multiple criteria; surface and structured parking, subject to multiple criteria, including ground floor commercial requirements for structured lots; and temporary wind anemometer towers.

As with other zones, uses not enumerated are not permitted. Additionally, the B-6 use requirements specifically prohibit ground mounted telecommunication towers; waste, scrap, and/or byproduct storage and processing facilities; auto service stations; and drive-up facilities, excepting bank drive-ups in interior parking structures.

In sum, neither the WSUZ nor the EWPZ allow residential uses or anything but ancillary non-residential, non-marine uses. They tackle this issue through different tools – the WSUZ allowing a greater range of non-marine-dependent uses north of the rail line that splits the zone and through limits on new construction, and EWPZ through a narrower list of combined possible uses and strong language regarding the necessary marine compatibility of non-marine uses. The emphasis in the list of permitted uses for EWPZ is on marine-dependent uses, with most marine-related uses being conditionally allowed. The allowed uses of the B-6 zone read like many other mixed-use urban zones, with no particular marine emphasis, except for its noted adjacency, and upland-intended application.

Dimensional Requirements Summary:

	WSUZ	EWPZ	B-6
Min. Lot Size	None	None	None
Min. Street Frontage	None	None	
Min. Front Yard	None	None	
Min. Rear Yard	None required unless adjacent to a residential zone; if adjacent to a residential zone, twenty-five (25) feet.	None	None
Min. Side Yard	None required unless adjacent to a residential zone; if adjacent to a residential zone, twenty-five (25) feet.	None	
Max. Setback from Street Line			10 ft., excepting parking garages, public trans. facilities, and subject to the building height envelopes of Eastern Waterfront Building Height Overlay Map. See Sec. 14-272 c.2 for exemptions.
Min. Length of Building Wall required to be located along street frontage of lot			70% of lot street frontage or 25% of building perimeter. For buildings fronting on 2+ streets, building wall on one street may be decreased so long as it is proportionally increased on others and the building wall on the secondary street is not reduced to less than 25 ft.
Min. Setback from Pier Line	5 feet from the edge of any pier, wharf or bulkhead. The setback may be utilized for activities related to the principal uses carried on in the structure, subject to 14-313/14-314, but shall not be utilized for off-street parking. The edge of any pier, wharf or bulkhead shall include any attached apron(s).	5 feet from the edge of any pier, wharf or bulkhead. The setback may be utilized for activities related to the principal uses carried on in the structure, subject to 14-313/14-314, but shall not be utilized for off-street parking. The edge of any pier, wharf or bulkhead shall include any attached apron(s).	
Max. Structure Height	45-100 ft. (see Sec. 14-320.9.e)	45 ft, except for cranes and gantries, rooftop appurtenances (see Sec. 14-303.e for full exemptions)	65 ft. or as otherwise governed by a Building Height Overlay Map
Minimum Building Height for New Construction			3 floors of habitable space above the average adjacent grade within 25 ft. of any public street. See Sec. 14-272 c.3.g for exemptions.
Max. Lot Coverage			100%
Max. Impervious Surface		100%	

VII. POLICY ANALYSIS

Comprehensive Plan Volume 1 (2002/2004) gives an overview of the years of waterfront planning efforts of the City, and addresses redevelopment of Waterfront East specifically. It outlines four redevelopment principles for development in this area (these four principles are restated in the Eastern Waterfront Masterplan): Character and Impact of Development, with particular emphasis on compatibility with surrounding areas – residential, maritime, and natural environment; Mixed-use as a component of an active, vibrant urban area; maintaining Maritime Resources; and Economically Responsible Development that benefits the city and the region. Volume 1 references the Eastern Waterfront Masterplan (adopted 2002 and amended 2004 & 2006). The study boundary is shown in red in Figure 2 below which is the specific policy

document for this area, which also consists, by reference, of two other documents: the Eastern Waterfront Design Guidelines and the Eastern Waterfront Building Height Study.

The Eastern Waterfront Masterplan makes specific reference to the Portland Company property:

The Portland Company complex, a mid-nineteenth century manufacturing facility, occupies the easterly end of the Eastern Waterfront. As an early manufacturing center, the site is home to several large brick and granite industrial buildings of architectural significance with potential for adaptive reuse. The Portland Company property is currently designated as eligible for inclusion in the National Register of Historic Places.

The property is highly developed, but in need of significant structural and cosmetic repair. Importantly, the complex is the only private property in the study area with direct water access. Currently, the Portland Company houses a variety of commercial uses, including a marina, boatyard, boat repair, general office, exhibition space, and the Narrow Gauge Railroad Museum.

Future parking enhancements and better vehicular and pedestrian access to the central redevelopment area will better integrate the Portland Company complex with the Eastern Waterfront and the Commercial Street business district, spurring the adaptive reuse and restoration of the historic structures.

Development Considerations

- *Historic 19th Century industrial complex.*
- *Promote the continuation of boat yard and yacht support services.*
- *Encourage the adaptive reuse and sensitive rehabilitation of historic structures.*
- *Increase connections to Commercial Street and promote shared parking with abutting uses.*
- *Expand recreational boating and active public use of the water.*

The applicant provides a summary of the alignment of their project with the Eastern Waterfront Masterplan in section 2.4 of their application. The application accurately cites support in that document for zoning changes that foster upland mixed use development as well as water dependent and marine uses within 75 feet of the shore line. Rezoning of this area was not only anticipated but called for, and the zone changes proposed reflect the specific policy guidance of the Eastern Waterfront Masterplan.

The October 21st memo regarding this application highlighted a Comprehensive Plan discrepancy with the application – the first volume of the Comprehensive Plan, and the Eastern Waterfront Masterplan (a component of the Comprehensive Plan by reference) indicated that land within 75 feet of mean high water should be given priority to water-dependent and marine uses. The location of the B-6/EWPZ boundary as originally submitted carried the B-6 zone to less than 75 feet of mean high water, thereby reducing the availability of land for intended marine-dependent uses. At the October workshop the applicant incorporated into their presentation a revised zoning map showing an adjusted B-6 boundary line no closer than 75 feet – the zone boundaries between B-6 and EWPZ are now consistent with Comprehensive Plan recommendations.

The Eastern Waterfront Design Guidelines will be a pertinent policy document when a development proposal is brought forward, but doesn't have bearing on the zoning application. The Eastern Waterfront Building Height Study (Height Study), however, has implications for the proposed zone change. The Height Study not only includes maximum height recommendations, but incorporates other tools for preserving and enhancing view corridors for a topographically varied area of Portland. It includes recommendations for street extensions and greater connectivity with the surrounding neighborhoods, maintaining view corridors through the delineation of building envelopes, as well as areas where "towers" could be built – areas where the maximum height could be exceeded – provided that those towers met particular spacing and dimensional requirements.

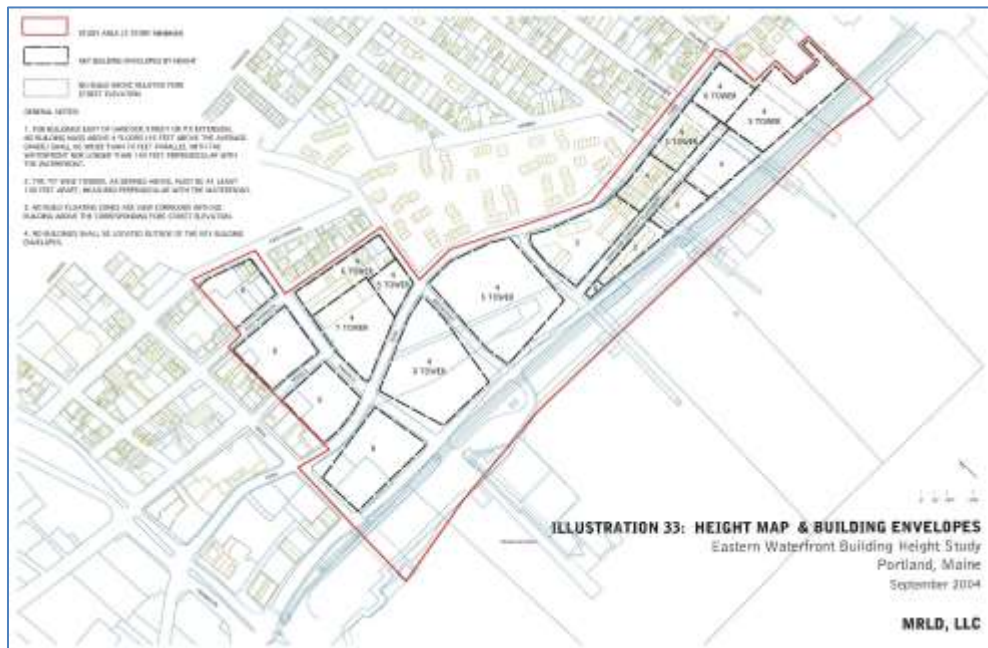


Figure 2, Eastern Waterfront Building Height Study, Illustration 33.

The B-6 Building Height Overlay & Building Envelopes map was adopted in 2004 as a direct outgrowth of the policy recommendations of the Height Study, and regulates heights and building areas within the current B-6 boundaries (Figure 4 and Attachment 2). The B-6 Height Overlay and the Height Study are currently in alignment, although the implemented height overlay took a somewhat more conservative approach to maximum heights than the Height Study recommended. A simultaneously amended B-6 Building Height Overlay and B-6 zone boundary would maintain Comprehensive Plan consistency. The applicant presented a proposal for amending the map at the previous meeting, and has included it as a primary discussion item for the November 18th workshop.

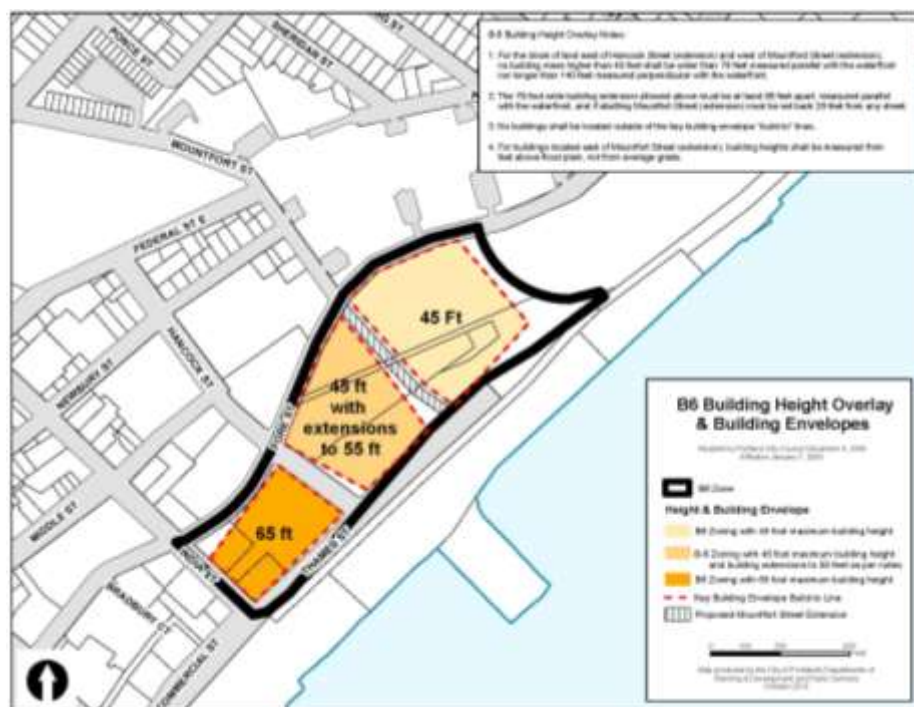


Figure 3

VIII. DISCUSSION

As the November 18th site walk is concerned primarily with illustrating the height implications of the proposed zoning changes, it would be ideal to focus the workshop that immediately follows the site walk with a focus on the pertinent building height issues of this application. An overview of staff and applicant discussions of building heights follows. Also included is a short list of other topics that could be discussed on Nov. 18th if time allowed, or at a subsequent meeting.

Height. The B-6 Building Height Overlay & Building Envelopes map is the regulatory fulfillment of one geographic area, just the west of the Portland Company land, of Illustration 33 (Figure 3 above and Attachment 1). An extension of the B-6 zone will require a continuation of the B-6 Building Height Overlay & Building Envelopes map in order for an expansion of B-6 to be compliant with Comprehensive Plan policy. Planning staff has had discussion about the height/building envelopes component of this proposal, and the applicant has submitted a Height Overlay map amendment as part of their application. B-6 currently allows for 65 ft. maximum feet, except that the zone (Sec. 14-272) currently states that *Notwithstanding sections 1. and 2. above, new structures located in the blocks located south of Fore Street and north of Commercial Street and its extension, shall build to the key building envelopes shown on the Eastern Waterfront Building Height Overlay Map.* An extension of the zone outside the boundary of the Height Overlay map would default to the maximum allowed height of 65 feet because the map stops before 58 Fore Street, creating a gap between the Height Study (which as an adopted component of the Eastern Waterfront Masterplan is an element of the Comprehensive Plan), and enacted Zoning. Staff recommends that the B-6 Building Height Overlay & Building Envelopes map be amended concurrently with an amendment to the zoning map, so that Comprehensive Plan consistency is maintained, and so that a 65 foot building height is not the resulting default maximum for this area.

The conversion of the Height Study recommendations to the B-6 Building Height Overlay involved some interpreting of terms used in the Height Study. The Height Study makes recommendations for # of stories, and elsewhere in the document defines a story as 11 feet. Zoning does not regulate height by stories, and so the B-6 Building height Overlay reflects this as maximum number of feet. A recommendation for 4 stories (or floors) was implemented as 45 feet. The Height Study uses the term “towers” to describe areas where the maximum height can be exceeded. These towers have both dimensional and locational limits, so as to avoid blocking identified view corridors and monolithic, uniform building heights. Towers were recommended to be no wider than 70’ parallel with the waterfront nor longer than 140’ perpendicular, and no closer than 140 feet apart.

The B-6 Building Height Overlay does not employ the tower terminology, but adopts the recommended dimensional and spacing standards, as well as building envelopes and view corridors. The building envelopes east of Hancock Street were implemented with more conservative heights than recommended in the Height Study. Another divergence from the Height Study is that the building envelope east of Mountfort Street utilizes a different means of calculating height than the others – maximum building height is calculated from feet above floodplain in deference to the steep grades of this eastern section of the study area, rather than the standard measurement from average surrounding grade. The topography of the site includes significant grade changes (Figure 5), and the difference in resulting building heights when measured from average grade versus feet above flood plain could be significant.

The City’s measurement of height is defined in Sec. 14-47 of the Land Use Code: ***Building, height of:*** *The vertical measurement from grade, or the predevelopment grade on the islands, to the highest point of the roof beams in flat roofs; to the highest point of the roof beams or the highest point on the deck of mansard roofs; to a level midway between the level of the eaves and highest point of pitched roofs or hip roofs; or to a level two-thirds of the distance from the level of the eaves to the highest point of gambrel roofs. For this purpose the level of the eaves shall be taken to mean the highest level where the plane of the roof intersects the plane of the outside wall on a side containing the eaves.*

This is the standard measurement city-wide, and the B-6 Height Overlay is the only instance of height being measured from floodplain. The Eastern Waterfront Building Height Study itself references height measurement from average grade (see Figure 3, Illustration 33, General Note 1). When the B-6 height Overlay map was adopted, two very different methods of calculating height were implemented, with the flood plain measurement being adopted as a way to control for unexpected visual impact due to the marked change in elevation in this area. In reviewing the application to amend the B-6 Height Overlay map the implications of the two methods have to be discussed.

Since the October workshop, staff and the applicant have had extensive discussions regarding the implications of both measurement methods, and they have included effective visuals in their most recent submission that demonstrate the implications of both (Attachment E and excerpted in Figure 5).



Figure 4, Height Measurement Comparison Examples

In the context of these visuals, and a more thorough picture of the implications of measuring from floodplain, Planning staff does not believe that the floodplain measurement would produce the intended development patterns outlined in the Eastern Waterfront Building Height Study. The Height Study anticipated building above the grade of Fore Street, as well as strongly supporting greater physical connectivity and continuity of the waterfront with the surrounding neighborhoods. At the October 21st workshop there were several public comments made regarding the wish for the grade of Fore Street not being broken by new construction, or for current views to be any further obscured. These opinions are understandable and a valuable part of the rezoning discussion, but in the interest of avoiding any future confusion in regard to City policy in this area, the Comprehensive Plan itself anticipates construction above Fore Street. The protected street projection view corridors recommended by the height study were recommended precisely because greater height was anticipated elsewhere. The Height Study also encourages a varied, punctuated, not-monolithic skyline in this area, which would not be a result of measuring from floodplain. The recommendations for variable stories and tower allowances attest to this. Allowing maximum building heights measured from adjacent grade is consistent with Comprehensive Plan policy for this area, and consistent with standard practice for calculating building height.

Consistency with the Comprehensive Plan established, concern for viewsheds in this area, and the overall aesthetic impact of the site's redevelopment has been stated by the public repeatedly, and we anticipate it will continue to be a source of great concern. In addition to the maximum building height, and the method of measuring height, the other tools available to govern the overall visual impact of eventual building heights at 58 Fore Street are the view corridors, building envelopes, and location and dimensional requirements for the height extensions (sometimes referred to as towers). A new dimensional standard has been introduced in the

building height overlay map that has been submitted by the applicant, as well – a maximum height at Fore Street (Figure 6). The specific wording of the proposed Note 3 reads: *For buildings located East of Mountfort Street (extension), no building that has frontage on Fore Street shall exceed 35 feet in height above the adjacent Fore Street right-of-way grade within 35 feet of the Fore Street right-of-way.* This proposal has been made in response to staff and the public’s concerns that the significant variation in elevations on the site, particularly in the eastern portion, could lead to surprising and undesirable building heights along Fore Street. This height maximum adjacent to Fore Street would supersede the more generous height allowances of the remainder of the Height Overlay, as well as be more limited than the adjacent R-6 residential neighborhood, which has a maximum building height of 45 feet. The addition of this standard would add a considerable degree of predictability to future redevelopment possibilities.

The November 18th site walk will afford the opportunity to consider the suitability of this proposal, and the Height Overlay as a whole, in the context of the existing conditions and the surrounding neighborhoods.



Figure 5, Proposed Amended B-6 Height Overlay

A question was raised at the October workshop regarding the Planning Board’s ability to amend the entire B-6 Height Overlay map so that all heights are measured from average grade. This is something the Board could chose to do as part of a map edit, though it is not the applicant’s interest or place to request this themselves.

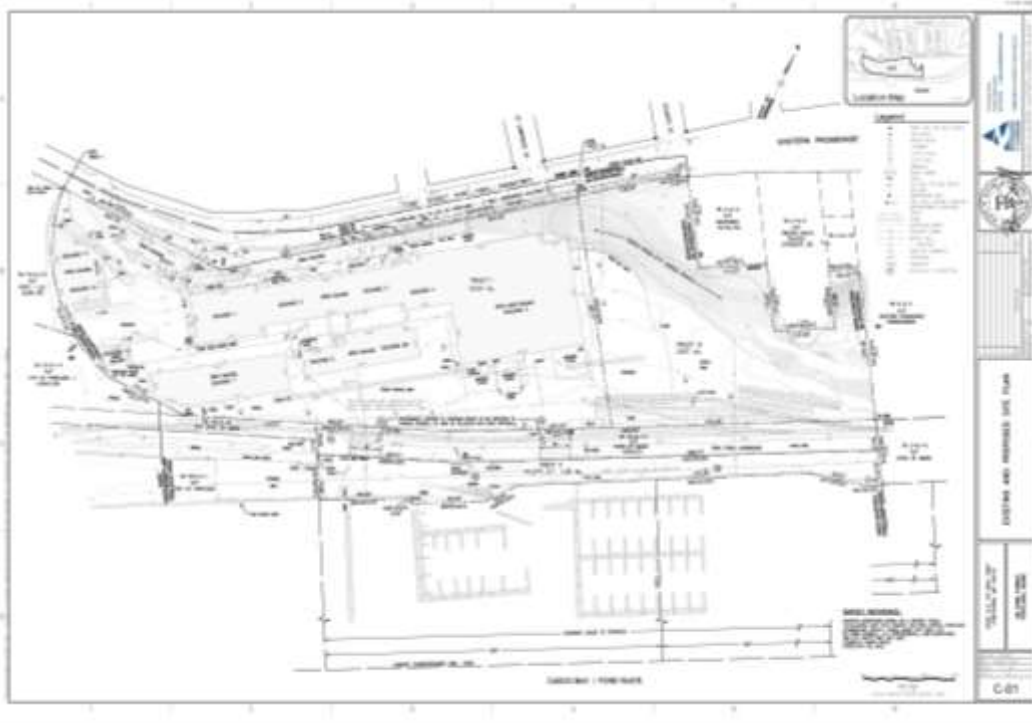


Figure 6

Marine Compatibility. Several issues have been raised in regard to the marine compatibility of the proposed changes. These were 1) the proposed boundary between B-6 and EWPZ, and the adequacy of the remaining upland, 2) marinas as a permitted use as opposed to a conditional use, and 3) setbacks from piers. The B-6 boundary has been moved northward, to 75 feet from the shore line. The proposal to allow marinas as a permitted use has been satisfactorily contained by limiting it as an allowed use only in the eastern portion of this zone, where there is currently a marina – this boundary line is shown as a dotted line perpendicular to the shoreline on the zoning map, as well as being tied by reference to a deed in the body of the proposed text amendments (Figure 8). A reduction in the required setback from pier line is also proposed to be limited to the eastern side of the depicted dotted line. Currently 25 feet in the B-6 zone, but 5 feet in the WSUZ, the proposed reduction east of roughly Ocean Gateway from 25 ft to 5 ft maintains current conditions in this area. As a standard that is cross-referenced in Shoreland Zone changes, this, like any other changes to Shoreland Zoning will require Maine DEP concurrence before enactment. Staff is satisfied with how each of these items is currently proposed.

Miscellaneous Dimensional Requirements. At the October workshop it was noted that the B-6 zone contains several provisions, including setback maximums, height minimums, and length of building wall minimum that might be problematic as applied to this location. Staff will assess these issues for discussion at a subsequent Board meeting.

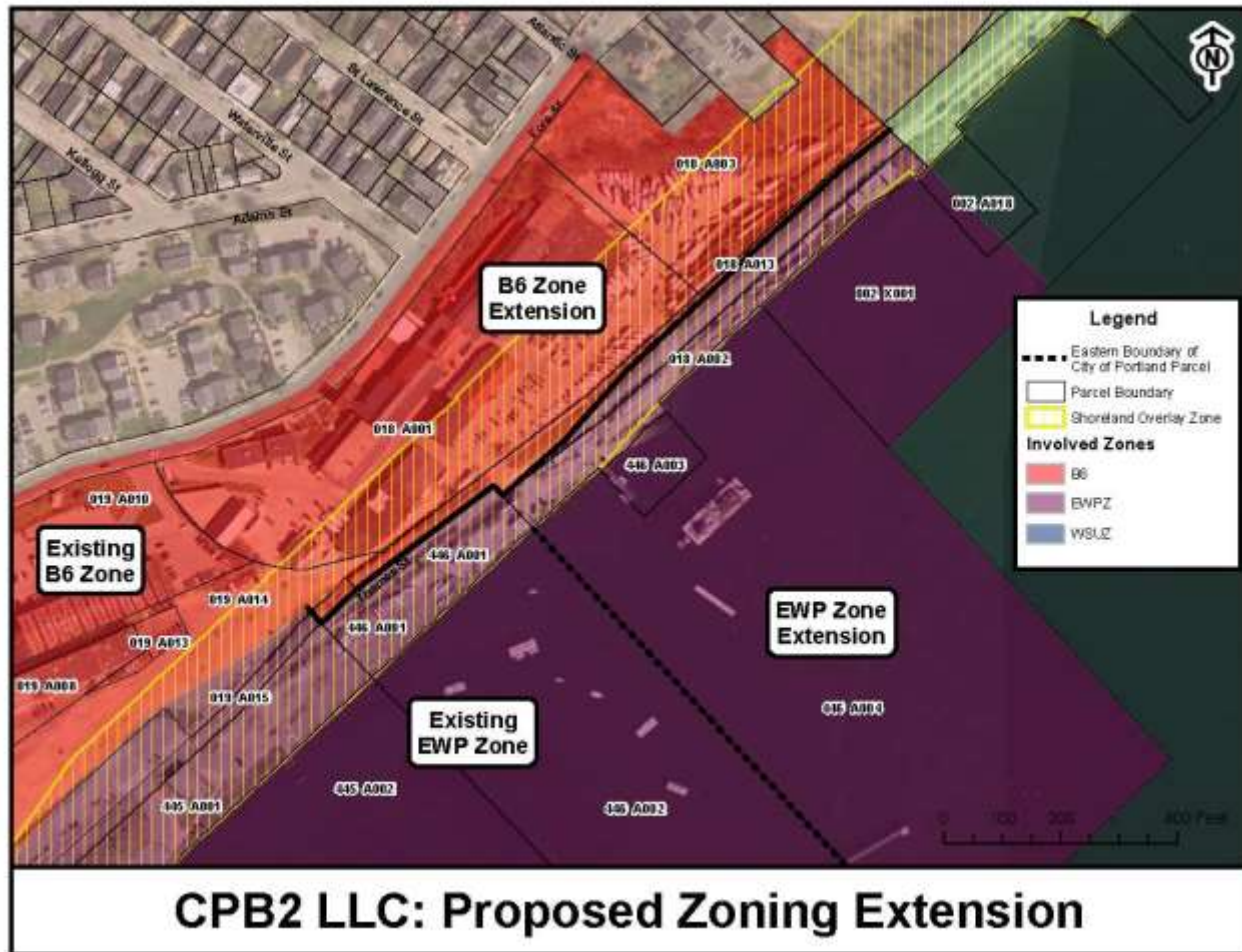


Figure 7, Proposed Zoning Map Amendment

IX. NEXT STEPS

- Provide feedback on zoning map, building height and text amendment requests.
- Schedule a public hearing or additional workshop if needed.

X. ATTACHMENTS

Report Attachments

1. Illustration 33
2. B-6 Building Height Overlay & Building Envelopes Map
3. Corporation Counsel Comments Re: Site Walks

Applicant's Submittal (Supplemental materials for the November 18th Workshop)

- A. Applicant's Cover Letter – 2014.11.07
- B. Proposed Zoning Extension
- C. Proposed B-6 Height Overlay with Aerial
- D. Proposed B-6 Height Overlay
- E. Height Overlay Plans and Sections

Public Comment

- PC 1. Preisser 11-11-14

PC 2 Macomber 11-14-2014

PC 3. Burwell 11-14-2014

**Memorandum**

Office of the Waterfront Coordinator

To: Chair O'Brien and
Members of the City of Portland Planning Board

From: Bill Needelman, Waterfront Coordinator

Date: February 3, 2014

Re: Portland Company Rezoning – Waterfront Impacts

I. Introduction

At the request of the Portland Planning Board, the Office of the Waterfront Coordinator offers the following observations regarding the proposed zone amendments for the Portland company complex at 58 Fore Street in the Eastern Waterfront.

The amendments include zone map changes and text changes as follows: extending the B-6 zone onto the upland portion of the subject site; extending the Eastern Waterfront Port Zone (EWPZ) along the water's edge and over the submerged lands currently occupied by the PYS marina; eliminating the Waterfront Special Use Zone (WSUZ); text changes to the B-6 zone broadening uses; and, text changes to the EWPZ allowing marine offices, and marinas and vessel fueling as a permitted use over portions of the site under the developer's control.

Additional amendments are requested for the Shoreland Zone providing the B-6 zone with reduced building, roadway and parking setback requirements

The following comments will concentrate on impacts to marine industry and active use of the water within the context of existing policies of the City of Portland.

II. Policy Background

The Eastern Waterfront Master Plan (Master Plan) provides the primary City policies informing land use and infrastructure decision making for the Portland Company complex. These policies are well explained in both the October and November memos to the Planning Board. Readers of this memo should refer to the policy discussions provided by Senior Planner, Christine Grimando as companion documents to this memo.

In addition to the policy analysis already provided, Board members should refer to *Eastern Waterfront Master Plan, Section IV. Statement of Principles for Redevelopment of the Eastern Waterfront*. These Development Principles will be key to locating the appropriate boundary line between the proposed B-6 and EWPZ zones. See Attachment 1 to this memo.

389 Congress Street/www.portlandmaine.gov/tel.207-874-8689/tty.207-874-8936/fax. 207-874-8669

III. Waterfront Implications of the Proposed Rezoning

B-6/EWPZ Boundary: Retain Sufficient Land for Active Use of the Water

The Portland Company development team requests a zone map change placing the B-6 zone 75' back from high water and extension of the EWPZ over the remaining shorefront and adjacent submerged lands. The significant waterfront questions raised by such amendments include (1) whether there is sufficient land retained in waterfront zoning in support of marine activity, and (2) whether the EWPZ is the appropriate zone to regulate waterfront activity associated with the Portland Company.

The “Maritime Resources” development principle from the Master Plan states that “Development...on land within 75' of mean high water ...will give priority to compatible water-dependent and maritime use.” This principle recognized that all water-dependent uses require some degree of upland support for circulation and efficient operation. Seventy five feet was selected as a minimum turning radius for a reasonably large truck and represented a minimum width of land expected to encourage active use of the water.

The existing Portland Yacht Services use occupies a strip of land approximately 72 feet wide at the westerly boundary with the Sail Maine community boating facilities and approximately 38 feet wide further to the east. As seen in the aerial photo below, the more active portions of the site are located in the areas with the greatest width, while the narrower areas to the east are generally used for boat and trailer storage.



The above aerial photo supports the wisdom of retaining sufficient land to support active use of the water. Where the rail-trail is set back from the water, a marginally sufficient strip of land supports the marina office, rigging storage, and circulation for the launch/haul ramp. The narrower strip has significantly less utility. The amount of land dedicated to the EWPZ may ultimately be less important to the promotion of active marine use than the location of the rail-trail corridor. Both zones allow for mixed use trails. As seen above, the trail has the potential to constrain land supporting active marine use, depending on its separation from the water and the nature of the marine use.

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Presuming that the trail and train remain in their present location, the current proposal appears generally consistent with standing policies for preservation of land for marine uses and the purpose of the EWPZ

Proposed Text Changes:

Marinas, Vessel Fueling, Marine Office and Classrooms as Permitted Uses: The proposed changes to the EWPZ text, with geographically specific allowances for marinas and vessel fueling as permitted uses, appears consistent with the purpose and policies of the zone and the Eastern Waterfront Master Plan. Marine office and classroom space likewise appears consistent with these policies, although building placement is a consideration – as discussed below with the *Setback from Pier Line* issues

5-foot building Setback from Pier Line: The proposal to allow structures closer than 25 feet to a pier edge or bulkhead poses potential conflicts with marine use, depending on the use of the structure. The purpose of the 25-foot setback is to allow large vehicle circulation adjacent to the water. If a proposed building supporting a marina were to be located closer than 25 to the water, it likely would not be a problem as it would be designed to facilitate the primary marine use. Other uses in the EWPZ, such as the conditionally permitted retail/restaurant uses, would likely compete for space with marine use. If the 5-foot setback were approved, the development team and the Planning Authority would need to work to ensure that the design and placement of structures and circulation routes facilitated active use of the water as consistent with the purpose of the EWPZ.

Shoreland Zone Amendments: Assuming that the location of the B-6 zone remains a minimum of 75 feet from high water, the B-6 setback reductions for buildings, roadways, and parking are not needed.

Attachments

Eastern Waterfront Master Plan, Section IV. *Statement of Principles for Redevelopment of the Eastern Waterfront.*

Development Principles for the Eastern Waterfront**Development Principles for the Eastern Waterfront****1. CHARACTER AND IMPACT OF DEVELOPMENT**

Development within the eastern waterfront will be compatible with the surrounding areas, neighborhoods, natural environment and maritime uses.

Objectives:

- Protect the operation of island ferry service and enhance parking, circulation and safety.
- Encourage compatible architecture.
- Encourage historic preservation and adaptive reuse of historic structures.
- Establish a new street and pedestrian network that integrates with the surrounding street and trail network.
- Preserve significant public view corridors to and from water and along the waterfront.
- Manage traffic, noise, and air and water emissions to minimize impacts on the surrounding community and users.
- Improve and protect the value and quality of natural resources.

2. MIXED USE

Development within the eastern waterfront will create a vital and active mixed use urban area that generates life and use every day of the year and all hours of the day.

Objectives:

- Provide opportunity for mixed-use non-marine development and activities in locations and in ways that are compatible with the use of maritime resources.
- Increase public use of the water, waterfront and shore through public access and green space development.
- Maintain and enhance recreational trail access.

* Note: Mixed use includes but is not limited to residential, commercial, public, institutional, marine, park, trail and industrial uses (all as generally defined in the B-5 Zone of the Portland Land Use Code.)

Development Principles for the Eastern Waterfront

3. MARITIME RESOURCES

Development in the eastern waterfront on piers, bulkheads, and on land within 75' of mean high water line, will give priority to compatible water-dependent and maritime uses.

Objectives:

- Preserve and encourage long-term enhancement of emerging and traditional maritime and water dependent uses.
- Utilize the harbor's deep-water resources to serve deep draft vessels.
- Encourage small boat berthing where water depth does not permit deep-water berthing.
- Encourage public physical and visual access to the water where appropriate.
- Allow non-marine mixed uses when compatible with water dependent and marine uses.

4. ECONOMICALLY RESPONSIBLE DEVELOPMENT

Development in the eastern waterfront will provide a significant benefit to the City and regional economy.

Objectives:

- Encourage a positive economic return to City government.
- Sustain and strengthen water-related tourism.
- Enhance the economic viability of the eastern waterfront's property and facilities.
- Assure that public investment and development benefit the residents of the greater Portland community.
- Provide adaptable, flexible infrastructure that will allow the City to adjust to future technologies and trends.
- Enhance multi-modal transportation opportunities.



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Secretary/Clerk

Sharon Miller
Member-at-Large

September 2, 2014

Deb Andrews
Manager, Historic Preservation Program
City of Portland
389 Congress Street
Portland, ME 04101

Dear Deb:

I write on behalf of Greater Portland Landmarks to request that the City of Portland Historic Preservation Board nominate the Portland Company complex as a local historic district.

The Portland Company complex is the only relatively intact 19th century waterfront industrial site surviving on the Portland peninsula. Its landmark quality buildings illustrate the story of 19th century Portland's industrial prowess in both rail and marine transportation, which helped establish Portland's prominence in international business and trade. The City's recent study commissioned from Sutherland Conservation and Consulting identified fourteen historic buildings built between the mid-1840s and the 1950s which survive on the ten acre site along the waterfront. The Sutherland study provides extensive documentation of the historic significance of the site locally and nationally in the context of the American Industrial Revolution. The whole complex has been determined eligible for the National Register of Historic Places by the Maine Historic Preservation Commission.

From 1845 - 1978, the Portland Company produced 630 steam railroad locomotives, boilers and engines for over 350 marine vessels, machinery for the paper industry, armor plate for gunboats for the Civil War (including the USS Monitor), and equipment to build the Panama Canal. In addition, the Company produced a variety of forged and cast iron objects needed for the metropolitan industrial age, such as decorative cast iron building storefronts, streetlights, gates, grates, and manhole covers. The Portland Company manufactured all the cast iron details of the Greek Revival style Portland Breakwater Light, or "Bug Light" (1875) in South Portland. The Portland Company was one of the largest employers in the state of Maine, providing jobs for hundreds of workers, contributing to the local and state economies for more than 130 years.

The Portland Company complex currently lacks any protection of its historic resources, which are at risk as development pressure increases on Portland's peninsula. The complex helps introduce and define the City of Portland from the water, and the character of any development on the site will have tremendous impact on the surrounding neighborhoods and the City as a whole. Therefore, we believe that the protections afforded by historic district designation would be essential to managing change, including new development on the site.

Thank you for your consideration.

Yours sincerely,

Hilary Bassett
Executive Director



MEMORANDUM

TO: Chair O'Brien and Members of the Planning Board

FROM: Rick Romano, Chair and Members of the Historic Preservation Board

CC: Jeff Levine, Director, Department of Planning & Urban Development
Alex Jaegerman, Planning Division Director
Christine Grimando, Senior Planner
CPB2 Partners Jim Brady, Kevin Costello, Dick Prentice, Casey Prentice

DATE: October 15, 2014

RE: Review Process for 58 Fore Street – Portland Company Site

On September 24, 2014, the Historic Preservation Board held a workshop to learn the findings of a recently completed historic and architectural assessment of the Portland Company complex at 58 Fore Street. The study was commissioned by the Planning Department and prepared by Sutherland Conservation & Consulting. In a powerpoint presentation, Scott Hanson of Sutherland Conservation & Consulting reviewed the history of the company, its place in the history of Portland and its significance in the history of manufacturing and transportation at the local, state and national levels. Mr. Hanson also reviewed the development history of the building complex itself and provided an assessment of the individual extant structures as to their relative significance and level of architectural integrity.

Included in the Board's packet for the workshop was a memorandum dated 9/17/14 from Planning Division Director Alex Jaegerman (copy attached). In the memo, Mr. Jaegerman recommends that the Historic Preservation Board postpone consideration of potential historic district designation for the former Portland Company complex at 58 Fore Street until after a decision is made regarding the property owner's requested zoning map and text amendments. The basis for the recommendation provided in the memo states that "without (the) map amendments the developer is very unlikely to move forward." At the Historic Preservation Board's 9/24/14 meeting Mr. Jaegerman also explained that it was staff's wish to pace and sequence the project review in a manner consistent with available municipal resources. In addressing the rezoning request first, Mr. Jaegerman assured the board that zoning changes would be managed so as not to prejudice the review and findings of the Historic Preservation Board as it considered the potential for historic designation of the property. Board members expressed some reservations about this approach and noted that zoning criteria often relate directly to Historic Preservation Board concerns. Board members explained that their principal concern at this point is that Planning Board members, Planning Division staff and the property owner understand at the outset of the rezoning process that the criteria for

Historic Preservation Board review is in addition to basic zoning requirements, and that neither existing nor amended zoning requirements supersede or otherwise compromise historic preservation ordinance review criteria, which criteria in some circumstances may result in more restrictive limits as to dimensional or other standards than may otherwise be imposed by zoning.

Members of the Historic Preservation Board agreed to cooperate with the staff recommendation for the sequencing of review provided the above position is recognized and honored.

Following up on the Sutherland report, the next step in the Historic Preservation Board's consideration of the Portland Company complex is to schedule a site walk with appropriate participants, including a representative of Sutherland Conservation & Consulting. Assuming the Planning Board will also need to conduct a site walk as it considers the future of the existing industrial complex and the larger parcel, Historic Preservation Board members suggest that a joint site walk would be both efficient and of mutual benefit. To that end, the Historic Preservation Board requests that a joint site walk be scheduled at the earliest opportunity.

Staff has informed the Historic Preservation Board that just as the Planning Department commissioned an independent historic and architectural assessment of the Portland Company complex (the Sutherland report), the Department has also commissioned an independent structural analysis of the 16 structures that comprise the Portland Company complex. The Board looks forward to reviewing the results of the structural analysis.

Cc: 9/17/14 memo from Alex Jaegerman to Historic Preservation Board



MEMORANDUM

TO: Chair Romano and Members of the Historic Preservation Board

FROM: Alex Jaegerman, Planning Division Director

DATE: September 17, 2014

SUBJECT: Review Process for 58 Fore Street – Portland Company Site

At the September 24 workshop you will receive a presentation on the Sutherland Consultants *Historic Significance and Integrity* report on the Portland Company site. You have also received a letter from Greater Portland Landmarks requesting that the Board initiate a historic district designation process for this site. The owners of the site, CBP2 LLC, have filed an application for certain zoning map and text amendments for this site, which are currently under review by the Planning Division and Planning Board.

The Planning Office has met with the property owners to review their anticipated process for development review, and how that review should relate to consideration of Historic District designation.

At a staff level, we believe that the zoning map and text amendments proceed first, with the historic designation discussion to follow. The proposed map amendments are most appropriately handled first, because without those map amendments the developer is very unlikely to move forward. After that decision is resolved, the issue of designation can be discussed as part of a collaborative exchange in which the preservation goals can be viewed in the context of the adaptive reuse and redevelopment prospects for the site. It should be noted that we do not envision initiation of the formal review process for the Master Development Plan or further Level III Site Plan review until the historic designation process has completed.

Please let me know if you have any questions.

DIVISION 15.1. B-6 EASTERN WATERFRONT MIXED ZONE

...

Sec. 14-272. Dimensional requirements.

In addition to the provisions of article III, division 25 of this Code, lots in the B-6 Eastern Waterfront Business Zone shall meet the following requirements:

(a) *Minimum lot size:* None.

(b) *Minimum frontage:* None.

(c) *Yard dimensions:*

1. Minimum yards in the B-6 zone:

Front setback: None required except as provided in 3. below:

Side setback: None required.

Rear setback: None required.

2. Maximum building setback from street line except for parking garages, public transportation facilities and provided in 3. below: 10 feet.

a. For lots fronting on more than one street, the setback can be increased more than ten (10) feet if all of the following conditions are met:

i. The increased setback occurs at the intersection of the streets;

ii. The increased setback area is the primary pedestrian entrance to the building;

iii. Seventy-five (75) percent of the total building wall length facing the abutting streets shall be setback no greater than ten (10) feet; and

iv. All building wall segments, which make

up the increased setback shall be included in the calculation of the total building wall length noted in subsection iii above.

In addition, for any new construction on a lot abutting three or more streets, the maximum setback shall apply only to the two most major streets. (For purposes of this section, major street shall mean that street with the highest traffic volume or the greatest street width in comparison with the remaining streets).

3. View Corridors and Key Street Wall Development

Notwithstanding sections 1. and 2. above, new structures located in the blocks located south of Fore Street and north of Commercial Street and its extension, shall build to the key building envelopes shown on the *Eastern Waterfront Building Height Overlay Map*. Parking structures and the buildings for public transportation facilities may, however, set back beyond the key building envelopes (toward the interior of blocks), but may not occupy the land between the key building envelope and the street right of way.

- (d) *Minimum length of building wall required to be located along street frontage of lot (except that buildings located in the easternmost key building envelope, as shown on the Eastern Waterfront Building Height Overlay Map, shall not be subject to this requirement).*

i. 70% of lot street frontage; or

ii. 25% of building perimeter,

iii. For buildings fronting on two or more streets, the minimum building wall on one street may be decreased so long as the frontage is proportionally increased on other streets in so far that the building wall on the secondary street is not reduced to less than 25 feet.

- (e) *Maximum lot coverage:* One hundred (100) percent.
- (f) *Maximum building height:* 65 feet, or as otherwise governed by a Building Height Overlay map (for example, in the Eastern Waterfront). Building Height Overlay maps are found in the Planning and Development Department Office.
- (g) *Minimum building height:* No new construction of any building shall have less than three (3) floors of habitable space above the average adjacent grade within twenty five (25) feet of any public street (except that buildings located in the easternmost key building envelope, as shown on the Eastern Waterfront Building Height Overlay Map, shall not be subject to a minimum building height).

This provision shall not apply to:

- i. Parking attendant booths,
- ii. Information kiosks and ticketing booths,
- iii. Parking garages,
- iv. Public transportation facilities,
- v. Additions to buildings existing as of December 8, 2004 provided that the cumulative additions since December 8, 2004 does not exceed 25% of the building footprint on December 8, 2004 except that such restriction shall not apply to those portions of the building addition that are constructed closer to the street line than the building footprint existing as of December 8, 2004,
- vi. Buildings or building additions of less than 2,000 square feet footprint, on lots or available building sites of less than 2,000 square feet,
- vii. Utility substations, including sewage collection and pumping stations, water pumping stations, transformer stations, telephone electronic equipment enclosures

and other similar structures, and

viii. Additions to and/or relocations of
designated historic structures.



December 17, 2014

Christine Grimando, Senior Planner
City of Portland Department of Planning and Development
389 Congress Street
Portland, Maine 04101

Re: 58 Fore Street Zoning Map/Text Amendment Application
Additional Material Submittal

Dear Christine:

On behalf of CPB2 LLC, we are pleased to submit additional information in support of our application for a Zoning Map/Text Amendment at the 58 Fore Street site. This additional information has been prepared in response to the requests received from the Planning Board at the November 18, 2014 Workshop. Enclosed, please find one paper copy and one PDF copy (via CD) of the additional information described herein:

1. Fore Street & Water Section Figures – Total of 15 figures depicting a visual “layering” of sections of existing building structures and building height overlay limits when looking at the 58 Fore Street Site from Fore Street and from the Water.
2. Information justifying potential need for fuel storage in excess of 20,000 gallons for marina operations (relates to proposed text edit to the EWPZ).
3. Nautical chart showing water depths in the submerged lands area associated with the 58 Fore Street property.

We look forward to our 3rd workshop with the Planning Board on January 13th to review this additional information, and to moving forward to a Public Hearing. We will submit additional information in response to the memorandum received from Bill Needelman, Waterfront Coordinator dated December 12, 2014 by this Friday (December 19th). If you have any questions or require additional information, please contact me at any time at (207) 774-2112, or by email dsenus@woodardcurran.com.

Sincerely,

WOODARD & CURRAN INC.

David Senus, P.E.
Project Manager

227007

Attachment: CD containing Figures and Additional Information as noted herein

cc: CPB2 LLC (via email)
Mary E. Costigan, Bernstein-Shur (via email)



Petroleum Marine Consultants, LLC
13833 Wellington Trace E4 #207
Wellington, Florida 33414
Tel (561) 248-0389
Fax (561) 795-2294
www.petroleummarine.com

58 Fore Street, Portland Maine
Marina Fueling
Attention Kevin Costello

December 17, 2014

Marina Fueling System suggestions;

CPB2 Management Team,

Based upon our extensive experience in the marina fueling industry, and discussions with your development team around the potential deep-water marina expansion at the 58 Fore Street site intended to accommodate both small transient vessels as well as larger transient vessels, we recommend the following fuel storage capacity and fueling rates for the expanded marina;

Fuel Tanks

- Storage Capacity +/- 40k diesel and +/- 12k gasoline
- Fuel Depot Location Drawing Figure -2B general area left adjacent to "Marina Access"

Fuel Dock

- Fueling Positions; Qty (2) 2 hose diesel/gas dispensers on fuel dock each w/ 75' hoses and 75' spring rewind S/S hose reels

Fueling Rates; Diesel @ 25-35gpm Gasoline @ 10-15gpm

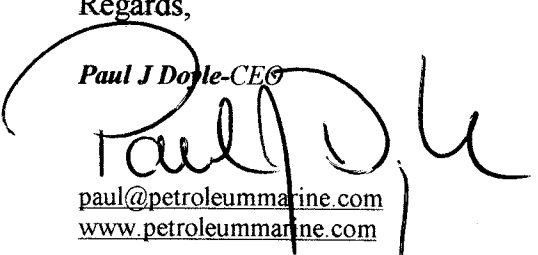
Large Vessel Fueling (90 feet +)

- Inslip Fueling; 4 fueling Hydrants @ +/- 100gpm

Please let our team know if you have additional questions.

Regards,

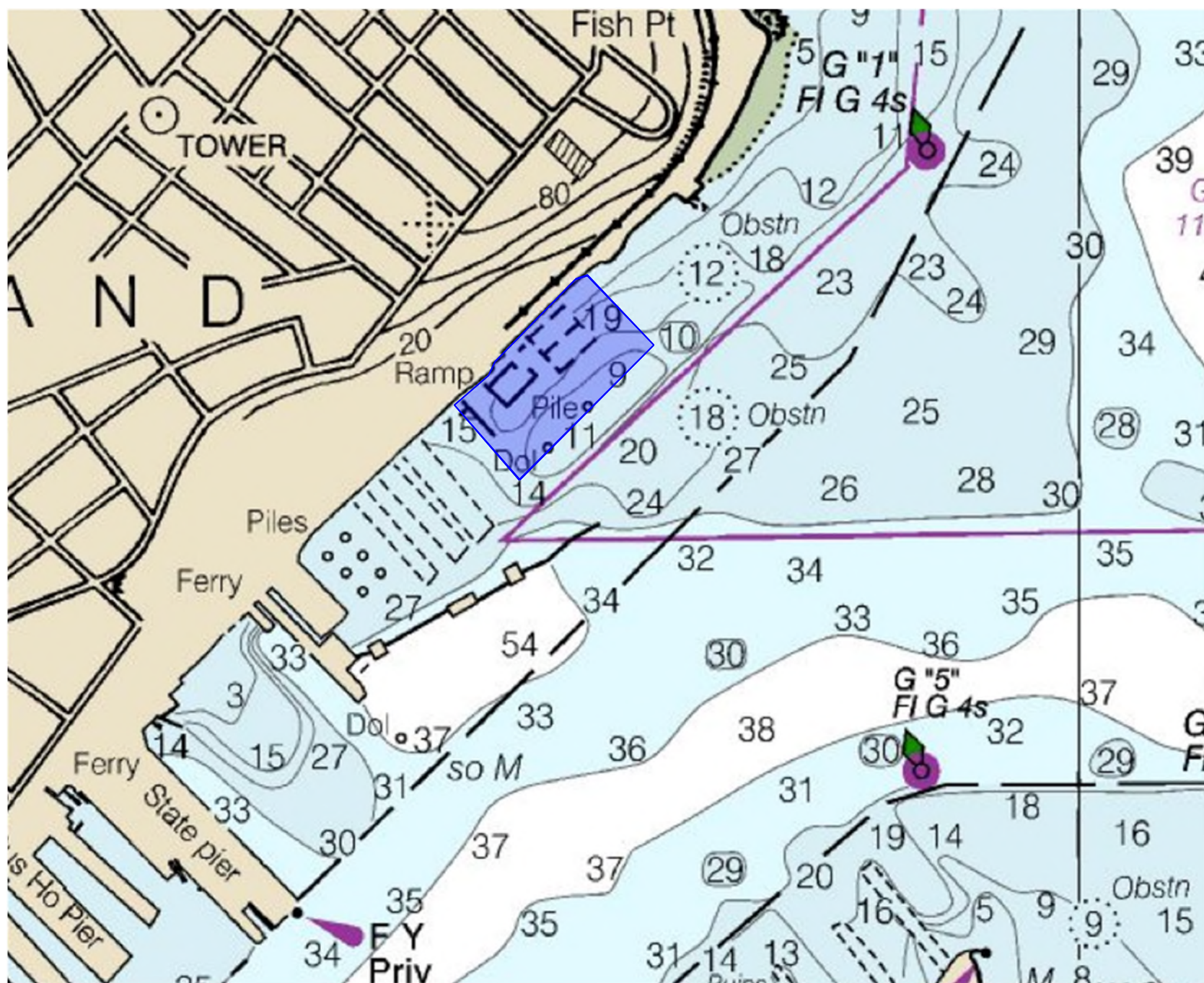
Paul J Doyle-CEO


paul@petroleummarine.com
www.petroleummarine.com

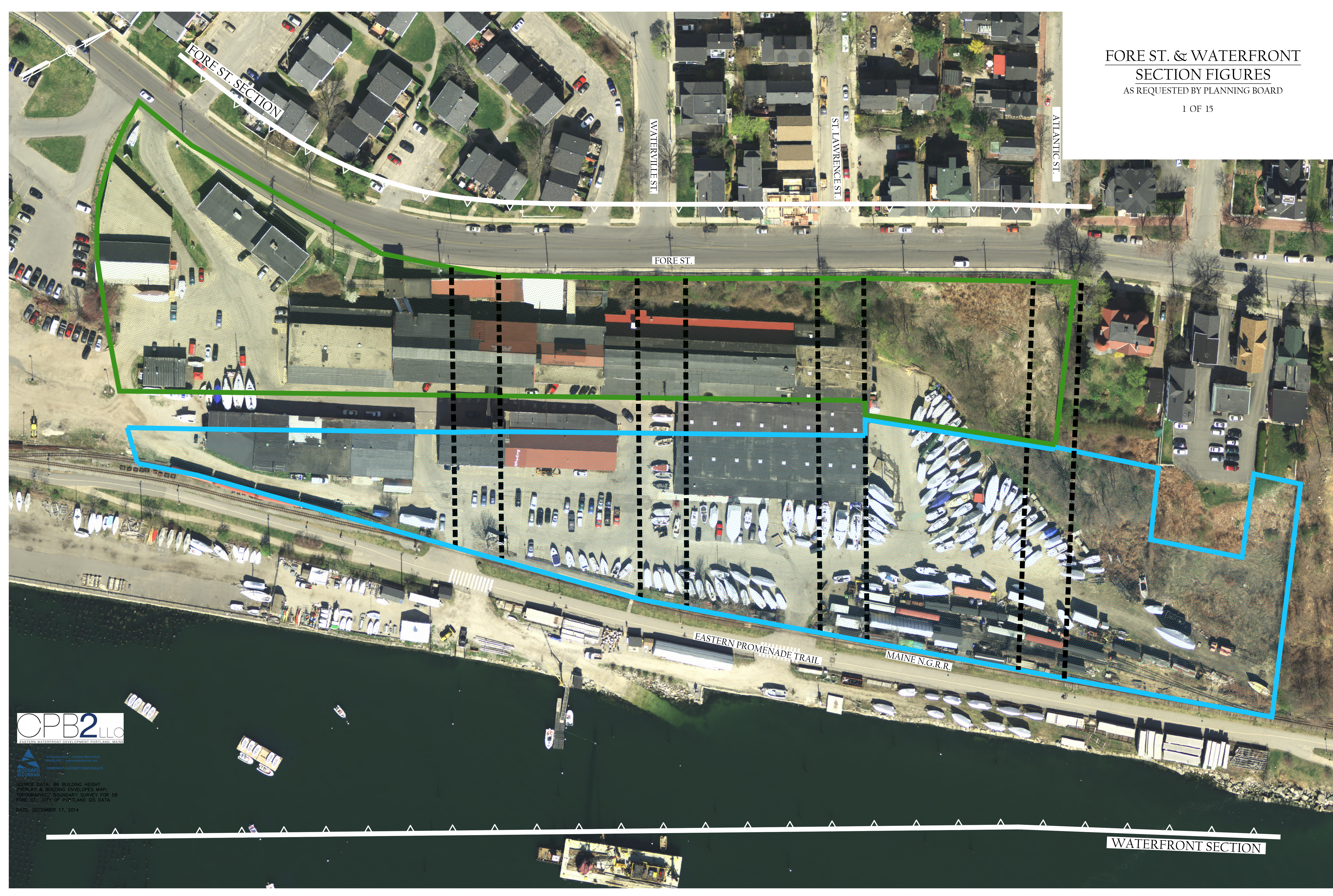
Affiliations;

- International Code Council
- Texaco Marina Council
- Association of Marine Industries
- South Carolina Marina Association
- The Marine Association of The Palm Beaches
- The Florida Marine Contractors Association, Inc
- Chairman & Co-Author; Petroleum Equipment Institute RP1000-09 Installation for Marina Fueling Systems
- Principal Committee Member for National Fire Protection Association (NFPA30A) Automotive and Marine Service Stations

"Quality means doing it right when no one is looking"



FORE ST. & WATERFRONT
SECTION FIGURES
AS REQUESTED BY PLANNING BOARD
1 OF 15



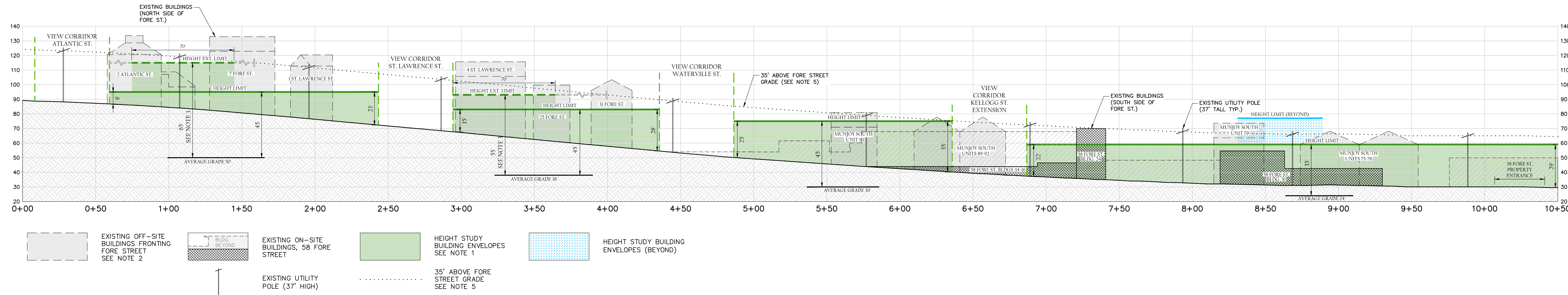
CPB2 LLC
EASTERN WATERFRONT DEVELOPMENT PORTLAND, MAINE

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SOURCE DATA: B6 BUILDING HEIGHT
OVERLAY & BUILDING ENVELOPES MAP;
TOPOGRAPHIC/ BOUNDARY SURVEY FOR 58
FORE ST.; CITY OF PORTLAND GIS DATA
DATE: DECEMBER 17, 2014

FORE STREET SECTION WITH B6 HEIGHT OVERLAY

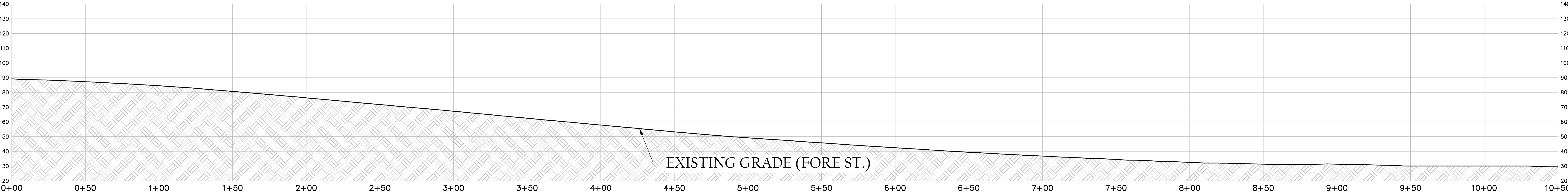
As requested by Planning Board



- NOTES:
- SECTION DOES NOT DEPICT ACTUAL PROPOSED BUILDING STRUCTURES. THE HEIGHT MEASUREMENTS ABOVE FORE STREET GRADE (SHADED IN BLUE AND GREEN) REPRESENT THE MAXIMUM HEIGHT ALLOWED PER THE BUILDING HEIGHT STUDY BASED ON AN ANALYSIS OF THE BUILDING HEIGHT ENVELOPES. THIS IS NOT A DESIGN PROPOSAL. IT IS INTENDED TO PROVIDE A REASONABLE INTERPRETATION OF THE FORE STREET CORRIDOR BASED ON THE EASTERN WATERFRONT BUILDING HEIGHT STUDY.
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 - SECTION SCALE: HORIZONTAL AND VERTICAL 1"=30'

FORE STREET SECTION WITH B6 HEIGHT OVERLAY

As requested by Planning Board

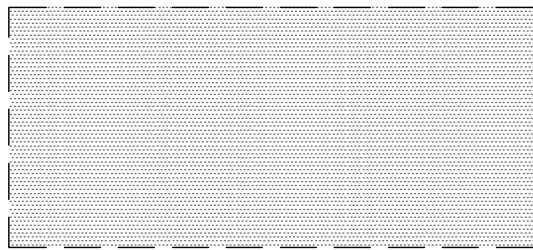
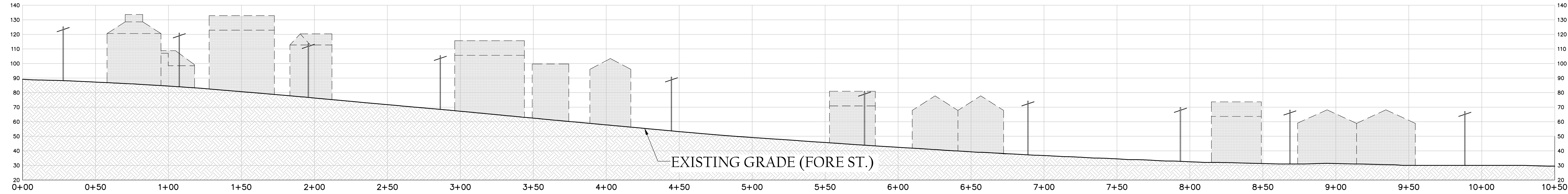


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DATE: DECEMBER 17, 2014

FORE STREET SECTION WITH B6 HEIGHT OVERLAY

As requested by Planning Board



EXISTING OFF-SITE
BUILDINGS FRONTING
FORE STREET

CPB2LLC
EASTERN WATERFRONT DEVELOPMENT PORTLAND, MAINE

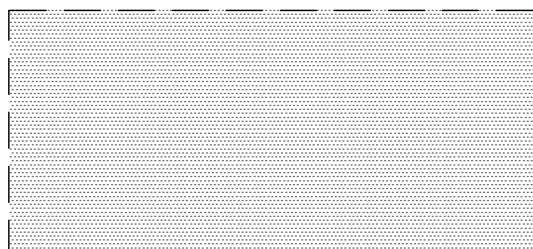
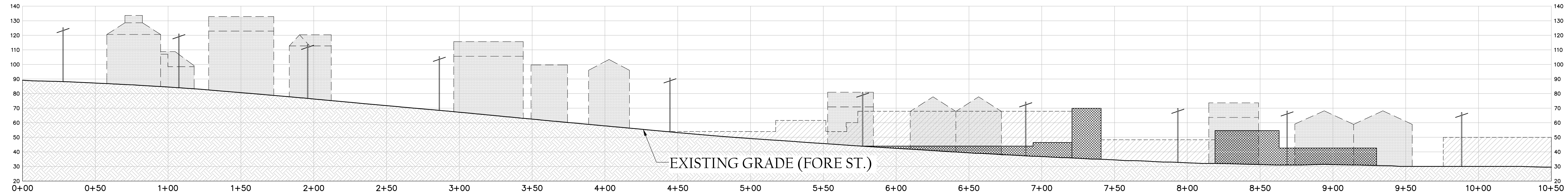
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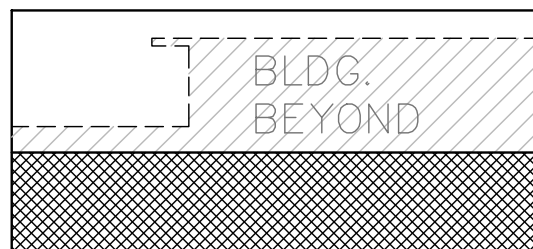
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FORE STREET SECTION WITH B6 HEIGHT OVERLAY

As requested by Planning Board



EXISTING OFF-SITE
BUILDINGS FRONTING
FORE STREET



EXISTING ON-SITE
BUILDINGS, 58
FORE STREET

EXISTING UTILITY
POLE (37' HIGH)

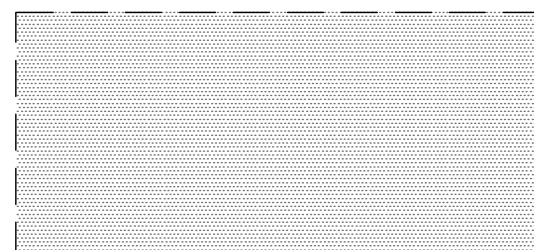
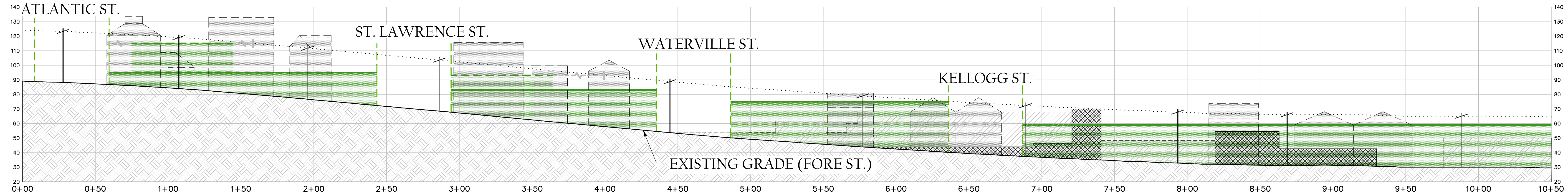


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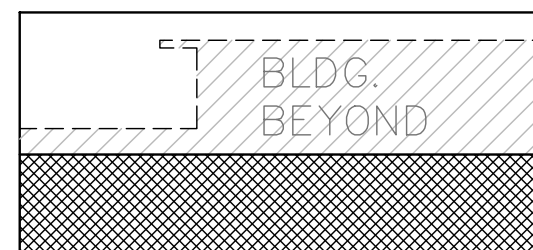
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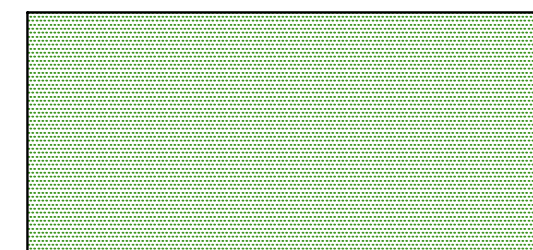
EXISTING OFF-SITE
BUILDINGS FRONTING
FORE STREET



EXISTING ON-SITE
BUILDINGS, 58
FORE STREET



EXISTING UTILITY
POLE (37' HIGH)



HEIGHT STUDY
BUILDING ENVELOPES



35' ABOVE FORE
STREET GRADE

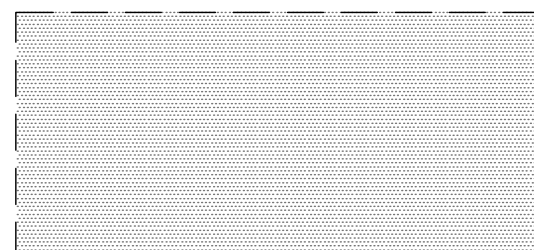
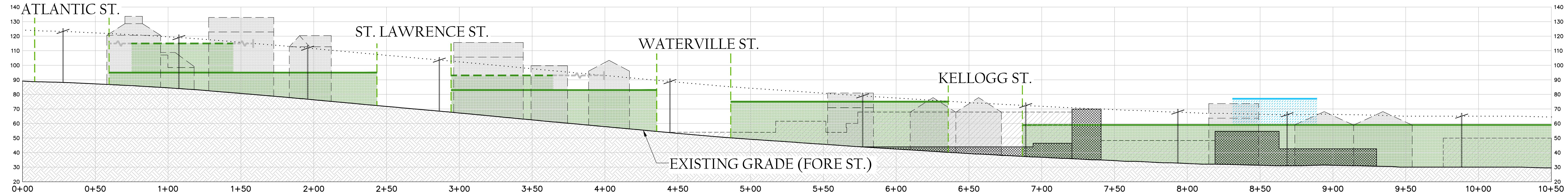


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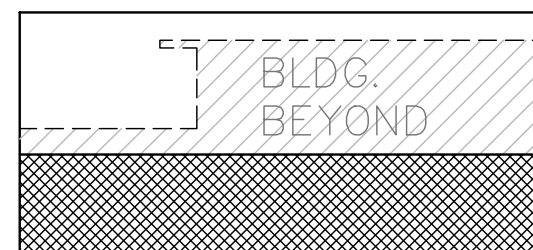
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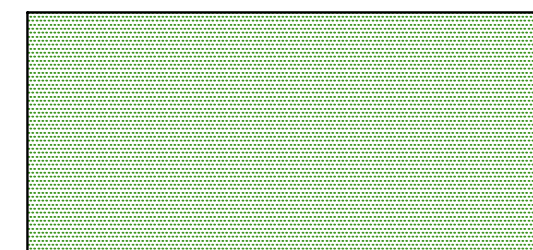
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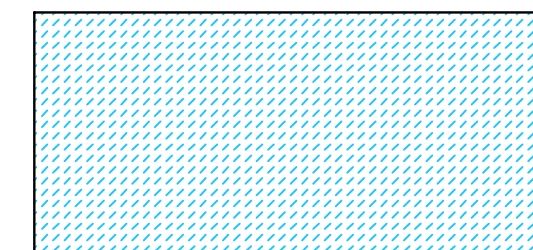
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BUILDINGS FRONTING
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EXISTING ON-SITE
BUILDINGS, 58
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HEIGHT STUDY
BUILDING ENVELOPES



HEIGHT STUDY BUILDING
ENVELOPES (BEYOND)



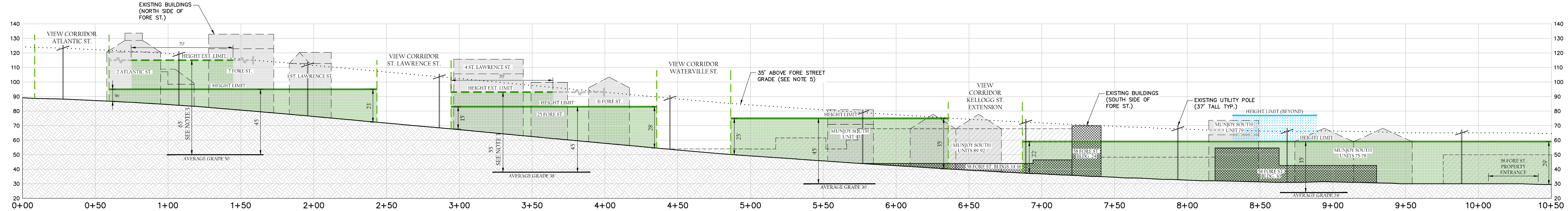
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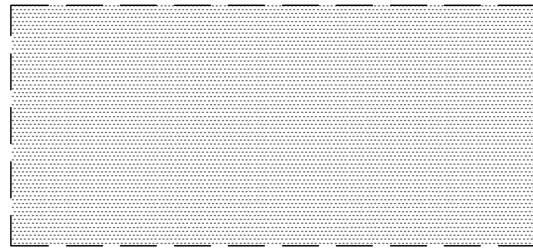


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EASTERN WATERFRONT DEVELOPMENT PORTLAND, MAINE

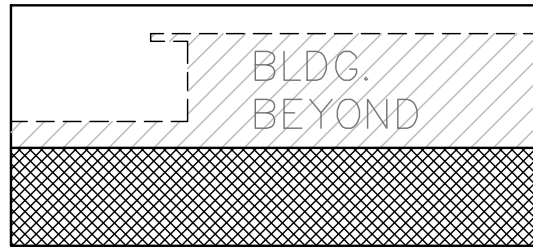
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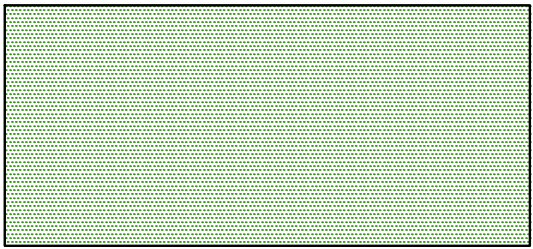


EXISTING
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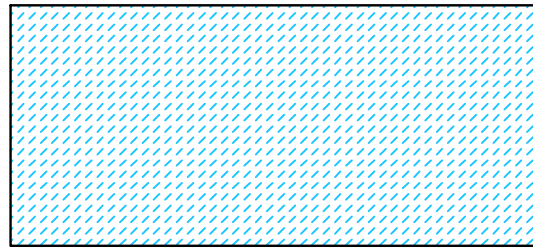
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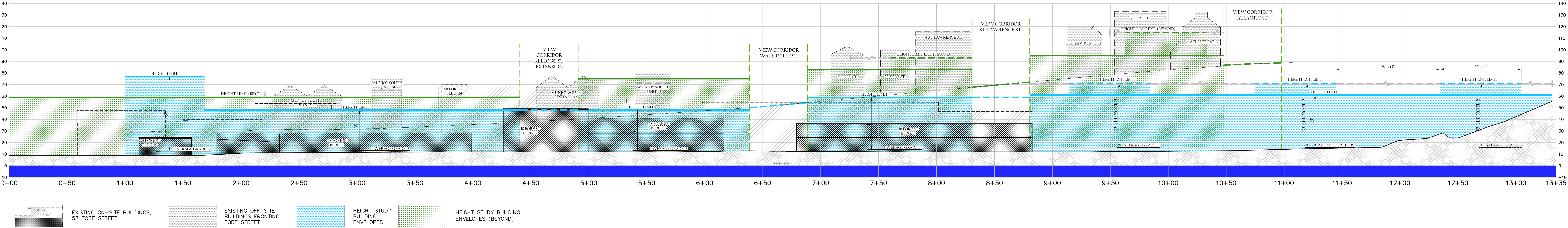
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HEIGHT
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BUILDING
ENVELOPES
(BEYOND)

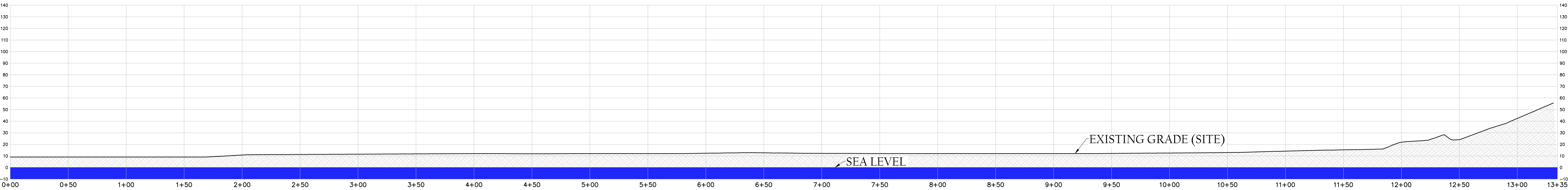
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 - SECTION SCALE: HORIZONTAL AND VERTICAL 1"=30'

WATERFRONT SECTION WITH B6 HEIGHT OVERLAY
AS REQUESTED BY PLANNING BOARD



WATERFRONT SECTION WITH B6 HEIGHT OVERLAY

AS REQUESTED BY PLANNING BOARD

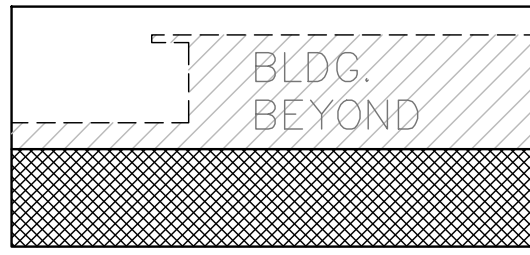
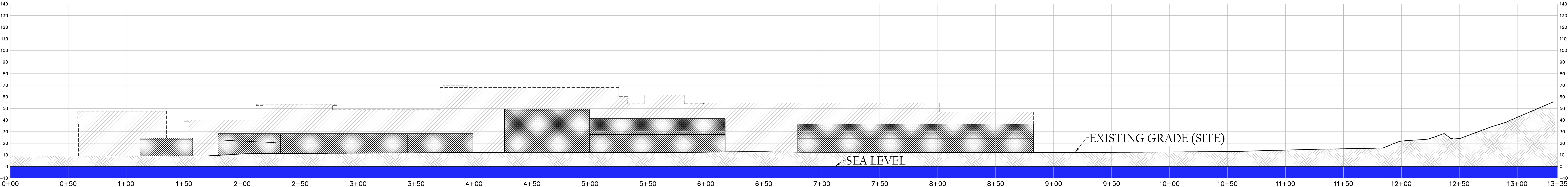


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WATERFRONT SECTION WITH B6 HEIGHT OVERLAY

AS REQUESTED BY PLANNING BOARD



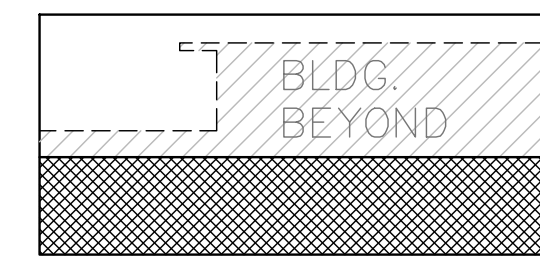
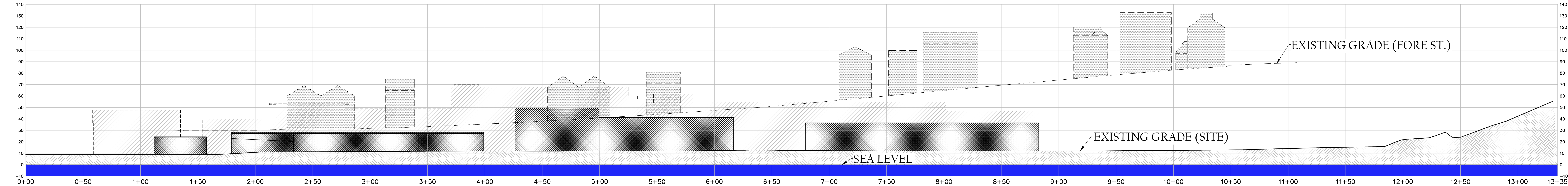
EXISTING ON-SITE
BUILDINGS, 58
FORE STREET



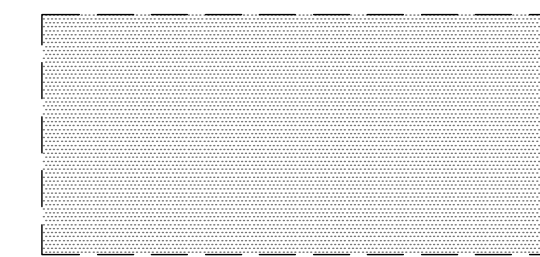
SOURCE DATA: B6 BUILDING HEIGHT
OVERLAY & BUILDING ENVELOPES MAP;
TOPOGRAPHIC/ BOUNDARY SURVEY FOR 58
FORE ST.; CITY OF PORTLAND GIS DATA
DATE: DECEMBER 17, 2014

WATERFRONT SECTION WITH B6 HEIGHT OVERLAY

AS REQUESTED BY PLANNING BOARD



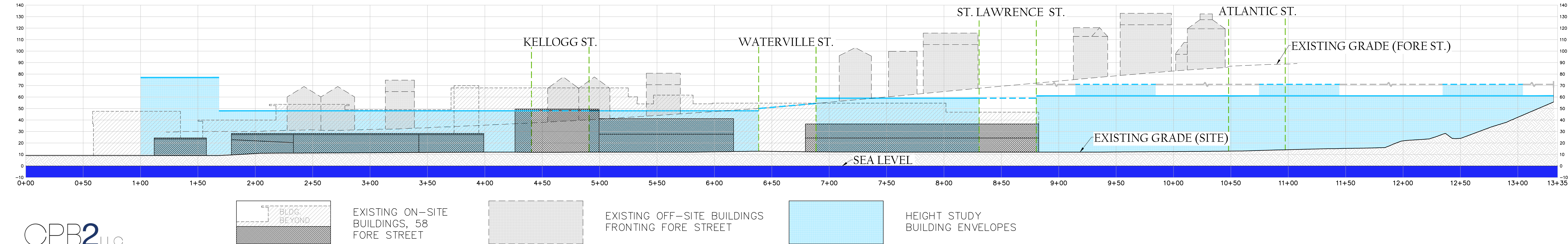
EXISTING ON-SITE
BUILDINGS, 58
FORE STREET



EXISTING OFF-SITE BUILDINGS
FRONTING FORE STREET

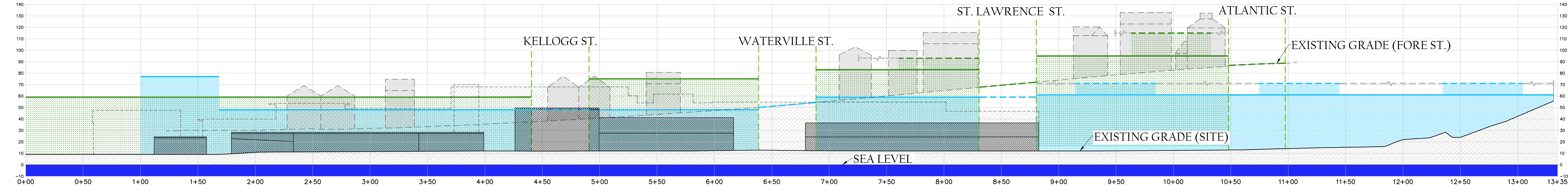
WATERFRONT SECTION WITH B6 HEIGHT OVERLAY

AS REQUESTED BY PLANNING BOARD



WATERFRONT SECTION WITH B6 HEIGHT OVERLAY

AS REQUESTED BY PLANNING BOARD

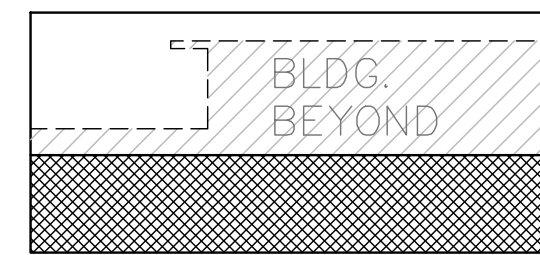
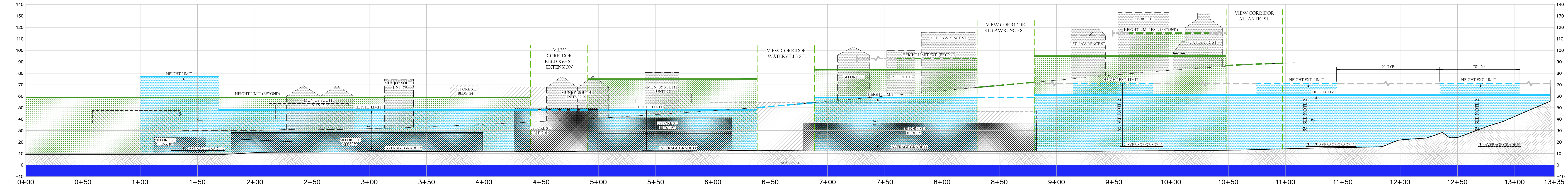


SOURCE DATA: B6 BUILDING HEIGHT
OVERLAY & BUILDING ENVELOPES MAP;
TOPOGRAPHIC/ BOUNDARY SURVEY FOR 58
FORE ST.; CITY OF PORTLAND GIS DATA

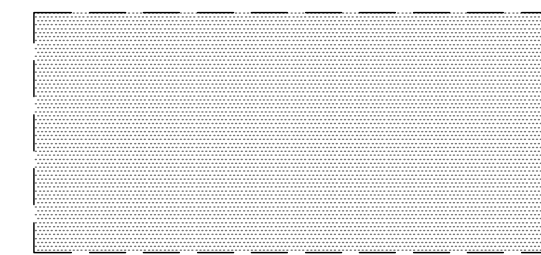
DATE: DECEMBER 17, 2014

WATERFRONT SECTION WITH B6 HEIGHT OVERLAY

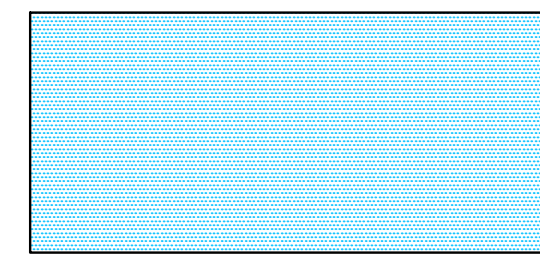
AS REQUESTED BY PLANNING BOARD



EXISTING ON-SITE
BUILDINGS, 58
FORE STREET



EXISTING OFF-SITE BUILDINGS
FRONTING FORE STREET



HEIGHT STUDY
BUILDING ENVELOPES



HEIGHT STUDY BUILDING
ENVELOPES (BEYOND)

- NOTES:**
- SECTION DOES NOT DEPICT ACTUAL PROPOSED BUILDING STRUCTURES. THE HEIGHT MEASUREMENTS ABOVE GRADE (SHADED IN BLUE AND GREEN) REPRESENT THE MAXIMUM HEIGHT ALLOWED PER THE BUILDING HEIGHT STUDY BASED ON AN ANALYSIS OF THE BUILDING HEIGHT ENVELOPES. THIS IS NOT A DESIGN PROPOSAL; IT IS INTENDED TO PROVIDE A REASONABLE INTERPRETATION OF THE FORE STREET CORRIDOR BASED ON THE EASTERN WATERFRONT BUILDING HEIGHT STUDY.
 - 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 MUST BE AT LEAST 90 FEET APART, MEASURED PARALLEL WITH THE WATERFRONT; EASTERN WATERFRONT BUILDING HEIGHT STUDY, SEPTEMBER 2004. HEIGHT EXTENSION LOCATIONS MAY VARY WITHIN THE LIMITS OF THE GREY LINES DEPICTED ON THE SECTION; HEIGHT EXTENSION LOCATIONS ARE RESTRICTED BY THE 35' MAXIMUM HEIGHT LIMIT ABOVE FORE STREET WITHIN 35' OF FORE STREET, AS PROPOSED ON THE B6 HEIGHT OVERLAY MAP.
 - AVERAGE GRADE IS THE AVERAGE OF THE FOUR CORNERS FOR EACH HEIGHT STUDY BUILDING ENVELOPE.
 - FIGURE WAS DEVELOPED BY LAYERING MULTIPLE SECTION CUTS ACROSS THE WATER, 58 FORE STREET SITE, FORE STREET, AND UPHILL OF FORE STREET. FIGURE DEPICTS BUILDING HEIGHT LIMITS WHEN VIEWING THE 58 FORE STREET SITE FROM AN OFFSITE LOCATION FROM THE FORE RIVER CHANNEL IN AN ORIENTATION THAT IS SQUARE WITH THE VIEW CORRIDORS.
 - SECTION SCALE: HORIZONTAL AND VERTICAL 1"=30'

CPB2LLC
EASTERN WATERFRONT DEVELOPMENT PORTLAND, MAINE



SOURCE DATA: B6 BUILDING HEIGHT
OVERLAY & BUILDING ENVELOPES MAP;
TOPOGRAPHIC/ BOUNDARY SURVEY FOR 58
FORE ST.; CITY OF PORTLAND GIS DATA

DATE: DECEMBER 17, 2014

Comparison of Permitted Uses in WSUZ and EWPZ

Black text indicates uses permitted in both zones.

Green text indicates uses permitted in EWPZ, but not in WSUZ.

Red text indicates uses permitted in WSUZ, but not in EWPZ.

Blue text indicates uses permitted in WSUZ and conditional in EWPZ.

Orange text indicates proposed text amendment

Waterfront Special Use Zone	Eastern Waterfront Port Zone
Permitted Uses: <i>Marine:</i> 1. Marine products, wholesaling, distribution and retailing; 2. Marine repair services and machine shops; 3. Tugboat, fireboat, pilot boat and similar services; 4. Harbor and marine supplies and services, chandleries, and ship supply such as fueling and bunkering of vessels (NOTE: proposed amendment to EWPZ to retain this provision); 5. Marine industrial welding and fabricating; 6. Shipbuilding and facilities for construction, maintenance and repair of vessels; 7. Commercial marine transport and excursion services, including ferries, captained charter services, sport fishing and water taxis; 8. Cargo handling facilities, including docking, loading and related storage; 9. Boat repair yards; 10. Boat storage facilities, including rack storage facilities; 11. Seafood processing; 12. Seafood packing and packaging; 13. Seafood loading and seafood distribution; 14. Fabrication, storage and repair of fishing equipment; 15. Ice-making services; 16. Facilities for marine construction and salvage; 17. Facilities for marine pollution control, oil spill cleanup, and servicing of marine sanitation devices; 18. Fabrication of marine-related goods; 19. Fishing and commercial vessel berthing; 20. Noncommercial berthing; 21. Marine office, including but not limited to offices of owners of wharves or their agents, and naval architects, and seafood brokers; (NOTE: proposed text amendment adds this use to EWPZ)	Permitted Uses: <i>Marine :</i> 1. Intermodal marine passenger facilities; 2. Cruise ship home port and port of call berthing and support; 3. International and domestic ferries. 4. Transient and long-term commercial berthing; 5. Marine-related warehousing; 6. Marine related construction, manufacturing, fabrication, salvage and repair; 7. Storage and repair of fishing equipment; 8. Ship and other marine vessel construction, building, servicing, and repair; 9. Boat and marine equipment storage; 10. Marine fuel storage and dispensing provided that on-site fuel storage structures shall be used solely for the purpose of fueling vessels and shall be limited, cumulatively, to 20,000 gallons of storage capacity within the zone; (NOTE: proposed text amendment deletes this provision and replaces it with language from WSUZ: "Harbor and marine supplies and services, chandleries, and ship supply such as fueling and bunkering of vessels") 11. Public, non-profit, or commercial marine transportation and excursion services, including captained charter services, sport fishing and water taxis; 12. Ship and off-shore support services, including but not limited to tug boats, pilot boats, and chandleries; 13. Facilities for marine pollution control, oil spill cleanup, and servicing of marine sanitation devices. Additional text amendments: A facility for non-profit organizations whose facility may include offices, classrooms, equipment, equipment rentals, and storage and bathrooms for the public.

Comparison of Permitted Uses in WSUZ and EWPZ

Black text indicates uses permitted in both zones.

Green text indicates uses permitted in EWPZ, but not in WSUZ.

Red text indicates uses permitted in WSUZ, but not in EWPZ.

Blue text indicates uses permitted in WSUZ and conditional in EWPZ.

Orange text indicates proposed text amendment

22. Public landings; 23. Marinas; (NOTE: commercial marinas are permitted as conditional use in EWPZ and the proposed text amendment allows marinas located east of the Ocean Gateway facility as a permitted use) 24. Intermodal transportation facilities.	Marinas located east of the eastern boundary of the parcel of land owned by the City of Portland pursuant to a deed from the State of Maine dated February 1982 and recorded in the Cumberland County Registry of Deeds at Book 4916, Page 26. Marine office, including but not limited to offices of owners of wharves or their agents, and naval architects, and seafood brokers.
<i>Industrial uses:</i> Industrial uses which meet the performance standards of the I-2 zone.	<i>Commercial:</i> 1. Professional, business, government, and general office located in upper floors of structures existing as of September 18, 2006. 2. Temporary events, except festivals as otherwise governed under section 14-30113 below. 3. Festivals subject to City license. 4. Street vendors licensed pursuant to Chapter 19 as a result of a competitive bid process conducted pursuant to Chapter 2 of the City Code.
<i>Public:</i> Pedestrian and bicycle trails.	<i>Public:</i> 1. Fire, police and emergency services; 2. Governmental agency emergency operations/crisis centers; 3. Research, military and visiting attraction vessel berthing; 4. Landscaped pedestrian parks, plazas and other similar outdoor pedestrian spaces, including without limitation pedestrian and/or bicycle trails.
	<i>Other:</i> 1. Wind energy systems, as defined and allowed in Article X, Alternative Energy.
Conditional uses: 1. Temporary wind anemometer towers, as defined in Sec 14-47, are permitted provided the following standards are met in addition to Sec 14-430: 2. Wind energy systems, as defined and allowed in Article X, Alternative Energy.	Conditional uses: provided that such uses will not impede or preclude existing or potential water-dependent development within the zone, will allow for adequate right-of-way access to the water, are compatible with marine uses, and meet all additional standards. 1. Marine products, wholesaling and retailing;

Comparison of Permitted Uses in WSUZ and EWPZ

Black text indicates uses permitted in both zones.

Green text indicates uses permitted in EWPZ, but not in WSUZ.

Red text indicates uses permitted in WSUZ, but not in EWPZ.

Blue text indicates uses permitted in WSUZ and conditional in EWPZ.

Orange text indicates proposed text amendment

NOTE: There are additional uses permitted in the WSUZ but only allowed north of the railroad tracks so were not included in this comparison of uses that would be permitted in the proposed new extension of the EWPZ.	2. Ice-making services; 3. Marine freight facilities providing service for, and/or intermodal transfer of, container and breakbulk freight; 4. Marine educational facilities; 5. Seafood retailing, wholesaling, packaging and shipping; 6. Seafood processing for human consumption, subject to the performance standards of the IL zone set forth in section 14-236 in addition to the performance standards of section 14-304; 7. Commercial marinas serving commercial and recreation boats, located west of the eastern boundary of the parcel of land owned by the City of Portland pursuant to a deed from the State of Maine dated February 1982 and recorded in the Cumberland County Registry of Deeds at Book 4916, Page 26., provided that such facilities are located in areas that do not conflict with the navigation and handling of deepwater dependent vessels accessing existing or potential deepwater berthing; 8. Fish byproducts processing, 9. Structured parking available to the general public; 10. Professional, business, government and general offices uses in upper floors of structures constructed after September 18, 2006; 11. Passenger support services supporting a marine passenger use listed under 14- 301(a)(marine passenger). The total ground floor area occupied by any combination of the following uses (regardless of ownership) shall not exceed 35% of the gross floor area of the principle associated marine passenger use and no more than 35,000 square feet cumulative within the EWPZ: i. Retail; ii. Restaurants/food service other than street vendors; iii. Retail service; iv. Passenger information services. 12. Non-marine related warehousing in structures
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Comparison of Permitted Uses in WSUZ and EWPZ

Black text indicates uses permitted in both zones.

Green text indicates uses permitted in EWPZ, but not in WSUZ.

Red text indicates uses permitted in WSUZ, but not in EWPZ.

Blue text indicates uses permitted in WSUZ and conditional in EWPZ.

Orange text indicates proposed text amendment

	existing as of September 18, 2006; 13. Facilities for combined marine and general construction; 14. Low impact industrial uses as permitted in the IL zone in structures existing as of September 18, 2006, excluding all auto repair service facilities. 15. Utility substations: Public utility substations, including but not limited to electrical transformers, sewage and stormwater pumps and telecommunication switching stations 16. Maritime museums, limited to 5,000 square feet of ground floor footprint. 17. Parking for non-marine uses. 18. Temporary wind anemometer towers, as defined in Sec 14-47. 19. Wind energy systems, as defined and allowed in Article X, Alternative Energy.
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January 28, 2015

Christine Grimando, Senior Planner
City of Portland Department of Planning and Development
389 Congress Street
Portland, Maine 04101

Re: 58 Fore Street – Review of “3d Massing” Model prepared by Whitten Architects on behalf of Soul of Portland

Dear Christine:

On behalf of CPB2 LLC, Woodard & Curran has reviewed the “3d Massing” model prepared by Whitten Architects on behalf of Soul of Portland and submitted to the City of Portland Planning Office via email on January 13, 2015. We reviewed the Google Earth (*.kmz) file provided to the City along with information presented on the www.soulofportland.org website.

Our review of the model identifies numerous locations where the model incorrectly depicts allowable building heights based on the 2004 Eastern Waterfront Height Study, the associated proposed B6 Building Height Overlay figure, and the City’s verified methodology for measuring building heights city-wide.

The inaccuracies that we identified in the model likely stem from four primary errors in methodology: (1) incorrect interpretation of how the City measures height; (2) incorrect interpretation of the height study/proposed overlay; (3) utilizing inaccurate ground elevation data; (4) projecting inaccurate height masses.

We have identified the following inaccuracies in Whitten Architects’ model:

- The grouping of 35’ x 35’ squares utilized within the model implies a large building mass, as each square directly contacts each adjacent square. The City’s methodology for measuring height dictates that when multiple buildings share walls or are connected, they are considered a single building when calculating building height; we have confirmed this determination in multiple meetings with the City’s Zoning Administrator and Planning Staff. As such, it is inaccurate to show an interconnected mass of squares with each square projecting to a height allowable only for that single, stand-alone square.
- The model applies height extensions to all 35’ x 35’ squares, ignoring the restrictions placed on these extensions in the proposed height overlay. Per the 2004 Eastern Waterfront Height Study and the associated proposed B6 Building Height Overlay figure, 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 90 feet apart, measured parallel with the waterfront, and if abutting Mountfort Street (extension) must be set back 25 feet from any street. According to the description on the Soul of Portland website, the limiting factors of the height extensions were intentionally ignored.
- There are numerous 35’ x 35’ squares in the block between Atlantic Street and St. Lawrence Street that are shown well above a 65’ height from average grade, or even from highest existing grade at those locations. The line of 35’ x 35’ squares set one or more rows back from Fore Street are shown higher than 65’ above existing grade. The Google Earth elevation information used by the Architect appears to be highly inaccurate in this area, likely due to vegetation cover. The heavily vegetated slope has elevations listed in google earth that are significantly higher than the topographic survey performed for the site, as Google Earth lists the top of trees and shrubs as the ground surface elevation in this area.



- The model images on the Soul of Portland website that depict height as measured from floodplain incorrectly imply that the buildings would rise above the Fore Street grade in the block between Atlantic Street and St. Lawrence Street. Our analysis shows that the buildings in this block could only crest 2' above the Fore Street grade at the edge of the St. Lawrence Street view corridor, and all other building heights in this area would be below the adjacent Fore Street grade when measured from floodplain.

The CPB2 LLC team has been working closely with City staff for the last year and a half to review potential heights in the area based on the 2004 height study, to understand and verify how the City measures height, and to collect on-the-ground survey data to help inform the figures that we have prepared and submitted to the City Planning Office. We believe that the Fore Street Section prepared by CPB2 LLC provides an accurate, thorough, and well informed projection of allowable building heights along the Fore Street corridor, and we have heard agreement from City Staff that the figures and methodologies used by the CPB2 LLC team are correct and accurate.

CPB2 LLC and the civil engineering team at Woodard & Curran are concerned that the model developed by Whitten Architects for Soul of Portland is both highly inaccurate and misleading to the public. CPB2 LLC has reached out to Soul of Portland on multiple occasions to request a meeting with Soul of Portland and Whitten Architects to review and discuss their model assumptions prior to its public release. CPB2 LLC has received written response from Soul of Portland denying these requests to meet.

Sincerely,

WOODARD & CURRAN INC.

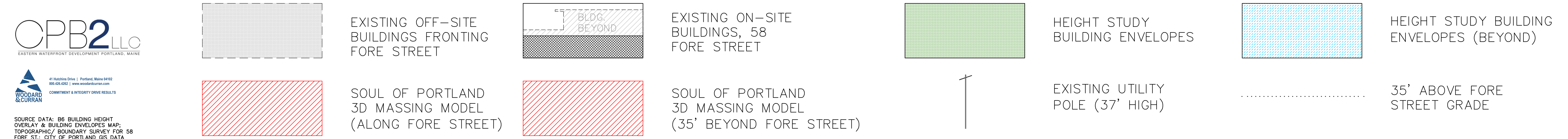
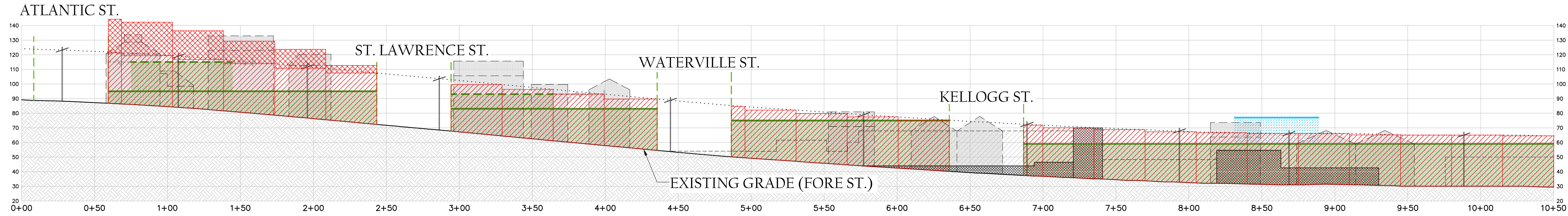
David Senus, P.E.
Project Manager

227007

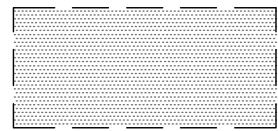
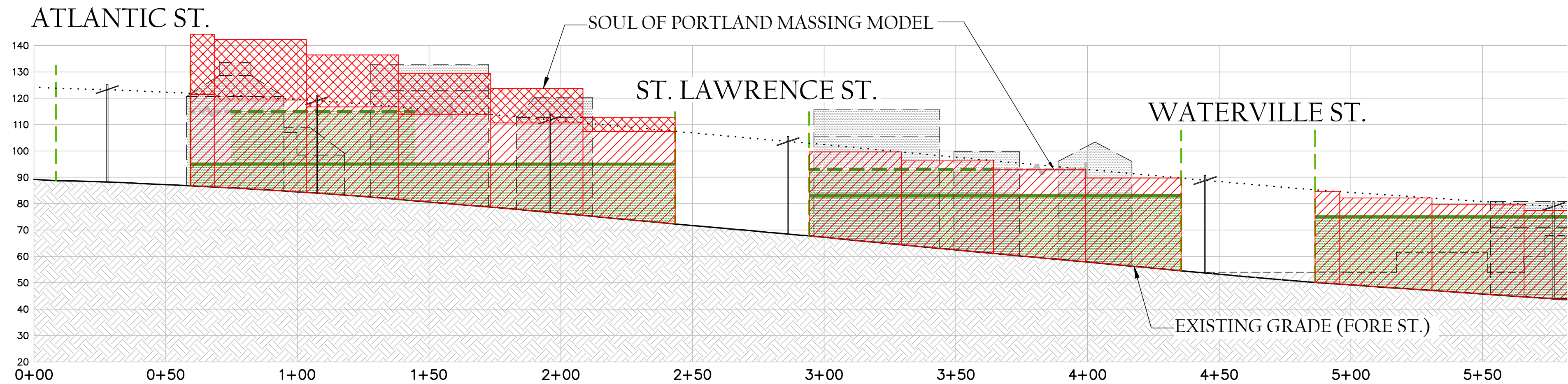
Attachment: Figures – Fore Street Section with Overlay Approximation of Soul of Portland Model

cc: CPB2 LLC (via email)
Mary E. Costigan, Bernstein-Shur (via email)

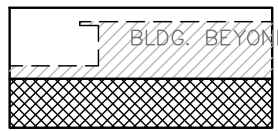
FORE STREET SECTION WITH B6 HEIGHT OVERLAY
& SOUL OF PORTLAND MASSING MODEL



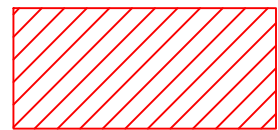
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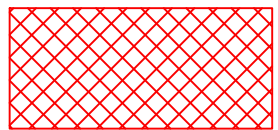
EXISTING OFF-SITE
BUILDINGS FRONTING
FORE STREET



EXISTING ON-SITE
BUILDINGS, 58 FORE
STREET



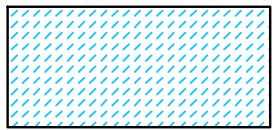
SOUL OF PORTLAND
3D MASSING MODEL
(ALONG FORE STREET)



SOUL OF PORTLAND
3D MASSING MODEL
(35' BEYOND FORE STREET)



HEIGHT STUDY
BUILDING ENVELOPES



HEIGHT STUDY BUILDING
ENVELOPES (BEYOND)



EXISTING UTILITY
POLE (37' HIGH)



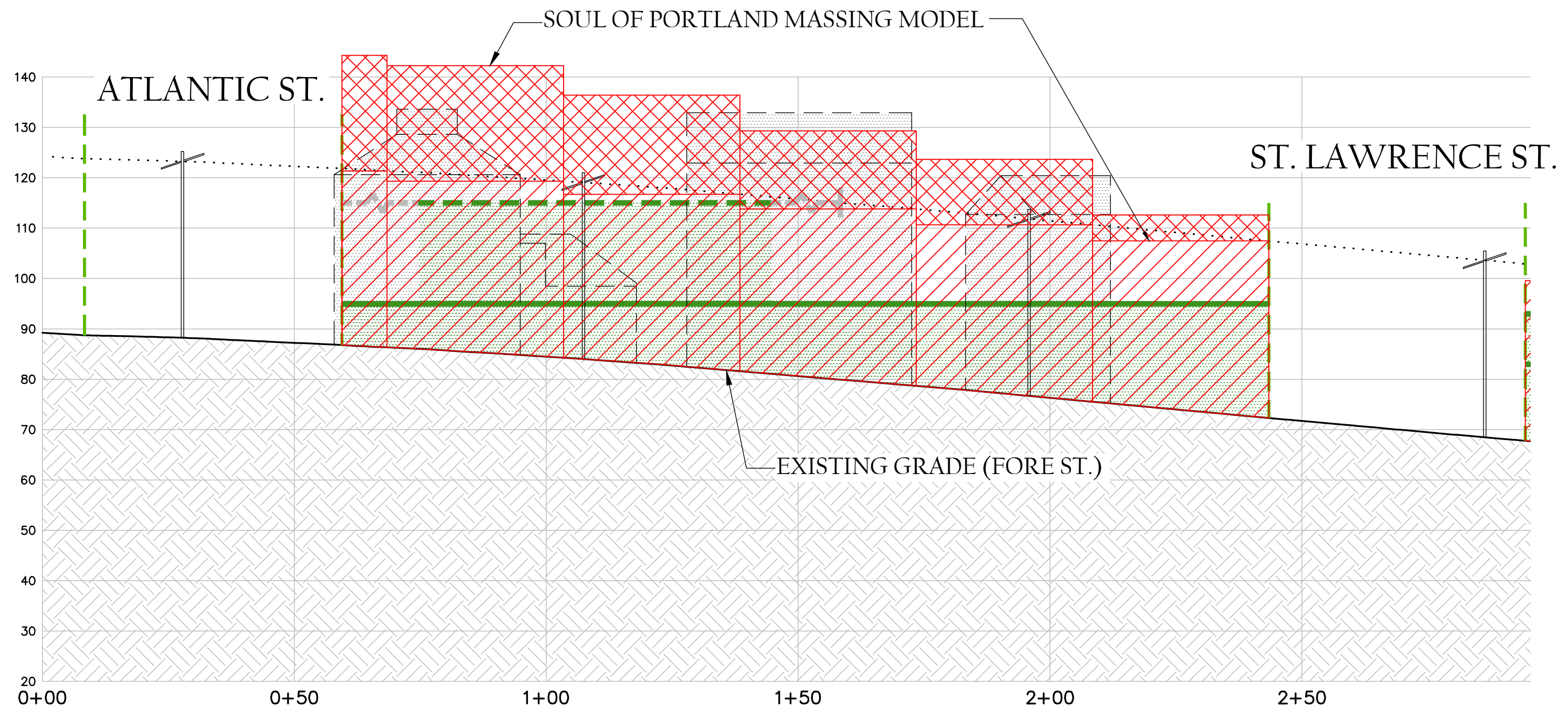
35' ABOVE FORE
STREET GRADE



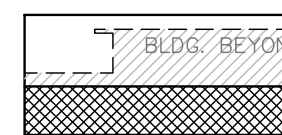
SOURCE DATA: B6 BUILDING HEIGHT
OVERLAY & BUILDING ENVELOPES MAP;
TOPOGRAPHIC/ BOUNDARY SURVEY FOR 58
FORE ST.; CITY OF PORTLAND GIS DATA

DATE: JANUARY 28, 2015

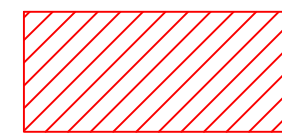
FORE STREET SECTION WITH B6 HEIGHT OVERLAY & SOUL OF PORTLAND MASSING MODEL



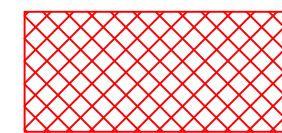
EXISTING OFF-SITE
BUILDINGS FRONTING
FORE STREET



EXISTING ON-SITE
BUILDINGS, 58 FORE
STREET



SOUL OF PORTLAND
3D MASSING MODEL
(ALONG FORE STREET)



SOUL OF PORTLAND
3D MASSING MODEL
(35' BEYOND FORE STREET)



HEIGHT STUDY
BUILDING ENVELOPES



HEIGHT STUDY BUILDING
ENVELOPES (BEYOND)



EXISTING UTILITY
POLE (37' HIGH)



35' ABOVE FORE
STREET GRADE

CPB2 LLC
EASTERN WATERFRONT DEVELOPMENT PORTLAND, MAINE

WOODARD & CURRAN
41 Hutchins Drive | Portland, Maine 04102
800.426.4262 | www.woodardcurran.com
COMMITMENT & INTEGRITY DRIVE RESULTS

SOURCE DATA: B6 BUILDING HEIGHT
OVERLAY & BUILDING ENVELOPES MAP;
TOPOGRAPHIC/ BOUNDARY SURVEY FOR 58
FORE ST.; CITY OF PORTLAND GIS DATA

DATE: JANUARY 28, 2015



February 5, 2015

Christine Grimando, Senior Planner
City of Portland Department of Planning and Development
389 Congress Street
Portland, Maine 04101

Re: 58 Fore Street – Planning Board Question Regarding Method of Measuring Average Grade

Dear Christine:

On behalf of CPB2 LLC, Woodard & Curran has prepared the following letter in response to a question received at the Planning Board workshop on November 18th. At the workshop, Planning Board member Carol Morrisette asked *what happens to the building heights if you determine average grade following [the City's other accepted methodology] of averaging adjacent grade at a set interval around the building envelope instead of at the four corners* (paraphrased). The question asked by Carol was in reference to the figures that were presented at the workshop; those figures showed sections across the site and depicted existing grade along with building heights as measured from the average grade of the four corners. The building heights depicted on the figures represent the maximum allowable building heights per the 2004 Eastern Waterfront Height Study / proposed B6 Building Height Overlay.

As confirmed through multiple meetings with the City's Planning Staff and Zoning Administrator, the City allows for average grade to be calculated by either averaging the elevation of the proposed abutting ground surface at the building corners or by averaging the elevation of the abutting ground surface at the building walls at some interval around the perimeter of the building (i.e., every 10 feet). The interval must remain consistent; grade cannot be determined from numerous points along the front-side of a building and only a few on the back-side; there must be equal spacing between points used to calculate grade. The City allows a choice to utilize either of these methodologies for all projects that they review; the City does not dictate which methodology is to be used.

In response to Carol's question, we went through an evaluation where we calculated average grade for the building envelopes by averaging the four corners and by averaging grade at two and ten foot intervals around the perimeter of the building envelopes. In the block abutting Fore Street bound by the Kellogg Street and Waterville Street view corridors, the 4-corner average grade calculation yields an average grade of 30, while a calculation of average grade at a 10-ft and 2-ft interval around the perimeter of the building envelope yields an average grade of 24.5 and 24.4, respectively. Similar results were found for the other building height envelopes that abut Fore Street.

Through this exercise, we have confirmed that calculating average grade based on the four corner method (as presented at the workshop) always yielded a higher number than calculating average grade at a set interval around the building height envelope for our particular site. The four corner calculation results in a higher average grade due to the elevation drop from west to east across our site. A calculation using only four points, two of which are at the higher Fore Street grade, yields a higher number than averaging grade around the perimeter (where 3 of 4 sides are lower than Fore Street). The figures presented at the November 18th workshop and (anticipated to be) presented at the February 10th workshop depict the method of measuring average grade that yields the **most conservative, highest building heights** for each building envelope.



Finally, regardless of how average grade is measured, we have proposed a cap on the height of buildings that front Fore Street. We have included a restriction on the proposed B6 Building Height Overlay map; the specific wording of which reads: *"For buildings located East of Mountfort Street (extension), no building that has frontage on Fore Street shall exceed 35 feet in height above the adjacent Fore Street right-of-way grade within 35 feet of the Fore Street right-of-way"*. This proposal has been made in response to staff and the public's concerns that the significant variation in elevations on the site, particularly in the eastern portion, could lead to surprising and undesirable building heights along Fore Street. As noted by Staff, the addition of this standard adds a considerable degree of predictability to future redevelopment possibilities.

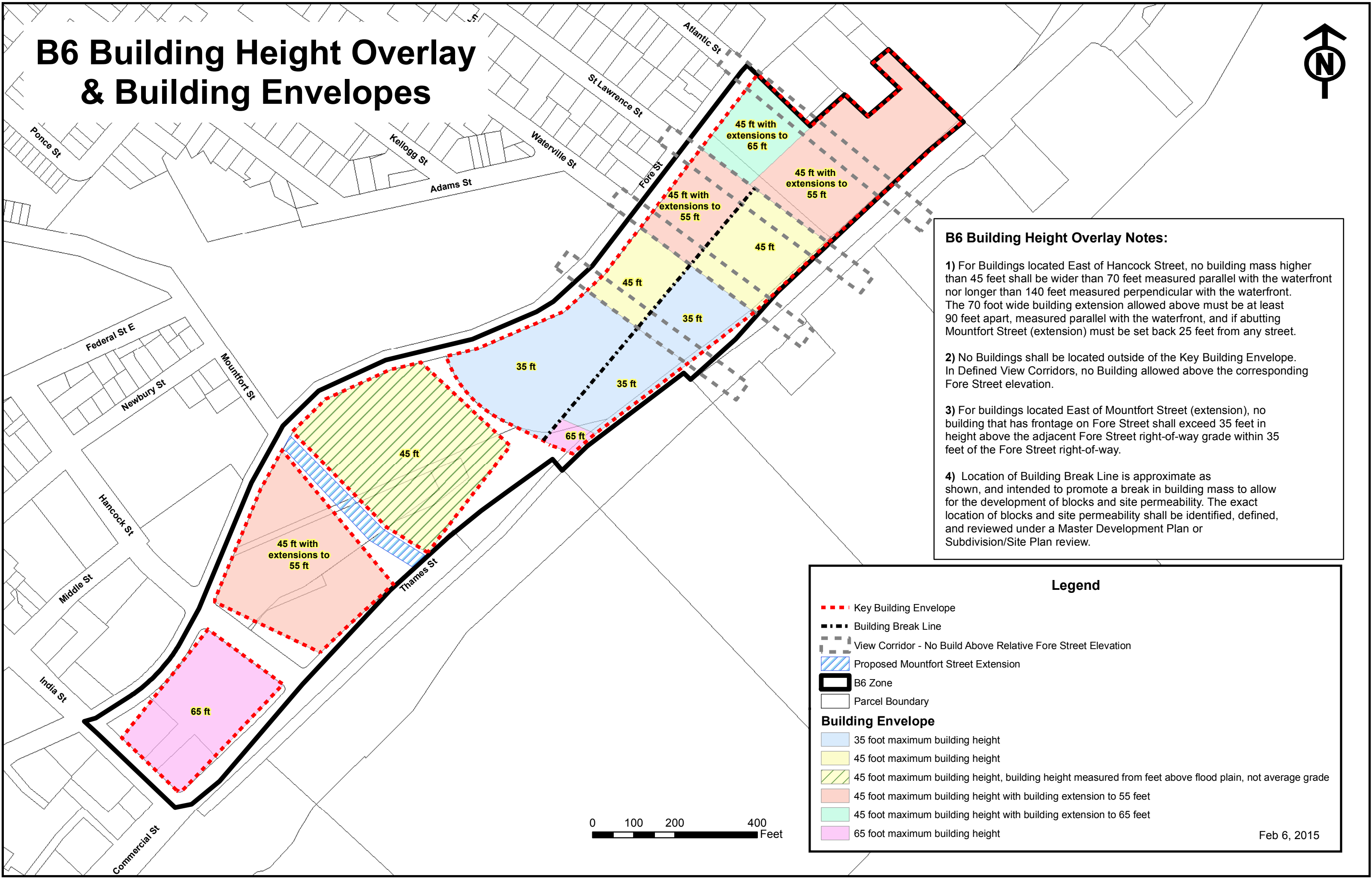
Sincerely,

WOODARD & CURRAN INC.

David Senus, P.E.
Project Manager
227007

cc: CPB2 LLC (via email)
Mary E. Costigan, Bernstein-Shur (via email)

B6 Building Height Overlay & Building Envelopes



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 90 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 that has frontage on Fore Street shall exceed 35 feet in height above the adjacent Fore Street right-of-way grade within 35 feet of 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

B6 Building Height Overlay & Building Envelopes



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 90 feet apart, measured parallel with the waterfront, and if abutting Mountfort Street (extension) must be set back 25 feet from any street.
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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

0 100 200 400 Feet

Feb 6, 2015

SUMMARY OF PROPOSED TEXT EDITS

Establishment of zones (Sec. 14-48)

- Sec. 14-48
 - o Strike text
 - ~~(dd) Waterfront special use zone~~

Shoreland Regulations (Sec. 14-446 to 14-450)

- Sec. 14-449(a)1.a
 - o B-3, B-5, B-5b, B-6, I-L (south and east of I-295), and I-M (south and east of I-295): Twenty-five (25) feet
- Sec. 14-449(a)1.b
 - o W-C, W-PD, W-SU, I-B, EWP: No setback required. Pier edge setbacks apply in EWP (Sec. 14-303(c)(4), W-C (Sec. 14-310(d)(4), and W-PD (Sec. 320.2(c)); and W-SU (Sec. 320.9(c)).
- Sec. 14-449(a)(1) – 3rd Paragraph
 - o In no event shall the setback from a coastal wetland be reduced to less than seventy-five (75) feet, except in the B-3, B-5, B-5b, B-6, EWP, W-C, W-PD, W-SU, I-B, I-L and I-M zones, where setbacks shall be as set forth above in this subsection.
- Sec. 14-449(b)6
 - o Except in the W-C, EWP, W-PD, W-SU, and I-B zones, no new structure shall be built . . .
- Sec. 14-449(c)2
 - o The clearing or removal of vegetation standards of this section shall not apply to the following zones: EWP, WCZ, WPD, WSU, B-3, B-5, B-5b, B-6, B-7, I-L (south and east of I-295) and I-M zones (south and east of I-295).
- Sec. 14-449(j)1.a
 - o In the EWP, WC, WPD, WSU, B-3, B-5, B-5b, B-6, I-L (south and east of I-295) and I-M zones (south and east of I-295) roads and driveways shall be setback as established for structures in those zones; as specified in Sec. 14-449(a)1.
- Sec. 14-449(k)1
 - o In the EWP, WC, WPD, WSU, B-3, B-5, B-5b, B-6, I-L and I-M zones, parking setbacks shall be as established for structures in those zones; as specified in Sec. 14-449(a)1.

B-6 Eastern Waterfront Mixed Zone (Sec. 14-268 to 14-275)

- Sec. 14-269(a)
 - New clause
 - 18. Underground marine fuel storage provided that fuel storage structures shall be used solely for the purpose of fueling vessels;
 - *Note: Renumber existing #18 to 19 and existing #19 to 20*
- Sec. 14-269(d)
 - Strike existing text and add new text
 - 3. Health clubs, martial arts and ~~mediation~~meditation facilities.
 - *Note: Language currently reads “mediation”*
- Sec. 14-269(d)
 - New clause
 - 6. Private clubs or nonprofit social and recreational facilities, as defined in 14-47.
- Sec. 14-269(d)
 - New clause
 - 7. Educational facilities.
- Sec. 14-269(d)
 - New clause
 - 8. Temporary events, provided that all such events on a lot do not exceed a combined total of (60) days per year and that the total floor area utilized for such uses does not exceed seventy thousand (70,000) square feet at any one (1) time;
 - *Note: Consistent with Sec. 14-320.6. (a) 5.a. Permitted uses under “Other”*
- Sec. 14-269(d)
 - New clause
 - 9. Museums and art galleries;
- Sec. 14-273(b)4.b.v
 - Strike existing text and add new text
 - v. Noise created by ~~any recreational activities~~ any temporary activities which are permitted by law and for which a license or permit has been granted by the city, including but not limited to parades, sporting events, ~~and~~ fireworks displays, festivals, events and concerts.

Eastern Waterfront Port Zone (Sec. 14-300 to 14-304)

- Sec. 14-301 (b)
 - Strike existing clause and add new clause
 - 7. Marine fuel storage and dispensing provided that on-site fuel storage structures shall be used solely for the purpose of fueling vessels and shall be limited, cumulatively, to 20,000 gallons of storage capacity within the zone; Harbor and marine supplies and services, chandleries, and ship supply such as fueling and bunkering of vessels;

- Sec. 14-301 (b)
 - New clause
 - 11. Marinas located east of the eastern boundary of the parcel of land owned by the City of Portland pursuant to a deed from the State of Maine dated February 1982 and recorded in the Cumberland County Registry of Deeds at Book 4916, Page 26;

- Sec. 14-301 (b)
 - New clause
 - 12. Marine office, including but not limited to offices of owners of marinas, wharves or their agents, and naval architects, and seafood brokers
 - Note: Consistent with Sec 14-307(a) 21.

- Sec. 14-301(e)
 - New clause
 - 2. A facility for non-profit organizations whose facility may include offices, classrooms, equipment, equipment rentals, and storage and bathrooms for the public.

- Sec. 14-301.1 (a)2.a.vii
 - New text
 - Commercial marinas serving commercial and recreation boats located west of the eastern boundary of the parcel of land owned by the City of Portland pursuant to a deed from the State of Maine dated February 1982 and recorded in the Cumberland County Registry of Deeds at Book 4916, Page 26, provided that such facilities are located in areas that do not conflict with the navigation and handling of deepwater dependent vessels accessing existing or potential deepwater berthing;

- Sec. 14-303(c)4
 - o Strike existing text and add new text
 - 4. Setback from pier line: Notwithstanding the above requirements, a minimum setback ~~of twenty-five (25) feet~~ from the edge of any pier, wharf or working edge of the hardened shoreline shall be required for any structure as follows:-
 - Twenty-five (25) feet for structures located west of the eastern boundary of the parcel of land owned by the City of Portland pursuant to a deed from the State of Maine dated February 1982 and recorded in the Cumberland County Registry of Deeds at Book 4916, Page 26.
 - Five (5) feet for structures located east of the eastern boundary of the parcel of land owned by the City of Portland pursuant to a deed from the State of Maine dated February 1982 and recorded in the Cumberland County Registry of Deeds at Book 4916, Page 26.

The setback area may be utilized for water-dependent uses and public uses and activities, subject to the provisions of sections 14-300.1 (no adverse impact) and 14-301.1 (conditional use provisions), and shall not be utilized for restaurant, drinking, or other non water-dependent uses or for off-street parking. The edge of any pier, wharf or bulkhead shall include any attached apron(s).

Waterfront Special Use Zone (Sec. 14-320.5 to 14-320.10)

- o Strike entire section and add word "RESERVED"

Additional references to WSU to be deleted:

- o Sec. 14-369.5(b) – Strike references to “WSU” and “Waterfront Special Use”

Sec. 14-48. Establishment of zones.

In order to carry out the provisions of this article, the city is hereby divided into the following classes of zones:

. . .

| ~~(dd) Waterfront special use zone~~

. . .

DIVISION 15.1. B-6 EASTERN WATERFRONT MIXED ZONE

Sec. 14-269. Permitted uses.

The following uses are permitted in the B-6 zone:

(a) *Commercial:*

1. Professional, business and general offices;
2. Restaurants and other eating and drinking establishments;
3. Hotels and inns limited to no more than 150 rooms;
4. Craft and specialty shops, including the on-premises production of handcrafted goods;
5. Retail and retail service establishments, excluding those with gas pumps;
6. Theatres;
7. Banking services, excluding vehicular drive-up services;

Editor's Note: Drive-up banking facilities located in the interior of parking structures are allowed as a conditional use subject to the criteria outlined below in the conditional use provisions of this section.

8. Cabinet and carpentry shops;
9. Personal services;
10. Business services;
11. Offices of business trades people;
12. Miscellaneous repair services, excluding all types of automotive repair except for automobile repair and service establishments;
13. Telecommunication and broadcast and receiving facilities, except as prohibited in section 14-

271 (prohibited uses);

In addition, building mounted telecommunications antennas, discs, transmitting and receiving equipment and the like shall adhere to the following criteria. Such roof-mounted equipment shall be:

- a. No taller than 15 feet above the highest structural steel of the building roof; and
- b. Set back no less than 15 feet from the building perimeter; and
- c. Integrated into the architecture of the building in placement, form, color, and material so as to screen or camouflage such equipment from public view.

14. Brew pubs and microbreweries without associated bottling facilities; and brewpubs and microbreweries with associated bottling facilities limited to 5,000 bottles per year output.

15. Electronic data storage;

16. Marine products wholesaling and retailing;

17. Harbor and marine supplies and services, chandlery and ship supply;

18. Underground marine fuel storage provided that fuel storage structures shall be used solely for the purpose of fueling vessels;

198. Bakeries, coffee roasters, and commercial kitchens with building footprints limited to fifteen thousand (15,000) square feet of contiguous building space.

1920. Printing establishments.

(b) *Residential:*

1. Attached dwellings including row houses, two-family and multifamily dwellings;

2. Handicapped family units;
3. Combined living/working spaces, including but not limited to artist residences with studio space;
4. Mixed use residential and commercial structures.

(c) *Public:*

1. Utility substations, including sewage collection and pumping stations, water pumping stations, transformer stations, telephone electronic equipment enclosures and other similar structures;
2. Landscaped pedestrian parks, plazas and other similar outdoor pedestrian spaces;
3. Pedestrian and multi-use trails;

(d) *Other:*

1. Studios for artists, photographers and craftspeople including but not limited to, painters, sculptors, dancers, graphic artists and musicians;
2. Accessory uses customarily incidental and subordinate to the location, function and operation of permitted uses, except that parking lots shall not be considered a permitted accessory use and such parking is subject to the conditional use section of the B-6 zone.
3. Health clubs, martial arts and ~~mediation~~ meditation facilities.
4. Intermodal transportation facilities.
5. Nursery schools, kindergartens, and daycare facilities or home babysitting services.
6. Private clubs or nonprofit social and recreational facilities, as defined in 14-47.
7. Educational facilities.

8. Temporary events, provided that all such events on a lot do not exceed a combined total of (60) days per year and that the total floor area utilized for such uses does not exceed seventy thousand (70,000) square feet at any one (1) time.

9. Museums and art galleries.

(e) Wind energy systems, as defined and allowed in Article X, Alternative Energy.

Sec. 14-270. Conditional uses.

(a) The following uses shall be permitted as conditional uses in the B-6 zone as provided in 14-474 (conditional uses), provided that, notwithstanding section 14-474(a) or any other provision of this code, the planning board shall be substituted for the board of appeals as the reviewing authority:

(1) *Commercial:*

- a. Meeting and exhibition facilities limited to a total of 20,000 gross square feet of interior floor area.
- b. Wholesaling, providing the wholesale operation is associated with an onsite retail establishment and that the wholesaling component of the facility occupies a building footprint of less than 15,000 square feet.
- c. Drive-up banking facilities located in the interior of parking structures, subject to the following criteria:
 - i. All drive-up features, such as automated teller machines and service windows, shall not extend nearer than twenty-five (25) feet to the street line;
 - ii. The site must have adequate stacking capacity for vehicles waiting to use these service features without impeding vehicular or pedestrian circulation or creating hazards to vehicular or pedestrian

circulation on adjoining streets;

iii. Drive-up vehicle circulation shall not create an impediment for retail or mixed-use development for the first floor of the subject garages along any adjacent public streets.

d. Research and development and related production facilities, including but not limited to biotechnology, subject to the following conditions:

i. Associated manufacturing and warehousing uses combined are not to exceed 15,000 square feet.

ii. Biotechnology facilities must demonstrate approvals by all applicable regulatory authorities prior to commencement of operations.

(2) *Parking*

. . .

Sec. 14-273. Performance standards.

All new development in the B-6 Eastern Waterfront Business Zone shall comply with the following standards:

. . .

(b) *Noise:*

1. *Definitions:*

a. Tonal sounds are defined as sound waves usually perceived as a hum or whine because their instantaneous sound pressure varies essentially as a simple sinusoidal function of time.

b. Impulse sounds are defined as sound events characterized by brief excursions of sound pressure, each with duration of less than one (1) second.

2. *Measurement:* Sound levels shall be measured with a sound level meter with a frequency weighting network manufactured according to standards prescribed by the American National Standards Institute (ANSI) or its successor body. Measurements shall be made at all major lot lines of the site, at a height of at least four (4) feet above the ground surface. In measuring sound levels under this section, sounds with a continuous duration of less than sixty (60) seconds shall be measured by the maximum reading on a sound level meter set to the A weighted scale and the fast meter response (L maxfast). Sounds with a continuous duration of sixty (60) seconds or more shall be measured on the basis of the energy average sound level over a period of sixty (60) seconds (LEQ₁).
3. *Maximum permissible sound levels:* The maximum permissible sound level of any continuous, regular or frequent source of sound produced by an activity shall be as follows:
 - a. Sixty (60) dBA between the hours of 7:00 a.m. and 10:00 p.m.
 - b. Fifty (50) dBA between the hours of 10:00 p.m. and 7:00 a.m., as measured at or within the boundaries of any residential zone.

In addition to the sound level standards established above, all uses located within this zone shall employ best practicable sound abatement techniques to prevent tonal sounds and impulse sounds or, if such tonal and impulse sounds cannot be prevented, to minimize the impact of such sounds in residential zones.

4. *Exemptions:*
 - a. Noises created by construction and maintenance activities between 7:00 a.m. and 10:00 p.m. are exempt from the maximum permissible sound levels set forth in subsection (a)3 of this section. Construction activities on a site abutting

any residential use between the hours of 10:00 p.m. of one (1) day and 7:00 a.m. of the following day shall not exceed fifty (50) dBA.

b. The following uses and activities shall also be exempt from the requirements of subsection (a)3 of this section:

i. The noises of safety signals, warning devices, emergency pressure relief valves, and any other emergency devices.

ii. Traffic noise on public roads or noise created by airplanes and railroads.

iii. Noise created by refuse and solid waste collection, provided that the activity is conducted between 6:00 a.m. and 7:00 p.m.

iv. Emergency construction or repair work by public utilities, at any hour.

v. Noise created by any ~~recreational activities~~ temporary activities which are permitted by law and for which a license or permit has been granted by the city, including but not limited to parades, sporting events, ~~and~~ fireworks displays, festivals, events and concerts.

DIVISION 17.5. EASTERN WATERFRONT PORT ZONE*

Sec.14-301. Permitted uses.

Subject to a determination that the proposed use meets the standards of section 14-300.1. (no adverse impact on marine uses), the following uses are permitted in the Eastern Waterfront Port Zone:

(a) *Marine passenger:*

1. Intermodal marine passenger facilities;
2. Cruise ship home port and port of call berthing and support;
3. International and domestic ferries.

(b) *Marine commercial:*

1. Transient and long-term commercial berthing;
2. Marine-related warehousing;
3. Marine related construction, manufacturing, fabrication, salvage and repair;
4. Storage and repair of fishing equipment;
5. Ship and other marine vessel construction, building, servicing, and repair;
6. Boat and marine equipment storage;
7. ~~Marine fuel storage and dispensing provided that on-site fuel storage structures shall be used solely for the purpose of fueling vessels and shall be limited, cumulatively, to 20,000 gallons of storage capacity within the zone; Harbor and marine supplies and services, chandleries, and ship supply such as fueling and bunkering of vessels;~~
8. Public, non-profit, or commercial marine transportation and excursion services, including captained charter services, sport fishing and water taxis;

9. Ship and off-shore support services, including but not limited to tug boats, pilot boats, and chandleries;
10. Facilities for marine pollution control, oil spill cleanup, and servicing of marine sanitation devices~~;-~~
11. Marinas located east of the eastern boundary of the parcel of land owned by the City of Portland pursuant to a deed from the State of Maine dated February 1982 and recorded in the Cumberland County Registry of Deeds at Book 4916, Page 26;
12. Marine office, including but not limited to offices of owners of marinas, wharves or their agents, and naval architects, and seafood brokers.

(c) *Commercial:*

1. Professional, business, government, and general office located in upper floors of structures existing as of September 18, 2006.

***Editor's Note**—On-site parking for non-marine commercial uses are permitted as conditional uses subject to the provisions of section 14-301.1. (conditional uses, parking) below.

2. Temporary events, except festivals as otherwise governed under section 14-301I3 below.

Buildings, piers and lands within the EWPZ may be used for temporary public and private events including but not limited to exhibitions, conferences, meetings, and trade shows under the following conditions:

- a. Temporary events occupying more than 10,000 square feet of building or outdoor space shall not exceed a combined total of sixty (60) days between May 1st to October 31st;
- b. No temporary event may continue for more than 14 days of continuous operation;

c. Any temporary event that anticipates more than 5,000 people in attendance on any single day must provide and be subject to a parking management plan. The parking management plan must be submitted for the review and approval of the public works authority at least 60 days prior to the first day of the event.

2. Festivals subject to City license.

4. Street vendors licensed pursuant to Chapter 19 as a result of a competitive bid process conducted pursuant to Chapter 2 of the City Code.

(d) *Public:*

1. Fire, police and emergency services;

2. Governmental agency emergency operations/crisis centers; 3. Research, military and visiting attraction vessel berthing;

4. Landscaped pedestrian parks, plazas and other similar outdoor pedestrian spaces, including without limitation pedestrian and/or bicycle trails.

(e) *Other:*

1. Wind energy systems, as defined and allowed in Article X, Alternative Energy.

2. A facility for non-profit organizations whose facility may include offices, classrooms, equipment, equipment rentals, storage, and bathrooms for the public.

Sec. 14-301.1. Conditional uses.

(a) The following uses shall be permitted as conditional uses in the Eastern Waterfront Port Zone, provided that, notwithstanding section 14-471(c), section 14-474(a), or any other provision of this code, the planning board shall be substituted for the board of appeals as the reviewing authority,

and provided further that in addition to the provision of section 14-474(c)(2) such uses will not impede or preclude existing or potential water-dependent development within the zone, will allow for adequate right-of-way access to the water, are compatible with marine uses, and meet all additional standards set forth below:

1. Conditional use standard:

- a. *Marine compatibility:* The proposed use shall be compatible with existing and potential marine uses in the vicinity, as required by section 14-304(n) and (o) (compatibility of non-marine uses with marine uses and functional utility of piers and access to the water's edge); and
- b. *Parking and traffic circulation:*
 - i. Parking and traffic circulation plan: All applications for conditional use in the EWPZ shall submit a parking and circulation plan for review and approval by the planning board. The parking and circulation plan shall show the location of all existing and proposed structures, travel ways and parking under the common ownership and/or control of the subject pier or property. The plan shall demonstrate that the parking and circulation of the conditional use does not interfere with the functional marine utility of the property and otherwise meets the standards and conditions of the EWPZ.

2. Conditional uses:

- a. *Marine:*
 - i. Marine products, wholesaling and retailing;
 - ii. Ice-making services;
 - iii. Marine freight facilities providing service for, and/or intermodal transfer of, container and breakbulk freight;
 - iv. Marine educational facilities;

- v. Seafood retailing, wholesaling, packaging and shipping;
- vi. Seafood processing for human consumption, subject to the performance standards of the IL zone set forth in section 14-236 in addition to the performance standards of section 14-304;
- vii. Commercial marinas serving commercial and recreation boats located west of the eastern boundary of the parcel of land owned by the City of Portland pursuant to a deed from the State of Maine dated February 1982 and recorded in the Cumberland County Registry of Deeds at Book 4916, Page 26, provided that such facilities are located in areas that do not conflict with the navigation and handling of deepwater dependent vessels accessing existing or potential deepwater berthing;
- viii. Fish byproducts processing, provided that:
 - a. Any fish byproducts processing facility has a valid rendering facility license under chapter 12 of the Portland city code; and
 - b. Any fish byproducts facility shall employ current and appropriate odor control technology to eliminate or minimize detectable odors from such a process, and in no case shall odors exceed the odor limitation performance standards of the IM zone (section 14-252); and
 - c. The processing other material wastes or byproducts shall not be deemed a lawful accessory use Permitted herein.

b. *Commercial:*

- a. Structured parking available to the general

public;

- b. Professional, business, government and general offices uses in upper floors of structures constructed after September 18, 2006;
- c. Passenger support services supporting a marine passenger use listed under 14-301(a)(marine passenger). The total ground floor area occupied by any combination of the following uses (regardless of ownership) shall not exceed 35% of the gross floor area of the principle associated marine passenger use and no more than 35,000 square feet cumulative within the EWPZ:

- i. Retail;
- ii. Restaurants/food service other than street vendors;
- iii. Retail service;
- iv. Passenger information services.

- c. *Industrial:* The following industrial uses are permitted provided that such uses shall conform to the IM zone performance standards set forth in section 14-252 in addition to the performance standards of 14-304. Where redundant or contradictory performance standards exist, the more restrictive standard applies.

- i. Non-marine related warehousing in structures existing as of September 18, 2006;
- ii. Facilities for combined marine and general construction;
- iii. Low impact industrial uses as permitted in the IL zone in structures existing as of September 18, 2006, excluding all auto repair service facilities.

- d. *Public:*

- i. *Utility substations:* Public utility substations, including but not limited to electrical transformers, sewage and stormwater pumps and telecommunication switching stations, are permitted under the following conditions:
 - a. The facility is located more than 100 feet from the water's edge;
 - b. The facility occupies no more than 50 square feet of structure above ground;
 - c. The facility provides no dedicated on-site parking and all subsurface elements of the facility are installed and operated such that land occupied by the facility is otherwise useable and made available for marine related uses, including but not limited to parking, travel ways, and/or storage; and
 - d. The facility shall be sized, sited and screened to minimize visual impact and prominence from public ways.
- ii. Maritime museums, limited to 5,000 square feet of ground floor footprint.

***Editor's Note**—On-site parking for non-marine commercial and industrial uses are permitted as conditional uses subject to the provisions of section 14-301.1. (conditional uses, parking) below.

- e. *Parking for non-marine uses:* Notwithstanding sections 14-304(h), 14-331, 14-334 (regarding off-street parking requirements) and article V (site plan) of this chapter, no parking shall be allowed in this zone for non-marine uses unless the applicant can demonstrate that the number of parking spaces on-site exceeds the number of parking spaces needed to accommodate the demand for marine and water-dependent uses that are permitted by section 14-301 (permitted marine uses) and 14-301.1. (conditional marine uses) which are or may be located on the subject

property (see editor's note below). The remainder of parking Required, if any, for such non-marine uses shall be provided off-site.

*Editor's Note—Vacant ground floor space should be considered to have a parking demand similar to other space housing an existing water-dependent use elsewhere on the subject property or on a comparable property.

. . . .

Sec. 14-303. Dimensional requirements.

In addition to the provisions of article III, division 25 of this code, lots in the EWPZ shall be subject to the following requirements:

- (a) *Minimum lot size:* None.
- (b) *Minimum frontage:* None.
- (c) *Minimum yard dimensions:*

- 1. Front setback: None.
- 2. Side setback: None.
- 3. Rear setback: None.

4. Setback from pier line: Notwithstanding the above requirements, a minimum setback ~~of twenty-five (25) feet~~ from the edge of any pier, wharf or working edge of the hardened shoreline shall be required for any structure as follows:-

- Twenty-five (25) feet for structures located west of the eastern boundary of the parcel of land owned by the City of Portland pursuant to a deed from the State of Maine dated February 1982 and recorded in the Cumberland County Registry of Deeds at Book 4916, Page 26.
- Five (5) feet for structures located east of the eastern boundary of the parcel of land owned by the City of Portland pursuant to a deed from the State of Maine dated February 1982 and recorded in the Cumberland County Registry of Deeds at Book 4916, Page 26.

The setback area may be utilized for water-dependent

uses and public uses and activities, subject to the provisions of sections 14-300.1 (no adverse impact) and 14-301.1 (conditional use provisions), and shall not be utilized for restaurant, drinking, or other non water-dependent uses or for off-street parking. The edge of any pier, wharf or bulkhead shall include any attached apron(s).

~~DIVISION 18.7. WATERFRONT SPECIAL USE ZONE* RESERVED~~

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*Editor's Note See the editor's note to division 18 of this article.
-----~~

~~Sec. 14-320.5. Purpose.~~

~~The waterfront special use zone recognizes that the uses appropriate in this zone are constrained by its proximity to heavy industrial use on the western end, a high-density residential neighborhood on the north, and park and R-OS land to the east. Uses to be located in this zone must be compatible with these existing neighborhood uses.~~

~~At a minimum, parcels in this zone generally enjoy visual access to the port. It is further recognized that this area has historically been used for marine uses and that some of the parcels have the capacity to accommodate active water-dependent uses. While physical access to the water may not currently be legally available to all parcels in this zone, it is anticipated that developments in this zone may be able to negotiate easements for access. At a minimum, development in this zone should not be incompatible with marine and water-dependent uses. Uses which contribute to the maintenance and improvement of the infrastructure along the water's edge as a condition of use are strongly encouraged.~~

~~(Ord. No. 168-93, § 2, 1-4-93)~~

~~Sec. 14-320.5.5. No adverse impact on marine uses.~~

~~No use shall be permitted, approved or established in this zone if it will have an impermissible adverse impact on future marine development opportunities. A proposed development will have an impermissible adverse impact if it will result in any one (1) or more of the following:~~

- ~~(a) The proposed nonwater-dependent use will displace an existing water-dependent use;~~
- ~~(b) The proposed use will reduce existing commercial vessel berthing space;~~
- ~~(c) The proposed nonwater-dependent use, structure or activities, including but not limited to access, circulation, parking, dumpsters, exterior storage or~~

~~loading facilities, and other structures, will unreasonably interfere with the activities and operation of existing water-dependent uses or significantly impede access to vessel berthing or other access to the water by water-dependent uses; or~~

~~(d) The siting of a proposed nonwater-dependent use will substantially reduce or inhibit existing public access to marine or tidal waters.~~

~~(Ord. No. 168-93, § 2, 1-4-93)~~

~~Sec. 14-320.6. Permitted uses.~~

~~Subject to a determination that the proposed use meets the standards of section 14-320.5.5 (no adverse impact on marine uses):~~

~~(a) The following uses are permitted in the waterfront special use zone on both the north and south sides of the railroad line indicated on the City of Portland Zoning Map:~~

~~1. Marine:~~

- ~~a. Marine products, wholesaling, distribution and retailing;~~
- ~~b. Marine repair services and machine shops;~~
- ~~c. Tugboat, fireboat, pilot boat and similar services;~~
- ~~d. Harbor and marine supplies and services, chandleries, and ship supply such as fueling and bunkering of vessels;~~
- ~~e. Marine industrial welding and fabricating;~~
- ~~f. Shipbuilding and facilities for construction, maintenance and repair of vessels;~~
- ~~g. Commercial marine transport and excursion services, including ferries, captained charter services, sport fishing and water~~

~~taxis;~~

~~h. Cargo handling facilities, including
docking, loading and related storage;~~

~~i. Boat repair yards;~~

~~j. Boat storage facilities, including rack
storage facilities;~~

~~k. Seafood processing;~~

~~l. Seafood packing and packaging;~~

~~m. Seafood loading and seafood distribution;~~

~~n. Fabrication, storage and repair of fishing
equipment;~~

~~o. Ice-making services;~~

~~p. Facilities for marine construction and
salvage;~~

~~q. Facilities for marine pollution control, oil
spill cleanup, and servicing of marine
sanitation devices;~~

~~r. Fabrication of marine-related goods;~~

~~s. Fishing and commercial vessel berthing;~~

~~t. Noncommercial berthing;~~

~~u. Marine office, including but not limited to
offices of owners of wharves or their
agents, and naval architects, and seafood
brokers;~~

~~v. Public landings;~~

~~w. Marinas;~~

~~x. Intermodal transportation facilities.~~

~~2. Industrial uses:~~

~~Industrial uses which meet the performance standards of the I-2 zone.~~

~~3. Public:~~

~~Pedestrian and bicycle trails.~~

~~The following uses are permitted in the waterfront special use zone only on the north side of the railroad tracks indicated on the City of Portland Zoning Map only in (a) buildings in existence on January 4, 1993, or (b) one (1) new structure per parcel (as defined in 30-A M.R.S.A. Section 4401(6)), which parcel was in existence on January 4, 1993, of up to five thousand (5,000) square feet in total floor area. No construction of a new structure of more than five thousand (5,000) square feet in total floor area or in excess of one (1) per parcel for uses other than those specified in subsections (1) through (3) above is allowed without approval of a conditional use pursuant to section 14-320.6.5 or conditional or contract rezoning pursuant to division 1.5 of this article:~~

~~4. Commercial uses:~~

~~a. Professional, business, and general offices;~~

~~b. Business service establishments;~~

~~c. Restaurants, provided that food service and consumption shall be the primary function of the restaurant;~~

~~d. Cabinet and carpentry shops;~~

~~e. Cold storage facilities;~~

~~f. Museums and art galleries.~~

~~5. Other:~~

~~a. Accessory uses customarily incidental and subordinate to the location, function and operation of permitted uses or temporary exhibition uses, provided that all such~~

~~exhibition uses on a lot do not exceed a combined total of sixty (60) days per year and that the total floor area utilized for such uses does not exceed seventy thousand (70,000) square feet at any one (1) time;~~

~~b. Parking: Parking shall be permitted as long as it does not impede access to water by existing or potential marine uses.~~

~~c. Institutional uses including marine research, education and laboratory facilities. Such uses shall not include any type of overnight accommodations.~~

~~d. Wind energy systems, as defined and allowed in Article X, Alternative Energy.~~

~~6. Public:~~

~~a. Utility substations, including sewage collection and pumping stations, water pumping stations, transformer stations, telephone electronic equipment enclosures and other similar structures, provided that such structures are located more than one hundred (100) feet from the water;~~

~~b. Municipal uses;~~

~~c. Landscaped pedestrian parks, plazas and similar outdoor pedestrian spaces, including without limitation pedestrian and bicycle trails.~~

~~7. Industrial uses:~~

~~Warehousing and wholesaling.~~

~~(Ord. No. 168-93, § 2, 1-4-93; Ord No. 187-99, 1-4-99; Ord. No. 33-11/12, 1-18-12)~~

~~Sec. 14-320.6.5. Conditional uses.~~

~~(a) The following uses shall be permitted only upon the issuance of a conditional use permit, subject to the provisions~~

~~of sections 14-320.5.5, 14-474 and any special provisions, standards or requirements specified below, and further provided that, notwithstanding section 14-474(a) or any other provision of this Code, the Planning Board shall be substituted for the board of appeals as the reviewing authority:~~

- ~~1. Any use permitted in section 14-320.6(d)2, 4, 5 or 6, (e), (f) or (g), in one (1) new structure of more than five thousand (5,000) square feet, but not more than ten thousand (10,000) square feet in total floor area per parcel.~~

~~(b) The following use shall be permitted only upon the issuance of a conditional use permit subject to the provisions of section 14-474 (conditional uses), and any special provisions, standards or requirements specified below:~~

- ~~1. Temporary wind anemometer towers, as defined in Sec 14-47, are permitted provided the following standards are met in addition to Sec 14-430:~~
 - ~~a. Towers may be installed for the purpose of wind data collection for no more than two (2) years after the issuance of a Certificate of Occupancy for the tower. At the conclusion of the aforementioned two (2) years, the tower must be dismantled and removed from the site within sixty (60) days; and~~
 - ~~b. Towers shall be constructed according to plans and specifications stamped by a licensed professional engineer, which shall be provided to the Board of Appeals with the application; and~~
 - ~~c. Towers shall be set back from habitable buildings by a distance equal to 1.1 times the tower height; and~~
 - ~~d. The applicant shall provide a safety report prepared and stamped by a licensed professional engineer to the Board of Appeals with their application for conditional use, which demonstrates how the~~

~~proposed temporary wind anemometer tower is safe in terms of strength, stability, security, grounding, icing impacts and maintenance; and~~

~~e. The applicant shall provide evidence of commercial general liability insurance, such insurance to be satisfactory to Corporation Counsel and cover damage or injury resulting from construction, operation or dismantling of any part of the temporary wind anemometer tower; and~~

~~f. Towers and associated guy wires shall be sited to minimize their prominence from and impacts on public ways (including pedestrian ways); and~~

~~g. Towers shall be used for installing anemometers and similar devices at a range of heights from the ground to measure wind characteristics (speed, direction, frequency) and related meteorological data, but shall not be used for any other purpose; and~~

~~h. A performance guarantee shall be required for the cost of removal of the tower, guy wires and anchors. This requirement may be satisfied by surety bond, letter of credit, escrow account or by evidence, acceptable to the City, or the financial and technical ability and commitment of the applicant or its agents to remove the facility at the end of the use period.~~

~~2. Wind energy systems, as defined and allowed in Article X, Alternative Energy.~~

~~(Ord. No. 168-93, § 2, 1-4-93; Ord. No. 29-09/10, 8-3-09, emergency passage; Ord. No. 33-11/12, 1-18-12)~~

~~**Sec. 14-320.7. Contract or conditional zoning.**~~

~~An applicant may only construct a new structure of either more than five thousand (5,000) square feet in total floor area~~

~~for occupancy by uses enumerated in section 14-320.6(d)1, or ten thousand (10,000) square feet in total floor area for occupancy by uses enumerated in section 14-320.6(d)2, 4, 5 or 6, (e), (f) or (g) or in excess of one (1) per parcel for occupancy by those same uses if a rezoning is approved pursuant to division 1.5 of this article. A conditional or contract rezoning shall only be approved if, after public hearing and opportunity for public comment, the reviewing body finds that the applicant has carried the burden of proof to show that the proposed development meets the standards of section 14-320.55 and all of the following standards:~~

- ~~(a) The proposed development is consistent with the comprehensive plan.~~
- ~~(b) The project's public benefits outweigh its potential negative impacts, taking into consideration as public benefits protection of existing water-dependent uses, preservation of future water-dependent use development opportunities, contribution to the development of and/or on-going maintenance of the marine infrastructure for commercial vessels (either on- or off-site), and visual and physical access to the waterfront for the general public.~~
- ~~(c) The proposed development responds to any unique physical conditions and development opportunities along the shoreline.~~
- ~~(d) The proposed development is sensitive to design opportunities and local environmental conditions, makes use of creative design solutions, does not significantly restrict air, light or water views of other structures located in the vicinity and does not create significant adverse local climatic effects such as increased winds, shadowing, or less efficient traffic, parking or circulation patterns.~~
- ~~(e) The proposed development is consistent with the Portland Waterfront Public Access Design Guidelines, a copy of which is on file in the department of planning and urban development.~~
- ~~(f) The proposed rezoning contains adequate provisions and/or conditions to ensure that the water-dependent~~

~~use is not abandoned after the project is developed.~~
(Ord. No. 168-93, § 2, 1-4-93)

~~**Sec. 14-320.8. Prohibited uses.**~~

~~Uses which are not enumerated in section 14-320.6 as permitted or in section 14-320.6.5 as conditional uses are prohibited.~~
(Ord. No. 168-93, § 2, 1-4-93)

~~**Sec. 14-320.9. Dimensional requirements.**~~

~~In addition to the provisions of article III, division 25 of this Code, lots in the waterfront special use zone shall be subject to the following requirements:~~

~~(a) Minimum lot size: None.~~

~~(b) Minimum frontage: None.~~

~~(c) Minimum yard dimensions:~~

~~Front setback: None.~~

~~Side setback: None required unless adjacent to a residential zone; if adjacent to a residential zone, twenty-five (25) feet.~~

~~Rear setback: None required unless adjacent to a residential zone; if adjacent to a residential zone, twenty-five (25) feet.~~

~~Setback from pier line: Notwithstanding the above requirements, a minimum setback of five (5) feet from the edge of any pier, wharf or bulkhead shall be required for any structure. The setback area may be utilized for activities related to the principal uses carried on in the structure, subject to the provisions of sections 14-313 and 14-314, but shall not be utilized for off-street parking. The edge of any pier, wharf or bulkhead shall include any attached apron(s).~~

~~(d) Maximum lot coverage: One hundred (100) percent.~~

~~(e) 1. Maximum building height: Forty five (45) feet, except in the area formed by the projection~~

~~of the centerline of Atlantic Street between its intersections with Wilson Street and the Eastern Promenade easterly to the easternmost boundary of the waterfront special use zone, where facilities for bulk storage of materials delivered to a site by waterborne transportation or awaiting transportation from the site by means of waterborne transportation may be erected to heights that shall not exceed sixty five (65) feet above mean sea level. In those areas where the maximum height may not exceed forty five (45) feet above grade, no structure may exceed sixty five (65) feet in height above mean sea level. For purposes of this section, a projection of the centerline of a street shall consist of an extension of the centerline of the street to the water side boundary of the waterfront special use zone.~~

~~2. Additional bulk, height and location standards for structures exceeding forty five (45) feet in height above grade within the waterfront special use zone:~~

~~a. The maximum horizontal diagonal measurement of portions of a structure, cluster of structures or equipment exceeding forty five (45) feet in height above grade shall not exceed one hundred (100) feet, except that for each foot that the structure, cluster of structures, or equipment is lowered from the maximum permitted height, the maximum horizontal measurement may increase by one (1) foot.~~

~~b. In addition to any other setback requirements, portions of structures or clusters of structures exceeding forty five (45) feet in height above grade shall be set back a minimum of one (1) foot from the exterior property line of the owner of the underlying fee interest for each foot that the structure or cluster of structures exceeds forty five (45) feet in height above grade.~~

- ~~c. No structure or cluster of structures exceeding forty five (45) feet in height above grade may be located closer than one hundred fifty (150) feet from any other such structure or cluster of structures.~~
- ~~d. The cumulative width of the portion of structures exceeding forty five (45) feet in height above grade shall not exceed more than thirty (30) percent of the average width of the lot as measured by a line drawn parallel to the water.~~
- ~~e. No structure shall exceed forty five (45) feet in height above grade within the view corridors established by the projection of the street right-of-way lines for Atlantic Street, Vesper Street or for O'Brion Street.~~
- ~~f. For purposes of this section only, moveable elements such as cranes and gantries, and connection devices such as conveyors or bridges shall not be subject to the space and bulk requirements, but shall be subject to a determination by the Federal Aviation Administration that the location of such equipment will not create a hazard to navigation. Other rooftop appurtenances shall not exceed the maximum height limits set forth in this section.~~
- ~~g. The applicant must provide a determination from the Federal Aviation Administration that structures and equipment will not exceed the applicable height guidelines for the runway approach and will not create a hazard to navigable airspace. Such a determination shall be accepted as conclusive evidence that the proposed development will not create a hazard.~~
- ~~h. Accessory uses in structures which exceed forty five (45) feet in height above grade shall not be located higher than forty-five~~

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~~(45) feet within the structure.~~
~~(Ord. No. 168-93, § 2, 1-4-93)~~

~~Sec. 14-320.10. Performance standards.~~

~~All uses in the waterfront special use zone shall comply with the following standards:~~

~~(a) Outdoor storage of materials: Outdoor storage of commodities and materials accessory to normal conduct of business, except pilings and/or cranes, shall be permitted to a maximum height of forty-five (45) feet, and such materials shall be entirely contained, including runoff contaminants and residual material, within a designated area within the lot boundaries.~~

~~(b) Noise:~~

~~1. The level of sound, measured by a sound level meter with frequency weighting network (manufactured according to standards prescribed by the American National Standards Institute, Inc.), inherently and recurrently generated within the waterfront special use zone between the hours of 7:00 p.m. and 7:00 a.m. from industrial facilities or operations commenced on or after July 1, 1988, shall not exceed fifty-five (55) decibels on the A scale at or within the boundaries of any residential zone, except for sound from construction activities, sound from traffic on public streets, sound from temporary activities such as festivals, and sound created as a result of, or relating to, an emergency, including sound from emergency warning signal devices.~~

~~2. In measuring sound levels under this section, sounds with a continuous duration of less than sixty (60) seconds shall be measured by the maximum reading on a sound level meter set to the A weighted scale and the fast meter response (L maxfast). Sounds with a continuous duration of sixty (60) seconds or more shall be measured on the basis of the energy average sound level over a period of sixty (60) seconds (LEQ₁).~~

~~3. In addition to the sound level standards otherwise established, facilities or operations established or built in the waterfront special~~

~~use zone on or after July 1, 1988, shall employ best practicable sound abatement techniques to prevent tonal sounds and impulse sounds or, if such tonal and impulse sounds cannot be prevented, to minimize the impact of such sounds in residential zones. Tonal sound is defined as a sound wave usually perceived as a hum or which because its instantaneous sound pressure varies essentially as a simple sinusoidal function of time. Impulse sounds are defined as sound events characterized by brief excursions of sound pressure, each with a duration of less than one (1) second.~~

- ~~(c) *Vibration:* Vibration inherently and recurrently generated shall be imperceptible without instruments at lot boundaries. This shall not apply to vibration resulting from activities aboard a vessel or from railroad vehicle activities, or from activities on a pile supported pier.~~
- ~~(d) *Federal and state environmental regulations:* All uses shall comply with federal and state environmental statutes and regulations regarding emissions into the air, except where provisions of this Code are more stringent.~~
- ~~(e) *Discharges into harbor areas:* No discharge into harbor water areas shall be permitted, unless permitted by the Maine Department of Environmental Protection under a waste discharge license and as approved by the department of parks and public works in accordance with chapter 24, article III of this Code. All private sewage disposal or private wastewater treatment facilities shall comply with the provisions of chapter 24, article II of this Code and federal and state environmental statutes and regulations regarding wastewater discharges.~~
- ~~(f) *Storage of vehicles:* Storage of any unregistered automotive vehicle on the premises for more than sixty (60) days shall not be permitted.~~
- ~~(g) *Landfill of docking and berthing areas:* Landfill of docking and berthing areas shall be governed by 38 M.R.S.A. Sections 471 through 478, and permitted only if the landfill does not reduce the amount of linear~~

~~berthing areas or space, or berthing capacity. If approved, construction shall be undertaken using methods approved by the department of parks and public works and shall be accomplished in accordance with the provisions of division 25 of this article and in a manner so as to ensure that a stable and impermeable wall of acceptable materials will completely contain the fill material and will not permit any fill material to leach into docking areas or navigable waters.~~

~~(h) Off-street parking: Off-street parking is required as provided in division 20 (off-street parking) of this article.~~

~~(i) Off-street loading: Off-street loading is required as provided in division 21 of this article.~~

~~(j) Shoreland and flood plain management regulations: Any lot or portion of a lot located in a shoreland zone as identified on the city shoreland zoning map or in a flood hazard zone shall be subject to the requirements of division 26 and/or division 26.5.~~

~~(k) Lighting: All lighting on the site shall be shielded such that direct light sources shall not unreasonably interfere with vessels transiting the harbor nor have an unreasonable adverse impact on adjacent residential zones.~~

~~(l) Signs: Signs shall be permitted as set forth in division 22 of this article.~~

~~(m) Storage of pollutants and oily wastes: On premises storage of pollutants and oily wastes shall not be permitted for more than forty-five (45) days.~~

~~(n) Compatibility of nonmarine uses with marine uses: Nonmarine uses, structures and activities, including but not limited to access, circulation, parking, dumpsters, exterior storage and loading facilities or other structures shall neither unreasonably interfere with the existence or operation of marine uses nor significantly impede access to vessel berthing or other access to the water by existing or potential marine uses.~~

DIVISION 22. SIGNS

. . .

Sec. 14-369.5. Tables.

(a) *Table 1. Permitted sign types by zone.*

Note: *The following legend applies for Table 1 below:*

- A. Allowed, no permit required;
- B. Allowed, permit required;
- C. Allowed, subject to licensing and permit required;
- D. Prohibited;
- E. Not Applicable

Parenthetical letters, i.e. (a), refer to the notes provided at the end of Table 1.

. . .

	<i>I-M, I-Ma, I-Mb Industrial</i>	<i>I-H, I-Hb Industrial</i>	<i>Eastern Waterfront Port Waterfront Central Waterfront Special Use</i>	<i>Waterfront Port Development</i>
Freestanding	B	B	B	B
In general(b)				
ResidentialI	A	A	A	A
Residential(d)	A	A	A	A
Temporary/ Portable (b)	D/D	B/D	D	D
Building	B	B	B	B
Commercial				
Banner				
Building	A	A	A	A
Marker(f)				
Awning	B	B	B	B
Identification(e)	A	A	A	A
Incidental(d)	A	A	A	A
Marquee(g)	B	B	B	B
Projecting	B	B	B	B
Residential(b)	A	A	A	A
Roof	D	D	D	D
Roof Integral	D	D	D	D
Suspended(g)	B	B	B	B
Temporary(h)	B	B	B	B
Wall	B	B	B	B
Window(I)	A	A	A	A
Miscellaneous	A	A	A	A
Community, Cultural Banner				
Directory(j)	A	A	A	A

Flag(k)	A	A	A	A
Pennant	D	D	D	D
Portable-in				
City right-of-way				
(A-frame)	D	D	C	D

. . .

Contents of Table 2:

2.1 Sign Regulations for R-1–R-7, IR-1–IR-3 Residential Zones

2.2 Sign Regulations for Institutional Uses in Residential Zones

2.3 Sign Regulations for RP Residence-Professional Zone

2.4 Sign Regulations for ROS/RPZ Open Space Zones & Signs in all Municipal Parks

2.5 Sign Regulations for B-1 Neighborhood Business Zone – Single Tenant Lots

2.6 Sign Regulations for B-2 Regional Business Zone – Single Tenant Lots

2.7 Sign Regulations for AB Airport Business Zone – Single Tenant Lots

2.8 Sign Regulations for B-3 Downtown Business, B-5 Urban Commercial, B-6 and B-7 Mixed Use Urban, WC Waterfront Central, ~~WSU Waterfront Special Use~~, and EWP, Eastern Waterfront Port Zones

2.9 Sign Regulations for IB Island Business Zone – Single Tenant Lots

2.10 Sign Regulations for B-4 Commercial Corridor Zone – Single Tenant Lots

2.11 Sign Regulations for OP Office Park Zones

2.12 Sign Regulations for I-L, I-Lb, I-M, I-Ma, I-Mb, I-H, I-Hb Industrial and WPD Waterfront Port Development Zones

2.13 Sign Regulations for B-1, B-2, AB, IB, and B-4

Business Zones – Multi-Tenant Lots

2.14 Sign Regulations for Gas Stations – All Zones Where Permitted

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TABLE 2.8 SIGN REGULATIONS BY ZONE

Downtown Business (B-3), Urban Commercial (B-5), <u>and</u> Waterfront Central (WC), and Waterfront Special Use (WSU) Zones
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. . .

DIVISION 26. SHORELAND REGULATIONS

. . .

Sec. 14-449. Land use standards.

All land uses and land use activities subject to this division shall conform to the following standards and regulations, as applicable:

(a) *Principal and accessory structures:*

1. All principal and accessory structures shall be set back at least seventy-five (75) feet horizontal distance, from the normal high water line of water bodies, the upland edge of a wetland or associated tributary streams within a shoreland zone, except that in the following zones the setback shall be as indicated below:

a. B-3, B-5, B-5b, B-6, I-L (south and east of I-295), and I-M (south and east of I-295): Twenty-five (25) feet.

b. W-C, W-PD, ~~W-SU~~, I-B, EWP: No setback required. Pier edge setbacks apply in EWP (Sec. 14-303(c)(4), W-C (Sec. 14-310(d)(4), and W-PD (Sec. 320.2(c)), ~~and W-SU (Sec. 320.9(c))~~.

For the principle structures, setback measurements shall be taken from the top of a costal bluff that has been identified on Coastal Bluff maps as being "highly unstable" or "unstable" by the Maine Geological Survey pursuant "Classification of Coastal Bluffs", and published in the most recent Coastal Bluff Map as further referenced on the Zoning Map.

Notwithstanding this requirement, when a lot is a lot of record as defined in section 14-433 or cannot otherwise meet the setback requirement of this section due to physical limitations of the site, the Planning Board may approve a reduction of the setback requirement for a principal structure to the least amount necessary to achieve a building dimension of twenty-eight (28)

feet, provided that the setback is not reduced to less than forty (40) feet. Structures in existence on June 15, 1992, may be expanded once during the lifetime of the structure up to twenty-five (25) feet toward a freshwater wetland, stream or tributary stream, provided that the setback is not reduced to less than forty (40) feet and the floor area or volume is not increased by more than thirty (30) percent. In no event shall the setback from a coastal wetland be reduced to less than seventy-five (75) feet, except in the B-3, B-5, B-5b, B-6, EWP, W-C, W-PD, ~~W-SU~~, I-B, I-L and I-M zones, where setbacks shall be as set forth above in this subsection.

In all cases, accessory detached structures of less than one hundred (100) square feet of floor area shall be permitted with no setback, provided that such structures shall be used only for the storage of fish, bait, and related equipment. No setback shall be required for piers, docks, retaining walls, or any other structures which require direct access to the water as an operational necessity.

. . .

- (b) *Piers, docks, wharves, bridges and other structures and uses extending over or below the normal high water line of a water body or within a wetland:*

. . .

6. Except in the W-C, EWP, W-PD, ~~W-SU~~, and I-B zones, no new structure shall be built on, over or abutting a pier, wharf, dock or other structure extending beyond the normal high water line of a water body or within a wetland unless the structure requires direct access to the water as an operational necessity;

. . .

- (c) *Clearing or removal of vegetation:*

1. In all shoreland areas in resource protection zones, the cutting or removal of vegetation shall be limited to that which is necessary for uses expressly authorized in that zone.
2. The clearing or removal of vegetation standards of this section shall not apply to the following zones: EWP, WCZ, WPD, ~~WSU~~, B-3, B-5, B-5b, B-6, B-7, I-L (south and east of I-295) and I-M zones (south and east of I-295).

. . .

(j) *Roads and driveways:*

1. Roads and driveways shall be setback a minimum of seventy-five (75) feet from the normal high-water or upland edge of a coastal wetland, freshwater wetland, river or tributary stream within a shoreland zone, except:
 - a. In the EWP, WC, WPD, ~~WSU~~, B-3, B-5, B-5b, B-6, I-L (south and east of I-295) and I-M (south and east of I-295) roads and driveways shall be setback as established for structures in those zones; as specified in Sec. 14-449(a)1.
 - b. Where the planning board determines that no other reasonable alternative exists. If no other reasonable alternative exists, the planning board may reduce the road and/or driveway setback requirement to no less than fifty (50) feet, horizontal distance, upon clear showing by the applicant that appropriate techniques will be used to prevent sedimentation of the water body, tributary stream or wetland. Such techniques may include, but are not limited to, the installation of settling basins, and/or effective use of additional ditch relief culverts and turnouts place so as to avoid sedimentation of the water body, tributary stream or wetland.

. . .

(k) *Parking areas:* Parking areas shall be set back a minimum of seventy-five (75) feet from the normal high-water or upland edge of a coastal wetland, freshwater wetland, river or tributary stream within a shoreland zone except:

1. In the EWP, WC, WPD, ~~WSU~~, B-3, B-5, B-5b, B-6, I-L and I-M zones, parking setbacks shall be as established for structures in those zones; as specified in Sec. 14-449(a)1.

2. Parking setbacks in the S-P (stream protection) zones are as established in Division 26.7.

3. Where the Planning Board finds that no other reasonable alternative exists further from the shoreline or tributary stream, the board may reduce the parking setback requirement to no less than fifty (50) feet in the R-OS, and I-B zones to the least amount necessary for construction, provided that the applicant proves by a preponderance of the evidence that appropriate techniques will be used to prevent sedimentation of the water body.

. . .

Lannie Dobson - Re: Fwd: 58 Fore Street

From: Lannie Dobson
To: Christine Grimando
Subject: Re: Fwd: 58 Fore Street

>>> Christine Grimando 2/6/2015 9:24 AM >>>
 Hi Lannie,

I had sent this and one other to Jen yesterday, but I'm resending for good measure.

Christine

Christine Grimando, AICP
 Senior Planner
 Planning & Urban Development Department
 389 Congress Street
 Portland, Maine 04101
cdg@portlandmaine.gov
 Ph: (207) 874-8608

>>> Christine Grimando 2/5/2015 6:24 PM >>>
 Hi Jen,

More public comment.

Christine

Christine Grimando, AICP
 Senior Planner
 Planning & Urban Development Department
 389 Congress Street
 Portland, Maine 04101
cdg@portlandmaine.gov
 Ph: (207) 874-8608

>>> Angela Adams <aaa@angelaadams.com> 2/5/2015 6:10 PM >>>

Dear Chairman O'Brien, Members of the the Planning Board and Senior Planner Ms. Grimando,

As a Portland resident, property owner and business owner I am writing to express my concerns regarding the proposed development of the 10 acre site known as The Portland Company and located at 58 Fore Street.

This parcel of land is critical to our city and the lifestyle that we all embrace as residents and business owners. It is most often the first thing you see as you fly in, the first thing you see entering the harbor by boat, ferry or cruise ship and it is the route the leaf peepers, tourists and locals use to show off the beauty of our coastal city from Fore Street. Developing this site is an exciting idea and if done thoughtfully and with the residents of the neighborhood and city in mind, Portland could have a world class waterfront that is enjoyed by all.

The Portland Company history is a critical part of the DNA of our city and a national treasure. Maine has a long history of craft and innovation and there is no better example of this than the Portland Company.

The historic importance of this site is of national significance:

- It is the only surviving pre-civil war locomotive manufacturing facility in the country
- It was critical to the development of many industries in Maine, including the textile industry, paper making and canning industries
- The company's development of Maine's railroads and the shipping industry are of significant importance
- This site is the only intact industrial complex from the 19th and early 20th century remaining in the city today
- Architecturally, the buildings which were built in the 1840's and 1850's are the only remaining industrial buildings of that era in our city.
- The Portland Company buildings as a whole, comprise the historic manufacturing process that allowed them to manufacture everything on one site (outside of the boiler construction) and was the only facility in the nation to do this on one site.
- The maritime significance is immense as our lighthouse components, lanterns and navigational buoys were manufactured there.
- Bug Light, the lighthouse at the entrance to Portland Harbor was made at the Portland Company complex.

The list goes on and on as to the historical significance of this site and I urge you to please consider preserving the existing buildings and maintaining the integrity of this important historical site.

Preserving the existing buildings is only one of my primary concerns. The other is in regard to the overall design of this project, the magnitude of it and it's importance to our city. As a designer, I am well aware of the time and consideration that must go into designs and projects in order for them to be great. We all know what a less than thoughtful development looks like and it's always unfortunate to see this, especially in our beautiful city.

My concern is that in order for the most valuable piece of our city to be designed in such a way that is worthy of it's spectacular site, it must be done in the most thoughtful process possible. It should be done incrementally and with intermittent approvals that allow the city to manage the process and development in such a way that prevents it from being a one sided project that benefits developers far more than an entire city of people that live and work here. The developers are asking for a zone change that would grant broad changes to the site that greatly benefit them and that could have a disastrous impact on the city's waterfront and surrounding neighborhood. An alternative to granting the zone change request is to instead change the zone to a Contract Zone that would allow the city to monitor the development and manage the evolution of the project in such a way that works both for the developers and the residents of the city. This property is too important for us to hand the keys over to developers that, like all developers, will have very different intentions for the site than the city does. This site cannot be developed simply for the benefit of investors.

Like everyone else I know, I live here because I love the fact that Portland is located on the waterfront. Many of us would have a much easier time running a business in other cities, but we choose Portland because it is a great place to live and because it is a beautiful city located on the ocean. We all get to enjoy the spectacular views, watching the boats and planes come and go and walking along the trails that line the waterfront.

This property is not like other properties you have been asked to vote on. This is the MOST valuable property in our city and our state. It must be treated differently and with the greatest care and consideration for the future or we will forever look longingly back on the days when it was a more integral part of our lives and city and not just a big business deal that made a lot of investors and developers very wealthy. We need to preserve the integrity of the historic site and the value of the waterfront views for greatest number of people and not simply for the wealthy that have the resources to purchase it. It's the reason we all live here and we need to be thoughtful about every aspect of it's future.

Sincerely,

Angela Adams

Angela Adams

Co-Founder, Creative Director

angela adams

273 Congress Street Portland, Maine 04101

(207) 774 3523 / ext. 203 fax (207) 874 9819

From: Barbara Vestal <vestal@chesterandvestal.com>
To: Christine Grimando <CDG@portlandmaine.gov>
Date: 2/5/2015 3:15 PM
Subject: Portland Company Complex
Attachments: 58 Fore - average grade vs. flood plain.pdf

3-D Height and Massing Study, 58 Fore Street, Portland, Maine,

Prepared for Keep the Soul of Portland in the Portland Company by Rob Whitten, Whitten Architects.

Submitted to the Portland Planning Board for the 2/10/2015 workshop by Barbara Vestal due to Rob Whitten's absence from the country. Rob Whitten is expected to be back for the February 10th workshop to briefly explain the study in person.

Background and Methodology:

At the request of Keep the Soul of Portland in the Portland Company (SOP), Whitten Architects (WA) prepared a graphic 3D representation of the Portland Company site and the surrounding Portland neighborhoods using Google Earth information and 3D modeling. They used it to show the maximum possible site coverage and maximum possible heights as currently proposed by the applicant in a much more detailed scale than the previous submissions of the applicant. The applicant's submissions represented maximum build-out heights by dividing the 10 acre site into 9 large blocks, and using the average grade within each of those large blocks as the baseline. Due to the extreme change in grade in some parts of the site, the applicant's methodology minimized the height impact in the portion of the site closest to Fore Street.

In contrast, the study prepared for SOP divided the 10 acre site into 35' by 35' squares, and calculated average mean height within each square. Then it applied the proposed allowable height to each 35' by 35' square. The resulting graphic representation shows the possibilities and limits of the proposed heights and massing as proposed by the applicant. The representation is NOT a design. It does NOT represent specific buildings. Where there are proposals for "extensions" or "towers", WA did not select where they would be located. Instead the extension is shown over the full area where it could be located. It should be noted that according to the existing proposal, these extensions would be limited to a width of 70' parallel with the water and a depth of 140' perpendicular to the water and would have to be separated by at least 90'.

In summarizing the methodology, Rob Whitten of Whitten Architects states:

We overlaid the Portland Company site with a 35' x 35' grid and used it to calculate the average mean height within each 35' square. We worked with Google height information in 5' contours. The grid is more or less parallel to Fore Street and the waterfront edge of the Portland Company site. We then took the 2004 Eastern Waterfront Planning information for Building Envelopes and Heights including view easements and established a height for each of the 35' x 35' grids. (Note: this is the same as proposed by the applicant, except that the applicant additionally proposes to limit heights immediately along Fore Street to 35 feet for a distance of 35 feet back from Fore Street. The WA study used the same 35' for 35' limit.) In the video, none of the Fore Street heights exceed 35' above Fore Street for a depth of 35'. The heights are approximate. They are only as good as the Google information.

The CPB2 submission treated each height area as a big block, which results in lower heights along Fore Street. In the video diagram we broke them into the smaller 35' x 35' units which results in more accurately representing the higher heights that would be allowed along Fore Street. It is a logical representation of the Eastern Waterfront Master Plan Height Overlay description as interpreted by the applicant.

The heights show what is possible on the Portland Company site as re-zoned to a B-6 zone. The 3D diagrams do not show buildings or any sort of design. The diagrams show the maximum possible site coverage and the maximum

possible heights in 35' x 35' sizes. Note that we show all possible options for height extensions in the B-6 zone. The Height Overlay extensions are limited to a variety of blocks and options relative to the waterfront. How they are placed and organized is a building and site design process.

There are two ways to interpret the Eastern Waterfront Building Height Study height overlay illustration 33 (from which the zoning is derived). The applicant asserts that maximum heights should be measured from average grade. SOP asserts that the maximum heights should be measured from *FEET ABOVE FLOOD PLAIN, NOT FROM AVERAGE GRADE*. SOP asserts that measuring heights from flood plain is consistent with the intent of the Eastern Waterfront Height Study, which emphasizes placing taller buildings in the "shadow areas" below Fore Street. Measuring from flood plain is also consistent with how the B-6 zoning was implemented in the adjacent block when it was rezoned to B-6. In that rezoning of the waterfront area from India Street up to (but not including) the 58 Fore Street property, the City adopted as part of the building height overlay: *"For buildings located east of Mountfort Street (extension), building heights shall be measured from feet above flood plain, not from average grade."* As the 58 Fore Street is east of Mountfort Street and the same condition of steep slopes toward Fore Street applies, the same method of measuring heights should apply.

It should also be noted that the WA representation is based upon conservative assumptions in showing height and massing. It calculates grade using existing, pre-development grade. In fact, as height is traditionally calculated for mainland Portland, it is based on post-development grade. The applicant could fill portions of the site, resulting in greater finished heights. Similarly the WA representation shows flat-roofed buildings with no roof-top appurtenances. In fact, actual heights could be higher if a different roof form is used (e.g. for a peak roof parallel to Fore Street, half of the roof from the eaves to the peak could exceed the applicable height limit) and if there are HVAC units, stairway access units, satellite dishes, decks or other non-occupied elements on the roof.

Videos of the Results of the Height and Massing Study:

There are two ways to view the results of the study. One way is to go to the website of SOP at www.soulofportland.org and click on Height Study and Other Links and scroll down a few inches. Posted on that website are images from Vimeo files.

You may also go directly to Vimeo by using the following link:
<http://vimeo.com/album/3202655/video/116566665>

The *first video* that appears on the website (a portion of the Keep the Soul of Portland in the Portland Company 3-D Height and Massing Study prepared by Whitten Architects) shows the maximum potential massing under the zoning currently proposed by the developer* if building heights are measured from average grade*. This shows the maximum potential massing going up Fore Street toward the Eastern Prom.

Videos have been made of additional views of the developer's proposed massing as rendered in the SOP study, showing an overview (long), going along the Eastern Prom Trail heading away from India Street, going down Fore Street, and going down Atlantic, St. Lawrence and Waterville Streets toward the "view corridors" as now proposed. Each of these videos assumes heights measured from average grade, as proposed by the developer.

They may be seen at www.soulofportland.org at Height Study and Other Links, or you may go directly to Vimeo by using the following links:

<http://vimeo.com/album/3202655/video/116573487> (overview)

<http://vimeo.com/album/3202655/video/116565732> (Eastern Prom Trail heading away from India St.)

<http://vimeo.com/album/3202655/video/116567730> (heading down Fore St. toward the Old Port)

<http://vimeo.com/album/3202655/video/116568347> (Waterville Street “view corridor”)

<http://vimeo.com/album/3202655/video/116569060> (St. Lawrence Street “view corridor”)

<http://vimeo.com/album/3202655/video/116569828> (Atlantic Street “view corridor”)

Images Comparing the Impact of Measuring from Average Grade or Flood Plain

The *next sets of six still shots *show a series of comparisons of the maximum potential massing under the same zoning, first showing massing if building heights are measured from average grade (as contended by the developer) and then, from the same location, *if building heights are measured by feet above flood plain (as asserted is proper by SOP)*. Only portions of the site are shown in these views. Whether height is measured from average grade or from flood plain only makes a significant difference in the massing in the vicinity of Fore Street. The captions in the bottom right identify location and method of measurement. They are attached to this e-mail as a pdf file.

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February 5, 2015

Chair O'Brien and Members of the Planning Board
c/o Christine Grimando
Planning Department
City of Portland
389 Congress Street
Portland, Maine 04101

Re: Portland Company Complex

Dear Chair O'Brien and Members of the Planning Board,

The Portland Company Complex, a very visible 10 acre gateway site, is critical to the identity of Portland. As the applicant needs a zone change of some variety in order to proceed with uses that are not currently allowed, the Board has the opportunity to craft zoning that is fully reflective of the best use of that site. It is important for the City to get its zoning right. I firmly believe that the B-6 zone is not the answer for the reasons outlined below.

1. THE B-6 ZONE WAS NOT DRAFTED TO APPLY TO THE PORTLAND COMPANY SITE.

During the course of the Eastern Waterfront master planning process, an "**Ultimate Build-out Scheme**" scenario was developed by the Planning Office in the spring of 2002. It included City-owned land, the parcel referred to as the Farley-Marino property and some land belonging to Shipyard Brewing. **It did not include the Portland Company Complex** because its owner was not interested in redeveloping his property at that time. That illustration is attached as Exhibit A.

The Eastern Waterfront Master Plan generally recommended mixed use development for upland areas of the Eastern Waterfront, including the Portland Company Complex. But it did not recommend that the Portland Company Complex be rezoned from WSUZ to B-6. Mixed use development on the Portland Company Complex can be accommodated within the existing WSUZ regulation.

Between the spring of 2002 and its adoption in December 2004, the Planning Board developed and forwarded to the City Council the proposed B-6 Eastern Waterfront Mixed Use Zone. It applied only to the properties east of India Street, north of Commercial Street and its extension, west of the Portland Company complex, and south of Fore Street. It did not include the Portland

Company Complex (See Exhibit B). This area was denoted the "Central Redevelopment District." In some documents the Shipyard Property, which was eventually developed as the Gateway Parking Garage and the Residence Inn, was included in the discussion as well. However, the B-6 zoning which was enacted in December 2004 applies only to the "Central Redevelopment Area," without the Shipyard properties.

2. THE B-6 ZONE MANDATES A VERY SPECIFIC FORM OF DEVELOPMENT WHICH IS A POOR FIT FOR THE PORTLAND COMPANY SITE

The B-6 zone is a variation of a form-based code. The attached Ultimate Build-out Scheme (Exhibit A) set the stage for a form of urban development that is woven throughout the zoning language. It is very specific to the three blocks that were rezoned to B-6.

The Ultimate Build-out is premised upon a re-connected grid of public streets and public sidewalks (Hancock St., Mountfort St. and an unnamed/unbuilt street adjacent to 58 Fore St.) The parking is directed to the interior of each block (light blue), with structures accommodating mixed uses wrapped around the parking (dark blue). There are virtually no provisions for the consideration of existing buildings, because the area of the Ultimate Build-out is composed of vacant land, surface parking lots, and metal industrial structures which will be razed in the event of development. The B-6 ordinance incorporates unique dimensional requirements to produce this Ultimate Build-out -- e.g., "built to lines," 10 foot maximum setbacks from "build to lines," minimum street wall lengths, and minimum heights -- and requires for ground floor retail space to create new, very dense urban space.

Poor Fit: Already Existing Structures: In contrast to the 3 blocks of B-6, the Portland Company Complex is already significantly occupied by historic buildings. The majority of these buildings are of the character which should be adaptively reused, as stated in the Master Plan and the Design Guidelines. Contrary to assuming a virtually blank slate, as the B-6 does, the Design 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 (Design Guidelines, p.7).

The form-based code approach of the B-6 zone is inconsistent with the goals for the important buildings already occupying a portion of this site.

Poor Fit: No Street Grid: There is no street grid proposed for 58 Fore which will produce the basic building blocks of the B-6 zone -- blocks surrounded on four sides by public streets. The only streets proposed are the existing Fore Street (which is well above the grade of most of the

existing buildings and the "Portland Company Alignment" where no buildings will be allowed. Presumably the no build area will serve as a street, but it is not clear whether it will be public. The B-6 zone relies upon public streets and public sidewalks on both sides of the streets to make the land publicly accessible, thus securing a benefit for the general public. There is no such similar street grid proposed on the Portland Company site.

The rest of the circulation pattern on the Portland Company site has yet to be determined, and may consist of private lanes. This is the opposite of the B-6 zone which relies upon a grid of public streets and sidewalks to assure public access.

Poor Fit: Build-to Lines Nonsensical: In the existing B-6 zone, the dashed lines are "key building envelopes." The B-6 zone states:

New structures located in the blocks located south of Fore Street and north of Commercial Street and its extension, shall build to the key building envelopes [sic] shown on the *Eastern Waterfront Building Height Overlay Map*. (14-272(c)(3))

These build-to lines are tied to the building envelopes, not to streets. The Overlay Map which the applicant proposed to apply to 58 Fore Street has 9 building envelopes. There are eight "built to" lines that do not abut streets or the edge of the parcel. It is unclear what the zoning intends to accomplish by requiring build-to lines in the eight locations where build-to lines are in the middle of a parcel, not bounded by a street. Similarly the impact of overlaying this grid of build-to lines on top of historic structures is unclear.

Poor Fit: High-Density Urban Pattern of Development: The type of development that would be produced by the B-6 standards is similar to the Ocean Gateway Garage and the Residence Inn. Even beyond the question of whether the provisions are effective to generate ground floor active uses (given that the "retail space" in the Gateway Garage has been vacant since it was constructed), it is important to ask whether this is, in fact, the type of development desired at 58 Fore St. It may make more sense to first settle the issue of whether the 58 Fore Street site, or some portion of it, is going to be designated a local historic district before casting the form of new development in stone as do the very detailed standards in the B-6 zone.

Poor Fit: Brew Pubs, Restaurants, etc. Incompatible with Immediately Adjacent Residential Neighborhood: The B-6 zone was designed to abut other commercial uses. Extending that zone to 58 Fore Street gives no consideration to the established residential neighborhood which, for over 100 years, has overlooked, but not interacted with, the 58 Fore Street property except at its single entrance. The substantial change in grade has acted as a buffer between the industrial use and the residences. The proposed extension of the B-6 to 58 Fore St. completely disregards this traditional buffer.

Except for the Portland Company site itself, both sides of Fore Street in the vicinity of 58 Fore St. are occupied by residential uses, mostly in small scale 1-3 family structures, with the exception of the Portland House. There are no existing non-residential uses except for one small insurance office, which may be a home occupation. The Munjoy Hill neighborhood moving north from Fore Street is of a similar, entirely residential, character.

In contrast, if the entire 58 Fore St. site is rezoned to B-6 as proposed, it would allow a developer to build, as of right, on the south side of Fore Street hotels, retail space, offices, restaurants, brew pubs and any number of other uses facing the residential neighborhood. It would require at least 75% of the street wall of whatever use to be built out to within 10 feet of Fore Street. And, in a provision that is inconsistent with how the maximum height limits should be applied to this site, it would require that uses facing Fore Street not have less than three (3) floors of habitable space above the average adjacent grade. This scale and range of permitted uses is completely out of character and incompatible with the existing, long-standing residential uses.

While these non-residential uses might belong in the area where the existing B-6 is located and on the filled land portion of 58 Fore Street, they are completely inappropriate on the upper portion of Fore Street. A rezoning to allow the incursion of this type of commercial use into a residential area that has no such similar uses would be unprecedented.

3. THE EXISTING B-6 ZONE REFLECTS CAREFUL PLANNING OF PUBLIC VISTAS WHICH HAS NOT YET BEEN UNDERTAKEN IN RELATION TO THE PORTLAND COMPANY SITE.

The B-6 Building Height Overlay & Building Envelopes evidences a level of planning to preserve public views and vistas from public streets that has not yet taken place on the 58 Fore Street site. In the overlay, the building envelopes are pulled back from street lines and the street space is splayed out to enhance public views. If serious consideration is being given to a B-6 rezoning for 58 Fore Street, that same level of detailed vista analysis needs to be done for that site. The Height Study just assumes that the existing buildings will remain on the site, and that the vistas over the existing buildings will remain. The study did not look at the impacts of new construction on the vistas.

4. THE CIRCULATION PATTERN WITHIN THE PORTLAND COMPANY COMPLEX, PARTICULARLY FOR WATER-DEPENDENT USES, NEEDS TO BE CONSIDERED PRIOR TO ADOPTION OF THE HEIGHT OVERLAY.

The B-6 dimensional requirements appear to allow limited space for driveways between buildings which are arranged around the build-to lines. But it is unclear whether these will be private or public within the 58 Fore Street site. It is also unclear whether they will be sufficient to provide the circulation patterns to allow continued existence of marine uses under the WSUZ.

The preface to the Eastern Waterfront Master Plan states: "the water's edge is the most precious resource we have" (p. 2). Similarly, the Design Guidelines note that the challenge is to preserve the value and marine utility of the water's edge while stimulating appropriate upland development for the benefit of the general population (p. 14). The Community Development Committee of the City Council, prior to recommending approval, added a section to the Master Plan noting the challenges of implementing the Master Plan. It reemphasized the importance of the working waterfront and full utilization of deep-water berthing resources, stating:

The challenge will be to maximize the benefits of mixed-use non-marine development, while retaining the function and future flexibility of the Eastern Waterfront as a pivotal intermodal hub in Maine's transportation system. Transportation utility of the Eastern Waterfront will require constant and vigilant protection (Master Plan, p. 21).

The circulation pattern within the 58 Fore Street site is critical to maintaining the functionality of the water's edge. The current circulation pattern does not allow for any obvious vehicular access to the water's edge. The building envelopes do not suggest any circulation pattern. As protection of the utility of the water's edge has been identified as a primary goal, it should be addressed as part of any rezoning.

5. THE "PORTLAND COMPANY ALIGNMENT" NEEDS TO BE CONSISTENT WITH THE ORIGINAL HEIGHT STUDY RECOMMENDATION

Illustration 33 of the Height Study (Exhibit C) shows a "Portland Company Alignment" (a no-build area) that was carefully located to preserve views from the B-6 area into the Portland Company Complex and line up to avoid the existing historic buildings. Building envelopes in the B-6 zone were pulled back to preserve the view into the heart of the historic buildings. However, in the applicant's proposed overlay map (Exhibit D), the no-build area has been moved so that views from the B-6 zone are not preserved. It also cuts across existing buildings.

It is unclear whether shifting this alignment is intentional or an oversight. If it is intentional, the applicant should make it clear that it is asking for an amendment to the height overlay and explain the basis for the change in the alignment. However, as it was carefully located as part of the Height Study design process, it would seem that there is good reason for keeping the original alignment.

6. THE APPLICANT'S POSITION THAT HEIGHTS AT 58 FORE SHOULD BE MEASURED FROM AVERAGE GRADE IS INCORRECT, AND WOULD RESULT IN A DEVELOPMENT WHICH IS OUT OF SCALE WITH THE RESIDENTIAL NEIGHBORHOOD

One of the primary goals of the Eastern Waterfront Height Study was to balance the needs of the study area against the surrounding "impact areas", including the Munjoy Hill residential

neighborhood. As part of that balancing, it identified three "shadow areas" where development could be located that would not negatively impact the adjacent areas. The upper Fore Street shadow area was identified to justify a height of 65 feet, due to the large change in grade.

Obviously, the large change in grade would not be cited as a reason to allow that extra height if it was anticipated that the extra height would be located at the top of the slope, as is contended should be allowed by the applicant. As is clear in the Building Height Study, it was intended that the resulting extra-tall structure would be located on the filled land portion of the site.

The November 2004 graphic, prepared by the height consultant after the adoption of the Building Height Study as part of the Master Plan (Exhibit E), includes as General Note 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. [Emphasis added]

This graphic applies to the entire study area, including the Portland Company site.

This method of calculating height was carried over one month later into the December 2004 Council-adopted B-6 Building Height Overlay & Building Envelopes, which states in Note 4:

For buildings located east of Mountfort Street (extension), building heights shall be measured from feet above flood plain, not from average grade (Exhibit B). [Emphasis added]

Thus, not only does it make sense for heights for the entire area east of Mountfort Street extension to be measured from flood plain based upon the substance of the height study, but it is also consistent with what the City actually enacted in the B-6 zone.

CONCLUSION: EXTENSIVE MODIFICATIONS TO B-6 OR OTHER ALTERNATIVES

The B-6 zone is not an appropriate zone to import to the heart of residential Munjoy Hill unless it is very significantly modified to keep the impact and uses down on the filled land. Moreover, the urban form the B-6 tries to create is incompatible with the existing historic structures and protection of the water's edge for the working waterfront.

If the City is still considering importing the B-6 zone to 58 Fore Street, the zoning text for the B-6 would require multiple modifications, including, but not limited to:

- (1) there should be a very substantial mandatory minimum setback from Fore Street (greater than 150 feet) for all new construction which would override the otherwise required build-to line and keep commercial uses from being developed on the southern side of Fore Street;
- (2) the building height overlay should specify, as it does for the block of B-6 adjacent to 58 Fore Street, that "the heights shall be measured from feet above flood plain, not from average grade";
- (3) the minimum height requirement of 3 stories should be deleted for this portion of the B-6 zone as being inconsistent with the historic buildings; and
- (4) the circulation pattern established as part of the height overlay and the dimensional requirements in the B-6 text, particularly the built-to lines, should be re-examined and modified as necessary to respond to the Master Plan goals of adaptive reuse of historic structures, protection of the utility of the water's edge for water-dependent uses, and preservation of public visual access to the water.

Much additional study is required to determine what pattern of development is appropriate for this site and how successfully the form-based code developed for the three blocks in the "Ultimate Build-Out Scenario" translates to an entirely different location.

In lieu of essentially rewriting the B-6 zone text to make numerous exceptions for 58 Fore Street, it would be better to leave the B-6 text alone and not expand its scope. That would leave the applicant with two options: applying for some form of contract zone under the existing WSUZ, or proposing text amendments to the WSUZ.

The WSUZ as written anticipates that any new mixed use development over 5,000 square feet will be reviewed as a contract zone, using the standards contained in the existing WSUZ text. In the past, the City has required very detailed plans to accompany any conditional rezoning. However, there is nothing in the enabling legislation or in the City's own ordinance pertaining to contract zones that requires that level of detail.

The applicant has made it clear that it does not want to invest in developing plans to the level of detail previously required by the City in order to pursue a contract zone. If the City finds that reasoning compelling, the applicant and the City should explore whether there is a more conceptual way to approve a conditional rezoning that clarifies, in general terms, what each will get in exchange for agreeing to a conditional rezoning, without requiring a site plan level of detail. Perhaps conditions more in the nature of performance standards would provide a way for the City to give the applicant the certainty it says it needs to proceed while still enacting a conditional rezoning that will run with the land to any new owner.

Chair O'Brien & Board
February 5, 2015
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In the alternative, now that the Farley-Marino site has been rezoned to B-6, 58 Fore Street is the only property remaining in the WSUZ. That fact offers the opportunity for carefully crafted amendments to the text of the WSUZ which are designed to allow a thoughtful version of the proposed development. It would obviate the need to comply with the precedent set by the City for conditional rezonings.

The applicant would have to reveal enough of its concepts and plans to allow discussion of text amendments. The amendments would likely identify sub-areas of the site for different treatment, such as permitting a certain range of uses only on the filled land. Similarly it could allow for new construction in locations and meeting dimensional requirements that are not incompatible with the existing historic structures. It could be in the nature of form based code, but designed for this particular location.

There is no reason to make tortured amendments to the B-6 or have portions of the B-6 apply only to the 58 Fore Street site when, due to the geographic scope of the existing WSUZ, the City can amend that zoning text directly to allow the development it wants to permit.

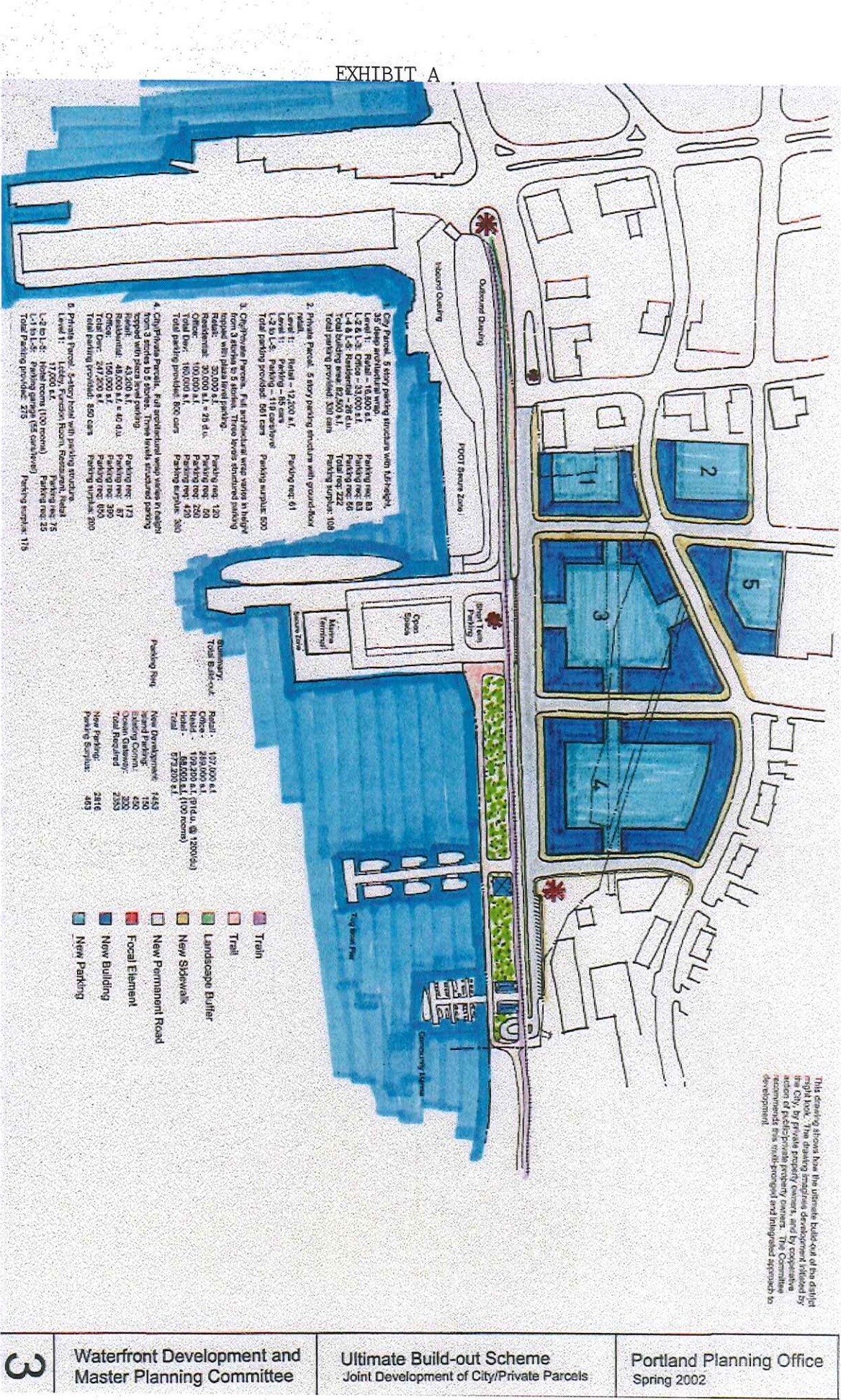
The applicant bought the property with the WSUZ in place. The burden is on the applicant to show that it will be in the best interest of the City to modify the zoning requirements. The Master Plan does lend support for upland mixed uses, provided they are balanced with protecting the water's edge for marine uses. But moving the B-6 zone over to encompass 58 Fore Street is like trying to jam a square peg in a round hole. As there are at least two viable better alternatives, I urge you to recommend that request for rezoning to B-6 not be approved.

Very truly yours,



Barbara A. Vestal

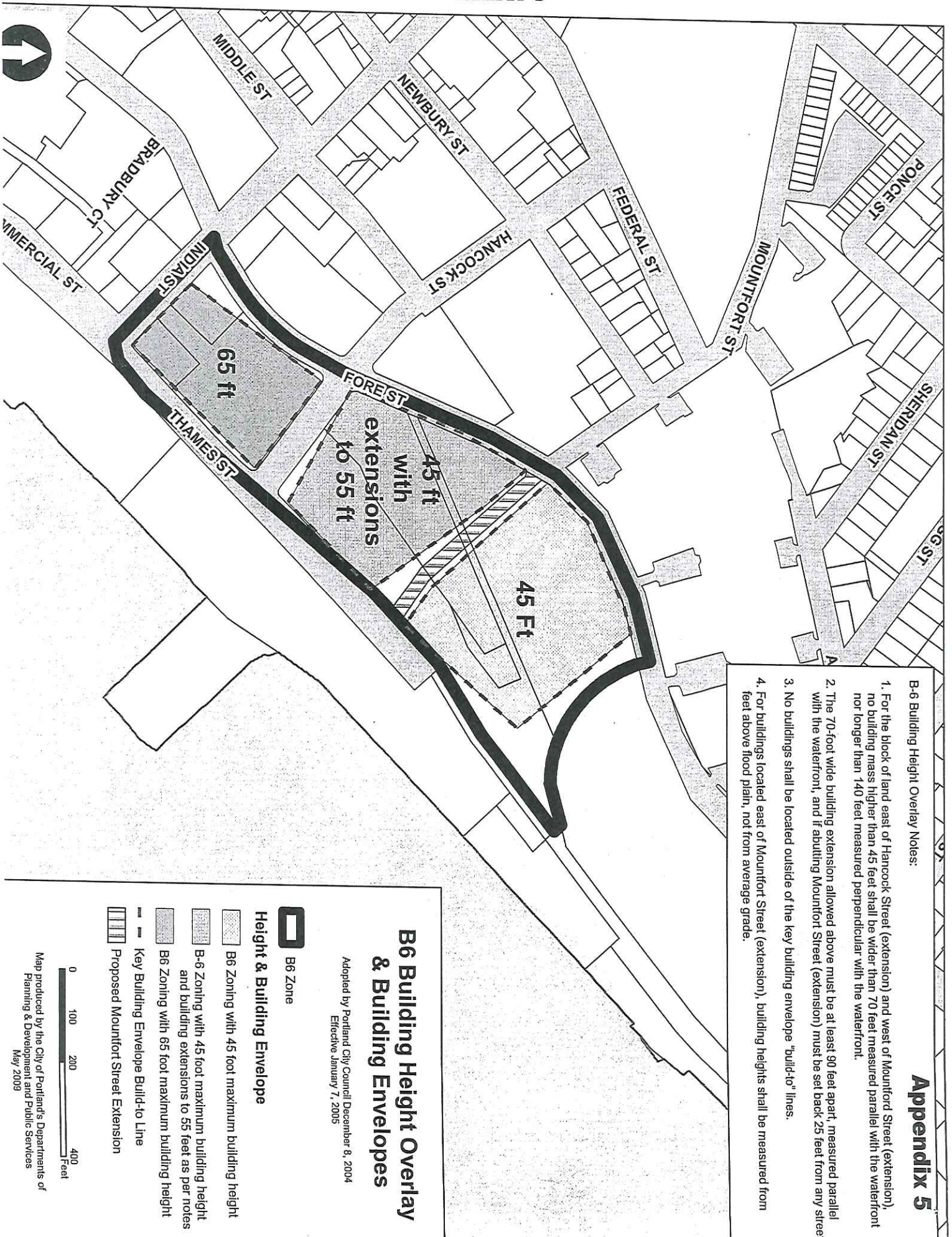
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cc: Christine Grimando

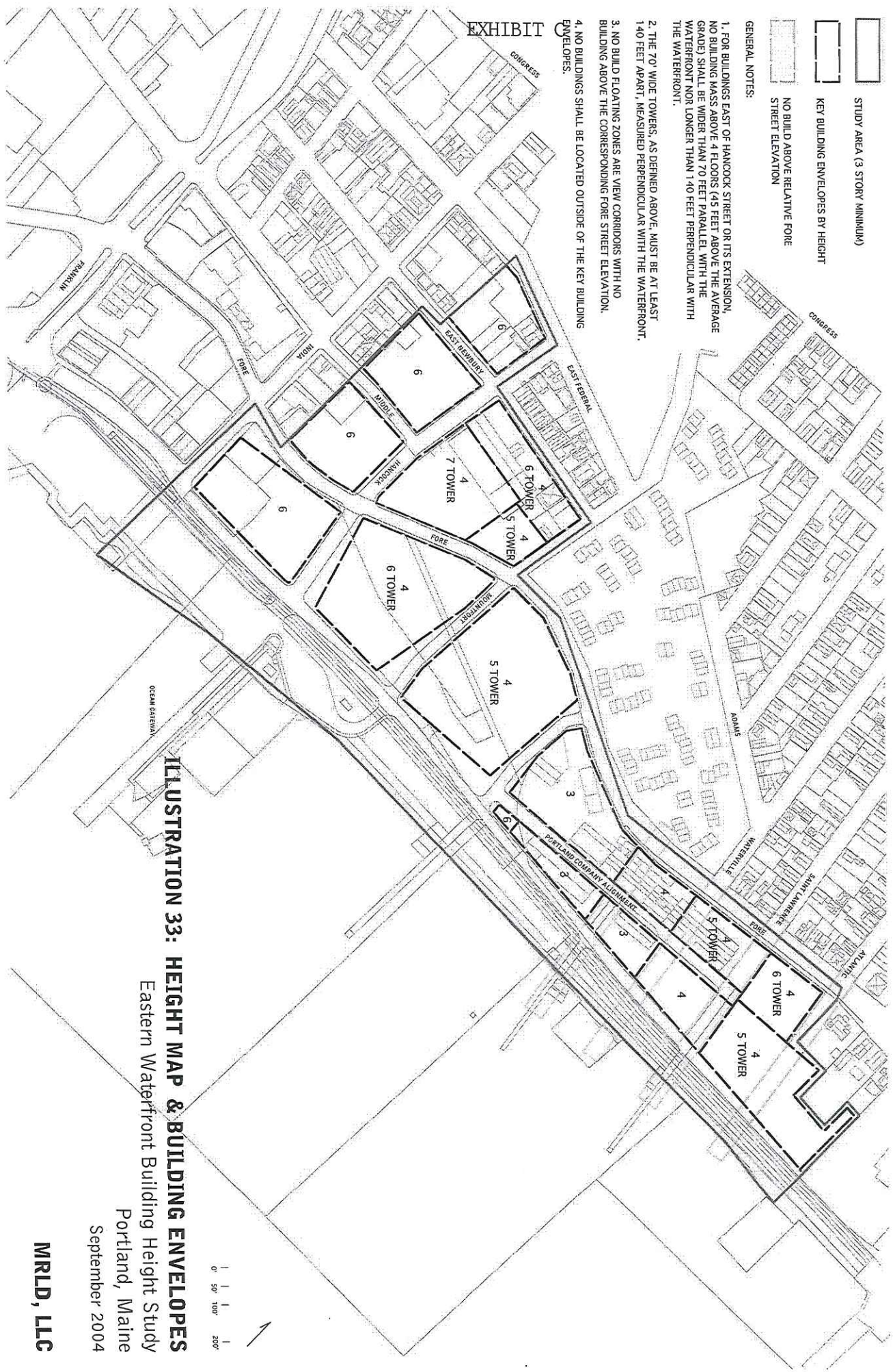


Appendix 5

B-6 Building Height Overlay Notes:

1. For the block of land east of Hancock Street (extension) and west of Mountfort Street (extension), 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.
2. The 70-foot wide building extension allowed above must be at least 90 feet apart, measured parallel with the waterfront, and if abutting Mountfort Street (extension) must be set back 25 feet from any street.
3. No buildings shall be located outside of the key building envelope "built-to" lines.
4. For buildings located east of Mountfort Street (extension), building heights shall be measured from feet above flood plain, not from average grade.





EXHIBIT

- STUDY AREA (3 STORY MINIMUM)
- KEY BUILDING ENVELOPES BY HEIGHT
- NO BUILD ABOVE RELATIVE FORE STREET ELEVATION

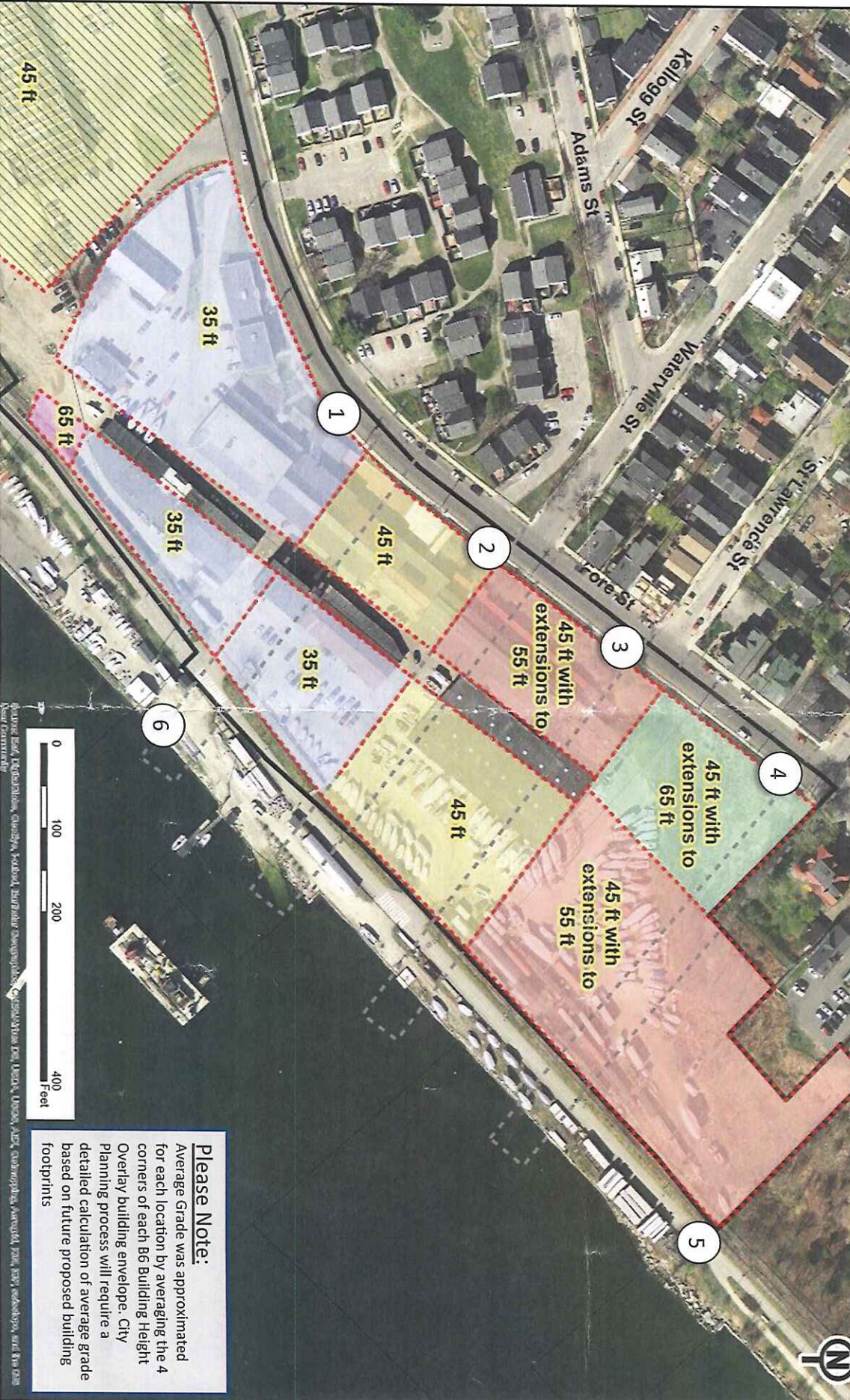
- GENERAL NOTES:**
1. FOR BUILDINGS EAST OF HANCOCK STREET OR ITS EXTENSION, NO BUILDING MASS ABOVE 4 FLOORS (45 FEET ABOVE THE AVERAGE GRADE) SHALL BE WIDER THAN 70 FEET PARALLEL WITH THE WATERFRONT NOR LONGER THAN 140 FEET PERPENDICULAR WITH THE WATERFRONT.
 2. THE 70' WIDE TOWERS, AS DENIED ABOVE, MUST BE AT LEAST 140 FEET APART, MEASURED PERPENDICULAR WITH THE WATERFRONT.
 3. NO BUILD FLOATING ZONES ARE VIEW CORRIDORS WITH NO BUILDING ABOVE THE CORRESPONDING FORE STREET ELEVATION.
 4. NO BUILDINGS SHALL BE LOCATED OUTSIDE OF THE KEY BUILDING ENVELOPES.

ILLUSTRATION 33: HEIGHT MAP & BUILDING ENVELOPES

Eastern Waterfront Building Height Study
 Portland, Maine
 September 2004

MRLD, LLC

EXHIBIT D



1 - Maximum Building Height Above Average Grade: 35' - Average Fore Street Elevation: 33' - Approximate Average Grade of Building Envelope: 24' - Average Height above Fore Street: 26' - Max Height above Fore Street: 29'	2 - Maximum Building Height Above Average Grade: 45' - Average Fore Street Elevation: 45' - Approximate Average Grade of Building Envelope: 30' - Average Height above Fore Street: 30' - Max Height above Fore Street: 34'	3 - Maximum Building Height Above Average Grade: 45' - 55' - Average Fore Street Elevation: 61' - Approximate Average Grade of Building Envelope: 38' - Average Height above Fore Street: 27' - Max Height above Fore Street: 35'	4 - Maximum Building Height Above Average Grade: 45' - 65' - Average Fore Street Elevation: 80' - Approximate Average Grade of Building Envelope: 50' - Average Height above Fore Street: 25' - Max Height above Fore Street: 35'
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Please Note:
Average Grade was approximated for each location by averaging the 4 corners of each B6 Building Height Overlay building envelope. City Planning process will require a detailed calculation of average grade based on future proposed building footprints

- 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.

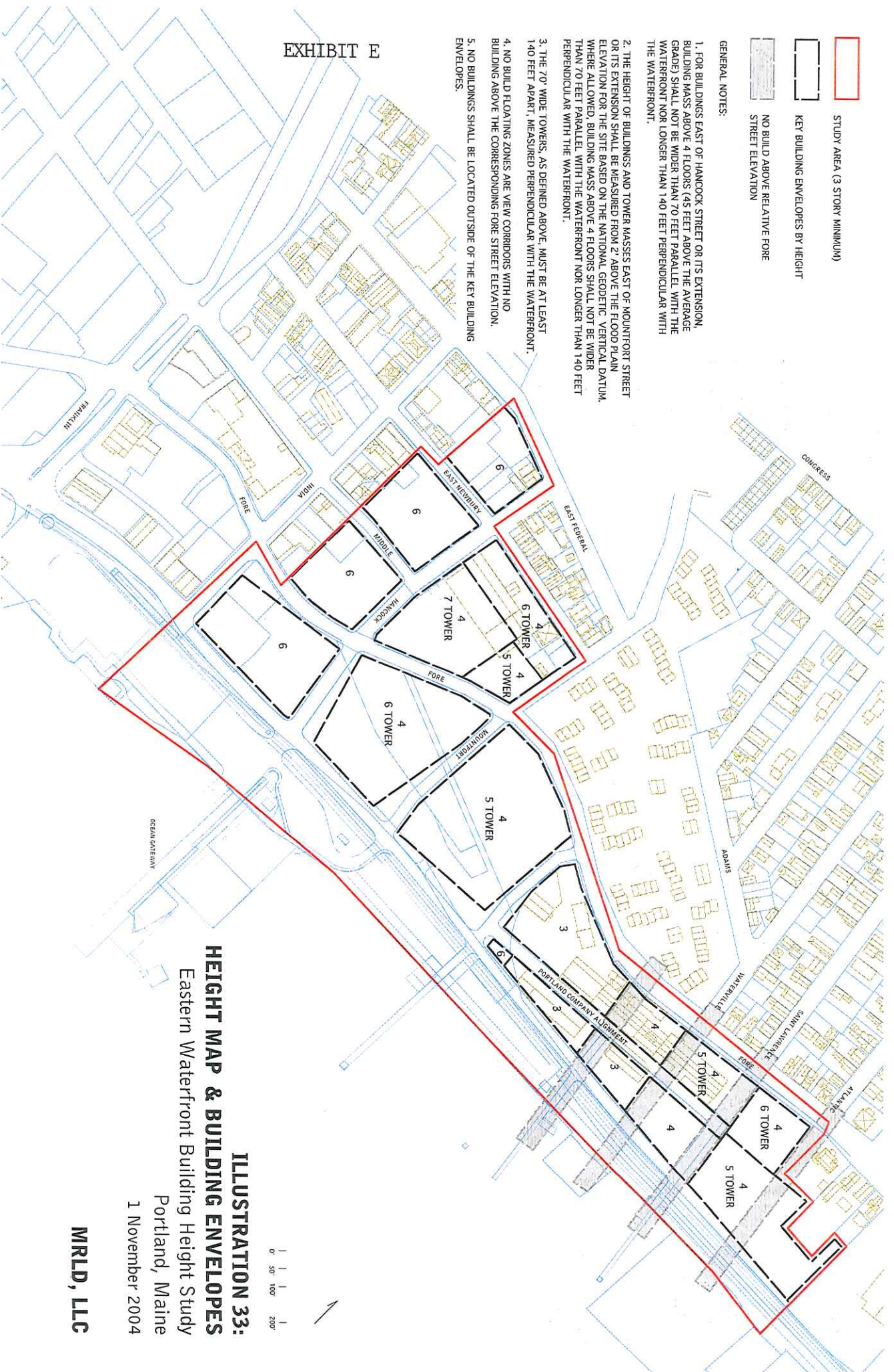


EXHIBIT E

ILLUSTRATION 33:
HEIGHT MAP & BUILDING ENVELOPES
 Eastern Waterfront Building Height Study
 Portland, Maine
 1 November 2004
MRLD, LLC



SOUL OF PORTLAND
SOULOFPORTLAND.ORG

FORE STREET & MUNJOY SOUTH
HEIGHTS ABOVE AVERAGE GRADE



SOUL OF PORTLAND
SOULOFPORTLAND.ORG

FORE STREET & MUNJOY SOUTH
HEIGHTS ABOVE FLOOD PLAIN





February 6, 2015

Chair O'Brien and Members of the Planning Board
% Christine Grimando
Planning Department
City of Portland
389 Congress Street
Portland, Maine 04101

Dear Chair O'Brien and Members of the Planning Board,

My name is Peter Macomber and I live on St Lawrence Street. I'd like to call the Board's attention to a study completed in 1983 by Terrien Architects and Mitchell-Dewan Associates titled "Portland Waterfront: Public Access Design Project". This study is referenced in Volume 2 of the Comprehensive Plan (page N-16) and is thereby incorporated into the Comprehensive Plan.

Among other things, the study identifies significant viewpoints and panoramas in the City. The panoramas from Fore Street above and overlooking the Portland Company complex and into the working harbor are labelled as **major panoramas** (Exhibits A-1 and A-2). The larger the arrow on the map, the more significant the panorama. These major panoramas are classified in the study as having an 'A' view, showing not only background views of the harbor and beyond, but also foreground waterfront activities as well.

The study acknowledges that progress is inevitable: "*conditions and circumstances of private interest and concern will continue to change, as will the scope and application of public policy*". But it also cautions that "*the City must nurture its connection to the sea to bring full advantage to the many public and private users, present and future, that take their livelihood and enjoyment from the waterfront.*"

I mention this study not only because it's part of the City's Comprehensive Plan and helps inform policy decisions, but also because it speaks to us, from 37 years ago, about just how valuable the street-level views of the water have been and continue to be. And it calls upon the City to preserve these views as much as possible in the face of change.

When I walk along Fore Street between Atlantic and Waterville streets, I also take "*enjoyment from the waterfront.*" I see daily the panoramas that are highlighted in that study. I find the harbor vista to be as compelling and significant as the authors of that study did 37 years ago. And I think the majority of Munjoy Hill residents and City residents would strongly agree with that. As such, I am very focussed on the building height issues related to the Portland Company development especially if any buildings protrude above Fore Street and degrade the street-level panorama. How building height maximums are calculated will determine whether these panoramas will survive.

But how the height maximums are determined is, at best, bewildering. I find the height calculations as brought forward at Planning Board workshops with regard to the site topology to be vague, confusing and contradictory. And it's not just me. It appears that differing

interpretations of this issue extend to the city staff as well: in a memo to the Board dated October 8, 2014, staff referenced the Eastern Waterfront Building Height Study and wrote *“Given the topography of the site, a measurement from average adjoining grade could result in substantially higher building forms than were predicated for this area, as we read the plan.”* But one month later this policy position is turned on its head. In a memo dated November 12, 2014, staff wrote *“Planning staff does not believe that the floodplain measurement would produce the intended development patterns outlined in the Eastern Waterfront Building Height Study.”* This is a breathtaking reversal of position.

It seems to boil down to this: should you measure building heights in this particular site from the floodplain or from average grade? Average grade calculations seem to be used fairly consistently in Portland, although I’ve found only one reference to average grade in the the Land Use Code: *“Pre-development grade is defined as average grade, existing on October 1, 2000, at the corners of the foundation of the proposed structure.”* It seems logical, though, and seems like it works quite well, even for a relatively steep site that has a consistent slope.

But does this methodology still work when 5% of a site is at at one elevation and 80% at a much lower elevation with an extremely steep slope comprising about 15% between? Take a close look at the applicant’s submittal “height measurement package” of November 7, 2014, page 9, Sections 7-9 (Exhibit B) to see how steeply the slope drops. These sections are between Waterville and St Lawrence streets. Is “average grade” still an appropriate methodology for determining building heights in such extreme topological conditions?

Maybe the best way to see how surprising an outcome can result from such extreme conditions is to look at it from the opposite direction.

Let’s take “Section 8” of the applicant’s submittal and flip the elevations (Exhibit C). Let’s suppose that the site conditions were reversed and 80% of the site is now at an elevation of 61 feet and 5% is now at 14 feet. And let’s say that an imaginary developer wanted to have a zone-permitted 45 foot building over that entire block of land.

The “average grade” of this imaginary site is exactly the same as the actual one - 38 feet - that the applicant has calculated. But even though the elevation of 95% of the imaginary site supports a 45’ building, the “average grade” formula would prohibit it. Only a 22 foot building would be permitted, or two full stories less than the desired 45 feet. Hmmm. I have a feeling that our imaginary developer would strongly advocate alternative measurement methods for determining building height maximums.

You may find this scenario a little silly and ludicrous, but then the converse must also be silly and ludicrous. And in truth, if 95% of a building envelope supports a given building height, it really should be permitted. Conversely, if 95% of a building envelope does not support a given building height, it should not be permitted.

This is a valid observation with respect to the matter before you. **If the preponderance of the elevation of the Portland Company site does not support a given building height, you must look at another way of calculating that building height.**

I urge the Board to consider the elevation of the bulk of the Portland Company site as a basis for calculating heights. That would be the “floodplain” methodology that has been interpreted or advocated by, among others, the Soul of Portland group, by Planning Staff in the memo to the Board dated October 8, 2014, the more recent version of Illustration 33 of the Eastern Waterfront Building Height Study(Exhibit D, Note 2) and even by the City’s own B-6 Building Height Overlay Map (Exhibit E). This approach would bring consistency and clarity to the applicant and to the citizens of Portland as well as helping preserve the treasured street-level panoramas that were celebrated 37 years ago.

Sincerely,

A handwritten signature in black ink, appearing to read 'Peter Macomber', with a long horizontal stroke extending to the right.

Peter Macomber

VISUAL CORRIDORS

Eastern Prom

KEY TO CHART

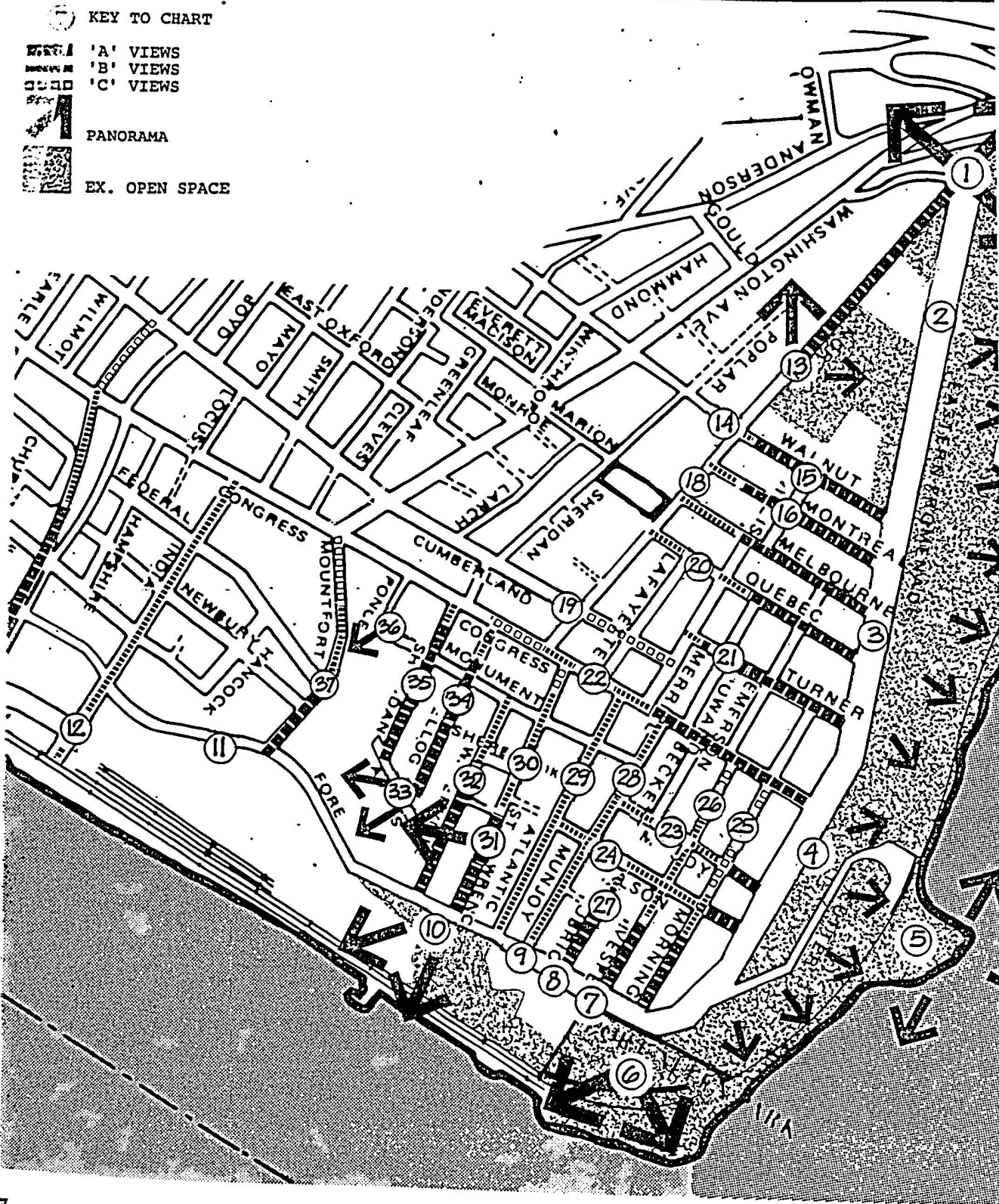
REF. 'A' VIEWS

DATE: 11/11/68 'B' VIEWS

3340 'C' VIEWS


PANORAMA

EX. OPEN SPACE



Within each of the four subsections the view corridors have been classified as follows, based upon field observations at street level:

■■■■■ 'A' VIEWS. Foreground or midground views of Portland's waterfront or the water's edge, plus background views of Casco Bay or South Portland.

■■■■■■■■ 'B' VIEWS. Midground or background views of Casco Bay or the Fore River and the opposite shore, with the Portland Waterfront obstructed by grade changes or buildings.

□□□□□ 'C' VIEWS. Water is not visible, but the observer has a sense of being near the water.

The map(s) of each section graphically show the extent of each type of view corridor. In addition the location of panorama viewpoints are noted: the larger the arrow the greater the significance of the panorama in terms of angle of view, position of observer, and degree of obstructions. A panorama is generally assumed to be a point or area offering the street level observer the opportunity to view water and waterfront activities in a cone of vision greater than 45°. The visual corridors map also indicates major open spaces that exist along the waterfront.

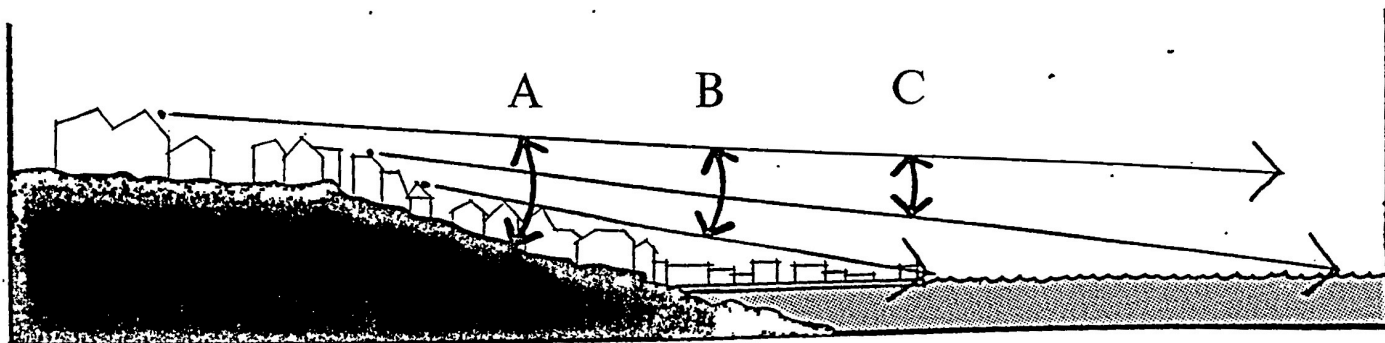
Opposite the visual corridors map is a chart describing characteristics of the visual corridors and viewpoints. In some instances the number on the chart refers to a single point, in others, a street - usually running perpendicular to the waterfront, and in others it represents an entire area Location.

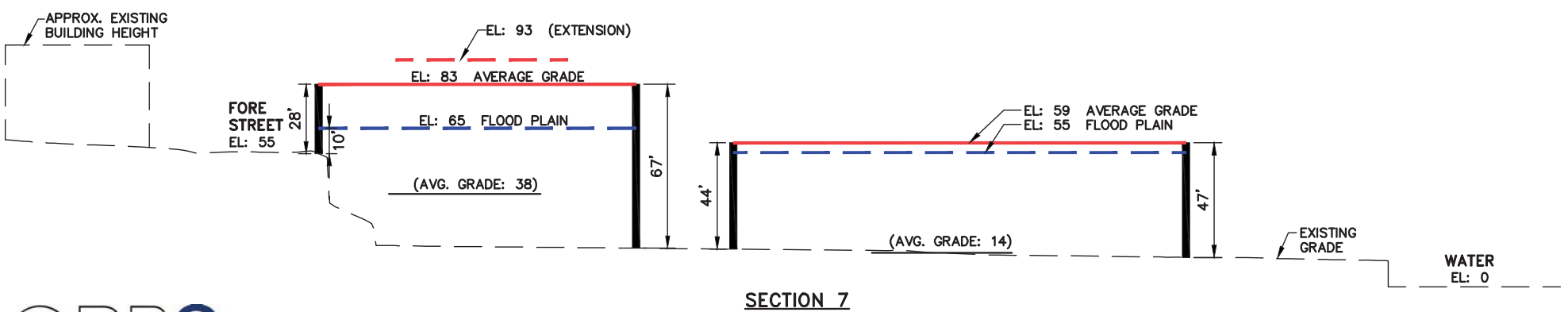
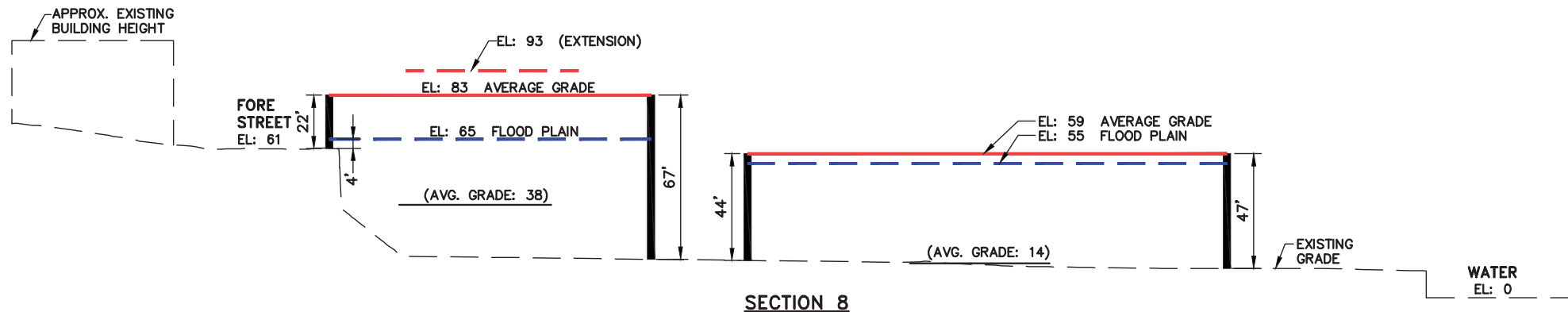
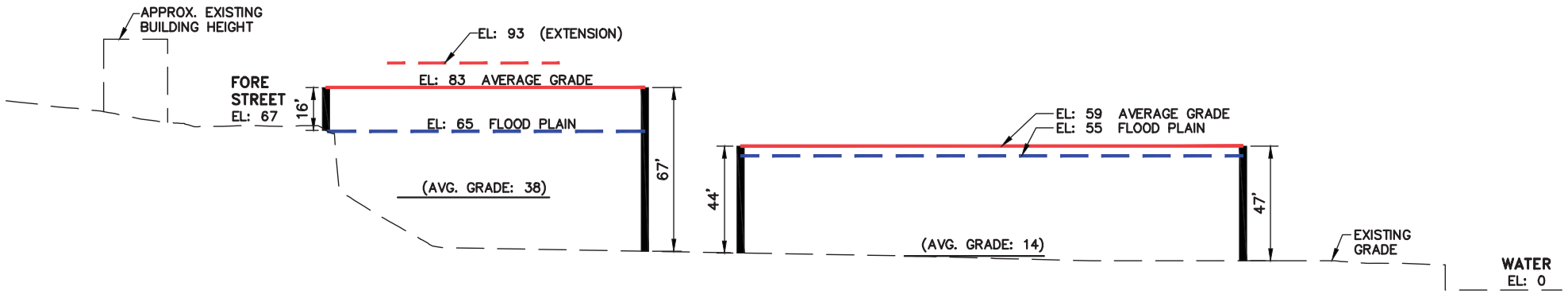
The Position column refers to the observer's position relative to the waterfront (WF): well above it, at the waterfront roofline, or at the water's edge.

Neighborhood land use and Condition observations are the result of site visits by consultant team members and are included for use as a benchmark for continuing assessments.

The View Types indicate whether the view at the designated position is a major panorama (solid block), minor panorama (cross-hatched block), a corridor terminus, or a minor interest point (occupying a relatively small percentage of the cone of vision at ground level).

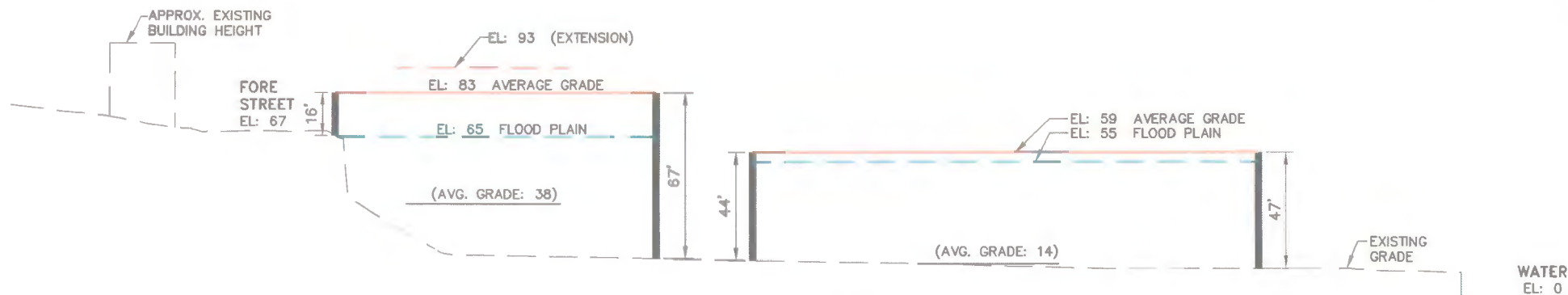
Where 'A' VIEWS are found, the 'A' View Foreground (waterfront activity) is noted. Similarly, the 'B' View Background records waterfront activities or land uses on the opposite shore.



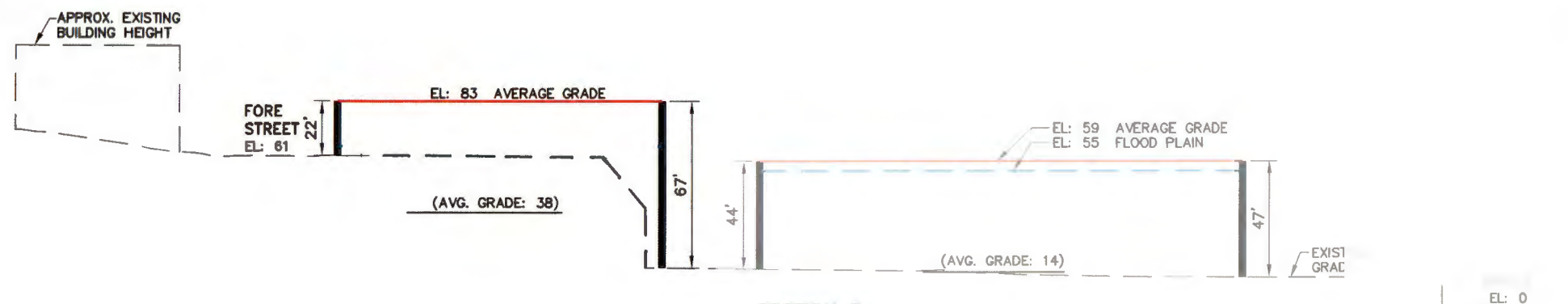


- LEGEND**
- MEASURED FROM AVERAGE GRADE
 - MEASURED FROM FLOOD PLAIN (EL. 10)
 - EXISTING GRADE

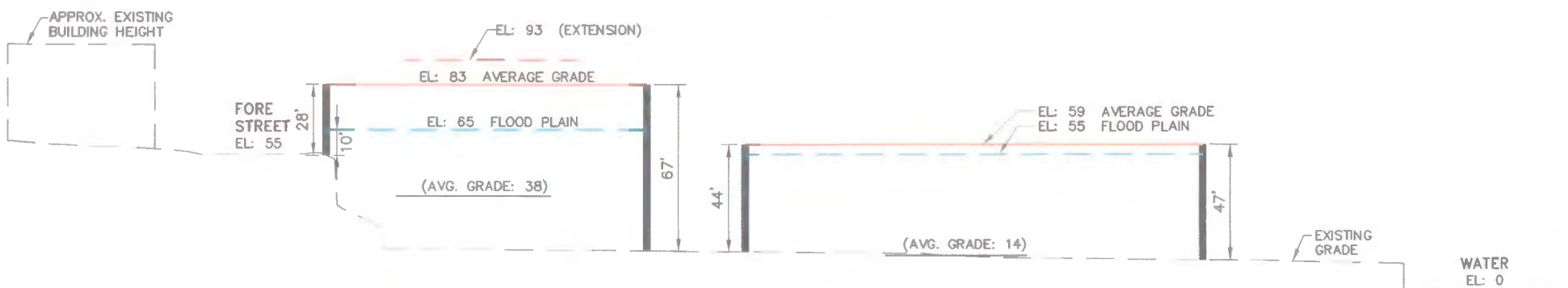
NOTE: SECTIONS DO NOT REPRESENT ACTUAL BUILDING STRUCTURES.



SECTION 9



SECTION 8



SECTION 7

CPB2

LEGEND

- MEASURED FROM AVERAGE GRADE
- MEASURED FROM FLOOD PLAIN (EL. 10)
- EXISTING GRADE

NOTE: SECTIONS DO NOT REPRESENT ACTUAL BUILDING STRUCTURES.

-  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.

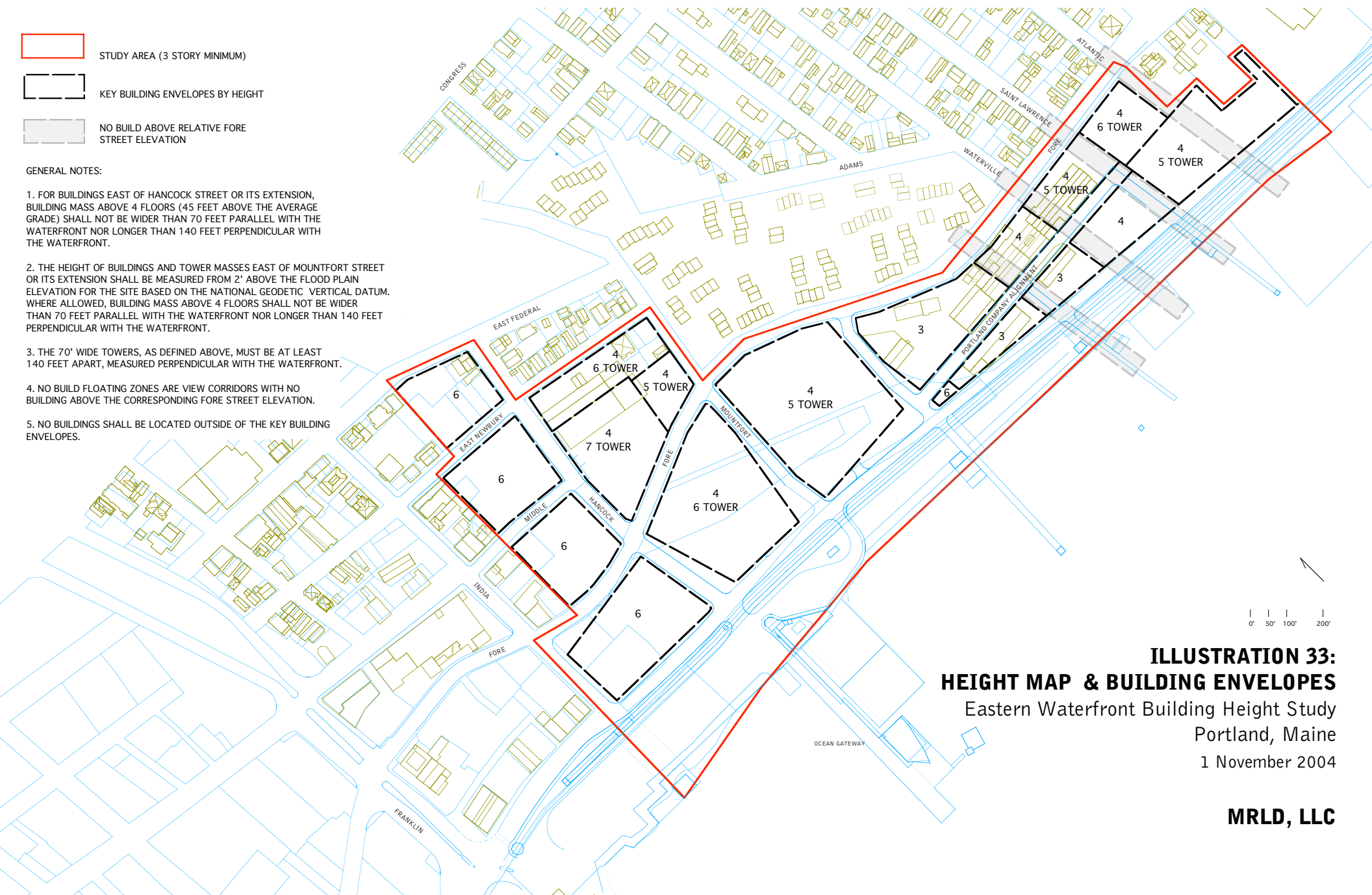
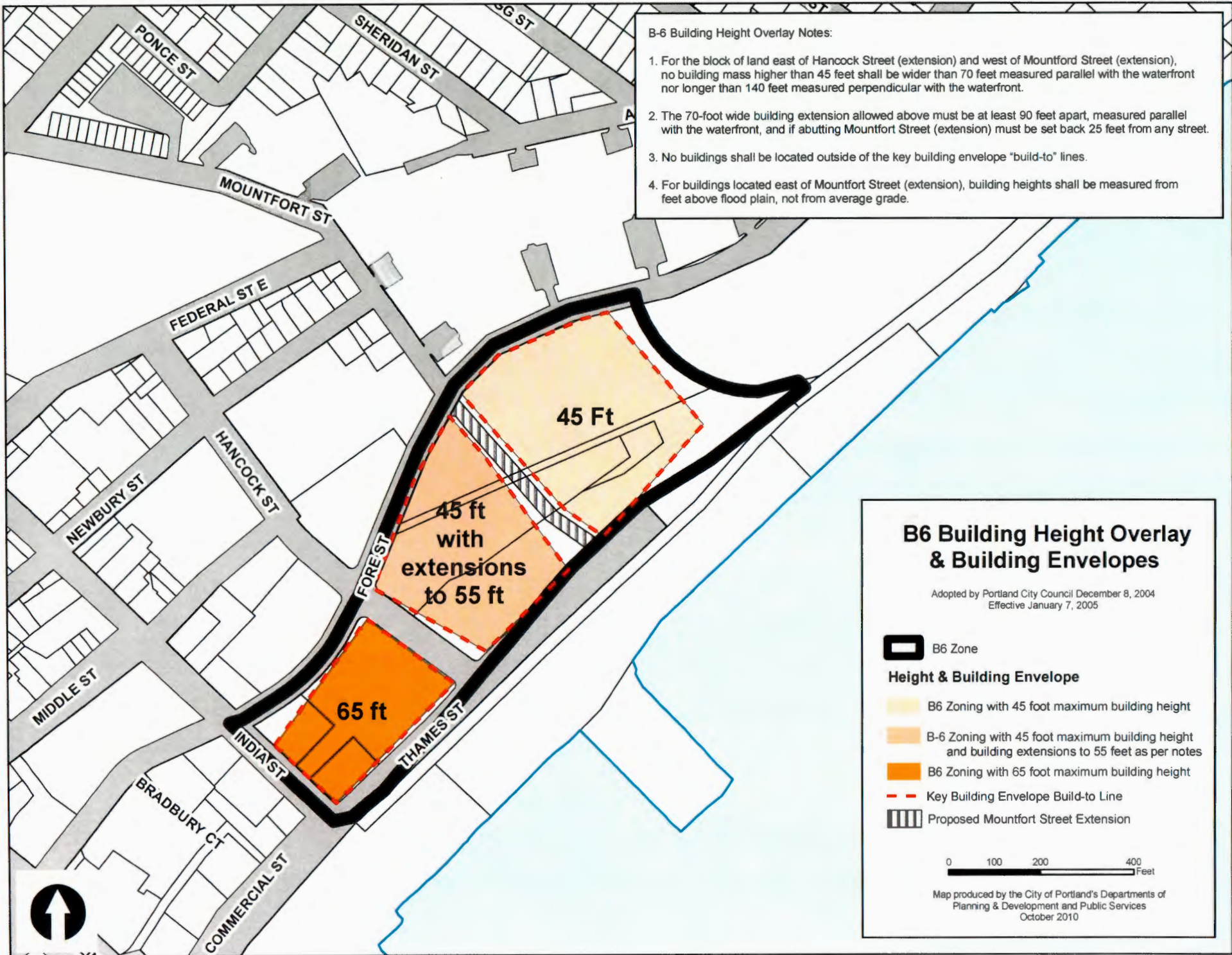


ILLUSTRATION 33:
HEIGHT MAP & BUILDING ENVELOPES
 Eastern Waterfront Building Height Study
 Portland, Maine
 1 November 2004

MRLD, LLC



Lannie Dobson - Re: Fwd: The Comprehensive Plan on public views of the harbor and building heights

From: Lannie Dobson
To: Christine Grimando
Subject: Re: Fwd: The Comprehensive Plan on public views of the harbor and building heights

Christine Grimando, AICP
 Senior Planner
 Planning & Urban Development Department
 389 Congress Street
 Portland, Maine 04101
cdg@portlandmaine.gov
 Ph: (207) 874-8608

>>> Brian Burwell <burwell@maine.edu> 2/6/2015 9:50 AM >>>
 Dear Chair O'Brien and Planning Board Members,

Re: Development of the Portland Company property

The City's Comprehensive Plan is a rigorous document incorporating professional expertise and resident inputs. And it is an asset belonging to all of its citizens.

Community forums held in 2001 were asked "What makes Portland distinctive?" Portland's natural setting was the number one response. (Comprehensive Plan, Vol 2, Natural Environment Inventory and Analysis, N-1). Recognizing the vital contributions of the ocean to its unique history and current character, the City has focused much planning effort on optimizing its relationship to the waterfront.

THE PUBLIC ACCESS DESIGN PROJECT

In 1983 the City engaged Terrien Architects and Mitchell-Dewan Assoc. to provide guidelines for "public access" to the waterfront for the entire peninsula. The Public Access Design Project identified "major viewing corridors and viewing points, (and) suggested measures to preserve and enhance these resources.." On Munjoy Hill, as well as other high points in the City, public access is defined in terms of water and/or harbor views obtained at street level. The Public Access Design Project classifies a major panorama "to be a point or area offering the street level observer the opportunity to view water and waterfront activities in a cone of vision greater than 45 degrees."

--" Panorama viewpoints are noted with an arrow, the larger the arrow, the greater the significance of the panorama in terms of angle of view, position of observer, and degree of obstructions. "



Comprehensive Plan, Volume 2, N-16.

As seen above, in addition to the Ft. Allen Park area, the only "major panoramic views" of the ocean and/or harbor are along Fore Street in the Waterville and Saint Lawrence Street blocks, and along Waterville Street; with lesser panoramas along Adams Street and at the corner of Ponce and Monument Streets. The streets sloping down to Adams and Fore are replete with "view corridors". This study assessed these panoramic and corridor views as "increasingly important for the well being of the entire City...", and having a goal "to protect and enhance them." (The entire study relating to the East End is available at dropbox: <https://www.dropbox.com/s/c9b3a1usc053k0/Portland%20Waterfront%20Public%20Access%20Design%20Project.pdf?dl=0>)

THE EASTERN WATERFRONT BUILDING HEIGHT STUDY

The Building Height Study was adopted into the Comprehensive Plan in December of 2004 after four years of work. It anticipated development of the Portland Company property emphasizing how the unusual topography of the site, with Fore Street rising to 80 feet over sea level, allows for the preservation of harbor views for pedestrians on Fore Street while enabling four to six story buildings nestled into the hillside. Guiding principles for the Building Height Study include:

- * "Protect, enhance and create views from various vantage points surrounding the study area and within the study area"; and
- * "Place taller and larger buildings in the "shadow" of existing grade changes"

The report was finalized after a lively meeting at Adams School attended by over 100 neighborhood residents who in large majority criticized the draft building heights as too aggressive. The study author notes that the "final illustrations provided herein, including section drawingsreflect public input generated at the neighborhood meeting." (Appendix D-5) Section E (attached below) shows existing and proposed building heights relative to Fore Street for the Portland Company property. Public views along Fore Street are minimally affected, while five and six story buildings (including the towers) are largely within the shadow of existing grade changes.

THESE PANORAMIC HARBOR VIEWS CONTRIBUTE TO THE PEDESTRIAN EXPERIENCE OF LARGE NUMBERS OF THE PUBLIC

Panoramic views of the harbor enhance the experience of living on the Hill and help foster a balance in the Hill's natural and increasingly dense built environment.

Neighborhood residents, whose numbers are increasing from new infill developments and building enlargements, walk the area and to and from downtown.

Hundreds of downtown workers on lunch breaks, cruise line passengers and other visitors stroll the Fore Street sidewalks during good weather in order to experience the harbor views unique to Portland.

According to the Maine Department of Transportation 4,573 vehicles traveled on upper Fore Street on October 21, 2013.

Austin, Seattle and other cities protect unique natural views and respect typography to maintain and enhance distinctive character

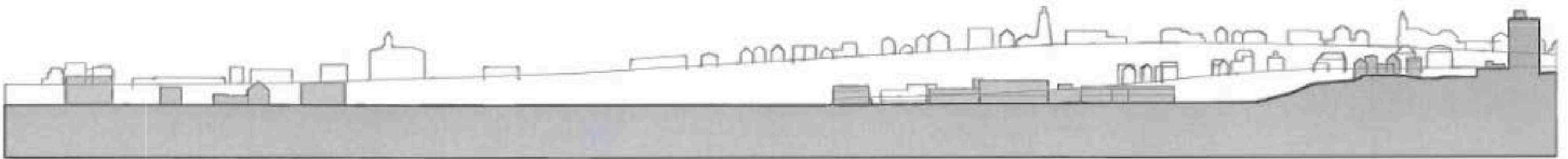
B-6 REQUIREMENTS FOR A BUILT STREETScape ON THE SOUTH SIDE OF FORE STREET ARE ANTITHETICAL TO "WHAT MAKES PORTLAND DISTINCTIVE".

B-6 is designed to apply to a commercial setting, with no setbacks in order to create a built streetscape. Application of B-6 standards to this setting would disrespect the unique, wonderful panoramas currently enjoyed by Portland's residents and visitors. It would be a be a major, non-reversible mistake.

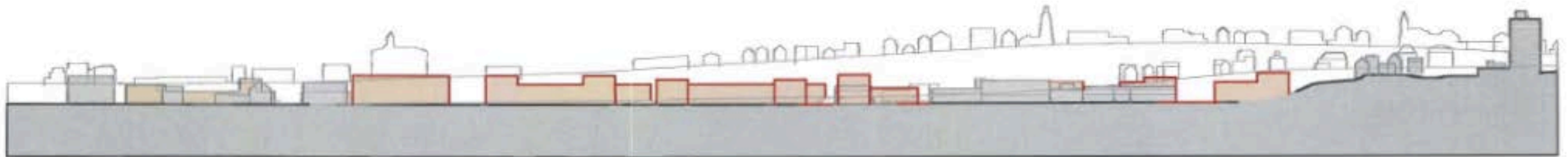
Question: If we ignore the wisdom and clear intent of these Comprehensive Plan documents, why would the City and its residents bother with the strenuous efforts to develop such plans?

Sincerely,

Brian Burwell
31 Fore Street



SECTION E EXISTING - EAST / WEST (with Congress Street and Fore Street Elevations)



SECTION E PROPOSED - EAST / WEST (with Congress Street and Fore Street Elevations)

EASTERN WATERFRONT HEIGHT STUDY

CHESTER & VESTAL

A PROFESSIONAL ASSOCIATION

ATTORNEYS AT LAW

107 Congress Street, Portland, Maine 04101
Telephone (207) 772-7426 Fax (207) 761-5822

EDWIN P. CHESTER
BARBARA A. VESTAL
MICHAEL P. DIXON

chester@chesterandvestal.com
vestal@chesterandvestal.com
dixon@chesterandvestal.com

February 5, 2015

Chair O'Brien and Members of the Planning Board
c/o Christine Grimando
Planning Department
City of Portland
389 Congress Street
Portland, Maine 04101

Re: Portland Company Complex

Dear Chair O'Brien and Members of the Planning Board,

The Portland Company Complex, a very visible 10 acre gateway site, is critical to the identity of Portland. As the applicant needs a zone change of some variety in order to proceed with uses that are not currently allowed, the Board has the opportunity to craft zoning that is fully reflective of the best use of that site. It is important for the City to get its zoning right. I firmly believe that the B-6 zone is not the answer for the reasons outlined below.

1. THE B-6 ZONE WAS NOT DRAFTED TO APPLY TO THE PORTLAND COMPANY SITE.

During the course of the Eastern Waterfront master planning process, an "**Ultimate Build-out Scheme**" scenario was developed by the Planning Office in the spring of 2002. It included City-owned land, the parcel referred to as the Farley-Marino property and some land belonging to Shipyard Brewing. **It did not include the Portland Company Complex** because its owner was not interested in redeveloping his property at that time. That illustration is attached as Exhibit A.

The Eastern Waterfront Master Plan generally recommended mixed use development for upland areas of the Eastern Waterfront, including the Portland Company Complex. But it did not recommend that the Portland Company Complex be rezoned from WSUZ to B-6. Mixed use development on the Portland Company Complex can be accommodated within the existing WSUZ regulation.

Between the spring of 2002 and its adoption in December 2004, the Planning Board developed and forwarded to the City Council the proposed B-6 Eastern Waterfront Mixed Use Zone. It applied only to the properties east of India Street, north of Commercial Street and its extension, west of the Portland Company complex, and south of Fore Street. It did not include the Portland

Company Complex (See Exhibit B). This area was denoted the "Central Redevelopment District." In some documents the Shipyard Property, which was eventually developed as the Gateway Parking Garage and the Residence Inn, was included in the discussion as well. However, the B-6 zoning which was enacted in December 2004 applies only to the "Central Redevelopment Area," without the Shipyard properties.

2. THE B-6 ZONE MANDATES A VERY SPECIFIC FORM OF DEVELOPMENT WHICH IS A POOR FIT FOR THE PORTLAND COMPANY SITE

The B-6 zone is a variation of a form-based code. The attached Ultimate Build-out Scheme (Exhibit A) set the stage for a form of urban development that is woven throughout the zoning language. It is very specific to the three blocks that were rezoned to B-6.

The Ultimate Build-out is premised upon a re-connected grid of public streets and public sidewalks (Hancock St., Mountfort St. and an unnamed/unbuilt street adjacent to 58 Fore St.) The parking is directed to the interior of each block (light blue), with structures accommodating mixed uses wrapped around the parking (dark blue). There are virtually no provisions for the consideration of existing buildings, because the area of the Ultimate Build-out is composed of vacant land, surface parking lots, and metal industrial structures which will be razed in the event of development. The B-6 ordinance incorporates unique dimensional requirements to produce this Ultimate Build-out -- e.g., "built to lines," 10 foot maximum setbacks from "build to lines," minimum street wall lengths, and minimum heights -- and requires for ground floor retail space to create new, very dense urban space.

Poor Fit: Already Existing Structures: In contrast to the 3 blocks of B-6, the Portland Company Complex is already significantly occupied by historic buildings. The majority of these buildings are of the character which should be adaptively reused, as stated in the Master Plan and the Design Guidelines. Contrary to assuming a virtually blank slate, as the B-6 does, the Design 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 (Design Guidelines, p.7).

The form-based code approach of the B-6 zone is inconsistent with the goals for the important buildings already occupying a portion of this site.

Poor Fit: No Street Grid: There is no street grid proposed for 58 Fore which will produce the basic building blocks of the B-6 zone -- blocks surrounded on four sides by public streets. The only streets proposed are the existing Fore Street (which is well above the grade of most of the

existing buildings and the "Portland Company Alignment" where no buildings will be allowed. Presumably the no build area will serve as a street, but it is not clear whether it will be public. The B-6 zone relies upon public streets and public sidewalks on both sides of the streets to make the land publicly accessible, thus securing a benefit for the general public. There is no such similar street grid proposed on the Portland Company site.

The rest of the circulation pattern on the Portland Company site has yet to be determined, and may consist of private lanes. This is the opposite of the B-6 zone which relies upon a grid of public streets and sidewalks to assure public access.

Poor Fit: Build-to Lines Nonsensical: In the existing B-6 zone, the dashed lines are "key building envelopes." The B-6 zone states:

New structures located in the blocks located south of Fore Street and north of Commercial Street and its extension, shall build to the key building envelopes [sic] shown on the *Eastern Waterfront Building Height Overlay Map*. (14-272(c)(3))

These build-to lines are tied to the building envelopes, not to streets. The Overlay Map which the applicant proposed to apply to 58 Fore Street has 9 building envelopes. There are eight "built to" lines that do not abut streets or the edge of the parcel. It is unclear what the zoning intends to accomplish by requiring build-to lines in the eight locations where build-to lines are in the middle of a parcel, not bounded by a street. Similarly the impact of overlaying this grid of build-to lines on top of historic structures is unclear.

Poor Fit: High-Density Urban Pattern of Development: The type of development that would be produced by the B-6 standards is similar to the Ocean Gateway Garage and the Residence Inn. Even beyond the question of whether the provisions are effective to generate ground floor active uses (given that the "retail space" in the Gateway Garage has been vacant since it was constructed), it is important to ask whether this is, in fact, the type of development desired at 58 Fore St. It may make more sense to first settle the issue of whether the 58 Fore Street site, or some portion of it, is going to be designated a local historic district before casting the form of new development in stone as do the very detailed standards in the B-6 zone.

Poor Fit: Brew Pubs, Restaurants, etc. Incompatible with Immediately Adjacent Residential Neighborhood: The B-6 zone was designed to abut other commercial uses. Extending that zone to 58 Fore Street gives no consideration to the established residential neighborhood which, for over 100 years, has overlooked, but not interacted with, the 58 Fore Street property except at its single entrance. The substantial change in grade has acted as a buffer between the industrial use and the residences. The proposed extension of the B-6 to 58 Fore St. completely disregards this traditional buffer.

Except for the Portland Company site itself, both sides of Fore Street in the vicinity of 58 Fore St. are occupied by residential uses, mostly in small scale 1-3 family structures, with the exception of the Portland House. There are no existing non-residential uses except for one small insurance office, which may be a home occupation. The Munjoy Hill neighborhood moving north from Fore Street is of a similar, entirely residential, character.

In contrast, if the entire 58 Fore St. site is rezoned to B-6 as proposed, it would allow a developer to build, as of right, on the south side of Fore Street hotels, retail space, offices, restaurants, brew pubs and any number of other uses facing the residential neighborhood. It would require at least 75% of the street wall of whatever use to be built out to within 10 feet of Fore Street. And, in a provision that is inconsistent with how the maximum height limits should be applied to this site, it would require that uses facing Fore Street not have less than three (3) floors of habitable space above the average adjacent grade. This scale and range of permitted uses is completely out of character and incompatible with the existing, long-standing residential uses.

While these non-residential uses might belong in the area where the existing B-6 is located and on the filled land portion of 58 Fore Street, they are completely inappropriate on the upper portion of Fore Street. A rezoning to allow the incursion of this type of commercial use into a residential area that has no such similar uses would be unprecedented.

3. THE EXISTING B-6 ZONE REFLECTS CAREFUL PLANNING OF PUBLIC VISTAS WHICH HAS NOT YET BEEN UNDERTAKEN IN RELATION TO THE PORTLAND COMPANY SITE.

The B-6 Building Height Overlay & Building Envelopes evidences a level of planning to preserve public views and vistas from public streets that has not yet taken place on the 58 Fore Street site. In the overlay, the building envelopes are pulled back from street lines and the street space is splayed out to enhance public views. If serious consideration is being given to a B-6 rezoning for 58 Fore Street, that same level of detailed vista analysis needs to be done for that site. The Height Study just assumes that the existing buildings will remain on the site, and that the vistas over the existing buildings will remain. The study did not look at the impacts of new construction on the vistas.

4. THE CIRCULATION PATTERN WITHIN THE PORTLAND COMPANY COMPLEX, PARTICULARLY FOR WATER-DEPENDENT USES, NEEDS TO BE CONSIDERED PRIOR TO ADOPTION OF THE HEIGHT OVERLAY.

The B-6 dimensional requirements appear to allow limited space for driveways between buildings which are arranged around the build-to lines. But it is unclear whether these will be private or public within the 58 Fore Street site. It is also unclear whether they will be sufficient to provide the circulation patterns to allow continued existence of marine uses under the WSUZ.

The preface to the Eastern Waterfront Master Plan states: "the water's edge is the most precious resource we have" (p. 2). Similarly, the Design Guidelines note that the challenge is to preserve the value and marine utility of the water's edge while stimulating appropriate upland development for the benefit of the general population (p. 14). The Community Development Committee of the City Council, prior to recommending approval, added a section to the Master Plan noting the challenges of implementing the Master Plan. It reemphasized the importance of the working waterfront and full utilization of deep-water berthing resources, stating:

The challenge will be to maximize the benefits of mixed-use non-marine development, while retaining the function and future flexibility of the Eastern Waterfront as a pivotal intermodal hub in Maine's transportation system. Transportation utility of the Eastern Waterfront will require constant and vigilant protection (Master Plan, p. 21).

The circulation pattern within the 58 Fore Street site is critical to maintaining the functionality of the water's edge. The current circulation pattern does not allow for any obvious vehicular access to the water's edge. The building envelopes do not suggest any circulation pattern. As protection of the utility of the water's edge has been identified as a primary goal, it should be addressed as part of any rezoning.

5. THE "PORTLAND COMPANY ALIGNMENT" NEEDS TO BE CONSISTENT WITH THE ORIGINAL HEIGHT STUDY RECOMMENDATION

Illustration 33 of the Height Study (Exhibit C) shows a "Portland Company Alignment" (a no-build area) that was carefully located to preserve views from the B-6 area into the Portland Company Complex and line up to avoid the existing historic buildings. Building envelopes in the B-6 zone were pulled back to preserve the view into the heart of the historic buildings. However, in the applicant's proposed overlay map (Exhibit D), the no-build area has been moved so that views from the B-6 zone are not preserved. It also cuts across existing buildings.

It is unclear whether shifting this alignment is intentional or an oversight. If it is intentional, the applicant should make it clear that it is asking for an amendment to the height overlay and explain the basis for the change in the alignment. However, as it was carefully located as part of the Height Study design process, it would seem that there is good reason for keeping the original alignment.

6. THE APPLICANT'S POSITION THAT HEIGHTS AT 58 FORE SHOULD BE MEASURED FROM AVERAGE GRADE IS INCORRECT, AND WOULD RESULT IN A DEVELOPMENT WHICH IS OUT OF SCALE WITH THE RESIDENTIAL NEIGHBORHOOD

One of the primary goals of the Eastern Waterfront Height Study was to balance the needs of the study area against the surrounding "impact areas", including the Munjoy Hill residential

neighborhood. As part of that balancing, it identified three "shadow areas" where development could be located that would not negatively impact the adjacent areas. The upper Fore Street shadow area was identified to justify a height of 65 feet, due to the large change in grade.

Obviously, the large change in grade would not be cited as a reason to allow that extra height if it was anticipated that the extra height would be located at the top of the slope, as is contended should be allowed by the applicant. As is clear in the Building Height Study, it was intended that the resulting extra-tall structure would be located on the filled land portion of the site.

The November 2004 graphic, prepared by the height consultant after the adoption of the Building Height Study as part of the Master Plan (Exhibit E), includes as General Note 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. [Emphasis added]

This graphic applies to the entire study area, including the Portland Company site.

This method of calculating height was carried over one month later into the December 2004 Council-adopted B-6 Building Height Overlay & Building Envelopes, which states in Note 4:

For buildings located east of Mountfort Street (extension), building heights shall be measured from feet above flood plain, not from average grade (Exhibit B). [Emphasis added]

Thus, not only does it make sense for heights for the entire area east of Mountfort Street extension to be measured from flood plain based upon the substance of the height study, but it is also consistent with what the City actually enacted in the B-6 zone.

CONCLUSION: EXTENSIVE MODIFICATIONS TO B-6 OR OTHER ALTERNATIVES

The B-6 zone is not an appropriate zone to import to the heart of residential Munjoy Hill unless it is very significantly modified to keep the impact and uses down on the filled land. Moreover, the urban form the B-6 tries to create is incompatible with the existing historic structures and protection of the water's edge for the working waterfront.

If the City is still considering importing the B-6 zone to 58 Fore Street, the zoning text for the B-6 would require multiple modifications, including, but not limited to:

- (1) there should be a very substantial mandatory minimum setback from Fore Street (greater than 150 feet) for all new construction which would override the otherwise required build-to line and keep commercial uses from being developed on the southern side of Fore Street;
- (2) the building height overlay should specify, as it does for the block of B-6 adjacent to 58 Fore Street, that "the heights shall be measured from feet above flood plain, not from average grade";
- (3) the minimum height requirement of 3 stories should be deleted for this portion of the B-6 zone as being inconsistent with the historic buildings; and
- (4) the circulation pattern established as part of the height overlay and the dimensional requirements in the B-6 text, particularly the built-to lines, should be re-examined and modified as necessary to respond to the Master Plan goals of adaptive reuse of historic structures, protection of the utility of the water's edge for water-dependent uses, and preservation of public visual access to the water.

Much additional study is required to determine what pattern of development is appropriate for this site and how successfully the form-based code developed for the three blocks in the "Ultimate Build-Out Scenario" translates to an entirely different location.

In lieu of essentially rewriting the B-6 zone text to make numerous exceptions for 58 Fore Street, it would be better to leave the B-6 text alone and not expand its scope. That would leave the applicant with two options: applying for some form of contract zone under the existing WSUZ, or proposing text amendments to the WSUZ.

The WSUZ as written anticipates that any new mixed use development over 5,000 square feet will be reviewed as a contract zone, using the standards contained in the existing WSUZ text. In the past, the City has required very detailed plans to accompany any conditional rezoning. However, there is nothing in the enabling legislation or in the City's own ordinance pertaining to contract zones that requires that level of detail.

The applicant has made it clear that it does not want to invest in developing plans to the level of detail previously required by the City in order to pursue a contract zone. If the City finds that reasoning compelling, the applicant and the City should explore whether there is a more conceptual way to approve a conditional rezoning that clarifies, in general terms, what each will get in exchange for agreeing to a conditional rezoning, without requiring a site plan level of detail. Perhaps conditions more in the nature of performance standards would provide a way for the City to give the applicant the certainty it says it needs to proceed while still enacting a conditional rezoning that will run with the land to any new owner.

Chair O'Brien & Board
February 5, 2015
Page Eight

In the alternative, now that the Farley-Marino site has been rezoned to B-6, 58 Fore Street is the only property remaining in the WSUZ. That fact offers the opportunity for carefully crafted amendments to the text of the WSUZ which are designed to allow a thoughtful version of the proposed development. It would obviate the need to comply with the precedent set by the City for conditional rezonings.

The applicant would have to reveal enough of its concepts and plans to allow discussion of text amendments. The amendments would likely identify sub-areas of the site for different treatment, such as permitting a certain range of uses only on the filled land. Similarly it could allow for new construction in locations and meeting dimensional requirements that are not incompatible with the existing historic structures. It could be in the nature of form based code, but designed for this particular location.

There is no reason to make tortured amendments to the B-6 or have portions of the B-6 apply only to the 58 Fore Street site when, due to the geographic scope of the existing WSUZ, the City can amend that zoning text directly to allow the development it wants to permit.

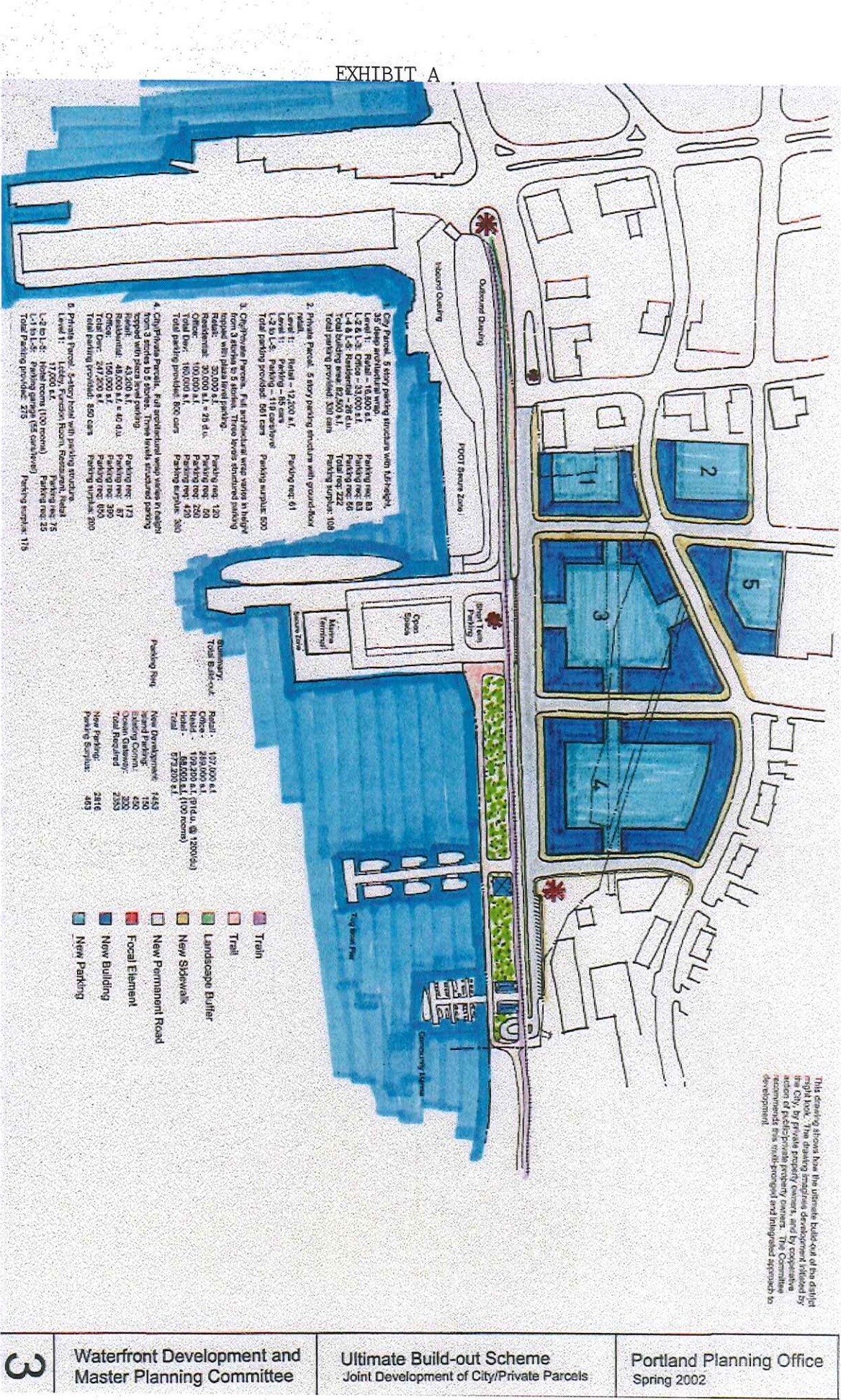
The applicant bought the property with the WSUZ in place. The burden is on the applicant to show that it will be in the best interest of the City to modify the zoning requirements. The Master Plan does lend support for upland mixed uses, provided they are balanced with protecting the water's edge for marine uses. But moving the B-6 zone over to encompass 58 Fore Street is like trying to jam a square peg in a round hole. As there are at least two viable better alternatives, I urge you to recommend that request for rezoning to B-6 not be approved.

Very truly yours,



Barbara A. Vestal

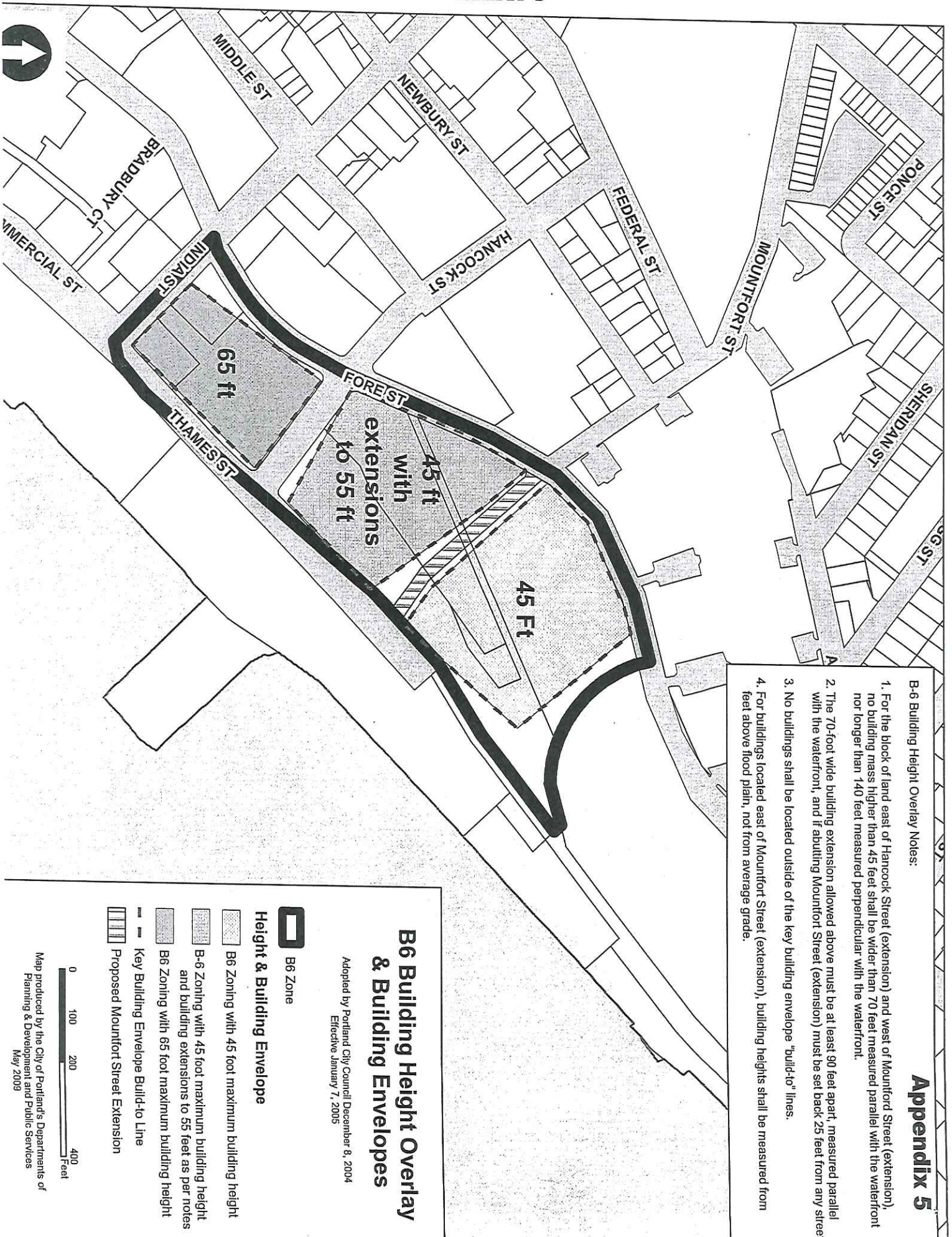
BAV/om
Enclosures
cc: Christine Grimando

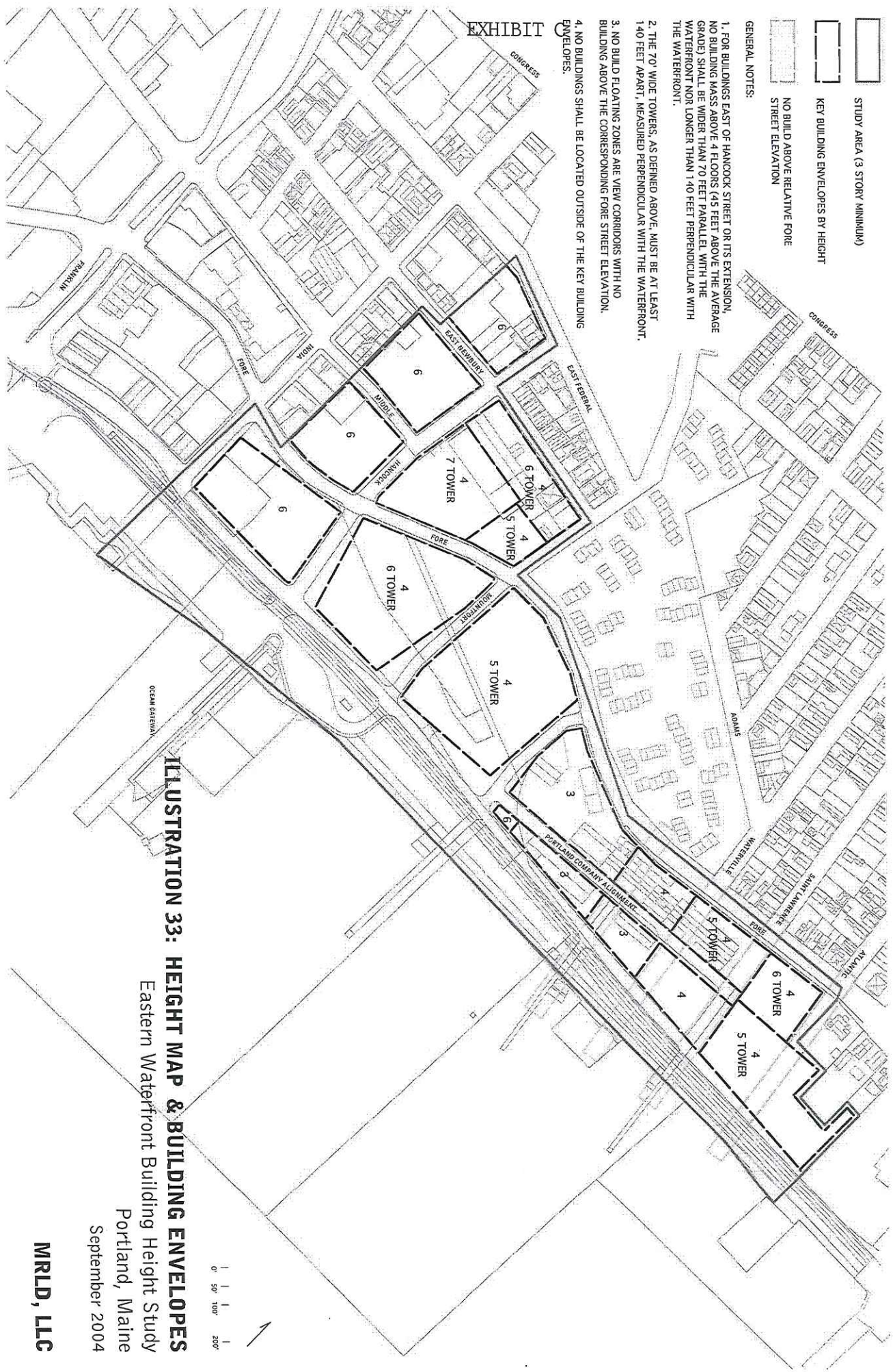


Appendix 5

B-6 Building Height Overlay Notes:

1. For the block of land east of Hancock Street (extension) and west of Mountfort Street (extension), 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.
2. The 70-foot wide building extension allowed above must be at least 90 feet apart, measured parallel with the waterfront, and if abutting Mountfort Street (extension) must be set back 25 feet from any street.
3. No buildings shall be located outside of the key building envelope "built-to" lines.
4. For buildings located east of Mountfort Street (extension), building heights shall be measured from feet above flood plain, not from average grade.





EXHIBIT

-  STUDY AREA (3 STORY MINIMUM)
-  KEY BUILDING ENVELOPES BY HEIGHT
-  NO BUILD ABOVE RELATIVE FORE STREET ELEVATION

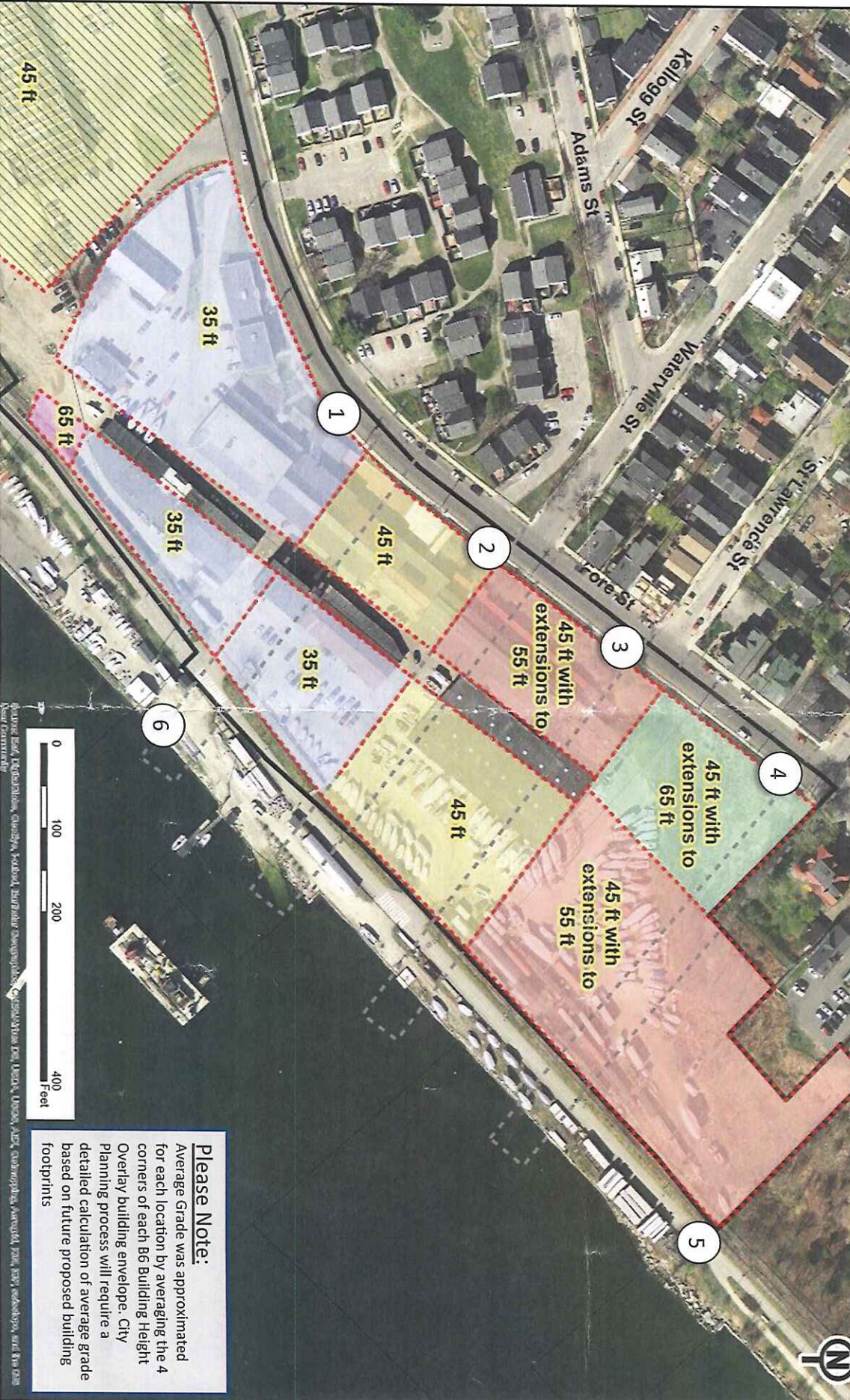
- GENERAL NOTES:**
1. FOR BUILDINGS EAST OF HANCOCK STREET OR ITS EXTENSION, NO BUILDING MASS ABOVE 4 FLOORS (45 FEET ABOVE THE AVERAGE GRADE) SHALL BE WIDER THAN 70 FEET PARALLEL WITH THE WATERFRONT NOR LONGER THAN 140 FEET PERPENDICULAR WITH THE WATERFRONT.
 2. THE 70' WIDE TOWERS, AS DENIED ABOVE, MUST BE AT LEAST 140 FEET APART, MEASURED PERPENDICULAR WITH THE WATERFRONT.
 3. NO BUILD FLOATING ZONES ARE VIEW CORRIDORS WITH NO BUILDING ABOVE THE CORRESPONDING FORE STREET ELEVATION.
 4. NO BUILDINGS SHALL BE LOCATED OUTSIDE OF THE KEY BUILDING ENVELOPES.

ILLUSTRATION 33: HEIGHT MAP & BUILDING ENVELOPES

Eastern Waterfront Building Height Study
 Portland, Maine
 September 2004

MRLD, LLC

EXHIBIT D



1 - Maximum Building Height Above Average Grade: 35' - Average Fore Street Elevation: 33' - Approximate Average Grade of Building Envelope: 24' - Average Height above Fore Street: 26' - Max Height above Fore Street: 29'	2 - Maximum Building Height Above Average Grade: 45' - Average Fore Street Elevation: 45' - Approximate Average Grade of Building Envelope: 30' - Average Height above Fore Street: 30' - Max Height above Fore Street: 34'	3 - Maximum Building Height Above Average Grade: 45' - 55' - Average Fore Street Elevation: 61' - Approximate Average Grade of Building Envelope: 38' - Average Height above Fore Street: 27' - Max Height above Fore Street: 35'	4 - Maximum Building Height Above Average Grade: 45' - 65' - Average Fore Street Elevation: 80' - Approximate Average Grade of Building Envelope: 50' - Average Height above Fore Street: 25' - Max Height above Fore Street: 35'
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Please Note:
Average Grade was approximated for each location by averaging the 4 corners of each B6 Building Height Overlay building envelope. City Planning process will require a detailed calculation of average grade based on future proposed building footprints

- 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.

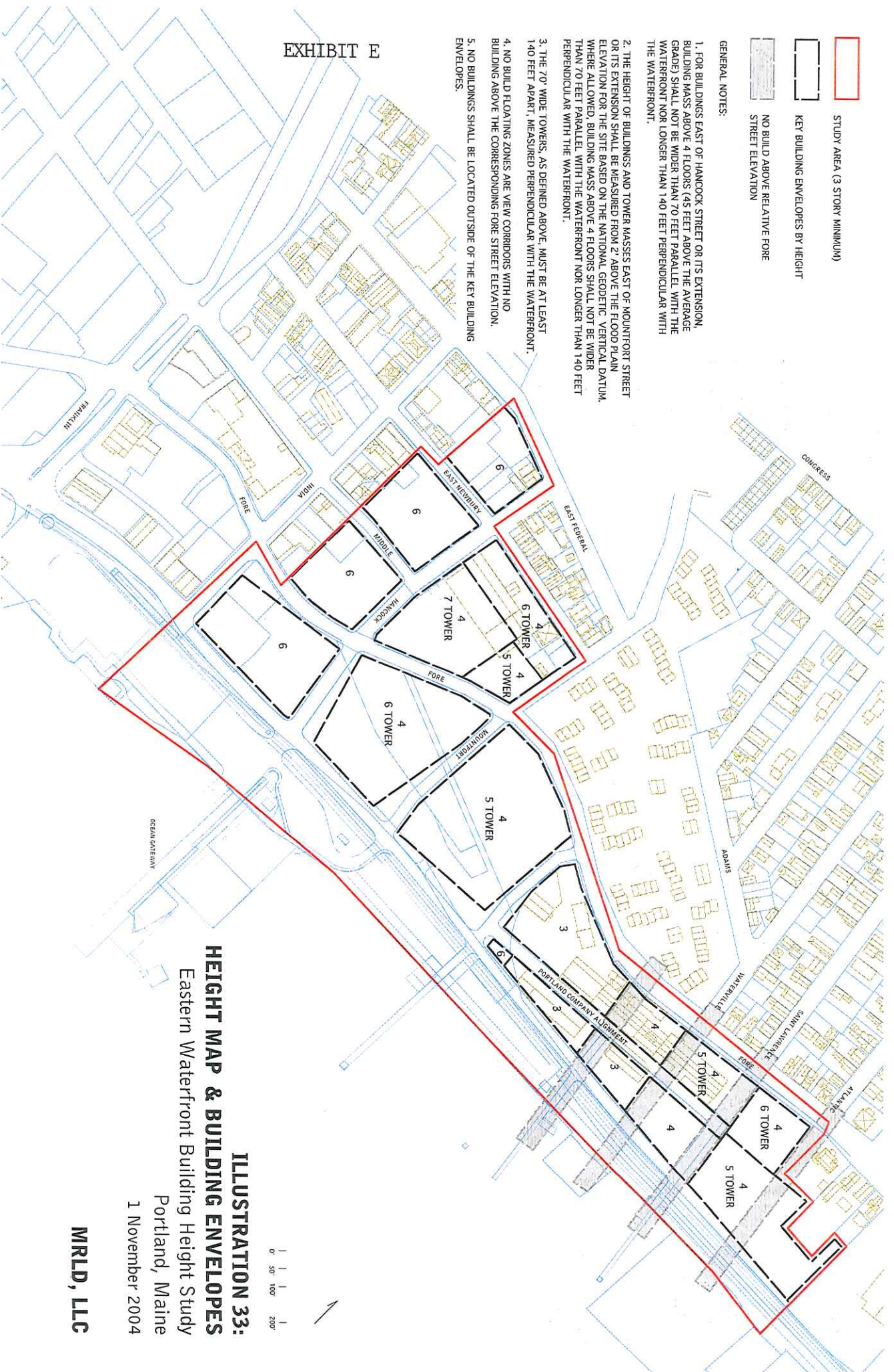


EXHIBIT E

ILLUSTRATION 33:
HEIGHT MAP & BUILDING ENVELOPES
 Eastern Waterfront Building Height Study
 Portland, Maine
 1 November 2004

MRLD, LLC




SOUL OF PORTLAND
 SOULOFPORTLAND.ORG

FORE STREET & MUNJOY SOUTH
 HEIGHTS ABOVE AVERAGE GRADE




SOUL OF PORTLAND
 SOULOFPORTLAND.ORG

FORE STREET & MUNJOY SOUTH*
 HEIGHTS ABOVE FLOOD PLAIN




SOUL OF PORTLAND
 SOULOFPORTLAND.ORG

58 FORE STREET
 HEIGHTS ABOVE AVERAGE GRADE




SOUL OF PORTLAND
 SOULOFPORTLAND.ORG

58 FORE STREET
 HEIGHTS ABOVE FLOOD PLAIN



P.O. Box 7602
Portland ME 04112
October 2, 2014

Deb Andrews, Historic Preservation Mgr.
Planning Division
City Hall, 4th flr.
389 Congress St.
Portland ME 04101

Ms. Andrews:

We are writing in support of Greater Portland Landmarks request to designate the Portland Company site at 58 Fore St. an historic district.

The Portland Company buildings have had a strong impact on marine and industrial work and they have impacted industry nationwide,

This is an opportunity to preserve the last of historical businesses in Portland. We have learned from the demolition of Union Station how deeply that loss has been felt and regretted in this town.

Lets not do it again.

Sincerely,
Everett and Susan Ingalls

October 8, 2014

Paula Guillemette Agopian
98 Monument St
Portland, Me 04101

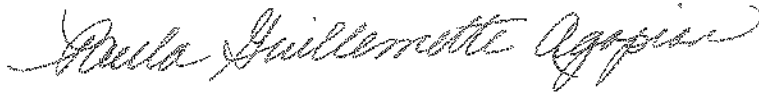
Deb Andrews, Historic Preservation Program Mgr.
City of Portland
389 Congress St
Portland, Me 04101

Dear Deb,

I was in attendance September 25th for the presentation of Sutherland Conservation Consultant's report on the historic significance of The Portland Co. property at 58 Fore St. I found it informational and thought provoking. It conjured up thoughts of Union Station, The Portland Co. is the East End's Union Station. I was aware that the property was of historic significance but was unaware of the far reaching implications on so many levels. I would like to see a presentation of this caliber done for our neighborhood, and will present that to The Munjoy Hill Neighborhood Organization's next Board Meeting on the 13th. This study could prove pivotal and key to the redevelopment of this site. I would hope at all levels of approval that the powers that be let this report weigh heavily in the decision making process. It deserves great consideration. The presenter's words "building removal will have an adverse impact on this site" are still ringing in my ears.

P.S. If there is a tour of the site I would love to participate before it is disturbed!

Sincerely, Paula Guillemette Agopian



Cc. Historic Preservation Chair, Rick Romano and Board Members
City of Portland Planning Board Chair, Stuart G. O'Brien and Board Members
City of Portland Planning Dept. Alex Jaegerman
Greater Portland Landmarks Hillary Bassett, Director
MHNO Board
CPB2 LLC, Jim Brady

Deb Andrews - 58 Fore Historical Significance Concerns

From: Karen Snyder <karsny@yahoo.com>
To: "dga@portlandmaine.gov" <dga@portlandmaine.gov>
Date: 10/12/2014 6:47 AM
Subject: 58 Fore Historical Significance Concerns
Attachments: 58ForeStreetHistoricBuildings.JPG; 58ForeStreetSeaWall.JPG

Dear Ms. Andrews,

I am voicing my concern as many others regarding the 58 Fore street proposed development.

There is a large amount of historical significance to this site, and there are concerns that the developer will destroy the original sea wall of Portland or buildings that are late 1900's that are over the sea wall.

I have attached historical buildings and the original sea wall photos.

There is additional concern by the proposal to change zone ordinances in order for this developer to build an inappropriate height for this area besides blocking the water views of all the residents of Waterville Street.

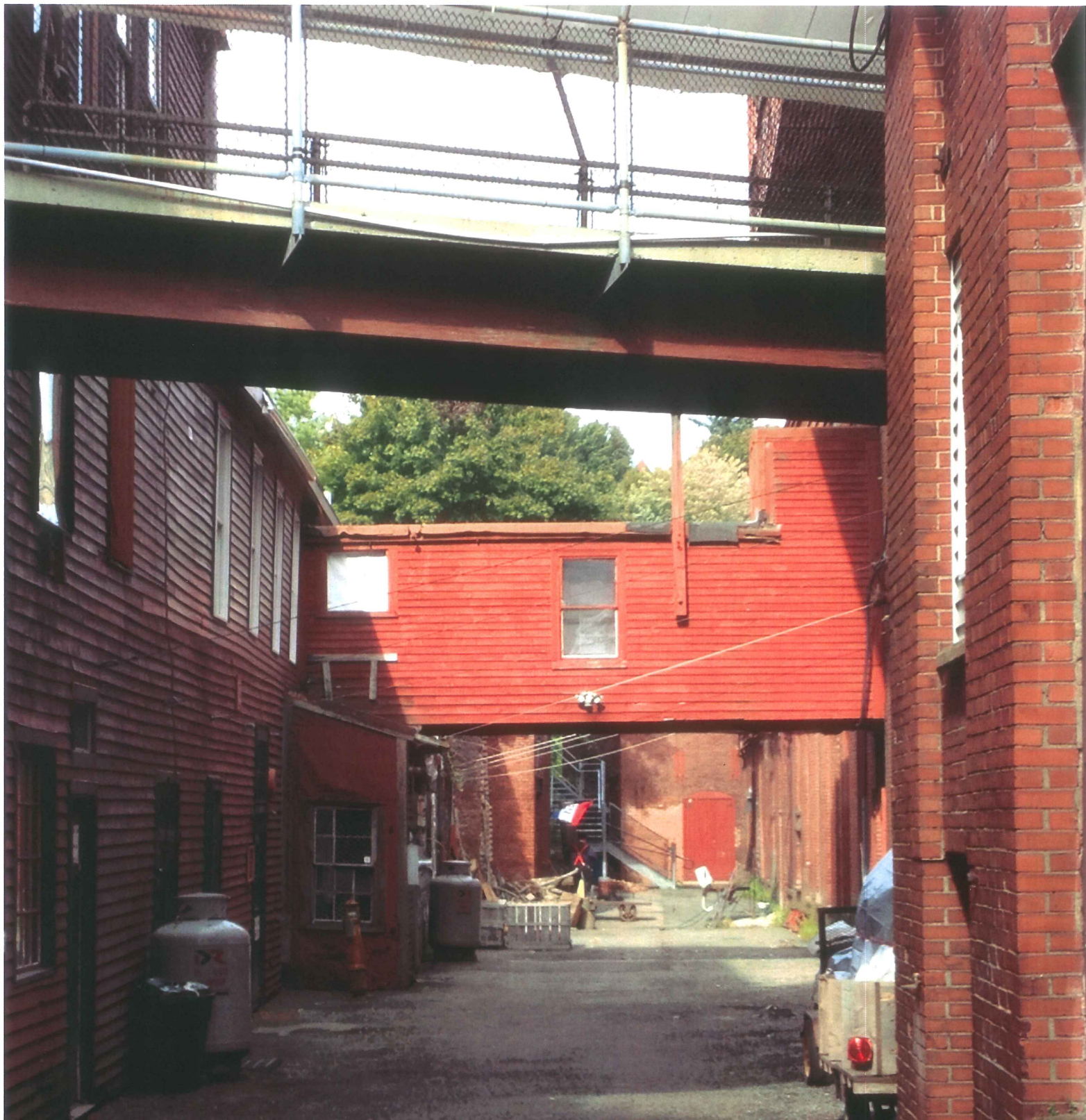
The Historical Preservation board was specifically created as a direct result of the travesty of allowing Union Station to be destroyed to allow a developer to put up a seedy strip mall.

It is up to the Historical Preservation board to PROTECT historical significant structures against the scourge of developers.

Please keep this in mind.

Regards,
K.Snyder
Munjoy Hill Resident





From: Karen Snyder <karsny@yahoo.com>
To: "cdg@portlandmaine.gov" <cdg@portlandmaine.gov>
Date: 10/12/2014 6:57 AM
Subject: Fw: Legal Ads for 10-14 and 10-21
Attachments: PB Lgl Ad 10-14-14.pdf; PB Lgl Ad 10-21-14.pdf

Dear Christine,

I am writing to voice my concerns with the 58 Fore Street zone amendment proposal.

There is concern by many Munjoy Hill residents in regards to this developer destroying the historical significance of the buildings as well as building height concerns for this area in regards to blocking the current water views of all the residents on Waterville Street.

When will the planning board finally respect and listen to the opposition of the local residents regarding all these developers that are trying (with success) in changing ordinances so their profit margins are large at the cost and inconvenience of local residents and the quality of life for the residences?

Regards,
K. Snyder
Munjoy Hill Resident

On Sunday, October 12, 2014 6:50 AM, Karen Snyder <karsny@yahoo.com> wrote:

Hi Helen,

What is the content of the B1 and B2 zoning amendments? Is this specific to 89 Anderson?

The attachment is quite generic.

Thanks.

K. Snyder
Munjoy Hill Resident

On Friday, October 10, 2014 8:44 AM, Jennifer Munson <JMY@portlandmaine.gov> wrote:

Good Moring,

Please see the attached.

Jennifer Munson, Office Manager
Planning and Urban Development
City of Portland
389 Congress St., 4th Floor
Portland ME 04101
jmy@portlandmaine.gov
(207)874-8719
(207)756-8258 (fax)

Notice: Under Maine law, documents - including e-mails - in the possession of public officials or city employees about government business may be classified as public records. There are very few exceptions. As a result, please be advised that what is written in an e-mail could be released to the public and/or the media if requested.

--

Greater Portland Landmarks

Planning Board – comments re: Portland Company Complex, 58 Fore Street

10/21/2014

Greater Portland Landmarks is especially interested in the proposed plans to redevelop the Portland Company Complex at 58 Fore Street. Recent research conducted by Sutherland Consulting has clearly established the local, state and national historic significance of the Complex as the only intact historic locomotive manufacturing complex remaining in the country. The City is now proceeding with a peer review of the developer's engineering study regarding structural integrity of the historic buildings. These materials are essential to a future consideration of the potential for historic designation of the complex.

Landmarks has several questions we would like to ask.

- a) We understand that what is being proposed is to adopt the zoning and related recommendations from the Eastern Waterfront Master Plan. As part of the documentation in the Mitchell Rasor Landscape Design map of 2004 there was inclusion on the map which shows the "Portland Company alignment" that recognizes the "alleyway typology" "like Wharf Street" between the major buildings of the Complex. We believe that the alleyway is an essential character defining element because it reflects the relationship of the Complex to the rail lines and to the manufacturing process associated with the Portland Company. The alignment shown on more recent maps appears to be different than the earlier maps? Has it been changed and if so why has it been changed?
- b) We would like to be sure that any zoning change or presentation of a potential plan for the site will not prejudice or limit historic preservation board consideration of the potential for historic designation. For this reason we urged the Historic Preservation Board to move more quickly to request designation. At the request of staff, the Preservation Board is moving more cautiously. What assurances will the city and the developers provide to support the historic preservation board's requests outlined in their memo of Oct. 15, 2014 that zoning changes not prejudice the review and findings of the Historic Preservation Board as it considers the potential for historic designation of the property?
- c) Building heights are important to us, especially with respect to views of the Complex from the water and views of the harbor from the Portland Observatory. How will the height overlay map apply, and from what level with building heights be measured?

The Guiding Principles of the Eastern Waterfront Master plan specifically call for development to be "Compatible with the surrounding areas, neighborhoods, natural environment and maritime uses, with objectives to "Encourage historic preservation and adaptive reuse of historic structures", "Encourage compatible architecture," and "Preserve significant public view corridors to and from the water and along the waterfront."

Thank you for your consideration.

Hilary Bassett
Executive Director
Greater Portland Landmarks

From: <dpreisse@maine.rr.com>
To: <cdg@portlandmaine.gov>
Date: 11/11/2014 11:43 AM
Subject: 58 Fore Street
Attachments: photo-19 copy.JPG; photo-19.JPG; SO2.JPG; Cruise ship.JPG

Dear Christine,

I am emailing you to share my thoughts in regards to the 58 Fore Street zoning change and in particular the site plan that has not yet been seen. I have attended the open forum with the developer as well as the city hall meeting for public comment. It is hard for me to support a zoning change without seeing the site plan that demonstrates the building heights above Fore Street. I can not attend the site walk or the public comment meeting on the 18th so wanted to share my thoughts with you to share with Council and Developers.

I do live on Munjoy Hill and each day I am in awe of the panoramic active harbor view that is seen now freely from the overlook driving/walking/biking on Fore Street between Waterville and St. Lawrence. I have observed hundreds of people and the tour/trolly buses as they stop for a short glance traveling this street. I know there are many who appreciate the unique beauty yet do not take part in civic action to save what could be lost.

Development of the property and all the ideas generally presented by the developers sound interesting to me and others I have spoken to. I am very concerned with the zoning approval of the height and the height overlay plans. It is so confusing to me even after all the dialogue. I believe at one time I heard in a presentation by the developer that the buildings could be 14-22 feet ABOVE Fore Street. That scares me to death and I can vision another mass half the height of the Portland House blocking the suns warmth and birds eye views so breathtakingly wonderful now. I am well aware of snake oil sales pitches and asking for zoning changes and getting something that was not wanted or expected but is allowed with these changes. I strongly support saving all the historical buildings (the Flower Show building was not marked in the developers presentation to save) and promoting this site as a historical district with the guidance and expertise of Portland Landmarks and the Historical Society.

The scaffolding view from the water to the residential area to the Observatory are just as vital as those looking down the hill to the vitality on the water. I have included a couple of pictures to express this greatness that occurs in Casco Bay that some may not have seen. Preserving this one last bit of scenic overview is vital and not to be lost for myself, my neighbors, Portlanders, tourists or for future generations. Please keep this point in mind as you make recommendations to the City Council.

I would encourage the City Council to not only walk the actual site but also take a stroll up the hill on Fore Street to experience this feeling of being on top of the world, a stop to catch one's breath, and savor the breathtaking beauty of the working/recreational waters of Casco Bay.

Best,
Denise Preisser







From: Brian Burwell <burwell@maine.edu>
To: <cdg@portlandmaine.gov>
Date: 11/14/2014 8:56 AM
Subject: Planning Board, 58 Fore Street, Protecting Pedestrian Views

Dear Planning Board members,

I am writing to defend existing pedestrian "key views of the harbor....a community resource to be preserved and protected...." ("Design Guidelines for the Eastern Waterfront", p.12, Adopted by Comprehensive Plan, 2002)

I appreciate the wonderful views along Adams and elsewhere, but am most familiar with the two blocks of Fore Street sidewalks between Waterville and Atlantic Streets.

While working on a three family residence at the corner of Waterville and Fore, I observe large numbers of neighborhood people walking these sidewalks to and from downtown and "around the block". In nice weather multiple small groups of downtown office workers walk up and down the Fore Street sidewalks during their lunch breaks. Many visiting tourist often stop in wonder and take pictures of the sailing schooners, ferries etc. and of themselves in front of the wire fence.

The existing four story Portland Company buildings situated along these two blocks do not interfere with sidewalk views because of the high elevation of Fore Street relative to the level land below. The cover and last page illustration (Section E Existing and Proposed East/West with Congress Street and Fore Street Elevations) of the "Eastern Waterfront Building Height Study" (adopted by the Comprehensive Plan in 2004) show how existing and anticipated four story structures preserve those sidewalk views.

The "Eastern Waterfront Building Height Study" allows for 70 foot wide towers separated by 140 feet. Such a tower in front of the Waterville to St. Lawrence Street block would interfere with the existing wonderful view of harbor activities. During the decade since this detailed height study was adopted, significant changes have occurred and continue to trend which strongly argue for preservation of unobstructed views and therefore against towers which would depreciate these views:

- * Increasing resident population in the neighborhood as a result of "infill" development and additions.
- * People walking and jogging more for healthy exercise.
- * Increasing numbers of tourists.
- * Increasing recognition of the value of pedestrian views of important natural elements. Many cities including Seattle, San Diego, Austin and Portland, Oregon incorporate preservation of such views into their development design criteria.
- * Blockage of pedestrian views by new construction to the west of Mountfort St.

To what extent these views, unique to Portland, are to be forever lost by a large public to be replaced by private structures (residences?) for a relatively few, is before you. I request that you consider the developers' opportunities for substantial development on these ten acres with little or no obstruction of current views.

Lastly, resident evaluations of developer plans for the site could provide valuable inputs to Planning Board and City Council members tasked with melding CPBE's rights and citizen interests. Award of B-6 zoning would provide substantial value to CPBE and could follow, not precede, resident vetting. Lack of a site plan for the "Neighborhood Meeting" of September left residents frustrated and distrustful. Without a site plan, residents are left jousting windmills like Don Quixote. I request that the Planning Board require a site plan from CPBE and obtain public input, both positive and negative, before deciding whether or not to recommend a zoning change from Waterfront Special Use Zone to B-6.

Thank you.

Brian Burwell
Owner, 31 Fore Street

burwell@maine.edu

From: Barbara Barhydt
To: Grimando, Christine; Jaegerman, Alex; Munson, Jennifer
Date: 11/14/2014 7:58 AM
Subject: Fwd: 58 Fore Street site visit and workshop

public comment

>>> Peter Macomber <pbm@macomber.com> Friday, November 14, 2014 7:16 AM >>>

Dear Chair O'Brien, Planning Board members, Planning Director Jaegerman and staff:

My name is Peter Macomber and my wife, Pam, and I live on Munjoy Hill. We have been residents of Portland since 1979, the last two on the Hill. I will be out of town next week during the scheduled site visit and the hearing, so I am sending this lieu of attending and commenting.

The purpose of your site visit and workshop is to review the building height overlay as it applies to the proposed zoning change. Because it also relates to building heights, it is also very important that you take into consideration the breathtaking pedestrian viewshed of Portland harbor from Fore Street between Atlantic and Waterville streets. This is to my knowledge the only publicly-accessible elevated viewpoint in the entire city that encompasses such a magnificent panorama of the inner working harbor, including the Gateway terminal and visiting cruise ships, the South Portland waterfront and the never-ending ship traffic.

This viewpoint has always been there throughout the history of the city, never blocked by any buildings and always freely accessible to all who walk by.

As a property owner in this area, I can attest to the surprising number of people who abruptly stop as they walk up or down Fore Street and are mesmerized by the view, sometimes for minutes at a time. Or to the cars that suddenly pull over to the side of the street, people piling out and excitedly taking pictures of the panorama or of the cruise ships.

And when the sun is low and illuminates the entire harbor with a quality of light that's unique to Maine, the scene is nothing short of magical.

This awesome landscape and seascape is part of the soul of Munjoy Hill and truly belongs to all of Portland. It must be preserved by ensuring that any development does not impinge on that entire view. Keeping the maximum building height of any development at or below the grade of Fore Street would do it.

(A thought about the so-called "view corridors" that are part of the Eastern Waterfront Height Study: they're a ridiculous sop to the public and are tantamount to telling people to look through the wrong end of a telescope with blinders on; those corridors only compartmentalize and minimize the view and conceal more than they reveal. The only real "view corridor" is the one that fully encompasses the entire viewshed, not tiny slivers of it!)

—

The B-6 zone as it currently exists requires that the minimum new building height within 25 feet of a street is 3 stories. This requirement is quite appropriate in the current B-6 zone, but obviously not appropriate in the proposed development. The developer's refrain is that they merely want to "drag over the existing B-6 zone" to the Portland Company property, but to "drag over" all requirements of that zone without closely examining how they'd impact the unique conditions of the property would be inappropriate.

But there's at least one aspect that would be appropriate: at the last public meeting, some questions were asked about the current B-6 Height Overlay map and the phrase "feet above the flood plain, not from average grade" as it applied to building heights on one particular lot of land. But it actually makes a lot of sense if you think about it. Fore Street begins to climb steeply as it passes to the east of Mounfort Street, so calculating the building heights from the flood plain instead of the average grade takes that steep climb into consideration. Because otherwise an envisioned 45-foot maximum building height could translate into 55 or even 65 feet if the average grade was used instead.

It is very important to follow the same reasoning as you consider building heights in the proposed development. Fore Street climbs even more steeply beyond Waterville Street while the Portland Company property is primarily on that same flood plain. Average grade calculations could result in buildings that ludicrously not only tower over Fore Street, but are the equivalent of 80-90 feet

above the flood plain. Using average grade calculations on what is basically a cliff edge is highly inappropriate, and would be a flawed methodology for this zoning. And since about 85-90% of the Portland Company land is at the flood plain level, using that as a basis for building heights makes far more sense.

I humbly suggest that during the site visit next week you include a short walk up Fore Street between Waterville and Atlantic streets so you can see for yourselves what I'm writing about. Enjoy that view!

—

The Planning Board's work will be very difficult in the weeks ahead. I thank you for your time and energy as you consider this zoning change. Please know that Pam and I are both very much in favor of a vibrant, yet thoughtful development of the property. But surely there is a way to keep this very special public viewshed forever open as well as provide the developers an opportunity to maximize their returns. I ask that you keep in mind these comments as you preserve this precious asset for the future of the city and its inhabitants and visitors.

Respectfully,
Peter & Pam Macomber
Saint Lawrence St.

From: Jeff Levine
To: Caitlin Cameron; Christine Grimando; Tammy Munson
Date: 11/19/2014 3:09 PM
Subject: Fwd: outdoor seating and height restrictions

On outdoor seating and 58 Fore Street.

Jeff

Jeff Levine, AICP
Director
Planning & Urban Development Department
389 Congress Street 4th Floor
Portland, Maine 04101
Phone (207)874-8720
Fax (207)756-8258
<http://www.portlandmaine.gov/planning>
@portlandplan
(<http://www.portlandmaine.gov/>)
>>> Nancy <nkacatalyst@msn.com> 11/19/2014 2:35 PM >>>

Hi Jeff- I saw your name from a recent PPH article. As a Portland resident (15 years on Little Diamond Island) and almost 8 years on Craigie Street) I would like to share my opinion on two recent issues.

1. As someone who LOVES to eat and cherishes the warm weather when we can eat outside in Portland, I do enjoy the outdoor cafes and seating areas at many of Portland's restaurants. My concern though is when the dining tables and robe dividers stretch onto the sidewalks pushing people to the road. It seems antithetical to the idea of a side "walk". All summer and fall we walk down Commercial street from our Parking spot on Widgery Wharf to the Casco Bay Lines. This year, I particularly noted (not just at Cruise ship times) that it was very difficult to walk down the sidewalks. It was the sidewalk cafes, food and craft vendors. and even the lines for the Trolley and day-time boats that cause multiple bottlenecks. While I support the tourist industry and want Portland small businesses to thrive, I just worry about how many times, we and others have to walk in the street because the sidewalks are too crowded. I also noticed people in wheelchairs and the elderly having a difficult time getting by. I am an able-bodied person, but pulling our luggage down the sidewalk has been very difficult because the sidewalk space is so limited. So I hope you will consider the safety of "walkers" as well as the diners when determining the line on the sidewalks for outdoor dining.

2. In today's paper there is discussion about increasing the height of new building at the bottom of Munjoy Hill/Fore Street. While I don't live in that part of town, I do appreciate the view not just from the mainland but looking at the city from the water as well. I know "view" might be less motivating than "business revenue" and potential tax, but I travel enough to other towns/cities to recognize that this is one of the unique features of Portland. I hope you and Portland will think long and hard about extending the heights and variances, as once it's gone, it's gone. I do believe one of the reasons Portland has been featured in so many articles and magazines polls lately is because of its unique character and balanced growth. Hope we can keep it that way.

Thank you very much for reading my email and considering my opinion when you make your decisions.

Nancy

Nancy Ansheles
186 Craigie Street
Portland, ME 04102
207-774-3634
207-272-5009 (Cell)
nkacatalyst@msn.com

Save the valued view.

Please share your thoughts
about building height and site
plan views with the City
Council members and
developers of 58 Fore Street.

*I frequently walk on the
bike/pedestrian path along the
waterfront between the Old
Port and the Eastern Prom.
The sight of the Observatory
on the crest of Munjoy
Hill, and the historic architecture
on the slopes are a very
important part of the
character of the East End.
Any additional height will
block that view including
the Observatory. Do not
let that happen.*

Card design by portlanddenise@gmail.com

*Sincerely,
Maggie Wolff
Saint Lawrence St. 04101*



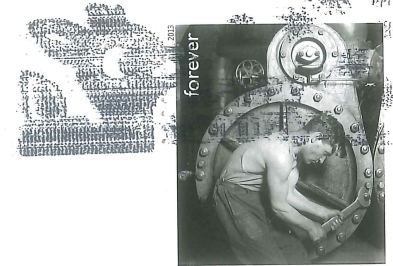
Christine Grimando
To: Senior Planner
Planning Division
City Hall
4th Floor
389 Congress Street
Portland, Maine 04101

Save the valued view.

Please share your thoughts
about building height and site
plan views with the City
Council members and
developers of 58 Fore Street.

*While our views
will not be blocked
substantially, The
Pedestrian views &
"Feel" of Fore Street
will be severely
damaged if they build on
Fore Street.*

Card design by portlanddenise@gmail.com



Christine Grimando
To: Senior Planner
Planning Division
City Hall
4th Floor
389 Congress Street
Portland, Maine 04101

*This van took
a watermill*


September 1, 2014

Good day.

In Portland, there is talk that the city officials are considering rezoning for the owners of the Portland Company, who have purchased 10 acres on the ocean at 58 Fore Street in Portland, Maine. They want to add thirteen acres of "submerged" land, enabling them to turn their ten acres into twenty-three acres,

If this is acceptable, then I, as an owner of two acres on the ocean, should be able to use "submerged" land to add another 2.6 acres to my land.

They are increasing their land by 130%, and I should be able to do the same.

Why not?!!

A very concerned citizen

SEP - 3 2014

Dept. of Building Inspections
City of Portland Maine



Save the valued view.

Please share your thoughts
about building height and site
plan views with the City
Council members and
developers of 58 Fore Street.

AS PORTLAND
RESIDENTS, WE
ARE CONCERNED
ABOUT LOSING
A UNIQUE VIEW,
WHICH IS A
RESOURCE FOR
ATTRACTING
TOURISTS.

Steve Schick
Lisa Schiffman

Card design by portlanddenise@gmail.com



Christine Grimando
To: Senior Planner
Planning Division
City Hall
4th Floor
389 Congress Street
Portland, Maine 04101

Save the valued view.

Please share your thoughts
about building height and site
plan views with the City
Council members and
developers of 58 Fore Street.

1/12/15
please, please, please don't
let a zoning change
happen that benefits a
few and that will ruin
the feel of an entire
neighborhood of Portland
and block a connection
with the water.

Thank you for your

consideration
Sincerely,
Jeremy Wintosteen
9 Waterville St #4C

Card design by portlanddenise@gmail.com



Christine Grimando
To: Senior Planner
Planning Division
City Hall
4th Floor
389 Congress Street
Portland, Maine 04101

Save the valued view.

Please share your thoughts
about building height and site
plan views with the City
Council members and
developers of 58 Fore Street.

Honestly? I feel that the
city is prostituting
itself for the almighty
dollar and a claim to
game - tall game. This
with all we realized when
it is too late. How sad.
Where is preservation of
that that is good? Soon we'll
look like any other city.
Tyler

Card design by portlanddenise@gmail.com

3c USA



Christine Grimando
To: Senior Planner
Planning Division
City Hall
4th Floor
389 Congress Street
Portland, Maine 04101



PLANNING BOARD REPORT PORTLAND, MAINE

Park Danforth
777 Stevens Avenue
Level III Subdivision and Site Plan Review
2014-202
The Park Danforth, Applicant

Submitted to: Portland Planning Board: Public Hearing Date: February 10, 2015	Prepared by: Barbara Barhydt, Development Review Services Manager Date: February 5, 2015
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I. INTRODUCTION

The Park Danforth has submitted a Level III application for site plan and subdivision review for their property at 777 Stevens Avenue (refer to Applicant's submission). The property is situated on a city block bounded by Forest and Stevens Avenues and Poland and Arbor Streets. The proposal is to construct a new building with fifty-five (55) senior independent living units that will be attached to the existing building with a one-story connector. The new building will be four stories along Arbor Street and Forest Avenue, with a fifth story corner projection and five stories facing a central garden courtyard between the two buildings. The initial project was approved and built in 1983 and underwent a major expansion in 1997. The site currently consists of 4.16 acres which includes the Goodwill site and three former house sites.

The site is located in the R-6A zone. This proposal is being reviewed as a final plan and subject to the Site Plan and Subdivision Ordinance of Land Use Code. The project will also be reviewed against the multiple-family housing of the Design Manual. Division 29 of the Land Use Code, the Housing Preservation and Replacement standards apply to this project as well.

The project was before the Planning Board for a map and text amendment to create a new zone, R-6A. The board forwarded a positive recommendation to the City Council for the map amendment and text amendments on September 9, 2014. The City Council approved the amendments on October 20, 2014, which then went into effect on November 20, 2014. A workshop on the proposed project development was held on November 12, 2014.

Applicant Name	The Park Danforth at 777 Stevens Avenue, property owner HOME FOR THE AGED - FOREST AVENUE PROPERTIES Denise Vachon, Chief Executive Officer
Consultants	
Agent Representative	Robert Metcalf of Mitchell & Associates
Engineer	Lester Berry, BH2M
Surveyor	Owen Haskell, Inc
Architect	Joan Easgleson, Lavalley/Brensinger Architects
Attorney	Melissa Murphy, Perkin Thompson

II. PROJECT REVIEW

<i>Review</i>	<i>Applicable Standards</i>
Site Plan	14-526
Subdivision	14-491
Design Manual	(i) Two-Family, Special Needs Independent Living Units, Multiple-Family, Lodging Houses, Bed And Breakfasts, And Emergency Shelters
Housing Replacement	Division 29, Land Use Code

III. REQUESTS FOR WAIVERS (staff evaluation within review under standards)

Waiver Request	Applicable Standard
<i>Sec. 14-526 (a) (b) Location and Required Number of Bicycle Parking Spaces</i> Proposing 8 bicycle parking space and 22 spaces would be required for the new units. Refer to applicant's submission, Attachment P	<i>Sec. 14-526 (a) (b) Location and Required Number of Bicycle Parking Spaces (ii) Waiver:</i> The reviewing authority may reduce the required number of bicycle parking spaces if it is determined, based on evidence submitted by the applicant, that the proposed development is expected to generate reduced demand for bicycle parking due to characteristics or uses such as elderly or disabled persons housing or industrial uses located in outlying areas.
<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 55 trees. The applicant is requesting the waiver and proposing to pay into the street tree fund for 26 trees. Refer to applicant's submission, Attachment P	<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>Driveway Location, Technical Manual 1.7.2.7</i> Existing driveway on Forest Avenue is 70 feet from Read Street and Forest Avenue. Refer to applicant's submission, Exhibit P and U	Along arterial, collector and local streets, minimum acceptable spacing between double or multiple driveways for driveways on adjacent lots or on the same parcel shall meet the criteria below: 30 mph 125 feet General Waiver Criteria
<i>1.7.2.8. Number of driveways:</i> Proposing 4 access driveways on the site. Refer to applicant's submission, Exhibit P	<i>1.7.2.8. Number of driveways:</i> No more than two (2) driveways shall be permitted for ingress and egress purposes to any commercial, industrial or residential (with 10 or more parking spaces) site. General Waiver Criteria
<i>Minimum driveway width (two-way):</i> Requesting 22 foot aisle width along Arbor Street Requesting 20 foot aisle width along Forest Avenue Refer to applicant's submission, Exhibit P and U	<i>1.7.2.3. Minimum driveway width (two-way):</i> 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. General Waiver Criteria
<i>Utility Pole Location – Required underground utilities – Subdivision Ordinance – 14-499</i>	Section 14-499, Required Improvements, Subdivision Ordinance, (h) All utility lines shall be placed underground unless otherwise approved by the Planning Board.

<i>Site Lighting Standards</i> Applicant seeking light pole fixtures and bollards within the interior campus courtyard that are not full cut offs. See applicants submission, Attachment BB	12.2.6. Luminaire Types: All fixtures, including pole mounted and wall mounted luminaires, shall be a "cut-off" type where lenses, refractors or lamp sources do not extend below the surface of the fixture housing and no direct light shall be directed at or above the horizontal plane. Sites which are part of an historic district or require specific decorative lighting fixtures as means to achieve compatibility within an existing architectural context may propose non-cutoff fixtures providing that they have built in reflectors to mitigate uplighting and that photometrics fall within IESNA guidelines. Low pressure sodium bulbs are prohibited.
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III. PROJECT DATA

Existing Zoning	R-6A		
Tax Map	CBL: 146 C005 001		
Existing Use	Special Needs Independent Living Units and Intermediate Care units		
Proposed Use	Independent Senior Housing		
Parcel Size	181,100 SF (4.16 acres)		
Number of Units to be Demolished	Two single family and a two-family home already demolished	Proposing to demolish the 2 single family for a total of 4 units	Housing Replacement Ordinance is applicable
Number of Affordable Units	Existing units- 70 are HUD supported housing and 36 market rate.	The proposed units will be market rate.	
	Existing	Proposed	Total
Residential Data	160 dwelling units in the existing building, three residential homes, one of which is vacant.	55 dwelling units	215
Proposed Bedroom Mix		52 One bedroom 4 – Two bedroom	52 One bedroom 4 – Two bedroom
Building Footprint	31,181 SF	21,777 SF	52,958 SF
Building Floor Area	172,567 SF	94,236 SF	266,803 SF
Building Heights	65 along Stevens	43.9' Arbor and Forest 55.9 Stevens/Arbor/ Courtyard 58.9 Forest Ave Corner	
Impervious Surface Area	3.22 AC	3.05 AC	5.05 AC
Parking Spaces	91	55	146 (37 in the garage)
Bicycle Parking Spaces	None	8	8
Condominium Ownership	The property is held within condominium entities, but the individual residential units and special needs independent units are not condominiums.		
Estimated Cost of Project	\$18 Million (Bath Saving Institution)		
Uses in Vicinity	Mixed commercial uses along Arbor Street, across the street on Stevens Avenue is the Maine State Armory and University of New England, on Poland Street there are residential use as well as offices, commercial uses along Forest Avenue.		

IV. EXISTING CONDITIONS/BACKGROUND

a. Background

The applicant, Park Danforth, is an elderly residential housing entity that has roots in the City for over 130 years and is a not-for-profit corporation. Park Danforth originally was located at the corner of Park and Danforth Streets, hence the name Park Danforth, and it was a “Mercantile Home for Aged Men”. Due to financial pressures, Danforth sold its property to 75 State Street and moved to their current location at 777 Stevens Avenue in 1985 with seventy (70) HUD supported apartments and thirty-six (36) market rate residential apartments for the elderly. The facility expanded again in 1999 to provide eighteen (18) new apartments and thirty-six (36) Assisted Living studios. Currently the building consists of 124 apartments and 36 Assisted Living studios.

The assisted living units at Park Danforth were developed as a special needs independent living units, which are a permitted use in the R-6 zone. It is defined in R-6 as follows:

Special needs independent living units, provided that building housing special needs independent living units shall not house other types of residential or other permitted uses. The owner of a special needs independent living unit building shall file in the Cumberland County Registry of Deeds a statement under oath that the building is a special needs independent living unit building and that any future change of use to a permitted residential use shall require a change in use review by the City of Portland and a decrease in the number of units in the building in accordance with the Portland City Code, chapter 14. The owner shall file proof of such recording with the building inspections division prior to the issuance of any certificates of occupancy for the new uses.

The special needs independent living units (SNILU) are subject to the dimensional standards of the R-6 zone. The density provision does allow for a greater density for SNILUs as follows:

- a. Minimum area per dwelling unit: *One thousand (1,000) square feet per dwelling unit; and in the case of building additions and new construction, one thousand two hundred (1,200) square feet for each dwelling unit after the first three (3) units. This requirement may be reduced by up to twenty (20) percent for a special needs independent living unit.*

The proposed development is for market rate independent living units and is not proposed as a SNILU; thus the 20% density bonus would not apply.

b. Existing Conditions

The city block contains the existing Park Danforth building and associated parking, the Goodwill retail store on Forest Avenue, and three residential houses on Arbor Street. Park Danforth now owns all the property within this block. The Goodwill site is almost all impervious area (about 95%) with two buildings and paved parking on a lot area of 60,798 SF (1.40 acres).

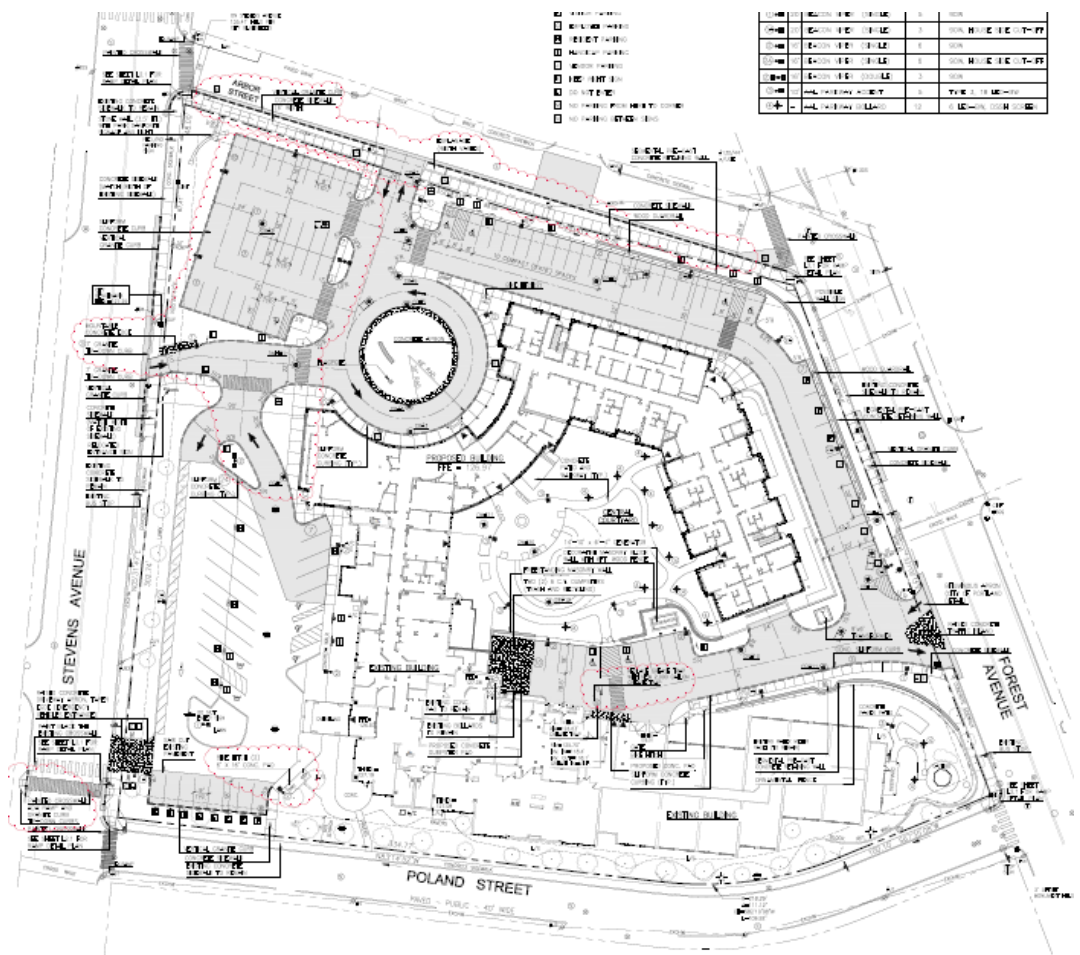


IV. PROPOSED DEVELOPMENT

The Park Danforth site has a total land area 181,100 SF or 4.16 acres. The proposal is to expand their current campus to provide for “independent elderly housing” for a younger aging population. This includes people that do not need assistance with daily living but would like to be in an interactive senior community with amenities and services. The main population being targeted is 75 years of age and older. According to the applicant’s submission, the plan consists of open spaces, addresses street presence, and provides for pedestrian and vehicular circulation and safety. The campus will include two interior court yard gardens and a central courtyard between the buildings to provide safe and functional open space for the residents. Other site improvements include landscaping and site features such as a retaining wall and fencing.

The applicant is proposing four driveways to this site, which includes the reconfiguration of the two Stevens Avenue curb cuts. The driveway closest to Poland Street will become a one-way entrance with a textured concrete surface and signage indicating that this is an emergency entrance only. The second curb cut is redesigned as one-way in only, which will lead to the new main entrance for the Park Danforth. The pavement width will be 11 feet with a mountable area on the site (not within the sidewalk) that offers adequate emergency access. The curb cut proposed on Arbor Street is a two-way curb cut, which will provide access to Stevens and Forest Avenues. The access drive on Forest Avenue is a right-in and right-out only with a raised island and provides access for the service area functions. Currently, the total site has 8 curb cuts, which served Goodwill and the residential properties along Arbor Street. Thus, the applicant is seeking a waiver from the technical standard of having a maximum of 2 curb cuts for a commercial site to allow the four curb cuts.

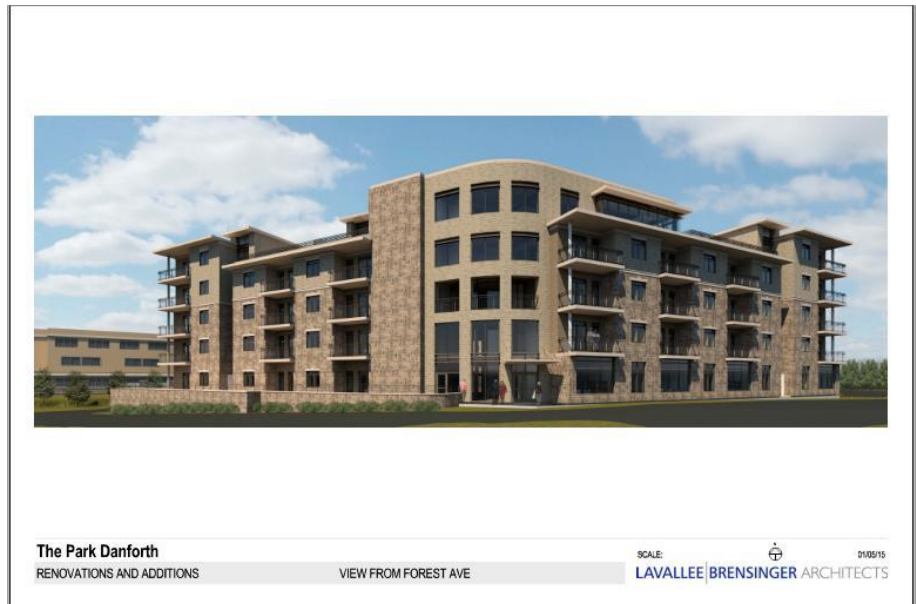
The site plan (below) was revised on February 5, 2015 to address staff comments from Tom Errico, David Margolis-Pineo, Bruce Hyman, and Captain Keith Gautreau. The plan modifies the staff and visitor parking near the intersection of Stevens and Arbor, relocates the Arbor Street sidewalk away from the curb edge thereby eliminating pole obstructions, creates the one-way in access drive from Stevens Avenue, and provides a handicap ramp on the opposite side of Stevens Avenue for a crosswalk. The revised plan is in the packet, but the other plans do not reflect the latest change.



The existing main building on the Park Danforth campus consists of a seven-story building along Stevens Avenue and a three-story building along Poland Street. Along with the newly acquired parcels, Park Danforth wants to build a new structure along Arbor Street and Forest Avenue. The new building will contain one level of underground parking for thirty-eight (37) cars and fifty-five (55) new “Independent Living” units on the upper four floors. The total building area will be about 64,000 SF, not including the parking level. The highest point of the building height is proposed at approximately 60 feet.



The building will be four-stories along Forest Avenue and Arbor Streets with a five-story element at the corner. The interior of the building facing the existing Park Danforth building will be five-stories. A single story building is proposed to connect the existing seven-story building with the new building at the new turn-around. This connector will serve as the main entrance to the building. It will also have an auditorium that has 107 seats, as well as a solarium, piano room, and a media room. Near the entrance will be a farmer’s porch. The campus will also have two interior courtyards, as well as a central courtyard located between the two buildings. Please refer to architectural plans and the site plan for more details of the campus.



The first floor of the existing building will be converted to a *Main Street* that will have services which include a boutique, ice cream parlor, bistro, and wellness center. This work to be done in the existing facility is independent of the proposed site plan application and will be done at a later date through the building permit process.

V. PUBLIC COMMENT

As of the writing of this report, no public comments have been submitted. The applicant held a neighborhood meeting (Applicant’s submission, Attachment S).

VI. RIGHT, TITLE AND INTEREST AND FINANCIAL/TECHNICAL CAPACITY

The existing ownership of The Park Danforth property is within a condominium form of ownership. The ownership makeup including the new addition has not been determined. The applicant has provided a copy of warranty deed, quitclaim deeds, statutory warranty deed, and purchase and sale agreement recorded at the Cumberland County Registry of Deeds (Please see Attachment D for the Book and Page) which demonstrates their right, title and interest in the property. According to the applicant's clarifying submission on January 6, 2015, the existing condominium and non-condominium ownership of recently acquired parcels as below. The ownership makeup including the new addition has not been determined:

1. 777 Stevens Avenue (current facility) is a three unit condominium; two units are owned by Home for the Aged and the other is owned by HFA HUD Properties, LLC (HFA HUD Properties, LLC is wholly owned by Home for the Aged).
2. The Goodwill parcel is owned by HFA Forest Avenue Properties, LLC (wholly owned by the Home for the Aged). Map 146-C-lots 6, 9, 11, 12, 14.
3. The Arbor Street and Stevens Avenue (residential) parcels or owned by Home for the Aged. Map 146-c-lots 8-7.

The estimated cost of the development is \$ 18 Million. The applicant has submitted a letter from Bath Savings Institution, dated June 18, 2014, as demonstration of their financial and technical capacity to complete the proposed development.

VII. ZONING ASSESSMENT

Ann Machado, Zoning Specialist, has reviewed the site plan application and found it to be in compliance with the R-6A zone. The development meets the dimensional standards. Her reviews are as follows:

November 5, 2014

- This property is located in the R-6A residential zone.
- The proposed addition of 54 independent dwelling units is a permitted use in the zone.
- The front, rear, and side setbacks are all being met for the proposed building.
- The minimum lot size of 4 acres is being met.
- The maximum lot coverage of 40% is being met.
- The open space ration of 20% is being met.
- 93 parking spaces are required for the existing and proposed buildings (39 for existing building & 54 for new building). 151 spaces are being provided.
- The minimum area per dwelling unit requirement is being met. For the 124 existing SNILUs , 99,200 sf of land area is required. For the 36 Intermediate Care units, 8,350 sf of land area is required. For the 54 independent units, 64,220 sf of land area is required. The total land area required for all the units is 171,750 sf. The lot is 181,100 sf.
- I need more information on the height of the building. I need to know what the average grade is for the building. The elevation drawings show the roof at 52' above Level 1. Parts of the roof go above this. I understand that some areas are the stair towers but what is the section above the roof on the Northeast elevation?

February 5, 2015

- Based on the letter submitted by Robert Metcalf on November 25, 2014 and Exhibit A - Average Grade Calculations the new addition is meeting the maximum height requirement of 65'. All other zoning requirements are still being met. See memo dated 11/5/14.

VIII. DEVELOPMENT REVIEW

A. SUBDIVISION PLAT AND RECORDING PLAT REQUIREMENTS (Section 14-496)

The applicant has submitted a recording plat. The final plat will need to be revised to reflect any waivers and conditions of approval that relate to the subdivision plan. Any waivers granted must be recorded at the Registry of Deeds within 90 days of a Planning Board decision. In addition, the applicant is working with Jennifer Thompson, Associate Corporation Counsel, on the appropriate documentation needed on the plat and accompanying declaration or condominium documents for the underlying condominium ownership entities for the existing facility and proposed project. A condition of approval is proposed that the final plat and/or condominium recording plat will be submitted for review and approval by the Planning Authority and Associate Corporation Counsel prior to recording. A condition is also proposed that the declaration and condominium documents be submitted for review and approval by the Associate Corporation Counsel.

B. SUBDIVISION STANDARDS (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. Woodard and Curran, has reviewed the erosion and sediment control plan and finds the proposal to meet city standards with two following revisions to the details (Attachment B):

- The Erosion and Sediment Control Plan (L3.2) should identify an inlet sediment control device on existing CB# 4
- Sheet L6.2 –The Snout detail contains a remnant note stating that “The Snout shall be provided on Proposed Catch Basins #6100, #6101 and #6102”; this note should be deleted.

The staff finds the proposed project in conformance with this standard.

2. *Sufficient Water Available (Section 14-497 (a) 2 and 3)*

The Portland Water District has submitted a letter dated January 5, 2015 (Attachment V), which indicates that the District is able to serve the project. The staff finds the proposed project in conformance with this standard.

3. *Will Not Cause Unreasonable Traffic Congestion (Section 14-497 (a) 5)*

Tom Errico, P.E. Ty Lin has reviewed the proposal and his complete review is listed under the site plan standards. The proposed project is not anticipated to cause unreasonable traffic congestion. The staff finds the proposed project is in conformance with this standard.

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 City of Portland has confirmed that the sewer system has sufficient capacity, December 9, 2014, letter from Mr. Brancely, DPS, (Attachment V). David Senus, P.E. Woodard and Curran, has reviewed the stormwater management plan finds the proposal to meet city standards (Attachment 3). The staff finds the proposal is in conformance with this standard.

5. *Scenic Beauty, Natural, Historic, Habitat and other Resources (Section 14-497 (a) 8)*

The proposal site is not within an historic district and 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. Easements

The applicant is proposing four locations for public access easements to allow a public sidewalk to cross onto the private property. There will also be a CMP easement on the site, which is being finalized with CMP. The staff finds the proposal in conformance with this standard subject to the following conditions of approval:

- The final easement language for the walks must be reviewed and approved by Corporation Counsel.
- The final plat shall depict the utility easement required for CMP.

7. Comprehensive Plan (Section 14-497 (a) 9)

The applicant has submitted their analysis of the projects conformance with the Comprehensive Plan (refer to attachment J). 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.
 - 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;
- 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.

Volume 2 Implementation - Housing Initiatives:

3. New Senior Citizen Housing: A variety of housing opportunities are needed to assist Portland's senior citizens, including subsidized apartments.

(b) Update zoning to encourage neighborhood livability with higher density multi-family and innovative mixed use projects that are along major public transportation routes, near service areas, in redevelopment (underutilized) or infill area, locations near downtown and in business zones.

8. Financial Capability (Section 14-497 (a) 10)

The estimated cost of the development is \$ 18 Million. The applicant has submitted a letter from Bath Savings Institution, dated June 18, 2014, as demonstration of their financial and technical capacity to complete the proposed development.

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 review and comments are listed below.

1. Transportation Standards

a. *Impact on Surrounding Street Systems*

A traffic study prepared by GPCEI was submitted as part of the application, which was reviewed by Tom Errico, P.E. TY Lin. Mr. Errico concurred with the conclusion of the study that the project would not have a significant impact on the transportation capacity of the surrounding street system and does not require a Traffic Movement Permit. The study did identify a high crash intersection at Read and Forest Avenue; however, Mr. Errico is not recommending any action by the applicant.

Mr. Errico's Comments, Feb. 5, 2015 (Attachment 1)

- I have reviewed the traffic study for the project prepared by GPCEI and concur that the project will not have a significant impact on transportation capacity and does not require a Traffic Movement Permit.

Status: No Comment

- The traffic study did identify a High Crash Location at the Forest Avenue/Read Street intersection and I need to further investigate as it relates to this project.

Status: No action is required of the applicant.

b. *Access and Circulation*

The Park Danforth campus is a city block and is surrounded by four streets: Stevens Avenue (main entrance), Forest Avenue, Arbor Street, and Poland Street. The preliminary proposal included 4 curb cuts to the site. The final plan modifies the four curb cuts to address staff comments. The four curb cuts are as follows:

- The curb cut on Stevens near Poland will be for emergency ingress only with textured concrete and signage;
- The second existing curb cut on Stevens Avenue is reconfigured to be a one-way into the main entrance area.
- The Arbor Street curb cut will be for two-way circulation; and
- The Forest Avenue curb cut is a right-in and right-out only.

The preliminary review, staff had recommended that the applicant consider reducing the number of curb cuts further. The proposed number of driveway cuts remains the same; however, the locations and designs have been modified to address staff concerns. Tom Errico, P.E. Ty Lin, supports the redesign of the curb cuts and supports the request for a waiver of the maximum number of curb cuts for a site. Mr. Errico's comments from February 5 are as follows (refer also to Attachment 1):

- The Forest Avenue driveway configuration geometry does not prevent the suggested turn prohibitions and it is suggested that adjustments be incorporated. I would also note that the GPCEI report notes the Stevens Avenue driveway will also have turn prohibitions. The geometry of driveways should reflect conditions that discourage the illegal turn movements.

Status: The plans have been revised and I find it to be acceptable.

- The one-way emergency entrance on Stevens Avenue should be designed such that it discourages general population usage and is supported by the fire department.

Status: The plans have been revised and I find the details to be acceptable.

- The applicant should provide specific importation that supports all proposed driveways, such that a waiver can be issued regarding the number of driveways as it exceeds City standards. The applicant should focus this response on why both the Stevens Avenue and Arbor Street driveways are both required.

Status: Significant coordination has taken place as it relates to providing safe and appropriate access that attempts to meet City Standards. Given motorist characteristics, delivery truck circulation, and emergency access requirements I find the proposed plan (Alternative A – with agreed upon modifications) to be acceptable and therefore I support a waiver from the City's Technical Standards for the number of driveways allowable per site.

On-site pedestrian circulation is proposed to all the main entrances; however, there is no pedestrian pathway from the buildings to Forest Avenue. Pedestrian connections to Forest Avenue were recommended in Caitlin Cameron's review and Mr. Errico's review of the preliminary plan. Bob Metcalf of Mitchell Associates addressed the site constraints to creating a direct access to Forest Avenue, which include the following points:

- There is a significant grade change at this location; there is a retaining wall along Arbor Street and Forest Avenue.
- As discussed previously, stairs at this location leading to Arbor Street is not an option. Due to the population age, stairs are a safety concern that The Park Danforth will not incur.
- There is insufficient area along the Forest Avenue side of the building to provide a sidewalk. The area between the foundation/stone –faced wall and 20 foot wide circulation drive is too narrow. In addition, per Jeff Tarling's request, we are providing landscaping, including green screens on the wall to break up the mass-length and height of the wall.
- The east side of the circulation drive is constrained by the continuation of the Arbor Street retaining wall and the required buffer width along Forest Avenue.
- Residents can access Forest Avenue via the walkway along the Arbor Street, north side, of the building that leads to the new sidewalk along Arbor Street.

The applicant has also provided a sidewalk along the service drive to Forest Avenue, which may be accessed from the internal courtyard, which serves all the buildings. Mr. Errico and the planning staff find the applicant's explanation addresses the hardship of meeting this objective and the plan does provide access to the Arbor Street sidewalk where the grades are not an issue. Mr. Errico's review comment is as follows:

- Pedestrian facility connections between the site and the public sidewalk system, particularly Forest Avenue should be clearly noted and provided.

Status: The applicant has indicated that site conditions, particularly the provision of a retaining wall, prevent the construction of a sidewalk that makes a direct connection to the Forest Avenue/Arbor Street corner. The applicant has indicated that a ramping system would result in the loss of the parallel parking spaces fronting Forest Avenue and given parking needs this is not an acceptable outcome. The applicant has indicated that there are two pedestrian routes to Forest Avenue, one via the Arbor Street driveway and one from

the Central Garden Area to the Forest Avenue driveway. Given the noted constraints and reasonable connectivity, I find conditions to be acceptable.

David Margolis-Pineo, Deputy Engineer with the Department of Public Services has reviewed the site plans and has requested that the applicant install a concrete sidewalk with granite curb on Arbor Street and all four street corners of the block will be constructed with sidewalks ramps that are ADA compliant. The applicant had proposed putting the sidewalk along the curb line in order to have more green space along the property line for landscaping, which had been suggested by Jeff Tarling, City Arborist. This design was hampered by existing power poles that became obstructions in the sidewalk. The plan has been revised to provide an esplanade and public access easements are offered at the corners where the sidewalk crosses onto private property. David Margolis' review of the sidewalk is below and his review was prepared prior to this latest revision, which addresses his concerns. Mr. Margolis-Pineo's review regarding the public improvements in the right-of-way (original comments and update) is as follows.

1. All proposed stormwater drainage shall be directed to Forest Ave and Read St unless demonstrated not feasible.
Drawing L4.0 revised 11-25-14 now shows an acceptable drainage plan. Plan is now stamped by a PE.
2. The intersection of Forest Ave and Read Street is under a five year street moratorium until August 26, 2016.
No comment required
3. Stormwater manholes do not have three foot sumps. Please provide correct detail on Sheet L6.2.
Detail now reflects a three foot sump.
4. Applicant is proposing the installation of a grease interceptor. Sizing of this interceptor shall be determined and stated on the plans prior to final approval. Please contact Frank Brancely at 874-8832.
Applicant now shows the installation of a 2,000 gallon grease interceptor.
5. Provide a General Note on plans stating that "All proposed construction within the City street right of way shall meet City of Portland Design Manual standards." It appears some of the plan details do not reflect City Design Manual standards. Applicant may wish to cut and paste Design Manual detail to plan set to avoid construction confusion.
Note has been provided.
6. All plans are to be stamped by a professional engineer, except the survey plan which is to be stamp by a registered land surveyor.
Drawings have now been stamped.
7. Applicant shall install a concrete sidewalk with granite curb on Arbor St. Back of sidewalk shall be placed on the road right of way.
The applicant has chosen not to follow the City's Technical Manual for local roadway design. The applicant is making an argument for placing the sidewalk along the curb line and not along the street right of way of Arbor Street as required. This design would require a waiver that is not supported by staff.

9. The applicant is proposing a raised concrete island within the right of way of the Forest Ave driveway cut. A license agreement is required between the City and the applicant stipulating that many required maintenance of said island is the responsibility of the applicant.

Two conditions of approval are proposed: 1) that required the plans be revised to be consistent with the latest site plan and that the plans shall be reviewed and approved by DPS and the

Planning Authority prior to the issuance of a building permit; and 2) that a license be secured with the City Council for the raised island outlining the long-term maintenance by the applicant prior to the issuance of a building permit.

There are two main crosswalks on Forest Avenue and Stevens Avenue and the crosswalk on Stevens Avenue serves a bus stop. As part of this project, it is recommended that the crosswalk be upgraded to meet ADA standards. Bruce Hyman, Transportation Program Manager, reviewed the plans and his comments are included as Attachment 7. The crosswalk on both sides of Stevens Avenue is now shown as being upgraded for handicap accessibility on the most recently revised site plan. Mr. Hyman has not had the opportunity to review the plan and the design details will need to be updated to correspond with the proposed change. The staff is recommending that the final plans be reviewed and approved by DPS and Planning Authority for compliance with handicap accessibility standards.

c. Public Transit Access

The Park Danforth is on the Metro Line Route #2 and 3. The applicant met with METRO and submitted a letter from Glenn Fenton dated Feb. 3, 2015 was submitted. METRO has approved the relocation of the bus stop closer to the emergency access drive on Stevens Avenue. Currently, it is not on the list for a bus shelter. They have asked the applicant to study the possibility of adding an 8 foot wide pad at both Stevens and Forest to allow for a 5' by 8' area for ADA accessibility. The Forest Avenue bus stop adjoining the property is a location where METRO would like to have a shelter, but there is insufficient space due to the retaining wall. METRO requested that the applicant investigate the possibility of installing a bench and/or trash receptacle. Mr. Errico recommends the following as a condition of approval:

Based upon coordination with METRO, the applicant indicates that the placement of a bus shelter on Forest Avenue is not feasible given site constraints and shelter dimensional requirements. The applicant has indicated that they will be coordinating with METRO on installation of other bus stop amenities (e.g. bench, trash receptacle) and I would suggest that a condition of approval should be included.

d. Parking

As part of the project, there will be one hundred and forty-seven (147) new parking spaces being proposed. Thirty-eight (37) of these spaces will be in the garage under the new proposed building. There are ninety-one (91) existing parking spaces. The Zoning Ordinance requires fifty-five (55) spaces for the new building (one space per unit) and ninety-three (94) for the whole site, so the proposal exceeds the minimum required by zoning. According to the traffic study the applicant submitted, there is a need for a parking ratio of 0.55 parking spaces per unit. The applicant is proposing to provide a ratio of 1.0 space per new unit. The applicant has discussed the staffing and visitor parking needs for the facility, so the staff supports the number of parking space proposed. The staff surface parking lot at the corner of Stevens Avenue and Arbor Street will be compact spaces, which is supported by Mr. Errico. The rest of the parking spaces are standard spaces. The applicant has sought a waiver of some of the aisle widths, which is also supported by Mr. Errico:

- I support the proposed compact parking spaces and support a waiver from the City's dimensional standards for compact spaces.

Status: No comment needed.

- Several parking aisle widths do not meet City standards. The applicant should provide supporting waiver documentation for all substandard conditions.

Status: The applicant has provided documentation onsite parking needs and vehicles circulation and I support a waiver from the City's Technical Standards. I have no further comment.

Bicycle Parking

The applicant is proposing eight bicycle spaces; four of the spaces are located approximately 40 feet from the entrance of the new building and two are in the parking garage. The zoning ordinance requires two bicycle parking spaces for every five dwelling units. Therefore twenty-two spaces are required for the 55 unit building. The applicant has requested a waiver to have the required bicycle parking spaces to be reduced to eight spaces because their resident population is elderly and will not use the required amount. The City reviewers (Planning, Mr. Hyman, and Mr. Errico) recommend granting the request to reduce the number of required bicycle spaces to 8 for this elderly housing proposal meets the waiver criteria:

Waiver: The reviewing authority may reduce the required number of bicycle parking spaces if it is determined, based on evidence submitted by the applicant, that the proposed development is expected to generate reduced demand for bicycle parking due to characteristics or uses such as elderly or disabled persons housing or industrial uses located in outlying areas.

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 applicant is requesting a waiver on the street tree provision of the site plan review ordinance because according to the applicant, there cannot place all the required trees on the site. There are a total of fifty-four (5) new units; therefore 55 street trees will need to be planted. The applicant is requesting a waiver of 26 trees and will contribute to the contribution of street tree fund. The Planning Staff supports the waiver request to fulfill the standard.

Jeff Tarling, City Arborist, review is as follows:

In review of the latest landscape plan for the proposed Park Danforth Project I would like to offer the following 'review & comments', and conditions:

a) Overall Landscape Plan - The proposed landscape plan blends the existing project landscape feel into the new project. The plan does lack landscape treatment on the parking lot on the Northeast side of the building on the Arbor Street & Forest Avenue side. Knowing the 'health & well-being' values of looking out onto a 'green' landscape given the intended use of the site, adjusting the building / parking lot siting should have been a paramount in the overall project design. It appears that even a 10' shift inward toward the courtyard could have reaped benefit for the paved side of the project. There is much new information on the importance of 'greening for health' that has not yet been added to our Planning Review but should be considered. See:

<http://www.naturewithin.info/policy.html>

<http://www.bostonfed.org/commdev/c&b/2014/winter/greening-the-city-for-health.htm>

b) Tree & Landscape Conditions - The following review comments & suggested improvements should be a condition of approval:

1) Tree types & sizes - There are a number of ornamental trees listed at the minimum standard size of 1.75" caliper; these should be upgraded to 2" size minimum in ALL cases due to the scale of the project. The row of Cornus Kousa Dogwoods located along the walkway between the parking lots should be upgraded to a shade tree type to help shade / cool the parking lot. There are many tree types available that will add shade to this area, Ginkgo perhaps, - this should be a condition.

Ideally, a more upright form of crabapple could be used along Forest Avenue such as M. 'Adirondack' which would be less likely to be in the way of parked cars & sidewalk in the future. Lindens - suggestion 'do not use Lindens', while they are already some on site. the problematic conditions from 'sooty-mold' / aphid problems - sap on cars and staining anything in the area thus should be changed to either a Red Maple cultivar such as 'Karpick', 'Bowhall', or 'Redpointe' Red Maple or Swamp White Oak.

2) Shrub Planting sizes - Every effort should be made to upsize the shrub planting sizes due to the scale of the project. The majority of the #3 gallon plants are just too small for this type of project. In most cases #5 gallon plants should be considered the minimum sizes. The proposed plants are more 'residential scale' vs a large complex as proposed.

3) Interior Courtyard - detailed landscape facts are missing. The plan notes " 'GARDEN PLANTINGS –TYPICAL SMALL FLOWERING TREES, FRAGRANT & FLOWERING SHRUBS & PERENNIALS', details on the Gazebo garden are also needed.

This important area does need a more enhanced greening effort, unknown at the time of this review. Edible landscape features, perhaps a few handicap accessible raised bed for therapeutic gardening should be considered for residents. This could be added on either side of the walk, the lawn side. Having space for residents to interact with the landscape is an extremely important landscape item for this area. Plantings that include pollinator gardens or landscape plants that help attract birds would also be a nice feature. Condition would include more details on the Courtyard, include row spaces for residents be it edible or ornamental in nature.

4) Arbor Street Edge - The project should show landscape treatment between the back edge of sidewalk and the property line. I would urge all parties that it would be acceptable to have landscape plantings or lawn included for this space within the city right of way.

c. Water Quality, Storm Water Management and Erosion Control

The total existing Park Danforth site includes 2.56 acres of land that is occupied by the existing elderly housing and associated pavement/ parking. The existing Goodwill and the three house lots are 1.60 acres. The majority of the stormwater runoff generated by the site will be treated by a stormwater infiltration system. A portion of the property will continue to be accommodated by the existing stormwater infrastructure.

The project will disturb and reconstruct more than one acre of land so a Department of Environmental Protection (DEP) stormwater Permit-by-Rule will be required, which the City has delegated review authority to grant. The stormwater plans also must comply with Chapter 500 of the City's Technical Standards. David Senus of Woodard and Curran, Consulting Engineer, has reviewed the stormwater management plan. The plans were revised to address David Senus' preliminary review comments and the revised plans are in conformance with the applicable site plan and technical standards. Mr. Senus' final review is as follows (see Attachment 3):

- 1) The Erosion and Sediment Control Plan (L3.2) should identify an inlet sediment control device on existing CB# 4.

- 2) Sheet L6.2 –The Snout detail contains a remnant note stating that “The Snout shall be provided on Proposed Catch Basins #6100, #6101 and #6102”; this note should be deleted.
- 3) All previous review comments have been adequately addressed.

3. Public Infrastructure and Community Safety Standards

a. *Public Safety and Fire Prevention*

The driveway on Stevens Avenue, near Poland Street, will be ingress only and used for emergency vehicles only. The site plan shows an “Emergency Vehicles Only” sign being posted at this curb cut. Mr. Metcalf met with the Fire Department to discuss the proposed layout. Assistant Chief Keith Gautreau noted that last year there were 151 calls for emergency assistance at the facility due to the age of the resident population. The proposed emergency entrance to the facility is acceptable to the Department. The revised plans are intended to address the Fire Departments comments about the second Stevens Avenue entrance and on-site circulation and Mr. Gautreau supported those revisions in his e-mail (see attachment 6). The staff are recommending that the final plans be reviewed and approved by the Fire Department prior to the issuance of a building permit.

b. *Availability and Adequate Capacity of Public Utilities*

Water/ Sanitary Sewer/ Natural Gas:

The project will be served by the existing utility services located in Forest Avenue and Arbor Street. Water is available from an existing 12 inch water main located in Arbor Street. This will supply both fire suppression and domestic service. The proposed service connections include a 4 inch and 8 inch for domestic water and fire service, respectively. The sanitary sewer will also be supplied by an existing 10 inch sewer main in Arbor Street. The connection will be a 6 inch line, approximately in the same location as the existing one. Natural gas will be supplied by an existing line in Arbor Street. The applicant has submitted letters from Portland Water District and from the City’s Sewer Division that the utilities have the capacity to serve. Mr. Senus and Mr. Margolis’ have provided a few technical design comments regarding the infrastructure, which is included above.

Electricity/ Telephone/ Cable TV:

The site plan shows a new utility pole that will be above ground near the service entrance and the electrical service shall be underground from that pole. The applicant has requested a waiver of the underground utilities to allow the installation of the one pole. Telephone and cable TV will also be connected via the same route as the electricity connection. According to the applicant’s request, there is insufficient space for an additional riser on the existing pole on Forest Avenue and the pole is required in order to put the power underground to feed the transformer and communication pedestals. The applicant has provided sufficient evidence that this is unique situation and it would be a hardship to meet the city standards. The staff recommends granting the waiver.

Waste Management:

All residential development of 20 units or more will provide for the temporary storage and removal of all trash and recyclable materials. All exterior storage of trash and recyclables will need to be screened from view from public sidewalks, streets and adjacent properties. The waste management plan for the site will remain as it is currently handled (see applicant’s submission, Mr. Metacalf response January 6th, Attachment V). The submitted plan meets the site plan standard.

4. Site Design Standards

a. *Snow and Ice Loading*

The applicant intends to contract for snow removal for large storm events that exceed three inches or as needed. According to the applicant, there are limited areas along the perimeter of the site that will be used as snow storage area. Mr. Margolis-Pineo's review comments are as follows:

8. The applicant shall explain how snow removal will be handled.

With the absence of snow storage shown on the plans, it is understood that the applicant intends to have snow removed from the site. The applicant has acknowledged that snow will be removed from the site.

The applicant intends to put this work out to bid, so a proposed condition of approval is that an executed contract be provided prior to the issuance of a Certificate of Occupancy.

b. *Exterior Lighting*

The photometric plan meets the city's technical standards and the parking lot fixtures are full cut off fixtures. The light fixtures and bollards proposed for the interior courtyard are not full cutoff fixtures. The applicant's request for a waiver is below and the staff supports the request.

The applicant is requesting a waiver from the Technical Design Standards, Section 12 Site Lighting; for the decorative pole mounted and bollard light fixtures to be located in the center Garden Court Yard. The pole mounted and bollard fixtures are LED fixtures that are not full cut off units. The court yard is completely surrounded by building and will not be visible from any street or abutting property. The fixtures were selected for their scale and quality of design that fits with the overall design intent of the court yard.

c. *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.

d. *Signage and Wayfinding*

With the most recent change in the site plan to address staff comments, the staff recommends that the final signage and wayfinding be reviewed and approved by the Planning Authority.

e. *Zoning Related Design Standards*

A design review was completed for the proposed multi-family dwelling project against the standards of *City of Portland Design Manual*. The site plan and architectural renderings were reviewed by Caitlin Cameron, Urban Designer and the initial review included Nell Donaldson and Shukria Wiar. The project was reviewed against the *Two-family, Special Needs Independent Living Units, Multiple-family, Lodging Houses, Bed and Breakfasts, and Emergency Shelters Standards* (Section (i) of the Design Manual). The design review comments from Feb. 4, 2015 are as follows:

Standard 1 – The neighboring residential context is most directly impacted by the existing building. In the case of the new addition, the surrounding context tends to be more

commercial and institutional in use and character. Additionally, the neighboring residential context is most often single-family or other small-scale buildings. Therefore, the multi-family, large-scale building proposed is not the same type of residential project and is therefore not able to have the same character. The project uses a mix of building materials which, in combination with the fenestration, the balconies, the varying forms and roof lines, and the strongly articulated cornice elements, provide positive visual interest as stipulated in the Standard.

Standard 2 – The surrounding context is varied with regards to building types and relationship to the street. Although it is preferable for new construction to be built nearer the street than is proposed, we observed that quite a few buildings, especially on Forest Avenue do have front yard parking. Additionally, the setback from the streets does provide for more privacy from the busy streets for the residents. See comments below regarding landscaping and screening.

The project is very vehicle-oriented and does not easily accommodate pedestrian circulation through the site or to and from the sidewalks. The pedestrian access to the street/sidewalk is not direct and residents coming and going from the building entrances would not be able to access the public right-of-way on foot in direct ways. The design of the sidewalk itself should be adjusted – the sidewalk path should be shifted towards the property line to allow for a furnishing zone between the curb and sidewalk. This adjustment will accommodate utility and sign poles at the curb and make for a clear and unobstructed pedestrian path.

Standard 3 – The project provides a courtyard space and screening and landscaping elements as required by the Standard.

Standard 4 – Overall the project has a high level of fenestration and the provision of balconies also contributes to residents' access to light and air.

Standard 5 – The current design does provide screening between the parking and the street. Overall, the design review panel felt there is an imbalance between the amount of hardscape and landscape. There are additional opportunities for landscaping to mitigate the impact of the parking/drive aisles from the street and especially to improve the pedestrian experience.

Standard 6 – Not Applicable

As noted above, the site plan has been revised and now adequately addresses the comment of moving the Arbor Street sidewalk back to the edge of the right-of-way, which is a comment that was shared in this design review, by DPS, and Mr. Errico. In addition, the reviewers have sought a more direct pedestrian connection to the Forest Avenue sidewalk. Please refer to the discussion in XXXX. The applicant has incorporated connections to the other sidewalks and provided a sidewalk along the service drive to Forest Avenue. They have also provided evidence that the direct connection is not feasible. The City staff and reviewers are satisfied with the design as presented.

IX. Housing Preservation and Replacement (Section 14-483)

The purpose of this section is as follows:

1. To promote and facilitate an adequate supply of housing, particularly affordable housing for all economic groups;

2. To limit the net loss of housing units in the city;
3. To preserve housing in zones where housing is permitted for in the city for all residents in order to promote the health, safety and welfare of its citizens.

In order to construct this development, two single-family homes and a two-family home were purchased. The applicant sought the required permits to demolish the two-family structure, which did not trigger this ordinance provision at that time. It was razed in 2013. The demolition of the two single-family homes, as well the two-family building (the loss of three or more units in less than five (5) years) triggers housing replacement regulations. According to Section 14-483 (c) *Applicability*, that states:

Except as otherwise provided in this section, this section shall apply to the loss of three or more dwelling units in a five year period, provided that such dwelling units were a legally registered residential use as of July 1, 2002.

The applicant will need to submit documentation for all four units that meets the standards of this section. The applicant is fulfilling the housing replacement requirements by building new units on the site and the proposed replacement housing meets the following criteria:

Replacement units built pursuant to sub-section (g)(1) or (2) above shall:

1. Be located within the City of Portland
2. Not previously have been on the market as of the date of application.
3. Be situated within a development which has not been a candidate for site plan approval as of the date of the application.
4. Be comparable in size to the units replaced; for the purpose of this section, “comparable in size” means that the aggregate size of the replacement units will be no less than 80% of the size of the aggregate of the original units.

Section 14-483 (j), requires the applicant to post a performance guarantee for the units that is equivalent to the amount the applicant would have paid into the City’s Housing Trust Fund prior to the release of any demolition or building permits. As noted in the applicant’s submission, they are aware of the requirement to post a guarantee for the four units, which can be released upon the completion of the project.

X. PROPOSED MOTIONS

Waivers

On the basis of the application (2014-202) plans, reports and other information submitted by the applicant, findings, recommendations, contained in the Planning Board Report for The Park Danforth site plan and subdivision (application 2014-202), including but not limited to Section VIII Technical Waivers, of 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, the Planning Board finds the following:

1. Bicycle Parking:

The Planning Board (**finds/does not find**) that the applicant has demonstrated that the resident population will be elderly and the applicant seeks to reduce the required number of bicycle parking spaces from 22 to 8 on-site, and that the Planning Board (finds/ does not find) the request does comply with the applicable waiver standard of *Sec. 14-526 (a) (b) Location and Required Number of Bicycle Parking Spaces (ii) Waiver*, and the Planning Board (**grants/does not grant**) the waiver to reduce the bicycle spaces to 8.

2. *Street Trees*

The Planning Board (***finds/does not find***) that the applicant has demonstrated that due to site constraints preventing the planting of required street trees in the right of way, the requirements of Section 14-526(2)(b)(iii) of the Site Plan Ordinance cannot be met; and the Board (***finds/does not find***) that the applicant has satisfied the waiver criteria set out in Section 14-526(2)(b)(iii)(b) with the monetary contribution to the tree fund of \$200 per tree for 26 trees for a total of \$5,200. The Planning Board therefore (***waives/does not waive***) Section 14-526 (b)(2)(b)(iii) Street Trees of the Site Plan Ordinance.

3. *Driveway Location*

The Planning Board (***finds/does not find***) that the applicant has demonstrated that extraordinary conditions unique to this property exist including that the existing driveway location on Forest Avenue cannot be relocated to meet the street separation standard of 125 feet contained in the Technical Manual and Mr. Errico has found that the separation of 70 feet is safe with the right-in and right-out change to the driveway; and the Board (***finds/does not find***) that the public interest and purposes of the land development plan are secured. The Planning Board therefore (***waives/does not waive***) Technical Manual 1.7.2.7 Driveway Location to allow the 70 foot separation.

4. *Number of Driveways*

The Planning Board (***finds/does not find***) that the applicant has demonstrated that extraordinary conditions unique to this property exist, including the demand for emergency services for the elder population that needs two access points off Stevens Avenue, the Forest Avenue curb cut provides access to the service areas for the entire campus and the Arbor Street curb cut provides two-way traffic and that Mr. Errico has found significant coordination has taken place as it relates to providing safe and appropriate access that attempts to meet City Standards, given motorist characteristics, delivery truck circulation, and emergency access requirements. Mr. Errico supports a waiver from the City's Technical Standards for the number of driveways allowable per site. The Board (***finds/does not find***) that the public interest and purposes of the land development plan are secured and therefore (***waives/does not waive***) Technical Manual 1.7.2.8. *Number of driveways* to allow four curb cuts to allow an emergency access only on Stevens Avenue near Poland, a one-way in curb cut on Stevens Avenue to serve the main entrance, a right-in and right-out only on Forest Avenue and two-way curb cut on Arbor Street.

5. *Aisle Width*

The Planning Board (***finds/does not find***) that the applicant has demonstrated that extraordinary conditions unique to this property exist that limit the ability to meet the aisle width standard of 24 feet and Mr. Errico has found that the proposed aisle widths provide safe on-site circulation; and the Board (***finds/does not find***) that the public interest and purposes of the land development plan are secured. The Planning Board therefore (***waives/does not waive***) Technical Manual 1.7.2.3. Minimum driveway width (two-way) to allow a 22 foot along Arbor Street and 20 feet along Forest Avenue.

6. *Underground Utilities*

The Planning Board (***finds/does not find***) that the applicant has demonstrated that there insufficient space for an additional riser on the existing pole on Forest Avenue and the pole is required in order to put the power underground to feed the transformer and communication pedestals, and the Board (***finds/does not find***) that the public interest and purposes of the land development plan are secured. The Planning Board therefore (***waives/does not waive***) Section 14-499, Required Improvements, Subdivision Ordinance, (h), which requires All utility lines shall be placed underground, unless otherwise approved by the Planning Board, so that one utility pole may be installed.

7. *Site Lighting*

The Planning Board (***finds/does not find***) that the applicant has demonstrated that extraordinary conditions

unique to this property exist with the internal courtyard and due to the need for a safe and well-lit area for the residents, and the Board **(finds/does not find)** that the public interest and purposes of the land development plan are secured. The Planning Board therefore **(waives/does not waive)** Technical Manual 12.2.6 Luminaire Types to allow light pole fixtures and bollards in the courtyard only that are not full cut-off fixtures.

Subdivision Plat

On the basis of the application (2014-202), plans, reports, and other information submitted by the applicant, findings and recommendations contained in Planning Board Report for application 2014-202 relevant to the Subdivision Ordinance, the MaineDEP Chapter 500 Stormwater Management Standards relative to Stormwater Permits under delegated review, 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 plat and/or condominium plat, along with accompanying condominium documents, shall be submitted for review and approval by the Planning Authority, Department of Public Services, and Associate Corporation Counsel prior to recording.
2. The final sidewalk easements to provide public access shall be reviewed and approved by Corporation Counsel.
3. The recording plat shall depict the utility easement required for Central Maine Power.
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.

Level III Site Plan

On the basis of the application (2014-202), plans, reports, and other information submitted by the applicant, findings and recommendations contained in Planning Board Report for application 2014-202 relevant to the Site Plan Ordinance, the MaineDEP Chapter 500 Stormwater Management Standards relative to Stormwater Permits under delegated review, the Preservation of Housing, 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 site plan standards and all other applicable provisions of the land use code, subject to the following conditions;

1. The proposed housing development meets the criteria of the Preservation of Housing Ordinance subject to submitting the documentation required in Section 14-483 and posting a performance guarantee prior to the issuance of a demolition or building permit.
2. The accompanying plans for the site plan shall be revised to reflect the changes contained in the overall site plan, including the plans for the fully ADA compliant crosswalk and ramps, and the plans shall be reviewed and approved by DPS, Fire, Traffic, and Planning prior to the issuance of a building permit.
3. The Erosion and Sediment Control Plan (L3.2) shall be revised to identify an inlet sediment control device on existing CB# 4.
4. The note on the Snout detail shown on Sheet L6.2 which states "The Snout shall be provided on

Proposed Catch Basins #6100, #6101 and #6102”; shall be deleted from the revised plans.

5. The applicant shall obtain a license agreement with the City Council, which articulates the maintenance requirements of the applicant for the raised island in the curb cut on Forest Avenue prior to the issuance of building permit.
6. The applicant shall submit an executed contract for snow removal prior to the issuance of a Certificate of Occupancy.
7. The Landscape Plan shall be revised for review and approval by the City Arborist, which address Jeff Tarling, City Arborist’s Feb. 6th review as follows:
 - Tree types & sizes - The minimum tree size shall be 2" caliper. Substitutions of tree types are recommended including shade trees for the parking lots, upright crab apples along Forest Avenue, and substitutions for the proposed Lindens.
 - Shrub Planting sizes - Every effort should be made to upsize the shrub planting sizes due to the scale of the project. The majority of the #3 gallon plants are just too small for this type of project. In most cases #5 gallon plants should be considered the minimum sizes. The proposed plants are more 'residential scale' vs a large complex as proposed.
 - Interior Courtyard - The final plans for the interior court should be submitted for final review and approval. The plan notes" 'GARDEN PLANTINGS –TYPICAL SMALL FLOWERING TREES, FRAGRANT & FLOWERING SHRUBS & PERENNIALS', details on the Gazebo garden are also needed.
- 4) Arbor Street Edge - The project should show landscape treatment between the back edge of sidewalk and the property line. It would be acceptable to have landscape plantings or lawn included for this space within the city right of way.
8. The final signage and wayfinding be reviewed and approved by the Planning Authority prior to the issuance of a certificate of occupancy.
9. The proposed specifications for the mechanical equipment shall be reviewed and approved by the Planning Authority and Acting Zoning Administrator prior to the issuance of a building permit.
10. The applicant shall provide evidence that they have coordinated with METRO on the installation of other bus stop amenities (e.g. bench, trash receptacle, bus shelter pad) and submit revised plans as needed for review and approval by the Planning Authority prior to the issuance of a building permit.

ATTACHMENTS:

Staff Review Comments and Background Information

1. Traffic Engineering Review (Tom Errico, T Y Lin), comments dated February 5, 2015
2. Department of Public Services Review, David Margolis-Pineo, dated January 29, 2015
3. Civic Engineer Review, David Senus, dated January 16, 2015
4. Urban Designer Review, Caitlin Cameron, dated February 4, 2015
5. Zoning Specialist Review, Ann Machado, 11.07.2014 and February 5, 2014

6. Keith Gautreau e-mail to Barbara Barhydt, including Bob Metcalf response, dated Feb 4, 2015
7. Bruce Hyman review- January 28, 2015
8. Jeff Tarling review – February 6, 2015

Public comments (none at the time PB Report completed)

Applicant's Submittal

- A. Cover Letter
- B. Application
- C. Project Description
- D. Right, Title, or Interest
- E. Permitting
- F. Compliance with Applicable Zoning
- G. Easements
- H. Technical Capacity and Financial Capacity
- I. Traffic and Parking Study
- J. Consistency with City's Master Plan and Conformity with Design Standards
- K. Public Utilities
- L. Solid Waste Disposal and Snow Removal
- M. Fire Department Checklist and HVAC Emissions Requirements
- N. Stormwater Management Plan
 - a. Revised Plan 1/2/14
- O. Existing Soils Condition
- P. Waiver Request
- Q. Light Fixtures
- R. Construction Management Plan
- S. Neighborhood Meeting Packet
- T. Mitchell Associates response, November 24, 2014
- U. Updated Waiver Request, November 24, 2104
- V. Mitchell & Associates, Cover Letter and Attachments January 6, 2015
- W. Building Description, Lavealle/Brensinger Architects, January 9, 2015
- X. Letter from METRO, dated Feb. 3, 2015
- Y. Mitchell and Associates, Letter and Parking lot concepts, February 3, 2015
- Z. Mitchell Associates, Letter, alternatives and generator information, February 4, 2015
- AA. Mitchell Associates, Letter regarding transit improvements and pedestrian access, February 5, 2015
- BB. Mitchell Associates, lighting waiver request, February 6, 2015

Plans

Civil Plans

- Plan P1 Cover Sheet
- Plan P2 Existing Conditions Plan L1.0
- Plan P3 Boundary and Topo Survey
- Plan P4 Subdivision Plat
- Plan P5 Site Plan L2.0
- Plan P6 Ramps L2.1
- Plan P7 Grading L3.0
- Plan P8 Grading Garage L3.1
- Plan P9 Erosion & Sedimentary Control Plan L3.2
- Plan P10 Utilities L4.0

Plan P11 Planting L5.0
Plan P12 Details L6.0
Plan P13 Details L6.1
Plan P14 Details L6.2
Plan P15 Details L6.3
Plan P16 Photometrics L7.0
Plan P17 Fire Truck Turning Info
Plan P18 Pedestrian Circulation Plan
Plan P19 Construction Management Plan L1.1

Building Plans

Plan P20 Elevations- Connector
Plan P21 Elevations North/NorthEast
Plan P22 Elevations West/SouthWest
Plan P23 Average Grade Calculations
Plan P24 Garage Level Floor Plan
Plan P25 Level 1 Floor Plan
Plan P26 Level 2 Floor Plan
Plan P27 Level 3 Floor Plan
Plan P28 Level 4 Floor Plan
Plan P29 Level 5 Floor Plan
Plan P30 Main Street Floor Plan
Plan P31 Connector/Auditorium Floor Plan
Plan P32 Courtyard Game Concept A
Plan P33 Courtyard Garden Concept B
Plan P34 Courtyard Stream Concept C
Plan P35 Architectural Renditions

Stormwater Plans

Plan P36 Pre-Development Stormwater Plan
Plan P37 Post-Development Stormwater Plan
Plan P38 Stormwater Treatment Plan

From: Tom Errico <thomas.errico@tylin.com>
To: Barbara Barhydt <BAB@portlandmaine.gov>
CC: David Margolis-Pineo <DMP@portlandmaine.gov>, Katherine Earley <KAS@port...>
Date: Thursday, February 05, 2015 4:40 PM
Subject: 777 Steven Avenue - The Park Danforth - Final Traffic Comments

Barbara - the following summarizes a status update on my November 5, 2014 comments and current plan revisions and represent my final comments.

* I have reviewed the traffic study for the project prepared by GPCEI and concur that the project will not have a significant impact on transportation capacity and does not require a Traffic Movement Permit.
Status: No Comment

* The traffic study did identify a High Crash Location at the Forest Avenue/Read Street intersection and I need to further investigate as it relates to this project.
Status: No action is required of the applicant.

* The Forest Avenue driveway configuration geometry does not prevent the suggested turn prohibitions and it is suggested that adjustments be incorporated. I would also noted that the GPCEI report notes the Stevens Avenue driveway will also have turn prohibitions. The geometry of driveways should reflect conditions that discourage the illegal turn movements.
Status: The plans have been revised and I find it to be acceptable.

* The one-way emergency entrance on Stevens Avenue should be designed such that it discourages general population usage and is supported by the fire department.
Status: The plans have been revised and I find the details to be acceptable.

* The applicant should provide specific importation that supports all proposed driveways, such that a waiver can be issued regarding the number of driveways as it exceeds City standards. The applicant should focus this response on why both the Stevens Avenue and Arbor Street driveways are both required.
Status: Significant coordination has taken place as it relates to providing safe and appropriate access that attempts to meet City Standards. Given motorist characteristics, delivery truck circulation, and emergency access requirements I find the proposed plan (Alternative A - with agreed upon modifications) to be acceptable and therefore I support a waiver from the City's Technical Standards for the number of driveways allowable per site.

* Several parking aisle widths do not meet City standards. The applicant should provide supporting waiver documentation for all substandard conditions.
Status: The applicant has provided documentation on site parking needs and vehicles circulation and I support a waiver from the City's Technical Standards. I have no further comment.

* Pedestrian facility connections between the site and the public sidewalk system, particularly Forest Avenue should be clearly noted and provided.
Status: The applicant has indicated that site conditions, particularly the provision of a retaining wall, prevent the construction of a sidewalk that makes a direct connection to the Forest Avenue/Arbor Street corner. The applicant has indicated that a ramping system would result in the loss of the parallel parking spaces fronting Forest Avenue and given parking needs this is not an acceptable outcome. The applicant has indicted that there are two pedestrian routes to Forest Avenue, one via the Arbor Street driveway and

one from the Central Garden Area to the Forest Avenue driveway. Given the noted constraints and reasonable connectivity, I find conditions to be acceptable.

* An ADA Ramp on the internal crosswalk at the Arbor Street driveway should to be provided.
Status: The plans have been revised and I have no further comment.

* I support the proposed compact parking spaces and support a waiver from the City's dimensional standards for compact spaces.
Status: No comment needed.

* It is suggested that the crosswalk on Stevens Avenue at Poland Street be upgraded to be fully ADA compliant. This crosswalk is active and provides an important connection to the METRO bus service.
Status: The applicant has agreed to implement the necessary improvements to make the noted crosswalk fully ADA compliant. A final design shall be provided to the City for review and approval.

* A crosswalk is provided on Forest Avenue near the site driveway and I need to review improvement needs and will provide direction in the future.
Status: No action is required of the applicant.

Additional Comments

* Based upon coordination with METRO, the applicant indicates that the placement of a bus shelter on Forest Avenue is not feasible given site constraints and shelter dimensional requirements. The applicant has indicated that they will be coordinating with METRO on installation of other bus stop amenities (e.g. bench, trash receptacle) and I would suggest that a condition of approval should be included.

* Proposed driveways on Forest Avenue and Steven Avenue do not meet City Technical Standards as it relates to intersection corner clearance. I support a waiver from the City's Technical Standard given that one driveway will serve emergency vehicle use only; one driveway will be a right-turn entry only; and one driveway will be a right-turn entry/exit only driveway.

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)
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thomas.errico@tylin.com<mailto:thomas.errico@tylin.com>
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MEMORANDUM

To: FILE
From: Shukria Wiar
Subject: Application ID: 2014-202
Date: 2/6/2015

Comments Submitted by: David Margolis-Pineo/Public Services on 1/29/2015
January 29, 2015

To: Shukria Wiar
Barbara Barhydt
Urban Insight
From: David Margolis-Pineo
Re: 777 Stevens Ave – Park Danforth

The Department of Public Services has the following final comments on the above project.

1. All proposed stormwater drainage shall be directed to Forest Ave and Read St unless demonstrated not feasible.

Drawing L4.0 revised 11-25-14 now shows an acceptable drainage plan. Plan is now stamped by a PE.

2. The intersection of Forest Ave and Read Street is under a five year street moratorium until August 26, 2016.
No comment required

3. Stormwater manholes do not have three foot sumps. Please provide correct detail on Sheet L6.2.
Detail now reflects a three foot sump.

4. Applicant is proposing the installation of a grease interceptor. Sizing of this interceptor shall be determined and stated on the plans prior to final approval. Please contact Frank Brancely at 874-8832.

Applicant now shows the installation of a 2,000 gallon grease interceptor.

5. Provide a General Note on plans stating that "All proposed construction within the City street right of way shall meet City of Portland Design Manual standards." It appears some of the plan details do not reflect City Design Manual standards. Applicant may wish to cut and paste Design Manual detail to plan set to avoid construction confusion.

Note has been provided.

6. All plans are to be stamped by a professional engineer, except the survey plan which is to be stamped by a registered land surveyor.

Drawings have now been stamped.

7. Applicant shall install a concrete sidewalk with granite curb on Arbor St. Back of sidewalk shall be placed on the road right of way.

The applicant has chosen not to follow the City's Technical Manual for local roadway design. The applicant is making an argument for placing the sidewalk along the curb line and not along the street right of way of Arbor Street as required. This design would require a waiver that is not supported by staff.

8. The applicant shall explain how snow removal will be handled.

With the absence of snow storage shown on the plans, it is understood that the applicant intends to have snow removed from the site.

The applicant has acknowledged that snow will be removed from the site

9. The applicant is proposing a raised concrete island within the right of way of the Forest Ave driveway cut. A license agreement is required between the City and the applicant stipulating that many required maintenance of said island is the responsibility of the applicant.

This Department has no further comments at this time.



MEMORANDUM

TO: Shukria Wiar, Planner
FROM: David Senus, P.E.
DATE: January 16, 2015
RE: The Park Danforth, Final Level III Site Plan Review

Woodard & Curran has reviewed the response to comments submittal for the Final Level III Site Plan Application for the Park Danforth development located at 777 Stevens Avenue in Portland, Maine. The project will involve a significant addition to the existing Park Danforth facility, including building expansions and site work within the full block that is encompassed by Forest Ave, Arbor Street, Stevens Ave, and Poland Street.

Documents Reviewed by Woodard & Curran

- Response to Comments Letter, dated January 6, 2015, prepared by Mitchell & Associates, on behalf of The Park Danforth.
- Plans, Sheets L1.0-L6.3, revised January 5, 2015, prepared by Mitchell & Associates, on behalf of The Park Danforth.

Comments

- 1) The Erosion and Sediment Control Plan (L3.2) should identify an inlet sediment control device on existing CB# 4.
- 2) Sheet L6.2 –The Snout detail contains a remnant note stating that “The Snout shall be provided on Proposed Catch Basins #6100, #6101 and #6102”; this note should be deleted.
- 3) All previous review comments have been adequately addressed.

Planning and Urban Development Department

Planning Division



Subject: R-6 Design Review – 777 Stevens Avenue

Written by: Caitlin Cameron, Urban Designer

Date of Review: Wednesday, February 4, 2015

On Tuesday, February 3, a design review according to the *City of Portland Design Manual* standards was performed for the proposed new construction of a multi-family dwelling project at 777 Stevens Avenue. The review was performed by Caitlin Cameron, Urban Designer, Nell Donaldson, Planner, and Shukria Wiar, Planner, all within the Planning Division of the Department of Planning & Urban Development. The project was reviewed against the *Two-family, Special Needs Independent Living Units, Multiple-family, Lodging Houses, Bed and Breakfasts, and Emergency Shelters Standards* (Section (i) of the Design Manual).

Design Review Comments:

Standard 1 – The neighboring residential context is most directly impacted by the existing building. In the case of the new addition, the surrounding context tends to be more commercial and institutional in use and character. Additionally, the neighboring residential context is most often single-family or other small-scale buildings. Therefore, the multi-family, large-scale building proposed is not the same type of residential project and is therefore not able to have the same character. The project uses a mix of building materials which, in combination with the fenestration, the balconies, the varying forms and roof lines, and the strongly articulated cornice elements, provide positive visual interest as stipulated in the Standard.

Standard 2 – The surrounding context is varied with regards to building types and relationship to the street. Although it is preferable for new construction to be built nearer the street than is proposed, we observed that quite a few buildings, especially on Forest Avenue do have front yard parking. Additionally, the setback from the streets does provide for more privacy from the busy streets for the residents. See comments below regarding landscaping and screening.

The project is very vehicle-oriented and does not easily accommodate pedestrian circulation through the site or to and from the sidewalks. The pedestrian access to the street/sidewalk is not direct and residents coming and going from the building entrances would not be able to access the public right-of-way on foot in direct ways. The design of the sidewalk itself should be adjusted – the sidewalk path should be shifted towards the property line to allow for a furnishing zone between the curb and sidewalk. This adjustment will accommodate utility and sign poles at the curb and make for a clear and unobstructed pedestrian path.

Standard 3 – The project provides a courtyard space and screening and landscaping elements as required by the Standard.

Standard 4 – Overall the project has a high level of fenestration and the provision of balconies also contributes to residents' access to light and air.

Standard 5 – The current design does provide screening between the parking and the street. Overall, the design review panel felt there is an imbalance between the amount of hardscape and landscape. There are additional opportunities for landscaping to mitigate the impact of the parking/drive aisles from the street and especially to improve the pedestrian experience.

Standard 6 – Not Applicable

MEMORANDUM

To: FILE

From: Shukria Wiar

Subject: Application ID: 2014-202

Date: 2/6/2015

Comments Submitted by: Ann Machado/Zoning on 2/5/2015

Based on the letter submitted by Robert Metcalf on November 25, 2014 and Exhibit A - Average Grade Calculations the new addition is meeting the maximum height requirement of 65'. All other zoning requirements are still being met . See memo dated 11/5/14 below.

11/5/2014

This property is located in the R-6A residential zone.

The proposed addition of 54 independent dwelling units is a permitted use in the zone.

The front, rear, and side setbacks are all being met for the proposed building.

The minimum lot size of 4 acres is being met.

The maximum lot coverage of 40% is being met.

The open space ration of 20% is being met.

93 parking spaces are required for the existing and proposed buildings (39 for existing building & 54 for new building). 151 spaces are being provided.

The minimum area per dwelling unit requirement is being met. For the 124 exsiting SNILUs , 99,200 sf of land area is required. For the 36 Intermediate Care units, 8,350 sf of land area is required. For the 54 independent units, 64,220 sf of land area is required. The total land area required for all the units is 171,750 sf. The lot is 181,100 sf.

I need more information on the height of the building. I need to know what the average grade is for the building. The elevation drawings show the roof at 52' above Level 1. Parts of the roof go above this. I understand that some areas are the stair towers but what is the section above the roof on the Northeast elevation?

From: Keith Gautreau
To: Barbara Barhydt; Bob Metcalf
CC: '<Errico Thomas'; 'Denise Vachon'; 'Thomas Gorrill'
Date: Thursday, February 05, 2015 8:46 AM
Subject: RE: Park Danforth

Hi Barbara & Bob,

Thanks for responding back to Bob on my behalf. It appears that they have addressed my concerns with items 2 & 3 below. I am satisfied with the responses below.
Barbara, let me know if you need anything else from me.

Thanks,
Keith

Keith Gautreau, Acting Asst. Chief
Fire Prevention
Portland Fire Department
380 Congress Street
Portland, ME 04101
(207)874-8400
kng@portlandmaine.gov
>>> "Bob Metcalf" <rmetcalf@mitchellassociates.biz> 2/4/2015 4:17 PM >>>

Hi Barbara,
Thank you for the comments, See my responses below.
Bob

From: Barbara Barhydt [mailto:BAB@portlandmaine.gov]
Sent: Wednesday, February 04, 2015 4:14 PM
To: Bob Metcalf
Cc: Keith Gautreau; <Errico Thomas
Subject: Park Danforth

Hi Bob:

We discussed the options at our meeting today. I don't have the review comments yet, but here is a summary as I understood it:

Option A seemed to be the preferred option. OkThe second drive entrance from Stevens avenue needs to be 16 feet for the fire trucks. The concern was raised that if it is paved to that width, then some drivers might try to use it as a 2-way entrance. Using a mountable edge treatment could provide the width needed for emergency vehicles. We can address this change with the mountable area being on site and not within the sidewalk.Assist Chief Gautreau said he discussed this with you, but he would like 2 of the bumpouts reduced in size in order for the fire trucks to more easily drive from the existing parking lot to Arbor Street. In the revised plan attached that shows the Arbor Street sidewalk, we have revised the internal circulation to address these comments.The question came up in the Urban Design review about pedestrian access to Forest Avenue. Tom was going to look at that again. We understand there is a grade change, but the reviewers and Alex noted that a pedestrian connection to Forest Avenue is important. There is a sidewalk along the service drive that has access to Forest Avenue. Access near the new entry (knuckle) to Forest Ave is not feasible due to grade change and as discussed with staff and

the board, stairs are a safety concern for the residents so stairs are not an option. There is a sidewalk along the Arbor Street face of the building that leads to a crosswalk – sidewalk to Arbor Street.

I may be forgetting something, so Tom and Keith feel free to add or clarify.

Thank you.

Barbara

Barbara Barhydt
Development Review Services Manager

Planning Division
389 Congress Street 4th Floor
Portland, ME 04101
(207) 874-8699
Fax: (207) 756-8256
bab@portlandmaine.gov

Notice: Under Maine law, documents - including e-mails - in the possession of public officials or city employees about government business may be classified as public records. There are very few exceptions. As a result, please be advised that what is written in an e-mail could be released to the public and/or the media if requested. 22

From: Bruce Hyman
To: Barbara Barhydt; David Margolis-Pineo; Tom Errico
CC: Shukria Wiar
Date: Wednesday, January 28, 2015 2:20 PM
Subject: Re: need your reviews: Park Danforth - For Internal Staff
Attachments: ParkDanforth_CurbRampOrientation_FHWA.pdf

Below and attached are my comments related to the Park Danforth plans dated October 17, 2104.

Curb ramps: the 4 curb ramps at Forest/Poland, Forest/Arbor, Stevens/Forest and Stevens/Arbor are to be designed so that the ramp is perpendicular to the curb (they are skewed now) - the orientation of the detectable warning panels is shown correctly but the ramps themselves need to be reconfigured. See attached.

Raised Concrete Traffic Islands (2): The applicant should ensure that there is an ADA compliant pedestrian access route through the traffic islands.

Bike Racks:

In General Note #12 on Sheet 1 of 1 (Subdivision Plat), the applicant states that 7 bike hitches are proposed: I can only locate 5 on the plans. *[Has the applicant requested a reduction to 14 bike parking spaces from the 22 that are required per the ordinance?]*

The concrete pad with 2 bike hitches closest to the intersection of Stevens/Poland should be increased to a minimum of 6' x 12.5' (shown as 4' x 12.5') if there is not a firm and stable area surrounding the pad to make it most functional for users.

Driveways: Driveways should be, to the extent feasible, constructed to ensure that there is an ADA compliant pedestrian access route along the streets. Generally, this means a cross-slope no greater than 2% across the driveway within the pedestrian access route.

NOTE - Detectable Warning Panels Internal to the Site: It is not a requirement of the city (nor ADA) to have the panels internal to the site at pedestrian crossings within parking lots and across driveways.

Bruce

Bruce Hyman
Transportation Program Manager

City of Portland
Dept. of Planning and Urban Development
389 Congress Street, Rm 312 (temp.)
Portland, Maine 04101
(207) 874-8717 (temp.) office

bhyman@portlandmaine.gov
www.portlandmaine.gov
>>> Barbara Barhydt 1/28/2015 11:49 AM >>>
Hi Bruce:

We need your review for midtown and Park Danforth. Shukria is out this week, so we can discuss Park Danforth. Tom and I are going to try and do a conference call with Bob Metcalf on Thursday.

Barbara

From: Jeff Tarling
To: Barbara Barhydt; Shukria Wiar
CC: David Margolis-Pineo
Date: Friday, February 06, 2015 11:56 AM
Subject: Re: Park Danforth Tree & Landscape Review

Hi Shukria, Barbara -

In review of the latest landscape plan for the proposed Park Danforth Project I would like to offer the following 'review & comments', and conditions:

a) Overall Landscape Plan - The proposed landscape plan blends the existing project landscape feel into the new project. The plan does lack landscape treatment on the parking lot on the Northeast side of the building on the Arbor Street & Forest Avenue side. Knowing the 'health & well being' values of looking out onto a 'green' landscape given the intended use of the site, adjusting the building / parking lot siting should have been a paramount in the overall project design. It appears that even a 10' shift inward toward the courtyard could have reaped benefit for the paved side of the project.

There is much new information on the importance of 'greening for health' that has not yet been added to our

Planning Review but should be considered. See:

<http://www.naturewithin.info/policy.html>

<http://www.bostonfed.org/commdev/c&b/2014/winter/greening-the-city-for-health.htm>

b) Tree & Landscape Conditions - The following review comments & suggested improvements should be a condition of approval:

1) Tree types & sizes - There are a number of ornamental trees listed at the minimum standard size of 1.75" caliper, these should be upgraded to 2" size minimum in ALL cases due to the scale of the project. The row of Cornus Kousa Dogwoods located along the walkway between the parking lots should be upgraded to a shade tree type to help shade / cool the parking lot. There are many tree types available that will add shade to this area, Ginkgo perhaps, - this should be a condition. Ideally, a more upright form of crabapple could be used along Forest Avenue such as M. "Adirondack" which would be less likely to be in the way of parked cars & sidewalk in the future. Lindens - suggestion 'do not use Lindens', while they are already some on site. the problematic conditions from 'sooty-mold' / aphid problems - sap on cars and staining anything in the area thus should be changed to either a Red Maple cultivar such as 'Karpick', 'Bowhall', or 'Redpointe' Red Maple or Swamp White Oak.

2) Shrub Planting sizes - Every effort should be made to upsize the shrub planting sizes due to the scale of the project.

The majority of the #3 gallon plants are just too small for this type of project. In most cases #5 gallon plants should be considered the minimum sizes. The proposed plants are more 'residential scale' vs a large complex as proposed.

3) Interior Courtyard - detailed landscape facts are missing. The plan notes "GARDEN PLANTINGS - TYPICAL

SMALL FLOWERING TREES, FRAGRANT & FLOWERING SHRUBS & PERENNIALS', details on the Gazebo garden

are also needed.

This important area does need a more enhanced greening effort, unknown at the time of this review.

Edible landscape

features, perhaps a few handicap accessible raised bed for therapeutic gardening should be considered for residents. This

could be added on either side of the walk, the lawn side. Having space for residents to interact with the landscape is

an extremely important landscape item for this area. Plantings that include pollinator gardens or landscape plants

that help attract birds would also be a nice feature. Condition would include more details on the Courtyard, include

grow spaces for residents be it edible or ornamental in nature.

4) Arbor Street Edge - The project should show landscape treatment between the back edge of sidewalk and the property

line. I would urge all parties that it would be acceptable to have landscape plantings or lawn included for this space within

the city right of way.

Jeff Tarling

City Arborist

Jeff Tarling

Portland Public Services - City Arborist

55 Portland Street

Portland, ME. 04101

(207) 874.8820

jst@portlandmaine.gov

The Park Danforth

777 Stevens Avenue



Site Plan and Subdivision Plan Application

October 17, 2014

APPLICANT:

The Park Danforth
777 Stevens Avenue
Portland, Maine 04103

AGENT:

MITCHELL & ASSOCIATES
70 Center Street
Portland, Maine 04101



The Staples School
70 Center Street
Portland, Maine 04101
P: 207.774.4427
F: 207.874.2460
www.mitchellassociates.biz

October 17, 2014

Ms. Barbara Barhydt
Development Review Services Manager
And Planning Board Members
City of Portland
389 Congress Street
Portland, Maine 04101

**RE: The Park Danforth
777 Stevens Avenue
Site Plan and Subdivision Review**

Dear Barbara and Board Members:

On behalf of "The Park Danforth", we are pleased to submit the following Site Plan and Subdivision Application for the proposed expansion of "The Park Danforth" located at 777 Stevens Avenue in Portland. This submission has been prepared in compliance with requirements of the City of Portland Zoning, Site Plan and Subdivision Ordinance. The project is intended to provide 54 new senior independent living units to the existing senior housing offered by The Park Danforth. The existing facility has 160 senior housing units consisting of 124 Special Needs Independent Living Units (SNILU) and 36 Intermediate Care units. Of these, 70 units are HUD supported.

The Park Danforth has developed a Master Development plan to expand their opportunities for providing elderly housing to include "independent senior housing" for a younger aging population including those that do not require assistance with daily living but who are looking for housing that provides opportunities for an interactive senior community with amenities and services for their choosing. The target market is 75 years of age plus.

Mission Statement

"The Park Danforth is a not-for-profit corporation dedicated to providing high quality housing and services to those 60 years of age or older. Our Mission is to provide housing and services to enhance a person's quality of life, respect personal dignity, and accommodate the need for privacy and self-determination. In doing so, we aim to respond to the individual's changing needs brought about through aging."

The Site

The Park Danforth over the previous 5 years has acquired the adjacent properties and currently controls the entire city block of 4.16 acres, bound by Stevens Avenue, Poland Street, Forest Avenue and Arbor Street. Since appearing before the Planning Board for the zone map change, The Park Danforth has a purchase and sale agreement for 24 Arbor Street that was the only parcel not owned. The majority of the Goodwill parcel is impervious, either building or pavement. There are two residential homes and one vacant lot where a two family residence was removed in 2013.

Project Description

The proposed project will create 54 new senior independent living units including relocated administrative offices, expand program opportunities and function spaces. The new building will be 4 stories along Arbor Street and Forest Avenue, with a fifth story corner projection and 5 stories facing toward a new central garden courtyard and the back of the existing building. The redevelopment of the site will also include improvements to enhance the campus, providing secure areas for outdoor activities for all levels of ability. The development will also provide for an enhanced visual street presence along Stevens Avenue, Forest Avenue and Arbor Street.

Submission

This submission includes the following information:

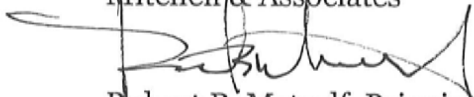
1. Cover letter, dated October 17, 2014
2. Site Plan and Subdivision Application & Checklist
3. Application Fee: \$3,000
4. Booklet of required exhibits
5. Stormwater Management Report
6. One set of plans (24" x 36")
7. One set of plans (11"x17")
8. One set of digital files

Ms. Barbara Barhydt, Development Review Coordinator
and Board Members

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We trust that the Planning Board will consider this a complete application for a workshop meeting. If you desire any additional information, please do not hesitate to contact us. We look forward to our meeting with the Board at its earliest convenience.

Sincerely,
Mitchell & Associates

A handwritten signature in black ink, appearing to read 'Robert B. Metcalf', written over the printed name.

Robert B. Metcalf, Principal
Maine Licensed Landscape Architect

Enclosures

cc: Denise Vachon, CEO
Robert Moore, CFO
Bill Shanahan

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PROJECT NAME: The Park Danforth**PROPOSED DEVELOPMENT ADDRESS:**777 Stevens Avenue, Portland, ME 04103**PROJECT DESCRIPTION:**Addition to the existing Park Danforth facility. Add an additional 54 elderly independent living units. See attached project description for additional information.CHART/BLOCK/LOT: 146/C/ lots 5-14

PRELIMINARY PLAN _____ (date)

FINAL PLAN _____ (date)

CONTACT INFORMATION:

Applicant – must be owner, Lessee or Buyer Name: The Park Danforth, Denise Vachon, CEO Business Name, if applicable: Address: 777 Stevens Avenue City/State : Portland, ME Zip Code: 04103	Applicant Contact Information Work # 207.797.7710 Home# Cell # Fax# e-mail: vachond@parkdanforth.com
Owner – (if different from Applicant) Name: Home for the Aged & HFA Forest Avenue Properties LLC Address: 777 Stevens Avenue City/State : Portland, ME Zip Code: 04103	Owner Contact Information Work # 207.797.7710 Home# Cell # Fax# e-mail: vachond.parkdanforth.com
Agent/ Representative Name: Mitchell & Associates, Robert Metcalf Address: 70 Center Street City/State : Portland, ME Zip Code: 04101	Agent/Representative Contact information Work # 207.774.4427 Cell # e-mail: rmetcalf@mitchellassociates.biz
Billing Information Name: The Park Danforth, Denise Vachon Address: 777 Stevens Avenue City/State : Portland, ME Zip Code: 04103	Billing Information Work # Cell # Fax# e-mail: vachond@parkdanforth.com

Engineer Name: BH2M Engineers Lester Berry, PE Address: 28 State St, 04038 City/State : Gorham, ME Zip Code: 04038	Engineer Contact Information Work # 207.839.2771 Cell # Fax# e-mail: lberry@bh2m.com
Surveyor Name: Owen Haskell Surveyors, Inc. 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: www.owenhaskell.com
Architect Name: Joan Eagleson, Lavallee/Brensinger Architects Address: 155 Dow Street, Suite 400 City/State : Manchester, NH Zip Code: 03101	Architect Contact Information Work # 603. 622.5450 Cell # Fax# e-mail: joan.eagleson. lbpa.com
Attorney Name: Melissa Murphy, Perkins Thompson Address: 1 Canal Plaza City/State : Portland, ME Zip Code:	Attorney Contact Information Work # 207. 774. 2635 Cell # Fax# e-mail: mmurphy@perkinsthompson.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) <u>X</u> 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) <u>X</u> Stormwater Quality (\$250) <u>X</u> Subdivisions (\$500 + \$25/lot) # of Lots 54 x \$25/lot = \$1,350 ___ 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-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:

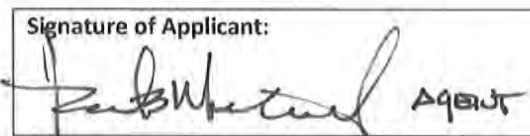
1. One (1) full size site plans that must be folded.
2. One (1) copy of all written materials or as follows, unless otherwise noted:
 - a. Application form that is completed and signed.
 - b. Cover letter stating the nature of the project.
 - c. All Written Submittals (Sec. 14-525 2. (c), including evidence 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 II 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:  Robert Whetzel Agent	Date: OCT 17, 2014
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PROJECT DATA

The following information is required where applicable, in order to complete the application.

Total Area of Site	181,100 sq. ft.
Proposed Total Disturbed Area of the Site	181,100 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)	3.22 AC sq. ft.
Impervious Area (Total Proposed)	3.05 AC sq. ft.
Building Ground Floor Area and Total Floor Area	
Building Footprint (Total Existing)	31,181 sq. ft.
Building Footprint (Total Proposed)	21,777 sq. ft.
Building Floor Area (Total Existing)	172,567 sq. ft.
Building Floor Area (Total Proposed)	94,236 sq. ft.
Zoning	
Existing	R6-A
Proposed, if applicable	
Land Use	
Existing	Elderly assisted living, commercial, residential
Proposed	Elderly assisted living & elderly independent living
Residential, If applicable	
# of Residential Units (Total Existing)	160
# of Residential Units (Total Proposed)	54
# of Lots (Total Proposed)	214
# of Affordable Housing Units (Total Proposed)	0
Proposed Bedroom Mix	
# of Efficiency Units (Total Proposed)	None
# of One-Bedroom Units (Total Proposed)	51
# of Two-Bedroom Units (Total Proposed)	3
# of Three-Bedroom Units (Total Proposed)	None
Parking Spaces	
# of Parking Spaces (Total Existing)	91
# of Parking Spaces (Total Proposed)	151
# of Handicapped Spaces (Total Proposed)	8
Bicycle Parking Spaces	
# of Bicycle Spaces (Total Existing)	None
# of Bicycle Spaces (Total Proposed)	8
Estimated Cost of Project	\$18 million

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 approvals, if applicable
		1	Written assessment of proposed project's compliance with applicable zoning requirements
		1	Summary of existing and/or proposed easement, covenants, public or private rights-of-way, or other burdens on the site
		1	Written requests for waivers from site plan or technical standards, if applicable.
		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
		1	Boundary Survey meeting the requirements of Section 13 of the City of Portland's 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 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)
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 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
*		1	Construction Management Plan
X		1	A traffic study and other applicable transportation plans in accordance with Section 1 of the technical Manual, where applicable.
N/A		1	Written summary of significant natural features located on the site (Section 14-526 (b) (a))
X		1	Stormwater management plan and stormwater calculations
X		1	Written summary of project's consistency with related city master plans
X		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
N/A		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.

* Temporary Waiver Request

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:
X			Existing and proposed structures, as applicable, and distance from property line (including location of proposed piers, docks or wharves if in Shoreland Zone);
N/A			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;
X			Engineered construction specifications and cross-sectional drawings for all proposed driveways, paved areas, sidewalks;
X			Location and dimensions of all proposed loading areas including turning templates for applicable design delivery vehicles;
X			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;
X			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;
N/A			Proposed buffers and preservation measures for significant natural features, where applicable, as defined in Section 14-526(b)(1);
N/A			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;
X			Existing soil conditions and location of test pits and test borings;
X			Existing vegetation to be preserved, proposed site landscaping, screening and proposed street trees, as applicable;
X			A stormwater management and drainage plan, in accordance with Section 5 of the Technical Manual;
X			Grading plan;
N/A			Ground water protection measures;
X			Existing and proposed sewer mains and connections;

* Temporary Waiver Request

- 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;
*		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;
N/A		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;
X		Location, dimensions and ownership of easements, public or private rights of way, both existing and proposed.

* Temporary Waiver Request



**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.
3. Name address, telephone number of architect
4. Proposed uses of any structures [NFPA and IBC classification]
- 5.
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



June 12, 2014

City of Portland
Attention: Planning Department
389 Congress Street
Portland, ME 04101

RE: Letter of Authorization

To Whom It May Concern:

This letter authorizes Mr. Robert Metcalf or Mr. John Mitchell, Mitchell & Associates to act as an agent on behalf of The Park Danforth, 777 Stevens Avenue, Portland, Maine for submission on any and all application materials that relate to the zoning and site plan permitting application(s) for the proposed zone map, text amendment and Level III Site Plan application (s) with the City of Portland Planning department.

Sincerely,

Denise M. Vachon
Chief Executive Officer

DMV/smc

EXHIBIT 2

PROJECT DESCRIPTION

History

The Park Danforth, a not-for-profit corporation, has been in existence for over a 130 years, evolving from the “Mercantile Home for Aged Men” located at the corner of Park and Danforth Streets. During the mid - 1970’s the facility model was expanded to provide a larger state-licensed and Medicaid supported residential care program coupled with internal subsidies as well. With financial pressures changing from both state reimbursements and increasing pressure for subsidies from its investments, The Park Danforth considered its options to continue its mission while remaining financially solvent. Making a bold move, The Park Danforth sold its program and property to 75 State Street – another strong not for profit provider – and moved its operations to the current 777 Stevens Avenue location in 1985 with 70 Section 8 apartments and 36 market rate residential apartments for the elderly in the mix. In 1999, to further its mission of service, The Park Danforth expanded the facility to provide 18 new apartments and 36 Assisted Living studios. The current makeup of The Park Danforth today consist of 124 apartments classified by the city as Special Needs Independent Living Units and 36 Assisted Living studios classified by the city as Intermediate Care units, 3 of which are licensed for double occupancy units.



Current location at 777 Stevens Avenue

Mission Statement

“The Park Danforth is a not-for-profit corporation dedicated to providing high quality housing and services to those 60 years of age or older. Our Mission is to provide housing and services to enhance a person’s quality of life, respect personal dignity, and accommodate the need for privacy and self-determination. In doing so, we aim to respond to the individual’s changing needs brought about through aging.”

Existing Conditions

The Park Danforth properties consist of 10 parcels identified on the Assessors maps as Map 146, Chart C, Lot's 5- 14. Over the past 5 years, The Park Danforth has negotiated the purchase of the adjacent parcels that include the Goodwill properties along Forest Avenue extending to Stevens Avenue and 3 existing residential properties (24 Arbor Street under contract), along Arbor Street and presently owns the entire city block.



Goodwill Property, Forest Ave. & Arbor St.



Goodwill entrance: view Stevens Ave south



The properties are bound by Stevens Avenue, Poland Street, Forest Avenue and Arbor Street. The Park Danforth, has recently requested and received a zoning map change to convert the entire block to R-6A. The total parcel area of The Park Danforth campus is 181,100 SF or 4.16 acres. The Goodwill site is almost entirely impervious (95% +/-) consisting of two buildings and paved parking with a lot area of 60,798 +/-SF or 1.40 acres. Of the three Arbor Street residential properties acquired, two have existing single family residences, one lot a formerly contained multi-family residence and is presently vacant.

Housing Objectives

The Park Danforth has developed a master development plan to expand their opportunities for providing elderly housing to include "independent elderly housing" for a younger aging population including those that do not require assistance with daily living but who are looking for housing that provides opportunities for an interactive senior community with amenities and services for their choosing. The target market is 75 years of age plus.

The Park Danforth development proposes to construct a new building addition with frontage along Forest Avenue and Arbor Street. The new building will add 54 elderly independent living apartments and a below ground level parking garage. The new building will be joined with the existing building by a single level connector that serves as the new main public entrance for the facility.

Proposed Development

The Park Danforth currently consist of a seven-story building along Stevens Avenue, and a three-story wing along Poland Street. With the acquired parcels along Arbor Street and Forest Avenue, The Park Danforth seeks to build a new structure along Arbor Street and Forest Avenue comprised of 54 new “Independent Living” units in four and five-story building with one level of underground parking for 38 cars. The building will be approximately 64,000 SF, excluding the parking level, and 60 feet tall at its highest point.

The majority of the building will be four-stories along Forest Avenue and Arbor Streets with a five-story element at the corner. The interior of the building that faces the existing Park Danforth building will be five-stories. The new building will connect to the existing seven-story building with a one-story structure at the new turn-around and be the new primary public entry. Refer to attached architecture description. The proposed campus Master Plan addresses functional open spaces, provides an opportunity to enhance the street presence, address pedestrian and vehicular circulation and safety. The total land area of the parcels making up The Park Danforth Campus is 181,100 +/-SF or 4.16 acres. Current residents will access by the modified Stevens Avenue entry, circulation for resident parking will remain as one-way, exiting from a modified existing driveway that will be two-way, providing access to new parking and the new visitor entry. The existing entry drive near Poland Street will be maintained as an emergency vehicle accessway. An existing curb cut along Forest Avenue serving the Goodwill is to be eliminated. A reconfigured drive on Arbor Street will be identified as the primary access to the new visitor entrance and for the proposed new elderly independent living units. The Forest Avenue service entrance will be modified to improve service vehicle/delivery truck access and accommodate for enhanced open space garden courtyards and to diminish the visual presence from Forest Avenue. Parking will be accommodated for by well distributed parking areas and proposed parking garage to minimize the presence of large areas of paved parking.

Site improvements will include enhanced street presence along Arbor Street and Forest Avenue through building architecture, extensive plantings and site features including retaining walls, fencing, lighting, buffering, and parking distributed in small lots. The campus will include two interior court yard gardens to provide safe and functional open space for the varied skill levels of the elderly resident population. Within the center of the campus an enclosed green space will provide outdoor access to garden spaces, outdoor game areas and outdoor

dining space. In addition to the outdoor experience, views into the courtyard will be considered for their beneficial effect on resident's well-being.

Building Program

The building program offers many services and amenities desired by the elderly population. In addition to the 54 independent living units, the building program includes developing a *Main Street* within the first floor of the existing facility with services that include a boutique, ice cream parlor, bistro, wellness center, auditorium and activity center. The shops and amenities centralized within the main corridor will serve to attract and encourage socialization between residents of the two buildings. The program changes being made in the existing building are independent of the proposed site application.

Stormwater Management

The current site is an entire city block that includes single family and multifamily family residences and commercial uses with approximately 85 percent of the lot impervious. The proposed building cover, parking and circulation, and site improvements will cover approximately 75 percent of the property. The majority of stormwater runoff generated by the site will be treated by a stormwater infiltration. A portion of The Park Danforth property will continue to be accommodated by the existing stormwater infrastructure. Refer to attached Stormwater Management Plan.

Snow Removal

Snow storage area is limited on-site for current and proposed improvements. The applicant intends to contract for snow removal for large storm events exceeding 3 inch events, or as needed. There is limited landscape/grass areas along the perimeter of the property where snow storage can be accommodated. Due to the age of the population of The Park Danforth snow removal and maintaining safe access and walking conditions have high priority.

The Park Danforth currently consists of a seven-story building along Stevens Avenue, and a three-story building along Poland Street. With the acquired parcels along Arbor Street and Forest Avenue, The Park Danforth seeks to build a new structure along Forest Avenue and Arbor Street comprised of 49 new Independent Living units on four and five floors with one level of underground parking for approximately 38 cars; there is the potential for a total of 54 new units to be determined based on construction costs and the owner's proforma. The building will be approximately 87,000 square feet excluding the parking level, and 60 feet tall.

The majority of the building will be four-stories along Forest Avenue and Arbor Streets with a five story element at the corner of Forest and Arbor Streets. The interior of the building that faces the existing Park Danforth building will be five-stories. The new building will connect to the existing seven-story Park Danforth building with a one-story structure at the new entry turn around. The building will feature varied window sizes, balconies, and materials, to coordinate and complement the existing Park Danforth building.

PROJECT DATA

Applicant	The Park Danforth 777 Stevens Avenue Portland, Maine 04103
Owner	Home for the Aged & HFA Forest Avenue Properties, L.L.C. 777 Stevens Avenue Portland, Maine 04103
Existing Zone	R6-A – Residential
Tax Map & Lot Number	Map 146, Block C, Lots 5-14
Land Area	4.16 Acres
Existing Land Use	Single Family Residential, Multifamily Residential & Commercial, Elderly Assisted Living
Proposed Land Use	Elderly Assisted Living and Independent Living Apartment Units
Water	12 inch main in Arbor Street
Sanitary Sewer	10 inch main in Arbor Street
Storm Drainage	15 in storm drain in Forest Avenue
Natural Gas	4 inch line in Arbor Street
Electric	Overhead Service on Forest Avenue
Telephone & Cable TV	Overhead services on Forest Avenue

EXHIBIT 3
RIGHT, TITLE OR INTEREST

Please see the following:

- Warranty Deed recorded in the Cumberland County Registry of Deeds, Book 30933, Page 330
- Quitclaim Deed recorded in the Cumberland County Registry of Deeds. Book 13485, Page 022
- Quitclaim Deed recorded in the Cumberland County Registry of Deeds. Book 31597, Page 247
- Quitclaim Deed recorded in the Cumberland County Registry of Deeds. Book 31525, Page 324
- Statutory Warranty Deed recorded in the Cumberland County Registry of Deeds. Book 29524, Page 325
- Purchase and Sale Agreement from the property owner at 24 Arbor Street to Home for the Aged, dated September 26, 2014.

WARRANTY DEED

MAINE INVESTMENT PROPERTIES, LLC, a Maine limited liability company with a place of business at 1651 Broadway, South Portland, Maine 04106, for consideration paid, grants to **HOME FOR THE AGED**, a Maine non-profit corporation with a place of business at 777 Stevens Avenue, Portland, Maine 04103, with WARRANTY COVENANTS, the following described land 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 7 day of August, 2013.



Witness

MAINE INVESTMENT PROPERTIES, LLC



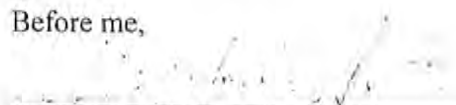
By: Timothy J. McGonagle
Its: Managing Member

State of Maine
County of Cumberland

August 7, 2013

Personally appeared before me Timothy J. McGonagle in his capacity as Managing Member for Maine Investment Properties, LLC, and acknowledged the foregoing instrument to be his free act and deed in his said capacity.

Before me,



Notary Public/Attorney at Law
Printed Name:
My Commission Expires:

MARJORIE A. JOHNSTON
Notary Public, Maine
My Commission Expires September 30, 2018

EXHIBIT A

A certain lot or parcel of land, with any buildings thereon, situated in the City of Portland, County of Cumberland, and State of Maine, being more particularly bounded and described as follows:

Commencing at a point on the southerly side of Arbor Street in said Portland at the northwesterly corner of land now or formerly of George H. Bangs; thence westerly along the said southerly side line of said Arbor Street fifty (50) feet to land now or formerly of William B. Barnett; thence southerly nearly at right angles to the southerly side line of Arbor Street, on line of said Barnett land, fifty-seven (57) feet to the Northerly side line of land now or formerly of D. Murphy heirs; thence easterly fifty (50) feet along the northerly side line of said Murphy land to land of said Bangs; thence northerly fifty-seven (57) feet along line of said Bangs land to the point of beginning.

Meaning and intending to convey the same property by deed from MECAP, LLC to Maine Investment Properties, LLC dated January 12, 2012 and recorded in the Cumberland County Registry of Deeds in Book 29305, Page 210.

Received
Recorded Registrar of Deeds
Aug 15 2013 01:31:26P
Cumberland County
Pamela E. Lovley

07-49

BK 13485PG022

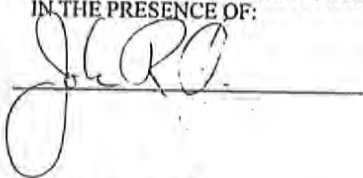
73649

QUITCLAIM DEED WITHOUT COVENANT
(Corporate)
(Maine Statutory Short Form)

KNOW ALL BY THESE PRESENTS, that The Park-Danforth, a non-profit corporation organized and existing under the laws of the State of Maine and having an address at 777 Stevens Avenue, Portland, Cumberland County, Maine, and Home for the Aged, a non-profit corporation organized and existing under the laws of the State of Maine and having an address at said 777 Stevens Avenue, Portland, Maine, for consideration paid, **RELEASE** to said Home for the Aged, those certain condominium units in Portland, County of Cumberland, and State of Maine, which are more particularly described in Exhibit A attached hereto and made a part hereof.

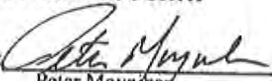
IN WITNESS WHEREOF, the said The Park-Danforth and Home for the Aged have caused this instrument to be duly executed by their duly authorized officer, this 8th day of December, 1997.

SIGNED, SEALED AND DELIVERED
IN THE PRESENCE OF:



THE PARK-DANFORTH

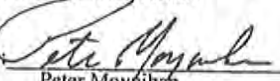
By:


Peter Moynihan
Its President



HOME FOR THE AGED

By:

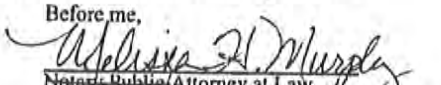

Peter Moynihan
Its President

STATE OF MAINE
CUMBERLAND, SS.

December 8, 1997

Then personally appeared the above-named Peter Moynihan, President of said grantor corporations as aforesaid, and acknowledged the foregoing instrument to be his free act and deed in his said capacity, and the free act and deed of said corporations.

Before me,


Notary Public/Attorney at Law

Printed Name: Melissa H. Murphy

EXHIBIT A

Certain real estate located in Portland, Cumberland County, Maine, being Market Unit M and Assisted Living Unit A at Park-Danforth Condominium, a condominium established in accordance with the Maine Condominium Act, Chapter 31 of Title 33 of the Revised Statutes of Maine, 1964, as the same may be amended from time to time, together with said Units' percentage interests and other appurtenant rights in Common Elements and Limited Common Elements, all as more specifically described in The Park-Danforth Condominium Declaration, dated December 14, 1983, and recorded in the Cumberland County Registry of Deeds in Book 6354, Page 119, as amended by Amended and Restated Declaration of Condominium of Park-Danforth Condominium, dated November 19, 1997, and recorded in said Registry of Deeds in Book 13480, Page 187; and as delineated on the Plats and Plans of Park-Danforth Condominium recorded in said Registry of Deeds in Plan Book 140, Page 37, as amended by Amended Plats and Plans recorded in said Registry of Deeds in Plan Book 197, Pages 515 through 519.

RECEIVED
RECORDED REGISTRY OF DEEDS

1997 DEC -8 PH 3: 13

CUMBERLAND COUNTY

John B. O'Brien

4000 9-88 1000

KNOW ALL MEN BY THESE PRESENTS

That Albert A. Foy, married, of City of
Concord, County of Merrimac

and State of New Hampshire consideration of One Dollar and other valuable consideration (the sum being less than one hundred dollars) paid by CENTRAL MAINE POWER COMPANY, a Maine corporation and NEW ENGLAND TELEPHONE AND TELEGRAPH COMPANY, a New York corporation, the receipt whereof is hereby acknowledged, does hereby give, grant, bargain, sell and convey unto the said Central Maine Power Company and New England Telephone and Telegraph Company, their successors and assigns, the right and easement to construct, erect, rebuild, operate, maintain and remove electric distribution and communication lines for the transmission of electricity and intelligence; together with the necessary poles, wires, cables, cross-arms, braces, anchors, guys and other electrical equipment and appurtenances connected therewith, over, along and across premises owned by the Grantor(s) in the City of Portland, County of Cumberland Town and State of Maine, along the route as now staked out, extending in a southwesterly direction from Forest Avenue to pole # 0128.3

Foy
to
Central
Me Power
Co &

Ease

Also the right to cut down, trim and remove such trees, branches and underbrush as in the judgment of the Grantees interfere with or endanger the operation of the lines constructed along the above described location, together with the right to enter upon the Grantor's premises for any or all of the foregoing purposes.

It is understood and agreed that the rights and easements hereby conveyed are to be jointly owned by Central Maine Power Company and New England Telephone and Telegraph Company, their successors and assigns. If either Central Maine Power Company or New England Telephone and Telegraph Company, or the successors or assigns of either, shall relinquish or abandon the rights and easements hereby conveyed, the same shall become the sole property of the remaining company.

TO HAVE AND TO HOLD the above granted rights and easements to the said Central Maine Power Company and New England Telephone and Telegraph Company, their successors or assigns, to their own use and behoof forever.

IN WITNESS WHEREOF, the said Grantor(s) and Mildred B. Foy, wife
of the said Grantor

joining in this easement as grantor and relinquishing and conveying all her his rights by descent and all other rights in the above described rights and easements have hereunto set their hands and seals this twentieth day of September, 1957

Signed, Sealed and Delivered
in presence of

Walter E. Brothby
to both

Albert A. Foy
Mildred B. Foy

MAY 5 1958
STATE OF MAINE,

County of Cumberland

September 20, 1957

Personally appeared the above named Albert A. Foy
and acknowledged the foregoing instrument to be his free act and deed, before me,

REGISTRY OF DEEDS, CUMBERLAND COUNTY, MAINE

Received at 9 H - M, and recorded in

BOOK 2407 PAGE 341

Walter E. Brothby
Justice of the Peace

Register

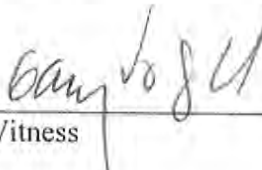
MHM
PERKINS THOMPSON
ONE CANAL PLAZA
P.O. BOX 426
PORTLAND, ME 04112-0426

QUITCLAIM DEED WITH COVENANT
(Maine Statutory Short Form)

KNOW ALL BY THESE PRESENTS, that **THE PARK-DANFORTH**, a Maine non-profit corporation with a mailing address of 777 Stevens Avenue, Portland, ME 04103, for consideration paid, GRANTS to **HFA HUD PROPERTIES, LLC**, a Maine limited liability company, with a mailing address of 777 Stevens Avenue, Portland, ME 04103, with QUITCLAIM COVENANT, certain real estate located in Portland, County of Cumberland and State of Maine, which is more particularly described in Exhibit A attached hereto and made a part hereof.

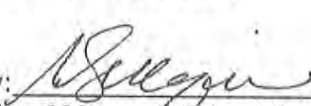
This conveyance is made pursuant to a merger transaction.

IN WITNESS WHEREOF, **THE PARK-DANFORTH** has caused this instrument to be executed on its behalf by its duly authorized undersigned representative to be effective as of June 30, 2014.



Witness

THE PARK-DANFORTH

By: 

Printed Name: Michael Bevilacqua

Its: Vice President

STATE OF MAINE
County of Cumberland, SS.

June 26, 2014

Then personally appeared the above-named Michael Bevilacqua, Vice President of **THE PARK-DANFORTH**, and acknowledged the foregoing instrument to be his/her free act and deed in his/her said capacity, and the free act and deed of **THE PARK-DANFORTH**.

Before me,

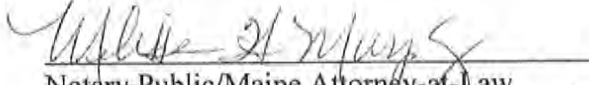

Notary Public/Maine Attorney-at-Law
Printed Name: Melissa H. Murphy

Exhibit A

All that certain premises and proportionate interest in The Park-Danforth Condominium, a condominium situated in Portland, Cumberland County, Maine more particularly described as follows:

The unit ("Unit") designated as HUD Unit H of The Park-Danforth Condominium located at 777 Stevens Avenue, Portland, Maine, as created pursuant to the provisions of the Maine Condominium Act, 33 M.R.S.A., Chapter 31 by Declaration of Condominium for Park-Danforth Condominium dated December 14, 1983 and recorded in Book 6354, Page 119, as affected by Certificate dated June 21, 1995, recorded in Book 11978, Page 253; as further affected by Amended and Restated Declaration dated November 19, 1997, recorded in Book 13480, Page 187 and First Amendment dated September 18, 2002 and recorded in Book 18699, Page 214, together with all limited common elements and other rights thereto and with an undivided interest in all common areas and facilities, and as delineated on the Park Danforth Condominium Plans dated December 7, 1983 and recorded in Plan Book 140, Page 37, as amended by Plat and Plans of The Park-Danforth Condominium dated September 23, 1997, recorded in the Cumberland County Registry of Deeds in Plan Book 197, Pages 515 through 519 (the "Plat and Plans").

Received
Recorded Register of Deeds
Jun 30 2014 09:47:01A
Cumberland County
Pamela E. Lavley

QUITCLAIM DEED
WITH COVENANT
Maine Statutory Short Form

KNOW ALL PERSONS BY THESE PRESENTS, That **Sarah A. Meyer** of Portland, County of Cumberland and State of Maine, for consideration paid, grants to **Home for the Aged**, a Maine non-profit corporation, whose mailing address is 777 Stevens Avenue, Portland, Maine 04103, with QUITCLAIM COVENANT, the real property situated in Portland, County of Cumberland and State of Maine more particularly described in Exhibit A attached hereto and incorporated herein by reference.

IN WITNESS WHEREOF, I have hereunto set my hand and seal this
27 of May, 2014.

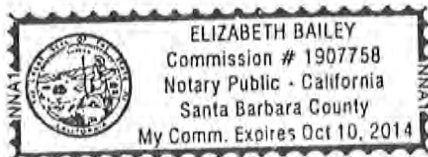
Witness

Sarah Meyer
Sarah A. Meyer

State of California,
County of Santa Barbara

May 27 2014

Personally appeared before me the above named **Sarah A. Meyer** and acknowledged the foregoing instrument to be her free act and deed.



Elizabeth Bailey
Notary Public

EXHIBIT A

A certain lot or parcel of land, with the buildings thereon, situated on the easterly side of Stevens Avenue, in the City of Portland, County of Cumberland and State of Maine, bounded and described as follows:

Beginning on said side of Stevens Avenue at the northwesterly corner of land formerly of Murphy;

Thence northerly on the easterly line of Stevens Avenue a distance of 48 feet to the southerly line of Arbor Street;

Thence easterly on the southerly line of Arbor Street a distance of 93 feet, more or less, to land conveyed by William B. Barnett to the Trustees of Maple Lodge of Good Templars by deed dated August 11, 1913 and recorded in Cumberland County Registry of Deeds in Book 916, Page 445 (the Grantor's deed contained a scrivener's error which mistakenly referenced the foregoing recording information as Book 916, Page 443);

Thence southerly by said Lodge land a distance of 48 feet, more or less, to said former Murphy land;

Thence westerly by said Murphy land to said Stevens Avenue at the point of beginning.

Meaning and intending to convey and hereby conveying the same premises conveyed to Sarah Meyer by deed of Stuart A. Anderson, Personal Representative of the Estate of Veronica M. Anderson dated March 19, 2010 and recorded in the Cumberland County Registry of Deeds in Book 27660, Page 339.

STATUTORY WARRANTY DEED

AJS Family Limited Partnership, a Maine limited partnership, with a principal place of business in the City of South Portland, County of Cumberland and State of Maine, and **Robert L. Adam**, an individual, of Westbrook, County of Cumberland and State of Maine,

For Consideration Paid, GRANT with WARRANTY COVENANTS TO:

HFA Forest Avenue Properties, LLC, a Maine limited liability company with a principal place of business in the City of Portland, County of Cumberland and State of Maine, with a mailing address of 777 Stevens Avenue, Portland, Maine 04103,

A certain lot or parcel of land, with the buildings and improvements thereon, situated on the westerly side of Forest Avenue, southerly side of Arbor Street, and easterly side of Stevens Avenue, in the City of Portland, County of Cumberland and State of Maine, bounded and described as follows:

Beginning on the westerly side of Forest Avenue at the northeasterly corner of land conveyed by George D. Little to the City of Portland by deed dated June 3, 1908 and recorded in Cumberland County Registry of Deeds, in Book 826, Page 132; thence northerly by Forest Avenue two hundred one and one tenth (201.1) feet to Arbor Street; thence westerly by Arbor Street, two hundred sixteen and twenty-five hundredths (216.25) feet to the easterly corner of land conveyed by George B. Bangs to William B. Barnett by deed dated May 10, 1892, and recorded in said Registry of Deeds, in Book 590, Page 353, now or formerly of Grenier; thence South 34° 30' West by said former William Barnett land, fifty-eight and thirteen hundredths (58.13) feet to the southeasterly corner of said Barnett land; thence North 51° 30' West by said Barnett land and by land formerly of Wright, et al., later of Lowery, and by land now or formerly of Walter Barnett, one hundred sixty-two and sixty-five hundredths (162.65) feet to Stevens Avenue; thence southwesterly by Stevens Avenue, eighty-eight and 46/100 (88.46) feet to a monument; thence South 63° 45' East by land of Westbrook Junior College, two hundred forty-two and seven-tenths (242.7) feet to an iron; thence South 16° 15' West by Westbrook Junior College, one hundred sixty-nine and ninety-three hundredths (169.93) feet to land now or formerly of the City of Portland; thence northeasterly by said City of Portland land, two hundred twenty-one and 81/100 (221.81) feet to Forest Avenue at the point of beginning.

For Grantors' source of title, reference is made to the following deeds recorded at the Cumberland County Registry of Deeds:

- 1) Warranty Deed from Pine State Beef Company to Lloyd B. Wolf dated November 21, 1972, and recorded in Book 3329, Page 17;

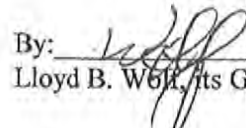
MAINE REAL ESTATE TAX PAID

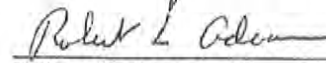
- 2) Warranty Deed from Lloyd B. Wolf to Lloyd B. Wolf and Robert L. Adam, dated February 3, 1986, and recorded in Book 7062, Page 48; and
- 3) Quitclaim Deed from Lloyd B. Wolf to AJS Family Limited Partnership (one-half interest) dated December 30, 1997, and recorded in Book 13529, Page 18.

IN WITNESS WHEREOF, the said AJS Family Limited Partnership, by and through its duly authorized General Partner, Lloyd B. Wolf, and Robert L. Adam, individually, have caused this instrument to be signed and sealed this 23rd day of April, 2012.

AJS Family Limited Partnership




By: 
Lloyd B. Wolf, its General Partner

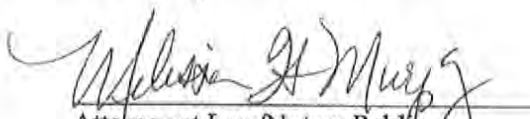

Robert L. Adam

STATE OF MAINE
CUMBERLAND, SS.

Date: April 23, 2012

Then personally appeared the above-named LLOYD B. WOLF, General Partner of said AJS Family Limited Partnership as aforesaid and acknowledged the foregoing instrument to be his free act and deed in his said capacity and the free act and deed of said limited partnership.

Before me,


Attorney at Law/Notary Public
Melissa H. Murphy

STATE OF MAINE
CUMBERLAND, SS.

Date: April 23, 2012

Then personally appeared the above-named ROBERT L. ADAM and acknowledged the foregoing instrument to be his free act and deed.

Before me,


Attorney at Law/Notary Public
Melissa H. Murphy

Received
Recorded Register of Deeds
Apr 24, 2012 10:28:36A
Cumberland County
Pamela E. Lovley

Date: September 26, 2014

1. PERSONAL PROPERTY: The following items of personal property are included in this sale (if applicable): None.

2. PURCHASE PRICE: The TOTAL purchase price being _____ Dollars (\$_____) to be paid as follows:

- (PD743199-1)

8. PRORATIONS: The following items shall be paid or prorated:

- Real Estate Taxes shall be prorated based on the City's tax year. Seller is responsible for any unpaid taxes for prior years.
- Fuel and metered utilities, such as water and sewer, shall be paid by Seller through date of Closing.
- Purchaser and Seller shall each pay its transfer tax at Closing as required by the State of Maine.
- Any other items that are customarily prorated between purchasers and sellers of real estate in the State of Maine shall be prorated at Closing.

9. INSPECTIONS: This Contract is subject to the following inspections and investigations, with the results being satisfactory to the Purchaser:

TYPE OF INSPECTION	YES	NO	RESULTS	TYPE OF INSPECTION	YES	NO	RESULTS
			REPORTED				REPORTED
u. General Building	x		Within 30 days	h. Pests		x	Within days
b. Sewage Disposal		x	Within days	i. Landlord Obligations		x	Within days
c. Water Quality		x	Within days	j. ADA		x	Within days
d. Radon Air Quality		x	Within days	k. Wetlands		x	Within days
e. Radon Water Quality		x	Within days	l. Environmental Phase I	x		Within 30 days
f. Asbestos	x		Within 30 days	m. Zoning and Land Use	x		Within 30 days
g. Lead Paint	x		Within 30 days	n. Survey	x		Within 30 days

The use of days is intended to mean from the Effective Date of this Contract. All inspections will be done by inspectors chosen and paid for by the Purchaser. If the result of any inspection or other condition specified herein is unsatisfactory to the Purchaser, in Purchaser's sole discretion, Purchaser may declare the Contract null and void by notifying Seller in writing within the specified number of days, and any earnest money shall be returned to the Purchaser. If the Purchaser does not notify the Seller that an inspection is unsatisfactory within the time period set forth above, this contingency is waived by the Purchaser. In the absence of inspection(s) mentioned above, the Purchaser is relying completely upon Purchaser's own opinion as to the condition of the property.

- 10. DEFAULT:** If Purchaser fails to perform any of the terms of this Contract for any reason other than those that would permit Purchaser to terminate the Contract and receive refund of the earnest money deposit or is otherwise in default of any of its obligations, Seller's sole and exclusive remedy shall be to retain the earnest money as full and complete liquidated damages. If Seller fails to perform any of the terms of this Contract or is otherwise in default in any of its obligations, Purchaser may demand termination of this Contract and return of the earnest money deposit or exercise any other remedy available to it at law or in equity.
- 11. PRIOR STATEMENTS:** Any verbal representations, statements and agreements are not valid unless contained herein. This Contract completely expresses the obligations of the parties. This is a Maine contract and shall be construed according to the laws of Maine.
- 12. HEIRS/ASSIGNS:** Purchaser may assign its rights under this Contract. This Contract shall extend to and be obligatory upon heirs, personal representatives, successors, and assigns of the respective parties.
- 13. COUNTERPARTS:** This Contract may be signed on any number of identical counterparts, including telefacsimile and pdf copies, with the same binding effect as if the signatures were on one instrument. Original, telefacsimiled or pdf signatures are binding.
- 14. BINDING CONTRACT:** 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. The Effective Date of the Contract is noted below. Time is of the essence of this Contract.

15. NO BROKERS: Seller and Purchaser warrant and represent to each other that neither has employed or engaged any real estate broker or agent in connection with this transaction that could give rise to a lien against the property. Each party hereto agrees to hold the other party harmless from and against any and all costs, expenses, claims, losses, or damages, including reasonable attorneys' fees, resulting from a breach of such party's representation or covenant contained in this paragraph 15. The provisions of this paragraph 15 shall survive the Closing.

16. NOTICES. All notices and other communications required or permitted under this Contract must be in writing and shall be deemed duly served if sent by personal delivery and receipted for, sent by FedEx or other nationally recognized overnight courier service, or mailed by registered or certified mail, return receipt requested, addressed, if to Seller, at the address of Seller set forth below with a copy sent to the address below or such other address as Seller shall have last designated by notice in writing to Purchaser and, if to Purchaser, at the address of Purchaser set forth below with a copy sent to the address below or such other address as Purchaser shall have last designated by notice in writing to Seller. Any such notice shall be deemed effective when sent in accordance with this paragraph 16.

If to Seller: Michele A. McGeachey



with a copy to:

If to Purchaser

Home for the Aged
777 Stevens Avenue
Portland, ME 04103
Attn: Denise M. Vachon, Chief Executive Officer

with a copy to:

Melissa Hanley Murphy, Esq.
Perkins Thompson
One Canal Plaza
PO Box 426
Portland, ME 04112

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.

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 the Seller furnishes to the Purchaser a certificate by the Seller stating, under penalty of perjury, that Seller is a resident of Maine or the transfer is otherwise exempt from withholding.

[Signatures to follow on next page]

Purchaser: Home for the Aged

By: [Signature]
Robert Moore/CFO

Date: 9/26/2014

Soc. Sec. # or Tax I.D. # [Redacted]

The Seller accepts the offer and agrees to deliver the above-mentioned property at the price and upon the terms and conditions set forth above.

Signed this 1 day of October, 2014

Effective date of Contract:

Seller: [Signature]
Michele A/McGeachey

Date: 9/10/14

Soc. Sec. # or Tax I.D. # [Redacted]

EXHIBIT 4

Permitting

The following permitting is required:

- Maine Construction General Permit (development over 1 acre)

EXHIBIT 5**COMPLIANCE WITH APPLICABLE ZONING REQUIREMENTS**

The proposed expansion of Park Danforth is located within the Residential 6-A Zone (R 6-A zone). The expansion will provide opportunity for aging residents of Portland and Greater Portland to remain in the city and have access to services, transportation and cultural activities. The property is in the heart of a diverse vibrant university community that provides for life-long learning opportunities through adult education programs and UNE offerings. Shopping and services are within walking distance of the campus.

The purpose of the R-6A zone as stated in the Land Use Ordinance, is to *'encourage neighborhood livability with higher density multi-family housing on large parcels located off-peninsula'*. The expanded Park Danforth campus will offer housing for 214 elderly residents. While some residents of the existing facility require assisted living services, the proposed project will add 54 independent living units, attracting residents who will benefit from the two Metro public bus stops (fronting along Stevens Avenue and Forest Avenue) at the perimeter of the campus and the wide range of retail, restaurants, and service businesses along Forest Avenue. The existing single family and two family residential properties adjacent to the large box Goodwill store creates an incompatible mix of uses. By combining the individual lots to create one campus, the site will become unified in scale, architecture and site elements. Aesthetically, the Forest Avenue corridor will benefit from the Park Danforth project with the creation of a seamless, attractive street presence along the entire block.

The lot size of 4.16 acres meets the minimum lot size requirements. Frontage and front setbacks are from Stevens Avenue, as confirmed by Marge Schmuckal. All setbacks meet or exceed the required minimum distances. The total site open space requirement of 20% minimum and maximum lot coverage of 40% maximum have been met.

EXHIBIT 6

Easements

The following easement is related to the property at 777 Stevens Avenue:

- CMP Easement recorded in the Cumberland County Registry of Deeds, Book 2407, Page 341

EXHIBIT 7
TECHNICAL CAPABILITY

The following firms and individuals have provided technical information contained in this application:

Mitchell & Associates

Landscape Architects and Site Planners

70 Center Street

Portland, Maine 04101

Telephone: (207) 774-4427

Contacts: Robert Metcalf, Maine licensed landscape architect #1815

Lavallee/Brensinger Architects

Architects

155 Dow Street, Suite 400

Manchester, NH 03101

Telephone: (603) 622-5450

Contacts: Joan Eagleson

Allied Engineering

Mechanical and Electrical Engineers

160 Veranda Street

Portland, Maine 04103

Telephone: (207) 221-2260

Contact: Ian MacDonald

BH2M Engineers

Civil Engineers

28 State Street

Gorham, Maine 04038

Telephone: (207) 839-2771

Contacts: Lester Berry, PE, Maine #3341

Owen Haskell

Land Surveyors

390 U.S. Route One, Suite 10

Falmouth, Maine 04105

Telephone: (207) 774-0424

Contact: John Swan, Maine #1314

Albert Frick Associates

Environmental Consultants

95A County Road

Gorham, Maine 04038

Telephone: (207) 839-5563

Gorrill-Palmer Consulting Engineers

15 Shaker Rd
Gray, ME 04039
(207) 657-6910

Transportation Engineers

S.W. Cole Engineering, Inc.

286 Portland Road
Gray, ME 04039
(207) 657-2866

Geotechnical Engineers



June 23, 2014

To: Interested Parties
From: Denise M. Vachon, CEO
Re: Statement of Technical Capability

The Park Danforth is a long-standing not-for-profit provider of housing and services to those 60 years of age and older, having served the greater Portland community since 1881. Once the Mercantile Home for Aged Men located at the corner of Park and Danforth Streets, The Park Danforth of today is located on Stevens Avenue and has evolved into a recognized leader in the field of aging services. Today, it provides a unique mix of federally-assisted and market rate housing, a combination that allows for and accommodates the changing financial conditions that some of its residents face. This financial safety net is the cornerstone of The Park Danforth's Mission. Additionally, Clark's Terrace at The Park Danforth, which opened its doors in 2000, offers Assisted Living studios and round-the-clock supports and services that create another safety net – one that provides for a higher level of catered service when living more independently is no longer practical or safe. All together these programs and offerings are the basis of the practice that embodies and manifests The Park Danforth's Mission "to provide high quality housing and services...(and to) accommodate changing needs brought about by aging."

The Park Danforth is governed by a 10-member volunteer Board of Trustees representing a variety of not-for-profit and proprietary businesses, as well as lending, investment and insurance businesses, health care and legal practices, and consumers. It is a single-site organization, with administrative offices embedded in the housing property and program. The Park Danforth currently serves 135 residents in 124 apartments, (70 of which are federally-assisted and available to eligible very-low and extremely-low income residents), and 36 residents in its Assisted Living program. It funds and provides approximately \$400,000 of unreimbursed services and supports to its residents each year. And, it is proud to employ 84 full- and part-time employees.

The Executive Team is made up of tenured and capable professionals:

- The CEO, Denise Vachon, has been the organization's leader since 1986, and successfully led the expansion project between 1997 to its completion in 2000, the Masonry remediation project completed in 2008, and is the licensed administrator for the organization's assisted living program.
- Robert Moore, its CFO, has extensive background in marketing and business development, and has been on the team for over two years.
- Lisa Noonan, its COO, has been in a management position with the organization for 14 years, and in this role for more than two years as well.

The Development Team is also seasoned. On team are

- Lavallee Brensinger Architects (Manchester NH), regional leaders in the design and development of senior housing, health care and behavioral health environments.
- Mitchell & Associates, highly recognized and reputable landscape architects, engaged to support the property development and to assist in the City approval process.
- Ron Norton, President, CMCS (Construction Management Consulting Services). Mr. Norton is engaged to advise the Board of Trustees, its Committees and staff and to assist in the navigation of the development process as well, with a focus on value-based construction design and design options.
- Melissa Murphy, Perkins Thompkins, is highly regarded in her work in Real Estate. She has served as Registered Agent for The Park Danforth for over a decade, and is The Park Danforth's primary legal counsel on this project.
- The Board of Trustees is Chaired by Catherine Lamson of MEMIC. Also in office are Michael Bevilacqua of John T Gorman Foundation, Erik Hayward of Libra Foundation and Dana Mitiguy of R.M. Davis, Inc. Chairing the Real Estate Committee is Bill Shanahan of Northern New England Housing Investment Fund.

Altogether, the history of this organization as a provider of senior housing and services in this community speaks to its ability to develop and successfully administer this expansion and renovation. Its leadership is unified and committed to creating new housing and a revitalized environment that will respond to the needs of a changing senior consumer, while remaining true and committed to its not-for-profit Mission and culture of service.

Thank you for your consideration.



Bath Savings Institution
Since 1852

June 18, 2014

The Park Danforth
777 Stevens Avenue
Portland, ME 04103

City of Portland
389 Congress Street
Portland, ME 04101

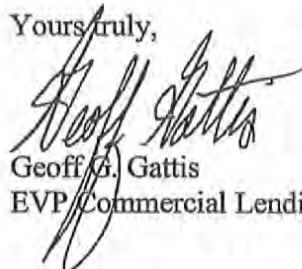
Re: City of Portland – The Park Danforth 1104 Forest Avenue Apartments Financial Capability Support Letter

To whom it may concern:

On behalf of Bath Savings Institution I am pleased to provide this letter in support of The Park Danforth for the above referenced project. Based on our prior experience with The Park Danforth in financing their current senior-living housing operations, and an understanding of the scope for the 1104 Forest Avenue project, we believe that the applicant has the ability to finance the projected costs and develop a project of similar type and scale from a fiscal perspective.

While this letter of support is not a commitment to lend, Bath Savings Institution would welcome the opportunity to be a resource to The Park Danforth for financing requirements as necessary in connection with this project. Our experience is that The Park Danforth is, in many ways, the premier senior housing development organization in Maine with a solid record of supporting healthy and inclusive neighborhoods and helping to build strong, affordable and sustainable senior living communities.

Yours truly,



Geoff B. Gattis
EVP Commercial Lending

EXHIBIT 8
TRAFFIC AND PARKING STUDY

**Traffic Forecast and Parking
Evaluation
The Park Danforth
Portland, Maine**

Prepared for:

**Mitchell Associates
70 Center Street
Portland, Maine 04101**

October 2014

Prepared by:



Gorrill-Palmer Consulting Engineers, Inc.

Traffic and Civil Engineering Services

*PO Box 1237
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Gray, ME 04039*

*(207) 657-6910
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**Traffic Forecast and Parking Evaluation
The Park Danforth
Portland, Maine**

Index

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Appendix

Trip Generation Calculations
Parking Summary Data
Maine DOT Crash Data

Executive Summary

The following Executive Summary is prepared for the reader's convenience, but is not intended to be a substitute for reading the full report.

Gorrill-Palmer Consulting Engineers, Inc. was retained by Mitchell & Associates to prepare this traffic forecast and parking evaluation for the proposed expansion of The Park Danforth. The existing site is bounded by Arbor Street, Forest Avenue, Stevens Avenue and Poland Street. The Park Danforth currently has 124 special needs independent living (SNILU) units and 36 intermediate care units and the planned expansion will consist of 54 independent residential units. The site currently has 91 space on the site today which is planned to increase by 59 spaces from 91 to 150 spaces upon completion of the project. Access to the site has been carefully planned after discussions with the City's Planning staff, consulting traffic engineer and the fire department.

Our findings based on this study are summarized below:

1. The proposed development is forecast to generate 11 and 14 trip ends in the weekday AM and PM peak hours of the adjacent street traffic respectively (ie the peak commuting hours. Note: A trip end is either a trip in or out of the site. Thus a round trip would equal two trip ends). At this level of trip generation, this project does not require a Maine Department of Transportation (MaineDOT) Traffic Movement Permit as there has not been any other significant construction during the last ten years.
2. Gorrill-Palmer Consulting Engineers, Inc. referenced the MaineDOT collision records to determine if there were any high crash locations in the project vicinity. The intersection of Forest Avenue and Read Street was identified as a high crash location with 10 collisions and a critical rate factor of 1.34 for the three year period of 2011 thru 2013. A copy of the collision reports for this intersection are included in the Appendix to this report which shows rear end collisions involving both right and left turning vehicles onto Read Street as well as a collision involving a pedestrian and one involving a bicyclist.
3. Access to the site has been carefully planned after discussions with the City's Planning staff, consulting traffic engineer and the fire department resulting in the following changes; close the Stevens Avenue driveway closest to Arbor Street; restrict the (relocated) current middle driveway on Stevens Ave to right in and out only; restrict the driveway closest to Poland Street as Emergency Vehicle Only, restrict the current Forest Avenue driveway to right in and out only.
4. The current campus has 160 living units and 91 parking spaces for an existing parking ratio of 0.57. There are 59 additional parking spaces planned for the proposed 54 independent living units which yields a parking ratio of 1.09 spaces per unit increasing the overall parking ratio for the campus to 0.70 spaces per unit.

I. *Existing and Proposed Site*

The existing site is bounded by Arbor Street, Forest Avenue, Stevens Avenue and Poland Street. The Park Danforth currently has 124 special needs independent living (SNILU) units and 36 intermediate care units and the planned expansion will consist of 54 independent residential units. The site currently has 91 parking spaces on the site today which is planned to increase by 59 spaces from 91 to 150 spaces upon completion of the project.

II. *Background Conditions*

Gorrill-Palmer Consulting Engineers, Inc. based the study on the following information:

- A site plan prepared by Mitchell & Associates.
- Crash data for 2011-2013 provided by the Maine Department of Transportation.
- Parking inventory performed at the existing Park Danforth completed for a two week period in September

III. *Trip Generation*

Gorrill-Palmer Consulting Engineers, Inc. used the Institute of Transportation Engineers (ITE) publication *Trip Generation*, 9th Edition Land Use Code 252, Senior Adult Housing to estimate the potential trip generation for the proposed 54 units of independent living. Using this information, the proposed housing is anticipated to generate the following trips (note- a trip end is a trip into or out of the site; thus a round trip is equal to two trip ends):

Weekday	186 trip ends
AM Peak Commuter Hour	11 trip ends
PM Peak Commuter Hour	14 trip ends
Peak hour for the units	21 trip ends
Peak hour for the units	19 trip ends

IV. *Crash Data*

In order to evaluate whether a location has a crash problem, MaineDOT uses two criteria to define High Crash Locations (HCL). Both criteria must be met in order to be classified as an HCL.

1. A critical rate factor of 1.00 or more for a three-year period. (A Critical Rate Factor {CRF} compares the actual accident rate to the rate for similar intersections in the State. A CRF of less than 1.00 indicates a rate less than average) and:
2. A minimum of 8 crashes over a three-year period.

Our office reviewed the 2011-2013 crash data in this area and found the intersection of Forest Avenue and Read Street was identified as a high crash location with 10 collisions and a critical rate factor of 1.34 for the three year period of 2011 thru 2013. A copy of the collision reports for this intersection are included in the Appendix to this report which shows rear end collisions involving both right and left turning vehicles onto Read Street as well as a collision involving a pedestrian and one involving a bicyclist. The Park Danforth does not appear to be a contributing factor to these collisions, however restriction of the existing Forest Avenue driveway to right turns in and right turns out only should provide an incremental improvement to the safety of the corridor.

V. Proposed Access

The site currently has three full access driveways to Stevens Avenue, one full access driveway on Arbor Street and two full access driveways on Forest Avenue. These access driveways to the site have been carefully reviewed by the project team and discussed with the City's Planning staff, consulting traffic engineer and the fire department resulting in the following changes; close the Stevens Avenue driveway closest to Arbor Street; restrict the (relocated) current middle driveway on Stevens Ave to right in and out only; restrict the driveway closest to Poland Street as Emergency Vehicle Only, restrict the current Forest Avenue driveway to right in and out only.

VI. Parking Evaluation

While The Park Danforth wants to provide adequate parking for the project, parking results in loss of open space and increasing stormwater impacts, and uses 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. To estimate the parking demand for the proposed project, Gorrill-Palmer Consulting Engineers, Inc. consulted two sources; a parking use inventory completed by The Park Danforth personnel for the existing 160 residential units at The Park Danforth; and secondly, relevant parking studies we have completed at other locations in Portland. Each of these are summarized below:

Parking study of existing 160 Park Danforth residential units- The Park Danforth personnel completed an inventory of occupied parking spaces for the existing 160 residential units currently on the property from Wednesday September 10th 2014 through Wednesday September 24th from 9:00 AM to until 6:00 PM each day. The number of vehicles present on the site beginning at each hour was recorded for three existing parking areas; the Stevens Avenue resident and visitor lot; the staff parking lot; and the Forest Avenue resident and visitor lot. This represents the time periods during the day with the highest activity. A summary of the results is presented below and the complete parking survey is included in the Appendix of this report:

Parking Survey Results for the Existing 160 Residential Units

- Highest Demand observed in the Stevens Avenue Resident Lot- 46 spaces which occurred once during the two week period at 4:00 PM on the 10th.
- Highest Demand observed in the staff parking lot- 24 spaces which occurred twice, at noon on the 22nd and 1:00 PM on the 23rd.
- Highest Demand observed in the Forest Avenue resident and visitor lot- 18 spaces which occurred twice, on the 23rd at noon and the 24th at 10:00.

If each of these peak demands were to occur simultaneously, the total demand would be 88 spaces occupied of the 91 available spaces on site yielding a demand of 0.55 spaces per unit.

Other Relevant Parking Studies

Our office also reviewed data from other projects we have on file in our office in estimating an appropriate parking ratio for this project which is summarized below:

- 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.

In addition, we referenced the parking supply for Franklin Towers and the recently-completed Oak Street Lofts. Franklin Towers has 200 units, and based upon aerial data, a parking supply of 58 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 are 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.

** 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.

While The Park Danforth is not located on the Peninsula, it is in close proximity and so the above information does provide a benchmark.

Proposed Parking Supply

The site currently has 91 parking spaces on the site today which appears to meet the demand for the facility based on the extended survey completed in September. The number of parking spaces is planned to increase by 59 spaces from 91 to 150 spaces upon completion of the project. This equates to an increase of 59 spaces for 54 units or a parking ratio of 1.09 per independent living unit. The Portland City Council is considering a text amendment to the current zoning to require 1 space per living unit, which is slightly exceeded with this proposal. With completion of the project, the overall parking ratio for the site will be 0.70 spaces per living unit.

JN:
 Project Description:
 Project Location:
 Date:

2892
 The Park Danforth
 Portland
 10/14/2014

Gorrill-Palmer Consulting Engineers, Inc.
 P.O. Box 1237
 15 Shaker Road
 Gray, Maine 04039

**Senior Adult Housing - Attached
 Land Use Code (LUC) 252**

Dwelling Units: 54

Average Rate

Time Period	ITE Trip Rate	Trip Ends	Directional Split *		Directional Distribution	
			IN	OUT	IN	OUT
Weekday	T = 3.44 (X)	186	50%	50%	93	93
Peak Hour of Adjacent Street Traffic 7-9 AM	T = 0.20 (X)	11	35%	65%	4	7
Peak Hour of Adjacent Street Traffic 4-6 PM	T = 0.25 (X)	14	60%	40%	8	6
AM Peak Hour of Generator	T = 0.39 (X)	21	50%	50%	11	10
PM Peak Hour of Generator	T = 0.35 (X)	19	55%	45%	10	9
Saturday	T = 2.61 (X)	141	50%	50%	71	70
Saturday Peak Hour	T = 0.31 (X)	17	50%	50%	9	8

* Percentages rounded to nearest 5%

14-day look-back	Stevens Avenue Resident and Visitor lot
------------------	---

This study requires review of 14 consecutive days, to include 10 business days and 4 weekend days

Once started, this project must include all the consecutive days

# of vehicles in the lot resident and visitors			# of vehicles in the lot resident and visitors		
Date			Date		
10-Sep	9:00 AM	38	13-Sep	9:00 AM	30
	10:00 AM	36		10:00 AM	32
	11:00 AM	35		11:00 AM	32
	12:00 PM	35		12:00 PM	34
	1:00 PM	39		1:00 PM	36
	2:00 PM	39		2:00 PM	41
	3:00 PM	39		3:00 PM	38
	4:00 PM	46		4:00 PM	37
	5:00 PM	43		5:00 PM	37
	6:00 PM	42		6:00 PM	35
11-Sep	9:00 AM	34	14-Sep	9:00 AM	35
	10:00 AM	35		10:00 AM	36
	11:00 AM	43		11:00 AM	39
	12:00 PM	41		12:00 PM	34
	1:00 PM	37		1:00 PM	39
	2:00 PM	39		2:00 PM	39
	3:00 PM	41		3:00 PM	36
	4:00 PM	38		4:00 PM	34
	5:00 PM	38		5:00 PM	37
	6:00 PM	37		6:00 PM	33
12-Sep	9:00 AM	31	15-Sep	9:00 AM	38
	10:00 AM	37		10:00 AM	38
	11:00 AM	30		11:00 AM	38
	12:00 PM	31		12:00 PM	37
	1:00 PM	39		1:00 PM	27
	2:00 PM	33		2:00 PM	26
	3:00 PM	39		3:00 PM	36
	4:00 PM	37		4:00 PM	39
	5:00 PM	38		5:00 PM	40
	6:00 PM	42		6:00 PM	40

# of vehicles in the lot resident and visitors			# of vehicles in the lot resident and visitors		
Date			Date		
16-Sep	9:00 AM	36	19-Sep	9:00 AM	32
	10:00 AM	39		10:00 AM	33
	11:00 AM	38		11:00 AM	33
	12:00 PM	39		12:00 PM	31
	1:00 PM	30		1:00 PM	34
	2:00 PM	36		2:00 PM	34
	3:00 PM	36		3:00 PM	38
	4:00 PM	34		4:00 PM	41
	5:00 PM	42		5:00 PM	39
	6:00 PM	38		6:00 PM	39
17-Sep	9:00 AM	33	20-Sep	9:00 AM	32
	10:00 AM	32		10:00 AM	31
	11:00 AM	38		11:00 AM	31
	12:00 PM	35		12:00 PM	30
	1:00 PM	34		1:00 PM	37
	2:00 PM	35		2:00 PM	36
	3:00 PM	38		3:00 PM	37
	4:00 PM	41		4:00 PM	40
	5:00 PM	42		5:00 PM	37
	6:00 PM	38		6:00 PM	39
18-Sep	9:00 AM	28	21-Sep	9:00 AM	32
	10:00 AM	31		10:00 AM	32
	11:00 AM	38		11:00 AM	31
	12:00 PM	39		12:00 PM	28
	1:00 PM	36		1:00 PM	31
	2:00 PM	36		2:00 PM	36
	3:00 PM	37		3:00 PM	39
	4:00 PM	40		4:00 PM	35
	5:00 PM	41		5:00 PM	36
	6:00 PM	39		6:00 PM	39

Staff Parking Lot

Once started, this project must include all the consecutive days

# of vehicles in the lot resident and visitors			# of vehicles in the lot resident and visitors		
Date			Date		
10-Sep	9:00 AM	18	13-Sep	9:00 AM	6
	10:00 AM	18		10:00 AM	6
	11:00 AM	22		11:00 AM	5
	12:00 PM	20		12:00 PM	6
	1:00 PM	18		1:00 PM	6
	2:00 PM	19		2:00 PM	7
	3:00 PM	18		3:00 PM	8
	4:00 PM	16		4:00 PM	5
	5:00 PM	10		5:00 PM	5
	6:00 PM	9		6:00 PM	5
11-Sep	9:00 AM	15	14-Sep	9:00 AM	missing data
	10:00 AM	16		10:00 AM	"
	11:00 AM	17		11:00 AM	"
	12:00 PM	17		12:00 PM	"
	1:00 PM	19		1:00 PM	"
	2:00 PM	17		2:00 PM	"
	3:00 PM	17		3:00 PM	"
	4:00 PM	14		4:00 PM	3
	5:00 PM	10		5:00 PM	3
	6:00 PM	10		6:00 PM	3
12-Sep	9:00 AM	18	15-Sep	9:00 AM	20
	10:00 AM	20		10:00 AM	22
	11:00 AM	22		11:00 AM	22
	12:00 PM	20		12:00 PM	22
	1:00 PM	20		1:00 PM	22
	2:00 PM	16		2:00 PM	21
	3:00 PM	19		3:00 PM	16
	4:00 PM	13		4:00 PM	19
	5:00 PM	12		5:00 PM	13
	6:00 PM	10		6:00 PM	10

Date			# of vehicles in the lot resident and visitors	Date			# of vehicles in the lot resident and visitors
16-Sep	9:00 AM		18	19-Sep	9:00 AM		17
	10:00 AM		20		10:00 AM		19
	11:00 AM		22		11:00 AM		19
	12:00 PM		21		12:00 PM		20
	1:00 PM		22		1:00 PM		19
	2:00 PM		21		2:00 PM		17
	3:00 PM		22		3:00 PM		17
	4:00 PM		19		4:00 PM		13
	5:00 PM		11		5:00 PM		9
	6:00 PM		9		6:00 PM		7
17-Sep	9:00 AM		19	20-Sep	9:00 AM		8
	10:00 AM		20		10:00 AM		8
	11:00 AM		22		11:00 AM		8
	12:00 PM		22		12:00 PM		8
	1:00 PM		21		1:00 PM		8
	2:00 PM		22		2:00 PM		9
	3:00 PM		22		3:00 PM		8
	4:00 PM		15		4:00 PM		3
	5:00 PM		12		5:00 PM		2
	6:00 PM		6		6:00 PM		2
18-Sep	9:00 AM		18	21-Sep	9:00 AM		8
	10:00 AM		19		10:00 AM		14
	11:00 AM		21		11:00 AM		18
	12:00 PM		20		12:00 PM		20
	1:00 PM		20		1:00 PM		22
	2:00 PM		17		2:00 PM		16
	3:00 PM		20		3:00 PM		15
	4:00 PM		14		4:00 PM		3
	5:00 PM		7		5:00 PM		2
	6:00 PM		7		6:00 PM		2

14-day look-back	Forest Avenue Resident and Visitor lot	
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This study requires review of 14 consecutive days, to include 10 business days and 4 weekend days

Once started, this project must include all the consecutive days				
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# of vehicles in the lot resident and visitors			# of vehicles in the lot resident and visitors		
Date			Date		
10-Sep	9:00 AM	12	13-Sep	9:00 AM	13
	10:00 AM	11		10:00 AM	13
	11:00 AM	10		11:00 AM	11
	12:00 PM	11		12:00 PM	10
	1:00 PM	9		1:00 PM	10
	2:00 PM	10		2:00 PM	9
	3:00 PM	11		3:00 PM	8
	4:00 PM	13		4:00 PM	11
	5:00 PM	12		5:00 PM	11
	6:00 PM	13		6:00 PM	11
11-Sep	9:00 AM	13	14-Sep	9:00 AM	missing data
	10:00 AM	12		10:00 AM	"
	11:00 AM	14		11:00 AM	"
	12:00 PM	12		12:00 PM	"
	1:00 PM	11		1:00 PM	"
	2:00 PM	13		2:00 PM	"
	3:00 PM	13		3:00 PM	"
	4:00 PM	14		4:00 PM	11
	5:00 PM	15		5:00 PM	12
	6:00 PM	15		6:00 PM	12
12-Sep	9:00 AM	10	15-Sep	9:00 AM	17
	10:00 AM	10		10:00 AM	17
	11:00 AM	12		11:00 AM	14
	12:00 PM	12		12:00 PM	11
	1:00 PM	9		1:00 PM	13
	2:00 PM	8		2:00 PM	13
	3:00 PM	10		3:00 PM	13
	4:00 PM	13		4:00 PM	13
	5:00 PM	15		5:00 PM	14
	6:00 PM	15		6:00 PM	12

Crash Summary Report

Report Selections and Input Parameters

REPORT SELECTIONS☒ Crash Summary I☐ Section Detail☒ Crash Summary II☐ 1320 Public☐ 1320 Private☐ 1320 SummaryREPORT DESCRIPTION

Poland_Arbor

REPORT PARAMETERS

Year 2011, Start Month 1 through Year 2013 End Month: 12

Route: 0560589

Start Node: 13199
End Node: 16866Start Offset: 0
End Offset: 0☐ Exclude First Node
☐ Exclude Last Node

Route: 0560016

Start Node: 13200
End Node: 16868Start Offset: 0
End Offset: 0☐ Exclude First Node
☐ Exclude Last Node

Route: 0302X

Start Node: 16866
End Node: 16868Start Offset: 0
End Offset: 0☒ Exclude First Node
☒ Exclude Last Node

Route: 0560678

Start Node: 13199
End Node: 13200Start Offset: 0
End Offset: 0☒ Exclude First Node
☒ Exclude Last Node

Maine Department Of Transportation - Traffic Engineering, Crash Records Section

Crash Summary I

Nodes														
Node	Route - MP	Node Description	U/R	Total Crashes	K	Injury Crashes			PD	Injury	Percent Annual M Ent-Veh	Crash Rate	Critical Rate	CRF
13199	0560589 - 0	Int of POLAND ST STEVENS AV	2	0	0	0	0	0	0	0.0	3,774	0.00	0.38	0.00
16866	0560589 - 0.11	Int of FOREST AV POLAND ST	2	2	0	0	0	1	1	50.0	7,443	0.09	0.29	0.00
13200	0560016 - 0	Int of ARBOR ST STEVENS AV	2	2	0	0	0	1	1	50.0	3,729	0.18	0.38	0.00
16868	0560016 - 0.07	Int of ARBOR ST FOREST AV	2	3	0	0	0	0	3	0.0	8,953	0.11	0.27	0.00
16867	0302X - 2.02	Int of ADELAIDE ST FOREST AV READ ST	2	10	0	1	1	3	5	50.0	9,107	0.37	0.27	1.34
Study Years: 3.00				NODE TOTALS:										
				17	0	1	1	5	10	41.2	33,006	0.17	0.21	0.81

Maine Department Of Transportation - Traffic Engineering, Crash Records Section

Crash Summary I

nd ode	Element	Offset Begin - End	Route - MP	Section Length	U/R	Sections							Annual HMVM	Crash Rate	Critical Rate	CRF
						Total Crashes	K	A	B	C	PD	Percent Injury				
866	187873 ST STEVENS AV	0 - 0.11	0560589 - 0 RD INV 05 60589	0.11	2	1	0	0	0	0	1	0.0	0.00007	5031.64 Statewide Crash Rate: 347.17	1235.99	4.07
868	187874 T STEVENS AV	0 - 0.07	0560016 - 0 RD INV 05 60016	0.07	2	0	0	0	0	0	0	0.0	0.00004	0.00 Statewide Crash Rate: 347.17	672.63	0.00
867	3131656 AV POLAND ST	0 - 0.04	0302X - 1.98 US 302	0.04	2	1	0	0	0	0	1	0.0	0.00300	110.94 Statewide Crash Rate: 172.78	473.95	0.00
868	3118708 E ST FOREST AV READ ST	0 - 0.03	0302X - 2.02 US 302	0.03	2	1	0	0	1	0	0	100.0	0.00267	124.81 Statewide Crash Rate: 172.78	488.66	0.00
200	3123933 ST STEVENS AV	0 - 0.09	0560678 - 0.26 RD INV 05 60678	0.09	2	4	0	0	0	0	4	0.0	0.00336	397.34 Statewide Crash Rate: 186.16	486.79	0.00
Section Totals:				0.34		7	0	0	1	0	6	14.3	0.00914	255.30	370.11	0.69
Grand Totals:				0.34		24	0	1	2	5	16	33.3	0.00914	875.30	518.84	1.69

∴ 3.00

Crash Summary

Section Details														
Start Node	End Node	Element	Offset Begin - End	Route - MP	Total Crashes	K	Injury Crashes			Crash Report	Crash Date	Crash Mile Point	Injury Degree	
							A	B	C	PD				
13199	16866	187873	0 - 0.11	0560589 - 0	1	0	0	0	0	1	2013-8510	04/02/2013	0.09	PD
13200	16868	187874	0 - 0.07	0560016 - 0	0	0	0	0	0	0				
16866	16867	3131656	0 - 0.04	0302X - 1.98	1	0	0	0	0	1	2011-1396C	01/25/2011	2.01	PD
16867	16868	3118708	0 - 0.03	0302X - 2.02	1	0	0	1	0	0	2013-21874	09/02/2013	2.03	B
13199	13200	3123933	0 - 0.09	0560678 - 0.26	4	0	0	0	0	4	2012-37814	09/06/2012	0.29	PD
											2012-44637	11/16/2012	0.31	PD
											2011-18118	12/07/2011	0.32	PD
											2011-8995C	06/14/2011	0.34	PD
Totals:					7	0	0	0	1	0	6			

Maine Department Of Transportation - Traffic Engineering, Crash Records Section
Crash Summary II - Characteristics

Crashes by Day and Hour

Day Of Week	Hour of Day												PM												Un	Tot
	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11		
SUNDAY	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
MONDAY	0	0	0	0	0	0	0	0	0	0	3	2	0	1	0	0	0	0	0	0	0	0	0	0	0	6
TUESDAY	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1	1	0	0	0	0	0	0	4
WEDNESDAY	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2
THURSDAY	0	0	0	0	0	0	0	1	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	4
FRIDAY	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	0	1	0	1	0	6
SATURDAY	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Totals	0	0	0	0	0	0	0	1	1	0	5	5	1	2	4	0	0	1	1	0	0	1	1	1	0	24

Vehicle Counts by Type

Unit Type	Total	Unit Type	Total
1-Passenger Car	27	23-Bicyclist	3
2-(Sport) Utility Vehicle	5	24-Witness	6
3-Passenger Van	3	25-Other	1
4-Cargo Van (10K lbs or Less)	1	Total	57
5-Pickup	4		
6-Motor Home	0		
7-School Bus	0		
8-Transit Bus	0		
9-Motor Coach	0		
10-Other Bus	0		
11-Motorcycle	0		
12-Moped	0		
13-Low Speed Vehicle	0		
14-Autocycle	0		
15-Experimental	0		
16-Other Light Trucks (10,000 lbs or Less)	0		
17-Medium/Heavy Trucks (More than 10,000 lbs)	2		
18-ATV - (4 wheel)	0		
20-ATV - (2 wheel)	0		
21-Snowmobile	0		
22-Pedestrian	5		

Crash Summary II - Characteristics

Crashes by Driver Action at Time of Crash							Crashes by Apparent Physical Condition And Driver								
Driver Action at Time of Crash	Dr-1	Dr-2	Dr-3	Dr-4	Dr-5	Other	Total	Apparent Physical Condition	Dr-1	Dr-2	Dr-3	Dr-4	Dr-5	Other	Total
No Contributing Action	12	5	0	0	0	0	17	Apparently Normal	24	18	0	0	0	8	50
Ran Off Roadway	0	0	0	0	0	0	0	Physically Impaired or Handicapped	0	0	0	0	0	0	0
Failed to Yield Right-of-Way	2	3	0	0	0	0	5	Emotional(Depressed, Angry, Disturbed, etc.)	0	0	0	0	0	0	0
Ran Red Light	0	0	0	0	0	0	0	Ill (Sick)	0	0	0	0	0	0	0
Ran Stop Sign	0	0	0	0	0	0	0	Asleep or Fatigued	0	0	0	0	0	0	0
Disregarded Other Traffic Sign	0	0	0	0	0	0	0	Under the Influence of Medications/Drugs/Alcohol	0	0	0	0	0	0	0
Disregarded Other Road Markings	0	0	0	0	0	0	0	Other	0	0	0	0	0	0	0
Exceeded Posted Speed Limit	0	0	0	0	0	0	0	Total	24	18	0	0	0	8	50
Drove Too Fast For Conditions	0	0	0	0	0	0	0	Driver Age by Unit Type							
Improper Turn	0	1	0	0	0	0	1	Age	Driver	Bicycle	SnowMobile	Pedestrian	ATV	Total	
Improper Backing	1	0	0	0	0	0	1	09-Under	0	0	0	0	0	0	0
Improper Passing	1	0	0	0	0	0	1	10-14	0	0	0	0	0	0	0
Wrong Way	0	0	0	0	0	0	0	15-19	2	0	0	0	0	0	2
Followed Too Closely	2	5	0	0	0	0	7	20-24	7	0	0	0	0	0	7
Failed to Keep in Proper Lane	0	0	0	0	0	0	0	25-29	7	0	0	0	0	0	7
Operated Motor Vehicle in Erratic, Reckless, Careless, Negligent or Aggressive Manner	1	0	0	0	0	0	1	30-39	8	0	0	0	0	0	8
Swerved or Avoided Due to Wind, Slippery Surface, Motor Vehicle, Object, Non-Motorist in Roadway	0	0	0	0	0	0	0	40-49	5	0	0	0	0	0	5
Over-Correcting/Over-Steering	0	0	0	0	0	0	0	50-59	6	0	0	0	0	0	6
Other Contributing Action	1	1	0	0	0	0	2	60-69	3	0	0	0	0	0	3
Unknown	0	0	0	0	0	0	0	70-79	0	0	0	0	0	0	0
Total	20	15	0	0	0	0	35	80-Over	4	0	0	0	0	0	4
								Unknown	1	3	0	5	0	0	9
								Total	43	3	0	5	0	0	51

Crash Summary II - Characteristics

Most Harmful Event			Injury Data		
Most Harmful Event	Total	Most Harmful Event	Severity Code	Injury Crashes	Number Of Injuries
1-Overturn / Rollover	0	38-Other Fixed Object (wall, building, tunnel, etc.)	K	0	0
2-Fire / Explosion	0	39-Unknown	A	1	1
3-Immersion	0	40-Gate or Cable	B	2	4
4-Jackknife	0	41-Pressure Ridge	C	5	9
5-Cargo / Equipment Loss Or Shift	0	Total	PD	16	0
6-Fell / Jumped from Motor Vehicle	0		Total	24	14
7-Thrown or Falling Object	0				
8-Other Non-Collision	0				
9-Pedestrian	0				
10-Pedalcycle	1				
11-Railway Vehicle - Train, Engine	0				
12-Animal	0				
13-Motor Vehicle in Transport	29				
14-Parked Motor Vehicle	2				
15-Struck by Falling, Shifting Cargo or Anything Set in Motion by Motor Vehicle	0				
16-Work Zone / Maintenance Equipment	0				
17-Other Non-Fixed Object	0				
18-Impact Attenuator / Crash Cushion	0				
19-Bridge Overhead Structure	0				
20-Bridge Pier or Support	0				
21-Bridge Rail	0				
22-Cable Barrier	0				
23-Culvert	0				
24-Curb	0				
25-Ditch	0				
26-Embankment	0				
27-Guardrail Face	0				
28-Guardrail End	0				
29-Concrete Traffic Barrier	0				
30-Other Traffic Barrier	0				
31-Tree (Standing)	0				
32-Utility Pole / Light Support	0				
33-Traffic Sign Support	0				
34-Traffic Signal Support	0				
35-Fence	0				
36-Mailbox	0				
37-Other Post Pole or Support	0				

Traffic Control Devices			Road Character		Total
Traffic Control Device	Total		Road Grade		
1-Traffic Signals (Stop & Go)	1		1-Level		23
2-Traffic Signals (Flashing)	0		2-On Grade		1
3-Advisory/Warning Sign	0		3-Top of Hill		0
4-Stop Signs - All Approaches	0		4-Bottom of Hill		0
5-Stop Signs - Other	4		5-Other		0
6-Yield Sign	0		Total		24
7-Curve Warning Sign	0				
8-Officer, Flagman, School Patrol	0				
9-School Bus Stop Arm	0				
10-School Zone Sign	0				
11-R.R. Crossing Device	0				
12-No Passing Zone	0				
13-None	19				
14-Other	0				
Total	24				

Light		Total
Light Condition		
1-Daylight		21
2-Dawn		0
3-Dusk		0
4-Dark - Lighted		3
5-Dark - Not Lighted		0
6-Dark - Unknown Lighting		0
7-Unknown		0
Total		24

Maine Department Of Transportation - Traffic Engineering, Crash Records Section
Crash Summary II - Characteristics

Crashes by Year and Month

Month	2011	2012	2013	Total
JANUARY	1	0	0	1
FEBRUARY	0	0	2	2
MARCH	0	0	1	1
APRIL	1	0	1	2
MAY	2	0	1	3
JUNE	1	0	0	1
JULY	1	0	0	1
AUGUST	1	0	2	3
SEPTEMBER	0	3	2	5
OCTOBER	0	0	0	0
NOVEMBER	1	1	0	2
DECEMBER	1	2	0	3
Total	9	6	9	24

Report is limited to the last 10 years of data.

Crash Summary II - Characteristics

Crashes by Crash Type and Type of Location

Crash Type	Straight Road	Curved Road	Three Leg Intersection	Four Leg Intersection	Five or More Leg Intersection	Driveways	Bridges	Interchanges	Other	Parking Lot	Private Way	Cross Over	Railroad Crossing	Total
Object in Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rear End / Sideswipe	5	0	6	4	0	1	0	0	0	0	0	0	0	16
Head-on / Sideswipe	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Intersection Movement	0	0	2	0	0	1	0	0	0	0	0	0	0	3
Pedestrians	1	0	0	1	0	0	0	0	0	0	0	0	0	2
Train	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Went Off Road	0	0	0	0	0	0	0	0	0	0	0	0	0	0
All Other Animal	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bicycle	0	0	0	3	0	0	0	0	0	0	0	0	0	3
Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Jackknife	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rollover	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fire	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Submersion	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thrown or Falling Object	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bear	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Deer	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Moose	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Turkey	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	6	0	8	8	0	2	0	0	0	0	0	0	0	24

Crash Summary II - Characteristics**Crashes by Weather, Light Condition and Road Surface**

Weather Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Blowing Sand, Soil, Dirt												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Blowing Snow												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Clear												
Dark - Lighted	3	0	0	0	0	0	0	0	0	0	0	3
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	13	0	0	0	0	0	0	0	0	0	0	13
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Cloudy												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	2	0	0	0	0	0	0	0	0	0	1	3
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0

Crash Summary II - Characteristics**Crashes by Weather, Light Condition and Road Surface**

Weather Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Fog, Smog, Smoke												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Other												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Rain												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	4	4
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Severe Crosswinds												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0

Crash Summary II - Characteristics

Crashes by Weather, Light Condition and Road Surface

Weather Light	Dry	Ice/Frost	Mud, Dirt, Gravel	Oil	Other	Sand	Slush	Snow	Unknown	Water (Standing, Moving)	Wet	Total
Sleet, Hail (Freezing Rain or Drizzle)												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
Snow												
Dark - Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Not Lighted	0	0	0	0	0	0	0	0	0	0	0	0
Dark - Unknown Lighting	0	0	0	0	0	0	0	0	0	0	0	0
Dawn	0	0	0	0	0	0	0	0	0	0	0	0
Daylight	0	0	0	0	0	0	0	1	0	0	0	1
Dusk	0	0	0	0	0	0	0	0	0	0	0	0
Unknown	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	18	0	0	0	0	0	0	1	0	0	0	24

Crash Summary Report

Report Selections and Input Parameters

REPORT SELECTIONS

☒ Crash Summary I -
Single Node

☐ Section Detail

☐ Crash Summary II

☐ 1320 Public

☐ 1320 Private

☒ 1320 Summary

REPORT DESCRIPTION

hcl

REPORT PARAMETERS

Year 2011, Start Month 1 through Year 2013 End Month: 12

Route: 0100X

Start Node: 16867

End Node: 16867

Start Offset: 0

End Offset: 0

☐ Exclude First Node

☐ Exclude Last Node

Maine Crash Report Summary

Crash Date: 4/21/2011 Time: 10:17 City: Portland Street/Highway: ADELAIDE ST
 Start Node: 16867 Int of ADELAIDE ST FOREST AV End Node: 0 Offset: 0
 READ ST
 OE Start Node: 16867 Int of ADELAIDE ST FOREST AV OE End Node:
 READ ST

Type of Crash: 2 - Rear End / Sideswipe Type of Location: 4 - Four Leg Intersection
 Weather: 1 - Clear Light: 1 - Daylight
 Road Grade: 1 - Level Surface Condition: 1 - Dry
 Traffic Control: 13 - None
 Cont. Circ. Env 1 Cont. Circ. Env 2
 Cont. Circ. Road 1 Cont. Circ. Road 2

Narrative

Diagram

unit 1 was following roadway, making a right turn. unit 2 was following roadway. unit 1 said "i was going along and making a right turn. i turned right and there was a car there i did not see, they were passing on my right." unit 2 said "i was going along and went into the right lane, it appeared to be two lanes. i was passing the van and it turned into my lane." no injuries reported at scene. the roadway there is not marked, no lines to indicate lanes.



Unit: 1 Type: 3 - Passenger Van
 Most Damaged Area: 1 - Front Passenger Corner
 Pre-Crash Actions: 5 - Making right turn
 Seq. Events 1:
 Seq. Events 3:
 Driver Distracted By:
 Driver Action 1:

Veh. Travel Dir.: 1 - Northbound
 Most Harmful Event:
 Contrib Circ. - Vehicle: 1 - None
 Seq. Events 2:
 Seq. Events 4:
 Cond. at Time Crash: 1 - Apparently Normal
 Driver Action 2:

Person Type	Age	Sex	Injury Degree
1 - Driver	33	1 - Male	5 - No Injury

Unit: 2 Type: 1 - Passenger Car
 Most Damaged Area: 11 - Front Driver Corner
 Pre-Crash Actions: 1 - Following roadway
 Seq. Events 1:
 Seq. Events 3:
 Driver Distracted By:
 Driver Action 1: 3 - Failed to Yield Right-of-Way

Veh. Travel Dir.: 1 - Northbound
 Most Harmful Event:
 Contrib Circ. - Vehicle: 1 - None
 Seq. Events 2:
 Seq. Events 4:
 Cond. at Time Crash: 1 - Apparently Normal
 Driver Action 2:

Person Type	Age	Sex	Injury Degree
6 - Driver/Owner	49	1 - Male	5 - No Injury

Maine Crash Report Summary

Crash Date: 7/22/2011 Time: 23:45 City: Portland Street/Highway: FOREST AV
 Start Node: 16867 Int of ADELAIDE ST FOREST AV End Node: 0 Offset: 0
 READ ST
 OE Start Node: 16867 Int of ADELAIDE ST FOREST AV OE End Node:
 READ ST

Type of Crash: 9 - Bicycle Type of Location: 4 - Four Leg Intersection
 Weather: 1 - Clear Light: 4 - Dark - Lighted
 Road Grade: 1 - Level Surface Condition: 1 - Dry
 Traffic Control: 13 - None
 Cont. Circ. Env 1 1 - None Cont. Circ. Env 2
 Cont. Circ. Road 1 5 - Work Zones (Construction / Maintenance /
 Utility) Cont. Circ. Road 2

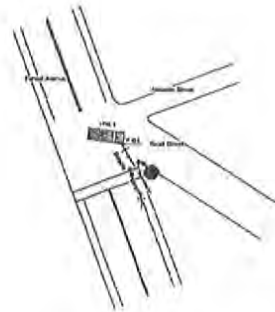
Narrative

Unit 1 driver stated that he was taking a left turn from Forest Avenue onto Read Street. Unit 1 driver stated that all of a sudden, the Bicycle collided with the front passenger quarter panel on Unit 1. Unit 1 driver stated that he never saw the Bicycle.

The Bicycle operator said he was traveling out-bound on the sidewalk of Forest Avenue approaching Read Street. The Bicycle operator said that he rode through a series of orange construction barrels on the sidewalk and into the intersection. The Bicycle operator said that Unit 1 did not have a blinker visible so he did not know it was turning.

For the report, the area was very dimly lit and the road is under construction (not active at the time of crash). The Bicycle or operator did not have any illuminating devices and operator was dressed in dark clothing (dark green shirt, dark pants). The Bicycle operator complained of shoulder pain from a previous injury and...

Diagram



Unit: 1 Type: 5 - Pickup Veh. Travel Dir.: 3 - Eastbound
 Most Damaged Area: 2 - Front Passenger Quarter Panel Most Harmful Event: 13 - Motor Vehicle in Transport
 Pre-Crash Actions: 6 - Making left turn Contrib Circ. - Vehicle: 1 - None
 Seq. Events 1: 21 - Motor Vehicle In Transport Seq. Events 2:
 Seq. Events 3: Seq. Events 4:
 Driver Distracted By: 1 - Not Distracted Cond. at Time Crash: 1 - Apparently Normal
 Driver Action 1: 1 - No Contributing Action Driver Action 2:

Person Type	Age	Sex	Injury Degree
6 - Driver/Owner	64	1 - Male	5 - No Injury

Unit: 50 Type: 23 - Bicyclist Veh. Travel Dir.:
 Most Damaged Area: Most Harmful Event:
 Pre-Crash Actions: Contrib Circ. - Vehicle:
 Seq. Events 1: Seq. Events 2:
 Seq. Events 3: Seq. Events 4:
 Driver Distracted By: Cond. at Time Crash:
 Driver Action 1: Driver Action 2:

Person Type	Age	Sex	Injury Degree
7 - Bicycle	22	1 - Male	4 - Possible Injury

STATE OF MAINE CRASH REPORT

Report Number
11-002101

Narrative / Diagram Supplemental

Unit 1 driver stated that he was taking a left turn from Forest Avenue onto Read Street. Unit 1 driver stated that all of a sudden, the Bicycle collided with the front passenger quarter panel on Unit 1. Unit 1 driver stated that he never saw the Bicycle.

The Bicycle operator said he was traveling out-bound on the sidewalk of Forest Avenue approaching Read Street. The Bicycle operator said that he rode through a series of orange construction barrels on the sidewalk and into the intersection. The Bicycle operator said that Unit 1 did not have a blinker visible so he did not know it was turning.

For the report, the area was very dimly lit and the road is under construction (not active at the time of crash). The Bicycle operator did not have any illuminating devices and operator was dressed in dark clothing (dark green shirt, dark pants). The Bicycle operator complained of shoulder pain from a previous injury and refused multiple requests for an ambulance and rode away on his own accord.

Maine Crash Report Summary

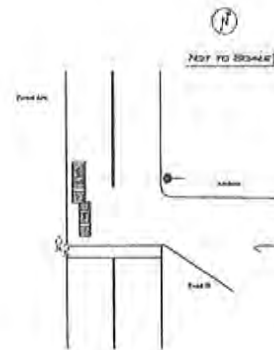
Crash Date: 8/11/2011 Time: 14:12 City: Portland Street/Highway: FOREST AV
 Start Node: 16867 Int of ADELAIDE ST FOREST AV End Node: 0 Offset: 0
 READ ST
 OE Start Node: 16867 Int of ADELAIDE ST FOREST AV OE End Node:
 READ ST

Type of Crash: 2 - Rear End / Sideswipe Type of Location: 4 - Four Leg Intersection
 Weather: 1 - Clear Light: 1 - Daylight
 Road Grade: 1 - Level Surface Condition: 1 - Dry
 Traffic Control: 5 - Stop Signs - Other
 Cont. Circ. Env 1 1 - None Cont. Circ. Env 2
 Cont. Circ. Road 1 1 - None Cont. Circ. Road 2

Narrative

Unit 1 stopped in roadway for pedestrians, unit 2 was following unit 1. Driver of unit 2 stated that she looked over at the pedestrians on the side walk and when she looked back unit 1 had stopped. Vehicles collided in road way.

Diagram



Unit: 1 Type: 1 - Passenger Car Veh. Travel Dir.: 2 - Southbound
 Most Damaged Area: 8 - Rear Driver Quarter Panel Most Harmful Event: 13 - Motor Vehicle in Transport
 Pre-Crash Actions: 1 - Following roadway Contrib. Circ. - Vehicle: 1 - None
 Seq. Events 1: 21 - Motor Vehicle In Transport Seq. Events 2:
 Seq. Events 3: Seq. Events 4:
 Driver Distracted By: 1 - Not Distracted Cond. at Time Crash: 1 - Apparently Normal
 Driver Action 1: 1 - No Contributing Action Driver Action 2:

Person Type	Age	Sex	Injury Degree
6 - Driver/Owner	84	2 - Female	5 - No Injury
2 - Passenger	87	2 - Female	4 - Possible Injury

Unit: 2 Type: 2 - (Sport) Utility Vehicle Veh. Travel Dir.: 2 - Southbound
 Most Damaged Area: 1 - Front Passenger Corner Most Harmful Event: 13 - Motor Vehicle in Transport
 Pre-Crash Actions: 1 - Following roadway Contrib. Circ. - Vehicle: 1 - None
 Seq. Events 1: 21 - Motor Vehicle In Transport Seq. Events 2:
 Seq. Events 3: Seq. Events 4:
 Driver Distracted By: 5 - External Distraction (outside the vehicle) Cond. at Time Crash: 1 - Apparently Normal
 Driver Action 1: 14 - Followed Too Closely Driver Action 2:

Person Type	Age	Sex	Injury Degree
6 - Driver/Owner	27	2 - Female	5 - No Injury

Maine Crash Report Summary

Crash Date: 11/18/2011

Time: 14:57

City: Portland

Street/Highway: FOREST AV

Start Node: 16867

Int of ADELAIDE ST FOREST AV
READ ST

End Node: 0

Offset: 0

OE Start Node: 16867

Int of ADELAIDE ST FOREST AV
READ ST

OE End Node:

Type of Crash: 4 - Intersection Movement

Type of Location: 6 - Driveways

Weather: 1 - Clear

Light: 1 - Daylight

Road Grade: 1 - Level

Surface Condition: 1 - Dry

Traffic Control: 13 - None

Cont. Circ. Env 1 1 - None

Cont. Circ. Env 2

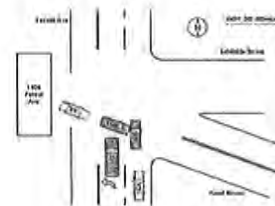
Cont. Circ. Road 1 1 - None

Cont. Circ. Road 2 1 - None

Narrative

Diagram

V1 was exiting the parking lot at 1104 Forest Ave and attempting to cross Forest Ave to Read Street. V2 was traveling north on Forest Ave in the right lane. An uninvolved vehicle was in the left turn lane, attempting to turn into the lot at 1104 Forest Ave. The uninvolved vehicle signaled for V1 to cross in front of them. V2 was continuing in the right lane and did not V1 crossing. V1 did see V2 approaching and struck V2 on the driver's side. V2 had the right of way.

**Unit: 1** Type: 1 - Passenger Car

Most Damaged Area: 11 - Front Driver Corner

Pre-Crash Actions: 30 - Other Vehicle Action

Seq. Events 1: 21 - Motor Vehicle In Transport

Seq. Events 3:

Driver Distracted By: 1 - Not Distracted

Driver Action 1: 3 - Failed to Yield Right-of-Way

Veh. Travel Dir.: 3 - Eastbound

Most Harmful Event: 13 - Motor Vehicle in Transport

Contrib Circ. - Vehicle: 1 - None

Seq. Events 2:

Seq. Events 4:

Cond. at Time Crash: 1 - Apparently Normal

Driver Action 2:

Person Type	Age	Sex	Injury Degree
6 - Driver/Owner	26	2 - Female	5 - No Injury

Unit: 2 Type: 1 - Passenger Car

Most Damaged Area: 10 - Front Driver Quarter Panel

Pre-Crash Actions: 1 - Following roadway

Seq. Events 1: 21 - Motor Vehicle In Transport

Seq. Events 3:

Driver Distracted By: 1 - Not Distracted

Driver Action 1: 1 - No Contributing Action

Veh. Travel Dir.: 1 - Northbound

Most Harmful Event: 13 - Motor Vehicle in Transport

Contrib Circ. - Vehicle: 1 - None

Seq. Events 2:

Seq. Events 4:

Cond. at Time Crash: 1 - Apparently Normal

Driver Action 2:

Person Type	Age	Sex	Injury Degree
6 - Driver/Owner	28	2 - Female	5 - No Injury

Maine Crash Report Summary

Crash Date: 9/2/2012 Time: 22:35 City: Portland Street/Highway: FOREST AV
 Start Node: 16867 Int of ADELAIDE ST FOREST AV End Node: 0 Offset: 0
 READ ST
 OE Start Node: 16867 Int of ADELAIDE ST FOREST AV OE End Node:
 READ ST

Type of Crash: 2 - Rear End / Sideswipe Type of Location: 4 - Four Leg Intersection
 Weather: 1 - Clear Light: 4 - Dark - Lighted
 Road Grade: 1 - Level Surface Condition: 1 - Dry
 Traffic Control: 13 - None
 Cont. Circ. Env 1 1 - None Cont. Circ. Env 2
 Cont. Circ. Road 1 1 - None Cont. Circ. Road 2

Narrative

V-2 was driving north bound on Forest Ave. turning right onto Adeliane St. when V-1 was passing V-2 on the right side. Driver of V-2 stated his directional light was on, Driver of V-1 stated it was not.

Diagram



Unit: 1 Type: 1 - Passenger Car Veh. Travel Dir.: 1 - Northbound
 Most Damaged Area: 8 - Rear Driver Quarter Panel Most Harmful Event: 13 - Motor Vehicle in Transport
 Pre-Crash Actions: 18 - Overtaking Passing Contrib Circ. - Vehicle: 1 - None
 Seq. Events 1: 21 - Motor Vehicle In Transport Seq. Events 2:
 Seq. Events 3: Seq. Events 4:
 Driver Distracted By: 1 - Not Distracted Cond. at Time Crash: 1 - Apparently Normal
 Driver Action 1: 12 - Improper Passing Driver Action 2:

Person Type	Age	Sex	Injury Degree
6 - Driver/Owner	55	1 - Male	5 - No Injury
2 - Passenger	26	1 - Male	5 - No Injury

Unit: 2 Type: 17 - Medium/Heavy Trucks (More than 10,000 lbs) Veh. Travel Dir.: 1 - Northbound
 Most Damaged Area: 1 - Front Passenger Corner Most Harmful Event: 13 - Motor Vehicle in Transport
 Pre-Crash Actions: 5 - Making right turn Contrib Circ. - Vehicle: 1 - None
 Seq. Events 1: 21 - Motor Vehicle In Transport Seq. Events 2:
 Seq. Events 3: Seq. Events 4:
 Driver Distracted By: 1 - Not Distracted Cond. at Time Crash: 1 - Apparently Normal
 Driver Action 1: 1 - No Contributing Action Driver Action 2:

Person Type	Age	Sex	Injury Degree
1 - Driver	43	1 - Male	5 - No Injury

Maine Crash Report Summary

Crash Date: 9/24/2012

Time: 10:32

City: Portland

Street/Highway: FOREST AV

Start Node: 16867

Int of ADELAIDE ST FOREST AV
READ ST

End Node: 0

Offset: 0

OE Start Node: 16867

Int of ADELAIDE ST FOREST AV
READ ST

OE End Node:

Type of Crash: 9 - Bicycle

Weather: 1 - Clear

Road Grade: 1 - Level

Traffic Control: 13 - None

Cont. Circ. Env 1 1 - None

Cont. Circ. Road 1 1 - None

Type of Location: 4 - Four Leg Intersection

Light: 1 - Daylight

Surface Condition: 1 - Dry

Cont. Circ. Env 2

Cont. Circ. Road 2 1 - None

Narrative

Diagram

VEHICLE 1 WAS TRAVELING WESTBOUND ON FOREST AVENUE AT THE INTERSECTION OF READ STREET.

BILLIAN WAS ALSO TRAVELING WESTBOUND ON FOREST AVENUE DIRECTLY IN FRONT OF VEHICLE 1 ON HER BICYCLE. THERE WAS ANOTHER UNKNOWN VEHICLE IN FRONT OF BILLIAN.

THE VEHICLE IN FRONT OF BILLIAN WAS TAKING A LEFT HAND TURN ONTO READ STREET. BILLIAN THEN ATTEMPTED TO GO AROUND THE VEHICLE IN FRONT OF HER.

BILLIAN SWITCHED LANES WITHOUT LOOKING. VEHICLE 1 WAS NOT ABLE TO STOP IN TIME AND COLLIDED WITH BILLIAN. BILLIAN WAS THEN TRANSPORTED TO THE HOSPITAL BY AMBULANCE.



Unit: 1

Type: 1 - Passenger Car

Most Damaged Area: 10 - Front Driver Quarter Panel

Pre-Crash Actions: 1 - Following roadway

Seq. Events 1: 21 - Motor Vehicle In Transport

Seq. Events 3:

Driver Distracted By: 1 - Not Distracted

Driver Action 1: 1 - No Contributing Action

Veh. Travel Dir.: 4 - Westbound

Most Harmful Event: 13 - Motor Vehicle in Transport

Contrib Circ. - Vehicle: 1 - None

Seq. Events 2:

Seq. Events 4:

Cond. at Time Crash: 1 - Apparently Normal

Driver Action 2:

Person Type	Age	Sex	Injury Degree
6 - Driver/Owner	25	2 - Female	5 - No Injury
2 - Passenger	3	2 - Female	5 - No Injury
2 - Passenger	2	1 - Male	5 - No Injury

Unit: 50

Type: 23 - Bicyclist

Most Damaged Area:

Pre-Crash Actions:

Seq. Events 1:

Seq. Events 3:

Driver Distracted By:

Driver Action 1:

Veh. Travel Dir.:

Most Harmful Event:

Contrib Circ. - Vehicle:

Seq. Events 2:

Seq. Events 4:

Cond. at Time Crash:

Driver Action 2:

Person Type	Age	Sex	Injury Degree
7 - Bicycle	27	2 - Female	2 - Incapacitating

Maine Crash Report Summary

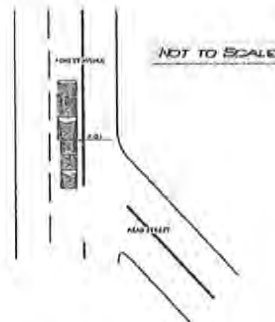
Crash Date: 2/1/2013 Time: 21:19 City: Portland Street/Highway: FOREST AV
 Start Node: 16867 Int of ADELAIDE ST FOREST AV End Node: 0 Offset: 0
 READ ST
 OE Start Node: 16867 Int of ADELAIDE ST FOREST AV OE End Node:
 READ ST

Type of Crash: 2 - Rear End / Sideswipe Type of Location: 4 - Four Leg Intersection
 Weather: 1 - Clear Light: 4 - Dark - Lighted
 Road Grade: 1 - Level Surface Condition: 1 - Dry
 Traffic Control: 13 - None
 Cont. Circ. Env 1 1 - None Cont. Circ. Env 2
 Cont. Circ. Road 1 1 - None Cont. Circ. Road 2 1 - None

Narrative

V-1 ON INBOUND FOREST AVE, STOPPED TO MAKE LEFT TURN ONTO READ STREET. V-2 TRAVELING BEHIND V-1. DRIVER OF V-2 STATES A WATER BOTTLE SLID OFF OF SEAT ONTO FLOOR, SHE REACHED TO PICK IT UP AND MOMENTARILY AVERTED HER EYES OFF THE ROAD WHICH CAUSED HER TO NOT SEE V-1 HAD STOPPED TO TURN. V-2 COLLIDED WITH REAR OF V-1. NO INJURIES, NO CITATIONS, BOTH VEHICLES TOWED FROM SCENE. DRIVER OF V-2 AT FAULT FOR FAILING TO YIELD RIGHT OF WAY/DRIVER DISTRACTION..

Diagram

**Unit: 1** Type: 1 - Passenger Car

Most Damaged Area: 6 - Rear

Pre-Crash Actions: 6 - Making left turn

Seq. Events 1: 21 - Motor Vehicle In Transport

Seq. Events 3: 21 - Motor Vehicle In Transport

Driver Distracted By: 1 - Not Distracted

Driver Action 1: 1 - No Contributing Action

Veh. Travel Dir.: 3 - Eastbound

Most Harmful Event: 13 - Motor Vehicle in Transport

Contrib Circ. - Vehicle: 1 - None

Seq. Events 2: 21 - Motor Vehicle In Transport

Seq. Events 4: 21 - Motor Vehicle In Transport

Cond. at Time Crash: 1 - Apparently Normal

Driver Action 2:

Person Type	Age	Sex	Injury Degree
1 - Driver	31	1 - Male	5 - No Injury

Unit: 2 Type: 2 - (Sport) Utility Vehicle

Most Damaged Area: 12 - Front

Pre-Crash Actions: 1 - Following roadway

Seq. Events 1: 21 - Motor Vehicle In Transport

Seq. Events 3: 21 - Motor Vehicle In Transport

Driver Distracted By: 4 - Other Inside the Vehicle (Eating, Reading, Grooming, Smoking, Passengers, etc.)

Driver Action 1: 3 - Failed to Yield Right-of-Way

Veh. Travel Dir.: 3 - Eastbound

Most Harmful Event: 13 - Motor Vehicle in Transport

Contrib Circ. - Vehicle: 1 - None

Seq. Events 2: 21 - Motor Vehicle In Transport

Seq. Events 4: 21 - Motor Vehicle In Transport

Cond. at Time Crash: 1 - Apparently Normal

Driver Action 2: 3 - Failed to Yield Right-of-Way

Person Type	Age	Sex	Injury Degree
6 - Driver/Owner	52	2 - Female	5 - No Injury

Maine Crash Report Summary

Crash Date: 8/5/2013 Time: 10:17 City: Portland Street/Highway: READ ST
 Start Node: 16867 Int of ADELAIDE ST FOREST AV End Node: 0 Offset: 0
 READ ST
 OE Start Node: 16867 Int of ADELAIDE ST FOREST AV OE End Node:
 READ ST

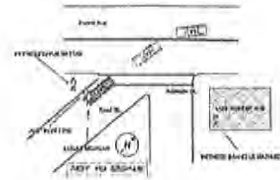
Type of Crash: 5 - Pedestrians Type of Location: 4 - Four Leg Intersection
 Weather: 1 - Clear Light: 1 - Daylight
 Road Grade: 1 - Level Surface Condition: 1 - Dry
 Traffic Control: 13 - None
 Cont. Circ. Env 1 1 - None Cont. Circ. Env 2
 Cont. Circ. Road 1 1 - None Cont. Circ. Road 2

Narrative

V1 WAS MAKING A LEFT TURN OFF OF FOREST AVENUE ONTO READ STREET [SOUTHBOUND.] 2 PEDESTRIANS (VICTIMS) WERE IN THE PROCESS OF CROSSING READ AND ADELAIDE STREETS AND 1 PEDESTRIAN (WITNESS) WAS ON THE SIDEWALK OF READ STREET AND PREPARING TO CROSS IN THE SAME MANNER AS THE OTHER 2 PEDESTRIANS. ALL PEDESTRIANS WERE WALKING OUTBOUND ON FOREST AVENUE WHILE TRAVELING TO AN ADDRESS ON ADELAIDE STREET. THE PEDESTRIAN VICTIMS FAILED TO USE THE CROSSWALK PROVIDED FOR THIS INTERSECTION.

A WITNESS WAS WORKING IN HER OFFICE AT THE SHALOM HOUSE BUILDING [1103 FOREST AVE] WHERE SHE HAD A VIEW OF THE ADELAIDE STREET, READ STREET AND FOREST AVENUE INTERSECTION. SHE WITNESSED THE LATER PORTION OF THE INCIDENT [I.E. V1 NEAR THE PEDESTRIAN VICTIMS AFTER CONTACT] BUT NOT THE BEGINNING OF THE...

Diagram



Unit: 1 Type: 1 - Passenger Car Veh. Travel Dir.: 2 - Southbound
 Most Damaged Area: 3 - Center Passenger Side Most Harmful Event: 13 - Motor Vehicle in Transport
 Pre-Crash Actions: 6 - Making left turn Contrib. Circ. - Vehicle: 1 - None
 Seq. Events 1: 21 - Motor Vehicle In Transport Seq. Events 2:
 Seq. Events 3: Seq. Events 4:
 Driver Distracted By: 1 - Not Distracted Cond. at Time Crash: 1 - Apparently Normal
 Driver Action 1: 16 - Operated Motor Vehicle in Erratic, Reckless, Careless, Negligent or Aggressive Manner Driver Action 2:

Person Type	Age	Sex	Injury Degree
1 - Driver	82	1 - Male	5 - No Injury

Unit: 50 Type: 22 - Pedestrian Veh. Travel Dir.:
 Most Damaged Area: Most Harmful Event:
 Pre-Crash Actions: Contrib. Circ. - Vehicle:
 Seq. Events 1: Seq. Events 2:
 Seq. Events 3: Seq. Events 4:
 Driver Distracted By: Cond. at Time Crash:
 Driver Action 1: Driver Action 2:

Person Type	Age	Sex	Injury Degree
3 - Pedestrian	17	1 - Male	3 - Non-Incapacitating

Unit: 50 Type: 22 - Pedestrian Veh. Travel Dir.:
 Most Damaged Area: Most Harmful Event:
 Pre-Crash Actions: Contrib. Circ. - Vehicle:
 Seq. Events 1: Seq. Events 2:
 Seq. Events 3: Seq. Events 4:
 Driver Distracted By: Cond. at Time Crash:
 Driver Action 1: Driver Action 2:

Maine Crash Report Summary

Person Type	Age	Sex	Injury Degree
3 - Pedestrian	17	1 - Male	3 - Non-Incapacitating

STATE OF MAINE CRASH REPORT

Report Number
13-0002199

Narrative / Diagram Supplemental

V1 WAS MAKING A LEFT TURN OFF OF FOREST AVENUE ONTO READ STREET [SOUTHBOUND.] 2 PEDESTRIANS (VICTIMS) WERE IN THE PROCESS OF CROSSING READ AND ADELAIDE STREETS AND 1 PEDESTRIAN (WITNESS) WAS ON THE SIDEWALK OF READ STREET AND PREPARING TO CROSS IN THE SAME MANNER AS THE OTHER 2 PEDESTRIANS. ALL PEDESTRIANS WERE WALKING OUTBOUND ON FOREST AVENUE WHILE TRAVELING TO AN ADDRESS ON ADELAIDE STREET. THE PEDESTRIAN VICTIMS FAILED TO USE THE CROSSWALK PROVIDED FOR THIS INTERSECTION.

A WITNESS WAS WORKING IN HER OFFICE AT THE SHALOM HOUSE BUILDING [1103 FOREST AVE] WHERE SHE HAD A VIEW OF THE ADELAIDE STREET, READ STREET AND FOREST AVENUE INTERSECTION. SHE WITNESSED THE LATER PORTION OF THE INCIDENT [I.E. V1 NEAR THE PEDESTRIAN VICTIMS AFTER CONTACT] BUT NOT THE BEGINNING OF THE INCIDENT.

V1 CONTINUED THE LEFT TURN INTO THE INTERSECTION. THE OPERATOR FAILED TO NOTICE THE 2 PEDESTRIANS IN THE ROADWAY. V1 MADE CONTACT WITH THE PEDESTRIANS, CAUSING MINOR INJURY TO BOTH; AS WELL AS MINOR DAMAGE TO V1.

PEDESTRIAN VICTIMS WERE EXAMINED BY MEDCU UNITS AT THE SCENE.

Maine Crash Report Summary

Crash Date: 8/6/2013

Time: 13:37

City: Portland

Street/Highway: FOREST AV

Start Node: 16867

Int of ADELAIDE ST
FOREST AV
READ ST

End Node: 0

Offset: 0

OE Start Node: 16868

Int of ARBOR ST FOREST AV

OE End Node:

Type of Crash: 2 - Rear End / Sideswipe

Type of Location: 3 - Three Leg Intersection

Weather: 1 - Clear

Light: 1 - Daylight

Road Grade: 1 - Level

Surface Condition: 1 - Dry

Traffic Control: 13 - None

Cont. Circ. Env 1 1 - None

Cont. Circ. Env 2

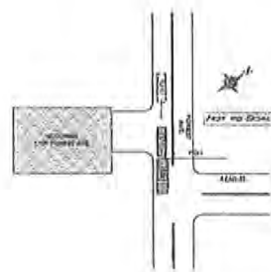
Cont. Circ. Road 1 1 - None

Cont. Circ. Road 2

Narrative

Diagram

U1 AND U2 WERE TRAVELING WESTBOUND ON FOREST AVENUE NEAR GOODWILL AT 1104 FOREST AVENUE. U2 STOPPED IN THE LANE OF TRAVEL BECAUSE A VEHICLE IN FRONT HER STOPPED. U1 WAS UNABLE TO STOP IN TIME AND REAR-ENDED U2. THERE WAS NO INJURIES AND MINOR DAMAGE TO BOTH VEHICLES.



Unit: 1

Type: 1 - Passenger Car

Veh. Travel Dir.: 4 - Westbound

Most Damaged Area: 12 - Front

Most Harmful Event: 13 - Motor Vehicle in Transport

Pre-Crash Actions: 10 - Slowing in traffic

Contrib Circ. - Vehicle: 1 - None

Seq. Events 1: 21 - Motor Vehicle in Transport

Seq. Events 2:

Seq. Events 3:

Seq. Events 4:

Driver Distracted By: 1 - Not Distracted

Cond. at Time Crash: 1 - Apparently Normal

Driver Action 1: 14 - Followed Too Closely

Driver Action 2:

Person Type	Age	Sex	Injury Degree
1 - Driver	19	2 - Female	5 - No Injury

Unit: 2

Type: 1 - Passenger Car

Veh. Travel Dir.: 4 - Westbound

Most Damaged Area: 6 - Rear

Most Harmful Event: 13 - Motor Vehicle in Transport

Pre-Crash Actions: 10 - Slowing in traffic

Contrib Circ. - Vehicle: 1 - None

Seq. Events 1: 21 - Motor Vehicle in Transport

Seq. Events 2:

Seq. Events 3:

Seq. Events 4:

Driver Distracted By: 1 - Not Distracted

Cond. at Time Crash: 1 - Apparently Normal

Driver Action 1: 1 - No Contributing Action

Driver Action 2:

Person Type	Age	Sex	Injury Degree
6 - Driver/Owner	28	2 - Female	5 - No Injury

Maine Crash Report Summary

Crash Date: 9/19/2013 Time: 14:18 City: Portland Street/Highway: ADELAIDE ST
 Start Node: 16867 Int of ADELAIDE ST FOREST AV End Node: 0 Offset: 0
 READ ST
 OE Start Node: 16867 Int of ADELAIDE ST FOREST AV OE End Node:
 READ ST

Type of Crash: 9 - Bicycle Type of Location: 4 - Four Leg Intersection
 Weather: 1 - Clear Light: 1 - Daylight
 Road Grade: 1 - Level Surface Condition: 1 - Dry
 Traffic Control: 5 - Stop Signs - Other
 Cont. Circ. Env 1 1 - None Cont. Circ. Env 2
 Cont. Circ. Road 1 1 - None Cont. Circ. Road 2 1 - None

Narrative

V1 WAS STOPPED AT THE STOP SIGN AT THE INTERSECTION OF FOREST AVE AND ADELAIDE. V1 WAS TRYING TO MAKE A RIGHT TURN ONTO FOREST AVE. V1 PULLED OUT ONTO FOREST AVE AND HIT B1 AS B1 WAS PASSING IN FRONT OF V1. B1 WAS TRAVELING INBOUND ON FOREST AVE ON THE SAME SIDE OF THE ROAD AS ADELAIDE STREET. B1 WAS TRANSPORTED TO MAINE MEDICAL CENTER BY MEDCU FOR ARM PAIN.

pjk

Diagram



Unit: 1 Type: 5 - Pickup

Most Damaged Area:

Pre-Crash Actions: 5 - Making right turn

Seq. Events 1: 18 - Pedalcycle

Seq. Events 3:

Driver Distracted By: 1 - Not Distracted

Driver Action 1: 1 - No Contributing Action

Veh. Travel Dir.: 4 - Westbound

Most Harmful Event: 10 - Pedalcycle

Contrib Circ. - Vehicle: 1 - None

Seq. Events 2:

Seq. Events 4:

Cond. at Time Crash: 1 - Apparently Normal

Driver Action 2:

Person Type	Age	Sex	Injury Degree
1 - Driver	24	1 - Male	5 - No Injury

Unit: 50 Type: 23 - Bicyclist

Most Damaged Area:

Pre-Crash Actions:

Seq. Events 1:

Seq. Events 3:

Driver Distracted By:

Driver Action 1:

Veh. Travel Dir.:

Most Harmful Event:

Contrib Circ. - Vehicle:

Seq. Events 2:

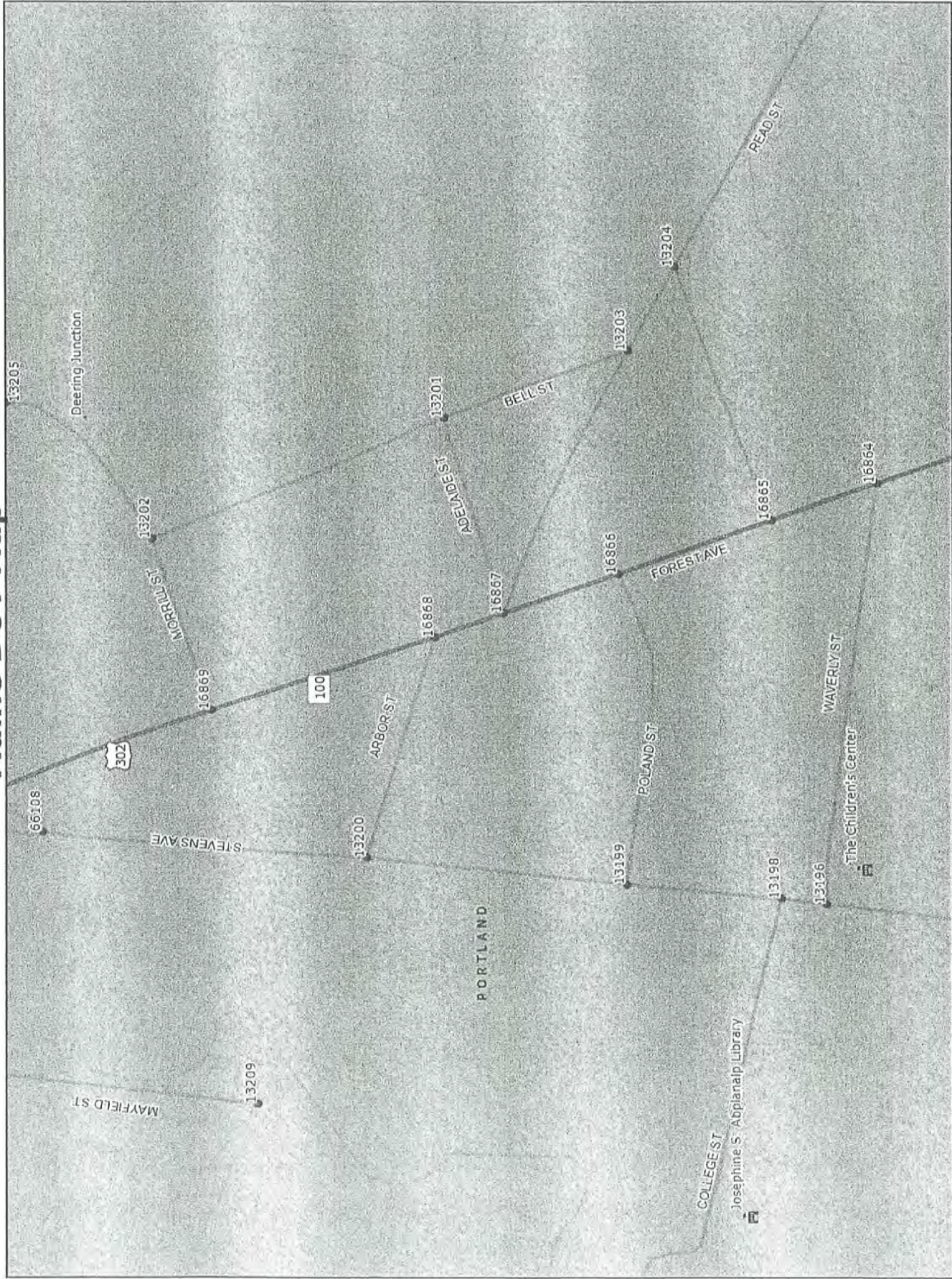
Seq. Events 4:

Cond. at Time Crash:

Driver Action 2:

Person Type	Age	Sex	Injury Degree
7 - Bicycle	15	1 - Male	4 - Possible Injury

Maine DOT Map



General Roads

-  Interstate
-  US Routes
-  State Routes
-  Public Roads

Nodes



MaineDOT Regions



State Urban



Water Bodies



Boundary Lines

-  coastline
-  county
-  state
-  town

Wetlands

Conserved Lands



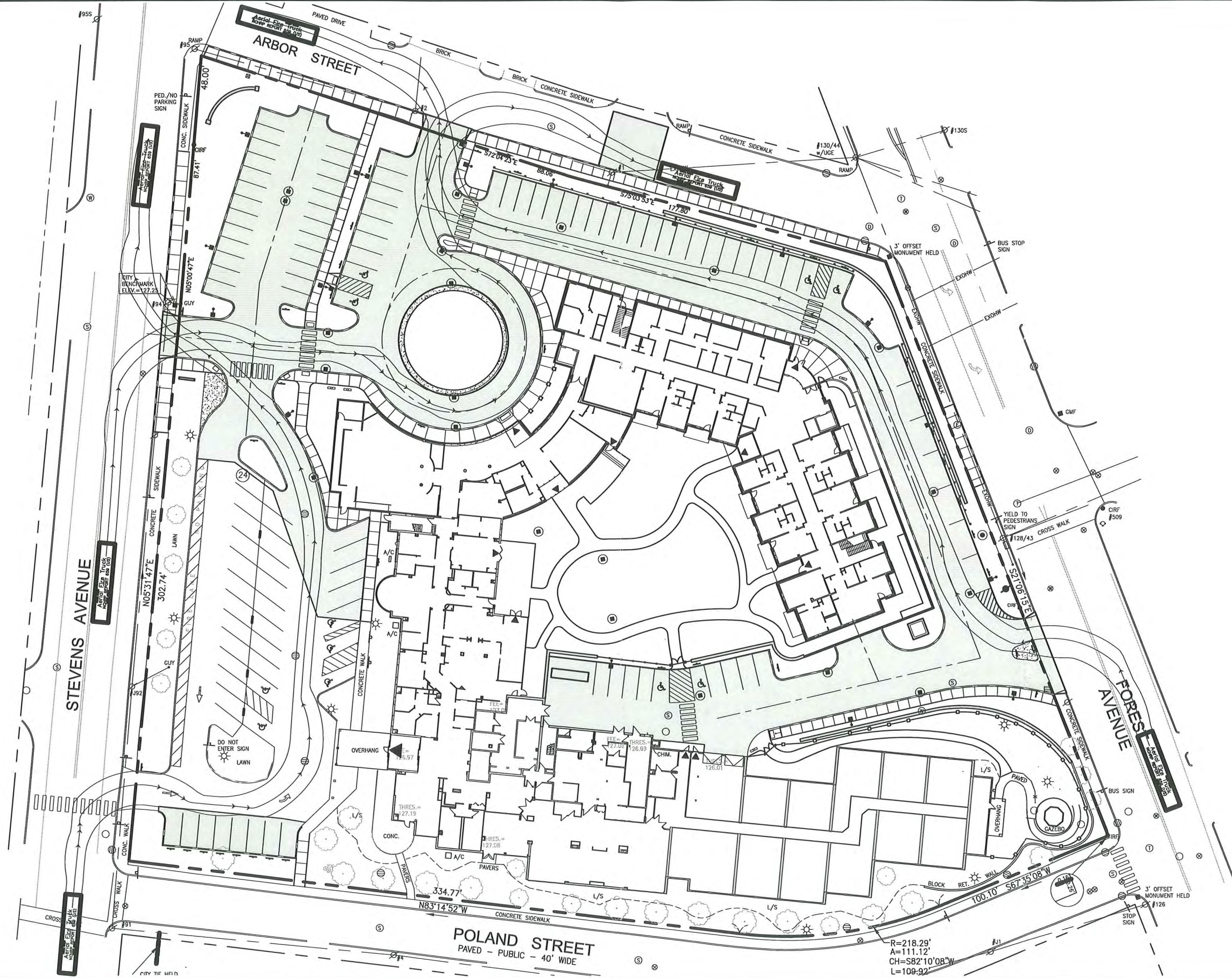
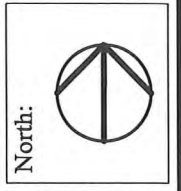


EXHIBIT
A



Title: FIRE TRUCK TURNING TEMPLATES

Date: OCTOBER 17, 2014

Scale: 1" = 50'

Project: THE PARK DANFORTH

Mitchell & Associates
LANDSCAPE ARCHITECTS

70 Center Street
Portland, Maine 04101

P: 207.774.4427
F: 207.874.2460

EXHIBIT 9

CONFORMANCE WITH CITY

Conformance with Comprehensive Plan

The proposed expansion, density and target market support the goals set-forth in the City's Comprehensive Plan "Portland's Goals and Policies for the Future". The proposed expansion of The Park Danforth provides for the density and mix of housing opportunities identified in the following sections of the Comprehensive plan. The Park Danforth campus will provide for a strong transition between business community along Forest Avenue, with the residential community along Poland Street and the changing UNE campus along Stevens Avenue.

STATE GOAL A: To encourage orderly growth and development in appropriate areas of each community, while protecting the State's rural character, making efficient use of public services and preventing development sprawl;

I. HOUSING: SUSTAINING PORTLAND'S FUTURE – Nov. 18, 2002

Goal

Portland's Comprehensive Plan encourages a manageable level of growth that will sustain the city as a healthy urban center in which to live and work and to achieve a shared vision for Portland. Portland should encourage sustainable development patterns and opportunities within the city by promoting efficient land use, conservation of natural resources, and easy access to public transportation, services, and public amenities.

Policies

- Encourage growth in Portland that strives for a dynamic balance of the essential elements of the city, such as excellent schools, diverse housing choices, proximity to services and employment, increased public transit usage, expanded economic base, high quality services, and an affordable tax rate.
- Target Portland to achieve and maintain a 25% share of Cumberland County's population.
- Maximize development where public infrastructure and amenities, such as schools, parks, public/alternative transportation, sewer lines, and roads, exist or may be expanded at minimal costs.
- Create new housing to support Portland as an employment center and to achieve an improved balance between jobs and housing.
- Encourage neighborhood business centers throughout the city to reduce dependence on the car and to make neighborhood life without a car more practical.
- Locate and design housing to reduce impacts on environmentally sensitive areas.
- Design housing to use new technologies and materials that reduce costs and increase energy efficiency.

The expansion of Park Danforth will provide the opportunity, for an aging population, a choice for residents of Portland and Greater Portland to remain in the city and have access to services, transportation and cultural activities. The property is in the heart of a diverse vibrant university

community that provides for life-long learning opportunities through adult education programs and UNE offerings. Shopping and services are within walking distance of the campus.

The proposed expansion will incorporate new building technologies and sustainability.

III. A TIME OF CHANGE: PORTLAND TRANSPORTATION PLAN - July 1993

Transportation Plan Guiding Principle

Provide maximum mobility in a balanced transportation system, which encompasses all modes, to support the economic vitality and quality of life of the Portland community.

Land Use and Transportation Link

Link the transportation plan with land use planning policies in the City and region to guide decision-making for development and infrastructure investment.

- Ensure that future growth does not foster auto dependency.

Transportation Policies

- Vibrant neighborhoods include nearby, small-scale commercial areas that provide both convenient service and natural meeting places. Provide routine, daily services within walking distance of residents of all neighborhoods, as long as the businesses providing the services are small-scale, are designed compatibly with residences, and fit into the fabric of the neighborhood.
- Allow development along transit corridors and near community commercial centers to evolve at a density sufficient to make public transit, walking, and biking viable options.

Public transportation is available along Stevens and Forest Avenue with bus stop locations on both street frontages. The property is within walking distance of neighborhood services.

STATE GOAL D. To encourage and promote affordable, decent housing opportunities for all Maine citizens:

I. HOUSING: SUSTAINING PORTLAND'S FUTURE- Nov.18, 2002

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:
 - Affordable housing, including starter homes;
 - Housing units for decreasing household size, such as young professionals, empty nesters, single-parent households, and senior citizens;

- Housing for special markets, such as SRO's, student or dormitory housing, group homes, and artist housing including live/work opportunities;
- Higher density housing, such as row houses, small lots, reuse of nonresidential buildings, and mixed use buildings;
- Housing development that encourages community, such as co-op housing;
- 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; and
- A variety of housing choices should be available such that no one should have to spend more than 30% of their income for housing.
- 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.
- Increase home ownership opportunities for all types of households and all income levels.
- Ensure that a continuum of housing is available for people with special needs and circumstances ranging from emergency shelters and transitional housing to permanent housing (rental and homeownership), which offer appropriate supportive services.
- Identify vacant land and redevelopment opportunities throughout the City to facilitate the construction of new housing.

The Park Danforth will provide a higher density of development and address a growing sector of population, providing for a much needed rental housing for the elderly.

Goal

Maintain and enhance the livability of Portland's neighborhoods as the City grows and evolves through careful land use regulation, design and public participation that respects neighborhood integrity.

Policies

- While accommodating needed services and facilities, protect the stability of Portland residential neighborhoods from excessive encroachment by inappropriately scaled and obtrusive commercial, institutional, governmental, and other non-residential uses.
- Support Portland's livable neighborhoods by encouraging a mix of uses that provide goods and services needed and are within walking distance of most residents.
- 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.
- Encourage Portland's neighborhoods to address the City's housing issues through the Neighborhood Based Planning Process.
- Encourage neighborhood populations that are economically, socially, culturally and ethnically diverse.

The Park Danforth provides an opportunity for affordable market rate elderly as well as subsidized (Section 8 HUD) housing for the aging population. A range of services provided supports the diverse needs of the aging elder population as needs increase, providing the opportunity for individuals to remain independent.

Campus improvements will enhance the character of the residential and university neighborhood providing street presence, incorporating green space and improved circulation.

To provide for the demand and growth of an aging population and maintain the sustainability of the Park Danforth Mission, the proposed master plan incorporates an expansion to include 46 elderly independent living housing units. The opportunity provided by controlling the majority of a city block, creates a campus that has a street presence along all frontages. The goal is to provide an opportunity for an active-wellness based community that provides for social interaction, functional outdoor green spaces, and addresses' security for a wide range of elderly skill levels.

EXHIBIT 10

PUBLIC UTILITIES

The Park Danforth expansion will be served by existing utility services located in Forest Avenue and Arbor Street. The following public utilities are available:

Water

Water for both fire suppression and domestic service will be supplied from an existing 12 inch water main located in Arbor Street. Proposed service connections include 4 inch domestic service and 8 inch fire service. Refer to the attached letter from the Portland Water District.

Sanitary Sewer

Sanitary sewer will be supplied from an existing 10 inch public sewer main located in Arbor Street. Proposed service connection will be a 6 inch line located within the same area as the existing service. A Wastewater Capacity Application has been filed with this Site Plan Application.

Natural Gas

Natural gas will be supplied from an existing 4 inch gas line located in Arbor Street. A 4 inch service will connect to the building. Refer to the attached letter from Unitil.

Electric

The existing service connects to The Park Danforth from a utility pole located on Forest Avenue. A new utility pole, required to accommodate the number of riser conduits for electric, telephone, and cable, will be set on-site. This connection will be maintained and the existing Park Danforth transformer will be upgraded and relocated adjacent to new expansion to accommodate the increased service. Refer to the attached letter from Central Maine Power.

Telephone and Cable TV

Telephone and cable TV will be connected along the same route as the proposed electric service.



10/1/2014

Sashie Misner
Maine Licensed Landscape Architect
Mitchell & Associates
70 Center Street, Portland, ME 04101
phone: 207-774-4427
Sent via email to: smisner@mittchellassociates.biz

RE: Ability to Serve Letter for Park Danforth expansion in Portland

Dear Ms. Misner:

CMP has the ability to serve the proposed Park Danforth expansion project located at 777 Stevens 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. Final layouts and locations will be determined after field visits. 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. A new account may not be needed at this site.
- 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



An equal opportunity employer



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>)

If you have any questions, please contact me.

Regards,

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



October 8, 2014

Sashie Misner
Mitchell & Associates
70 Center St.
Portland, ME 04101

Re: 22 Arbor St., Portland

Dear Sashie Misner,

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 service. I have submitted and received approval from gas engineering as shown below:

"Gas Engineering has approved a new load of up to 3000 scfh on a new 100 foot 4" IPS HDPE LP commercial service supplied by the existing 4" CI LP main on Arbor Street in Portland, ME. As with other commercial customers with similar load profiles, Gas Engineering requires a curb valve/box with the service installation. Gas Engineering has approved a 3M meter"

In order to complete our design, determine the costs to service and to determine if any customer contribution will be needed prior to being able to move to contract we will need the following:

1. BTU's of the gas load
2. The pressure required from our meter
3. A site plan showing the gas service coming to the building.

If you have any further questions or require additional information, please contact me directly at (207) 541-2543 or at carpenters@unitil.com.

Sincerely,

Scott Carpenter
Business Development Representative
Unitil Corporation
(o) 207-541-2543 (f) 207-541-2593

ME GAS CUSTOMER ENERGY SOLUTIONS
1075 Forest Avenue
Portland, ME 04103-3586

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: 10.1.14

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

Site Address: 777 Stevens Avenue,
Portland

(Regarding addressing, please contact Leslie Kaynor, either at 756-8346, or at LMK@portlandmaine.gov)

Chart Block Lot Number: 146-C-5,6,7,8,9,
10,11,12,13,14

Proposed Use: 54 independent living apartment units
Previous Use: Multi lots: 2 Single & 1 multi-family
residences & 1 commercial building
Existing Sanitary Flows: 715.5 GPD
Existing Process Flows: 0GPD
Description and location of City sewer, at proposed building
sewer lateral connection:
10" sewer along Arbor Street

Site Category

Commercial
Industrial (complete part 4 below)
Governmental
Residential
Other (specify)

x

Clearly, indicate the proposed connection, on the submitted plans.

2. Please, Submit Domestic Wastewater Design Flow Calculations.

Estimated Domestic Wastewater Flow Generated: 3240 GPD

Peaking Factor/ Peak Times: Peak flow 150-175 GPM (at meal times, three times per day. Estimated based on use group)

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) **Maine Subsurface Wastewater Disposal Rules, Section 4.E.2**

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.

3. Please, Submit Contact Information.

Owner/Developer Name: The Park Danforth/ Denise Vachon
Owner/Developer Address: 777 Stevens Avenue, Portland ME
Phone: 797-7710 Fax: E-mail: vachond@parkdanforth.com
Engineering Consultant Name: Mitchell & Associates, Sashie Misner/ Bob Metcalf
Engineering Consultant Address: 70 Center Street, Portland
Phone: 207.774.4427 Fax: 207.874.2460 E-mail: smisner@mitchellassociates.biz
City Planner's Name: xxx Phone:

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

4. Please, Submit Industrial Process Wastewater Flow Calculations

Estimated Industrial Process Wastewater Flows Generated: 3240 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 the locations, where the building's sanitary, and process water sewer laterals, exit the facility, where they enter the city's sewer, the location of any control manholes, wet wells, or other access points, and the locations of any filters, strainers, or grease traps.

Notes, Comments, or Calculations:

PROPOSED NEW USAGE: 54 UNITS X 60 GPD =3,240 GPD

FORMER TENANTS /PREVIOUS USAGE CALCULATIONS:

748 STEVENS AVENUE(26 ARBOR STREET):
CALCULATED AVG HCF/MONTH (PER 3 YEARS OF RECORDS)= 2.8 HCF/MONTH
DIVIDED BY DAYS (30)= 0.093 HCF/DAY X 748= **69.6 GPD**

24 ARBOR STREET:
AVG MONTHLY USAGE= 4.5 HCF DIVIDED BY DAYS (30) = .15 HCF/ DAY X 748= **112.2 GPD**

20 ARBOR STREET:
AVG MONTHLY USAGE= 13.13 HCF DIVIDED BY DAYS (30)= .437 HCF/DAY X748= **327.5 GPD**

GOODWILL INDUSTRIES:
BUILDING 1: READING DATED 8/5/14 **152 HCF**- READING 8/2/13 **154 HCF**= 2 HCF/ YEAR X 748= **2992 GPY** DIVIDED BY 365= **8.2 GPD**

STORE: READING DATED 8/5/14 **513 HCF**- READING DATED 8/2/13 **417 HCF**= 96 HCF/YEAR X 748= 71,808 GPY
DIVIDED BY 365 DAYS= **198 GPD**

PREVIOUS USAGE: 69.6 GPD + 112.2 GPD+ 327.5 GPD + 8.2 GPD + 198 GPD= 715.50 GPD
PROPOSED USAGE: 3,240.00GPD
NET INCREASE= 2,524.50 GPD

EXHIBIT 11

SOLID WASTE DISPOSAL

The Park Danforth will contract with a private hauler for removal of solid waste generated within the building. A waste management room is located on the first floor of the building and accessible from an exterior door along the east side of the building. Currently all trash is accommodated for in exterior dumpsters. The Park Danforth is currently exploring options to eliminate external dumpsters and evaluating the use of a compactor unit. Additional information will be provided, including volume of waste stream and recycling.

SNOW REMOVAL

Snow storage area is limited on-site for current and proposed improvements. The applicant intends to contract for snow removal for large storm events exceeding 3 inch events, or as needed. There is limited landscape/grass areas along the perimeter of the property where snow storage can be accommodated. Due to the age of the population of The Park Danforth snow removal and maintaining safe access and walking conditions have high priority.



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



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

1. Name, address, telephone number of applicant
- 2.
3. Name address, telephone number of architect
4. Proposed uses of any structures [NFPA and IBC classification]
- 5.
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 or more structures shall be required to be sprinkled in compliance with NFPA 13D. (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.

3.	Joan Eagleson, Lavalée Brensinger Architects 155 Dow St, Manchester, NH 03101 (603) 622-5450
4. + 5.	IBC Type: I-B NFPA Type": II(222)
6.	Garage: 16,817 GSF Level 1: 14,975 + 3,848 Connector + 2,954 Auditorium GSF Level 2: 14,619 GSF Level 3: 14,619 GSF Level 4: 14,619 GSF Level 5: 11,785 GSF Total: 94,236 GSF
10.	8" water main
12.	See attached code summary

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

Client: The Park Danforth

Structural Engineer: Becker Structural Engineers

FP / Plumbing / Mechanical Engineer: Allied Engineering

Electrical Engineer: Allied Engineering

Civil Engineer: Mitchell & Associates

Geotechnical Engineer:

Project Category(s):

Project Category	IBC 2009	NFPA 101 & 1 2009	IEBC 2009
New Construction	IBC applies with Amendments.	101: Chapters 1 thru 11 and new occupancy chapters as applicable. 1: All chapters as applicable.	
Major Rehab Modification Reconstruction	IBC applies as referenced in the IEBC with Amendments.	101: Chapter 43 applies. 1: Applies	IEBC applies.
Additions	IBC applies to new construction & 3403.1 height & area with Amendments.	101: Chapters 1 thru 11 and new occupancy chapters as applicable. Chapter 43.8 applies 1: Applies.	IEBC applies.
Change of Use Renovations	IBC applies as referenced in the IEBC with Amendments.	101: Chapter 43 applies. Existing Occupancy chapters apply to portions not being altered. 1: Applies	IEBC applies.

Existing Uses Assembly (A-2 & A-3), Institutional (I-1), Business (B), Storage (S-1)

Proposed Uses

Assembly: A-1 Theatre / A-2 Restaurant / A-3 Auditorium / A-3 Gym (Health & Wellness)

Business: B Professional – Administrative

Institutional: I-1 Residential Care/Assisted Living

Storage: S-1 Moderate Hazard / S-2 Low Hazard

Sprinkler System

Existing YES Proposed YES

Existing Compartmentation

Existing Fire Walls? NONE KNOWN

Existing Fire Barriers?

- Corridors: 1 hr.
- 1983 Building, 7 Story: 1 hr tenant demising walls.
- 1997 Building, 3 Story: 2 hr tenant demising walls.
- Shafts: 2 hr.

Existing Construction Type: IBC Type: I-B NFPA Type: II(222)

Existing Building Height

Existing Ht: 62 feet 10 inches Existing # of Stories: 7

Existing Building Area: 30,679 SF (roof coverage less courtyards)

Ex Floor Level 1: 30,679 SF

Ex Floor Level 2 & 3: 27,453 SF

Ex Floor Level 4 thru 7: 13,640 SF

Ex Total Building Area: 140,145 SF (sum of all floor plates)

Proposed Existing Building Work Areas

Floor Level 1 Work Area: 14,725 SF

Floor Level 2-7 Work Area: NO WORK.

Applicable Codes

Building Code: Maine Uniform Building & Energy Code:

IBC, 2009 Chapters 1-10; 12-27; 31-35 w/ amendments.

(Chapters on Accessibility, Mech, Plumbing, Elevator excluded)

Existing Building Code: IEBC 2009 w/ Maine amendments

Mechanical Code: IMC, 2009

Plumbing Code: Uniform Plumbing Code, 2009

Energy Code: IECC, 2009 w/ Maine amendments

Electrical Code: NEC – NFPA 80, 2011

Life Safety Code: NFPA 101, 2009

Fire Code: NFPA 1, 2009

Accessibility Standard: Maine Statue 5 MRS; 4594-G; ADAAG, 2010

Elevator Code: Maine Title 32 MRSA Chapter 133; ASME A17.1, 2007.

Code Analysis Issues for Resolution with AHJ:

- Review/confirm building construction type IB. Based on available construction documentation. Portions of Roof construction shown as bar joist framing with metal decking does not look to be rated per available documentation - not compliant with IBC Table 601 (1 hr required for Type IB typically).

FOR ALL PROJECTS:**Occupancy Classification & Occupancy Loads**

OCCUPANCY CLASSIFICATION AND OCCUPANCY LOADS							
BUILDING 1: First Floor (EXISTING)							
IBC 1004 & NFPA 101 Table 7.3.1.2							
Room Name	Functional Use	Classification		Room Area (gross or net as noted)	Occupant Load		Notes
		Occupancy Group	Incidental Accessory Occupancy		Factor 1 Person/X sf Gr or net noted	Total persons	
Resident Units	Residential	I-1	-	11,685 gross	200 gross	60	
Private Dining	Assembly	I-1	-	543 net	15 net	37	IBC 303.1 Exc 2
Dining waiting	Assembly	I-1	-	95 net	15 net	7	IBC 303.1 Exc 2
Main Lobby Lounge	Assembly	I-1	-	714 net	15 net	48	IBC 303.1 Exc 2
Boiler Room	Mechanical	I-1	S-1	459 gross	300 gross	2	IBC 508.2
Electrical Closet	Mechanical	I-1	S-1	35 gross	300 gross	1	IBC 508.2
Main Mechanical	Mechanical	I-1	S-1	1217 gross	300 gross	5	IBC 508.2
Laundry Room	Equipment	I-1	S-1	400 gross	300 gross	2	IBC 508.2
Garage/Maintenance	Storage	I-1	S-1	755 gross	300 gross	3	IBC 508.2
Staff Lounge	Assembly	B	-	245 gross	15 net	17	
Receptionist	Office	B	-	191 gross	100 gross	2	
Office Suite # 1	Office	B	-	1,546 gross	100 gross	16	
Office Suite # 2	Office	B	-	943 gross	100 gross	10	
Auditorium	Assembly	A-1	-	1,202	15 net	81	
Kitchen Suite	Kitchen	A-2	-	2,081	200 gross	11	
Main Dining	Assembly	A-2	-	2,355 net	15 net	157	
Activity/Multi-Purpose	Assembly	A-3	-	940 net	15 net	63	
TOTAL OCCUPANCY						522	

NOTE: THE FOLLOWING OCCUPANT LOAD CALCULATION HAS BEEN DERIVED UTILIZING THE OCTOBER 13, 2014 SCHEMATIC FLOOR PLAN SET. CURRENT FLOOR PLAN AREAS MAY FLUXUATE DURING THE DEVELOPMENT OF DESIGN. TO BE REVISED THROUGHOUT THE DEVELOPMENT OF THE PROJECT.

OCCUPANCY CLASSIFICATION AND OCCUPANCY LOADS BUILDING 1: First Floor (Proposed with Additions) IBC 1004 & NFPA 101 Table 7.3.1.2							
Room Name	Functional Use	Classification		Room Area (gross or net as noted)	Occupant Load		Notes
		Occupancy Group	Incidental Accessory Occupancy		Factor 1 Person/X sf Gr or net noted	Total persons	
Resident Units	Residential	I-1	-	11,685 gross	200 gross	60	
Private Dining	Assembly	I-1	-	543 net	15 net	37	IBC 303.1 Exc 2
Dining waiting	Assembly	I-1	-	95 net	15 net	7	IBC 303.1 Exc 2
Main Lobby Lounge	Assembly	I-1	-	714 net	15 net	48	IBC 303.1 Exc 2
Boiler Room	Mechanical	I-1	S-1	459 gross	300 gross	2	IBC 508.2
Electrical Closet	Mechanical	I-1	S-1	35 gross	300 gross	1	IBC 508.2
Main Mechanical	Mechanical	I-1	S-1	1217 gross	300 gross	5	IBC 508.2
Laundry Room	Equipment	I-1	S-1	400 gross	300 gross	2	IBC 508.2
Garage/Maintenance	Storage	I-1	S-1	755 gross	300 gross	3	IBC 508.2
Administrative Area	Business	B	-	811 gross	100 gross	9	
Administrative Conference	Assembly	B	-	137 net	15 net	9	
Ice Cream	Assembly	I-1	-	93 net	15 net	7	IBC 303.1 Exc 2
Bistro/Dining	Assembly	A-2	-	1537 net	15 net	103	
Kitchen Suite - Bistro	Kitchen	A-2	-	588 gross	200 gross	3	
Store	Mercantile	I-1	-	270 gross	60 gross	5	IBC 508.2
Wellness Center	Exercise	I-1	-	901 gross	50 gross	19	
Salon	Business	I-1	-	406 gross	100 gross	5	
Movie Room	Assembly	A-1	-	459 net	7 net	66	
Entry/Lounge	Assembly	I-1	-	376 net	15 net	25	IBC 303.1 Exc 2
Music Room	Assembly	A-1	-	632 net	7 net	91	
Break Room	Assembly	I-1	-	360 net	15 net	24	IBC 303.1 Exc 2
Kitchen Suite	Kitchen	A-2	-	2,081 gross	200 gross	11	
Main Dining	Assembly	A-2	-	2,355 net	15 net	157	
Activity/Multi-Purpose	Assembly	A-3	-	940 net	15 net	63	
Activity/Multi-Purpose	Assembly	A-3	-	458 net	15 net	31	Activity/Multi-Purpose
Auditorium	Assembly	A-1	-	1940 net	7 net	277	
Stage	Stage	A-3	-	946 net	15 net	64	
TOTAL OCCUPANCY						1,134	

OCCUPANCY CLASSIFICATION AND OCCUPANCY LOADS							
BUILDING 2: Basement (Proposed)							
IBC 1004 & NFPA 101 Table 7.3.1.2							
Room Name	Functional Use	Classification		Room Area (gross or net as noted)	Occupant Load		Notes
		Occupancy Group	Incidental Accessory Occupancy		Factor 1 Person/X sf Gr or net noted	Total person s	
Mechanical Room(S)	Mechanical	S-1	-	3,468	300 gross	12	
Parking Garage	Parking	S-2	-	13,764	200 gross	69	
TOTAL OCCUPANCY						81	

OCCUPANCY CLASSIFICATION AND OCCUPANCY LOADS							
BUILDING 2: First Floor							
IBC 1004 & NFPA 101 Table 7.3.1.2							
Room Name	Functional Use	Classification		Room Area (gross or net as noted)	Occupant Load		Notes
		Occupancy Group	Incidental Accessory Occupancy		Factor 1 Person/X sf Gr or net noted	Total person s	
Resident Units	Residential	I-1	-	11,094 gross	200 gross	56	
Board Room	Assembly	I-1	-	658 net	15 net	44	IBC 303.1 Exc 2
Administrative Area	Business	I-1	B	2504 gross	100 gross	26	IBC 508.2
Conference Room	Assembly	I-1	-	187	15 net	13	IBC 303.1 Exc 2
Activity Area	Assembly	I-1	-	533	15 net	36	IBC 303.1 Exc 2
TOTAL OCCUPANCY						175	

OCCUPANCY CLASSIFICATION AND OCCUPANCY LOADS							
BUILDING 2: Second Floor							
IBC 1004 & NFPA 101 Table 7.3.1.2							
Room Name	Functional Use	Classification		Room Area (gross or net as noted)	Occupant Load		Notes
		Occupancy Group	Incidental Accessory Occupancy		Factor 1 Person/X sf Gr or net noted	Total person s	
Resident Units	Residential	I-1	-	14,281 gross	200 gross	72	
Activity Area	Assembly	I-1	-	338 net	15 net	23	IBC 303.1 Exc 2
TOTAL OCCUPANCY						95	

OCCUPANCY CLASSIFICATION AND OCCUPANCY LOADS							
BUILDING 2: Third & Fourth Floor							
IBC 1004 & NFPA 101 Table 7.3.1.2							
Room Name	Functional Use	Classification		Room Area (gross or net as noted)	Occupant Load		Notes
		Occupancy Group	Incidental Accessory Occupancy		Factor 1 Person/X sf Gr or net noted	Total persons	
Resident Units	Residential	I-1	-	14,101 gross	200 gross	71	
Activity Area	Assembly	I-1	-	518 net	15 net	35	IBC 303.1 Exc 2
TOTAL OCCUPANCY						106	Each floor level.

OCCUPANCY CLASSIFICATION AND OCCUPANCY LOADS							
BUILDING 2: Fifth Floor							
IBC 1004 & NFPA 101 Table 7.3.1.2							
Room Name	Functional Use	Classification		Room Area (gross or net as noted)	Occupant Load		Notes
		Occupancy Group	Incidental Accessory Occupancy		Factor 1 Person/X sf Gr or net noted	Total persons	
Resident Units	Residential	I-1	-	7,770 gross	200 gross	39	
Activity Area	Assembly	I-1	-	231 net	15 net	16	IBC 303.1 Exc 2
Roof Garden 1	Assembly	A-3	-	938 net	15 net	63	
Roof Garden 2	Assembly	A-3	-	1,289 net	15 net	86	
Community Room	Assembly	A-3	-	1,320 net	15 net	88	
TOTAL OCCUPANCY						292	

FOR EXISTING BUILDINGS:**NFPA 101 – Chapter 43 Building Rehabilitation**

43.1.1 Work Categories: See 43.2.2 for definitions

Repair: Existing use chapters apply & 43.3

Renovation: Existing use chapters apply & 43.4

Modification: Existing use chapters apply, 43.4 and 43.5 and new use chapters for newly constructed elements.

Change of use or occupancy classification: Comply with 43.7

Addition: Comply with 43.8, existing use chapters for exist bldg and new use chapters for the addition.

43.1.3 Multiple work categories may be applied to different areas of the same project.

Renovation

43.4.1.3 All new work shall comply with applicable existing use chapters. (superseded by 43.5.1.3)

43.4.1.4 Work shall not make the building less conforming with other sections of the code.

43.4.1.5 Minor reductions in width due to door or window replacement shall be permitted, unless prohibited.

43.4.2 Capacity of means of egress per 7.3 shall be sufficient for load unless AHJ permits load based on capacity of egress or if capacity was previously approved.

43.4.3 Interior Finish: new finishes shall meet new construction requirements.

43.4.4 Reconfiguration of systems shall comply with 43.5

Modification

43.4.1.3 All new work shall comply with applicable existing use chapters. (superseded by 43.5.1.3)

43.4.1.4 Work shall not make the building less conforming with other sections of the code.

43.4.1.5 Minor reductions in width due to door or window replacement shall be permitted, unless prohibited.

43.4.2 Capacity of means of egress per 7.3 shall be sufficient for load unless AHJ permits load based on capacity of egress or if capacity was previously approved.

43.4.3 Interior Finish: new finishes shall meet new construction requirements.

43.4.4 Reconfiguration of systems shall comply with 43.5

43.5.1.3 Newly constructed elements, components, and systems shall comply with requirements of other sections of code for **new** construction.

43.5.2 See definition and requirements for Extensive Modifications.

Change of Use

43.7.1.1 Change of use that does not change occupancy classification or increase hazard meet applicable existing occupancy chapter.

43.7.1.2 Change of use that does not change occupancy classification but increases hazard meet applicable new occupancy chapter.

43.7.1.3 Repair, renovation, modification, or reconstruction with a change of use that does not change occupancy classification to meet 43.3, 43.4, 43.5 and 43.6.

43.7.2.1 Change of use & Occupancy Classification within same or lesser hazard class (Table 43.7.3), meet applicable existing occupancy chapters and sprinkler, detection, alarm system requirements of the applicable new occupancy chapters.

43.7.2.2 Change of use & Occupancy Classification to higher hazard class, meet applicable new occupancy chapters.

Additions

43.8.1.1 Addition shall comply with applicable new occupancy chapters and existing bldg. shall comply with applicable existing occupancy chapters.

43.8.1.2 Addition shall not create or extend any non-conformance regarding fire safety or means of egress.

43.8.2 No addition shall increase existing bldg. height beyond permitted for new.

43.8.3 Existing areas without sprinklers that are not separated from additions have to be sprinkled, if combined area has requirement for sprinklers under new occupancy chapter.

IEBC Compliance Method:

Work Area Compliance and Level 2 (Chapters 4 to 12)

IEBC – WORK AREA - ALTERATION LEVEL 2

Chapter 4 Classification of Work: Level 2 – Reconfiguration of space: See chapters 6 & 7.

Chapter 6:

New work shall meet new construction requirements of IBC, IECC, IMC, IPC.

Alterations shall protect and maintain the level of protection provided at means of egress.

Toilet rooms being altered shall be accessible to max extent possible.

Structural Alterations (606). Alterations comply with IECC, the entire building does not have to comply.

Chapter 7:

New work shall meet new construction requirements of IBC, IECC, IMC, IPC.

Existing vertical openings shall be not less than 1 hour rated.

See 704 for sprinkler system requirements.

See 707 for Structural alterations.

See 708 for Electrical alterations.

See 709 for Mechanical alterations.

See 710 for Plumbing alterations

See 711 for Energy Conservation alterations.

IEBC – WORK AREA - CHANGE OF USE

Chapter 9 Change of Use

901.3 Change of occupancy: provisions of 902 thru 912 apply.

902 - Not applicable

903 - 912 materials apply

904 - 912 fire protection applies

905 - 912 means of egress applies

906 - 912 accessibility applies; comply with 605, 706. and at least 1 accessible building entrance, at least one

- accessible route from entrance to primary function area, compliant signage, accessible parking, 1 passenger loading zone. Make accessible unless technically infeasible.
- 907 - Structural:
IBC 1604.5 Occupancy Category: Proposed Category II; Previous Use: II (I-1 Occupancy). Therefore thought of as "Standard Occupancy" building as evidenced by importance factors for earthquake, snow and wind that are all equal to 1.
- 908 - Electrical (Electrical system in work area is being replaced compliance with NEC)
- 909 - Mechanical (Mechanical system in work area is being replaced compliance with IMC)
- 910 - Plumbing (Plumbing system in work area is being replaced, compliance with IPC)
- 911 - Other Requirements: Light and ventilation shall comply with IBC for the new occupancy.
- 912 - Change of Occupancy Classification
New Occupancies Not Separated: If changed occupancies are not separated from existing unchanged occupancies, then Chapter 8 requirements shall apply to whole building for most restrictive occupancy. All alterations shall conform to the Int Energy Conservation Code.
Fire protection per 912.2: (Entire building will be sprinkled with fire alarm and detection systems)
Interior finish per 912.3: Finishes to comply with new construction requirements for each use.
- 912 - Hazard Class: Per Table 912.4, 5, 6:
Egress Hazard Category: Pre-existing: 3. Proposed B & S-1: 4; A & I-1: 3. Category is equal or of a lesser hazard, therefore means of egress doesn't have to comply with IBC, except for stair enclosure, handrails.
Heights and Areas Hazard Category: Pre-existing: 2 Proposed A & I: 2; B: 4 S-1: 3. Use is generally equal or of less hazardous, with assembly areas being of equal hazard. Therefore, per 912.5.2, height and area of existing building shall be deemed acceptable.
Exposure of exterior walls hazard Category: Pre-existing: 3 Proposed A, B: 3 S-1: 2. (S-1 considered an Incidental Accessory to the main Use) When equal hazard category, existing walls and openings are acceptable.
- 912.7 Enclosure of vertical shafts: per 912.7.1
Stairs: No higher hazard category, so no change in existing shaft protection is required.
Other shafts (Existing): 1 hour opening protection. Any new shafts shall meet IBC.

IEBC – WORK AREA - ADDITIONS

Chapter 4 Classification of Work: Addition: See Chapter 10.

Chapter 10: Addition shall comply with building code for new construction. Impact on existing building shall conform to this chapter.

1001 Addition shall not create or extend any nonconformity of the existing building.

1002 Height and Area: Height and area limits in IBC apply to existing and addition.

Fire wall shall separate if nonconforming condition is created.

Increased fire areas must conform to IBC Chapter 9.

1003 Structural: Additional loads on existing structural members.

1005 Accessibility: Additions shall be accessible per building code.

FOR NEW BUILDINGS & ADDITIONS:

BUILDING HEIGHT - AREA & CONSTRUCTION TYPE ANALYSIS

Existing Building Size

Existing Gross Building Area: 30,679 SF (Roof plan less any open courtyards)

Existing Gross Floor Areas:

Ex Floor Level 1: 30,679 SF

Ex Floor Level 2 & 3: 27,453 SF

Ex Floor Level 4 thru 7: 13,640 SF

Ex Total Building Area: 140,145 SF (sum of all floor plates)

Proposed Building Size (before any firewalls or fire areas are established)

Gross Building Area: 22,538 SF (New Addition roof plan less any open courtyards)

Gross Floor Areas:

Garage Level:	17,232 SF (New addition – detached from existing)
Floor Level 1:	53,217 SF (Total existing and additions)
Floor Level 2, 3 & 4:	14,619 SF ea. (New addition – detached from existing)
Floor Level 5:	9,351 SF (New addition – detached from existing)
Total Building Area:	233,123 SF (sum of all floor plates, Existing and New Addition)

Proposed Compartmented Building Size: (Considering Fire Walls)

Building 1 (Original plus Additions): 147,707 SF (First floor portion: 38,241 SF)

Building 2 (New Addition): 85,416 SF (First floor portion: 14,976 SF)

Existing Height & Stories

Ex Building Height above 1st Floor: 64 feet 10 inches

Ex Grade Plane: 0 feet 0 inch (above / below 1st floor)

Ex Height above Grade Plane: 64 feet 10 inches

Is lowest level a Basement or a Story? Story

Ex Number of Stories: 7 stories.

Note: Existing Tower occupied floor is less than 75' above finish grade therefore the building is NOT defined as a High Rise per Section 202 IBC and 3.3.32.7 NFPA 101.

Proposed Height & Stories (New Addition)

Proposed Building Height above 1st Floor: 59 feet 0 inches

Proposed Grade Plane: 1 feet 6 inches (below 1st floor)

Proposed Building Height above Grade Plane: 60 feet 6 inches

Is lowest level a Basement or Story? Basement (Garage/Mechanical)

Proposed Number of Stories: 5

Basement (IBC 502, NFPA 101 3.3.28)

First Story Above Grade Plane (NFPA 101 3.3.115.1): entirely above grade plane, or if story above is more than 6' above grade plane or if story above is more than 12' above finished ground level at any point.

Penthouse (IBC 1509)

NFPA Stories in Height (4.6.3)

Equipment Platforms (IBC 505.5, NFPA 101 4.6.3(3))

Existing Construction Type

IBC: Type I-B (IBC 602)

NFPA: Type II(222) (101 Table A.8.2.1.2)

Proposed Construction Type

IBC: Type I-B (IBC 602)

NFPA: Type II(222) (101 Table A.8.2.1.2)

NFPA Height & Area Analysis

New Assembly Table 12.1.6 Proposed Type Allowed for Bldg Ht? Yes

Ex Assembly Table 13.1.6 Ditto

New Lrg Bd Care Table 32.3.1.3 Ditto

Ex Lrg Bd Care Table 33.3.1.3 Ditto

Business No requirement

Storage No requirement

Note: Under IBC the Occupancy is Institutional (Healthcare), Under NFPA it is a Residential Board and Care Occupancy.

IBC Height & Area Analysis See table below.**Height Modification Factor** (IBC 504.2)

Height Increase for Fully Sprinkled: 1 story and 20 feet

Area Modification Factors (IBC 506)

Sprinkler Area Increase (506.3 For fully sprinkled building): 200% for multi-story bldgs.

Street Frontage Increase (506.2) Open area is at least 30' wide.

Proposed Building Perimeter (P): (perimeter of box that fits the floor plate)

Building 1: 1,268 feet

Building 2: 758 feet

Proposed Building Accessible Perimeter (F):

Building 1: 1,218 feet

Building 2: 703 feet

Width of public way or open space (W): 30 feet (See 506.2.1 for limitations)

[F/P - 0.25]W/30 =

= Building 1: 71 Frontage area increase

= Building 2: 67 Frontage area increase

Total Area Increase Factor

(Tabular 100%) + (Sprinkler 200%) + (Frontage factor 75%) =

= 371% (Building 1)

= 367% (Building 2)

IBC ALLOWABLE ADJUSTED BUILDING HEIGHT & AREA SUMMARY**Building 1 - Type I-B**

Bldg #	Use Group	Tabular HT		+ Sprinkler Increase		= Allowable Adjusted Height		Tabular Area 503	Area Increase Factor	Allowable Adjusted Area
		Stories	Ft	Stories	Ft	Stories	Ft			
	A-1	5	160	1	20	6	180	UL	371%	UL
	A-2	11	160	1	20	12	180	UL	371%	UL
	A-3	11	160	1	20	12	180	UL	371%	UL
	B	11	160	1	20	12	180	UL	371%	UL
	I-1	9	160	1	20	10	180	55,000	371%	204,050
	S-1	11	160	1	20	12	180	48,000	371%	178,080
	S-2	11	160	1	20	12	180	79,000	371%	293,090

IBC ALLOWABLE ADJUSTED BUILDING HEIGHT & AREA SUMMARY**Building 2 - Type I-B**

Bldg #	Use Group	Tabular HT		+ Sprinkler Increase		= Allowable Adjusted Height		Tabular Area 503	Area Increase Factor	Allowable Adjusted Area
		Stories	Ft	Stories	Ft	Stories	Ft			
	A-1	5	160	1	20	6	180	UL	367%	UL
	A-2	11	160	1	20	12	180	UL	367%	UL
	A-3	11	160	1	20	12	180	UL	367%	UL
	B	11	160	1	20	12	180	UL	367%	UL
	I-1	9	160	1	20	10	180	55,000	367%	201,850

	S-1	11	160	1	20	12	180	48,000	367%	176,160
	S-2	11	160	1	20	12	180	79,000	367%	289,930

Notes: (Include any NFPA Assembly limitations that govern over IBC)

MULTIPLE OCCUPANCY ANALYSIS (IBC 508 & NFPA101, 6.1.14)

Accessory Occupancy Analysis (IBC 508.2 only Maine excludes NFPA 101- 6.1.14.1.3)

Aggregate area of all accessory occupancies / floor $\leq$ 10% of floor

Aggregate area of all accessory occupancies $\leq$ 503 tabular areas

Accessory areas shall be occupancy classed with their use group

Height of each accessory area shall not exceed 503 tabular heights.

No separation required between main use group and accessory uses (see 3 exceptions)

Storage uses shall be considered accessory (separation per hazard requirements)

Assembly can be Accessory use in Maine

Incidental Accessory Occupancies (IBC 508.2.5)

Furnace Rooms >400,000 Btu per hr input

Boiler Room >15 psi & 10 HP

Laundry Room >100 SF

Waste & Linen Collection >100 SF

Fire Pump room in high rise

Multiple Separated and Multiple Mixed/Non-separated Occupancies (IBC 508.3 & NFPA 101 6.1.14)

Multiple Mixed/Non-separated Occupancies

Non-separated occupancies shall be individually classed except most restrictive Section 403, Chapter 9 requirements and per NFPA 101, construction type, egress and other safeguards, apply to all occupancies.

Storage uses are still subject to separation by NFPA per hazard requirements.

Multiple Occupancy Analysis Conclusion

Multiple Mixed/Non-separated Occupancies with Accessory Occupancy to the main use I-1.

FIRE RESISTIVE CONSTRUCTION REQUIREMENTS

Separation of Occupancies

Incidental Accessory Occupancies (IBC 508.2.5 & NFPA 101 32.3.3.2.2)

<u>Room or Area:</u>	<u>Fire Barrier Separation and/or Protection:</u>
Boiler Room >15 psi & 10 HP	1 hr
Physical plant maintenance Shop	1 hr
Laundry Room >100 SF	1 hr
Waste & Linen Collection	1 hr
Storage rooms >50 SF	Smoke Partition
Storage rooms >100 SF	1 hr
Trash collection rooms	1 hr
Fire Pump room in high rise	2 hr

Hazardous Area Protection (NFPA 101 8.7 and occupancy chapters)

8.7.1 Areas of greater hazard than normal to the general occupancy. Require 1 hr fire barrier, or sprinkler with smoke partition (some exceptions), or both depending on hazard.

8.7.2 If explosion hazard, then explosion venting system or explosion suppression system required.

Control Areas (IBC 414.2.4)

8.7.3 Flammable liquids and gases: Per NFPA 30, 54, 58.

NFPA 75 Information Technology Equipment Rooms (ITE): 1 hr rated in buildings of Type I-A, I-B, II-A OR single story Type II-B OR fully sprinkled any construction type. Class A finish or Class B w/ sprinkler.

Special Occupancy Requirements:

Parking Garages in other occupancies (IBC 509 & 101 Use Chapters)

Stages and Platforms (NFPA 101 12.4.5.2 and .3 / IBC 410)

Fire Compartments (NFPA 101 8.2.2) as required by occupancy chapters with fire barriers per 8.3.

Residential Board and Care: See Smoke Barriers below.

Business, Storage, Mercantile: none

Smoke Barriers (IBC 710 & 101 8.5)

As defined in NFPA smoke barriers can be fire rated or not, per occupancy chapter requirements.

Residential Board and Care: Minimum 2 per floor; not to exceed 22,500 SF; 1 hr rated. (NFPA 101 32.3.3.7)

Vertical Openings:

Shaft Enclosures (IBC 708, 101-8.6.4)

Shaft Enclosures: (IBC 707.4 & 101 8.6.4, 8.6.5).

Shaft connecting 4 or more levels: 2 hour

Shaft connecting 2 and 3 levels: 1 hour

Exit Enclosures (101 7.1.3.2):

Connecting 2 and 3 stories: 1 hour

Connecting 4 and more stories: 2 hours

Elevators shall not open to an exit enclosure (101 9.4.7)

Floors constructed to block passage of smoke (101 8.6.1)

Openings must be protected by fire barrier unless otherwise allowed (101 8.6.2)

Chutes: (101 9.5) Enclose with fire barrier.

Unprotected Floor Openings

IBC 708.2 exception 7 Allowed to connect 2 stories, if not part of means of egress system; can NOT be open to corridors in I occupancies; must be separated by rated assemblies from other floor openings.
NFPA IS MORE RESTRICTIVE.

Convenience Openings (101 -8.6.8.2)

Project Applications:

Connecting 2 stories is allowed if:

Separated from openings to other floors,

Separated from corridors by smoke partitions.

Not a means of egress.

NFPA Exit access stairs: 2 story unenclosed allowed for stage stairs in A

Corridor Enclosure Requirements:

12.3.6 Assembly: 0 hr w/ sprinklers

32.3.3.6.3 Residential Board and Care: ½ hr smoke partition at sleeping areas (Doors not required to be rated 32.3.3.6.4, exceptions for closers 32.3.3.6.5) (1 hr corridor rating per IBC Table 1018.1 – most stringent applies)

38.3.6 Business: 0 hr w/ sprinkler

40.3.6 Storage: no requirements

Construction Type (IBC Table 601 and NFPA A.8.2.1.2)

Construction Classification: IBC Type I-B NFPA Type II(222)

Building Element Fire Resistive Rating Requirements:

Primary Structural Frame: 2 hrs (1 hr supporting roof only)

Bearing walls, exterior: 2 hrs (1 hr supporting roof only)

Bearing walls, interior: 2 hrs (1 hr supporting roof only)

Nonbearing walls & partitions - exterior: 0 hrs

Nonbearing walls & partitions - interior: 0 hrs

Floor construction & secondary members: 2 hrs

Roof construction & secondary members: 1 hr

Exterior Wall Fire Rating based on Fire Separation Distance (IBC Table 602)

Review plan and layout of proposed Fire Wall.

Fire Rating for applicable Use Group: 1 hrs

Marking & Identification (IBC 703.7)

Permanently sign or stencil fire walls, fire barriers, fire partitions, smoke barriers and smoke partitions per requirements.

Fire Rating of Structural Members (IBC 704)

Exterior Walls (IBC 705)

Review plan and layout of proposed Fire Wall.

Fire Walls (IBC 706)

Separate construction into separate buildings and structurally independent to allow collapse on either side.

706.4: Fire Wall Rating:

Construction Type I-1, Use Groups I to I: 3 hours.

Where fire wall forms less than 180 degrees to exterior wall intersection:

Option 1: Fire rate ext wall for 1 hour on min 4 feet each side of fire wall with $\frac{3}{4}$ hr opening protection.

Note NFPA 101 requires 10 feet when wall is a horizontal exit. This governs.

Option 2: Establish imaginary line between buildings and comply with 705.5 and .8.

See requirements for top terminations, stepped buildings

Fire Barriers (IBC 707 & 101- 7.2.4.3, 8.3)

Fire Barriers used for shafts, exit enclosures, separation of occupancies, exit passageways, atriums, control areas, fire areas, incidental accessory areas and horizontal exits.

Fire rating of structure supporting Fire Barriers shall match the Fire Barrier (IBC 707.5.1)

1 hr fire barriers can be supported by structure rated to construction type only, except for exit enclosures and when protecting vertical openings (101 – 8.2.3.3) (As a Type II (222) we generally have a 2 hr protected structure.)

Shaft Enclosures

Exit Stairs, Elevator Shafts, Shafts: 2 hours

Fire Partitions (IBC 709)

1 hour, separate dwelling units; corridor walls; elevator lobbies (elevator lobbies 708.14.1 Exception 5 may be smoke partition unless otherwise required. If used as an evacuation component see NFPA).

Smoke Partitions: (IBC 711 & 101- 8.4)

As defined by IBC smoke partitions resist smoke with no fire rating (unless specified in occupancy sections – NFPA sleeping area protection); continuous from floor to deck above to smoke resistant ceiling system.

Doors UL 1784 tested and self-closing where required by other sections. Joints & penetrations sealed.

Horizontal Assemblies (IBC 712)

Floor and roof assemblies shall not less than rating per construction type, for separation of occupancies, for separating fire areas, or for separating dwelling units and sleeping units.

2 hr Horizontal Assembly can be a Horizontal Exit.

Penetrations (IBC 713)**Joint Protection (IBC 714 & 101- 8.3.5, 8.3.6)****Opening Protectives (IBC 715 & 101- 8.3.3, 8.3.4)**

Fire Door and Window Ratings: See Table 715.4 & 101 Table 8.3.4.2)

Ducts (IBC 716 & 101- 8.5.5)**Concealed Spaces (IBC 717 & 101- 8.6.10)****Thermal & Sound Insulation (IBC 719)****Prescriptive Fire-Resistance (IBC 720)****Calculated Fire-Resistance (IBC 721)****Horizontal Exits (IBC 1025 & 101- 7.2.4)**

Separation may be a fire wall, fire separation assembly or horizontal assembly of at least 2 hours. (Note fire wall requires 3 hrs per Use Group – see above)

INTERIOR FINISHES – (IBC Chapter 8 & 101- Occupancy Chapters)

IBC & NFPA 101 FINISHES FIRE RATING CLASS REQUIREMENTS						
USE GROUP	SPRINKLED					
	EXITS	CORRIDORS	ROOMS			
A	A	B	B >300P C <300P			
M	B	B	B			
B	B	C	C			
I-1	A	B	B			
S	B	C	C			

Combustible materials in Type I and II (IBC 805)

EGRESS REQUIREMENTS (IBC Chpter 10 & NFPA 101 applies)**General (IBC 1003, 101- 7.1)**

Min ceiling height, Projections, Floor surface, Elevation change.

Occupant Load (IBC 1004 & 101- 7.3.1.2) See worksheet table on page 2.**Egress Width (IBC 1005 & 101 Table 7.3.3.1.)**

Stairs: 0.3" / person

Doors/Corridors/Ramps: 0.2 inches /person

Minimum Stair Width: 44" min. see exceptions at 1003.3.3.3

Minimum Corridor & Ramp Width: 44" min. see exceptions at 1018.2 & 101)

Minimum Door Width: 34" clear (for accessibility)

No one egress shall provide more than half the required load.

Door Swing: Into corridors cannot reduce required corridor width by more than half during any part of the swing. Doors in fully open position can only extend 7" into corridor width.

Exit Remoteness: Check distances. See Code Plan.

Minimum # Exits per Floor (IBC 1021.1 & NFPA 101-7.4, Occupancy Chapters)

1-500 occupant load: Min 2/story

501-1,000 occupant load: Min 3/story More than 1000 occupant load: Min 4/story

PROJECT EXIT REQUIREMENT (New Addition)							
Floor Level	Total Occupant Load	Min # Exits Per story For Load	Exit Requirements				
			Exit Load	Door min clr width	Stair min width	Exit components	Exit Capacity Provided
B	81	2	41 ea	34" ea (170 load)	44" ea (146 load)	Stairs, Exits	34" door 48" stair
1	175	2	See Plan	See Plan 34" min	NA	Exits	See Plan
2	95	2	48 ea	34" ea (170 load)	44" ea (146 load)	Stairs, Exits	34" door 48" stair
3	106	2	53 ea	34" ea (170 load)	44" ea (146 load)	Stairs, Exits	34" door 48" stair
4	106	2	53 ea	34" ea (170 load)	44" ea (146 load)	Stairs, Exits	34" door 48" stair
5	292	2	146ea	34" ea (170 load)	44" ea (146 load)	Stairs, Exits	34" door 48" stair

Exit Access / Arrangement (101-7.5)

Limitations on travel thru other rooms

Common Path of Travel (101- A7.6)

A: 20 ft and see seating aisle requirements

B, S: 100 ft w/ sprinkler (exception for < 30 occup load)

Board and Care: 125 ft 75 ft per occupancy chapter code discrepancy 32.3.2.5.2

Travel Distance Limit (IBC Table 1016.1 & 101- A7.6) sprinkled

A 250 ft

B 300 ft

S-1 400 ft

Board and Care: 325 ft 250 ft per occupancy chapter code discrepancy 32.3.2.6
Dead End (101- A7.6)
A 20 ft
B, S 50 ft
Board and Care: 30 ft
Spaces requiring 2 exit access (Board and Care): 2000 SF
Exit & Exit Access Doors (IBC 1015)
2 doors required for occupancy load of 50 or more. Occupant load > 10 in I or > 50 in A, B or > 29 in S.
Remoteness 1/3 diagonal distance if sprinkled.
Boiler room exit access (101- 7.12)
Common path 100' w/sprinkler. Stories with only mech spaces may have 1 egress if travel distance to exit meets common path.
Stage egress: Required from both sides.
Auditorium aisle egress: See NFPA 101 Chapter 12

Corridors (101 Occupancy Chapters)

Foyers, lobbies or reception rooms can intervene in corridor continuity.
Min Corridor Width: 5 ft Board and Care

Exit Discharge (101- 7.7.2)

Up to half of exits may discharge thru the level of exist discharge in sprinkled buildings.

Accessible Egress (IBC 1007.2.1 & 101- 7.5.4)

In general, 2 accessible means of egress required; comply with ANSI A117.1. Can be:
Stairs, Elevator, Platform Lifts, Horizontal Exits, Ramps or Area of Refuge.
At least one accessible exit must be within travel distance to area of refuge or an accessible exit.
NFPA: Accessible egress not required in healthcare occupancies if sprinkled.
Remoteness (101 - 7.5.4.2), except if sprinkled.

Accessible Elevators (IBC 1007.2.1 & 101-7.2.13, 9.4)

Required for accessible floor 4 or more stories above LED, except if fully sprinkled with a horizontal exit (2 hr fire barrier creating 2 compartments on the floor) or a ramp (1007.2.1).
Required with standby power and emergency operation and signaling per ASME A17.1,
Accessed from an area of refuge or a horizontal exit except if sprinkled.
See (101 9.4.1, 7.2.12.2.4)
Shaft shall be a smoke proof enclosure, except if sprinkled. (101 - 7.5.4.7)

Platform Lifts (IBC 1007.5)

Allowed only in specific locations per 1109.7, with standby power,
Can NOT be in an enclosed in a hoistway.

Accessible Stairs (IBC 1007.3)

Min 48" wide between handrails with a) floor landing area of refuge OR b) stair accessed from areas of refuge OR c) stair accessed from a horizontal exit. Width and area of refuge is excepted if fully sprinkled (still need a compartmented floor).
Tactile Signage: 1022.8 at 4 story & higher stairs

Areas of Refuge (IBC 1007 & 101- 7.2.12) (one way of providing accessible egress)

Travel distance from accessible space to Area of Refuge within allowable Max Travel Distance.
Areas of Refuge shall directly connect with an accessible stair or elevator.
Requirements for smokeproof enclosures – review.
Size of Area of Refuge: 1 wheelchair space per 200 occupants.
Enclosure: Smoke barrier or horizontal exit (2 hr).

Multi-story Sprinkled Business Example: Entire floor is area of refuge. Need one room for sheltering that is

smoke resisting (NFPA definition of area of refuge), 2 way communication required at elevator entrances.
No fire ratings required. No enlarge stair landing required. (Confirmed with call to NFPA) This is an example of 7.2.12.1.1.

Project Accessible Egress Elements: Elevator.

Doors (IBC 1008 & 101- 7.2.1)

Min Door Width:

36" (to provide 32" min clear for accessibility) (101- 7.2.1.2.3.2)

Hardware clearance requirements (101- 7.2.1.2)

Doors swing in direction of egress for 50 and more people or high hazard contents (101- 7.2.1.4.2)

Door encroachment in corridors – check outswing doors! (101- 7.2.1.4.3)

Special locking situations (101- 7.2.1.5).

Doors must be side hinged except power operated doors.

Floor level at both sides of doors, except at exterior doors, pad may pitch ¼"/foot.

Panic devices: Required on doors serving ≥50 in A Groups (1008 & 101- 7.2.1.7 & Use Chapt)

Special locking requirements – review as applicable

Horizontal sliding doors (101- 7.2.14)

Stairs (IBC 1009 & 101- 7.2.2)

Geometry – new & existing, construction

Alternating tread, spiral,

Access for Unoccupied Low-pitch Roofs:

101- 7.2.8.3.4: Ladder per 7.2.9 or alternating tread device 7.2.11

Stair required for bldgs. 4 story & more unless pitched roof. IBC 1009.13

Elevator equipment must be accessed by stairs (not ladders).

Stair Signage (101- 7.2.2.5.4)

Ramps (IBC 1010 & 101- 7.2.5)

Ramp geometry new & existing (101-7.2.5.2)

Exit Signs (IBC 1011 & 101- 7.10)

Lighted exit signs at exits, exit access doors (except rooms with 1 door), doors in path of exit, 100 ft intervals.

Tactile exit sign required at door to area of refuge, exterior area of rescue assistance, exit stairs, exit ramps, exit passageway and exit discharge.

Handrails (IBC 1012 & 101- 7.1.8, 7.2.2.4)

Guards (IBC 1013 & 101- 7.2.2.4)

At open areas with 30" or greater drop; except: loading docks, audience side of stages & platforms.

Guards at roof hatches, paths of travel and roof mounted mechanical equipment within 10' of roof edge.

Minimum # Exits per Floor (IBC 1021.1 & 101-7.4, Occupancy Chapters)

1-500 occupant load: Min 2/story

501-1,000 occupant load: Min 3/story

More than 1000 occupant load: Min 4/story

Note IBC allows some conditions 1 exit / floor see table 1021.4.

Exit Passageways (IBC 1023 & 101- 7.2.6)

Horizontal Exits (IBC 1025 & 101- 7.2.4.3)

Up to half required exits may be Horizontal Exits

Refuge area must be provided on each side. See code for required area based on load and use group.

Exit Discharge (IBC 1027 & 101- 7.7.2)

Up to half of exits may discharge thru the level of exist discharge in sprinkled buildings

Assembly Occupancy Requirements (IBC 1028, 101 Use Chapters)

Emergency Escape (IBC 1029) Group I-1 Exception 1 Sprinkled building

ACCESSIBILITY ANSI A117.1; ADAAG 2010

Accessible Route: Site transport stops, parking, drop-off to bldg entrances, all public and student use spaces on all floors.

Not accessible: limited access mechanical spaces, elevator pits, etc.

ADAAG 802 Accessible assembly seating:

Auditorium seating: See ADA Table 221.2.1.1.

Accessible stage access from audience.

Cafeteria seating: See ADA Table 221.2.1.1. (adjustable ht tables)

Assisted listening system as part of PA system in auditorium.

All toilet rooms and bathing rooms shall be accessible.

In multi-user restrooms: At least one wheelchair stall and where more than 6 toilets/urinals, provide 1 ambulatory stall.

Drinking fountains shall be combination hi/low units.

See ADAAG 608.2.1 for accessible transfer shower and wheelchair area

Staff kitchenettes and breakrooms shall be accessible.

Elevator shall be on an accessible route.

Must comply with ADAAG 308 reach ranges.

Food serving lines: At least 1 shall be accessible. Queue lines shall be accessible.

Main office reception desk, library desk, shall be accessible.

Controls, operating mechanisms, hardware shall be accessible except those controlled by maintenance staff only.

Operable windows: At least one window shall be accessible in accessible rooms.

Signage.

Work surfaces: 34" AFF max.

Food service tray slides: 28 to 34" AFF

INTERIOR ENVIRONMENT IBC Chapter 12

Sound Transmission- Dwellings (1207)

Interior Habitable Space Dimension Minimums 7'-6" min ceiling ht.

Surrounding Materials: Toilet, bathing and shower room floors and walls shall be smooth, hard, non-absorbent with base of 4" min height. Walls and partitions within 2 feet of urinals and toilets shall be smooth, hard, non-absorbent to 4 feet high min. Accessories shall be sealed to moisture.

Shower compartments & walls shall extend to at least 70 inches above height of drain.

1210.5 Toilet rooms shall not open into rooms where food is prepared for the public.

ENERGY EFFICIENCY IBC Chapter 13 – See IECC

Project Location: Portland in Cumberland County, Maine: Climate Zone 6A

Exterior Walls: U: 0.064 or R: R-13 + R-7.5ci

Roof: U: 0.048 or R: 20ci

Below grade walls: R: 7.5ci

Swing doors: U: 0.70

Roll-up doors: U: 0.50

Fenestration: 40% max wall area; Metal framing: U: 0.45 Curtain Walls, U 0.80 Entrance Doors, U: 0.55 Others.

Skylight: U: 0.60

EXTERIOR WALLS IBC Chapter 14

1404.2 Water-resistive barrier flashed to exterior required behind all exterior wall veneer.

1404.5 and 1405.6 Anchored Masonry veneer

1404.10 and 1405.16 Fiber-cement siding veneer. Allowed on Type II construction meeting wind pressure/wind speed exposures as labeled by manufacturer.

1405.3 Vapor retarders:

Class I or II shall be installed on frame walls in Zone 6.

Class III is allowed in Zone 6 with vented cladding or insulated sheathing of R11.25 or more.

1405.15 Cement Plaster: meet Chapter 25 requirements.

ROOFS IBC Chapter 15

1503.4 Roof Drainage: Secondary drains or scuppers required if roof edge parapets entrap water if primary drain fails

1504.3 Roofing Wind Resistance: per Section 1609, including low slope roof edge metal work attachment.

1505: Fire Classification: Type I-B: Min Class B.

1507.12 Thermoset single-ply Membrane Roofing: Min pitch 1/4 inch per foot.

MATERIALS IBC Chapters 18 to 26

2509 Gypsum Board in Showers & Water Closets: Glass mat MR board, GMMB shall be used for wall tile substrate and ceiling panels in shower areas. MR gyp bd may be used for wall tile base at toilets

PLUMBING - See Uniform Plumbing Code

FOR ALL NEW BUILDINGS, ADDITIONS & EXISTING BUILDINGS W/ CHANGE OF USE:

ELEVATORS See ASME A17.1 2007 and Maine code.

Firemen's key access required for elevators and LULA elevators with Yale 3502 keyway.

Elevator car size required for 76" x 24" stretcher.

FOR NEW BUILDINGS, ADDITIONS TO EXIST BLDGS & SOME EXIST BLDG CHANGE OF USE:

SPECIAL REQUIREMENTS FOR USE GROUPS

IBC Special Requirements for Use Groups (Chapter 4)

High Rise 403 **NOT APPLICABLE** – See Definition Section 202 IBC.

Motor Vehicle Related Occupancies IBC 406

Stages IBC 410

Live/Work Units 419, Group I-1, R 420

NFPA 101 – Chapter 12 New Assembly Occupancies

12.1 General

12.1.2.2 Exits sized for simultaneous exiting with multiple use groups.

12.1.6 Minimum Construction Requirements

12.2 Means of Egress

12.2.2.2 Door requirements

12.2.3 Stairs

12.2.5 Arrangement of Egress: special requirements for aisle and seating

12.2.11 Guards and Railings

12.3 Protection

12.3.2 Protection of hazards

12.3.4 Fire alarm system required for oc load of 300 and greater.

12.3.5 Requirements for sprinklers

101 – Chapter 32 New Residential Board & Care Occupancies

32.1.2 Multiple Occupancies

32.1.2.3 No board and care occupancy shall have its sole means of egress or means of escape pass through any non-residential or non-healthcare occupancy in the same building.

32.1.2.4 No board and care occupancy shall be located above a non-residential or non-healthcare

occupancy unless separated by construction having a minimum 2-hour fire resistance rating.

32.3.1.3 Minimum Construction Requirements: Table 32.3.1.3

32.3.2 Means of Egress

32.3.2.3.3 60" min corridors

32.3.2.5.2 Common path of travel shall not exceed 75 ft

32.3.2.5.4 Dead end corridors shall not exceed 30 ft

32.3.2.5.5 Any room or suite of rooms exceeding 2000 SF shall be provided with not less than two exits

32.3.2.6 Travel distance to exits shall not exceed 250 ft

32.3 Protection

32.3.3.2.2 Area protection per Table 32.3.3.2.2.

32.3.3.3.2 Interior Finishes

32.3.3.4.7 Smoke Alarms: Inside sleeping rooms, outside every sleeping room and on all levels within a resident unit

32.3.3.6 Corridors and Separation of Sleeping Rooms

32.3.3.7 Subdivision of building spaces.

101 - Chapter 38 New Business Occupancies

38.1 General

38.1.6 No construction type requirements.

38.1.7 Occupant load determined on characteristics of each space based on load table factors (conference, training rooms are not accessed on basis of 1/100, but 1/15)

38.2 Means of Egress

38.2.2.13 If sprinkled, area of refuge

38.2.3.3 44" min corridors

38.2.3 Capacity of Egress

38.2.4 Number of Exits

38.2.5 Arrangement of Exits

32.3 Protection

32.3.4 Detection system required. Emergency lighting required.

32.3.6.1 No corridor fire rating required with sprinklers.

32.3.1.1(1) Convenience openings allowed.

32.2.2 Interior Finish

32.3.2.3 Cooking equipment – fire suppression needed except for food warming.

32.2.6 Corridors: no fire rating with sprinklers

101 – Chapter 42 Storage Occupancies

42.1 General

42.1.4 Determine hazard class

42.1.7 Occupant load determine by maximum probable population.

42.2 Means of Egress

42.2.5 Dead end: 100' common path: 100' Travel Distance: 400'

EXHIBIT 13
STORMWATER MANAGEMENT PLAN

Refer to Stormwater Management Plan.

Prepared by
BH2M Engineers



Albert Frick Associates, Inc
Environmental Consultants
95A County Road Gorham, Maine 04038
(207) 839-5563 FAX (207) 839-5564
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Brady Frick, SE
Bryan Jordan, SE
William O'Connor, SE
Noel Dunn, Office Manager

September 27, 2014

Mr. Mike King
Mitchell Associates
70 Center Street
Portland, ME 04101

Re: The Park at Danforth, Stevens Avenue, Portland

Dear Mr. King:

We have revisited the above-referenced site to re-excavate soil test pits for stormwater design. Previously our test pits were dug by hand shovel and soil auger, and were not sufficiently deep to fully evaluate soil characteristics. Enclosed for your review and use are revised soil profile descriptions for TP1-6, based on excavations with backhoe, at the on-site locations previously identified by others.

Soil profiles observed in backhoe test pits exhibited similar conditions to those described with hand shovel test pits. These consist of fill soils of variable sandy textures, over original soils that are Croghan (Variant) soils, in that they are glacial outwash soils on nearly level to gently sloping landforms. The area has been developed for many years, with more than one project at this site.

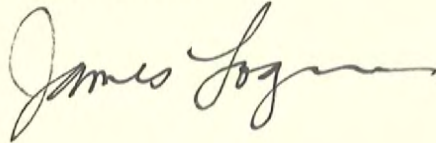
A subsurface layer of somewhat firm to firm, very gravelly loamy sand was observed in all test pits, which had evidence of slower internal drainage than those soil layers above and below this slightly cemented zone. Original soil data provided suggested the soils are "Skerry-like", but over –excavation/removal of the somewhat firm to firm subsurface layer would create soil conditions on-site that more closely resemble Croghan (Deerfield) soil as mapped originally in the USDA Natural Resource Conservation Service Soil Survey of Cumberland County.

While Croghan soils are generally moderately well drained (i.e. seasonal high water tables generally within 4' of the original soil surface), long term development of city streets/infrastructure has likely lowered the traditional water tables in the area. (It is my understanding that soil borings verified static water table levels approaching 20' in depth). A revised generic soil description for fill over Croghan soils is also now enclosed.

I trust you will find this enhanced investigation of soils on the project site will be helpful in redefining parameters and site limiting factors for sound stormwater design.

Otherwise, should you have further questions or matters for discussion regarding the site, please do not hesitate to call.

Sincerely,

A handwritten signature in cursive script that reads "James Logan". The signature is written in dark ink and is positioned to the right of the word "Sincerely,".

James Logan
Certified Soil Scientist #213
Licensed Site Evaluator #237
Wetland Scientist

Cc. Lester Berry, P.E. (BH2M)

CROGHAN (Variant)

SETTING

Parent Material:	Derived from outwash or deltaic sand.
Landform:	Occupy outwash terraces and sand plains.
Position in Landscape:	Usually are found in intermediate positions in the landscape.
Slope Gradient Ranges:	(B) 3-8% (C) 8-20%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class:	Generally moderately well-drained, with an apparent water table within 4' of the soil surface. On this specific site, city stormwater infrastructure in surrounding streets has likely lowered the water table.	
Typical Profile Description:	Surface layer:	Dark brown sand, 0-7"
	Subsurface layer:	Strong brown/yellowish brown, brown & pale brown sand with mottles below 13", 7-52"
	Substratum:	Grayish brown loose sand, 52-60"
Hydrologic Group:	Group B	
Surface Run Off:	Slow to medium	
Permeability:	Rapid to very rapid in the lower horizons.	
Depth to Bedrock:	Moderately deep, 20-40"	
Hazard to Flooding:	None	

INCLUSIONS

(Within Mapping Unit)

Similar:	Adams, Duane
Dissimilar:	Au Gres, Naumburg, Naskeag

USE AND MANAGEMENT

Development of stormwater management systems: The limiting factor for building site development is wetness due to the presence of a groundwater table. Proper foundation drainage or site modification is recommended. Croghan soils are suitable for creation of stormwater management structures, and permeability is 6"-20"/hr in the upper 7" of soil profile, and in excess of 20"/hr on subsoil.

Owner's Name
MITCHELL ASSOCIATES

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 2 ☒ Test Pit ☐ Boring
" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)	Texture	Consistency	Color	Mottling
0				
10	SANDY LOAM & LOAMY SAND (FILL)		BROWN	
20		FRIABLE		NONE EVIDENT
30	LOAMY SAND		DARK BROWN	
40	MEDIUM & COARSE SAND		YELLOWISH BROWN	
40	COBBLY SAND	SOMEWHAT FIRM IN COBBLES	OLIVE BROWN	FEW FAINT
50				
60	GRAVELLY COARSE SAND	FRIABLE	YELLOWISH BROWN	NONE EVIDENT
70				
		LIMIT OF EXCAVATION		
80				
90				
100				

FILL OVER CROGHAN (VARIANT)

9-25-14
Date

A circular professional seal for the State of Maine. The outer ring contains the text "STATE OF MAINE" at the top and "SOIL SCIENTIST" at the bottom, separated by two five-pointed stars. The center of the seal contains the name "JAMES LOGAN" and the number "#213" below it.

Town, City, Plantation
PORTLAND

Street, Road Subdivision
THE PARK DANFORTH

Owner's Name
MITCHELL ASSOCIATES

ALL SOIL TEST PITS EXCAVATED BY BACKHOE

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole **TP 3** ☒ Test Pit ☐ Boring
" Depth of Organic Horizon Above Mineral Soil

Observation Hole **TP 4** ☒ Test Pit ☐ Boring
" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)	Texture	Consistency	Color	Mottling
0	BARK			
10	MULCH (FILL)		BLACK	
20	SANDY LOAM	FRIABLE	DARK BROWN	
30	LOAMY SAND		DARK YELLOWISH BROWN	
40	MEDIUM & COARSE SAND		YELLOWISH BROWN	
50	GRAVELLY LOAMY SAND & SAND	FIRM IN PLACE	OLIVE BROWN	FEW FAINT
60	COARSE SAND & GRAVEL		YELLOWISH BROWN	NONE EVIDENT
70				
80				
90				
100				

Soil Classification
Profile Condition
Slope
Limiting Factor **38"**
☐ Ground Water
☐ Restrictive Layer
☐ Bedrock
☐ Pit Depth

CROGHAN (VARIANT)

DEPTH BELOW MINERAL SOIL SURFACE (inches)	Texture	Consistency	Color	Mottling
0	SANDY LOAM & LOAMY SAND (FILL)		BROWN	
10		FRIABLE		
20	LOAMY SAND		DARK BROWN	
30				
40	FINE & MEDIUM SAND		DARK YELLOWISH BROWN	
50	LOAMY SAND	FIRM IN PLACE	OLIVE BROWN	FEW FAINT
60	FINE SAND	FRIABLE	LIGHT OLIVE BROWN	NONE EVIDENT
70				
80				
90				
100				

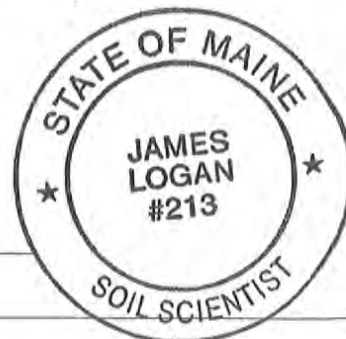
Soil Classification
Profile Condition
Slope
Limiting Factor **43"**
☐ Ground Water
☐ Restrictive Layer
☐ Bedrock
☐ Pit Depth

FILL OVER CROGHAN (VARIANT)

James Logan
Site Evaluator/Soil Scientist Signature

237/243
SE/CSS "

9-25-14
Date



Town, City, Plantation
PORTLAND

Street, Road Subdivision
THE PARK DANFORTH

Owner's Name
MITCHELL ASSOCIATES

ALL SOIL TEST PITS EXCAVATED BY BACKHOE

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 5 ☒ Test Pit ☐ Boring
" Depth of Organic Horizon Above Mineral Soil

Observation Hole TP 6 ☒ Test Pit ☐ Boring
" Depth of Organic Horizon Above Mineral Soil

Texture	Consistency	Color	Mottling
	FRIABLE		
SANDY LOAM & LOAMY SAND (FILL) W/ BRICKS	SOMEWHAT FIRM	VARIABLE BROWN	
GRAVELLY LOAMY COARSE SAND	FIRM IN PLACE (SLIGHTLY CEMENTED)	OLIVE BROWN	COMMON FAINT
LIMIT OF EXCAVATION			

Soil Classification
Profile Condition
Slope %
Limiting Factor 34"
☒ Ground Water
☐ Restrictive Layer
☐ Bedrock
☐ Pit Depth

FILL OVER CROGHAN (VARIANT)

Texture	Consistency	Color	Mottling
SANDY LOAM & LOAMY SAND (FILL)		BROWN	
LOAMY SAND	FRIABLE	DARK BROWN	
GRAVELLY LOAMY COARSE SAND		DARK YELLOWISH BROWN	
GRAVELLY COARSE SAND	SOMEWHAT FIRM IN PLACE	MIXED OLIVE BROWN	FEW FAINT
MEDIUM & COARSE SAND	FRIABLE	LIGHT OLIVE BROWN	NONE EVIDENT
LIMIT OF EXCAVATION			

Soil Classification
Profile Condition
Slope %
Limiting Factor 36"
☒ Ground Water
☐ Restrictive Layer
☐ Bedrock
☐ Pit Depth

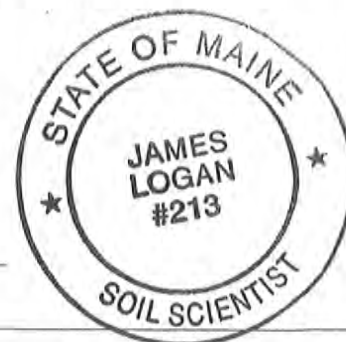
FILL OVER CROGHAN (VARIANT)

James Logan for AFA
Site Evaluator/Soil Scientist Signature

ALBERT FRICK ASSOCIATES - 95A COUNTY ROAD GORHAM, MAINE 04038 - (207) 839-5563

237/243
SE/CSS *

9-25-14
Date



REPORT

September 30, 2014
14-0065 S

Geotechnical Engineering Services

Proposed Senior Living Facility
The Park Danforth
Arbor Street & Forest Avenue
Portland, Maine

PREPARED FOR:

The Park Danforth
c/o Mitchell & Associates
Attention: Robert Metcalf
70 Center Street
Portland, Maine 04101

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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Attachment A	Limitations
Sheet 1	Exploration Location Plan
Sheets 2 - 15	Exploration Logs
Sheet 16	Key to the Notes and Symbols
Sheets 17 – 21	Laboratory Gradation Testing
Sheets 22 & 23	Underdrain Details

14-0065 S

September 30, 2014

The Park Danforth
c/o Mitchell & Associates
Attention: Robert Metcalf
70 Center Street
Portland, Maine 04101

Subject: Geotechnical Engineering Services
Proposed Senior Living Facility
The Park Danforth
Arbor Street and Forest Avenue
Portland, Maine

Dear Bob:

In accordance with our Revised Proposal, dated February 21, 2014, we have performed subsurface explorations for the subject project. This report summarizes 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 test boring explorations, soils laboratory testing, a geotechnical analysis of the subsurface findings and preparation of this report.

1.2 Site and Proposed Construction

The site is located southwest of the intersection of Arbor Street and Forest Avenue in Portland, Maine. The site is currently occupied by residential and retail development and improvements associated with the existing Park Danforth facility.

We understand development plans call for demolition of existing improvements and construction of a new four and five story apartment building with below grade parking for senior housing. The new apartment building is proposed in the northeast portion of the site in the vicinity of an existing one-story retail building that will be demolished. We understand typical column loads for the apartment building may range from 180 to 460 kips. We anticipate finish floor elevations will be within 2 feet of existing grades.

Development plans also include a one-story, on-grade addition to the northwest wing of the existing Park Danforth building. Paved parking and access drive areas are proposed around the north, east, and west peripheries of the site, adjacent to Forest Avenue, Arbor Street, and Stevens Avenue.

Proposed and existing site features are shown on the "Exploration Location Plan" attached as Sheet 1.

2.0 EXPLORATION AND TESTING

2.1 Explorations

Fourteen test borings (B-101 through B-114) were made at the site on May 22 and 23, 2014 by Great Works Test Boring, Inc. of Rollinsford, New Hampshire working under subcontract to S. W. Cole Engineering, Inc. (S.W.COLE). The exploration locations were selected by Mitchell & Associates and established in the field by S.W.COLE based on measurements from existing site features. The exploration program consisted of the following:

- Five test borings (B-104 through B-108) made for the proposed apartment building in the northeast portion of the site;
- Three test borings (B-111 through B-114) made for the proposed one-story Park Danforth building addition;
- Six test borings (B-101 through B-103 and B-109 and B-110) made for the proposed paved areas.

The approximate exploration locations are shown on the "Exploration Location Plan" attached as Sheet 1. Logs of the test borings are attached as Sheets 2 through 15. The elevations shown on the logs were estimated based on topographic information shown on Sheet 1. A key to the notes and symbols used on the logs is attached as Sheet 16.

2.2 Testing

The test borings were drilled using a combination of solid stem auger and hollow stem auger drilling techniques. The soils were sampled at 2 to 5 foot intervals using a split spoon sampler and Standard Penetration Testing (SPT) techniques. SPT blow counts are shown on the logs.

Soil samples obtained from the explorations were returned to our laboratory for further classification and testing. Laboratory testing included five gradation tests and five moisture content tests. Results of the gradation testing are attached as Sheets 17 through 21. Results of the moisture content tests are shown on the logs.

3.0 SITE AND SUBSURFACE CONDITIONS

3.1 Surficial

The site is currently occupied by residential and retail development and associated landscape and pavement areas. The site is relatively level and flat with existing grades generally dropping west to east from about elevation 127 to 120 feet. Existing site features are shown on Sheet 1.

It should be noted that the site is an urban site with likely previous development, including past structures that are not represented on Sheet 1.

3.2 Soil and Bedrock

Underlying a surficial layer of topsoil or pavement the borings encountered a subsurface profile generally consisting of a thin layer of uncontrolled granular fill overlying native outwash sands overlying refusal surfaces (probable bedrock). The principal soils encountered at the explorations are summarized below; refer to the attached logs for more detailed descriptions of the subsurface findings.

Uncontrolled Fill: The borings encountered uncontrolled fill consisting of loose to medium dense, brown and dark brown sand with varying portions of silt, gravel, and miscellaneous debris such as coal, porcelain, glass, and brick fragments. Rootlets were observed in the fill at some of the explorations. The fill was penetrated at depths varying from approximately 1.5 to 6 feet at the explorations.

Outwash Sands: Underlying the uncontrolled fill, the borings encountered native outwash sands consisting of stratified medium dense to very dense sand with varying portions of silt and gravel. The borings, with the exception of B-104 through B-108, were terminated in the outwash sands at depths varying from 9 to 21 feet.

Refusal Surfaces: Underlying the outwash sands, borings B-104 through B-108 encountered refusal surfaces (probable bedrock) at depths varying from 22 to 28 feet. A zone of probable weathered bedrock was penetrated by as much as approximately 2 feet by the augers before encountering refusal.

3.3 Groundwater

Free groundwater or saturated soils were encountered at depths varying from about 18 to 21 feet at borings B-105 through B-108. Free water was not encountered at the remainder of the borings. Long term groundwater information is not available. It should be anticipated that seasonal groundwater levels will fluctuate, especially during periods of snowmelt and precipitation.

3.4 Seismic and Frost

The 25-year Air Freezing Index for the Portland, Maine area is about 1,290-Fahrenheit degree-days, which corresponds to a frost penetration depth on the order of 4.5 feet. Based on the subsurface findings, we interpret the site soils to correspond to Seismic Soil Site Class C according to 2009 IBC.

4.0 EVALUATION AND RECOMMENDATIONS

4.1 General Findings

Based on the subsurface findings, the proposed construction appears feasible from a geotechnical standpoint. The principle geotechnical considerations are as follows:

- The site is an urban site likely with past structures and underground improvements that may not become apparent until construction. An assessment of past site uses including historical structures should be completed during the planning phase of the project to help understand the impact of past site development to the proposed construction.
- A 2 to 6 foot layer of uncontrolled granular fill exists within the proposed apartment building and Park Danforth building addition footprints. The uncontrolled fill should be removed and replaced below foundations and densified below on-grade floor slabs. Areas that become soft after densifying should be removed and replaced prior to installing slab base gravels. Provided the building pads are properly prepared, spread footing foundations and on-grade floor slabs appear suitable for the proposed construction.
- Native sand subgrades below foundations and on-grade floor slabs should be densified. Pavement subgrades consisting of uncontrolled granular fill or native sands should be proof-rolled and soft areas repaired prior to installing pavement gravels.
- Imported Granular Borrow, Structural Fill, and Crushed Stone will be needed for construction. Existing native outwash sands appear suitable for reuse as Granular Borrow.
- We recommend completing a historical mapping and records review of the site to explore the potential for buried structures and foundations which may be encountered during construction. S.W.COLE is available to complete this task.

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 and site disturbance. All topsoil and organics should be completely removed from areas of proposed construction. Final cuts to subgrade elevation should be made with a smooth edge bucket to lessen subgrade disturbance. We offer the following subgrade preparation recommendations for proposed building and paved areas.

Proposed Building Areas: In addition to grubbing all organics, all existing pavement, utilities, foundations, structures, and uncontrolled fill should be completely removed beneath proposed foundations until undisturbed native sands are encountered. The removal of unsuitable materials should extend outward 1 foot laterally from edge of footing for every foot of vertical depth below bottom of footing (1H:1V bearing splay). Overexcavations should be backfilled with compacted Structural Fill. The native sand footing subgrade soils should be densified with 3 to 5 passes of a vibratory plate compactor having a static weight of at least 600 pounds prior to placing new fill or concrete.

Following installation and backfilling of building foundations, we recommend on-grade floor slab subgrade be densified with 3 to 5 passes of a vibratory roller having a static weight of at least 5 tons. Floor slab areas that become soft or continue to yield after densifying should be removed and replaced with compacted Structural Fill prior to installing slab gravels.

Proposed Paved Areas: Following grubbing all organics, all pavement and deleterious materials should be removed beneath proposed paved areas. Existing utilities should be removed and existing foundations should be removed to at least 4.5 feet below finish grade and backfilled with compacted Granular Borrow. Pavement subgrades should be proof rolled and densified with 3 to 5 passes of a vibratory roller having a static weight of at least 10 tons. Pavement subgrade areas that become soft or continue to yield should be removed and replaced with compacted Granular Borrow prior to installing pavement gravels.

4.3 Excavation and Dewatering

Excavation work will generally encounter existing uncontrolled granular fill and native outwash sands. Care must be exercised during construction to limit disturbance of the native bearing soils. Earthwork and grading activities should occur during drier summer and fall seasons. Final cuts to subgrade should be performed with a smooth-edged bucket to help minimize soil disturbance.

We recommend that the construction documents contain unit pricing for removal and replacement of existing uncontrolled fills, structures, and other unsuitable materials as described herein.

Groundwater was encountered in the explorations at depths on the order of 20 feet. Sumping and pumping dewatering techniques should be adequate to control groundwater in excavations. Excavations must be properly shored or sloped in accordance with OSHA trenching regulations to prevent sloughing and caving of the sidewalls during construction. Care must be taken to preclude undermining adjacent structures, utilities and roadways. The design and planning of excavations, excavation support systems, and dewatering is the responsibility of the contractor.

4.4 Foundations

We recommend the proposed buildings be supported on spread footings founded on densified native outwash sands or properly compacted Structural Fill overlying densified native outwash sands. As presented herein, it will be necessary to remove and replace existing uncontrolled fills below foundations.

For foundations bearing on properly prepared subgrades, we recommend the following geotechnical parameters for design consideration:

- Design Frost Depth = 4.5 feet
- Net Allowable Soil Bearing Pressure = 4 ksf or less
- Base Friction Factor = 0.30 (concrete to sand)
- Total Unit Weight of Backfill = 130 pcf (compacted Structural Fill)
- At-Rest Lateral Earth Pressure Coefficient = 0.5 (compacted Structural Fill)
- Internal Friction Angle of Backfill = 30° (compacted Structural Fill)
- Seismic Soil Site Class = C (IBC 2009)

4.5 Foundation Drainage

The site soils consist of relatively dry, well-drained sands. However, it is good practice to provide perimeter underdrainage to help reduce the risk of frost heaving of entrance slabs and sidewalks. We recommend an underdrain system be installed along the outside edge the perimeter footings. The underdrain pipe should consist of 4-inch diameter, slotted foundation drain pipe bedded in Underdrain Sand. The underdrain pipe must have a positive gravity outlet protected from freezing, clogging and backflow. Surface grades should be sloped away from the building for positive drainage. General underdrain details are illustrated on Sheets 22 and 23.

4.6 Slab-On-Grade

On-grade floor slabs in heated areas may be designed using a subgrade reaction modulus of 100 pci (pounds per cubic inch) provided the slab is underlain by at least 12-inches of compacted Structural Fill placed over densified native sand subgrades or densified existing fill subgrades which have been repaired as necessary. On-grade slabs in the below grade parking garage should be underlain with at least 6 inches of Crushed Stone overlying a filter fabric. If the parking garage is unheated, we recommend floor slabs be underlain with at least 2 inches of foundation insulation for frost protection. The structural engineer or concrete consultant must design steel reinforcing and joint spacing appropriate to slab thickness and function.

We recommend a sub-slab vapor retarder particularly in areas of the building where the concrete slab will be covered with an impermeable surface treatment or floor covering that may be sensitive to moisture vapors. 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 direct contact with the sub-slab base material and construction activity. The vapor retarder material should 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 the building must be designed to reduce the effects of differential frost action between adjacent pavement, doorways, and entrances. We recommend that non-frost susceptible Structural Fill be provided to a depth of at least 4.5 feet below the top of entrance slabs. This thickness of Structural Fill should extend the full width of the entrance slab and outward at least 4.5 feet, thereafter transitioning up to the bottom of the adjacent sidewalk or pavement gravels at a 3H:1V or flatter slope. General details of this frost transition zone are attached as Sheets 22 and 23.

4.8 Backfill and Compaction

We recommend the following fill and backfill materials:

Granular Borrow: Sand or silty sand meeting the gradation requirements of MDOT Standard Specification 703.19 Granular Borrow. Granular Borrow is recommended for use as:

- Fill to raise site grades in proposed paved areas
- Backfill of overexcavations below proposed paved areas

Structural Fill: Clean, 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:

- Backfill for overexcavations below footings and on-grade floor slabs

- Fill to raise grades in building areas
- Backfill against foundations
- Backfill within frost transition zones below entrances and sidewalks

Underdrain Sand: Underdrain Sand used around underdrain pipes should meet the gradation requirements of MDOT Standard Specification 703.22 "Underdrain Backfill Type B".

Crushed Stone: Crushed Stone used below the basement parking garage slab should consist of clean angular stone meeting the requirements of MDOT Standard Specification 703.22 "Underdrain Backfill Type C". A nominally sized 3/4-inch crushed stone typically meets this specification.

Reuse of Site Soils: The existing uncontrolled fills are unsuitable for reuse below proposed building areas, but may be suitable for reused in proposed pavement and landscape areas. The native sands appear suitable for reuse as Granular Borrow. The contractor should anticipate the need to moisture condition soils for reuse.

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 lift thicknesses for grading, fill and backfill activities should not exceed 12 inches. We recommend that 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.

4.9 Weather Considerations

Construction activity should be limited during wet and freezing weather and the site soils may require drying before construction activities may continue. 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. Considering the site soils and proposed usage, we offer the following pavement section for consideration. Materials are based on Maine Department of Transportation Standard Specifications.

- 1 ¼ inches of 9.5 mm Hot Mix Asphalt (50 Gyrating Design)
- 2 ¼ inches of 12.5 mm Hot Mix Asphalt (50 Gyrating Design)
- 3 inches of MDOT 703.06 Type A, Crushed Aggregate Base
- 15 inches of MDOT 703.06 Type D, Crushed Aggregate Subbase

Pavement subgrades are anticipated to consist of densified existing fills, native sands or compacted Granular Borrow. 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 Recommendation for Additional Study

Given the previously developed nature of the site, we recommend performing a historical mapping and records research review of the site. A review will help to establish the location of historical buildings and underground structures which could be encountered during construction. S.W.COLE is available to provide the historical research services.

4.12 Design Review and Construction Testing

S.W.COLE should be retained to review the civil and foundation construction documents to determine that our earthwork, foundation and pavement recommendations have been properly interpreted and implemented.

A soils and concrete testing program should be implemented during construction to observe compliance with the design concepts, plans, and specifications. S.W.COLE is available to provide subgrade observations for foundations as well as testing 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,

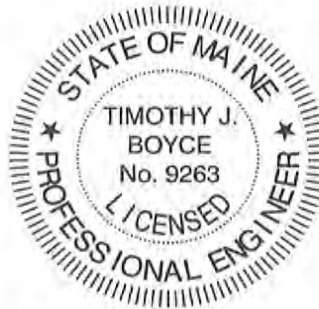
S. W. Cole Engineering, Inc.

Evan M. Walker, P.E.
Geotechnical Engineer



Timothy J. Boyce, P.E.
Senior Geotechnical Engineer

EMW: tjb



Attachment A Limitations

This report has been prepared for the exclusive use of The Park Danforth and Mitchell & Associates for specific application to the proposed Park Danforth Expansion in Portland, Maine. S.W.COLE has endeavored to conduct the work in accordance with generally accepted soil and foundation engineering practices. No warranty, expressed or implied, is made.

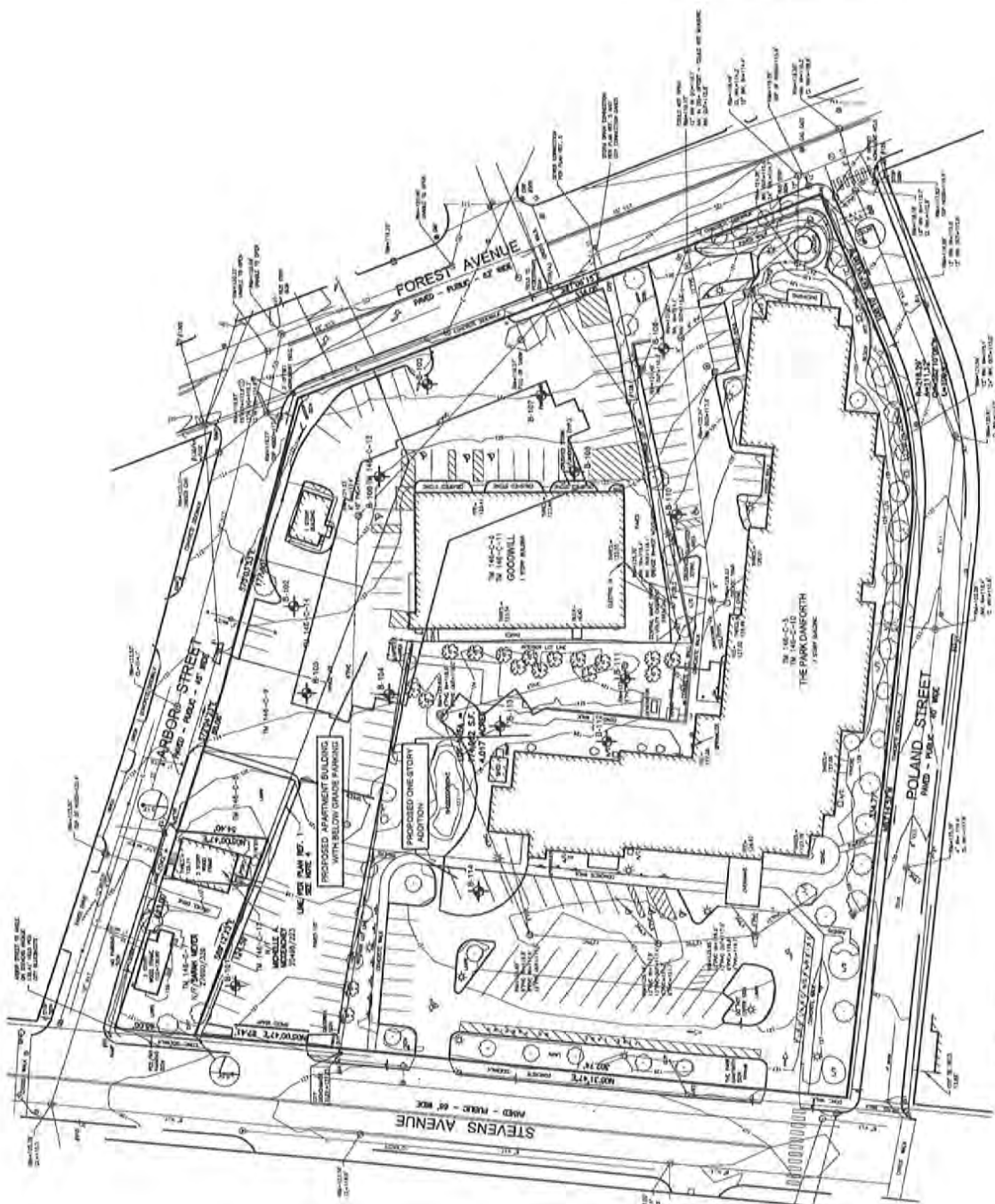
The soil profiles described in the report are intended to convey general trends in subsurface conditions. The boundaries between strata are approximate and are based upon interpretation of exploration data and samples.

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'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 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.



LEGEND

1. EXPLORATION LOCATION ARE SHOWN FROM A PHOTOGRAPHIC SURVEY PREPARED BY CHEN HANSHU INC. DATED JANUARY 2, 2014.
2. THE PLAN SHALL BE USED IN CONJUNCTION WITH THE ASSOCIATED 3D IN 3D ENGINEERING INC.
3. THE PURPOSE OF THIS PLAN IS ONLY TO IDENTIFY THE LOCATION OF THE EXPLORATION IN RELATION TO THE SURROUNDING STREETS AND TO BE USED FOR CONSTRUCTION AND IS NOT TO BE USED FOR CONSTRUCTION.

DATE	11/15/2014
BY	SW COLE
FOR	THE PARK CANTONMENT
PROJECT	PROPOSED APARTMENT BUILDING
LOCATION	APRIL STREET AND FOREST AVENUE
SCALE	1" = 40'

SW COLE
 THE PARK CANTONMENT
 PROPOSED APARTMENT BUILDING
 APRIL STREET AND FOREST AVENUE
 DATE: 11/15/2014
 BY: SW COLE
 FOR: THE PARK CANTONMENT
 PROJECT: PROPOSED APARTMENT BUILDING
 LOCATION: APRIL STREET AND FOREST AVENUE
 SCALE: 1" = 40'



BORING LOG

BORING NO.: **B-101**
 SHEET: **1 OF 1**
 PROJECT NO.: **14-0065**
 DATE START: **5/23/2014**
 DATE FINISH: **5/23/2014**
 ELEVATION: **127' ±**
 SWC REP.: **PJO**

PROJECT / CLIENT: **PROPOSED SENIOR LIVING FACILITY / THE PARK DANFORTH c/o MITCHELL & ASSOCIATES**
 LOCATION: **ARBOR STREET & FOREST AVENUE, PORTLAND, ME**
 DRILLING CO.: **GREAT WORKS TEST BORINGS, INC.** DRILLER: **JEFF LEE**

CASING: **SSA 2 1/4"**
 SAMPLER: **SS 1 3/8" 140-LBS 30"**
 CORE BARREL:

WATER LEVEL INFORMATION
NO FREE WATER OBSERVED

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		
										4" ASPHALT DARK BROWN GRAVELLY SAND, SOME SILT WITH ROOTLETS AND BRICK (FILL) ~MEDIUM DENSE TO LOOSE~
	1D	24"	18"	2.5'	9	7	5	5		
	2D	24"	12"	4.5'	4	4	5	4	5.0'	
	3D	24"	18"	7.0'	5	12	24	24		BROWN SAND AND GRAVEL, TRACE SILT ~DENSE~
	4D	24"	16"	9.0'	24	25	18	16		
										BOTTOM OF EXPLORATION AT 9.0'

SAMPLES:
 D = SPLIT SPOON
 C = 2" SHELBY TUBE
 S = 3" SHELBY TUBE
 U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:

☐ 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-101**



BORING NO.:	B-102
SHEET:	1 OF 1
PROJECT NO.:	14-0065
DATE START:	5/23/2014
DATE FINISH:	5/23/2014
ELEVATION:	123' ±
SWC REP.:	PJO
ER LEVEL INFORMATION	
FREE WATER OBSERVED	

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 3/4"		
SAMPLER:	SS	1 3/8"	140-LBS	30"
CORE BARREL:				

3



BORING LOG

BORING NO.: **B-104**
 SHEET: **1 OF 1**
 PROJECT NO.: **14-0065**
 DATE START: **5/23/2014**
 DATE FINISH: **5/23/2014**
 ELEVATION: **124' ±**
 SWC REP.: **PJO**

PROJECT / CLIENT: **PROPOSED SENIOR LIVING FACILITY / THE PARK DANFORTH c/o MITCHELL & ASSOCIATES**
 LOCATION: **ARBOR STREET & FOREST AVENUE, PORTLAND, ME**
 DRILLING CO.: **GREAT WORKS TEST BORINGS, INC.** DRILLER: **JEFF LEE**

CASING: TYPE **HSA** SIZE I.D. **2 3/4"** HAMMER WT. **140-LBS** HAMMER FALL **30"**
 SAMPLER: **SS**
 CORE BARREL:

WATER LEVEL INFORMATION
 NO FREE WATER OBSERVED

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		
										3"± ASPHALT
	1D	24"	16"	2.5'	5	6	5	8	2.0'	BROWN SAND, SOME GRAVEL, SOME SILT WITH GLASS & WOOD PIECES (FILL) ~MEDIUM DENSE~
	2D	24"	18"	4.5'	12	16	18	20		w = 3.4% BROWN GRAVELLY MEDIUM TO COARSE SAND, TRACE SILT ~DENSE TO VERY DENSE~
	3D	24"	17"	7.0'	13	23	25	33		
	4D	18"	16"	8.5'	28	28	31		10.0'	
	5D	24"	18"	12.0'	10	14	16	23		w = 4.3% ~DENSE~ BROWN MEDIUM SAND, TRACE GRAVEL, TRACE SILT ~MEDIUM DENSE~
	6D	24"	20"	17.0'	12	12	15	21	19.5'	WEATHERED BEDROCK
										REFUSAL AT 21.8' (PROBABLE BEDROCK)

SAMPLES: D = SPLIT SPOON
 C = 2" SHELBY TUBE
 S = 3" SHELBY TUBE
 U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
☐ DRILLER - VISUALLY
☒ SOIL TECH. - VISUALLY
☒ LABORATORY TEST

REMARKS:
 STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.



BORING LOG

BORING NO.: **B-105**
 SHEET: **1 OF 1**
 PROJECT NO.: **14-0065**
 DATE START: **5/23/2014**
 DATE FINISH: **5/23/2014**
 ELEVATION: **124' ±**
 SWC REP.: **PJO**
 WATER LEVEL INFORMATION
 SOILS WET AT 21'

PROJECT / CLIENT: **PROPOSED SENIOR LIVING FACILITY / THE PARK DANFORTH c/o MITCHELL & ASSOCIATES**
 LOCATION: **ARBOR STREET & FOREST AVENUE, PORTLAND, ME**
 DRILLING CO.: **GREAT WORKS TEST BORINGS, INC.** DRILLER: **JEFF LEE**

CASING: TYPE **HSA** SIZE I.D. **2 3/4"** HAMMER WT. **140-LBS** HAMMER FALL **30"**
 SAMPLER: **SS**
 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		
										3"± ASPHALT
	1D	24"	15"	2.5'	5	9	18	8	3.0'	BROWN SAND SOME GRAVEL, SOME SILT WITH CONCRETE FRAGMENTS (FILL) ~MEDIUM DENSE~
	2D	24"	16"	4.5'	5	6	6	8	5.0'	BROWN MEDIUM TO COARSE SAND, SOME GRAVEL, TRACE SILT ~MEDIUM DENSE~
	3D	24"	17"	7.0'	6	16	22	23		~DENSE~ BROWN GRAVELLY MEDIUM TO COARSE SAND, TRACE SILT ~VERY DENSE~
	4D	24"	19"	9.0'	16	20	22	24		
	5D	24"	20"	12.0'	15	23	29	49		
	6D	24"	20"	17.0'	16	23	31	38		
									21.0'	
	7D	18"	15"	21.5'	24	34	45		23.0'	BROWN GRAVELLY FINE TO MEDIUM SAND, TRACE SILT ~VERY DENSE~
										REFUSAL AT 23' (PROBABLE BEDROCK)

SAMPLES: D = SPLIT SPOON C = 2" SHELBY TUBE S = 3" SHELBY TUBE U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY: ☐ DRILLER - VISUALLY ☒ SOIL TECH. - VISUALLY ☐ LABORATORY TEST

REMARKS: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

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BORING NO.: **B-105**



BORING LOG

BORING NO.: **B-106**
 SHEET: **1 OF 1**
 PROJECT NO.: **14-0065**
 DATE START: **5/22/2014**
 DATE FINISH: **5/22/2014**
 ELEVATION: **122' ±**
 SWC REP.: **PJO**
 WATER LEVEL INFORMATION
 SOILS SATURATED AT 20'

PROJECT / CLIENT: **PROPOSED SENIOR LIVING FACILITY / THE PARK DANFORTH c/o MITCHELL & ASSOCIATES**
 LOCATION: **ARBOR STREET & FOREST AVENUE, PORTLAND, ME**
 DRILLING CO.: **GREAT WORKS TEST BORINGS, INC.** DRILLER: **JEFF LEE**

CASING: TYPE **HSA** SIZE I.D. **2 3/4"** HAMMER WT. **140-LBS** HAMMER FALL **30"**
 SAMPLER: **SS**
 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		
										2 1/2" ± ASPHALT
	1D	24"	15"	2.5'	8	9	8	8	3.0'	DARK BROWN TO BROWN SAND, SOME GRAVEL, SOME SILT (FILL) ~MEDIUM DENSE~
	2D	24"	15"	4.5'	9	9	7	3	7.0'	BROWN FINE TO COARSE SAND, SOME GRAVEL, TRACE SILT ~MEDIUM DENSE~
	3D	24"	16"	7.0'	6	12	16	19	10.0'	w = 4.1% BROWN MEDIUM TO COARSE SAND, SOME GRAVEL, TRACE SILT ~DENSE~
	4D	24"	16"	9.0'	12	15	16	16		~DENSE~
	5D	24"	20"	12.0'	15	25	23	25		BROWN GRAVELLY MEDIUM TO COARSE SAND, TRACE SILT
	6D	24"	18"	17.0'	15	28	32	40		w = 2.4% ~VERY DENSE~
	7D	24"	22"	22.0'	15	17	24	30	21.2'	w = 19.5% BROWN FINE TO MEDIUM SAND SOME SILT ~DENSE~ ~ DENSE ~
									28.0'	REFUSAL 28.0' (PROBABLE BEDROCK)

SAMPLES: D = SPLIT SPOON
 C = 2" SHELBY TUBE
 S = 3" SHELBY TUBE
 U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
 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-106**



BORING LOG

BORING NO.: **B-107**
 SHEET: **1 OF 1**
 PROJECT NO.: **14-0065**
 DATE START: **5/22/2014**
 DATE FINISH: **5/22/2014**
 ELEVATION: **121' ±**
 SWC REP.: **PJO**
 WATER LEVEL INFORMATION
 SOILS SATURATED AT 18'

PROJECT / CLIENT: **PROPOSED SENIOR LIVING FACILITY / THE PARK DANFORTH c/o MITCHELL & ASSOCIATES**
 LOCATION: **ARBOR STREET & FOREST AVENUE, PORTLAND, ME**
 DRILLING CO.: **GREAT WORKS TEST BORINGS, INC.** DRILLER: **JEFF LEE**

CASING: TYPE **HSA** SIZE I.D. **2 3/4"** HAMMER WT. **30"** HAMMER FALL
 SAMPLER: **SS** **1 3/8"** **140-LBS**
 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		
										3" ASPHALT
	1D	24"	14"	2.5'	6	9	9	9	2.5'	DARK BROWN SAND, SOME GRAVEL, SOME SILT (FILL) ~MEDIUM DENSE~
	2D	24"	15"	4.5'	12	8	7	6	4.5'	ORANGE-BROWN SAND SOME SILT ~MEDIUM DENSE~
	3D	24"	17"	7.0'	5	9	9	10		~MEDIUM DENSE~ LIGHT BROWN FINE TO MEDIUM SAND, TRACE SILT WITH OCCASIONAL SILT SEAMS BETWEEN 10-12' AND 10" SAND AND GRAVEL LAYER FROM 15.2-16.0'
	4D	24"	18"	9.0'	12	13	12	12		
	5D	24"	22"	12.0'	8	11	16	23		
	6D	24"	22"	17.0'	12	16	15	18		
	7D	24"	18"	22.0'	4	8	9	22	23.0'	~DENSE~
									24.0'	~MEDIUM DENSE~
										WEATHERED BEDROCK
										REFUSAL AT 24.0' (PROBABLE BEDROCK)

SAMPLES: D = SPLIT SPOON
 C = 2" SHELBY TUBE
 S = 3" SHELBY TUBE
 U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
☐ 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-108
SHEET:	1 OF 1
PROJECT NO.:	14-0065
DATE START:	5/22/2014
DATE FINISH:	5/22/2014
ELEVATION:	123' ±
SWC REP.:	PJO
ER LEVEL INFORMATION	
OILS SATURATED AT 20'	

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 3/4"		
SAMPLER:	SS	1 3/8"	140-LBS	30"
CORE BARREL:				

9



BORING LOG

BORING NO.: **B-109**
 SHEET: **1 OF 1**
 PROJECT NO.: **14-0065**
 DATE START: **5/22/2014**
 DATE FINISH: **5/22/2014**
 ELEVATION: **121' ±**
 SWC REP.: **PJO**

PROJECT / CLIENT: **PROPOSED SENIOR LIVING FACILITY / THE PARK DANFORTH c/o MITCHELL & ASSOCIATES**
 LOCATION: **ARBOR STREET & FOREST AVENUE, PORTLAND, ME**
 DRILLING CO.: **GREAT WORKS TEST BORINGS, INC.** DRILLER: **JEFF LEE**

CASING: **SSA 2 1/4"**
 SAMPLER: **SS 1 3/8" 140-LBS 30"**
 CORE BARREL:

WATER LEVEL INFORMATION
 NO FREE WATER OBSERVED

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 1/2" ± ASPHALT
	1D	24"	16"	2.5'	7	14	8	8	2.5'	BROWN GRAVELLY SAND, SOME SILT (FILL) ~MEDIUM DENSE~
	2D	24"	18"	4.5'	8	10	11	8	4.5'	BROWN FINE TO MEDIUM SAND, SOME GRAVEL, SOME SILT ~MEDIUM DENSE~
	3D	24"	18"	7.0'	3	5	5	5		LIGHT BROWN FINE TO MEDIUM SAND, TRACE SILT WITH COARSE SAND LAYERS BETWEEN 8-9' ~MEDIUM DENSE~
	4D	24"	17"	9.0'	6	9	9	12		
	5D	24"	16"	12.0'	7	11	14	15		
										BOTTOM OF EXPLORATION AT 12.0'

SAMPLES: D = SPLIT SPOON C = 2" SHELBY TUBE S = 3" SHELBY TUBE U = 3.5" SHELBY TUBE	SOIL CLASSIFIED BY: DRILLER - VISUALLY X SOIL TECH. - VISUALLY LABORATORY TEST	REMARKS: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.	10
			BORING NO.: B-109



BORING LOG

BORING NO.: **B-110**
 SHEET: 1 OF 1
 PROJECT NO.: 14-0065
 DATE START: 5/22/2014
 DATE FINISH: 5/22/2014
 ELEVATION: 125' ±
 SWC REP.: PJO

PROJECT / CLIENT: PROPOSED SENIOR LIVING FACILITY / THE PARK DANFORTH c/o MITCHELL & ASSOCIATES
 LOCATION: ARBOR STREET & FOREST AVENUE, PORTLAND, ME
 DRILLING CO.: GREAT WORKS TEST BORINGS, INC. DRILLER: JEFF LEE

CASING: TYPE SSA SIZE I.D. 2 1/4" HAMMER WT. HAMMER FALL
 SAMPLER: SS 1 3/8" 140-LBS 30"
 CORE BARREL:

WATER LEVEL INFORMATION
 NO FREE WATER OBSERVED

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	12"	6"	1.5'	19	50			3.0'	2 1/2" ASPHALT DARK BROWN GRAVELLY SAND, SOME SILT (FILL) <<BLOW COUNT OVERSTATED - PUSHED GRAVEL>>
	2D	24"	15"	5.0'	4	5	5	4	5.0'	ORANGE-BROWN FINE TO MEDIUM SAND TRACE GRAVEL ~LOOSE TO MEDIUM DENSE~
	3D	24"	16"	7.0'	5	4	9	13		~MEDIUM DENSE~ BROWN FINE TO MEDIUM SAND, SOME GRAVEL, TRACE SILT <<BLOW COUNT OVERSTATED - PUSHED GRAVEL>>
	4D	24"	16"	9.0'	17	21	15	14		
	5D	24"	14"	12.0'	9	10	12	14		~MEDIUM DENSE~
										BOTTOM OF EXPLORATION AT 12.0'

SAMPLES: D = SPLIT SPOON C = 2" SHELBY TUBE S = 3" SHELBY TUBE U = 3.5" SHELBY TUBE	SOIL CLASSIFIED BY: DRILLER - VISUALLY X SOIL TECH. - VISUALLY LABORATORY TEST	REMARKS: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.	11
			BORING NO.: B-110



BORING NO.:	B-113
SHEET:	1 OF 1
PROJECT NO.:	14-0065
DATE START:	5/23/2014
DATE FINISH:	5/23/2014
ELEVATION:	125' ±
SWC REP.:	PJO
ER LEVEL INFORMATION	
FREE WATER OBSERVED	

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 3/4"		
SAMPLER:	SS	1 3/8"	140-LBS	30"
CORE BARREL:				

SAMPLES: D = SPLIT SPOON C = 2" SHELBY TUBE S = 3" SHELBY TUBE U = 3.5" SHELBY TUBE	SOIL CLASSIFIED BY:		REMARKS: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.	14
		DRILLER - VISUALLY		
	X	SOIL TECH. - VISUALLY		
		LABORATORY TEST		
	BORING NO.: B-113			



BORING NO.:	B-114
SHEET:	1 OF 1
PROJECT NO.:	14-0065
DATE START:	5/23/2014
DATE FINISH:	5/23/2014
ELEVATION:	126' ±
SWC REP.:	PJO
ER LEVEL INFORMATION	
FREE WATER OBSERVED	

	TYPE	SIZE I.D.	HAMMER WT.	HAMMER FALL
CASING:	HSA	2 3/4"		
SAMPLER:	SS	1 3/8"	140-LBS	30"
CORE BARREL:				

SAMPLES: D = SPLIT SPOON C = 2" SHELBY TUBE S = 3" SHELBY TUBE U = 3.5" SHELBY TUBE	SOIL CLASSIFIED BY:		REMARKS: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.	15
		DRILLER - VISUALLY		
	X	SOIL TECH. - VISUALLY		
		LABORATORY TEST		
			BORING NO.:	B-114

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+%
With	Undifferentiated

Description of Stratified Soils

Parting:	0 to 1/16" thickness
Seam:	1/16" to 1/2" thickness
Layer:	½" 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.

Report of Gradation

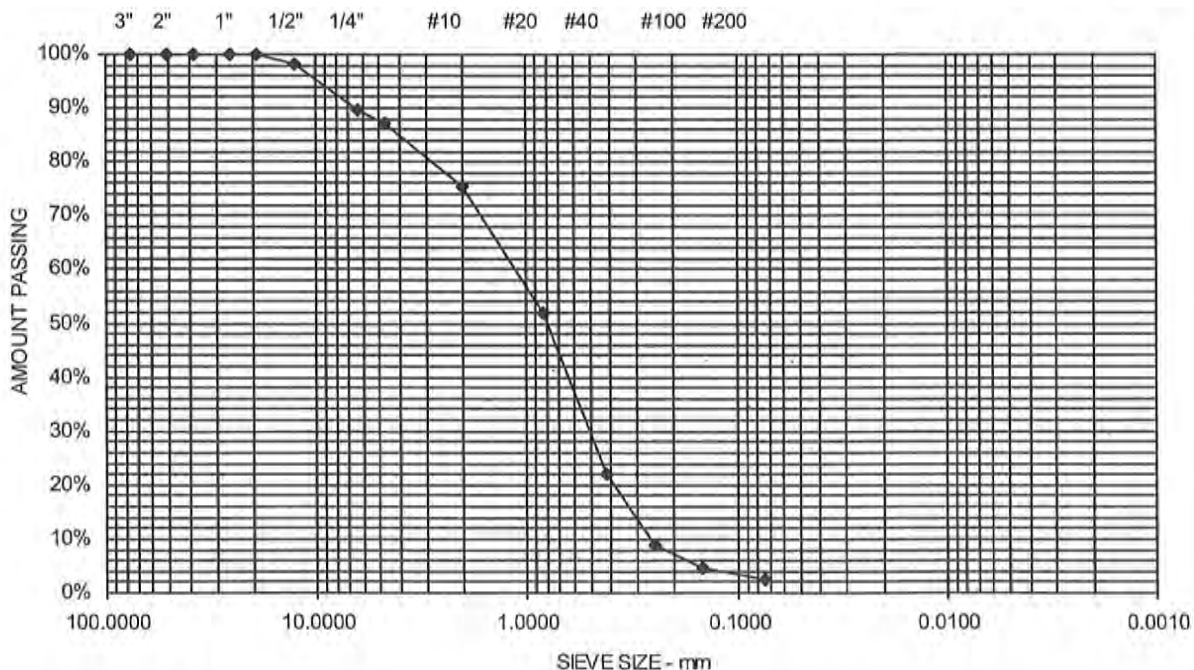
ASTM C-117 & C-136

Project Name PORTLAND ME - PROPOSED SENIOR LIVING - THE PARK
 DANFORTH - GEOTECHNICAL ENGINEERING SERVICES
 Client THE PARK-DANFORTH

Project Number 14-0065
 Lab ID 18232G
 Date Received 5/28/2014
 Date Completed 5/30/2014
 Tested By JUSTIN BISSON

Material Source **B-104 2D 2.5-4.5**

<u>STANDARD DESIGNATION (mm/μm)</u>	<u>SIEVE SIZE</u>	<u>AMOUNT PASSING (%)</u>	
150 mm	6"	100	
125 mm	5"	100	
100 mm	4"	100	
75 mm	3"	100	
50 mm	2"	100	
38.1 mm	1-1/2"	100	
25.0 mm	1"	100	
19.0 mm	3/4"	100	
12.5 mm	1/2"	98	
6.3 mm	1/4"	90	
4.75 mm	No. 4	87	12.8% Gravel
2.00 mm	No. 10	75	
850 μm	No. 20	52	
425 μm	No. 40	22	84.8% Sand
250 μm	No. 60	9	
150 μm	No. 100	5	
75 μm	No. 200	2.4	2.4% Fines



Report of Gradation

ASTM C-117 & C-136

Project Name **PORTLAND ME - PROPOSED SENIOR LIVING - THE PARK DANFORTH - GEOTECHNICAL ENGINEERING SERVICES**

Client **THE PARK-DANFORTH**

Material Source **B-104 5D 10-12**

Project Number **14-0065**

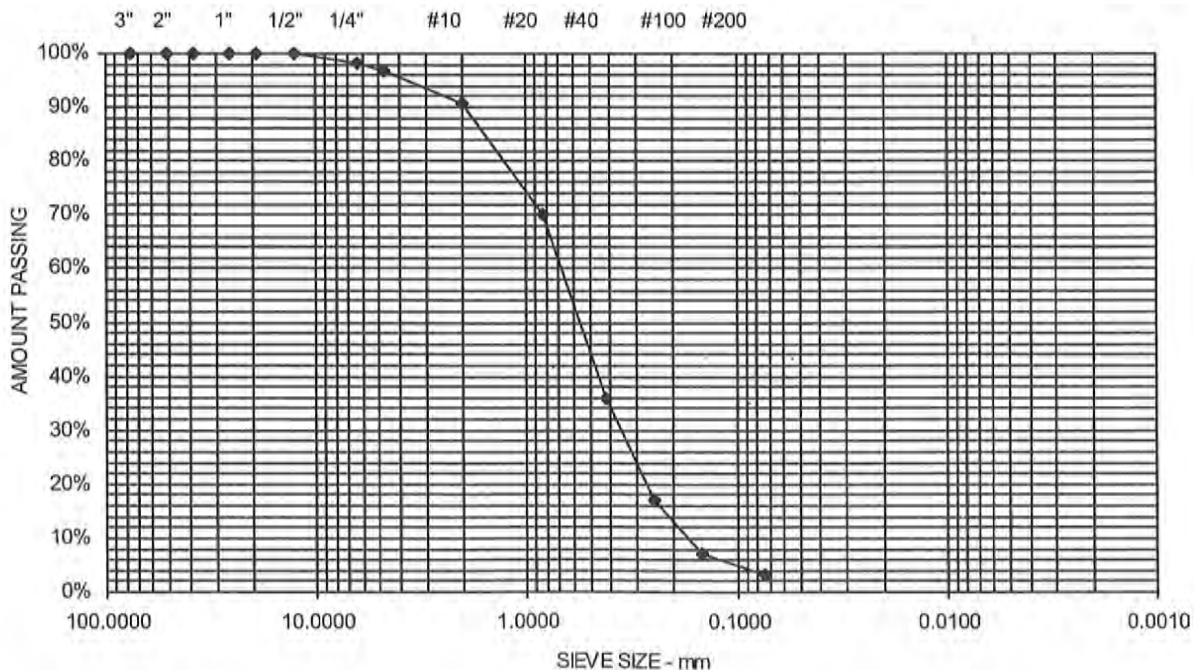
Lab ID **18233G**

Date Received **5/28/2014**

Date Completed **5/30/2014**

Tested By **JUSTIN BISSON**

<u>STANDARD DESIGNATION (mm/μm)</u>	<u>SIEVE SIZE</u>	<u>AMOUNT PASSING (%)</u>	
150 mm	6"	100	
125 mm	5"	100	
100 mm	4"	100	
75 mm	3"	100	
50 mm	2"	100	
38.1 mm	1-1/2"	100	
25.0 mm	1"	100	
19.0 mm	3/4"	100	
12.5 mm	1/2"	100	
6.3 mm	1/4"	98	
4.75 mm	No. 4	97	3.2% Gravel
2.00 mm	No. 10	91	
850 μm	No. 20	70	
425 μm	No. 40	36	93.4% Sand
250 μm	No. 60	17	
150 μm	No. 100	7	
75 μm	No. 200	3.3	3.3% Fines



Report of Gradation

ASTM C-117 & C-136

Project Name PORTLAND ME - PROPOSED SENIOR LIVING - THE PARK
DANFORTH - GEOTECHNICAL ENGINEERING SERVICES

Client THE PARK-DANFORTH

Material Source B-106 4D 7-9

Project Number 14-0065

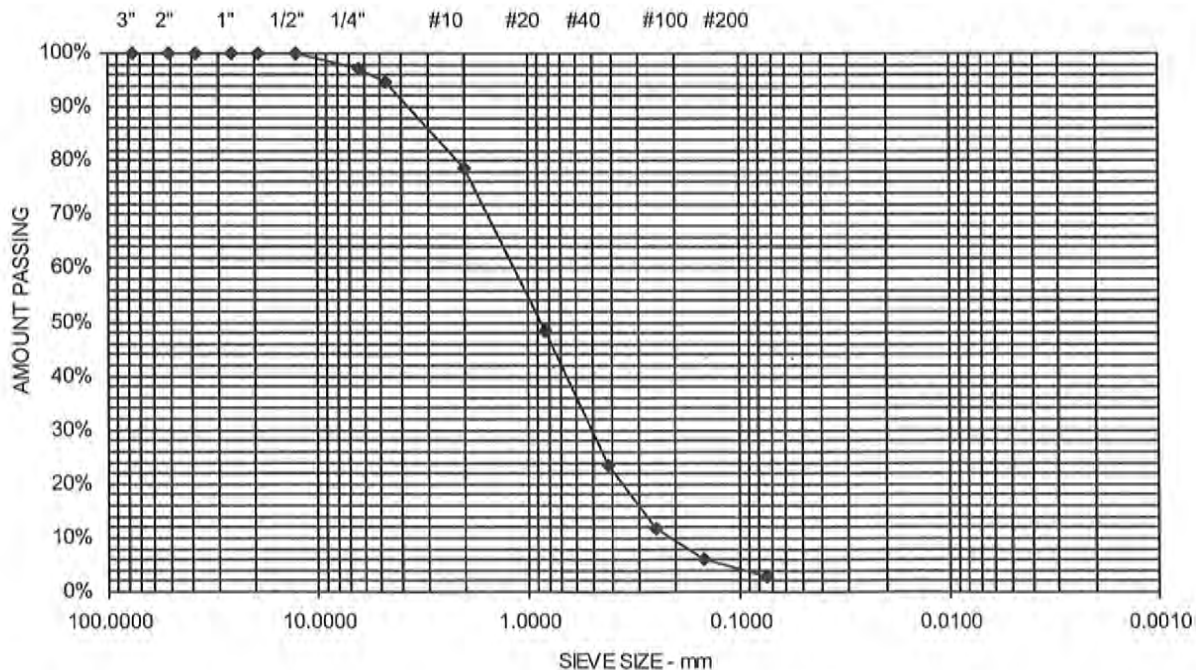
Lab ID 18234G

Date Received 5/28/2014

Date Completed 5/30/2014

Tested By JUSTIN BISSON

<u>STANDARD DESIGNATION (mm/μm)</u>	<u>SIEVE SIZE</u>	<u>AMOUNT PASSING (%)</u>	
150 mm	6"	100	
125 mm	5"	100	
100 mm	4"	100	
75 mm	3"	100	
50 mm	2"	100	
38.1 mm	1-1/2"	100	
25.0 mm	1"	100	
19.0 mm	3/4"	100	
12.5 mm	1/2"	100	
6.3 mm	1/4"	97	
4.75 mm	No. 4	95	5.4% Gravel
2.00 mm	No. 10	79	
850 μm	No. 20	48	
425 μm	No. 40	24	91.7% Sand
250 μm	No. 60	12	
150 μm	No. 100	6	
75 μm	No. 200	2.9	2.9% Fines



Report of Gradation

ASTM C-117 & C-136

Project Name **PORTLAND ME - PROPOSED SENIOR LIVING - THE PARK DANFORTH - GEOTECHNICAL ENGINEERING SERVICES**

Client **THE PARK-DANFORTH**

Material Source **B-106 6D 15-17**

Project Number **14-0065**

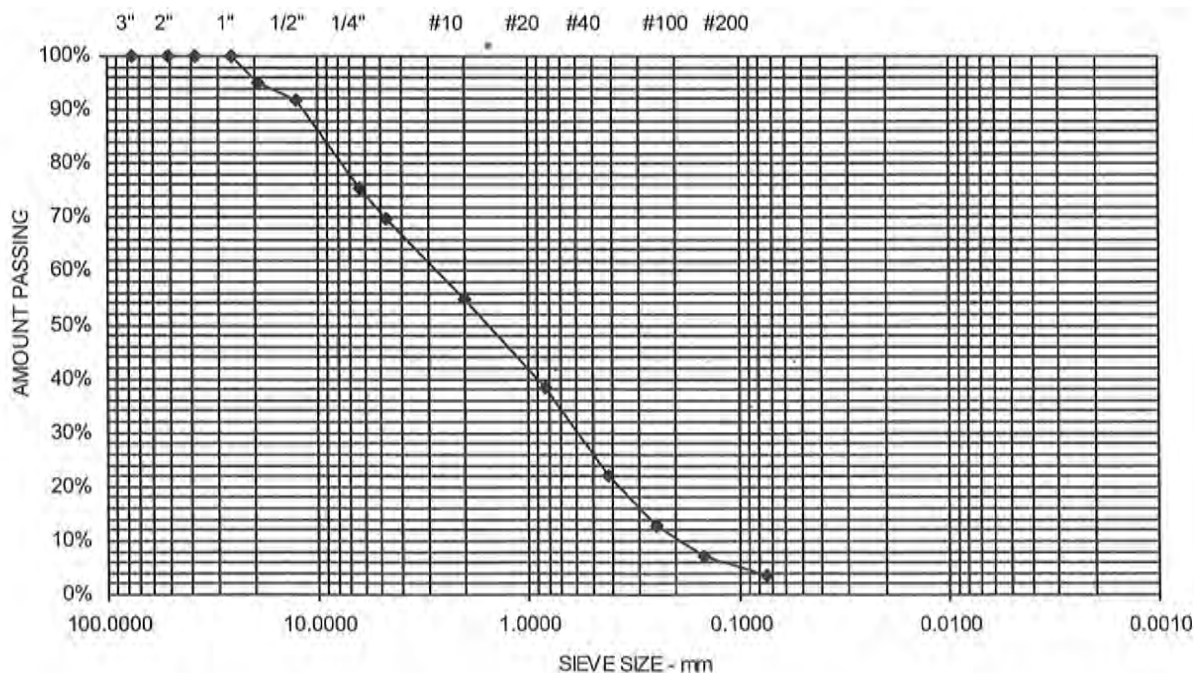
Lab ID **18235G**

Date Received **5/28/2014**

Date Completed **5/30/2014**

Tested By **JUSTIN BISSON**

<u>STANDARD DESIGNATION (mm/μm)</u>	<u>SIEVE SIZE</u>	<u>AMOUNT PASSING (%)</u>	
150 mm	6"	100	
125 mm	5"	100	
100 mm	4"	100	
75 mm	3"	100	
50 mm	2"	100	
38.1 mm	1-1/2"	100	
25.0 mm	1"	100	
19.0 mm	3/4"	95	
12.5 mm	1/2"	92	
6.3 mm	1/4"	75	
4.75 mm	No. 4	70	30.3% Gravel
2.00 mm	No. 10	55	
850 μm	No. 20	39	
425 μm	No. 40	22	66.2% Sand
250 μm	No. 60	13	
150 μm	No. 100	7	
75 μm	No. 200	3.6	3.6% Fines



Report of Gradation

ASTM C-117 & C-136

 Project Name **PORTLAND ME - PROPOSED SENIOR LIVING - THE PARK**
DANFORTH - GEOTECHNICAL ENGINEERING SERVICES

 Client **THE PARK-DANFORTH**

 Project Number **14-0065**

 Lab ID **18236G**

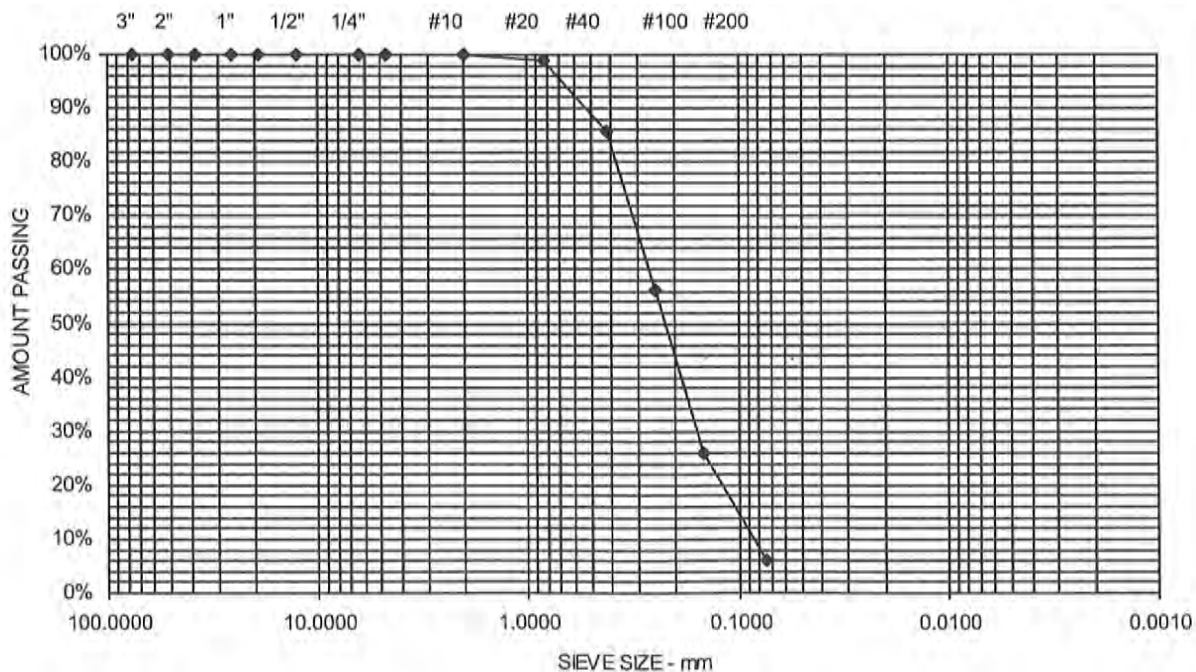
 Date Received **5/28/2014**

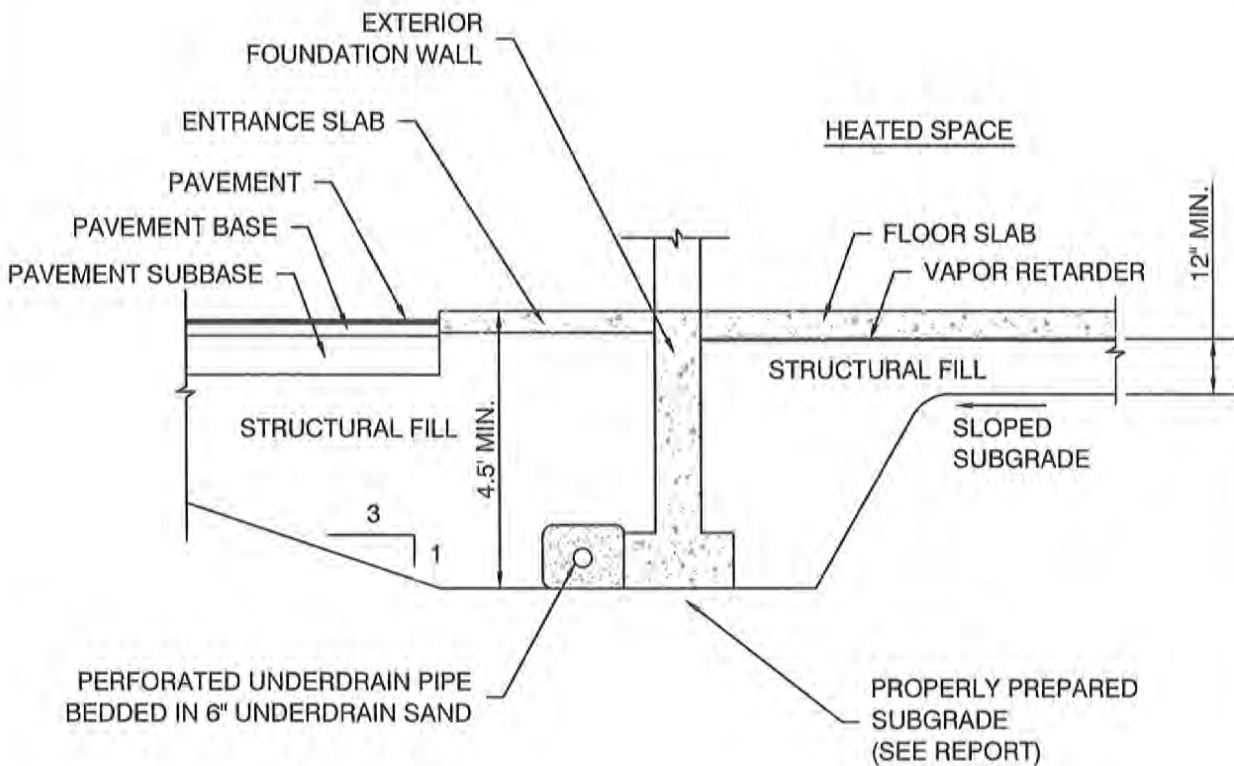
 Date Completed **5/30/2014**

 Tested By **JUSTIN BISSON**

 Material Source **B-106 7D 20-22**

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150 mm	6"	100	
125 mm	5"	100	
100 mm	4"	100	
75 mm	3"	100	
50 mm	2"	100	
38.1 mm	1-1/2"	100	
25.0 mm	1"	100	
19.0 mm	3/4"	100	
12.5 mm	1/2"	100	
6.3 mm	1/4"	100	
4.75 mm	No. 4	100	0% Gravel
2.00 mm	No. 10	100	
850 μm	No. 20	99	
425 μm	No. 40	86	94.1% Sand
250 μm	No. 60	56	
150 μm	No. 100	26	
75 μm	No. 200	5.9	5.9% Fines





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.

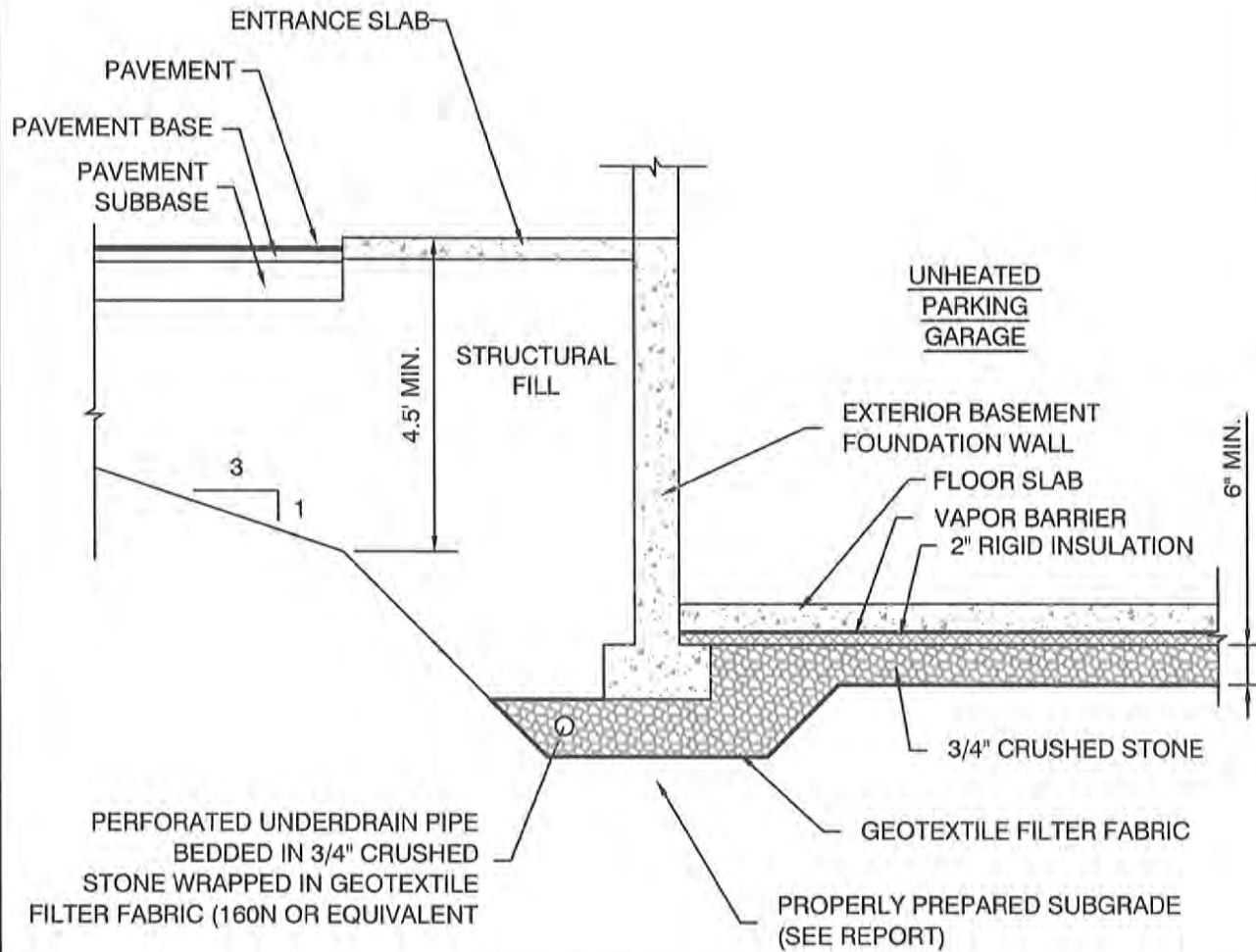
THE PARK DANFORTH
C/O MITCHELL & ASSOCIATES

UNDERDRAIN DETAIL

PROPOSED APARTMENT BUILDING
ARBOR STREET AND FOREST AVENUE
PORTLAND, MAINE

Job No.: 14-0065
Date : 09/30/2014

Scale: Not to Scale
Sheet: 22



BASEMENT AREA

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.

THE PARK DANFORTH
C/O MITCHELL & ASSOCIATES

UNDERDRAIN DETAIL

PROPOSED APARTMENT BUILDING
ARBOR STREET AND FOREST AVENUE
PORTLAND, MAINE

Job No.: 14-0065
Date : 09/30/2014

Scale: Not to Scale
Sheet: 23

EXHIBIT 15

WAIVER REQUESTS

The following waiver request are sought:

1. **Bicycle Parking [Sec. 14-526 a.4 b.(i) (a)]** The 54 elderly independent living units require twenty-two (22) bicycle parking spaces. The owner believes the resident and employee population will not require this amount. We request to reduce the requirement to 6 bicycle parking spaces. Four spaces located on the exterior of the building and two in the parking garage.
2. **Street Tree Requirement (Sec. 14-526 2.b. iii. a & Technical Design Manual 4.6)** The proposed 54 unit multi-family residential development expansion requires the planting of 54 trees (1 tree/unit). Due to the size of property and available street frontage, planting this quantity of trees is not feasible. The applicant requests a waiver for 26 trees and shall contribute to the street tree fund in an amount proportionate to the cost of the required trees.
3. **Driveway Location (Technical Design Manual 1.7.2.7)** Forest Avenue is a 30 mph road. The minimum spacing requirement for curb cuts in this location is 125 feet. The existing driveway for The Park Danforth is approximately 70 feet from the intersection of Read Street and Forest Avenue. The applicant is requesting a waiver from this requirement. This is an existing driveway location providing access to the service area and parking. The applicant is widening the driveway and adding ingress and egress lanes separated by a raised pedestrian mounbtable concrete median. The drive will be posted right turn in, right turn out.
4. **Number of Driveways (Technical Design Manual 1.7.2.8)** No more than two (2) ingress & egress driveways are permitted for commercial developments. The applicant is requesting a waiver to allow four driveways to serve the property which is an entire city block. The existing city block has seven (7) driveways serving the uses with three (3) along Stevens Avenue, three on Arbor Street, one (1) previously eliminated with the removal of a two-family residence in 2013, and two (2) on Forest Avenue. The applicant is reducing the amount of curb cuts on this block to four (4). Three of the proposed entrance drives (Stevens Avenue, Arbor Street and Forest Avenue) will be for daily use while, at the recommendation of the Portland Fire Department, one of the curb cuts will be for

Street will be posted as emergency vehicle access only. This was a request made by the Portland Fire Department during review of site circulation and current EMS history for The Park Danforth. The middle Stevens Avenue curb cut has been relocated to align with the new main entry and the two (2) current curb openings will be closed. This driveway will be posted as right-turn in, right-turn out only. The Arbor Street driveway aligns with the new building entry and is located where the former two-family residence was located. The existing driveway to the Park Danforth service area is being modified to improve delivery vehicle access and will be posted as right-turn in, right-turn out. The four (4) curb cuts will allow easier movement within the site, maintain access into an existing service area, and accommodate accessibility for emergency vehicles.

Temporary Waiver Request

The applicant requests the following temporary waivers:

1. Construction Management Plan. At this stage in development we are unable to provide a detailed construction management plan. We request the ability to provide this at a later time.
2. Lighting Photometric Plan. We are currently working on selection of energy efficient fixtures for the site and building. We request the ability to provide this at a later time.
3. Sign Plan. The Sign Plan will be in conformance with city zoning. We request the ability to provide this at a later time for staff review
4. Waste Stream Management: Currently, The Park Danforth is in the process of evaluating the management to accommodate the waste stream in an effort to eliminate the current dumpster service. We request the ability to provide this at a later date.
5. Manufacturers' Verification of Mechanical Systems, HVAC, Emergency Generators, etc.: Emergency generator, HVAC equipment will be mounted on the roof. Sizing and selection of equipment is currently being developed. Appropriate documentation will be submitted for staff review. We request the ability to provide at a later date.

EXHIBIT 16
LIGHTING FIXTURES

Temporary waiver request for submission of Lighting Plan.

EXHIBIT 17
CONSTRUCTION MANAGEMENT PLAN

Temporary waiver request for submission of Construction Management Plan.

The Park Danforth
Neighborhood Meeting

Park Danforth Meeting Room, November 13, 2014, 6:30 pm

Meeting Minutes

Attendees: Denise Vachon (Park Danforth), Michael King (Mitchell & Associates), Scott Carpenter (UNITIL, Forest Avenue), Jerry Hankinson (Waverly Street)

Purpose of meeting: To discuss the proposed redevelopment of the 1104 Forest Avenue property for senior independent living housing and modifications to the existing Park Danforth facilities.

Site Redevelopment:

- An overview of the proposed redevelopment of the Goodwill site and expansion of the Park Danforth facility was presented to the attendees. The overview consisted of a review of the on-site circulation, the total number of existing and proposed units and architectural building elevations.

Parking:

- The primary concern of an abutting neighbor was parking. With the growth of UNE, he has witnessed the increase demand for parking in the neighborhood. The proposed parking layout was reviewed and it was emphasized that all resident, staff and visitor parking will remain on-site.

Lighting:

- Another concern of an abutting neighbor was site lighting. The neighbor referred to an unshilded cobra-head light fixture in the UNITIL parking lot; the light from this fixture is seen from his property. The proposed lighting plan was

reviewed. It was explained that current City of Portland light standards do not allow light spill beyond the property line and do not allow visible light sources. It was emphasized that all proposed site lighting will meet the current City of Portland lighting standards.

Stormwater:

- A brief overview of the proposed stormwater management system was presented to the attendees. It was explained that by using the proposed stormwater infiltration system, the rate of stormwater flowing off site will be reduced from the current rate.

The meeting adjourned at approximately 7:30 pm.





The Park Danforth

Personalized Senior Living Since 1881

The Park Danforth Forest Avenue Development Project

Neighborhood and Interested Parties Meeting
November 13, 2014
6:30 p.m.

Please Sign In Below

Name (printed)

Signature

Scott Carpenter

Scott Carpenter

Address: 107 S Forest Ave, Portland

Name (printed)

Signature

Jerry HANKINSON

Jerry Hankinson

Address: 35 Waverly St, Portland

Name (printed)

Signature

Address: _____

Name (printed)

Signature

Address: _____



November 14, 2014

Neighborhood Meeting Certification
for
1104 Forest Avenue Project

I, Denise M. Vachon, CEO of The Park Danforth, hereby certify that a neighborhood meeting has been held relative to the above referenced property and project. This meeting was held on November 13, 2014 at 6:30 p.m. at The Park Danforth

I also certify that on November 3, 2014 invitations were mailed to the following:

1. All addressees on the mailing list provided by the Planning Division, which includes property owners within 500 feet of the proposed project, or within 1,000 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), ldobson@portlandmaine.gov and SHUKRIAW@portlandmaine.gov, as well as the assigned planner to be forwarded to those on the interested citizens list who receive email notices.

Signed,

Denise M. Vachon
CEO

Attached: Copy of invitations sent
Sign-in sheets
Meeting minutes

November 25, 2014

Ms. Shukria Wiar, Planner
and Planning Board Members
Planning and Urban Development
City of Portland
389 Congress Street
Portland, ME 04101

**RE: Level III Site Plan
The Park Danforth
777 Stevens Avenue**

Dear Shukria and Planning Board Members:

The following documentation has been prepared in response to staff review comments, dated, November 12, 2014 and comments received from Board Members during the October workshop meeting. Since the initial submission, the applicant has been further developing the plans and has determined, due to economics based on preliminary cost estimates, the need to increase the number of new units from 54 to 55. The revised plans include the request to increase the number of units to 55. The additional unit will be located as a fifth story unit on the north westerly corner of the building on the Arbor Street frontage.

Project Clarification:

- The existing building height (along Stevens Avenue) is 65 feet or seven stories.
- Garden spaces: There is one center Garden Court Yard enclosed by the existing building and proposed addition. A second existing green space, located at the Forest Avenue end of the three story building, is being expanded to extend along the existing service drive.



- The proposed parking garage has been reduced to 37 spaces, 1 was removed due to mechanical equipment storage requirements.

VII Zoning Assessment

A. Zoning Review:

- The average post development grade for the proposed addition is 127.32, refer to Exhibit A “Average Grade Calculations” attached.
- The finish floor of the proposed addition is 128.22’.
- The building height above average grade for the four (4) story portion along Arbor Street and Forest Avenue is 43.9 feet to roof beam.
- The five story corner of the building at the Stevens Avenue Arbor Street (added unit) side of the building is 55.9 feet.
- The fifth story (community room) at the Arbor Street, Forest Avenue corner is 58.9 feet.
- The five story elevation facing the interior garden court yard is 55.9 feet.

VIII Development Review

A. Site Plan Submission Requirements and Subdivision Plat and Recording Plat Requirements

a. Application Completeness

- Temporary Waiver of Lighting Photometrics, Signage Plan. Waste Management plan and manufactures Verification of Mechanical Systems, refer to attached revised waiver request.

B. Site Plan Standards

1. Transportation Standards:

a. Impact on surrounding street system

- The number of curb cuts proposed are necessary to address emergency vehicle access, existing service vehicle requirements, as well as the safety for residents entering and exiting the property (see revised waiver request).
- The existing main entry from Stevens Avenue, currently one way, in has been retained as requested by the Fire Department as an emergency access curb cut. We have provided two sided signage, one on each side of the curb cut denoting “Emergency Vehicle Access Only”. To further minimize access, additional plantings have been added to provide a low screening of the drive.
- The relocated entry on Stevens Avenue aligns with the new main entry drop off area. The geometry of this curb cut has been modified, refer to response to Tom Errico’s memo, prepared by Gorrill-Palmer Consulting Engineers, attached and revised site plan.
- The Arbor Street curb cut is proposed as two-way circulation. This new drive aligns with the new main entry to The Park Danforth. This access allows for safer access for the residents to gain safer access to Stevens Avenue or Forest Avenue. In addition, this curb cut provides accessibility for emergency vehicles to circulate around the building (see revised waiver request).
- The Forest Avenue curb cut is the existing service drive as well as providing access to resident parking and the new garage. The geometry of the curb cut has been revised in response to Tom Errico’s memo; please refer to response letter prepared by Gorrill-Palmer Consulting Engineers and revised site plan.

b. Access and Circulation:

- Refer to comments above concerning curb cuts.
- On-site pedestrian circulation is provided to Forest Avenue via a new sidewalk along the service drive that residents access from the three story wing and from the new garden court yard. Connection to Forest Avenue from the resident entry at the corner of Arbor Street and Forest Avenue is not feasible due to grade change (retaining wall). Stairs are not an option due the safety concerns for the age of the residents. Access to Forest Avenue can be made from internal sidewalks leading to Arbor Street. Refer to Exhibit B Pedestrian Circulation Plan attached.

- We have met with Bruce Hyman to review all of the crosswalk locations within the public right-of-way and have revised the plans to meet the city standards with exception of the Poland Street-Forest Avenue curb ramp. The constraints associated with existing drainage structures do not permit installing the curb ramp per city standards. We have provided a curb ramp detail for this location to discuss further with staff. Pedestrian access easement areas have been shown where required to meet the minimum sidewalk width.
- New concrete sidewalk and granite curb were shown on the original submission. Since that submission we have had discussions with Bruce Hyman regarding ADA curb ramps and with David Margolis-Pineo regarding improvements along Arbor Street. The paved width of Arbor Street varies from Stevens Avenue to Forest Avenue exceeding 30 FT. To install new sidewalk, ADA curb ramps and avoid several existing utility poles we have adjusted the curb alignment slightly to provide a passable sidewalk. The width of Arbor Street is maintained at 30 FT wide. To maintain the minimum sidewalk width we have had to extend the sidewalk out around utility poles still within the right of way.

c. Public Transit Access

- No comment required at this time.

d. Parking

- There have been two modifications to the plan resulting in a decrease in parking from 151 spaces to 149. Due to a requirement for mechanical equipment room one (1) space in the garage has been eliminated. The applicant also requested to have two additional handicap spaces along the Arbor Street parking that resulted in the loss of one (1) regular space.
- The off-street parking requirements, note 11. Plan sheet L3.2 has been revised. The original submission did include the number of employees at peak period. Revisions include the requirement for the additional unit.
- Aisle width requirements, see attached Waiver Request.
- Bicycle parking: No comment required at this time.

Tom Errico's review comments:

- See attached letter prepared by Gorrill-Palmer Consulting Engineers for responses. Additional responses follow.
- Refer to revised waiver request for Stevens Avenue and Arbor Street curb cuts and travel aisle widths.

In response to parking needs, we have prepared the following to provide an understanding of how The Park Danforth functions:

The following documentation provides additional detail regarding the operation of The Park Danforth and the associated parking demands. The average age of The Park Danforth residents is 86. While this population is in reasonably good health and are independent, they do require medical attention beyond what is provided by The Park Danforth staff. Outside providers, such as VNA, occupational and physical therapist and other providers make visits to see residents during the week and require parking. The average number of visits during a weekday is 15 between the hours of 8 AM and 5 PM with peak days exceeding 25 visits. Visit time also varies, depending on the nature of the service, that may be as short as 15 min and longer for treatment services, or if one provider is seeing multiple residents.

In addition to medical providers, there are service providers that are on-site at various times during the week that include facility equipment repair, appliance repair service for residents, cable TV and others. There are also regular scheduled vendor visits that vary throughout the year. The number and frequency varies, however on any given weekday, they usually see a minimum of two during the 8 AM to 5 PM time frame.

Another significant factor that coincides with the average age of current residents is that many of these folks have family/children that are retired and visit more frequently as well as stay longer. This can attribute to periods with a shortage of visitor parking. There are demands for short term parking for family members dropping off groceries, medications or picking up family members. Short term parking spaces have been located adjacent to the emergency vehicle access drive.

2. Environmental Quality Standards

a. Preservation of Significant Natural Features

- No comment required

b. Landscape and Landscape Preservation

- No response required at this time regarding the waiver request for number of street trees.
- Regarding comments from the City Arborist, we met with Jeff Tarling to review the revised planting in response to his concerns with meeting the Design Standards regarding landscaping for parking areas. Plans were revised and reviewed with Jeff Tarling.
- Regarding comments by staff concerning the center Garden Court Yard, we have provided several concept designs being considered by the applicant. As presented during the planning board workshop, the intent of this space is to provide a stimulating interactive environment, provide safe yet challenging walking environment, seasonal variation, outdoor seating opportunities, opportunities for gardening and outdoor rooms. The plan as revised provides a limited planting plan approach for now.
- The plan will be further developed and will depend upon budget. Improvements may be phased as budget allows. We request consideration of the final design to a condition of approval with staff review.

c. Water Quality, Storm Water, Storm Water Management and Erosion Control

- We have revised the storm water management plan as discussed with staff prior to the workshop. The plan follows the same principals for management as well as water quality. We have also connected a portion of the new drainage area to the existing storm drain system in Arbor Street as discussed with staff, with a portion of the site connecting to the storm drain in Forest Avenue as previously proposed.
- The storm drain system in the parking garage has been revised to include an oil and water separator and now connects to the sanitary sewer as requested.
- The storm water management plan conforms to the City Chapter 500 standards and a MDEP PBR will be submitted.

3. Public Infrastructure and Community Safety

a. Public Safety and Fire Prevention

- The existing main entry on Stevens Avenue has been revised to include two sided signage on both sides of the drive indicating Emergency Vehicle Access Only. In addition, we have added a substantial amount of landscaping on either side of the drive to diminish its visibility to the general public.
- All of the other curb cuts allow for emergency vehicle access to the building. The building can be accessed on four sides from interior circulation.

b. Availability and Adequate Capacity of Public Utilities

Water/Sanitary/Sewer

- We have revised the plan to reflect a change in pipe size for the sanitary sewer connection in Arbor Street from a 6 inch to an 8 inch pipe.
- We have also split the sewer service connection for the new building into two runs due to grade change, a portion of the new building will now connect to the existing sanitary manhole in the existing service drive.
- A Note regarding meeting the provisions of Section 2 and Section 9 of the Technical Manual has been added as note 15 on plan sheet L3 and note 19 on plan sheet L4.
- We are still waiting on a letter from Public Services regarding sanitary sewer capacity.

Electricity/Telephone/Cable TV

- As previously discussed, a new utility pole is proposed on-site near the Forest Avenue entry to allow for extension of underground utilities. There is not sufficient room on the existing utility pole on Forest Avenue to install the necessary riser conduit. Refer to attached waiver request.

Waste Management

- Final determination of waste management has not been made, updated documentation will be provided under separate cover. As of this submission, the plan reflects the use of a pulper/compactor unit.

4. Site Design Standards

a. Snow and Ice Loading

- As stated previously, there is limited snow storage available on-site with no designated storage area. Snow from small storms will be plowed to the edge of parking lots onto the grassed areas. Storm events exceeding 3 inches will require snow removal. The applicant currently contracts for snow removal, a copy of a contract will be provided under separate cover prior to the public hearing.

b. Exterior Lighting

- The lighting plan is in the process of having the photometric plans being prepared to address the city lighting requirements. These plans will be submitted under separate cover for staff review.

c. Noise and Vibration

- Final selection of the mechanical equipment has not been made at this time. All equipment shall meet the city noise standards. We are requesting at this time to have submission of the required documentation be considered as a condition of approval with review by staff.

d. Signage and Wayfinding

- Presently The Park Danforth is updating its branding that includes signage. We have shown several sign locations, however the final plan is subject to change. A sign plan indicating locations will be submitted under separate cover.

e. Zoning Related Design Standards

- Regarding landscaping and site circulation, see previous comments under transportation and landscaping.

C. Subdivision

- No comment required for items 1 through 5.

6. *Easements*

- An easement agreement with CMP will be provided as a condition of approval. The applicant is presently working with CMP on the design of the new service and will establish the required easement on the subdivision plat prior to signing by the planning board. In addition, pedestrian easements will be granted to the city where public sidewalk occurs on private property. The existing conditions plan is the boundary survey for the entire property. A certified stamped plan will be submitted under separate cover.

7. *Comprehensive Plan*

- No response required

8. *Financial Capability*

- No response required

IX. Housing Preservation and Replacement (Section 14-483)

- The applicant understands the requirements concerning the housing replacement and performance guarantee.

Enclosed for your review are the following:

- Revised Waiver Request
- Neighborhood Meeting Documentation
- Revised Storm water Report, prepared by BH2M Engineers
- Traffic Response Letter, prepared by Gorrill-Palmer Consulting Engineers
- Exhibit A “Average Grade Calculations”
- Exhibit B “Pedestrian Circulation Plan”
- Exhibit C “Fire Truck Turning Templates”
- Revised Plan Set Sheets L1.0 – L6.3 and D1.0 – D3.0
- Architecture Plans and Elevations
- Concept Garden Court Yard Designs

Ms. Shukria Wiar and Planning Board Members

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Should you or staff have any questions, please do not hesitate to contact me.

Sincerely,
Mitchell & Associates

A handwritten signature in black ink, appearing to read "R. Metcalf", written in a cursive style.

Robert B. Metcalf, Principal
Maine Licensed Landscape Architect

cc: Denise Vachon
Ron Norton
Les Berry

November 25, 2014

Mr. Bob Metcalf
Mitchell & Associates
70 Center Street
Portland, Maine 04101

Subject: Response to Tom Errico's Review Comments
Park Danforth
Portland, Maine

Dear Bob,

Per your request, Gorrill-Palmer Consulting Engineers, Inc. (GP) has reviewed Tom Errico's comments on The Park Danforth expansion in his email to Shukria Wiar dated 11/5/2014. For your convenience, each of his comments is repeated below followed by our response:

Comment: I have reviewed the traffic study for the project prepared by GPCEI and concur that the project will not have a significant impact on transportation capacity and does not require a Traffic Movement Permit.

Response: No response required.

Comment: The traffic study did identify a High Crash Location at the Forest Avenue/Read Street intersection and I need to further investigate as it relates to this project.

Response: No response required.

Comment: The Forest Avenue driveway configuration geometry does not prevent the suggested turn prohibitions and it is suggested that adjustments be incorporated. I would also note that the GPCEI report notes the Stevens Avenue driveway will also have turn prohibitions. The geometry of driveways should reflect conditions that discourage the illegal turn movements.

Response: The design of the Forest Avenue driveway has been revisited and the exit has been narrowed to 12 feet and has been located to avoid relocating an existing utility pole. The entry radius has also been adjusted to the extent practicable. The Stevens Avenue driveway will be restricted to right turns in and out and has been re-designed to facilitate this restriction and signage has been added advising of the restriction.

Comment: The one-way emergency entrance on Stevens Avenue should be designed such that it discourages general population usage and is supported by the fire department.

Response: GP evaluated the entrance based on a fire truck and determined that the full width shown is required to maintain access. It is also our understanding that you have met with the fire

Mr. Bob Metcalf
November 25, 2014
Page 2 of 3

department and reviewed this design. We do recommend that an additional sign "C" be shown on the right side of the driveway as well to further highlight this restriction. We also understand from you that landscaping features will also be added to further highlight this restriction.

Comment: The applicant should provide specific information that supports all proposed driveways, such that a waiver can be issued regarding the number of driveways as it exceeds City standards. The applicant should focus this response on why both the Stevens Avenue and Arbor Street driveways are both required.

Response: As noted in the traffic report, the total number of driveways are being reduced from 6 full access to one full access, two driveways which are restricted to right in and out movements only and one emergency driveway. Thus the number of allowed non-emergency movements is reduced from 24 to 8. Each remaining accesses has been carefully reviewed during the design process and is discussed below:

Forest Avenue: one of the existing two driveways on Forest Avenue has been closed as part of this design. The remaining curb cut is proposed to be restricted to right turning traffic in and out. Access from this driveway in combination with the Arbor Street driveway is important for fire access to the Forest Avenue side of the proposed and existing buildings as well as the underground parking.

Arbor Street: This driveway is needed in combination with the Forest Avenue driveway for fire access to the Forest Avenue side of the proposed and existing buildings. It is also needed in combination with the northerly Stevens Avenue driveway for fire access to the northwest side of the proposed building.

Comment: Several parking aisle widths do not meet City standards. The applicant should provide supporting waiver documentation for all substandard conditions.

Response: This waiver was discussed with Mr. Errico at the City staff meeting and it is our understanding that Mitchell & Associates will be providing the waiver documentation.

Comment: Pedestrian facility connections between the site and the public sidewalk system, particularly Forest Avenue should be clearly noted and provided.

Response: Five pedestrian connections from the site to the public sidewalk system are proposed; one on Stevens, two on Arbor Street, one on Poland Street, and one on Forest Avenue. Grading constraints limit the number of pedestrian connections to Forest Avenue to one.

Comment: An ADA ramp on the internal crosswalk at the Arbor Street driveway should be provided.

Response: It is our understanding that you are revising the plans to add an ADA ramp adjacent to the drop off area.

Comment: I support the proposed compact parking spaces and support a waiver from the City's dimensional standards for compact spaces.

Mr. Bob Metcalf
November 25, 2014
Page 3 of 3

Response: No response required.

Comment: It is suggested that the crosswalk on Stevens Avenue at Poland Street be upgraded to be fully ADA compliant. This crosswalk is active and provides an important connection to the METRO bus service.

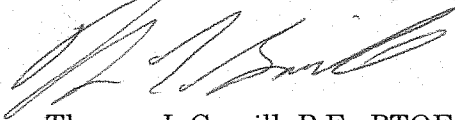
Response: Our office agrees that the crosswalk on Stevens Avenue at Poland Street should be fully ADA compliant. We recommend that discussions be held with the City to discuss options for funding these improvements.

Comment: A crosswalk is provided on Forest Avenue near the site driveway and I need to review improvement needs and will provide direction in the future.

Response: No response required.

Sincerely,

Gorrill-Palmer Consulting Engineers, Inc.



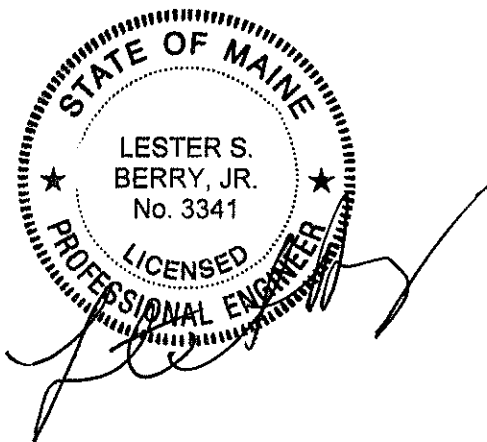
Thomas L Gorrill, P.E., PTOE
Principal

STORMWATER MANAGEMENT REPORT

**FOR: THE PARK DANFORTH EXPANSION PROJECT
PORTLAND, MAINE**

**FOR
MITCHELL & ASSOCIATES
PORTLAND, MAINE**

**October 2014
Revised November 2014**



Prepared By:

**Berry Huff McDonald Milligan, Inc.
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PLANS: **See Mitchell & Associates Project Plans**
 Sheet D1-0 - Predevelopment Plan
 Sheet D2-0 - Development Plan
 Sheet D3-0- Treatment Plan

STORMWATER MANAGEMENT REPORT

FOR: THE PARK DANFORTH PORTLAND, MAINE

The November 2014 Revisions include changing the drywells proposed in the October 2014 Report to standard catchbasins and leaching galleys.

INTRODUCTION

The Park Danforth is an elderly housing project located between east side of Stevens Avenue, the westside of Forest Avenue, the north side of Poland Street and the south side of Arbor Street. The project was originally approved and constructed in 1983 and underwent a major expansion in 1997. The site currently consists of 4.16 acres of land which includes the Goodwill site and three former house sites. Attached in Appendix A is a USGS Location Map.

The Park Danforth has purchased the Goodwill site which is their abutter to the north. The intention is to demolish the Goodwill facilities and expand the elderly housing building, access drives and parking lots. This will require a Subdivision and Site Plan approval from the City of Portland. The project will also “disturb” and reconstruct more than 1 acre of land so a DEP Stormwater Permit-by-Rule will be required for which the City probably does not have delegated authority. Therefore the purpose of this Report is to present a Stormwater Plan for the project which complies with “Chapter 500” which fortunately is the same standard for both the City of Portland and the Maine DEP. No “Site Law” Permit is required.

EXISTING SITES

For purposes of this Report the “existing site” or “predevelopment conditions” consists of two sites:

1. Existing Park Danforth Site – 2.56 acres
This site is occupied by the existing elderly housing building and associated pavement/parking.
2. Existing Goodwill Site (and 3 house lots) – 1.60 acres
This site currently has the old Goodwill building, small one story building (old bank building), 2 houses, and associated pavement/parking.

PROPOSED EXPANSION

The intent is to demolish the Goodwill site and existing houses and add a new building wing and parking/access to the site. The proposed layout is shown on the Post-development Drainage Plan and is detailed in the Project Plans by Mitchell & Associates.

STORMWATER STANDARDS

The total or new site is currently (both sites) a 4.16 acre site with 3.22 acres of existing impervious area. The reconstructed proposed site will be 4.16 acres with 3.05 acres of impervious area. This will represent a decrease from 3.27 acres to 3.05 acres or 0.17 acres. This is good.

The portion of the project (Goodwill site) which will represent the “redevelopment” portion of the work is not counted in the “impervious” calculations since the new use “is not likely to increase stormwater impacts” (Chapter 500, page7). The “disturbed” area does count.

Therefore, the project is not a “Site Law” project and only subject to Stormwater Law Standards for a “Permit-by-Rule”. No “General” Standards or “Flooding” Standards apply. However, from a practical perspective, the new stormwater plan needs to fit within the existing capacity of the City drainage systems and treatment is a positive addition if the City adopts the proposed stormwater fees.

1997 STORMWATER REPORT

The City of Portland approved the Park Danforth expansion project in 1997 which included a “Stormwater Report” (copy in Appendix G).

Per the 1997 Stormwater Report most of the site runoff (from the 2.56 acre Park Danforth site) was collected in an on-site stormdrain system and discharged to the municipal stormdrain in Forest Avenue. Calculations were as follows:

<u>Storm</u>	<u>Pre (before 1997)</u>	<u>Post (after 1997)</u>
2 Year	4.26 cfs	3.89 cfs
10 Year	5.99 cfs	5.81 cfs
25 Year	7.01 cfs	6.80 cfs

The “Post” flowrates should be our current “Pre” flowrates.

However, a close inspection of the report calculations are concerning. The calculations were done using HydroCAD but with the “rational” method. It is our opinion that stormwater calculations since 1985 should have been performed by the TR-55 or TR-20 methodology. It is also our opinion that the 1997 report as a result of methodology and technical inputs has

significantly under estimated the peak flow rates based upon using methodologies per accepted engineering practice. Hence, we will not be referring to or using the existing report as a basis for the proposed project.

No reports or calculations were found for the Goodwill site.

SOILS

The Predevelopment Drainage Plan and Post-development Plan have soils plotted per the Cumberland County Medium Intensive Soils Mapping. Soils are:

WmB - Adams – Hydrologic Soils Group A
De - Croghan – Hydrologic Soils Group B

Additional Soils Data is also available.

1. Geotechnical Engineering Services by S.W. Cole, June 18, 2014. This report (Appendix H) confirms that the site is generally consisting of a thin layer of uncontrolled granular fill overlying native outwash sands overlying refusal surfaces (probably bedrock). Groundwater varied in depth from 18 feet to 21 feet. The findings were for the geotechnical design of the new structures but it did lead us to believe “infiltration” may be an option for Stormwater Management (see #2 below).
2. Test Pits by Albert Frick Associates are including in Appendix I. The first report dated September 16, 2014 by James Logan, CSS #213, consisted of hand dug test pits. A restrictive layer was recorded at 21” to 38”. These results were not satisfactory so the test pits were redone using a backhoe. See Report dated September 27, 2014. These results indicated that the restrictive layer found initially was a loosely cemented sand layer that was 15” to 18” thick. Below this layer was free draining sand with no further evidence of groundwater. Hence, it was concluded that infiltration is a viable option as long as the infiltration surface is below the cemented sand layer. Using infiltration will require inspection by a CSS to insure all infiltration surface are below the cemented layer.

PRE-DEVELOPMENT DRAINAGE CONDITIONS

The total proposed site (4.16 acres) or one city block is essentially the “top” of a minor hill. All runoff either flows overland to the street or via pipes to city stormdrain in Forest Avenue. It is our understanding that the city stormdrain is a “separated” stormdrain, although the outlet location is unknown. Old plans seem to indicate an 8” or 10” vitrified clay pipe from 1907.

The first week of August 2014, the City had a freak storm that dumped 6+ inches of rain in a short time frame. This exceeded the 25 year design storm, so the question we had for the Park

Danforth staff and City of Portland was “was there any flooding?” The answer has been consistently “no”. Our opinion was that the storm overwhelmed the on-site and City stormdrains and runoff then flooded the curb lines and continued downhill. Since the site was at the top of a hill there was no damage or consequences. It is suspected that since most of the rain occurred during the night that nobody was around to observe any flooding.

The Predevelopment Plan shows the existing drainage subareas, roads and ponds. The HydroCAD models (2) have been set-up as follows:

1. “Park Danforth Predevelopment”
This model includes most of the existing Park Danforth site that drains to the on-site stormdrain system and then discharges to the Forest Avenue municipal stormdrain (AP #1).
2. “Goodwill Site Predevelopment”
This model includes most of the existing Goodwill site that drains to the on-site stormdrain system and then discharges to the Forest Avenue municipal stormdrain (AP #2).

Both AP’s discharge to the same 8” or 10” municipal stormdrain that also receives runoff from Forest Avenue and Poland Street. The municipal stormdrain was not modelled or any of the other downstream pipes. It is our opinion that the municipal pipe is too small to handle the larger design storms. It is suspected that catchbasins flood and some runoff probably just bypasses the system via the curb line flow. If this results in any flooding issues they are all downstream and not at the Park Danforth site or the immediate area.

As noted above, the predevelopment calculations are presented as if they were two separate projects.

PARK DANFORTH PREDEVELOPMENT

The Park Danforth predevelopment calculations are included in Appendix B and the layout is shown on the “Predevelopment Plan”.

The total existing Park Danforth site includes 2.56 acres of land and the model includes 2.08 acres. Therefore 0.48 acres of land just drains to the streets and has not been included in the calculations.

The catchbasins have the same structure numbers as the 1997 Stormwater Report. CB #1 starts on the easterly side of the northerly wing and the stormwater system wraps around the building and connects to the Forest Avenue stormdrain. After Reach 1 and the “Reaches/Pipes” were modelled as Ponds since the peak flows exceeded the pipe capacities and caused surcharging. The roof subareas are an estimate of the area that may drain to each roof drain.

DMH1 is a 6' diameter structure with a 6" orifice plate that regulates flow into the municipal stormdrain. Therefore, the structure was modelled as a "Pond" with storage in the 24" inlet pipes to the structure. The CB #7 and CB #8 rims were modelled as overflow weirs.

Results @ DMH#1 (Pond 9)

<u>Storm</u>	<u>Total</u>	<u>To City SD</u>	<u>Discarded*</u>
2 Year	3.73 cfs	2.12 cfs	1.60 cfs
10 Year	5.57 cfs	2.16 cfs	3.40 cfs
25 Year	6.00 cfs	2.17 cfs	3.83 cfs

* Discarded flow is flow to the street curblines via the overflows.

The 6" orifice limits flow to 2+ cfs to the municipal stormdrain but allows the upstream CB's to overflow to the street.

Peak flows to AP #1 include the above peak flow rates plus runoff from the maintenance area.

Results @ AP #1 (Reach 11)

<u>Storm</u>	<u>Peak</u>
2 Year Storm	2.77 cfs
10 Year Storm	3.28 cfs
25 Year Storm	3.52 cfs

The "Total" flows originating on-site are similar to the post-development flows approved in 1997 but the actual flows to the city system are less.

GOODWILL PREDEVELOPMENT

The Goodwill predevelopment calculations are included in Appendix C and the layout is shown on the Predevelopment Plan.

The total existing Goodwill (and house lots) site includes 1.60 acres of land and the model includes 1.42 acres. Therefore, 0.18 acres of land just drains to the streets and may not have been included.

Results @ AP #2 (Pond 31)

<u>Storm</u>	<u>Peak Flowrate to City stormdrain</u>
2 Year	2.94 cfs
10 Year	5.00 cfs
25 Year	5.59 cfs

The model assumes that the municipal stormdrain has plenty of capacity and does not cause a backwater condition. Based upon our field observations after the August storm it appears that CB# 31 could not accept the runoff and surface runoff simply flowed out the parking lot entrance onto Forest Avenue. There was no obvious damage or consequence of the overflow.

PREDEVELOPMENT SUMMARY

The current peak flows for the design storms exceed the on-site and municipal stormdrains capacity. However, this does not appear to result in any negative consequences other than perhaps an increase in flooding in some other downstream part of the City. The goal of the post-development plan should be to devise a plan to reduce peak flow so that flooding can be minimized.

POST-DEVELOPMENT DRAINAGE CONDITIONS

The post-development stormwater is similar to the predevelopment except a new Analysis Point #3 was added.

1. Park Danforth Model I Post – to AP #1
2. Park Danforth Model II– to AP #2
3. Park Danforth Model III – to AP #3

PARK DANFORTH MODEL I POST

This area drains to AP #1 and is identical to the predevelopment model except the following have been deleted or modified

CB #1 – R-1 & SA-1 DELETED
CB #2 – Pond 2 & SA-2 – DELETED
CB #3 – Pond 3 & SA-3 – MODIFIED
CB #9 & #10 – R-10 & R-9 – DELETED and MODIFIED

The areas included in SA-1, SA-2, SA-3 (modified) and SA-9 and SA-10, will now be in the other model to AP #2. This is an opportunity to reduce peak flows to AP #1.

The post-development calculations for The Park Danforth side are include in Appendix D. DMH #1 (Pond 9) is the same as the predevelopment condition.

<u>Results @ DMH #1 (Pond 9)</u>			
<u>Storm</u>	<u>Total</u>	<u>to City SD</u>	<u>Discarded</u>
2 Year Storm	3.35 cfs	2.12 cfs	1.70 cfs
10 Year Storm	5.39 cfs	2.16 cfs	3.30 cfs
25 Year Storm	6.06 cfs	2.17 cfs	3.88 cfs

Reducing some of the upstream subareas had almost no impact.

Peak Flows to AP #1 are as follows:

<u>Results @ AP #1 (Reach 11)</u>		
<u>Storm</u>	<u>Peak</u>	<u>(Pre)</u>
2 Year Storm	2.19 cfs	(2.77 cfs)
10 Year Storm	2.32 cfs	(3.28 cfs)
25 Year Storm	2.39 cfs	(3.32 cfs)

The results show a significant reduction (in percent) of the revised stormwater layout.

PARK DANFORTH MODEL II (OLD GOODWILL SITE)

This model is new since all the old Goodwill site stormwater facilities will be removed. The intent was to provide catchbasins that drain to several leaching galleys for infiltration. Using the DEP Standard of an infiltration rate of 2.41 inches per hour is very slow. Therefore, full infiltration is not possible although is highly probable. Actual infiltration rates would be between 12"- 20" per hour (typical of most sandy sites). The infiltration is primarily for the treatment volume (DEP = 1" per storm). This will be discussed in the "Treatment Section" of this Report. The infiltration slows runoff so that hopefully peak flows at

<u>Results @ AP #2 (Pond 100 – Model II)</u>		
<u>Storm</u>	<u>Peak Flowrate to City stormdrain</u>	<u>(Pre)</u>
2 Year Storm	1.55 cfs	(2.94 cfs)
10 Year Storm	2.33 cfs	(5.00 cfs)
25 Year Storm	2.66 cfs	(5.59 cfs)

The Post peak flow represents a significant decrease in peak flows.

PARK DANFORTH MODEL III (OLD GOODWILL SITE)

This model is new and it represents the portion of the Old Goodwill Site that will be connected to an existing municipal drain manhole located in Arbor Street. This is the newer municipal system that flows down Read Street.

<u>Results @ AP #3 (Pond 112 Model III)</u>	
<u>Storm</u>	<u>Peak Flowrate to City stormdrain</u>
2 Year Storm	2.35 cfs
10 Year Storm	4.04 cfs
25 Year Storm	4.16 cfs

TREATMENT

“Treatment” is not required per the “Chapter 500” standards. However, treatment (infiltration) has been provided for two purposes:

1. The infiltration of the treatment volume reduces peak flow rates at AP #2 and AP #3.
2. In the near future the City of Portland will probably enact a stormwater fee based upon impervious area with a reduction for “treated surfaces”.

Per Chapter 500, (page 6, (c), Infiltration, the system must infiltrate 1.0” times the impervious area and 0.4” times the landscape area. For calculation purposes a 1” rainstorm was used. The results show all runoff was retained in the system.

The proposed project will have 2.79 acres (121,532 sf). As shown on the “Treatment Plan”, the total “treated” impervious area equals 76,237 sf. This will leave 58,351 sf as untreated.

APPENDIX A

MAPS

**USGS
SOILS MAP
AERIAL PHOTOGRAPHY**





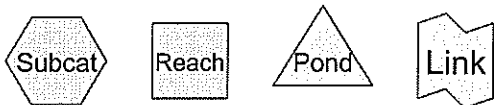
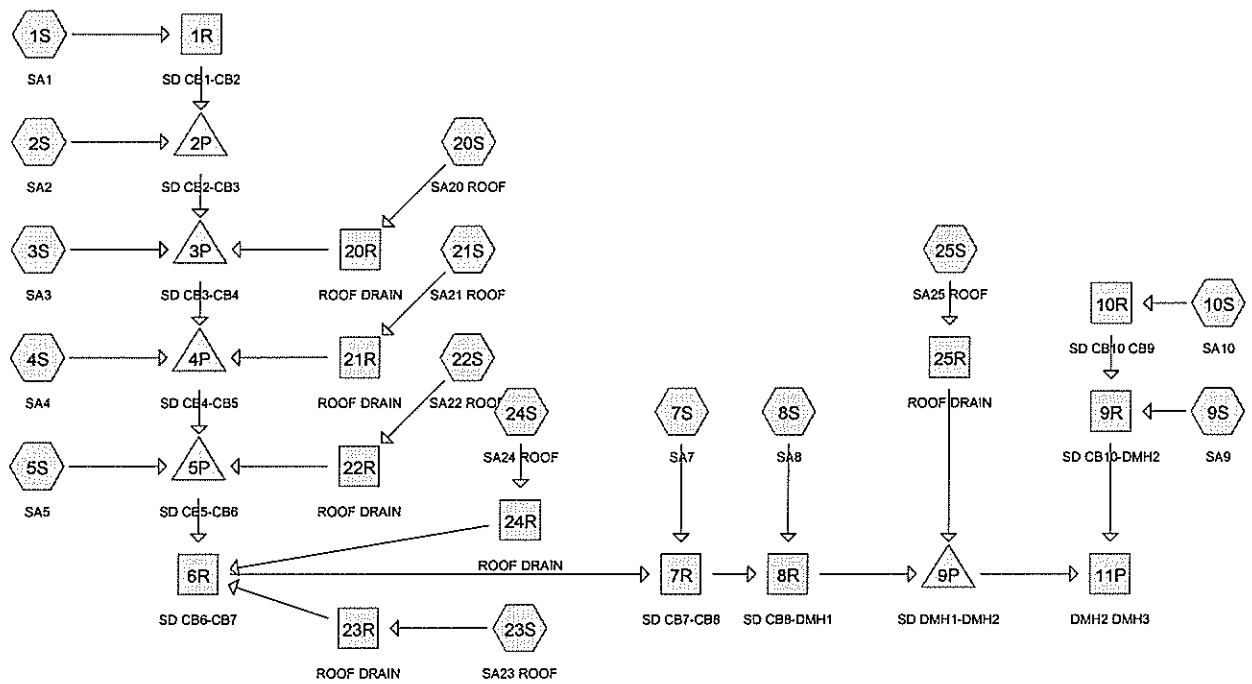
Google earth

feet
meters



APPENDIX B

PARK DANFORTH PREDEVELOPMENT CALCULATIONS



Routing Diagram for PARK DANFORTH PREDEVELOPMENT
 Prepared by BH2M ENGINEERS, Printed 9/8/2014
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PARK DANFORTH PREDEVELOPMENT

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.022	39	>75% Grass cover, Good, HSG A (3S, 4S)
0.413	61	>75% Grass cover, Good, HSG B (1S, 2S, 3S, 4S, 5S, 7S, 8S, 9S, 10S)
0.905	98	Paved parking, HSG D (1S, 3S, 4S, 5S, 9S, 10S)
0.715	98	Roofs, HSG D (20S, 21S, 22S, 23S, 24S, 25S)
0.023	98	Unconnected pavement, HSG D (2S)
2.078	90	TOTAL AREA

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.022	HSG A	3S, 4S
0.413	HSG B	1S, 2S, 3S, 4S, 5S, 7S, 8S, 9S, 10S
0.000	HSG C	
1.643	HSG D	1S, 2S, 3S, 4S, 5S, 9S, 10S, 20S, 21S, 22S, 23S, 24S, 25S
0.000	Other	
2.078		TOTAL AREA

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.022	0.413	0.000	0.000	0.000	0.435	>75% Grass cover, Good	1S, 2S, 3S, 4S, 5S, 7S, 8S, 9S, 10S
0.000	0.000	0.000	0.905	0.000	0.905	Paved parking	1S, 3S, 4S, 5S, 9S, 10S
0.000	0.000	0.000	0.023	0.000	0.023	Unconnected pavement	2S
0.000	0.000	0.000	0.715	0.000	0.715	Roofs	20S, 21S, 22S, 23S, 24S, 25S
0.022	0.413	0.000	1.643	0.000	2.078	TOTAL AREA	

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Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	1R	118.60	118.00	110.0	0.0055	0.010	6.0	0.0	0.0
2	6R	116.00	115.10	253.0	0.0036	0.010	15.0	0.0	0.0
3	7R	115.10	115.00	88.0	0.0011	0.010	24.0	0.0	0.0
4	8R	115.00	114.70	35.0	0.0086	0.010	24.0	0.0	0.0
5	9R	115.20	115.00	72.0	0.0028	0.010	12.0	0.0	0.0
6	10R	115.30	115.20	70.0	0.0014	0.010	12.0	0.0	0.0
7	11P	115.00	114.80	24.0	0.0083	0.010	15.0	0.0	0.0
8	20R	0.00	-0.60	60.0	0.0100	0.010	6.0	0.0	0.0
9	21R	0.00	-0.60	60.0	0.0100	0.010	6.0	0.0	0.0
10	22R	0.00	-0.60	60.0	0.0100	0.010	6.0	0.0	0.0
11	23R	0.00	-0.20	20.0	0.0100	0.010	6.0	0.0	0.0
12	24R	0.00	-0.15	15.0	0.0100	0.010	6.0	0.0	0.0
13	25R	0.00	-0.30	30.0	0.0100	0.010	6.0	0.0	0.0
14	2P	118.00	117.60	136.0	0.0029	0.010	8.0	0.0	0.0
15	3P	117.50	117.50	73.0	0.0000	0.010	12.0	0.0	0.0
16	4P	117.40	117.00	54.0	0.0074	0.010	12.0	0.0	0.0
17	5P	116.90	116.00	70.0	0.0129	0.010	12.0	0.0	0.0
18	9P	114.70	114.50	24.0	0.0083	0.010	15.0	0.0	0.0

PARK DANFORTH PREDEVELOPMENT

Type III 24-hr 2 YEAR STORM Rainfall=3.00"

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Summary for Subcatchment 1S: SA1

Runoff = 0.06 cfs @ 12.22 hrs, Volume= 0.006 af, Depth> 0.48"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type III 24-hr 2 YEAR STORM Rainfall=3.00"

Area (sf)	CN	Description
910	98	Paved parking, HSG D
5,562	61	>75% Grass cover, Good, HSG B
6,472	66	Weighted Average
5,562		85.94% Pervious Area
910		14.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9	60	0.0100	0.08		Sheet Flow, LAWN
					Grass: Dense n= 0.240 P2= 3.00"

Summary for Subcatchment 2S: SA2

Runoff = 0.05 cfs @ 12.20 hrs, Volume= 0.005 af, Depth> 0.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type III 24-hr 2 YEAR STORM Rainfall=3.00"

Area (sf)	CN	Description
1,000	98	Unconnected pavement, HSG D
6,421	61	>75% Grass cover, Good, HSG B
7,421	66	Weighted Average, UI Adjusted CN = 63
6,421		86.52% Pervious Area
1,000		13.48% Impervious Area
1,000		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	60	0.0200	0.10		Sheet Flow, LAWN
					Grass: Dense n= 0.240 P2= 3.00"

Summary for Subcatchment 3S: SA3

Runoff = 0.73 cfs @ 12.14 hrs, Volume= 0.059 af, Depth> 2.22"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type III 24-hr 2 YEAR STORM Rainfall=3.00"

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Area (sf)	CN	Description
12,414	98	Paved parking, HSG D
1,116	61	>75% Grass cover, Good, HSG B
350	39	>75% Grass cover, Good, HSG A
13,880	94	Weighted Average
1,466		10.56% Pervious Area
12,414		89.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	35	0.0100	0.07		Sheet Flow, LAWN
					Grass: Dense n= 0.240 P2= 3.00"
1.4	60	0.0050	0.69		Sheet Flow, PAVEMENT
					Smooth surfaces n= 0.011 P2= 3.00"
9.8	95	Total			

Summary for Subcatchment 4S: SA4

Runoff = 0.72 cfs @ 12.09 hrs, Volume= 0.051 af, Depth> 2.13"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.00"

Area (sf)	CN	Description
800	61	>75% Grass cover, Good, HSG B
600	39	>75% Grass cover, Good, HSG A
11,043	98	Paved parking, HSG D
12,443	93	Weighted Average
1,400		11.25% Pervious Area
11,043		88.75% Impervious Area

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

Summary for Subcatchment 5S: SA5

Runoff = 0.34 cfs @ 12.09 hrs, Volume= 0.025 af, Depth> 2.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.00"

Area (sf)	CN	Description
5,100	98	Paved parking, HSG D
300	61	>75% Grass cover, Good, HSG B
5,400	96	Weighted Average
300		5.56% Pervious Area
5,100		94.44% Impervious Area

PARK DANFORTH PREDEVELOPMENT

Type III 24-hr 2 YEAR STORM Rainfall=3.00"

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

Summary for Subcatchment 7S: SA7

Runoff = 0.01 cfs @ 12.15 hrs, Volume= 0.001 af, Depth> 0.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.00"

Area (sf)	CN	Description
1,000	61	>75% Grass cover, Good, HSG B
1,000		100.00% Pervious Area

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

Summary for Subcatchment 8S: SA8

Runoff = 0.00 cfs @ 12.15 hrs, Volume= 0.000 af, Depth> 0.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.00"

Area (sf)	CN	Description
500	61	>75% Grass cover, Good, HSG B
500		100.00% Pervious Area

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

Summary for Subcatchment 9S: SA9

Runoff = 0.11 cfs @ 12.10 hrs, Volume= 0.007 af, Depth> 1.15"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.00"

Area (sf)	CN	Description
1,700	98	Paved parking, HSG D
1,690	61	>75% Grass cover, Good, HSG B
3,390	80	Weighted Average
1,690		49.85% Pervious Area
1,700		50.15% Impervious Area

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Type III 24-hr 2 YEAR STORM Rainfall=3.00"

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

Summary for Subcatchment 10S: SA10

Runoff = 0.60 cfs @ 12.04 hrs, Volume= 0.039 af, Depth> 2.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.00"

Area (sf)	CN	Description
8,272	98	Paved parking, HSG D
600	61	>75% Grass cover, Good, HSG B
8,872	95	Weighted Average
600		6.76% Pervious Area
8,272		93.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	150	0.0100	1.09		Sheet Flow, PAVEMENT Smooth surfaces n= 0.011 P2= 3.00"
0.4	65	0.0200	2.87		Shallow Concentrated Flow, PAVEMENT Paved Kv= 20.3 fps
2.7	215	Total			

Summary for Subcatchment 20S: SA20 ROOF

Runoff = 0.26 cfs @ 12.09 hrs, Volume= 0.020 af, Depth> 2.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.00"

Area (sf)	CN	Description
4,060	98	Roofs, HSG D
4,060		100.00% Impervious Area

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

Summary for Subcatchment 21S: SA21 ROOF

Runoff = 0.16 cfs @ 12.09 hrs, Volume= 0.012 af, Depth> 2.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.00"

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Area (sf)	CN	Description
2,500	98	Roofs, HSG D
2,500		100.00% Impervious Area

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

Summary for Subcatchment 22S: SA22 ROOF

Runoff = 0.25 cfs @ 12.09 hrs, Volume= 0.019 af, Depth> 2.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.00"

Area (sf)	CN	Description
3,900	98	Roofs, HSG D
3,900		100.00% Impervious Area

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

Summary for Subcatchment 23S: SA23 ROOF

Runoff = 0.52 cfs @ 12.09 hrs, Volume= 0.040 af, Depth> 2.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.00"

Area (sf)	CN	Description
8,020	98	Roofs, HSG D
8,020		100.00% Impervious Area

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

Summary for Subcatchment 24S: SA24 ROOF

Runoff = 0.46 cfs @ 12.09 hrs, Volume= 0.035 af, Depth> 2.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.00"

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Area (sf)	CN	Description
7,100	98	Roofs, HSG D
7,100		100.00% Impervious Area

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

Summary for Subcatchment 25S: SA25 ROOF

Runoff = 0.36 cfs @ 12.09 hrs, Volume= 0.028 af, Depth> 2.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.00"

Area (sf)	CN	Description
5,550	98	Roofs, HSG D
5,550		100.00% Impervious Area

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

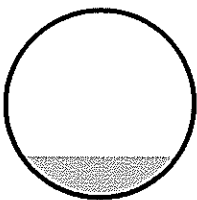
Summary for Reach 1R: SD CB1-CB2

Inflow Area = 0.149 ac, 14.06% Impervious, Inflow Depth > 0.48" for 2 YEAR STORM event
 Inflow = 0.06 cfs @ 12.22 hrs, Volume= 0.006 af
 Outflow = 0.06 cfs @ 12.26 hrs, Volume= 0.006 af, Atten= 2%, Lag= 2.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 1.78 fps, Min. Travel Time= 1.0 min
 Avg. Velocity= 0.94 fps, Avg. Travel Time= 1.9 min

Peak Storage= 4 cf @ 12.24 hrs
 Average Depth at Peak Storage= 0.11'
 Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.54 cfs

6.0" Round Pipe
 n= 0.010
 Length= 110.0' Slope= 0.0055 '/
 Inlet Invert= 118.60', Outlet Invert= 118.00'



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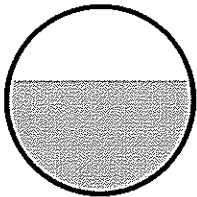
Summary for Reach 6R: SD CB6-CB7

Inflow Area = 1.634 ac, 78.72% Impervious, Inflow Depth > 2.00" for 2 YEAR STORM event
Inflow = 3.45 cfs @ 12.10 hrs, Volume= 0.272 af
Outflow = 3.28 cfs @ 12.13 hrs, Volume= 0.272 af, Atten= 5%, Lag= 1.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.38 fps, Min. Travel Time= 1.0 min
Avg. Velocity= 1.76 fps, Avg. Travel Time= 2.4 min

Peak Storage= 197 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.76'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 5.01 cfs

15.0" Round Pipe
n= 0.010
Length= 253.0' Slope= 0.0036 1/'
Inlet Invert= 116.00', Outlet Invert= 115.10'

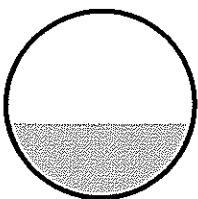
**Summary for Reach 7R: SD CB7-CB8**

Inflow Area = 1.657 ac, 77.63% Impervious, Inflow Depth > 1.97" for 2 YEAR STORM event
Inflow = 3.29 cfs @ 12.13 hrs, Volume= 0.273 af
Outflow = 3.25 cfs @ 12.15 hrs, Volume= 0.272 af, Atten= 1%, Lag= 1.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.83 fps, Min. Travel Time= 0.5 min
Avg. Velocity= 1.11 fps, Avg. Travel Time= 1.3 min

Peak Storage= 102 cf @ 12.14 hrs
Average Depth at Peak Storage= 0.79'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 9.91 cfs

24.0" Round Pipe
n= 0.010
Length= 88.0' Slope= 0.0011 1/'
Inlet Invert= 115.10', Outlet Invert= 115.00'



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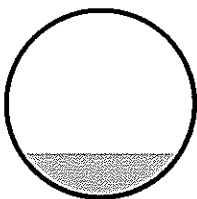
Summary for Reach 8R: SD CB8-DMH1

Inflow Area = 1.669 ac, 77.10% Impervious, Inflow Depth > 1.96" for 2 YEAR STORM event
Inflow = 3.25 cfs @ 12.15 hrs, Volume= 0.273 af
Outflow = 3.24 cfs @ 12.15 hrs, Volume= 0.273 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.84 fps, Min. Travel Time= 0.1 min
Avg. Velocity= 2.25 fps, Avg. Travel Time= 0.3 min

Peak Storage= 20 cf @ 12.15 hrs
Average Depth at Peak Storage= 0.47'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 27.23 cfs

24.0" Round Pipe
n= 0.010
Length= 35.0' Slope= 0.0086 '/
Inlet Invert= 115.00', Outlet Invert= 114.70'

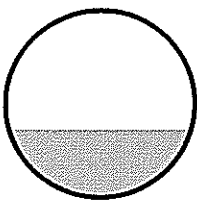
**Summary for Reach 9R: SD CB10-DMH2**

Inflow Area = 0.281 ac, 81.32% Impervious, Inflow Depth > 1.99" for 2 YEAR STORM event
Inflow = 0.68 cfs @ 12.06 hrs, Volume= 0.047 af
Outflow = 0.65 cfs @ 12.08 hrs, Volume= 0.047 af, Atten= 4%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.64 fps, Min. Travel Time= 0.5 min
Avg. Velocity= 0.96 fps, Avg. Travel Time= 1.2 min

Peak Storage= 18 cf @ 12.07 hrs
Average Depth at Peak Storage= 0.36'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.44 cfs

12.0" Round Pipe
n= 0.010
Length= 72.0' Slope= 0.0028 '/
Inlet Invert= 115.20', Outlet Invert= 115.00'



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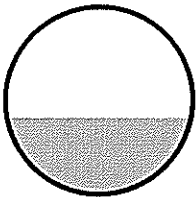
Summary for Reach 10R: SD CB10 CB9

Inflow Area = 0.204 ac, 93.24% Impervious, Inflow Depth > 2.32" for 2 YEAR STORM event
Inflow = 0.60 cfs @ 12.04 hrs, Volume= 0.039 af
Outflow = 0.58 cfs @ 12.06 hrs, Volume= 0.039 af, Atten= 4%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.02 fps, Min. Travel Time= 0.6 min
Avg. Velocity= 0.73 fps, Avg. Travel Time= 1.6 min

Peak Storage= 21 cf @ 12.05 hrs
Average Depth at Peak Storage= 0.40'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 1.75 cfs

12.0" Round Pipe
n= 0.010
Length= 70.0' Slope= 0.0014 '/'
Inlet Invert= 115.30', Outlet Invert= 115.20'

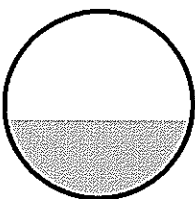
**Summary for Reach 11P: DMH2 DMH3**

Inflow Area = 2.078 ac, 79.07% Impervious, Inflow Depth > 1.90" for 2 YEAR STORM event
Inflow = 2.76 cfs @ 12.10 hrs, Volume= 0.328 af
Outflow = 2.77 cfs @ 12.10 hrs, Volume= 0.328 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.75 fps, Min. Travel Time= 0.1 min
Avg. Velocity= 2.54 fps, Avg. Travel Time= 0.2 min

Peak Storage= 12 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.52'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 7.67 cfs

15.0" Round Pipe
n= 0.010
Length= 24.0' Slope= 0.0083 '/'
Inlet Invert= 115.00', Outlet Invert= 114.80'



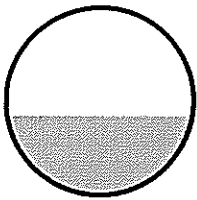
Summary for Reach 20R: ROOF DRAIN

Inflow Area = 0.093 ac, 100.00% Impervious, Inflow Depth > 2.59" for 2 YEAR STORM event
Inflow = 0.26 cfs @ 12.09 hrs, Volume= 0.020 af
Outflow = 0.26 cfs @ 12.09 hrs, Volume= 0.020 af, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.42 fps, Min. Travel Time= 0.3 min
Avg. Velocity= 1.32 fps, Avg. Travel Time= 0.8 min

Peak Storage= 5 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.21'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.73 cfs

6.0" Round Pipe
n= 0.010 PVC, smooth interior
Length= 60.0' Slope= 0.0100 '/
Inlet Invert= 0.00', Outlet Invert= -0.60'

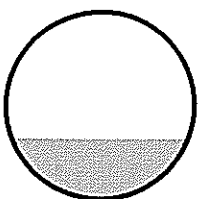
**Summary for Reach 21R: ROOF DRAIN**

Inflow Area = 0.057 ac, 100.00% Impervious, Inflow Depth > 2.59" for 2 YEAR STORM event
Inflow = 0.16 cfs @ 12.09 hrs, Volume= 0.012 af
Outflow = 0.16 cfs @ 12.10 hrs, Volume= 0.012 af, Atten= 1%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.99 fps, Min. Travel Time= 0.3 min
Avg. Velocity= 1.14 fps, Avg. Travel Time= 0.9 min

Peak Storage= 3 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.16'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.73 cfs

6.0" Round Pipe
n= 0.010
Length= 60.0' Slope= 0.0100 '/
Inlet Invert= 0.00', Outlet Invert= -0.60'



PARK DANFORTH PREDEVELOPMENT*Type III 24-hr 2 YEAR STORM Rainfall=3.00"*

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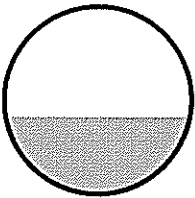
Summary for Reach 22R: ROOF DRAIN

Inflow Area = 0.090 ac, 100.00% Impervious, Inflow Depth > 2.59" for 2 YEAR STORM event
Inflow = 0.25 cfs @ 12.09 hrs, Volume= 0.019 af
Outflow = 0.25 cfs @ 12.09 hrs, Volume= 0.019 af, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.38 fps, Min. Travel Time= 0.3 min
Avg. Velocity= 1.31 fps, Avg. Travel Time= 0.8 min

Peak Storage= 5 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.20'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.73 cfs

6.0" Round Pipe
n= 0.010
Length= 60.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -0.60'

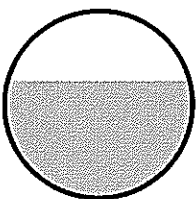
**Summary for Reach 23R: ROOF DRAIN**

Inflow Area = 0.184 ac, 100.00% Impervious, Inflow Depth > 2.59" for 2 YEAR STORM event
Inflow = 0.52 cfs @ 12.09 hrs, Volume= 0.040 af
Outflow = 0.52 cfs @ 12.09 hrs, Volume= 0.040 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.03 fps, Min. Travel Time= 0.1 min
Avg. Velocity= 1.62 fps, Avg. Travel Time= 0.2 min

Peak Storage= 3 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.31'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.73 cfs

6.0" Round Pipe
n= 0.010
Length= 20.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -0.20'



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Summary for Reach 24R: ROOF DRAIN

Inflow Area = 0.163 ac, 100.00% Impervious, Inflow Depth > 2.59" for 2 YEAR STORM event
Inflow = 0.46 cfs @ 12.09 hrs, Volume= 0.035 af
Outflow = 0.46 cfs @ 12.09 hrs, Volume= 0.035 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.93 fps, Min. Travel Time= 0.1 min

Avg. Velocity= 1.56 fps, Avg. Travel Time= 0.2 min

Peak Storage= 2 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.29'

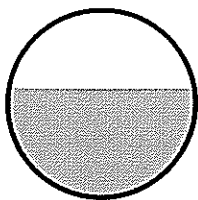
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.73 cfs

6.0" Round Pipe

n= 0.010

Length= 15.0' Slope= 0.0100 '/'

Inlet Invert= 0.00', Outlet Invert= -0.15'

**Summary for Reach 25R: ROOF DRAIN**

Inflow Area = 0.127 ac, 100.00% Impervious, Inflow Depth > 2.59" for 2 YEAR STORM event
Inflow = 0.36 cfs @ 12.09 hrs, Volume= 0.028 af
Outflow = 0.36 cfs @ 12.09 hrs, Volume= 0.027 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.70 fps, Min. Travel Time= 0.1 min

Avg. Velocity= 1.45 fps, Avg. Travel Time= 0.3 min

Peak Storage= 3 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.25'

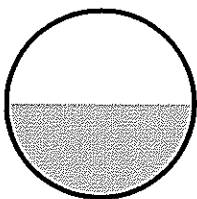
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.73 cfs

6.0" Round Pipe

n= 0.010

Length= 30.0' Slope= 0.0100 '/'

Inlet Invert= 0.00', Outlet Invert= -0.30'



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Summary for Pond 2P: SD CB2-CB3

Inflow Area = 0.319 ac, 13.75% Impervious, Inflow Depth > 0.43" for 2 YEAR STORM event
 Inflow = 0.10 cfs @ 12.24 hrs, Volume= 0.011 af
 Outflow = 0.10 cfs @ 12.24 hrs, Volume= 0.011 af, Atten= 0%, Lag= 0.3 min
 Primary = 0.10 cfs @ 12.24 hrs, Volume= 0.011 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 118.21' @ 12.24 hrs Surf.Area= 12 sf Storage= 2 cf

Plug-Flow detention time= 0.9 min calculated for 0.011 af (100% of inflow)
 Center-of-Mass det. time= 0.5 min (854.7 - 854.2)

Volume	Invert	Avail.Storage	Storage Description
#1	118.00'	98 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
118.00	12	0	0
122.60	12	55	55
123.00	200	42	98

Device	Routing	Invert	Outlet Devices
#1	Primary	118.00'	8.0" Round Culvert L= 136.0' Ke= 0.500 Inlet / Outlet Invert= 118.00' / 117.60' S= 0.0029 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.10 cfs @ 12.24 hrs HW=118.21' (Free Discharge)
 1=Culvert (Barrel Controls 0.10 cfs @ 1.62 fps)

Summary for Pond 3P: SD CB3-CB4

Inflow Area = 0.731 ac, 57.75% Impervious, Inflow Depth > 1.48" for 2 YEAR STORM event
 Inflow = 1.04 cfs @ 12.13 hrs, Volume= 0.090 af
 Outflow = 1.04 cfs @ 12.13 hrs, Volume= 0.090 af, Atten= 0%, Lag= 0.1 min
 Primary = 1.04 cfs @ 12.13 hrs, Volume= 0.090 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 118.29' @ 12.13 hrs Surf.Area= 12 sf Storage= 9 cf

Plug-Flow detention time= 0.5 min calculated for 0.090 af (100% of inflow)
 Center-of-Mass det. time= 0.4 min (769.5 - 769.1)

Volume	Invert	Avail.Storage	Storage Description
#1	117.50'	119 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
117.50	12	0	0
125.82	12	100	100
126.00	200	19	119

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Device	Routing	Invert	Outlet Devices
#1	Primary	117.50'	12.0" Round Culvert L= 73.0' Ke= 0.500 Inlet / Outlet Invert= 117.50' / 117.50' S= 0.0000 ' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=1.02 cfs @ 12.13 hrs HW=118.28' (Free Discharge)↑**1=Culvert** (Barrel Controls 1.02 cfs @ 2.15 fps)**Summary for Pond 4P: SD CB4-CB5**

Inflow Area = 1.074 ac, 68.26% Impervious, Inflow Depth > 1.71" for 2 YEAR STORM event
 Inflow = 1.89 cfs @ 12.11 hrs, Volume= 0.153 af
 Outflow = 1.89 cfs @ 12.11 hrs, Volume= 0.153 af, Atten= 0%, Lag= 0.1 min
 Primary = 1.89 cfs @ 12.11 hrs, Volume= 0.153 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 118.17' @ 12.11 hrs Surf.Area= 12 sf Storage= 9 cf

Plug-Flow detention time= 0.2 min calculated for 0.153 af (100% of inflow)

Center-of-Mass det. time= 0.1 min (765.5 - 765.4)

Volume	Invert	Avail.Storage	Storage Description
#1	117.40'	350 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
117.40	12	0	0
125.50	12	97	97
126.00	1,000	253	350

Device	Routing	Invert	Outlet Devices
#1	Primary	117.40'	12.0" Round Culvert L= 54.0' Ke= 0.500 Inlet / Outlet Invert= 117.40' / 117.00' S= 0.0074 ' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=1.86 cfs @ 12.11 hrs HW=118.17' (Free Discharge)↑**1=Culvert** (Barrel Controls 1.86 cfs @ 3.98 fps)**Summary for Pond 5P: SD CB5-CB6**

Inflow Area = 1.287 ac, 72.98% Impervious, Inflow Depth > 1.84" for 2 YEAR STORM event
 Inflow = 2.47 cfs @ 12.10 hrs, Volume= 0.198 af
 Outflow = 2.47 cfs @ 12.11 hrs, Volume= 0.197 af, Atten= 0%, Lag= 0.1 min
 Primary = 2.47 cfs @ 12.11 hrs, Volume= 0.197 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 117.82' @ 12.10 hrs Surf.Area= 12 sf Storage= 11 cf

Plug-Flow detention time= 0.2 min calculated for 0.197 af (100% of inflow)

Center-of-Mass det. time= 0.1 min (761.2 - 761.1)

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Volume	Invert	Avail.Storage	Storage Description
#1	116.90'	187 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
116.90	12	0	0
126.00	12	109	109
126.50	300	78	187

Device	Routing	Invert	Outlet Devices
#1	Primary	116.90'	12.0" Round Culvert L= 70.0' Ke= 0.500 Inlet / Outlet Invert= 116.90' / 116.00' S= 0.0129 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=2.45 cfs @ 12.11 hrs HW=117.82' (Free Discharge)

1=Culvert (Inlet Controls 2.45 cfs @ 3.26 fps)

Summary for Pond 9P: SD DMH1-DMH2

Inflow Area = 1.796 ac, 78.72% Impervious, Inflow Depth > 2.01" for 2 YEAR STORM event
 Inflow = 3.54 cfs @ 12.14 hrs, Volume= 0.300 af
 Outflow = 3.73 cfs @ 12.11 hrs, Volume= 0.300 af, Atten= 0%, Lag= 0.0 min
 Discarded = 1.60 cfs @ 12.11 hrs, Volume= 0.018 af
 Primary = 2.12 cfs @ 12.10 hrs, Volume= 0.282 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 119.98' @ 12.10 hrs Surf.Area= 28 sf Storage= 536 cf

Plug-Flow detention time= 2.6 min calculated for 0.300 af (100% of inflow)
 Center-of-Mass det. time= 2.4 min (759.8 - 757.4)

Volume	Invert	Avail.Storage	Storage Description
#1	114.70'	273 cf	6.00'D x 9.66'H Vertical Cone/Cylinder
#2	114.70'	110 cf	24.0" D x 35.0'L Pipe Storage S= 0.0030 '/'
#3	115.00'	276 cf	24.0" D x 88.0'L Pipe Storage
		660 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Device 2	114.70'	6.0" Vert. Orifice/Grate C= 0.600
#2	Primary	114.70'	15.0" Round Culvert L= 24.0' Ke= 0.500 Inlet / Outlet Invert= 114.70' / 114.50' S= 0.0083 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf
#3	Discarded	119.70'	3.1' long x 1.00' rise Sharp-Crested Rectangular Weir 0 End Contraction(s) 5.0' Crest Height
#4	Discarded	121.00'	3.1' long x 1.00' rise Sharp-Crested Rectangular Weir 0 End Contraction(s) 7.0' Crest Height

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Discarded OutFlow Max=1.38 cfs @ 12.11 hrs HW=119.96' (Free Discharge)

↑**3=Sharp-Crested Rectangular Weir** (Weir Controls 1.38 cfs @ 1.69 fps)

└**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Primary OutFlow Max=2.12 cfs @ 12.10 hrs HW=119.98' (Free Discharge)

↑**2=Culvert** (Passes 2.12 cfs of 12.75 cfs potential flow)

└**1=Orifice/Grate** (Orifice Controls 2.12 cfs @ 10.80 fps)

PARK DANFORTH PREDEVELOPMENT

Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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Summary for Subcatchment 1S: SA1

Runoff = 0.20 cfs @ 12.20 hrs, Volume= 0.017 af, Depth> 1.39"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type III 24-hr 10 YEAR STORM Rainfall=4.70"

Area (sf)	CN	Description
910	98	Paved parking, HSG D
5,562	61	>75% Grass cover, Good, HSG B
6,472	66	Weighted Average
5,562		85.94% Pervious Area
910		14.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9	60	0.0100	0.08		Sheet Flow, LAWN
					Grass: Dense n= 0.240 P2= 3.00"

Summary for Subcatchment 2S: SA2

Runoff = 0.21 cfs @ 12.16 hrs, Volume= 0.017 af, Depth> 1.20"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type III 24-hr 10 YEAR STORM Rainfall=4.70"

Area (sf)	CN	Description
1,000	98	Unconnected pavement, HSG D
6,421	61	>75% Grass cover, Good, HSG B
7,421	66	Weighted Average, UI Adjusted CN = 63
6,421		86.52% Pervious Area
1,000		13.48% Impervious Area
1,000		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	60	0.0200	0.10		Sheet Flow, LAWN
					Grass: Dense n= 0.240 P2= 3.00"

Summary for Subcatchment 3S: SA3

Runoff = 1.22 cfs @ 12.13 hrs, Volume= 0.100 af, Depth> 3.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type III 24-hr 10 YEAR STORM Rainfall=4.70"

PARK DANFORTH PREDEVELOPMENT

Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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Area (sf)	CN	Description
12,414	98	Paved parking, HSG D
1,116	61	>75% Grass cover, Good, HSG B
350	39	>75% Grass cover, Good, HSG A
13,880	94	Weighted Average
1,466		10.56% Pervious Area
12,414		89.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	35	0.0100	0.07		Sheet Flow, LAWN
					Grass: Dense n= 0.240 P2= 3.00"
1.4	60	0.0050	0.69		Sheet Flow, PAVEMENT
					Smooth surfaces n= 0.011 P2= 3.00"
9.8	95	Total			

Summary for Subcatchment 4S: SA4

Runoff = 1.21 cfs @ 12.09 hrs, Volume= 0.088 af, Depth> 3.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.70"

Area (sf)	CN	Description
800	61	>75% Grass cover, Good, HSG B
600	39	>75% Grass cover, Good, HSG A
11,043	98	Paved parking, HSG D
12,443	93	Weighted Average
1,400		11.25% Pervious Area
11,043		88.75% Impervious Area

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

Summary for Subcatchment 5S: SA5

Runoff = 0.55 cfs @ 12.09 hrs, Volume= 0.041 af, Depth> 3.98"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.70"

Area (sf)	CN	Description
5,100	98	Paved parking, HSG D
300	61	>75% Grass cover, Good, HSG B
5,400	96	Weighted Average
300		5.56% Pervious Area
5,100		94.44% Impervious Area

PARK DANFORTH PREDEVELOPMENT

Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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

Summary for Subcatchment 7S: SA7

Runoff = 0.03 cfs @ 12.10 hrs, Volume= 0.002 af, Depth> 1.08"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type III 24-hr 10 YEAR STORM Rainfall=4.70"

Area (sf)	CN	Description
1,000	61	>75% Grass cover, Good, HSG B
1,000		100.00% Pervious Area

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

Summary for Subcatchment 8S: SA8

Runoff = 0.01 cfs @ 12.10 hrs, Volume= 0.001 af, Depth> 1.08"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type III 24-hr 10 YEAR STORM Rainfall=4.70"

Area (sf)	CN	Description
500	61	>75% Grass cover, Good, HSG B
500		100.00% Pervious Area

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

Summary for Subcatchment 9S: SA9

Runoff = 0.24 cfs @ 12.09 hrs, Volume= 0.016 af, Depth> 2.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type III 24-hr 10 YEAR STORM Rainfall=4.70"

Area (sf)	CN	Description
1,700	98	Paved parking, HSG D
1,690	61	>75% Grass cover, Good, HSG B
3,390	80	Weighted Average
1,690		49.85% Pervious Area
1,700		50.15% Impervious Area

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

Summary for Subcatchment 10S: SA10

Runoff = 0.99 cfs @ 12.04 hrs, Volume= 0.066 af, Depth> 3.89"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.70"

Area (sf)	CN	Description
8,272	98	Paved parking, HSG D
600	61	>75% Grass cover, Good, HSG B
8,872	95	Weighted Average
600		6.76% Pervious Area
8,272		93.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	150	0.0100	1.09		Sheet Flow, PAVEMENT Smooth surfaces n= 0.011 P2= 3.00"
0.4	65	0.0200	2.87		Shallow Concentrated Flow, PAVEMENT Paved Kv= 20.3 fps
2.7	215	Total			

Summary for Subcatchment 20S: SA20 ROOF

Runoff = 0.42 cfs @ 12.09 hrs, Volume= 0.032 af, Depth> 4.15"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.70"

Area (sf)	CN	Description
4,060	98	Roofs, HSG D
4,060		100.00% Impervious Area

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

Summary for Subcatchment 21S: SA21 ROOF

Runoff = 0.26 cfs @ 12.09 hrs, Volume= 0.020 af, Depth> 4.15"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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Area (sf)	CN	Description
2,500	98	Roofs, HSG D
2,500		100.00% Impervious Area

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

Summary for Subcatchment 22S: SA22 ROOF

Runoff = 0.40 cfs @ 12.09 hrs, Volume= 0.031 af, Depth> 4.15"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.70"

Area (sf)	CN	Description
3,900	98	Roofs, HSG D
3,900		100.00% Impervious Area

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

Summary for Subcatchment 23S: SA23 ROOF

Runoff = 0.83 cfs @ 12.09 hrs, Volume= 0.064 af, Depth> 4.15"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.70"

Area (sf)	CN	Description
8,020	98	Roofs, HSG D
8,020		100.00% Impervious Area

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

Summary for Subcatchment 24S: SA24 ROOF

Runoff = 0.73 cfs @ 12.09 hrs, Volume= 0.056 af, Depth> 4.15"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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Area (sf)	CN	Description
7,100	98	Roofs, HSG D
7,100		100.00% Impervious Area

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

Summary for Subcatchment 25S: SA25 ROOF

Runoff = 0.57 cfs @ 12.09 hrs, Volume= 0.044 af, Depth> 4.15"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.70"

Area (sf)	CN	Description
5,550	98	Roofs, HSG D
5,550		100.00% Impervious Area

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

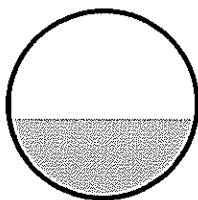
Summary for Reach 1R: SD CB1-CB2

Inflow Area = 0.149 ac, 14.06% Impervious, Inflow Depth > 1.39" for 10 YEAR STORM event
 Inflow = 0.20 cfs @ 12.20 hrs, Volume= 0.017 af
 Outflow = 0.20 cfs @ 12.22 hrs, Volume= 0.017 af, Atten= 1%, Lag= 1.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 2.54 fps, Min. Travel Time= 0.7 min
 Avg. Velocity= 1.19 fps, Avg. Travel Time= 1.5 min

Peak Storage= 9 cf @ 12.21 hrs
 Average Depth at Peak Storage= 0.21'
 Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.54 cfs

6.0" Round Pipe
 n= 0.010
 Length= 110.0' Slope= 0.0055 '/'
 Inlet Invert= 118.60', Outlet Invert= 118.00'



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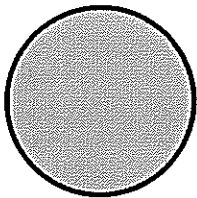
Summary for Reach 6R: SD CB6-CB7

Inflow Area = 1.634 ac, 78.72% Impervious, Inflow Depth > 3.42" for 10 YEAR STORM event
Inflow = 5.71 cfs @ 12.10 hrs, Volume= 0.466 af
Outflow = 5.15 cfs @ 12.18 hrs, Volume= 0.466 af, Atten= 10%, Lag= 4.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.65 fps, Min. Travel Time= 0.9 min
Avg. Velocity= 2.07 fps, Avg. Travel Time= 2.0 min

Peak Storage= 318 cf @ 12.13 hrs
Average Depth at Peak Storage= 1.25'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 5.01 cfs

15.0" Round Pipe
n= 0.010
Length= 253.0' Slope= 0.0036 '/
Inlet Invert= 116.00', Outlet Invert= 115.10'

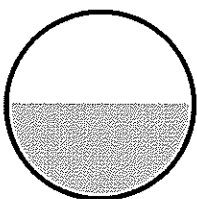
**Summary for Reach 7R: SD CB7-CB8**

Inflow Area = 1.657 ac, 77.63% Impervious, Inflow Depth > 3.39" for 10 YEAR STORM event
Inflow = 5.17 cfs @ 12.18 hrs, Volume= 0.468 af
Outflow = 5.12 cfs @ 12.18 hrs, Volume= 0.467 af, Atten= 1%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.17 fps, Min. Travel Time= 0.5 min
Avg. Velocity= 1.31 fps, Avg. Travel Time= 1.1 min

Peak Storage= 142 cf @ 12.18 hrs
Average Depth at Peak Storage= 1.02'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 9.91 cfs

24.0" Round Pipe
n= 0.010
Length= 88.0' Slope= 0.0011 '/
Inlet Invert= 115.10', Outlet Invert= 115.00'



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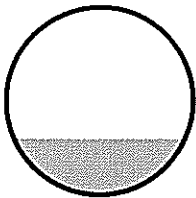
Summary for Reach 8R: SD CB8-DMH1

Inflow Area = 1.669 ac, 77.10% Impervious, Inflow Depth > 3.37" for 10 YEAR STORM event
Inflow = 5.13 cfs @ 12.18 hrs, Volume= 0.469 af
Outflow = 5.12 cfs @ 12.18 hrs, Volume= 0.468 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.63 fps, Min. Travel Time= 0.1 min
Avg. Velocity= 2.66 fps, Avg. Travel Time= 0.2 min

Peak Storage= 27 cf @ 12.18 hrs
Average Depth at Peak Storage= 0.59'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 27.23 cfs

24.0" Round Pipe
n= 0.010
Length= 35.0' Slope= 0.0086 '/
Inlet Invert= 115.00', Outlet Invert= 114.70'

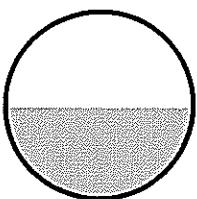
**Summary for Reach 9R: SD CB10-DMH2**

Inflow Area = 0.281 ac, 81.32% Impervious, Inflow Depth > 3.49" for 10 YEAR STORM event
Inflow = 1.17 cfs @ 12.06 hrs, Volume= 0.082 af
Outflow = 1.13 cfs @ 12.07 hrs, Volume= 0.082 af, Atten= 3%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.05 fps, Min. Travel Time= 0.4 min
Avg. Velocity= 1.15 fps, Avg. Travel Time= 1.0 min

Peak Storage= 27 cf @ 12.07 hrs
Average Depth at Peak Storage= 0.49'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.44 cfs

12.0" Round Pipe
n= 0.010
Length= 72.0' Slope= 0.0028 '/
Inlet Invert= 115.20', Outlet Invert= 115.00'



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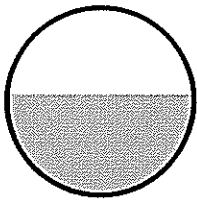
Summary for Reach 10R: SD CB10 CB9

Inflow Area = 0.204 ac, 93.24% Impervious, Inflow Depth > 3.89" for 10 YEAR STORM event
Inflow = 0.99 cfs @ 12.04 hrs, Volume= 0.066 af
Outflow = 0.95 cfs @ 12.06 hrs, Volume= 0.066 af, Atten= 4%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.29 fps, Min. Travel Time= 0.5 min
Avg. Velocity= 0.86 fps, Avg. Travel Time= 1.4 min

Peak Storage= 30 cf @ 12.05 hrs
Average Depth at Peak Storage= 0.54'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 1.75 cfs

12.0" Round Pipe
n= 0.010
Length= 70.0' Slope= 0.0014 '/
Inlet Invert= 115.30', Outlet Invert= 115.20'

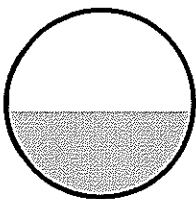
**Summary for Reach 11P: DMH2 DMH3**

Inflow Area = 2.078 ac, 79.07% Impervious, Inflow Depth > 2.96" for 10 YEAR STORM event
Inflow = 3.27 cfs @ 12.08 hrs, Volume= 0.513 af
Outflow = 3.28 cfs @ 12.07 hrs, Volume= 0.513 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 5.99 fps, Min. Travel Time= 0.1 min
Avg. Velocity= 2.98 fps, Avg. Travel Time= 0.1 min

Peak Storage= 13 cf @ 12.07 hrs
Average Depth at Peak Storage= 0.57'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 7.67 cfs

15.0" Round Pipe
n= 0.010
Length= 24.0' Slope= 0.0083 '/
Inlet Invert= 115.00', Outlet Invert= 114.80'



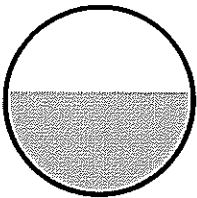
Summary for Reach 20R: ROOF DRAIN

Inflow Area = 0.093 ac, 100.00% Impervious, Inflow Depth > 4.15" for 10 YEAR STORM event
Inflow = 0.42 cfs @ 12.09 hrs, Volume= 0.032 af
Outflow = 0.41 cfs @ 12.09 hrs, Volume= 0.032 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.84 fps, Min. Travel Time= 0.3 min
Avg. Velocity= 1.53 fps, Avg. Travel Time= 0.7 min

Peak Storage= 7 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.27'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.73 cfs

6.0" Round Pipe
n= 0.010 PVC, smooth interior
Length= 60.0' Slope= 0.0100 '/
Inlet Invert= 0.00', Outlet Invert= -0.60'

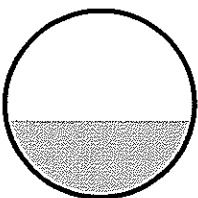
**Summary for Reach 21R: ROOF DRAIN**

Inflow Area = 0.057 ac, 100.00% Impervious, Inflow Depth > 4.15" for 10 YEAR STORM event
Inflow = 0.26 cfs @ 12.09 hrs, Volume= 0.020 af
Outflow = 0.26 cfs @ 12.09 hrs, Volume= 0.020 af, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.39 fps, Min. Travel Time= 0.3 min
Avg. Velocity= 1.32 fps, Avg. Travel Time= 0.8 min

Peak Storage= 5 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.21'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.73 cfs

6.0" Round Pipe
n= 0.010
Length= 60.0' Slope= 0.0100 '/
Inlet Invert= 0.00', Outlet Invert= -0.60'



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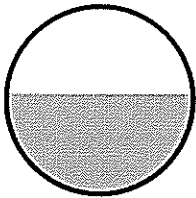
Summary for Reach 22R: ROOF DRAIN

Inflow Area = 0.090 ac, 100.00% Impervious, Inflow Depth > 4.15" for 10 YEAR STORM event
Inflow = 0.40 cfs @ 12.09 hrs, Volume= 0.031 af
Outflow = 0.40 cfs @ 12.09 hrs, Volume= 0.031 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.80 fps, Min. Travel Time= 0.3 min
Avg. Velocity= 1.51 fps, Avg. Travel Time= 0.7 min

Peak Storage= 6 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.27'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.73 cfs

6.0" Round Pipe
n= 0.010
Length= 60.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -0.60'

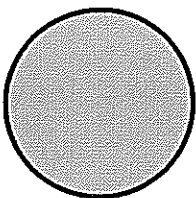
**Summary for Reach 23R: ROOF DRAIN**

Inflow Area = 0.184 ac, 100.00% Impervious, Inflow Depth > 4.15" for 10 YEAR STORM event
Inflow = 0.83 cfs @ 12.09 hrs, Volume= 0.064 af
Outflow = 0.75 cfs @ 12.05 hrs, Volume= 0.064 af, Atten= 9%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.23 fps, Min. Travel Time= 0.1 min
Avg. Velocity= 1.87 fps, Avg. Travel Time= 0.2 min

Peak Storage= 4 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.50'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.73 cfs

6.0" Round Pipe
n= 0.010
Length= 20.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -0.20'



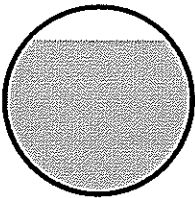
Summary for Reach 24R: ROOF DRAIN

Inflow Area = 0.163 ac, 100.00% Impervious, Inflow Depth > 4.15" for 10 YEAR STORM event
Inflow = 0.73 cfs @ 12.09 hrs, Volume= 0.056 af
Outflow = 0.73 cfs @ 12.09 hrs, Volume= 0.056 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.24 fps, Min. Travel Time= 0.1 min
Avg. Velocity= 1.80 fps, Avg. Travel Time= 0.1 min

Peak Storage= 3 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.41'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.73 cfs

6.0" Round Pipe
n= 0.010
Length= 15.0' Slope= 0.0100 '/
Inlet Invert= 0.00', Outlet Invert= -0.15'

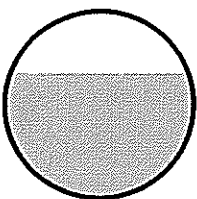
**Summary for Reach 25R: ROOF DRAIN**

Inflow Area = 0.127 ac, 100.00% Impervious, Inflow Depth > 4.15" for 10 YEAR STORM event
Inflow = 0.57 cfs @ 12.09 hrs, Volume= 0.044 af
Outflow = 0.57 cfs @ 12.09 hrs, Volume= 0.044 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.11 fps, Min. Travel Time= 0.1 min
Avg. Velocity= 1.68 fps, Avg. Travel Time= 0.3 min

Peak Storage= 4 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.33'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.73 cfs

6.0" Round Pipe
n= 0.010
Length= 30.0' Slope= 0.0100 '/
Inlet Invert= 0.00', Outlet Invert= -0.30'



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Summary for Pond 2P: SD CB2-CB3

Inflow Area = 0.319 ac, 13.75% Impervious, Inflow Depth > 1.28" for 10 YEAR STORM event
 Inflow = 0.39 cfs @ 12.18 hrs, Volume= 0.034 af
 Outflow = 0.39 cfs @ 12.19 hrs, Volume= 0.034 af, Atten= 0%, Lag= 0.2 min
 Primary = 0.39 cfs @ 12.19 hrs, Volume= 0.034 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 118.43' @ 12.19 hrs Surf.Area= 12 sf Storage= 5 cf

Plug-Flow detention time= 0.5 min calculated for 0.034 af (100% of inflow)

Center-of-Mass det. time= 0.3 min (826.5 - 826.2)

Volume	Invert	Avail.Storage	Storage Description
#1	118.00'	98 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
118.00	12	0	0
122.60	12	55	55
123.00	200	42	98

Device	Routing	Invert	Outlet Devices
#1	Primary	118.00'	8.0" Round Culvert L= 136.0' Ke= 0.500 Inlet / Outlet Invert= 118.00' / 117.60' S= 0.0029 ' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.39 cfs @ 12.19 hrs HW=118.43' (Free Discharge)

1=Culvert (Barrel Controls 0.39 cfs @ 2.33 fps)

Summary for Pond 3P: SD CB3-CB4

Inflow Area = 0.731 ac, 57.75% Impervious, Inflow Depth > 2.74" for 10 YEAR STORM event
 Inflow = 1.95 cfs @ 12.13 hrs, Volume= 0.167 af
 Outflow = 1.95 cfs @ 12.13 hrs, Volume= 0.167 af, Atten= 0%, Lag= 0.1 min
 Primary = 1.95 cfs @ 12.13 hrs, Volume= 0.167 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 118.65' @ 12.13 hrs Surf.Area= 12 sf Storage= 14 cf

Plug-Flow detention time= 0.4 min calculated for 0.167 af (100% of inflow)

Center-of-Mass det. time= 0.2 min (764.7 - 764.4)

Volume	Invert	Avail.Storage	Storage Description
#1	117.50'	119 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
117.50	12	0	0
125.82	12	100	100
126.00	200	19	119

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Device	Routing	Invert	Outlet Devices
#1	Primary	117.50'	12.0" Round Culvert L= 73.0' Ke= 0.500 Inlet / Outlet Invert= 117.50' / 117.50' S= 0.0000 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=1.92 cfs @ 12.13 hrs HW=118.64' (Free Discharge)↑**1=Culvert** (Barrel Controls 1.92 cfs @ 2.68 fps)**Summary for Pond 4P: SD CB4-CB5**

Inflow Area = 1.074 ac, 68.26% Impervious, Inflow Depth > 3.07" for 10 YEAR STORM event
 Inflow = 3.34 cfs @ 12.11 hrs, Volume= 0.274 af
 Outflow = 3.33 cfs @ 12.11 hrs, Volume= 0.274 af, Atten= 0%, Lag= 0.1 min
 Primary = 3.33 cfs @ 12.11 hrs, Volume= 0.274 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 118.68' @ 12.11 hrs Surf.Area= 12 sf Storage= 15 cf

Plug-Flow detention time= 0.2 min calculated for 0.273 af (100% of inflow)

Center-of-Mass det. time= 0.1 min (758.9 - 758.8)

Volume	Invert	Avail.Storage	Storage Description
#1	117.40'	350 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
117.40	12	0	0
125.50	12	97	97
126.00	1,000	253	350

Device	Routing	Invert	Outlet Devices
#1	Primary	117.40'	12.0" Round Culvert L= 54.0' Ke= 0.500 Inlet / Outlet Invert= 117.40' / 117.00' S= 0.0074 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=3.27 cfs @ 12.11 hrs HW=118.65' (Free Discharge)↑**1=Culvert** (Inlet Controls 3.27 cfs @ 4.17 fps)**Summary for Pond 5P: SD CB5-CB6**

Inflow Area = 1.287 ac, 72.98% Impervious, Inflow Depth > 3.23" for 10 YEAR STORM event
 Inflow = 4.26 cfs @ 12.11 hrs, Volume= 0.346 af
 Outflow = 4.26 cfs @ 12.11 hrs, Volume= 0.346 af, Atten= 0%, Lag= 0.1 min
 Primary = 4.26 cfs @ 12.11 hrs, Volume= 0.346 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 118.67' @ 12.11 hrs Surf.Area= 12 sf Storage= 21 cf

Plug-Flow detention time= 0.2 min calculated for 0.345 af (100% of inflow)

Center-of-Mass det. time= 0.1 min (755.1 - 755.0)

PARK DANFORTH PREDEVELOPMENT

Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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Volume	Invert	Avail.Storage	Storage Description
#1	116.90'	187 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
116.90	12	0	0
126.00	12	109	109
126.50	300	78	187

Device	Routing	Invert	Outlet Devices
#1	Primary	116.90'	12.0" Round Culvert L= 70.0' Ke= 0.500 Inlet / Outlet Invert= 116.90' / 116.00' S= 0.0129 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=4.20 cfs @ 12.11 hrs HW=118.63' (Free Discharge)

1=Culvert (Inlet Controls 4.20 cfs @ 5.35 fps)

Summary for Pond 9P: SD DMH1-DMH2

Inflow Area =	1.796 ac, 78.72% Impervious, Inflow Depth > 3.42" for 10 YEAR STORM event
Inflow =	5.47 cfs @ 12.16 hrs, Volume= 0.512 af
Outflow =	5.57 cfs @ 12.15 hrs, Volume= 0.512 af, Atten= 0%, Lag= 0.0 min
Discarded =	3.40 cfs @ 12.15 hrs, Volume= 0.081 af
Primary =	2.16 cfs @ 12.15 hrs, Volume= 0.431 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 120.18' @ 12.15 hrs Surf.Area= 28 sf Storage= 541 cf

Plug-Flow detention time= 2.3 min calculated for 0.512 af (100% of inflow)

Center-of-Mass det. time= 2.1 min (754.5 - 752.4)

Volume	Invert	Avail.Storage	Storage Description
#1	114.70'	273 cf	6.00'D x 9.66'H Vertical Cone/Cylinder
#2	114.70'	110 cf	24.0" D x 35.0'L Pipe Storage S= 0.0030 '/'
#3	115.00'	276 cf	24.0" D x 88.0'L Pipe Storage
			660 cf Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Device 2	114.70'	6.0" Vert. Orifice/Grate C= 0.600
#2	Primary	114.70'	15.0" Round Culvert L= 24.0' Ke= 0.500 Inlet / Outlet Invert= 114.70' / 114.50' S= 0.0083 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf
#3	Discarded	119.70'	3.1' long x 1.00' rise Sharp-Crested Rectangular Weir 0 End Contraction(s) 5.0' Crest Height
#4	Discarded	121.00'	3.1' long x 1.00' rise Sharp-Crested Rectangular Weir 0 End Contraction(s) 7.0' Crest Height

PARK DANFORTH PREDEVELOPMENT

Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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Discarded OutFlow Max=3.37 cfs @ 12.15 hrs HW=120.18' (Free Discharge)

↑**3=Sharp-Crested Rectangular Weir** (Weir Controls 3.37 cfs @ 2.28 fps)

└**4=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Primary OutFlow Max=2.16 cfs @ 12.15 hrs HW=120.18' (Free Discharge)

↑**2=Culvert** (Passes 2.16 cfs of 13.01 cfs potential flow)

└**1=Orifice/Grate** (Orifice Controls 2.16 cfs @ 11.01 fps)

PARK DANFORTH PREDEVELOPMENT

Type III 24-hr 25YEAR STORM Rainfall=5.50"

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Summary for Subcatchment 1S: SA1

Runoff = 0.28 cfs @ 12.19 hrs, Volume= 0.024 af, Depth> 1.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YEAR STORM Rainfall=5.50"

Area (sf)	CN	Description
910	98	Paved parking, HSG D
5,562	61	>75% Grass cover, Good, HSG B
6,472	66	Weighted Average
5,562		85.94% Pervious Area
910		14.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9	60	0.0100	0.08		Sheet Flow, LAWN Grass: Dense n= 0.240 P2= 3.00"

Summary for Subcatchment 2S: SA2

Runoff = 0.30 cfs @ 12.15 hrs, Volume= 0.024 af, Depth> 1.67"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YEAR STORM Rainfall=5.50"

Area (sf)	CN	Description
1,000	98	Unconnected pavement, HSG D
6,421	61	>75% Grass cover, Good, HSG B
7,421	66	Weighted Average, UI Adjusted CN = 63
6,421		86.52% Pervious Area
1,000		13.48% Impervious Area
1,000		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	60	0.0200	0.10		Sheet Flow, LAWN Grass: Dense n= 0.240 P2= 3.00"

Summary for Subcatchment 3S: SA3

Runoff = 1.44 cfs @ 12.13 hrs, Volume= 0.120 af, Depth> 4.52"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YEAR STORM Rainfall=5.50"

PARK DANFORTH PREDEVELOPMENT

Type III 24-hr 25YEAR STORM Rainfall=5.50"

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Area (sf)	CN	Description
12,414	98	Paved parking, HSG D
1,116	61	>75% Grass cover, Good, HSG B
350	39	>75% Grass cover, Good, HSG A
13,880	94	Weighted Average
1,466		10.56% Pervious Area
12,414		89.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	35	0.0100	0.07		Sheet Flow, LAWN
					Grass: Dense n= 0.240 P2= 3.00"
1.4	60	0.0050	0.69		Sheet Flow, PAVEMENT
					Smooth surfaces n= 0.011 P2= 3.00"
9.8	95	Total			

Summary for Subcatchment 4S: SA4

Runoff = 1.43 cfs @ 12.09 hrs, Volume= 0.105 af, Depth> 4.43"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YEAR STORM Rainfall=5.50"

Area (sf)	CN	Description
800	61	>75% Grass cover, Good, HSG B
600	39	>75% Grass cover, Good, HSG A
11,043	98	Paved parking, HSG D
12,443	93	Weighted Average
1,400		11.25% Pervious Area
11,043		88.75% Impervious Area

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

Summary for Subcatchment 5S: SA5

Runoff = 0.64 cfs @ 12.09 hrs, Volume= 0.049 af, Depth> 4.71"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YEAR STORM Rainfall=5.50"

Area (sf)	CN	Description
5,100	98	Paved parking, HSG D
300	61	>75% Grass cover, Good, HSG B
5,400	96	Weighted Average
300		5.56% Pervious Area
5,100		94.44% Impervious Area

PARK DANFORTH PREDEVELOPMENT

Type III 24-hr 25YEAR STORM Rainfall=5.50"

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

Summary for Subcatchment 7S: SA7

Runoff = 0.04 cfs @ 12.10 hrs, Volume= 0.003 af, Depth> 1.53"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YEAR STORM Rainfall=5.50"

Area (sf)	CN	Description
1,000	61	>75% Grass cover, Good, HSG B
1,000		100.00% Pervious Area

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

Summary for Subcatchment 8S: SA8

Runoff = 0.02 cfs @ 12.10 hrs, Volume= 0.001 af, Depth> 1.53"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YEAR STORM Rainfall=5.50"

Area (sf)	CN	Description
500	61	>75% Grass cover, Good, HSG B
500		100.00% Pervious Area

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

Summary for Subcatchment 9S: SA9

Runoff = 0.30 cfs @ 12.09 hrs, Volume= 0.020 af, Depth> 3.12"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YEAR STORM Rainfall=5.50"

Area (sf)	CN	Description
1,700	98	Paved parking, HSG D
1,690	61	>75% Grass cover, Good, HSG B
3,390	80	Weighted Average
1,690		49.85% Pervious Area
1,700		50.15% Impervious Area

PARK DANFORTH PREDEVELOPMENT

Type III 24-hr 25YEAR STORM Rainfall=5.50"

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

Summary for Subcatchment 10S: SA10

Runoff = 1.16 cfs @ 12.04 hrs, Volume= 0.078 af, Depth> 4.62"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YEAR STORM Rainfall=5.50"

Area (sf)	CN	Description
8,272	98	Paved parking, HSG D
600	61	>75% Grass cover, Good, HSG B
8,872	95	Weighted Average
600		6.76% Pervious Area
8,272		93.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.3	150	0.0100	1.09		Sheet Flow, PAVEMENT Smooth surfaces n= 0.011 P2= 3.00"
0.4	65	0.0200	2.87		Shallow Concentrated Flow, PAVEMENT Paved Kv= 20.3 fps
2.7	215	Total			

Summary for Subcatchment 20S: SA20 ROOF

Runoff = 0.49 cfs @ 12.09 hrs, Volume= 0.038 af, Depth> 4.87"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YEAR STORM Rainfall=5.50"

Area (sf)	CN	Description
4,060	98	Roofs, HSG D
4,060		100.00% Impervious Area

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

Summary for Subcatchment 21S: SA21 ROOF

Runoff = 0.30 cfs @ 12.09 hrs, Volume= 0.023 af, Depth> 4.87"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YEAR STORM Rainfall=5.50"

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Type III 24-hr 25YEAR STORM Rainfall=5.50"

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Area (sf)	CN	Description
2,500	98	Roofs, HSG D
2,500		100.00% Impervious Area

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

Summary for Subcatchment 22S: SA22 ROOF

Runoff = 0.47 cfs @ 12.09 hrs, Volume= 0.036 af, Depth> 4.87"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YEAR STORM Rainfall=5.50"

Area (sf)	CN	Description
3,900	98	Roofs, HSG D
3,900		100.00% Impervious Area

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

Summary for Subcatchment 23S: SA23 ROOF

Runoff = 0.97 cfs @ 12.09 hrs, Volume= 0.075 af, Depth> 4.87"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YEAR STORM Rainfall=5.50"

Area (sf)	CN	Description
8,020	98	Roofs, HSG D
8,020		100.00% Impervious Area

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

Summary for Subcatchment 24S: SA24 ROOF

Runoff = 0.86 cfs @ 12.09 hrs, Volume= 0.066 af, Depth> 4.87"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YEAR STORM Rainfall=5.50"

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Type III 24-hr 25YEAR STORM Rainfall=5.50"

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Area (sf)	CN	Description
7,100	98	Roofs, HSG D
7,100		100.00% Impervious Area

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

Summary for Subcatchment 25S: SA25 ROOF

Runoff = 0.67 cfs @ 12.09 hrs, Volume= 0.052 af, Depth> 4.87"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YEAR STORM Rainfall=5.50"

Area (sf)	CN	Description
5,550	98	Roofs, HSG D
5,550		100.00% Impervious Area

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

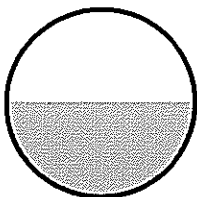
Summary for Reach 1R: SD CB1-CB2

Inflow Area = 0.149 ac, 14.06% Impervious, Inflow Depth > 1.90" for 25YEAR STORM event
 Inflow = 0.28 cfs @ 12.19 hrs, Volume= 0.024 af
 Outflow = 0.27 cfs @ 12.21 hrs, Volume= 0.024 af, Atten= 1%, Lag= 1.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 2.77 fps, Min. Travel Time= 0.7 min
 Avg. Velocity= 1.27 fps, Avg. Travel Time= 1.4 min

Peak Storage= 11 cf @ 12.20 hrs
 Average Depth at Peak Storage= 0.25'
 Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.54 cfs

6.0" Round Pipe
 n= 0.010
 Length= 110.0' Slope= 0.0055 '/'
 Inlet Invert= 118.60', Outlet Invert= 118.00'



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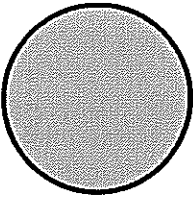
Summary for Reach 6R: SD CB6-CB7

Inflow Area = 1.634 ac, 78.72% Impervious, Inflow Depth > 4.11" for 25YEAR STORM event
Inflow = 6.57 cfs @ 12.11 hrs, Volume= 0.560 af
Outflow = 5.10 cfs @ 12.11 hrs, Volume= 0.559 af, Atten= 22%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.61 fps, Min. Travel Time= 0.9 min
Avg. Velocity= 2.18 fps, Avg. Travel Time= 1.9 min

Peak Storage= 310 cf @ 12.10 hrs
Average Depth at Peak Storage= 1.25'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 5.01 cfs

15.0" Round Pipe
n= 0.010
Length= 253.0' Slope= 0.0036 '/'
Inlet Invert= 116.00', Outlet Invert= 115.10'

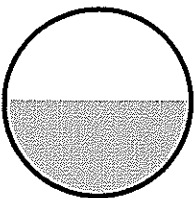
**Summary for Reach 7R: SD CB7-CB8**

Inflow Area = 1.657 ac, 77.63% Impervious, Inflow Depth > 4.07" for 25YEAR STORM event
Inflow = 5.14 cfs @ 12.11 hrs, Volume= 0.562 af
Outflow = 5.13 cfs @ 12.10 hrs, Volume= 0.562 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.19 fps, Min. Travel Time= 0.5 min
Avg. Velocity= 1.39 fps, Avg. Travel Time= 1.1 min

Peak Storage= 144 cf @ 12.11 hrs
Average Depth at Peak Storage= 1.03'
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 9.91 cfs

24.0" Round Pipe
n= 0.010
Length= 88.0' Slope= 0.0011 '/'
Inlet Invert= 115.10', Outlet Invert= 115.00'



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Summary for Reach 8R: SD CB8-DMH1

Inflow Area = 1.669 ac, 77.10% Impervious, Inflow Depth > 4.05" for 25YEAR STORM event
Inflow = 5.20 cfs @ 12.12 hrs, Volume= 0.563 af
Outflow = 5.14 cfs @ 12.10 hrs, Volume= 0.563 af, Atten= 1%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 6.66 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 2.82 fps, Avg. Travel Time= 0.2 min

Peak Storage= 27 cf @ 12.12 hrs

Average Depth at Peak Storage= 0.59'

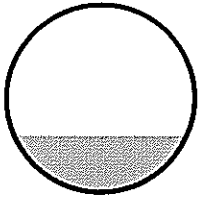
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 27.23 cfs

24.0" Round Pipe

n= 0.010

Length= 35.0' Slope= 0.0086 '/'

Inlet Invert= 115.00', Outlet Invert= 114.70'

**Summary for Reach 9R: SD CB10-DMH2**

Inflow Area = 0.281 ac, 81.32% Impervious, Inflow Depth > 4.21" for 25YEAR STORM event
Inflow = 1.40 cfs @ 12.06 hrs, Volume= 0.099 af
Outflow = 1.36 cfs @ 12.07 hrs, Volume= 0.099 af, Atten= 3%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.20 fps, Min. Travel Time= 0.4 min

Avg. Velocity = 1.22 fps, Avg. Travel Time= 1.0 min

Peak Storage= 31 cf @ 12.07 hrs

Average Depth at Peak Storage= 0.54'

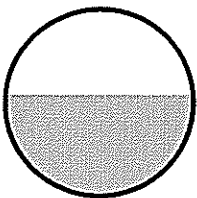
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 2.44 cfs

12.0" Round Pipe

n= 0.010

Length= 72.0' Slope= 0.0028 '/'

Inlet Invert= 115.20', Outlet Invert= 115.00'



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Type III 24-hr 25YEAR STORM Rainfall=5.50"

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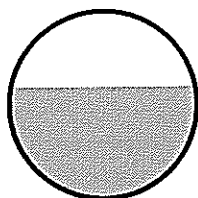
Summary for Reach 10R: SD CB10 CB9

Inflow Area = 0.204 ac, 93.24% Impervious, Inflow Depth > 4.62" for 25YEAR STORM event
Inflow = 1.16 cfs @ 12.04 hrs, Volume= 0.078 af
Outflow = 1.12 cfs @ 12.06 hrs, Volume= 0.078 af, Atten= 3%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.38 fps, Min. Travel Time= 0.5 min
Avg. Velocity= 0.91 fps, Avg. Travel Time= 1.3 min

Peak Storage= 34 cf @ 12.05 hrs
Average Depth at Peak Storage= 0.59'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 1.75 cfs

12.0" Round Pipe
n= 0.010
Length= 70.0' Slope= 0.0014 '/'
Inlet Invert= 115.30', Outlet Invert= 115.20'



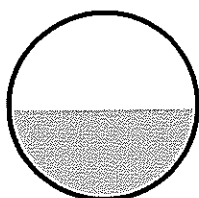
Summary for Reach 11P: DMH2 DMH3

Inflow Area = 2.078 ac, 79.07% Impervious, Inflow Depth > 3.43" for 25YEAR STORM event
Inflow = 3.52 cfs @ 12.07 hrs, Volume= 0.594 af
Outflow = 3.52 cfs @ 12.08 hrs, Volume= 0.594 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 6.10 fps, Min. Travel Time= 0.1 min
Avg. Velocity= 3.14 fps, Avg. Travel Time= 0.1 min

Peak Storage= 14 cf @ 12.08 hrs
Average Depth at Peak Storage= 0.59'
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 7.67 cfs

15.0" Round Pipe
n= 0.010
Length= 24.0' Slope= 0.0083 '/'
Inlet Invert= 115.00', Outlet Invert= 114.80'



PARK DANFORTH PREDEVELOPMENT

Type III 24-hr 25YEAR STORM Rainfall=5.50"

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Summary for Reach 20R: ROOF DRAIN

Inflow Area = 0.093 ac, 100.00% Impervious, Inflow Depth > 4.87" for 25YEAR STORM event
Inflow = 0.49 cfs @ 12.09 hrs, Volume= 0.038 af
Outflow = 0.49 cfs @ 12.09 hrs, Volume= 0.038 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.98 fps, Min. Travel Time= 0.3 min

Avg. Velocity = 1.61 fps, Avg. Travel Time= 0.6 min

Peak Storage= 7 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.30'

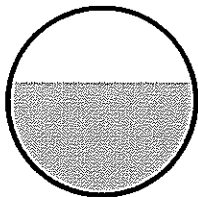
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.73 cfs

6.0" Round Pipe

n= 0.010 PVC, smooth interior

Length= 60.0' Slope= 0.0100 1'

Inlet Invert= 0.00', Outlet Invert= -0.60'

**Summary for Reach 21R: ROOF DRAIN**

Inflow Area = 0.057 ac, 100.00% Impervious, Inflow Depth > 4.87" for 25YEAR STORM event
Inflow = 0.30 cfs @ 12.09 hrs, Volume= 0.023 af
Outflow = 0.30 cfs @ 12.09 hrs, Volume= 0.023 af, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.54 fps, Min. Travel Time= 0.3 min

Avg. Velocity = 1.39 fps, Avg. Travel Time= 0.7 min

Peak Storage= 5 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.22'

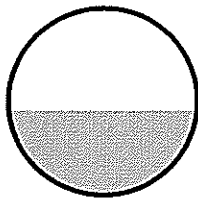
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.73 cfs

6.0" Round Pipe

n= 0.010

Length= 60.0' Slope= 0.0100 1'

Inlet Invert= 0.00', Outlet Invert= -0.60'



PARK DANFORTH PREDEVELOPMENT

Type III 24-hr 25YEAR STORM Rainfall=5.50"

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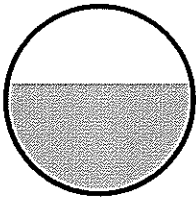
Summary for Reach 22R: ROOF DRAIN

Inflow Area = 0.090 ac, 100.00% Impervious, Inflow Depth > 4.87" for 25YEAR STORM event
Inflow = 0.47 cfs @ 12.09 hrs, Volume= 0.036 af
Outflow = 0.47 cfs @ 12.09 hrs, Volume= 0.036 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.95 fps, Min. Travel Time= 0.3 min
Avg. Velocity = 1.59 fps, Avg. Travel Time= 0.6 min

Peak Storage= 7 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.29'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.73 cfs

6.0" Round Pipe
n= 0.010
Length= 60.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -0.60'

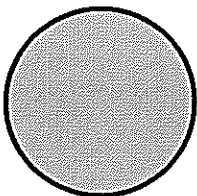
**Summary for Reach 23R: ROOF DRAIN**

Inflow Area = 0.184 ac, 100.00% Impervious, Inflow Depth > 4.87" for 25YEAR STORM event
Inflow = 0.97 cfs @ 12.09 hrs, Volume= 0.075 af
Outflow = 0.73 cfs @ 12.10 hrs, Volume= 0.075 af, Atten= 25%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.23 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.95 fps, Avg. Travel Time= 0.2 min

Peak Storage= 4 cf @ 12.05 hrs
Average Depth at Peak Storage= 0.50'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.73 cfs

6.0" Round Pipe
n= 0.010
Length= 20.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -0.20'



Summary for Reach 24R: ROOF DRAIN

Inflow Area = 0.163 ac, 100.00% Impervious, Inflow Depth > 4.87" for 25YEAR STORM event
Inflow = 0.86 cfs @ 12.09 hrs, Volume= 0.066 af
Outflow = 0.73 cfs @ 12.13 hrs, Volume= 0.066 af, Atten= 15%, Lag= 2.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 4.17 fps, Min. Travel Time= 0.1 min

Avg. Velocity= 1.89 fps, Avg. Travel Time= 0.1 min

Peak Storage= 3 cf @ 12.05 hrs

Average Depth at Peak Storage= 0.50'

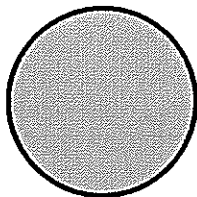
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.73 cfs

6.0" Round Pipe

n= 0.010

Length= 15.0' Slope= 0.0100 '/'

Inlet Invert= 0.00', Outlet Invert= -0.15'

**Summary for Reach 25R: ROOF DRAIN**

Inflow Area = 0.127 ac, 100.00% Impervious, Inflow Depth > 4.87" for 25YEAR STORM event
Inflow = 0.67 cfs @ 12.09 hrs, Volume= 0.052 af
Outflow = 0.67 cfs @ 12.09 hrs, Volume= 0.052 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 4.21 fps, Min. Travel Time= 0.1 min

Avg. Velocity= 1.76 fps, Avg. Travel Time= 0.3 min

Peak Storage= 5 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.38'

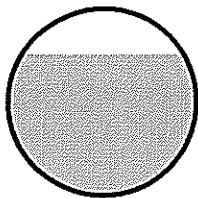
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.73 cfs

6.0" Round Pipe

n= 0.010

Length= 30.0' Slope= 0.0100 '/'

Inlet Invert= 0.00', Outlet Invert= -0.30'



Summary for Pond 2P: SD CB2-CB3

Inflow Area = 0.319 ac, 13.75% Impervious, Inflow Depth > 1.78" for 25YEAR STORM event
 Inflow = 0.56 cfs @ 12.17 hrs, Volume= 0.047 af
 Outflow = 0.56 cfs @ 12.18 hrs, Volume= 0.047 af, Atten= 1%, Lag= 0.2 min
 Primary = 0.56 cfs @ 12.18 hrs, Volume= 0.047 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 118.53' @ 12.18 hrs Surf.Area= 12 sf Storage= 6 cf

Plug-Flow detention time= 0.5 min calculated for 0.047 af (100% of inflow)
 Center-of-Mass det. time= 0.3 min (819.2 - 818.9)

Volume	Invert	Avail.Storage	Storage Description
#1	118.00'	98 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
118.00	12	0	0
122.60	12	55	55
123.00	200	42	98

Device	Routing	Invert	Outlet Devices
#1	Primary	118.00'	8.0" Round Culvert L= 136.0' Ke= 0.500 Inlet / Outlet Invert= 118.00' / 117.60' S= 0.0029 ' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.55 cfs @ 12.18 hrs HW=118.53' (Free Discharge)
 1=Culvert (Barrel Controls 0.55 cfs @ 2.54 fps)

Summary for Pond 3P: SD CB3-CB4

Inflow Area = 0.731 ac, 57.75% Impervious, Inflow Depth > 3.37" for 25YEAR STORM event
 Inflow = 2.40 cfs @ 12.13 hrs, Volume= 0.205 af
 Outflow = 2.41 cfs @ 12.14 hrs, Volume= 0.205 af, Atten= 0%, Lag= 0.2 min
 Primary = 2.41 cfs @ 12.14 hrs, Volume= 0.205 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 118.93' @ 12.13 hrs Surf.Area= 12 sf Storage= 17 cf

Plug-Flow detention time= 0.4 min calculated for 0.205 af (100% of inflow)
 Center-of-Mass det. time= 0.2 min (763.1 - 762.9)

Volume	Invert	Avail.Storage	Storage Description
#1	117.50'	119 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
117.50	12	0	0
125.82	12	100	100
126.00	200	19	119

PARK DANFORTH PREDEVELOPMENT

Type III 24-hr 25YEAR STORM Rainfall=5.50"

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Device	Routing	Invert	Outlet Devices
#1	Primary	117.50'	12.0" Round Culvert L= 73.0' Ke= 0.500 Inlet / Outlet Invert= 117.50' / 117.50' S= 0.0000 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=2.37 cfs @ 12.14 hrs HW=118.90' (Free Discharge)↑**1=Culvert** (Barrel Controls 2.37 cfs @ 3.02 fps)**Summary for Pond 4P: SD CB4-CB5**

Inflow Area = 1.074 ac, 68.26% Impervious, Inflow Depth > 3.73" for 25YEAR STORM event
 Inflow = 4.04 cfs @ 12.11 hrs, Volume= 0.334 af
 Outflow = 4.03 cfs @ 12.11 hrs, Volume= 0.334 af, Atten= 0%, Lag= 0.1 min
 Primary = 4.03 cfs @ 12.11 hrs, Volume= 0.334 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 119.04' @ 12.11 hrs Surf.Area= 12 sf Storage= 20 cf

Plug-Flow detention time= 0.2 min calculated for 0.334 af (100% of inflow)

Center-of-Mass det. time= 0.1 min (757.0 - 756.9)

Volume	Invert	Avail.Storage	Storage Description
#1	117.40'	350 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
117.40	12	0	0
125.50	12	97	97
126.00	1,000	253	350

Device	Routing	Invert	Outlet Devices
#1	Primary	117.40'	12.0" Round Culvert L= 54.0' Ke= 0.500 Inlet / Outlet Invert= 117.40' / 117.00' S= 0.0074 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=3.96 cfs @ 12.11 hrs HW=118.99' (Free Discharge)↑**1=Culvert** (Inlet Controls 3.96 cfs @ 5.04 fps)**Summary for Pond 5P: SD CB5-CB6**

Inflow Area = 1.287 ac, 72.98% Impervious, Inflow Depth > 3.90" for 25YEAR STORM event
 Inflow = 5.12 cfs @ 12.11 hrs, Volume= 0.419 af
 Outflow = 5.12 cfs @ 12.11 hrs, Volume= 0.419 af, Atten= 0%, Lag= 0.1 min
 Primary = 5.12 cfs @ 12.11 hrs, Volume= 0.419 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 119.23' @ 12.11 hrs Surf.Area= 12 sf Storage= 28 cf

Plug-Flow detention time= 0.2 min calculated for 0.419 af (100% of inflow)

Center-of-Mass det. time= 0.1 min (753.3 - 753.2)

PARK DANFORTH PREDEVELOPMENT

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Volume	Invert	Avail.Storage	Storage Description
#1	116.90'	187 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
116.90	12	0	0
126.00	12	109	109
126.50	300	78	187

Device	Routing	Invert	Outlet Devices
#1	Primary	116.90'	12.0" Round Culvert L= 70.0' Ke= 0.500 Inlet / Outlet Invert= 116.90' / 116.00' S= 0.0129 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=5.03 cfs @ 12.11 hrs HW=119.17' (Free Discharge)

1=Culvert (Inlet Controls 5.03 cfs @ 6.41 fps)

Summary for Pond 9P: SD DMH1-DMH2

Inflow Area = 1.796 ac, 78.72% Impervious, Inflow Depth > 4.11" for 25YEAR STORM event
 Inflow = 5.83 cfs @ 12.11 hrs, Volume= 0.615 af
 Outflow = 6.00 cfs @ 12.11 hrs, Volume= 0.615 af, Atten= 0%, Lag= 0.0 min
 Discarded = 3.83 cfs @ 12.11 hrs, Volume= 0.119 af
 Primary = 2.17 cfs @ 12.11 hrs, Volume= 0.496 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 120.22' @ 12.11 hrs Surf.Area= 28 sf Storage= 542 cf

Plug-Flow detention time= 2.2 min calculated for 0.613 af (100% of inflow)
 Center-of-Mass det. time= 2.1 min (753.3 - 751.2)

Volume	Invert	Avail.Storage	Storage Description
#1	114.70'	273 cf	6.00'D x 9.66'H Vertical Cone/Cylinder
#2	114.70'	110 cf	24.0" D x 35.0'L Pipe Storage S= 0.0030 '/'
#3	115.00'	276 cf	24.0" D x 88.0'L Pipe Storage
		660 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Device 2	114.70'	6.0" Vert. Orifice/Grate C= 0.600
#2	Primary	114.70'	15.0" Round Culvert L= 24.0' Ke= 0.500 Inlet / Outlet Invert= 114.70' / 114.50' S= 0.0083 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf
#3	Discarded	119.70'	3.1' long x 1.00' rise Sharp-Crested Rectangular Weir 0 End Contraction(s) 5.0' Crest Height
#4	Discarded	121.00'	3.1' long x 1.00' rise Sharp-Crested Rectangular Weir 0 End Contraction(s) 7.0' Crest Height

PARK DANFORTH PREDEVELOPMENT

Type III 24-hr 25YEAR STORM Rainfall=5.50"

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Volume	Invert	Avail.Storage	Storage Description
#1	116.90'	187 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
116.90	12	0	0
126.00	12	109	109
126.50	300	78	187

Device	Routing	Invert	Outlet Devices
#1	Primary	116.90'	12.0" Round Culvert L= 70.0' Ke= 0.500 Inlet / Outlet Invert= 116.90' / 116.00' S= 0.0129 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=5.03 cfs @ 12.11 hrs HW=119.17' (Free Discharge)

1=Culvert (Inlet Controls 5.03 cfs @ 6.41 fps)

Summary for Pond 9P: SD DMH1-DMH2

Inflow Area =	1.796 ac, 78.72% Impervious, Inflow Depth > 4.11" for 25YEAR STORM event
Inflow =	5.83 cfs @ 12.11 hrs, Volume= 0.615 af
Outflow =	6.00 cfs @ 12.11 hrs, Volume= 0.615 af, Atten= 0%, Lag= 0.0 min
Discarded =	3.83 cfs @ 12.11 hrs, Volume= 0.119 af
Primary =	2.17 cfs @ 12.11 hrs, Volume= 0.496 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 120.22' @ 12.11 hrs Surf.Area= 28 sf Storage= 542 cf

Plug-Flow detention time= 2.2 min calculated for 0.613 af (100% of inflow)

Center-of-Mass det. time= 2.1 min (753.3 - 751.2)

Volume	Invert	Avail.Storage	Storage Description
#1	114.70'	273 cf	6.00'D x 9.66'H Vertical Cone/Cylinder
#2	114.70'	110 cf	24.0" D x 35.0'L Pipe Storage S= 0.0030 '/'
#3	115.00'	276 cf	24.0" D x 88.0'L Pipe Storage
		660 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Device 2	114.70'	6.0" Vert. Orifice/Grate C= 0.600
#2	Primary	114.70'	15.0" Round Culvert L= 24.0' Ke= 0.500 Inlet / Outlet Invert= 114.70' / 114.50' S= 0.0083 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf
#3	Discarded	119.70'	3.1' long x 1.00' rise Sharp-Crested Rectangular Weir 0 End Contraction(s) 5.0' Crest Height
#4	Discarded	121.00'	3.1' long x 1.00' rise Sharp-Crested Rectangular Weir 0 End Contraction(s) 7.0' Crest Height

PARK DANFORTH PREDEVELOPMENT

Type III 24-hr 25YEAR STORM Rainfall=5.50"

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Discarded OutFlow Max=3.71 cfs @ 12.11 hrs HW=120.21' (Free Discharge)

└─3=Sharp-Crested Rectangular Weir (Weir Controls 3.71 cfs @ 2.36 fps)

└─4=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

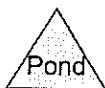
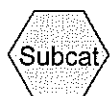
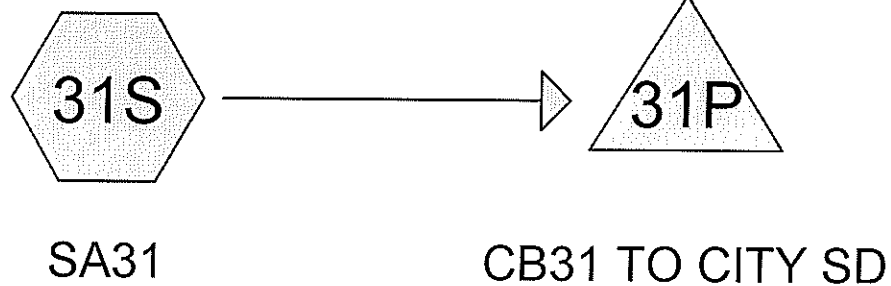
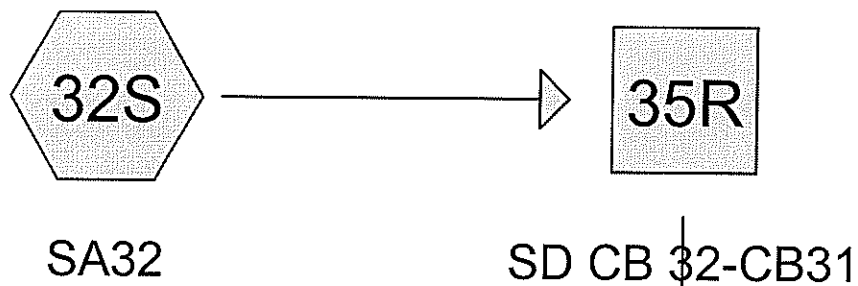
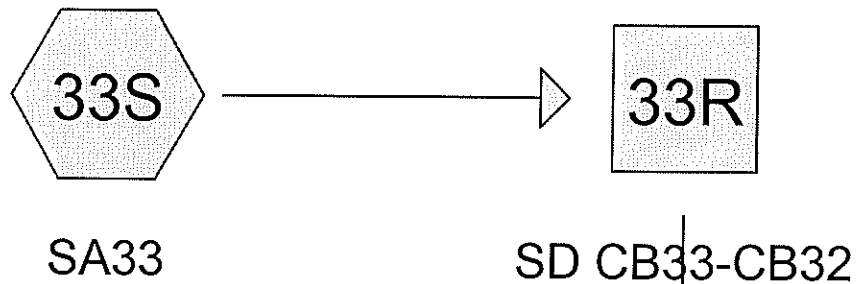
Primary OutFlow Max=2.17 cfs @ 12.11 hrs HW=120.21' (Free Discharge)

└─2=Culvert (Passes 2.17 cfs of 13.06 cfs potential flow)

└─1=Orifice/Grate (Orifice Controls 2.17 cfs @ 11.04 fps)

APPENDIX C

GOODWILL SITE PREDEVELOPMENT CALCULATIONS



GOODWILL PREDEVELOPMENT

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.091	39	>75% Grass cover, Good, HSG A (33S)
0.140	61	>75% Grass cover, Good, HSG B (31S, 32S, 33S)
0.124	98	Paved parking, HSG D (32S)
1.065	98	Unconnected roofs, HSG D (31S, 33S)
1.421	91	TOTAL AREA

GOODWILL PREDEVELOPMENT

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.091	HSG A	33S
0.140	HSG B	31S, 32S, 33S
0.000	HSG C	
1.190	HSG D	31S, 32S, 33S
0.000	Other	
1.421		TOTAL AREA

GOODWILL PREDEVELOPMENT

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.091	0.140	0.000	0.000	0.000	0.231	>75% Grass cover, Good	31S, 32S, 33S
0.000	0.000	0.000	0.124	0.000	0.124	Paved parking	32S
0.000	0.000	0.000	1.065	0.000	1.065	Unconnected roofs	31S, 33S
0.091	0.140	0.000	1.190	0.000	1.421	TOTAL AREA	

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Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	33R	120.10	117.40	178.0	0.0152	0.010	6.0	0.0	0.0
2	35R	117.10	115.00	140.0	0.0150	0.010	10.0	0.0	0.0
3	31P	115.00	114.00	65.0	0.0154	0.010	10.0	0.0	0.0

GOODWILL PREDEVELOPMENT

Type III 24-hr 2 YEAR STORM Rainfall=3.00"

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Summary for Subcatchment 31S: SA31

Runoff = 2.62 cfs @ 12.06 hrs, Volume= 0.173 af, Depth> 2.22"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type III 24-hr 2 YEAR STORM Rainfall=3.00"

Area (sf)	CN	Description
36,200	98	Unconnected roofs, HSG D
4,550	61	>75% Grass cover, Good, HSG B
40,750	94	Weighted Average
4,550		11.17% Pervious Area
36,200		88.83% Impervious Area
36,200		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	150	0.0150	1.29		Sheet Flow, PAVEMENT
					Smooth surfaces n= 0.011 P2= 3.00"
1.9	230	0.0100	2.03		Shallow Concentrated Flow, PAVEMENT
					Paved Kv= 20.3 fps
3.8	380	Total			

Summary for Subcatchment 32S: SA32

Runoff = 0.29 cfs @ 12.18 hrs, Volume= 0.025 af, Depth> 1.94"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type III 24-hr 2 YEAR STORM Rainfall=3.00"

Area (sf)	CN	Description
1,170	61	>75% Grass cover, Good, HSG B
5,415	98	Paved parking, HSG D
6,585	91	Weighted Average
1,170		17.77% Pervious Area
5,415		82.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	55	0.0100	0.08		Sheet Flow, LAWN
					Grass: Dense n= 0.240 P2= 3.00"
0.9	160	0.0200	2.87		Shallow Concentrated Flow, PAVEMENT
					Paved Kv= 20.3 fps
13.0	215	Total			

GOODWILL PREDEVELOPMENT

Type III 24-hr 2 YEAR STORM Rainfall=3.00"

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Summary for Subcatchment 33S: SA33

Runoff = 0.38 cfs @ 12.22 hrs, Volume= 0.034 af, Depth> 1.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type III 24-hr 2 YEAR STORM Rainfall=3.00"

Area (sf)	CN	Description
10,200	98	Unconnected roofs, HSG D
400	61	>75% Grass cover, Good, HSG B
3,950	39	>75% Grass cover, Good, HSG A
14,550	81	Weighted Average
4,350		29.90% Pervious Area
10,200		70.10% Impervious Area
10,200		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	70	0.0100	0.08		Sheet Flow, LAWN
					Grass: Dense n= 0.240 P2= 3.00"
0.9	105	0.0100	2.03		Shallow Concentrated Flow, PAVEMENT
					Paved Kv= 20.3 fps
15.5	175	Total			

Summary for Reach 33R: SD CB33-CB32

Inflow Area = 0.334 ac, 70.10% Impervious, Inflow Depth > 1.21" for 2 YEAR STORM event

Inflow = 0.38 cfs @ 12.22 hrs, Volume= 0.034 af

Outflow = 0.37 cfs @ 12.25 hrs, Volume= 0.034 af, Atten= 1%, Lag= 1.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 4.36 fps, Min. Travel Time= 0.7 min

Avg. Velocity= 1.96 fps, Avg. Travel Time= 1.5 min

Peak Storage= 15 cf @ 12.23 hrs

Average Depth at Peak Storage= 0.23'

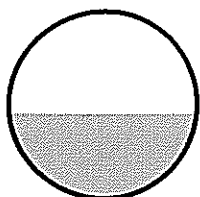
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.90 cfs

6.0" Round Pipe

n= 0.010

Length= 178.0' Slope= 0.0152 '/'

Inlet Invert= 120.10', Outlet Invert= 117.40'



GOODWILL PREDEVELOPMENT

Type III 24-hr 2 YEAR STORM Rainfall=3.00"

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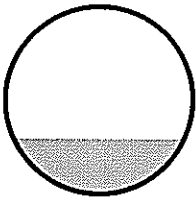
Summary for Reach 35R: SD CB 32-CB31

Inflow Area = 0.485 ac, 73.88% Impervious, Inflow Depth > 1.44" for 2 YEAR STORM event
 Inflow = 0.64 cfs @ 12.21 hrs, Volume= 0.058 af
 Outflow = 0.64 cfs @ 12.23 hrs, Volume= 0.058 af, Atten= 1%, Lag= 0.9 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 4.87 fps, Min. Travel Time= 0.5 min
 Avg. Velocity= 1.85 fps, Avg. Travel Time= 1.3 min

Peak Storage= 18 cf @ 12.22 hrs
 Average Depth at Peak Storage= 0.24'
 Bank-Full Depth= 0.83' Flow Area= 0.5 sf, Capacity= 3.49 cfs

10.0" Round Pipe
 n= 0.010
 Length= 140.0' Slope= 0.0150 1/
 Inlet Invert= 117.10', Outlet Invert= 115.00'

**Summary for Pond 31P: CB31 TO CITY SD**

Inflow Area = 1.421 ac, 83.73% Impervious, Inflow Depth > 1.95" for 2 YEAR STORM event
 Inflow = 2.96 cfs @ 12.06 hrs, Volume= 0.231 af
 Outflow = 2.94 cfs @ 12.06 hrs, Volume= 0.231 af, Atten= 1%, Lag= 0.2 min
 Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
 Primary = 2.94 cfs @ 12.06 hrs, Volume= 0.231 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 116.67' @ 12.06 hrs Surf.Area= 13 sf Storage= 21 cf

Plug-Flow detention time= 0.2 min calculated for 0.230 af (100% of inflow)
 Center-of-Mass det. time= 0.1 min (768.4 - 768.3)

Volume	Invert	Avail.Storage	Storage Description
#1	115.00'	57 cf	4.00'D x 4.50'H Vertical Cone/Cylinder
#2	119.50'	502 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
		558 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
119.50	6	0	0
120.00	500	127	127
120.50	1,000	375	502

GOODWILL PREDEVELOPMENT

Type III 24-hr 2 YEAR STORM Rainfall=3.00"

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Device	Routing	Invert	Outlet Devices
#1	Primary	115.00'	10.0" Round Culvert L= 65.0' Ke= 0.500 Inlet / Outlet Invert= 115.00' / 114.00' S= 0.0154 '/' Cc= 0.900 n= 0.010, Flow Area= 0.55 sf
#2	Discarded	120.00'	20.0' long x 20.0' 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) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=115.01' (Free Discharge)└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Primary OutFlow** Max=2.85 cfs @ 12.06 hrs HW=116.59' (Free Discharge)└**1=Culvert** (Inlet Controls 2.85 cfs @ 5.23 fps)

GOODWILL PREDEVELOPMENT

Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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Summary for Subcatchment 31S: SA31

Runoff = 4.34 cfs @ 12.06 hrs, Volume= 0.295 af, Depth> 3.79"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.70"

Area (sf)	CN	Description
36,200	98	Unconnected roofs, HSG D
4,550	61	>75% Grass cover, Good, HSG B
40,750	94	Weighted Average
4,550		11.17% Pervious Area
36,200		88.83% Impervious Area
36,200		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	150	0.0150	1.29		Sheet Flow, PAVEMENT
					Smooth surfaces n= 0.011 P2= 3.00"
1.9	230	0.0100	2.03		Shallow Concentrated Flow, PAVEMENT
					Paved Kv= 20.3 fps
3.8	380	Total			

Summary for Subcatchment 32S: SA32

Runoff = 0.50 cfs @ 12.17 hrs, Volume= 0.044 af, Depth> 3.48"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.70"

Area (sf)	CN	Description
1,170	61	>75% Grass cover, Good, HSG B
5,415	98	Paved parking, HSG D
6,585	91	Weighted Average
1,170		17.77% Pervious Area
5,415		82.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	55	0.0100	0.08		Sheet Flow, LAWN
					Grass: Dense n= 0.240 P2= 3.00"
0.9	160	0.0200	2.87		Shallow Concentrated Flow, PAVEMENT
					Paved Kv= 20.3 fps
13.0	215	Total			

GOODWILL PREDEVELOPMENT

Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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Summary for Subcatchment 33S: SA33

Runoff = 0.79 cfs @ 12.21 hrs, Volume= 0.071 af, Depth> 2.53"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type III 24-hr 10 YEAR STORM Rainfall=4.70"

Area (sf)	CN	Description
10,200	98	Unconnected roofs, HSG D
400	61	>75% Grass cover, Good, HSG B
3,950	39	>75% Grass cover, Good, HSG A
14,550	81	Weighted Average
4,350		29.90% Pervious Area
10,200		70.10% Impervious Area
10,200		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	70	0.0100	0.08		Sheet Flow, LAWN
					Grass: Dense n= 0.240 P2= 3.00"
0.9	105	0.0100	2.03		Shallow Concentrated Flow, PAVEMENT
					Paved Kv= 20.3 fps
15.5	175	Total			

Summary for Reach 33R: SD CB33-CB32

Inflow Area = 0.334 ac, 70.10% Impervious, Inflow Depth > 2.53" for 10 YEAR STORM event

Inflow = 0.79 cfs @ 12.21 hrs, Volume= 0.071 af

Outflow = 0.78 cfs @ 12.23 hrs, Volume= 0.070 af, Atten= 1%, Lag= 1.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 5.16 fps, Min. Travel Time= 0.6 min

Avg. Velocity= 2.28 fps, Avg. Travel Time= 1.3 min

Peak Storage= 27 cf @ 12.22 hrs

Average Depth at Peak Storage= 0.36'

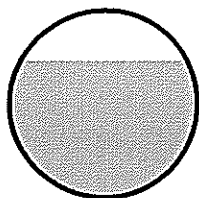
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.90 cfs

6.0" Round Pipe

n= 0.010

Length= 178.0' Slope= 0.0152 '/'

Inlet Invert= 120.10', Outlet Invert= 117.40'



GOODWILL PREDEVELOPMENT

Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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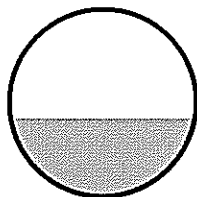
Summary for Reach 35R: SD CB 32-CB31

Inflow Area = 0.485 ac, 73.88% Impervious, Inflow Depth > 2.83" for 10 YEAR STORM event
 Inflow = 1.26 cfs @ 12.21 hrs, Volume= 0.114 af
 Outflow = 1.25 cfs @ 12.22 hrs, Volume= 0.114 af, Atten= 1%, Lag= 0.7 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 5.87 fps, Min. Travel Time= 0.4 min
 Avg. Velocity= 2.24 fps, Avg. Travel Time= 1.0 min

Peak Storage= 30 cf @ 12.21 hrs
 Average Depth at Peak Storage= 0.35'
 Bank-Full Depth= 0.83' Flow Area= 0.5 sf, Capacity= 3.49 cfs

10.0" Round Pipe
 n= 0.010
 Length= 140.0' Slope= 0.0150 '/
 Inlet Invert= 117.10', Outlet Invert= 115.00'

**Summary for Pond 31P: CB31 TO CITY SD**

Inflow Area = 1.421 ac, 83.73% Impervious, Inflow Depth > 3.46" for 10 YEAR STORM event
 Inflow = 5.05 cfs @ 12.06 hrs, Volume= 0.410 af
 Outflow = 5.00 cfs @ 12.07 hrs, Volume= 0.410 af, Atten= 1%, Lag= 0.4 min
 Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
 Primary = 5.00 cfs @ 12.07 hrs, Volume= 0.410 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 119.02' @ 12.07 hrs Surf.Area= 13 sf Storage= 50 cf

Plug-Flow detention time= 0.2 min calculated for 0.410 af (100% of inflow)
 Center-of-Mass det. time= 0.1 min (758.2 - 758.0)

Volume	Invert	Avail.Storage	Storage Description
#1	115.00'	57 cf	4.00'D x 4.50'H Vertical Cone/Cylinder
#2	119.50'	502 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
		558 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
119.50	6	0	0
120.00	500	127	127
120.50	1,000	375	502

GOODWILL PREDEVELOPMENT

Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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Device	Routing	Invert	Outlet Devices
#1	Primary	115.00'	10.0" Round Culvert L= 65.0' Ke= 0.500 Inlet / Outlet Invert= 115.00' / 114.00' S= 0.0154 '/' Cc= 0.900 n= 0.010, Flow Area= 0.55 sf
#2	Discarded	120.00'	20.0' long x 20.0' 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) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=115.06' (Free Discharge)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Primary OutFlow** Max=4.84 cfs @ 12.07 hrs HW=118.81' (Free Discharge)↑**1=Culvert** (Inlet Controls 4.84 cfs @ 8.87 fps)

GOODWILL PREDEVELOPMENT

Type III 24-hr 25YEAR STORM Rainfall=5.50"

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Summary for Subcatchment 31S: SA31

Runoff = 5.15 cfs @ 12.06 hrs, Volume= 0.353 af, Depth> 4.53"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type III 24-hr 25YEAR STORM Rainfall=5.50"

Area (sf)	CN	Description
36,200	98	Unconnected roofs, HSG D
4,550	61	>75% Grass cover, Good, HSG B
40,750	94	Weighted Average
4,550		11.17% Pervious Area
36,200		88.83% Impervious Area
36,200		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	150	0.0150	1.29		Sheet Flow, PAVEMENT
					Smooth surfaces n= 0.011 P2= 3.00"
1.9	230	0.0100	2.03		Shallow Concentrated Flow, PAVEMENT
					Paved Kv= 20.3 fps
3.8	380	Total			

Summary for Subcatchment 32S: SA32

Runoff = 0.60 cfs @ 12.17 hrs, Volume= 0.053 af, Depth> 4.22"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type III 24-hr 25YEAR STORM Rainfall=5.50"

Area (sf)	CN	Description
1,170	61	>75% Grass cover, Good, HSG B
5,415	98	Paved parking, HSG D
6,585	91	Weighted Average
1,170		17.77% Pervious Area
5,415		82.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	55	0.0100	0.08		Sheet Flow, LAWN
					Grass: Dense n= 0.240 P2= 3.00"
0.9	160	0.0200	2.87		Shallow Concentrated Flow, PAVEMENT
					Paved Kv= 20.3 fps
13.0	215	Total			

GOODWILL PREDEVELOPMENT

Type III 24-hr 25YEAR STORM Rainfall=5.50"

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Summary for Subcatchment 33S: SA33

Runoff = 1.00 cfs @ 12.21 hrs, Volume= 0.089 af, Depth> 3.21"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YEAR STORM Rainfall=5.50"

Area (sf)	CN	Description
10,200	98	Unconnected roofs, HSG D
400	61	>75% Grass cover, Good, HSG B
3,950	39	>75% Grass cover, Good, HSG A
14,550	81	Weighted Average
4,350		29.90% Pervious Area
10,200		70.10% Impervious Area
10,200		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
14.6	70	0.0100	0.08		Sheet Flow, LAWN
					Grass: Dense n= 0.240 P2= 3.00"
0.9	105	0.0100	2.03		Shallow Concentrated Flow, PAVEMENT
					Paved Kv= 20.3 fps
15.5	175	Total			

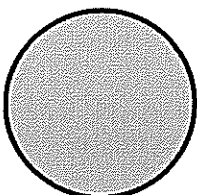
Summary for Reach 33R: SD CB33-CB32

Inflow Area = 0.334 ac, 70.10% Impervious, Inflow Depth > 3.21" for 25YEAR STORM event
 Inflow = 1.00 cfs @ 12.21 hrs, Volume= 0.089 af
 Outflow = 0.94 cfs @ 12.33 hrs, Volume= 0.089 af, Atten= 6%, Lag= 7.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 5.21 fps, Min. Travel Time= 0.6 min
 Avg. Velocity= 2.37 fps, Avg. Travel Time= 1.3 min

Peak Storage= 35 cf @ 12.20 hrs
 Average Depth at Peak Storage= 0.50'
 Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.90 cfs

6.0" Round Pipe
 n= 0.010
 Length= 178.0' Slope= 0.0152 '/'
 Inlet Invert= 120.10', Outlet Invert= 117.40'



GOODWILL PREDEVELOPMENT

Type III 24-hr 25YEAR STORM Rainfall=5.50"

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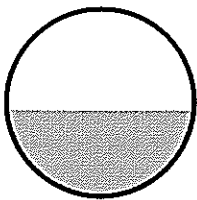
Summary for Reach 35R: SD CB 32-CB31

Inflow Area = 0.485 ac, 73.88% Impervious, Inflow Depth > 3.52" for 25YEAR STORM event
 Inflow = 1.48 cfs @ 12.20 hrs, Volume= 0.142 af
 Outflow = 1.48 cfs @ 12.21 hrs, Volume= 0.142 af, Atten= 0%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 6.14 fps, Min. Travel Time= 0.4 min
 Avg. Velocity = 2.42 fps, Avg. Travel Time= 1.0 min

Peak Storage= 34 cf @ 12.20 hrs
 Average Depth at Peak Storage= 0.38'
 Bank-Full Depth= 0.83' Flow Area= 0.5 sf, Capacity= 3.49 cfs

10.0" Round Pipe
 n= 0.010
 Length= 140.0' Slope= 0.0150 1/
 Inlet Invert= 117.10', Outlet Invert= 115.00'

**Summary for Pond 31P: CB31 TO CITY SD**

Inflow Area = 1.421 ac, 83.73% Impervious, Inflow Depth > 4.18" for 25YEAR STORM event
 Inflow = 6.03 cfs @ 12.06 hrs, Volume= 0.495 af
 Outflow = 5.59 cfs @ 12.08 hrs, Volume= 0.495 af, Atten= 7%, Lag= 1.2 min
 Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
 Primary = 5.59 cfs @ 12.08 hrs, Volume= 0.495 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 119.94' @ 12.08 hrs Surf.Area= 457 sf Storage= 156 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 0.2 min (755.1 - 755.0)

Volume	Invert	Avail.Storage	Storage Description
#1	115.00'	57 cf	4.00'D x 4.50'H Vertical Cone/Cylinder
#2	119.50'	502 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
		558 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
119.50	6	0	0
120.00	500	127	127
120.50	1,000	375	502

GOODWILL PREDEVELOPMENT

Type III 24-hr 25YEAR STORM Rainfall=5.50"

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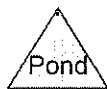
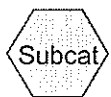
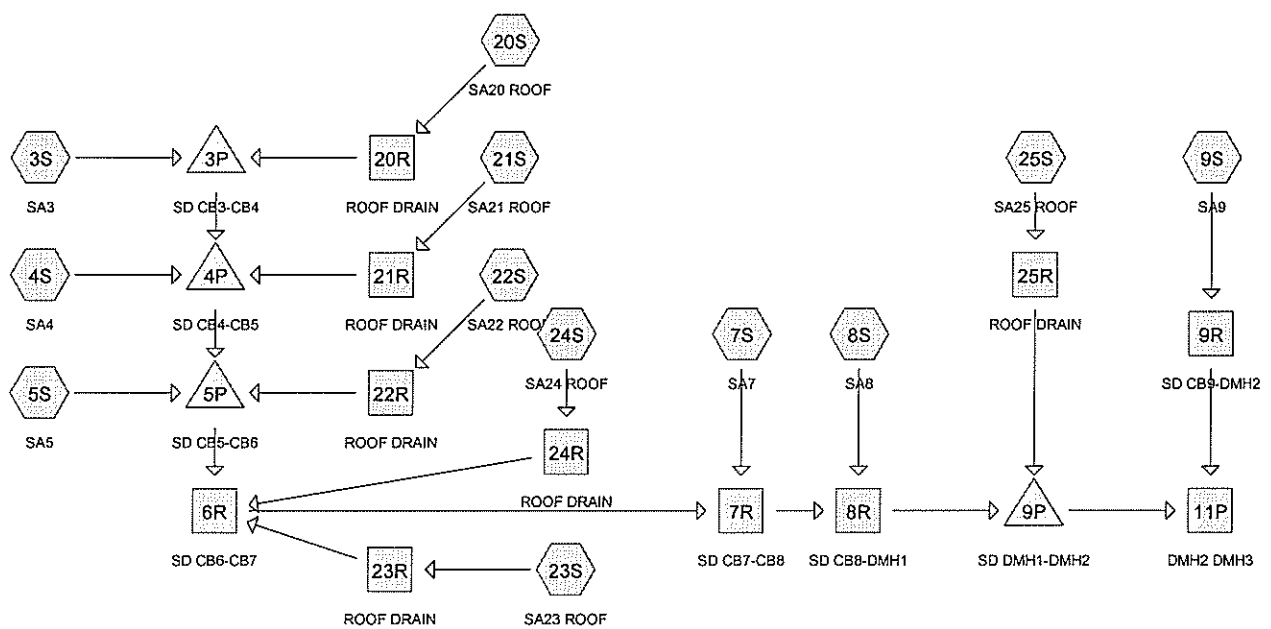
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Device	Routing	Invert	Outlet Devices
#1	Primary	115.00'	10.0" Round Culvert L= 65.0' Ke= 0.500 Inlet / Outlet Invert= 115.00' / 114.00' S= 0.0154 '/' Cc= 0.900 n= 0.010, Flow Area= 0.55 sf
#2	Discarded	120.00'	20.0' long x 20.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=115.07' (Free Discharge)↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Primary OutFlow** Max=5.53 cfs @ 12.08 hrs HW=119.85' (Free Discharge)↑**1=Culvert** (Inlet Controls 5.53 cfs @ 10.14 fps)

APPENDIX D

**POST-DEVELOPMENT CALCULATIONS
PARK DANFORTH MODEL I**



Routing Diagram for Park Danforth Post Model I
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Park Danforth Post Model I

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.022	39	>75% Grass cover, Good, HSG A (3S, 4S)
0.126	61	>75% Grass cover, Good, HSG B (3S, 4S, 5S, 7S, 8S, 9S)
0.523	98	Paved parking, HSG D (3S, 4S, 5S, 9S)
0.696	98	Roofs, HSG D (20S, 21S, 22S, 23S, 24S, 25S)
1.367	94	TOTAL AREA

Park Danforth Post Model I

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.022	HSG A	3S, 4S
0.126	HSG B	3S, 4S, 5S, 7S, 8S, 9S
0.000	HSG C	
1.219	HSG D	3S, 4S, 5S, 9S, 20S, 21S, 22S, 23S, 24S, 25S
0.000	Other	
1.367		TOTAL AREA

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.022	0.126	0.000	0.000	0.000	0.148	>75% Grass cover, Good	3S, 4S, 5S, 7S, 8S, 9S
0.000	0.000	0.000	0.523	0.000	0.523	Paved parking	3S, 4S, 5S, 9S
0.000	0.000	0.000	0.696	0.000	0.696	Roofs	20S, 21S, 22S, 23S, 24S, 25S
0.022	0.126	0.000	1.219	0.000	1.367	TOTAL AREA	

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Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	6R	116.00	115.10	253.0	0.0036	0.010	15.0	0.0	0.0
2	7R	115.10	115.00	88.0	0.0011	0.010	24.0	0.0	0.0
3	8R	115.00	114.70	35.0	0.0086	0.010	24.0	0.0	0.0
4	9R	115.80	115.00	72.0	0.0111	0.010	12.0	0.0	0.0
5	11P	115.00	114.80	24.0	0.0083	0.010	15.0	0.0	0.0
6	20R	0.00	-0.60	60.0	0.0100	0.010	6.0	0.0	0.0
7	21R	0.00	-0.60	60.0	0.0100	0.010	6.0	0.0	0.0
8	22R	0.00	-0.60	60.0	0.0100	0.010	6.0	0.0	0.0
9	23R	0.00	-0.20	20.0	0.0100	0.010	6.0	0.0	0.0
10	24R	0.00	-0.15	15.0	0.0100	0.010	6.0	0.0	0.0
11	25R	0.00	-0.30	30.0	0.0100	0.010	6.0	0.0	0.0
12	3P	117.50	117.50	73.0	0.0000	0.010	12.0	0.0	0.0
13	4P	117.40	117.00	54.0	0.0074	0.010	12.0	0.0	0.0
14	5P	116.90	116.00	70.0	0.0129	0.010	12.0	0.0	0.0
15	9P	114.70	114.50	24.0	0.0083	0.010	15.0	0.0	0.0

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Type III 24-hr 2 YEAR STORM Rainfall=3.00"

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Summary for Subcatchment 3S: SA3

Runoff = 0.35 cfs @ 12.09 hrs, Volume= 0.025 af, Depth> 2.13"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.00"

Area (sf)	CN	Description
5,486	98	Paved parking, HSG D
300	61	>75% Grass cover, Good, HSG B
350	39	>75% Grass cover, Good, HSG A
6,136	93	Weighted Average
650		10.59% Pervious Area
5,486		89.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	15	0.0100	0.06		Sheet Flow, LAWN
					Grass: Dense n= 0.240 P2= 3.00"
1.6	70	0.0050	0.71		Sheet Flow, PAVEMENT
					Smooth surfaces n= 0.011 P2= 3.00"
5.9	85	Total			

Summary for Subcatchment 4S: SA4

Runoff = 0.72 cfs @ 12.09 hrs, Volume= 0.051 af, Depth> 2.13"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.00"

Area (sf)	CN	Description
800	61	>75% Grass cover, Good, HSG B
600	39	>75% Grass cover, Good, HSG A
11,043	98	Paved parking, HSG D
12,443	93	Weighted Average
1,400		11.25% Pervious Area
11,043		88.75% Impervious Area

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

Summary for Subcatchment 5S: SA5

Runoff = 0.34 cfs @ 12.09 hrs, Volume= 0.025 af, Depth> 2.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.00"

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Type III 24-hr 2 YEAR STORM Rainfall=3.00"

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Area (sf)	CN	Description
5,100	98	Paved parking, HSG D
300	61	>75% Grass cover, Good, HSG B
5,400	96	Weighted Average
300		5.56% Pervious Area
5,100		94.44% Impervious Area

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

Summary for Subcatchment 7S: SA7

Runoff = 0.01 cfs @ 12.15 hrs, Volume= 0.001 af, Depth> 0.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.00"

Area (sf)	CN	Description
1,000	61	>75% Grass cover, Good, HSG B
1,000		100.00% Pervious Area

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

Summary for Subcatchment 8S: SA8

Runoff = 0.00 cfs @ 12.15 hrs, Volume= 0.000 af, Depth> 0.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.00"

Area (sf)	CN	Description
500	61	>75% Grass cover, Good, HSG B
500		100.00% Pervious Area

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

Summary for Subcatchment 9S: SA9

Runoff = 0.06 cfs @ 12.16 hrs, Volume= 0.005 af, Depth> 0.73"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.00"

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Type III 24-hr 2 YEAR STORM Rainfall=3.00"

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Area (sf)	CN	Description
2,600	61	>75% Grass cover, Good, HSG B
1,150	98	Paved parking, HSG D
3,750	72	Weighted Average
2,600		69.33% Pervious Area
1,150		30.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	60	0.0200	0.10		Sheet Flow, GRASS Grass: Dense n= 0.240 P2= 3.00"

Summary for Subcatchment 20S: SA20 ROOF

Runoff = 0.21 cfs @ 12.09 hrs, Volume= 0.016 af, Depth> 2.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.00"

Area (sf)	CN	Description
3,236	98	Roofs, HSG D
3,236		100.00% Impervious Area

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

Summary for Subcatchment 21S: SA21 ROOF

Runoff = 0.16 cfs @ 12.09 hrs, Volume= 0.012 af, Depth> 2.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.00"

Area (sf)	CN	Description
2,500	98	Roofs, HSG D
2,500		100.00% Impervious Area

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

Summary for Subcatchment 22S: SA22 ROOF

Runoff = 0.25 cfs @ 12.09 hrs, Volume= 0.019 af, Depth> 2.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.00"

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Type III 24-hr 2 YEAR STORM Rainfall=3.00"

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Area (sf)	CN	Description
3,900	98	Roofs, HSG D
3,900		100.00% Impervious Area

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

Summary for Subcatchment 23S: SA23 ROOF

Runoff = 0.52 cfs @ 12.09 hrs, Volume= 0.040 af, Depth> 2.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.00"

Area (sf)	CN	Description
8,020	98	Roofs, HSG D
8,020		100.00% Impervious Area

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

Summary for Subcatchment 24S: SA24 ROOF

Runoff = 0.46 cfs @ 12.09 hrs, Volume= 0.035 af, Depth> 2.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.00"

Area (sf)	CN	Description
7,100	98	Roofs, HSG D
7,100		100.00% Impervious Area

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

Summary for Subcatchment 25S: SA25 ROOF

Runoff = 0.36 cfs @ 12.09 hrs, Volume= 0.028 af, Depth> 2.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.00"

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Type III 24-hr 2 YEAR STORM Rainfall=3.00"

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Area (sf)	CN	Description
5,550	98	Roofs, HSG D
5,550		100.00% Impervious Area

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

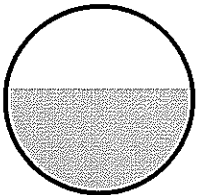
Summary for Reach 6R: SD CB6-CB7

Inflow Area = 1.119 ac, 95.18% Impervious, Inflow Depth > 2.39" for 2 YEAR STORM event
 Inflow = 3.03 cfs @ 12.09 hrs, Volume= 0.223 af
 Outflow = 3.00 cfs @ 12.10 hrs, Volume= 0.223 af, Atten= 1%, Lag= 0.8 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 4.27 fps, Min. Travel Time= 1.0 min
 Avg. Velocity= 1.65 fps, Avg. Travel Time= 2.5 min

Peak Storage= 178 cf @ 12.10 hrs
 Average Depth at Peak Storage= 0.70'
 Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 5.01 cfs

15.0" Round Pipe
 n= 0.010
 Length= 253.0' Slope= 0.0036 1/
 Inlet Invert= 116.00', Outlet Invert= 115.10'

**Summary for Reach 7R: SD CB7-CB8**

Inflow Area = 1.142 ac, 93.26% Impervious, Inflow Depth > 2.35" for 2 YEAR STORM event
 Inflow = 3.01 cfs @ 12.10 hrs, Volume= 0.223 af
 Outflow = 2.99 cfs @ 12.11 hrs, Volume= 0.223 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 2.76 fps, Min. Travel Time= 0.5 min
 Avg. Velocity= 1.04 fps, Avg. Travel Time= 1.4 min

Peak Storage= 95 cf @ 12.11 hrs
 Average Depth at Peak Storage= 0.75'
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 9.91 cfs

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Type III 24-hr 2 YEAR STORM Rainfall=3.00"

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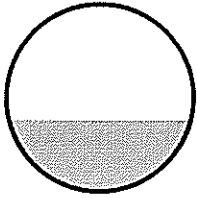
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24.0" Round Pipe

n= 0.010

Length= 88.0' Slope= 0.0011 '/

Inlet Invert= 115.10', Outlet Invert= 115.00'

**Summary for Reach 8R: SD CB8-DMH1**

Inflow Area = 1.153 ac, 92.34% Impervious, Inflow Depth > 2.33" for 2 YEAR STORM event
Inflow = 3.00 cfs @ 12.11 hrs, Volume= 0.224 af
Outflow = 3.00 cfs @ 12.11 hrs, Volume= 0.224 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 5.69 fps, Min. Travel Time= 0.1 min

Avg. Velocity= 2.12 fps, Avg. Travel Time= 0.3 min

Peak Storage= 18 cf @ 12.11 hrs

Average Depth at Peak Storage= 0.45'

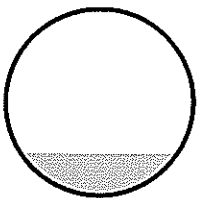
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 27.23 cfs

24.0" Round Pipe

n= 0.010

Length= 35.0' Slope= 0.0086 '/

Inlet Invert= 115.00', Outlet Invert= 114.70'

**Summary for Reach 9R: SD CB9-DMH2**

Inflow Area = 0.086 ac, 30.67% Impervious, Inflow Depth > 0.73" for 2 YEAR STORM event
Inflow = 0.06 cfs @ 12.16 hrs, Volume= 0.005 af
Outflow = 0.06 cfs @ 12.16 hrs, Volume= 0.005 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.16 fps, Min. Travel Time= 0.6 min

Avg. Velocity= 1.02 fps, Avg. Travel Time= 1.2 min

Peak Storage= 2 cf @ 12.16 hrs

Average Depth at Peak Storage= 0.08'

Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.88 cfs

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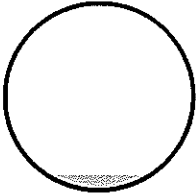
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12.0" Round Pipe

n= 0.010

Length= 72.0' Slope= 0.0111 '/'

Inlet Invert= 115.80', Outlet Invert= 115.00'

**Summary for Reach 11P: DMH2 DMH3**

Inflow Area = 1.367 ac, 89.17% Impervious, Inflow Depth > 2.15" for 2 YEAR STORM event
Inflow = 2.18 cfs @ 12.10 hrs, Volume= 0.245 af
Outflow = 2.19 cfs @ 12.10 hrs, Volume= 0.245 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 5.39 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 2.32 fps, Avg. Travel Time= 0.2 min

Peak Storage= 10 cf @ 12.10 hrs

Average Depth at Peak Storage= 0.46'

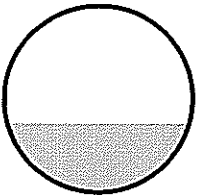
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 7.67 cfs

15.0" Round Pipe

n= 0.010

Length= 24.0' Slope= 0.0083 '/'

Inlet Invert= 115.00', Outlet Invert= 114.80'

**Summary for Reach 20R: ROOF DRAIN**

Inflow Area = 0.074 ac, 100.00% Impervious, Inflow Depth > 2.59" for 2 YEAR STORM event
Inflow = 0.21 cfs @ 12.09 hrs, Volume= 0.016 af
Outflow = 0.21 cfs @ 12.09 hrs, Volume= 0.016 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.21 fps, Min. Travel Time= 0.3 min

Avg. Velocity = 1.24 fps, Avg. Travel Time= 0.8 min

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Type III 24-hr 2 YEAR STORM Rainfall=3.00"

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Peak Storage= 4 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.18'

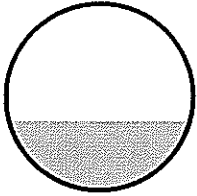
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.73 cfs

6.0" Round Pipe

n= 0.010 PVC, smooth interior

Length= 60.0' Slope= 0.0100 '/'

Inlet Invert= 0.00', Outlet Invert= -0.60'



Summary for Reach 21R: ROOF DRAIN

Inflow Area = 0.057 ac, 100.00% Impervious, Inflow Depth > 2.59" for 2 YEAR STORM event
Inflow = 0.16 cfs @ 12.09 hrs, Volume= 0.012 af
Outflow = 0.16 cfs @ 12.09 hrs, Volume= 0.012 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.99 fps, Min. Travel Time= 0.3 min

Avg. Velocity= 1.14 fps, Avg. Travel Time= 0.9 min

Peak Storage= 3 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.16'

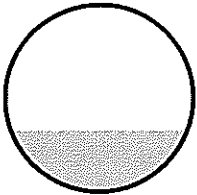
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.73 cfs

6.0" Round Pipe

n= 0.010

Length= 60.0' Slope= 0.0100 '/'

Inlet Invert= 0.00', Outlet Invert= -0.60'



Summary for Reach 22R: ROOF DRAIN

Inflow Area = 0.090 ac, 100.00% Impervious, Inflow Depth > 2.59" for 2 YEAR STORM event
Inflow = 0.25 cfs @ 12.09 hrs, Volume= 0.019 af
Outflow = 0.25 cfs @ 12.09 hrs, Volume= 0.019 af, Atten= 0%, Lag= 0.3 min

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Type III 24-hr 2 YEAR STORM Rainfall=3.00"

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Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.38 fps, Min. Travel Time= 0.3 min

Avg. Velocity= 1.31 fps, Avg. Travel Time= 0.8 min

Peak Storage= 5 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.20'

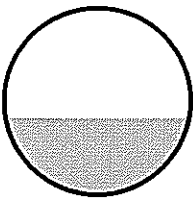
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.73 cfs

6.0" Round Pipe

n= 0.010

Length= 60.0' Slope= 0.0100 '/'

Inlet Invert= 0.00', Outlet Invert= -0.60'



Summary for Reach 23R: ROOF DRAIN

Inflow Area = 0.184 ac, 100.00% Impervious, Inflow Depth > 2.59" for 2 YEAR STORM event

Inflow = 0.52 cfs @ 12.09 hrs, Volume= 0.040 af

Outflow = 0.52 cfs @ 12.09 hrs, Volume= 0.040 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 4.03 fps, Min. Travel Time= 0.1 min

Avg. Velocity= 1.62 fps, Avg. Travel Time= 0.2 min

Peak Storage= 3 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.31'

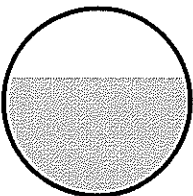
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.73 cfs

6.0" Round Pipe

n= 0.010

Length= 20.0' Slope= 0.0100 '/'

Inlet Invert= 0.00', Outlet Invert= -0.20'



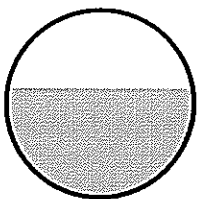
Summary for Reach 24R: ROOF DRAIN

Inflow Area = 0.163 ac, 100.00% Impervious, Inflow Depth > 2.59" for 2 YEAR STORM event
Inflow = 0.46 cfs @ 12.09 hrs, Volume= 0.035 af
Outflow = 0.46 cfs @ 12.09 hrs, Volume= 0.035 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.93 fps, Min. Travel Time= 0.1 min
Avg. Velocity= 1.56 fps, Avg. Travel Time= 0.2 min

Peak Storage= 2 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.29'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.73 cfs

6.0" Round Pipe
n= 0.010
Length= 15.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -0.15'

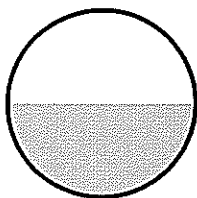
**Summary for Reach 25R: ROOF DRAIN**

Inflow Area = 0.127 ac, 100.00% Impervious, Inflow Depth > 2.59" for 2 YEAR STORM event
Inflow = 0.36 cfs @ 12.09 hrs, Volume= 0.028 af
Outflow = 0.36 cfs @ 12.09 hrs, Volume= 0.027 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.70 fps, Min. Travel Time= 0.1 min
Avg. Velocity= 1.45 fps, Avg. Travel Time= 0.3 min

Peak Storage= 3 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.25'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.73 cfs

6.0" Round Pipe
n= 0.010
Length= 30.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -0.30'



Park Danforth Post Model I

Type III 24-hr 2 YEAR STORM Rainfall=3.00"

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Summary for Pond 3P: SD CB3-CB4

Inflow Area = 0.215 ac, 93.06% Impervious, Inflow Depth > 2.29" for 2 YEAR STORM event
 Inflow = 0.57 cfs @ 12.09 hrs, Volume= 0.041 af
 Outflow = 0.57 cfs @ 12.09 hrs, Volume= 0.041 af, Atten= 0%, Lag= 0.1 min
 Primary = 0.57 cfs @ 12.09 hrs, Volume= 0.041 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 118.08' @ 12.09 hrs Surf.Area= 12 sf Storage= 7 cf

Plug-Flow detention time= 0.8 min calculated for 0.041 af (100% of inflow)
 Center-of-Mass det. time= 0.5 min (755.2 - 754.7)

Volume	Invert	Avail.Storage	Storage Description
#1	117.50'	119 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
117.50	12	0	0
125.82	12	100	100
126.00	200	19	119

Device	Routing	Invert	Outlet Devices
#1	Primary	117.50'	12.0" Round Culvert L= 73.0' Ke= 0.500 Inlet / Outlet Invert= 117.50' / 117.50' S= 0.0000 ' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=0.55 cfs @ 12.09 hrs HW=118.07' (Free Discharge)
 1=Culvert (Barrel Controls 0.55 cfs @ 1.73 fps)

Summary for Pond 4P: SD CB4-CB5

Inflow Area = 0.558 ac, 91.57% Impervious, Inflow Depth > 2.24" for 2 YEAR STORM event
 Inflow = 1.45 cfs @ 12.09 hrs, Volume= 0.104 af
 Outflow = 1.45 cfs @ 12.09 hrs, Volume= 0.104 af, Atten= 0%, Lag= 0.1 min
 Primary = 1.45 cfs @ 12.09 hrs, Volume= 0.104 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 118.05' @ 12.09 hrs Surf.Area= 12 sf Storage= 8 cf

Plug-Flow detention time= 0.3 min calculated for 0.104 af (100% of inflow)
 Center-of-Mass det. time= 0.2 min (758.0 - 757.8)

Volume	Invert	Avail.Storage	Storage Description
#1	117.40'	350 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
117.40	12	0	0
125.50	12	97	97
126.00	1,000	253	350

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Type III 24-hr 2 YEAR STORM Rainfall=3.00"

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Device	Routing	Invert	Outlet Devices
#1	Primary	117.40'	12.0" Round Culvert L= 54.0' Ke= 0.500 Inlet / Outlet Invert= 117.40' / 117.00' S= 0.0074 ' S= 0.0074 ' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=1.42 cfs @ 12.09 hrs HW=118.04' (Free Discharge)

1=Culvert (Barrel Controls 1.42 cfs @ 3.78 fps)

Summary for Pond 5P: SD CB5-CB6

Inflow Area = 0.772 ac, 93.01% Impervious, Inflow Depth > 2.30" for 2 YEAR STORM event
 Inflow = 2.04 cfs @ 12.09 hrs, Volume= 0.148 af
 Outflow = 2.04 cfs @ 12.09 hrs, Volume= 0.148 af, Atten= 0%, Lag= 0.1 min
 Primary = 2.04 cfs @ 12.09 hrs, Volume= 0.148 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 117.70' @ 12.09 hrs Surf.Area= 12 sf Storage= 10 cf

Plug-Flow detention time= 0.2 min calculated for 0.148 af (100% of inflow)

Center-of-Mass det. time= 0.2 min (754.4 - 754.2)

Volume	Invert	Avail.Storage	Storage Description
#1	116.90'	262 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
116.90	12	0	0
126.00	12	109	109
126.50	600	153	262

Device	Routing	Invert	Outlet Devices
#1	Primary	116.90'	12.0" Round Culvert L= 70.0' Ke= 0.500 Inlet / Outlet Invert= 116.90' / 116.00' S= 0.0129 ' S= 0.0129 ' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=2.00 cfs @ 12.09 hrs HW=117.69' (Free Discharge)

1=Culvert (Inlet Controls 2.00 cfs @ 3.02 fps)

Summary for Pond 9P: SD DMH1-DMH2

Inflow Area = 1.281 ac, 93.10% Impervious, Inflow Depth > 2.35" for 2 YEAR STORM event
 Inflow = 3.35 cfs @ 12.11 hrs, Volume= 0.251 af
 Outflow = 3.83 cfs @ 12.11 hrs, Volume= 0.251 af, Atten= 0%, Lag= 0.0 min
 Discarded = 1.70 cfs @ 12.10 hrs, Volume= 0.012 af
 Primary = 2.12 cfs @ 12.10 hrs, Volume= 0.240 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 120.00' @ 12.10 hrs Surf.Area= 28 sf Storage= 536 cf

Plug-Flow detention time= 2.6 min calculated for 0.251 af (100% of inflow)

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Type III 24-hr 2 YEAR STORM Rainfall=3.00"

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Center-of-Mass det. time= 2.4 min (753.3 - 750.9)

Volume	Invert	Avail.Storage	Storage Description
#1	114.70'	273 cf	6.00'D x 9.66'H Vertical Cone/Cylinder
#2	114.70'	110 cf	24.0" D x 35.0'L Pipe Storage S= 0.0030 '/
#3	115.00'	276 cf	24.0" D x 88.0'L Pipe Storage
		660 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Device 2	114.70'	6.0" Vert. Orifice/Grate C= 0.600
#2	Primary	114.70'	15.0" Round Culvert L= 24.0' Ke= 0.500 Inlet / Outlet Invert= 114.70' / 114.50' S= 0.0083 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf
#3	Discarded	119.70'	3.1' long x 1.00' rise Sharp-Crested Rectangular Weir 0 End Contraction(s) 5.0' Crest Height
#4	Discarded	121.00'	3.1' long x 1.00' rise Sharp-Crested Rectangular Weir 0 End Contraction(s) 7.0' Crest Height

Discarded OutFlow Max=1.56 cfs @ 12.10 hrs HW=119.99' (Free Discharge)

3=Sharp-Crested Rectangular Weir (Weir Controls 1.56 cfs @ 1.76 fps)


4=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)
Primary OutFlow Max=2.12 cfs @ 12.10 hrs HW=120.00' (Free Discharge)

2=Culvert (Passes 2.12 cfs of 12.78 cfs potential flow)


1=Orifice/Grate (Orifice Controls 2.12 cfs @ 10.82 fps)

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Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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Summary for Subcatchment 3S: SA3

Runoff = 0.60 cfs @ 12.09 hrs, Volume= 0.043 af, Depth> 3.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.70"

Area (sf)	CN	Description
5,486	98	Paved parking, HSG D
300	61	>75% Grass cover, Good, HSG B
350	39	>75% Grass cover, Good, HSG A
6,136	93	Weighted Average
650		10.59% Pervious Area
5,486		89.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	15	0.0100	0.06		Sheet Flow, LAWN
					Grass: Dense n= 0.240 P2= 3.00"
1.6	70	0.0050	0.71		Sheet Flow, PAVEMENT
					Smooth surfaces n= 0.011 P2= 3.00"
5.9	85	Total			

Summary for Subcatchment 4S: SA4

Runoff = 1.21 cfs @ 12.09 hrs, Volume= 0.088 af, Depth> 3.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.70"

Area (sf)	CN	Description
800	61	>75% Grass cover, Good, HSG B
600	39	>75% Grass cover, Good, HSG A
11,043	98	Paved parking, HSG D
12,443	93	Weighted Average
1,400		11.25% Pervious Area
11,043		88.75% Impervious Area

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

Summary for Subcatchment 5S: SA5

Runoff = 0.55 cfs @ 12.09 hrs, Volume= 0.041 af, Depth> 3.98"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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Area (sf)	CN	Description
5,100	98	Paved parking, HSG D
300	61	>75% Grass cover, Good, HSG B
5,400	96	Weighted Average
300		5.56% Pervious Area
5,100		94.44% Impervious Area

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

Summary for Subcatchment 7S: SA7

Runoff = 0.03 cfs @ 12.10 hrs, Volume= 0.002 af, Depth> 1.08"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.70"

Area (sf)	CN	Description
1,000	61	>75% Grass cover, Good, HSG B
1,000		100.00% Pervious Area

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

Summary for Subcatchment 8S: SA8

Runoff = 0.01 cfs @ 12.10 hrs, Volume= 0.001 af, Depth> 1.08"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.70"

Area (sf)	CN	Description
500	61	>75% Grass cover, Good, HSG B
500		100.00% Pervious Area

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

Summary for Subcatchment 9S: SA9

Runoff = 0.17 cfs @ 12.15 hrs, Volume= 0.013 af, Depth> 1.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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Area (sf)	CN	Description
2,600	61	>75% Grass cover, Good, HSG B
1,150	98	Paved parking, HSG D
3,750	72	Weighted Average
2,600		69.33% Pervious Area
1,150		30.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	60	0.0200	0.10		Sheet Flow, GRASS Grass: Dense n= 0.240 P2= 3.00"

Summary for Subcatchment 20S: SA20 ROOF

Runoff = 0.33 cfs @ 12.09 hrs, Volume= 0.026 af, Depth> 4.15"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.70"

Area (sf)	CN	Description
3,236	98	Roofs, HSG D
3,236		100.00% Impervious Area

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

Summary for Subcatchment 21S: SA21 ROOF

Runoff = 0.26 cfs @ 12.09 hrs, Volume= 0.020 af, Depth> 4.15"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.70"

Area (sf)	CN	Description
2,500	98	Roofs, HSG D
2,500		100.00% Impervious Area

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

Summary for Subcatchment 22S: SA22 ROOF

Runoff = 0.40 cfs @ 12.09 hrs, Volume= 0.031 af, Depth> 4.15"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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Area (sf)	CN	Description
3,900	98	Roofs, HSG D
3,900		100.00% Impervious Area

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

Summary for Subcatchment 23S: SA23 ROOF

Runoff = 0.83 cfs @ 12.09 hrs, Volume= 0.064 af, Depth> 4.15"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.70"

Area (sf)	CN	Description
8,020	98	Roofs, HSG D
8,020		100.00% Impervious Area

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

Summary for Subcatchment 24S: SA24 ROOF

Runoff = 0.73 cfs @ 12.09 hrs, Volume= 0.056 af, Depth> 4.15"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.70"

Area (sf)	CN	Description
7,100	98	Roofs, HSG D
7,100		100.00% Impervious Area

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

Summary for Subcatchment 25S: SA25 ROOF

Runoff = 0.57 cfs @ 12.09 hrs, Volume= 0.044 af, Depth> 4.15"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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Area (sf)	CN	Description
5,550	98	Roofs, HSG D
5,550		100.00% Impervious Area

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

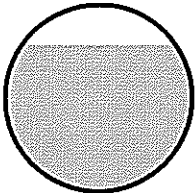
Summary for Reach 6R: SD CB6-CB7

Inflow Area = 1.119 ac, 95.18% Impervious, Inflow Depth > 3.95" for 10 YEAR STORM event
 Inflow = 4.81 cfs @ 12.09 hrs, Volume= 0.368 af
 Outflow = 4.79 cfs @ 12.10 hrs, Volume= 0.368 af, Atten= 0%, Lag= 0.8 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 4.65 fps, Min. Travel Time= 0.9 min
 Avg. Velocity= 1.94 fps, Avg. Travel Time= 2.2 min

Peak Storage= 261 cf @ 12.10 hrs
 Average Depth at Peak Storage= 0.98'
 Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 5.01 cfs

15.0" Round Pipe
 n= 0.010
 Length= 253.0' Slope= 0.0036 1/
 Inlet Invert= 116.00', Outlet Invert= 115.10'

**Summary for Reach 7R: SD CB7-CB8**

Inflow Area = 1.142 ac, 93.26% Impervious, Inflow Depth > 3.89" for 10 YEAR STORM event
 Inflow = 4.82 cfs @ 12.10 hrs, Volume= 0.370 af
 Outflow = 4.81 cfs @ 12.11 hrs, Volume= 0.370 af, Atten= 0%, Lag= 0.4 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 3.13 fps, Min. Travel Time= 0.5 min
 Avg. Velocity= 1.22 fps, Avg. Travel Time= 1.2 min

Peak Storage= 135 cf @ 12.11 hrs
 Average Depth at Peak Storage= 0.98'
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 9.91 cfs

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Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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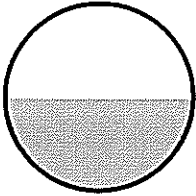
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24.0" Round Pipe

n= 0.010

Length= 88.0' Slope= 0.0011 '/

Inlet Invert= 115.10', Outlet Invert= 115.00'



Summary for Reach 8R: SD CB8-DMH1

Inflow Area = 1.153 ac, 92.34% Impervious, Inflow Depth > 3.86" for 10 YEAR STORM event

Inflow = 4.83 cfs @ 12.11 hrs, Volume= 0.371 af

Outflow = 4.83 cfs @ 12.11 hrs, Volume= 0.371 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 6.53 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 2.49 fps, Avg. Travel Time= 0.2 min

Peak Storage= 26 cf @ 12.11 hrs

Average Depth at Peak Storage= 0.57'

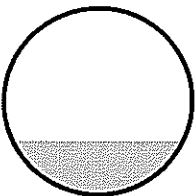
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 27.23 cfs

24.0" Round Pipe

n= 0.010

Length= 35.0' Slope= 0.0086 '/

Inlet Invert= 115.00', Outlet Invert= 114.70'



Summary for Reach 9R: SD CB9-DMH2

Inflow Area = 0.086 ac, 30.67% Impervious, Inflow Depth > 1.81" for 10 YEAR STORM event

Inflow = 0.17 cfs @ 12.15 hrs, Volume= 0.013 af

Outflow = 0.17 cfs @ 12.15 hrs, Volume= 0.013 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.91 fps, Min. Travel Time= 0.4 min

Avg. Velocity = 1.23 fps, Avg. Travel Time= 1.0 min

Peak Storage= 4 cf @ 12.15 hrs

Average Depth at Peak Storage= 0.13'

Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.88 cfs

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Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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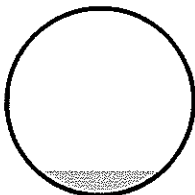
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12.0" Round Pipe

n= 0.010

Length= 72.0' Slope= 0.0111 '/

Inlet Invert= 115.80', Outlet Invert= 115.00'



Summary for Reach 11P: DMH2 DMH3

Inflow Area = 1.367 ac, 89.17% Impervious, Inflow Depth > 3.32" for 10 YEAR STORM event
Inflow = 2.32 cfs @ 12.13 hrs, Volume= 0.378 af
Outflow = 2.32 cfs @ 12.14 hrs, Volume= 0.378 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 5.47 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 2.71 fps, Avg. Travel Time= 0.1 min

Peak Storage= 10 cf @ 12.14 hrs

Average Depth at Peak Storage= 0.47'

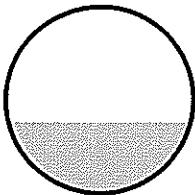
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 7.67 cfs

15.0" Round Pipe

n= 0.010

Length= 24.0' Slope= 0.0083 '/

Inlet Invert= 115.00', Outlet Invert= 114.80'



Summary for Reach 20R: ROOF DRAIN

Inflow Area = 0.074 ac, 100.00% Impervious, Inflow Depth > 4.15" for 10 YEAR STORM event
Inflow = 0.33 cfs @ 12.09 hrs, Volume= 0.026 af
Outflow = 0.33 cfs @ 12.09 hrs, Volume= 0.026 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.63 fps, Min. Travel Time= 0.3 min

Avg. Velocity = 1.43 fps, Avg. Travel Time= 0.7 min

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Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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Peak Storage= 6 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.24'

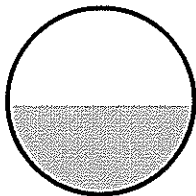
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.73 cfs

6.0" Round Pipe

n= 0.010 PVC, smooth interior

Length= 60.0' Slope= 0.0100 '/'

Inlet Invert= 0.00', Outlet Invert= -0.60'



Summary for Reach 21R: ROOF DRAIN

Inflow Area = 0.057 ac, 100.00% Impervious, Inflow Depth > 4.15" for 10 YEAR STORM event

Inflow = 0.26 cfs @ 12.09 hrs, Volume= 0.020 af

Outflow = 0.26 cfs @ 12.09 hrs, Volume= 0.020 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.39 fps, Min. Travel Time= 0.3 min

Avg. Velocity= 1.32 fps, Avg. Travel Time= 0.8 min

Peak Storage= 5 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.21'

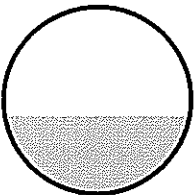
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.73 cfs

6.0" Round Pipe

n= 0.010

Length= 60.0' Slope= 0.0100 '/'

Inlet Invert= 0.00', Outlet Invert= -0.60'



Summary for Reach 22R: ROOF DRAIN

Inflow Area = 0.090 ac, 100.00% Impervious, Inflow Depth > 4.15" for 10 YEAR STORM event

Inflow = 0.40 cfs @ 12.09 hrs, Volume= 0.031 af

Outflow = 0.40 cfs @ 12.09 hrs, Volume= 0.031 af, Atten= 0%, Lag= 0.2 min

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Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.80 fps, Min. Travel Time= 0.3 min

Avg. Velocity= 1.51 fps, Avg. Travel Time= 0.7 min

Peak Storage= 6 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.27'

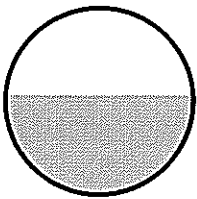
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.73 cfs

6.0" Round Pipe

n= 0.010

Length= 60.0' Slope= 0.0100 '/'

Inlet Invert= 0.00', Outlet Invert= -0.60'



Summary for Reach 23R: ROOF DRAIN

Inflow Area = 0.184 ac, 100.00% Impervious, Inflow Depth > 4.15" for 10 YEAR STORM event

Inflow = 0.83 cfs @ 12.09 hrs, Volume= 0.064 af

Outflow = 0.78 cfs @ 12.07 hrs, Volume= 0.064 af, Atten= 6%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 4.23 fps, Min. Travel Time= 0.1 min

Avg. Velocity= 1.87 fps, Avg. Travel Time= 0.2 min

Peak Storage= 4 cf @ 12.10 hrs

Average Depth at Peak Storage= 0.50'

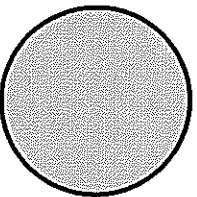
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.73 cfs

6.0" Round Pipe

n= 0.010

Length= 20.0' Slope= 0.0100 '/'

Inlet Invert= 0.00', Outlet Invert= -0.20'



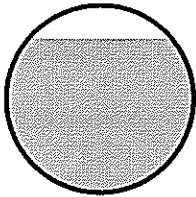
Summary for Reach 24R: ROOF DRAIN

Inflow Area = 0.163 ac, 100.00% Impervious, Inflow Depth > 4.15" for 10 YEAR STORM event
Inflow = 0.73 cfs @ 12.09 hrs, Volume= 0.056 af
Outflow = 0.73 cfs @ 12.09 hrs, Volume= 0.056 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.24 fps, Min. Travel Time= 0.1 min
Avg. Velocity= 1.80 fps, Avg. Travel Time= 0.1 min

Peak Storage= 3 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.41'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.73 cfs

6.0" Round Pipe
n= 0.010
Length= 15.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -0.15'

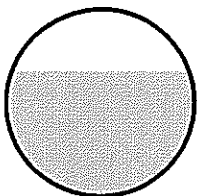
**Summary for Reach 25R: ROOF DRAIN**

Inflow Area = 0.127 ac, 100.00% Impervious, Inflow Depth > 4.15" for 10 YEAR STORM event
Inflow = 0.57 cfs @ 12.09 hrs, Volume= 0.044 af
Outflow = 0.57 cfs @ 12.09 hrs, Volume= 0.044 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.11 fps, Min. Travel Time= 0.1 min
Avg. Velocity= 1.68 fps, Avg. Travel Time= 0.3 min

Peak Storage= 4 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.33'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.73 cfs

6.0" Round Pipe
n= 0.010
Length= 30.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -0.30'



Summary for Pond 3P: SD CB3-CB4

Inflow Area = 0.215 ac, 93.06% Impervious, Inflow Depth > 3.85" for 10 YEAR STORM event
 Inflow = 0.93 cfs @ 12.09 hrs, Volume= 0.069 af
 Outflow = 0.93 cfs @ 12.09 hrs, Volume= 0.069 af, Atten= 0%, Lag= 0.1 min
 Primary = 0.93 cfs @ 12.09 hrs, Volume= 0.069 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 118.24' @ 12.09 hrs Surf.Area= 12 sf Storage= 9 cf

Plug-Flow detention time= 0.7 min calculated for 0.069 af (100% of inflow)
 Center-of-Mass det. time= 0.4 min (746.9 - 746.5)

Volume	Invert	Avail.Storage	Storage Description
#1	117.50'	119 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
117.50	12	0	0
125.82	12	100	100
126.00	200	19	119

Device	Routing	Invert	Outlet Devices
#1	Primary	117.50'	12.0" Round Culvert L= 73.0' Ke= 0.500 Inlet / Outlet Invert= 117.50' / 117.50' S= 0.0000 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=0.91 cfs @ 12.09 hrs HW=118.23' (Free Discharge)
 1=Culvert (Barrel Controls 0.91 cfs @ 2.06 fps)

Summary for Pond 4P: SD CB4-CB5

Inflow Area = 0.558 ac, 91.57% Impervious, Inflow Depth > 3.79" for 10 YEAR STORM event
 Inflow = 2.39 cfs @ 12.09 hrs, Volume= 0.177 af
 Outflow = 2.40 cfs @ 12.09 hrs, Volume= 0.176 af, Atten= 0%, Lag= 0.1 min
 Primary = 2.40 cfs @ 12.09 hrs, Volume= 0.176 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 118.31' @ 12.09 hrs Surf.Area= 12 sf Storage= 11 cf

Plug-Flow detention time= 0.2 min calculated for 0.176 af (100% of inflow)
 Center-of-Mass det. time= 0.1 min (748.8 - 748.6)

Volume	Invert	Avail.Storage	Storage Description
#1	117.40'	350 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
117.40	12	0	0
125.50	12	97	97
126.00	1,000	253	350

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Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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Device	Routing	Invert	Outlet Devices
#1	Primary	117.40'	12.0" Round Culvert L= 54.0' Ke= 0.500 Inlet / Outlet Invert= 117.40' / 117.00' S= 0.0074 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=2.34 cfs @ 12.09 hrs HW=118.30' (Free Discharge)↑**1=Culvert** (Barrel Controls 2.34 cfs @ 4.17 fps)**Summary for Pond 5P: SD CB5-CB6**

Inflow Area = 0.772 ac, 93.01% Impervious, Inflow Depth > 3.86" for 10 YEAR STORM event
 Inflow = 3.35 cfs @ 12.09 hrs, Volume= 0.248 af
 Outflow = 3.35 cfs @ 12.09 hrs, Volume= 0.248 af, Atten= 0%, Lag= 0.1 min
 Primary = 3.35 cfs @ 12.09 hrs, Volume= 0.248 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 118.18' @ 12.09 hrs Surf.Area= 12 sf Storage= 15 cf

Plug-Flow detention time= 0.2 min calculated for 0.248 af (100% of inflow)

Center-of-Mass det. time= 0.1 min (746.3 - 746.1)

Volume	Invert	Avail.Storage	Storage Description
#1	116.90'	262 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
116.90	12	0	0
126.00	12	109	109
126.50	600	153	262

Device	Routing	Invert	Outlet Devices
#1	Primary	116.90'	12.0" Round Culvert L= 70.0' Ke= 0.500 Inlet / Outlet Invert= 116.90' / 116.00' S= 0.0129 '/' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=3.28 cfs @ 12.09 hrs HW=118.15' (Free Discharge)↑**1=Culvert** (Inlet Controls 3.28 cfs @ 4.18 fps)**Summary for Pond 9P: SD DMH1-DMH2**

Inflow Area = 1.281 ac, 93.10% Impervious, Inflow Depth > 3.89" for 10 YEAR STORM event
 Inflow = 5.39 cfs @ 12.11 hrs, Volume= 0.415 af
 Outflow = 5.45 cfs @ 12.11 hrs, Volume= 0.415 af, Atten= 0%, Lag= 0.0 min
 Discarded = 3.30 cfs @ 12.11 hrs, Volume= 0.050 af
 Primary = 2.16 cfs @ 12.11 hrs, Volume= 0.365 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 120.17' @ 12.11 hrs Surf.Area= 28 sf Storage= 541 cf

Plug-Flow detention time= 2.3 min calculated for 0.413 af (100% of inflow)

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Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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Center-of-Mass det. time= 2.2 min (746.8 - 744.6)

Volume	Invert	Avail.Storage	Storage Description
#1	114.70'	273 cf	6.00'D x 9.66'H Vertical Cone/Cylinder
#2	114.70'	110 cf	24.0" D x 35.0'L Pipe Storage S= 0.0030 '/
#3	115.00'	276 cf	24.0" D x 88.0'L Pipe Storage
		660 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Device 2	114.70'	6.0" Vert. Orifice/Grate C= 0.600
#2	Primary	114.70'	15.0" Round Culvert L= 24.0' Ke= 0.500 Inlet / Outlet Invert= 114.70' / 114.50' S= 0.0083 '/ Cc= 0.900 n= 0.010, Flow Area= 1.23 sf
#3	Discarded	119.70'	3.1' long x 1.00' rise Sharp-Crested Rectangular Weir 0 End Contraction(s) 5.0' Crest Height
#4	Discarded	121.00'	3.1' long x 1.00' rise Sharp-Crested Rectangular Weir 0 End Contraction(s) 7.0' Crest Height

Discarded OutFlow Max=3.18 cfs @ 12.11 hrs HW=120.16' (Free Discharge)

3=Sharp-Crested Rectangular Weir (Weir Controls 3.18 cfs @ 2.24 fps)


4=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)
Primary OutFlow Max=2.16 cfs @ 12.11 hrs HW=120.16' (Free Discharge)

2=Culvert (Passes 2.16 cfs of 12.99 cfs potential flow)


1=Orifice/Grate (Orifice Controls 2.16 cfs @ 10.99 fps)

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Type III 24-hr 25YEAR STORM Rainfall=5.50"

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Summary for Subcatchment 3S: SA3

Runoff = 0.71 cfs @ 12.09 hrs, Volume= 0.052 af, Depth> 4.43"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type III 24-hr 25YEAR STORM Rainfall=5.50"

Area (sf)	CN	Description
5,486	98	Paved parking, HSG D
300	61	>75% Grass cover, Good, HSG B
350	39	>75% Grass cover, Good, HSG A
6,136	93	Weighted Average
650		10.59% Pervious Area
5,486		89.41% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.3	15	0.0100	0.06		Sheet Flow, LAWN
					Grass: Dense n= 0.240 P2= 3.00"
1.6	70	0.0050	0.71		Sheet Flow, PAVEMENT
					Smooth surfaces n= 0.011 P2= 3.00"
5.9	85	Total			

Summary for Subcatchment 4S: SA4

Runoff = 1.43 cfs @ 12.09 hrs, Volume= 0.105 af, Depth> 4.43"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type III 24-hr 25YEAR STORM Rainfall=5.50"

Area (sf)	CN	Description
800	61	>75% Grass cover, Good, HSG B
600	39	>75% Grass cover, Good, HSG A
11,043	98	Paved parking, HSG D
12,443	93	Weighted Average
1,400		11.25% Pervious Area
11,043		88.75% Impervious Area

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

Summary for Subcatchment 5S: SA5

Runoff = 0.64 cfs @ 12.09 hrs, Volume= 0.049 af, Depth> 4.71"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type III 24-hr 25YEAR STORM Rainfall=5.50"

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Type III 24-hr 25YEAR STORM Rainfall=5.50"

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Area (sf)	CN	Description
5,100	98	Paved parking, HSG D
300	61	>75% Grass cover, Good, HSG B
5,400	96	Weighted Average
300		5.56% Pervious Area
5,100		94.44% Impervious Area

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

Summary for Subcatchment 7S: SA7

Runoff = 0.04 cfs @ 12.10 hrs, Volume= 0.003 af, Depth> 1.53"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YEAR STORM Rainfall=5.50"

Area (sf)	CN	Description
1,000	61	>75% Grass cover, Good, HSG B
1,000		100.00% Pervious Area

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

Summary for Subcatchment 8S: SA8

Runoff = 0.02 cfs @ 12.10 hrs, Volume= 0.001 af, Depth> 1.53"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YEAR STORM Rainfall=5.50"

Area (sf)	CN	Description
500	61	>75% Grass cover, Good, HSG B
500		100.00% Pervious Area

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

Summary for Subcatchment 9S: SA9

Runoff = 0.23 cfs @ 12.14 hrs, Volume= 0.017 af, Depth> 2.40"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YEAR STORM Rainfall=5.50"

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Type III 24-hr 25YEAR STORM Rainfall=5.50"

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Area (sf)	CN	Description
2,600	61	>75% Grass cover, Good, HSG B
1,150	98	Paved parking, HSG D
3,750	72	Weighted Average
2,600		69.33% Pervious Area
1,150		30.67% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	60	0.0200	0.10		Sheet Flow, GRASS Grass: Dense n= 0.240 P2= 3.00"

Summary for Subcatchment 20S: SA20 ROOF

Runoff = 0.39 cfs @ 12.09 hrs, Volume= 0.030 af, Depth> 4.87"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YEAR STORM Rainfall=5.50"

Area (sf)	CN	Description
3,236	98	Roofs, HSG D
3,236		100.00% Impervious Area

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

Summary for Subcatchment 21S: SA21 ROOF

Runoff = 0.30 cfs @ 12.09 hrs, Volume= 0.023 af, Depth> 4.87"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YEAR STORM Rainfall=5.50"

Area (sf)	CN	Description
2,500	98	Roofs, HSG D
2,500		100.00% Impervious Area

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

Summary for Subcatchment 22S: SA22 ROOF

Runoff = 0.47 cfs @ 12.09 hrs, Volume= 0.036 af, Depth> 4.87"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YEAR STORM Rainfall=5.50"

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Type III 24-hr 25YEAR STORM Rainfall=5.50"

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Area (sf)	CN	Description
3,900	98	Roofs, HSG D
3,900		100.00% Impervious Area

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

Summary for Subcatchment 23S: SA23 ROOF

Runoff = 0.97 cfs @ 12.09 hrs, Volume= 0.075 af, Depth> 4.87"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YEAR STORM Rainfall=5.50"

Area (sf)	CN	Description
8,020	98	Roofs, HSG D
8,020		100.00% Impervious Area

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

Summary for Subcatchment 24S: SA24 ROOF

Runoff = 0.86 cfs @ 12.09 hrs, Volume= 0.066 af, Depth> 4.87"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YEAR STORM Rainfall=5.50"

Area (sf)	CN	Description
7,100	98	Roofs, HSG D
7,100		100.00% Impervious Area

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

Summary for Subcatchment 25S: SA25 ROOF

Runoff = 0.67 cfs @ 12.09 hrs, Volume= 0.052 af, Depth> 4.87"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YEAR STORM Rainfall=5.50"

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Type III 24-hr 25YEAR STORM Rainfall=5.50"

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Area (sf)	CN	Description
5,550	98	Roofs, HSG D
5,550		100.00% Impervious Area

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

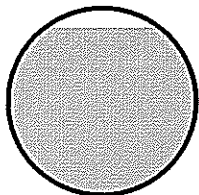
Summary for Reach 6R: SD CB6-CB7

Inflow Area = 1.119 ac, 95.18% Impervious, Inflow Depth > 4.68" for 25YEAR STORM event
 Inflow = 5.42 cfs @ 12.09 hrs, Volume= 0.437 af
 Outflow = 5.34 cfs @ 12.11 hrs, Volume= 0.436 af, Atten= 1%, Lag= 1.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 4.65 fps, Min. Travel Time= 0.9 min
 Avg. Velocity= 2.04 fps, Avg. Travel Time= 2.1 min

Peak Storage= 294 cf @ 12.11 hrs
 Average Depth at Peak Storage= 1.12'
 Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 5.01 cfs

15.0" Round Pipe
 n= 0.010
 Length= 253.0' Slope= 0.0036 1/
 Inlet Invert= 116.00', Outlet Invert= 115.10'

**Summary for Reach 7R: SD CB7-CB8**

Inflow Area = 1.142 ac, 93.26% Impervious, Inflow Depth > 4.62" for 25YEAR STORM event
 Inflow = 5.38 cfs @ 12.11 hrs, Volume= 0.439 af
 Outflow = 5.39 cfs @ 12.11 hrs, Volume= 0.439 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 3.22 fps, Min. Travel Time= 0.5 min
 Avg. Velocity= 1.29 fps, Avg. Travel Time= 1.1 min

Peak Storage= 147 cf @ 12.11 hrs
 Average Depth at Peak Storage= 1.05'
 Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 9.91 cfs

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Type III 24-hr 25YEAR STORM Rainfall=5.50"

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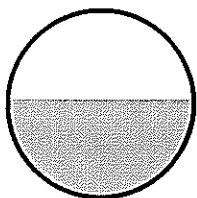
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24.0" Round Pipe

n= 0.010

Length= 88.0' Slope= 0.0011 '/'

Inlet Invert= 115.10', Outlet Invert= 115.00'



Summary for Reach 8R: SD CB8-DMH1

Inflow Area = 1.153 ac, 92.34% Impervious, Inflow Depth > 4.58" for 25YEAR STORM event
Inflow = 5.41 cfs @ 12.11 hrs, Volume= 0.441 af
Outflow = 5.41 cfs @ 12.11 hrs, Volume= 0.441 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 6.74 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 2.62 fps, Avg. Travel Time= 0.2 min

Peak Storage= 28 cf @ 12.11 hrs

Average Depth at Peak Storage= 0.60'

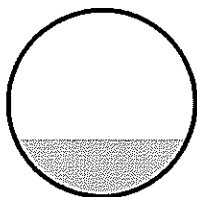
Bank-Full Depth= 2.00' Flow Area= 3.1 sf, Capacity= 27.23 cfs

24.0" Round Pipe

n= 0.010

Length= 35.0' Slope= 0.0086 '/'

Inlet Invert= 115.00', Outlet Invert= 114.70'



Summary for Reach 9R: SD CB9-DMH2

Inflow Area = 0.086 ac, 30.67% Impervious, Inflow Depth > 2.40" for 25YEAR STORM event
Inflow = 0.23 cfs @ 12.14 hrs, Volume= 0.017 af
Outflow = 0.23 cfs @ 12.15 hrs, Volume= 0.017 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.17 fps, Min. Travel Time= 0.4 min

Avg. Velocity = 1.30 fps, Avg. Travel Time= 0.9 min

Peak Storage= 5 cf @ 12.15 hrs

Average Depth at Peak Storage= 0.15'

Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 4.88 cfs

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Type III 24-hr 25YEAR STORM Rainfall=5.50"

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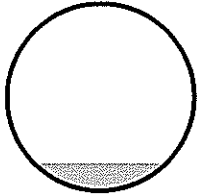
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12.0" Round Pipe

n= 0.010

Length= 72.0' Slope= 0.0111 '/'

Inlet Invert= 115.80', Outlet Invert= 115.00'



Summary for Reach 11P: DMH2 DMH3

Inflow Area = 1.367 ac, 89.17% Impervious, Inflow Depth > 3.82" for 25YEAR STORM event
Inflow = 2.39 cfs @ 12.14 hrs, Volume= 0.435 af
Outflow = 2.39 cfs @ 12.14 hrs, Volume= 0.435 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 5.52 fps, Min. Travel Time= 0.1 min

Avg. Velocity= 2.85 fps, Avg. Travel Time= 0.1 min

Peak Storage= 10 cf @ 12.14 hrs

Average Depth at Peak Storage= 0.48'

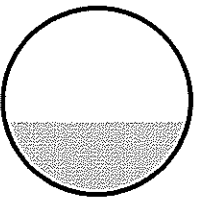
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 7.67 cfs

15.0" Round Pipe

n= 0.010

Length= 24.0' Slope= 0.0083 '/'

Inlet Invert= 115.00', Outlet Invert= 114.80'



Summary for Reach 20R: ROOF DRAIN

Inflow Area = 0.074 ac, 100.00% Impervious, Inflow Depth > 4.87" for 25YEAR STORM event
Inflow = 0.39 cfs @ 12.09 hrs, Volume= 0.030 af
Outflow = 0.39 cfs @ 12.09 hrs, Volume= 0.030 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.78 fps, Min. Travel Time= 0.3 min

Avg. Velocity= 1.50 fps, Avg. Travel Time= 0.7 min

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Type III 24-hr 25YEAR STORM Rainfall=5.50"

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Peak Storage= 6 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.26'

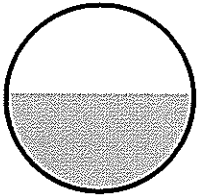
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.73 cfs

6.0" Round Pipe

n= 0.010 PVC, smooth interior

Length= 60.0' Slope= 0.0100 '/'

Inlet Invert= 0.00', Outlet Invert= -0.60'



Summary for Reach 21R: ROOF DRAIN

Inflow Area = 0.057 ac, 100.00% Impervious, Inflow Depth > 4.87" for 25YEAR STORM event

Inflow = 0.30 cfs @ 12.09 hrs, Volume= 0.023 af

Outflow = 0.30 cfs @ 12.09 hrs, Volume= 0.023 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.54 fps, Min. Travel Time= 0.3 min

Avg. Velocity= 1.39 fps, Avg. Travel Time= 0.7 min

Peak Storage= 5 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.22'

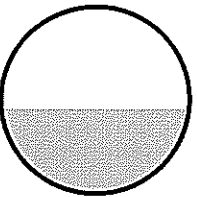
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.73 cfs

6.0" Round Pipe

n= 0.010

Length= 60.0' Slope= 0.0100 '/'

Inlet Invert= 0.00', Outlet Invert= -0.60'



Summary for Reach 22R: ROOF DRAIN

Inflow Area = 0.090 ac, 100.00% Impervious, Inflow Depth > 4.87" for 25YEAR STORM event

Inflow = 0.47 cfs @ 12.09 hrs, Volume= 0.036 af

Outflow = 0.47 cfs @ 12.09 hrs, Volume= 0.036 af, Atten= 0%, Lag= 0.2 min

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Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.95 fps, Min. Travel Time= 0.3 min

Avg. Velocity= 1.59 fps, Avg. Travel Time= 0.6 min

Peak Storage= 7 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.29'

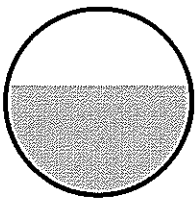
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.73 cfs

6.0" Round Pipe

n= 0.010

Length= 60.0' Slope= 0.0100 '/'

Inlet Invert= 0.00', Outlet Invert= -0.60'



Summary for Reach 23R: ROOF DRAIN

Inflow Area = 0.184 ac, 100.00% Impervious, Inflow Depth > 4.87" for 25YEAR STORM event

Inflow = 0.97 cfs @ 12.09 hrs, Volume= 0.075 af

Outflow = 0.73 cfs @ 12.05 hrs, Volume= 0.075 af, Atten= 25%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 4.23 fps, Min. Travel Time= 0.1 min

Avg. Velocity= 1.95 fps, Avg. Travel Time= 0.2 min

Peak Storage= 4 cf @ 12.05 hrs

Average Depth at Peak Storage= 0.50'

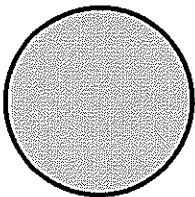
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.73 cfs

6.0" Round Pipe

n= 0.010

Length= 20.0' Slope= 0.0100 '/'

Inlet Invert= 0.00', Outlet Invert= -0.20'



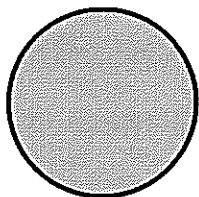
Summary for Reach 24R: ROOF DRAIN

Inflow Area = 0.163 ac, 100.00% Impervious, Inflow Depth > 4.87" for 25YEAR STORM event
Inflow = 0.86 cfs @ 12.09 hrs, Volume= 0.066 af
Outflow = 0.73 cfs @ 12.05 hrs, Volume= 0.066 af, Atten= 15%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.17 fps, Min. Travel Time= 0.1 min
Avg. Velocity= 1.89 fps, Avg. Travel Time= 0.1 min

Peak Storage= 3 cf @ 12.05 hrs
Average Depth at Peak Storage= 0.50'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.73 cfs

6.0" Round Pipe
n= 0.010
Length= 15.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -0.15'

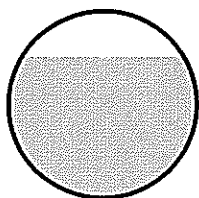
**Summary for Reach 25R: ROOF DRAIN**

Inflow Area = 0.127 ac, 100.00% Impervious, Inflow Depth > 4.87" for 25YEAR STORM event
Inflow = 0.67 cfs @ 12.09 hrs, Volume= 0.052 af
Outflow = 0.67 cfs @ 12.09 hrs, Volume= 0.052 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.21 fps, Min. Travel Time= 0.1 min
Avg. Velocity= 1.76 fps, Avg. Travel Time= 0.3 min

Peak Storage= 5 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.38'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.73 cfs

6.0" Round Pipe
n= 0.010
Length= 30.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -0.30'



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Type III 24-hr 25YEAR STORM Rainfall=5.50"

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Summary for Pond 3P: SD CB3-CB4

Inflow Area = 0.215 ac, 93.06% Impervious, Inflow Depth > 4.58" for 25YEAR STORM event
 Inflow = 1.10 cfs @ 12.09 hrs, Volume= 0.082 af
 Outflow = 1.10 cfs @ 12.09 hrs, Volume= 0.082 af, Atten= 0%, Lag= 0.1 min
 Primary = 1.10 cfs @ 12.09 hrs, Volume= 0.082 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 118.31' @ 12.09 hrs Surf.Area= 12 sf Storage= 10 cf

Plug-Flow detention time= 0.6 min calculated for 0.082 af (100% of inflow)
 Center-of-Mass det. time= 0.4 min (744.6 - 744.2)

Volume	Invert	Avail.Storage	Storage Description
#1	117.50'	119 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
117.50	12	0	0
125.82	12	100	100
126.00	200	19	119

Device	Routing	Invert	Outlet Devices
#1	Primary	117.50'	12.0" Round Culvert L= 73.0' Ke= 0.500 Inlet / Outlet Invert= 117.50' / 117.50' S= 0.0000 ' S= 0.0000 ' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=1.07 cfs @ 12.09 hrs HW=118.30' (Free Discharge)
 1=Culvert (Barrel Controls 1.07 cfs @ 2.19 fps)

Summary for Pond 4P: SD CB4-CB5

Inflow Area = 0.558 ac, 91.57% Impervious, Inflow Depth > 4.53" for 25YEAR STORM event
 Inflow = 2.84 cfs @ 12.09 hrs, Volume= 0.211 af
 Outflow = 2.84 cfs @ 12.09 hrs, Volume= 0.211 af, Atten= 0%, Lag= 0.1 min
 Primary = 2.84 cfs @ 12.09 hrs, Volume= 0.211 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 118.46' @ 12.09 hrs Surf.Area= 12 sf Storage= 13 cf

Plug-Flow detention time= 0.2 min calculated for 0.210 af (100% of inflow)
 Center-of-Mass det. time= 0.1 min (746.2 - 746.0)

Volume	Invert	Avail.Storage	Storage Description
#1	117.40'	350 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
117.40	12	0	0
125.50	12	97	97
126.00	1,000	253	350

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Device	Routing	Invert	Outlet Devices
#1	Primary	117.40'	12.0" Round Culvert L= 54.0' Ke= 0.500 Inlet / Outlet Invert= 117.40' / 117.00' S= 0.0074 ' S= 0.0074 ' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=2.78 cfs @ 12.09 hrs HW=118.44' (Free Discharge)

1=Culvert (Inlet Controls 2.78 cfs @ 3.53 fps)

Summary for Pond 5P: SD CB5-CB6

Inflow Area = 0.772 ac, 93.01% Impervious, Inflow Depth > 4.60" for 25YEAR STORM event
 Inflow = 3.95 cfs @ 12.09 hrs, Volume= 0.296 af
 Outflow = 3.96 cfs @ 12.09 hrs, Volume= 0.296 af, Atten= 0%, Lag= 0.1 min
 Primary = 3.96 cfs @ 12.09 hrs, Volume= 0.296 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 118.49' @ 12.09 hrs Surf.Area= 12 sf Storage= 19 cf

Plug-Flow detention time= 0.2 min calculated for 0.295 af (100% of inflow)

Center-of-Mass det. time= 0.1 min (744.0 - 743.9)

Volume	Invert	Avail.Storage	Storage Description
#1	116.90'	262 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
116.90	12	0	0
126.00	12	109	109
126.50	600	153	262

Device	Routing	Invert	Outlet Devices
#1	Primary	116.90'	12.0" Round Culvert L= 70.0' Ke= 0.500 Inlet / Outlet Invert= 116.90' / 116.00' S= 0.0129 ' S= 0.0129 ' Cc= 0.900 n= 0.010, Flow Area= 0.79 sf

Primary OutFlow Max=3.88 cfs @ 12.09 hrs HW=118.45' (Free Discharge)

1=Culvert (Inlet Controls 3.88 cfs @ 4.94 fps)

Summary for Pond 9P: SD DMH1-DMH2

Inflow Area = 1.281 ac, 93.10% Impervious, Inflow Depth > 4.61" for 25YEAR STORM event
 Inflow = 6.06 cfs @ 12.11 hrs, Volume= 0.492 af
 Outflow = 6.05 cfs @ 12.11 hrs, Volume= 0.492 af, Atten= 0%, Lag= 0.1 min
 Discarded = 3.88 cfs @ 12.11 hrs, Volume= 0.074 af
 Primary = 2.17 cfs @ 12.11 hrs, Volume= 0.418 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 120.22' @ 12.11 hrs Surf.Area= 28 sf Storage= 543 cf

Plug-Flow detention time= 2.3 min calculated for 0.492 af (100% of inflow)

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Type III 24-hr 25YEAR STORM Rainfall=5.50"

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Center-of-Mass det. time= 2.1 min (745.1 - 743.0)

Volume	Invert	Avail.Storage	Storage Description
#1	114.70'	273 cf	6.00'D x 9.66'H Vertical Cone/Cylinder
#2	114.70'	110 cf	24.0" D x 35.0'L Pipe Storage S= 0.0030 '/'
#3	115.00'	276 cf	24.0" D x 88.0'L Pipe Storage
		660 cf	Total Available Storage

Device	Routing	Invert	Outlet Devices
#1	Device 2	114.70'	6.0" Vert. Orifice/Grate C= 0.600
#2	Primary	114.70'	15.0" Round Culvert L= 24.0' Ke= 0.500 Inlet / Outlet Invert= 114.70' / 114.50' S= 0.0083 '/' Cc= 0.900 n= 0.010, Flow Area= 1.23 sf
#3	Discarded	119.70'	3.1' long x 1.00' rise Sharp-Crested Rectangular Weir 0 End Contraction(s) 5.0' Crest Height
#4	Discarded	121.00'	3.1' long x 1.00' rise Sharp-Crested Rectangular Weir 0 End Contraction(s) 7.0' Crest Height

Discarded OutFlow Max=3.77 cfs @ 12.11 hrs HW=120.21' (Free Discharge)

3=Sharp-Crested Rectangular Weir (Weir Controls 3.77 cfs @ 2.37 fps)

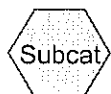
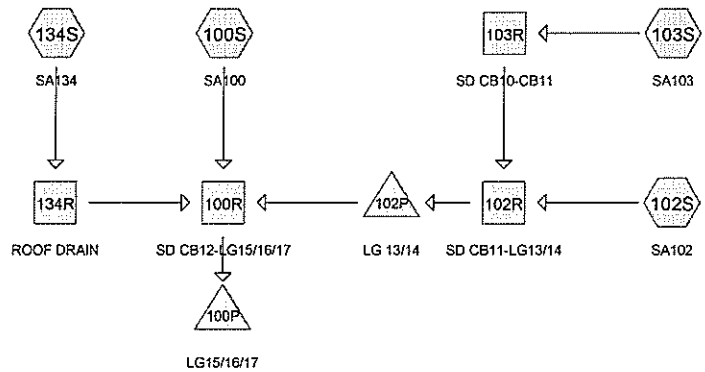
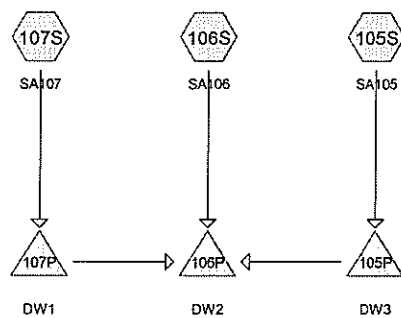

4=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)
Primary OutFlow Max=2.17 cfs @ 12.11 hrs HW=120.21' (Free Discharge)

2=Culvert (Passes 2.17 cfs of 13.06 cfs potential flow)


1=Orifice/Grate (Orifice Controls 2.17 cfs @ 11.05 fps)

APPENDIX E

**GOODWILL SITE POST-DEVELOPMENT CALCULATIONS
PARK DANFORTH MODELS II & III**



Routing Diagram for PARK DANFORTH MODEL II POST
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PARK DANFORTH MODEL II POST

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.327	61	>75% Grass cover, Good, HSG B (102S, 103S, 105S, 106S, 107S)
0.369	98	Paved parking, HSG D (100S, 102S, 103S)
0.192	98	Roofs, HSG D (134S)
0.033	98	Unconnected pavement, HSG D (106S, 107S)
0.025	98	Unconnected roofs, HSG D (105S)
0.946	85	TOTAL AREA

PARK DANFORTH MODEL II POST

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.327	HSG B	102S, 103S, 105S, 106S, 107S
0.000	HSG C	
0.619	HSG D	100S, 102S, 103S, 105S, 106S, 107S, 134S
0.000	Other	
0.946		TOTAL AREA

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.327	0.000	0.000	0.000	0.327	>75% Grass cover, Good	102S, 103S, 105S, 106S, 107S
0.000	0.000	0.000	0.369	0.000	0.369	Paved parking	100S, 102S, 103S
0.000	0.000	0.000	0.033	0.000	0.033	Unconnected pavement	106S, 107S
0.000	0.000	0.000	0.192	0.000	0.192	Roofs	134S
0.000	0.000	0.000	0.025	0.000	0.025	Unconnected roofs	105S
0.000	0.327	0.000	0.619	0.000	0.946	TOTAL AREA	

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Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	100R	115.12	115.08	4.0	0.0100	0.012	12.0	0.0	0.0
2	102R	115.68	115.53	15.0	0.0100	0.012	12.0	0.0	0.0
3	103R	116.25	115.78	47.0	0.0100	0.012	12.0	0.0	0.0
4	134R	0.00	-0.30	30.0	0.0100	0.012	6.0	0.0	0.0
5	100P	115.08	114.96	12.0	0.0100	0.012	12.0	0.0	0.0
6	102P	115.53	115.22	31.0	0.0100	0.012	12.0	0.0	0.0
7	105P	123.90	123.90	28.0	0.0000	0.012	6.0	0.0	0.0
8	107P	123.90	123.90	34.0	0.0000	0.012	6.0	0.0	0.0

PARK DANFORTH MODEL II POST

Type III 24-hr 2 YEAR STORM Rainfall=3.00"

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Summary for Subcatchment 100S: SA100

Runoff = 0.45 cfs @ 12.09 hrs, Volume= 0.034 af, Depth> 2.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.00"

Area (sf)	CN	Description
6,877	98	Paved parking, HSG D
6,877		100.00% Impervious Area

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

Summary for Subcatchment 102S: SA102

Runoff = 0.16 cfs @ 12.09 hrs, Volume= 0.011 af, Depth> 1.41"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.00"

Area (sf)	CN	Description
1,495	61	>75% Grass cover, Good, HSG B
2,508	98	Paved parking, HSG D
4,003	84	Weighted Average
1,495		37.35% Pervious Area
2,508		62.65% Impervious Area

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

Summary for Subcatchment 103S: SA103

Runoff = 0.45 cfs @ 12.09 hrs, Volume= 0.031 af, Depth> 2.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.00"

Area (sf)	CN	Description
1,344	61	>75% Grass cover, Good, HSG B
6,677	98	Paved parking, HSG D
8,021	92	Weighted Average
1,344		16.76% Pervious Area
6,677		83.24% Impervious Area

PARK DANFORTH MODEL II POST

Type III 24-hr 2 YEAR STORM Rainfall=3.00"

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

Summary for Subcatchment 105S: SA105

Runoff = 0.04 cfs @ 12.29 hrs, Volume= 0.005 af, Depth> 0.44"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.00"

Area (sf)	CN	Description
1,080	98	Unconnected roofs, HSG D
4,513	61	>75% Grass cover, Good, HSG B
5,593	68	Weighted Average, UI Adjusted CN = 65
4,513		80.69% Pervious Area
1,080		19.31% Impervious Area
1,080		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.9	110	0.0200	0.12		Sheet Flow, GRASS Grass: Dense n= 0.240 P2= 3.00"

Summary for Subcatchment 106S: SA106

Runoff = 0.02 cfs @ 12.32 hrs, Volume= 0.003 af, Depth> 0.35"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.00"

Area (sf)	CN	Description
4,300	61	>75% Grass cover, Good, HSG B
360	98	Unconnected pavement, HSG D
4,660	64	Weighted Average, UI Adjusted CN = 62
4,300		92.27% Pervious Area
360		7.73% Impervious Area
360		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	90	0.0150	0.10		Sheet Flow, GRASS Grass: Dense n= 0.240 P2= 3.00"

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Type III 24-hr 2 YEAR STORM Rainfall=3.00"

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Summary for Subcatchment 107S: SA107

Runoff = 0.03 cfs @ 12.20 hrs, Volume= 0.003 af, Depth> 0.48"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.00"

Area (sf)	CN	Description
1,088	98	Unconnected pavement, HSG D
2,594	61	>75% Grass cover, Good, HSG B
3,682	72	Weighted Average, UI Adjusted CN = 66
2,594		70.45% Pervious Area
1,088		29.55% Impervious Area
1,088		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.5	90	0.0300	0.13		Sheet Flow, GRASS Grass: Dense n= 0.240 P2= 3.00"

Summary for Subcatchment 134S: SA134

Runoff = 0.55 cfs @ 12.09 hrs, Volume= 0.041 af, Depth> 2.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.00"

Area (sf)	CN	Description
8,370	98	Roofs, HSG D
8,370		100.00% Impervious Area

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

Summary for Reach 100R: SD CB12-LG15/16/17

Inflow Area = 0.626 ac, 89.59% Impervious, Inflow Depth > 1.89" for 2 YEAR STORM event
 Inflow = 1.57 cfs @ 12.09 hrs, Volume= 0.098 af
 Outflow = 1.57 cfs @ 12.10 hrs, Volume= 0.098 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 4.66 fps, Min. Travel Time= 0.0 min
 Avg. Velocity = 1.64 fps, Avg. Travel Time= 0.0 min

Peak Storage= 1 cf @ 12.09 hrs
 Average Depth at Peak Storage= 0.44'
 Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

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Type III 24-hr 2 YEAR STORM Rainfall=3.00"

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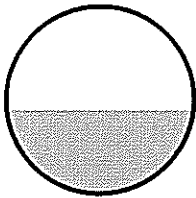
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12.0" Round Pipe

n= 0.012

Length= 4.0' Slope= 0.0100 1/'

Inlet Invert= 115.12', Outlet Invert= 115.08'

**Summary for Reach 102R: SD CB11-LG13/14**

Inflow Area = 0.276 ac, 76.39% Impervious, Inflow Depth > 1.83" for 2 YEAR STORM event
Inflow = 0.60 cfs @ 12.10 hrs, Volume= 0.042 af
Outflow = 0.60 cfs @ 12.10 hrs, Volume= 0.042 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.58 fps, Min. Travel Time= 0.1 min

Avg. Velocity= 1.26 fps, Avg. Travel Time= 0.2 min

Peak Storage= 3 cf @ 12.10 hrs

Average Depth at Peak Storage= 0.27'

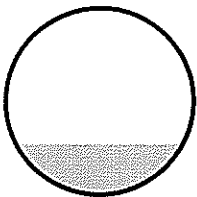
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe

n= 0.012

Length= 15.0' Slope= 0.0100 1/'

Inlet Invert= 115.68', Outlet Invert= 115.53'

**Summary for Reach 103R: SD CB10-CB11**

Inflow Area = 0.184 ac, 83.24% Impervious, Inflow Depth > 2.04" for 2 YEAR STORM event
Inflow = 0.45 cfs @ 12.09 hrs, Volume= 0.031 af
Outflow = 0.44 cfs @ 12.10 hrs, Volume= 0.031 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.28 fps, Min. Travel Time= 0.2 min

Avg. Velocity= 1.16 fps, Avg. Travel Time= 0.7 min

Peak Storage= 6 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.23'

Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

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Type III 24-hr 2 YEAR STORM Rainfall=3.00"

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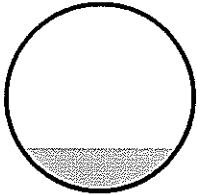
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12.0" Round Pipe

n= 0.012

Length= 47.0' Slope= 0.0100 '/'

Inlet Invert= 116.25', Outlet Invert= 115.78'

**Summary for Reach 134R: ROOF DRAIN**

Inflow Area = 0.192 ac, 100.00% Impervious, Inflow Depth > 2.59" for 2 YEAR STORM event
Inflow = 0.55 cfs @ 12.09 hrs, Volume= 0.041 af
Outflow = 0.54 cfs @ 12.09 hrs, Volume= 0.041 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.50 fps, Min. Travel Time= 0.1 min

Avg. Velocity= 1.44 fps, Avg. Travel Time= 0.3 min

Peak Storage= 5 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.37'

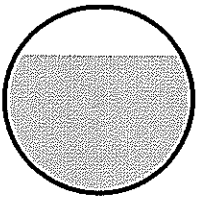
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.61 cfs

6.0" Round Pipe

n= 0.012

Length= 30.0' Slope= 0.0100 '/'

Inlet Invert= 0.00', Outlet Invert= -0.30'

**Summary for Pond 100P: LG15/16/17**

Inflow Area = 0.626 ac, 89.59% Impervious, Inflow Depth > 1.89" for 2 YEAR STORM event
Inflow = 1.57 cfs @ 12.10 hrs, Volume= 0.098 af
Outflow = 1.58 cfs @ 12.10 hrs, Volume= 0.089 af, Atten= 0%, Lag= 0.5 min
Discarded = 0.03 cfs @ 12.10 hrs, Volume= 0.024 af
Primary = 1.55 cfs @ 12.10 hrs, Volume= 0.065 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 115.84' @ 12.10 hrs Surf.Area= 162 sf Storage= 541 cf

Plug-Flow detention time= 54.6 min calculated for 0.089 af (90% of inflow)

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Type III 24-hr 2 YEAR STORM Rainfall=3.00"

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Center-of-Mass det. time= 26.5 min (770.3 - 743.8)

Volume	Invert	Avail.Storage	Storage Description
#1	109.00'	412 cf	Custom Stage Data (Conic) Listed below (Recalc) 1,228 cf Overall - 198 cf Embedded = 1,030 cf x 40.0% Voids
#2	112.46'	198 cf	Custom Stage Data (Prismatic) Listed below (Recalc) Inside #1
		610 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
109.00	162	0	0	162
116.58	162	1,228	1,228	504

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
112.46	48	0	0
116.58	48	198	198

Device	Routing	Invert	Outlet Devices
#1	Discarded	109.00'	2.410 in/hr Exfiltration over Wetted area
#2	Primary	115.08'	12.0" Round Culvert L= 12.0' Ke= 0.500 Inlet / Outlet Invert= 115.08' / 114.96' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=0.03 cfs @ 12.10 hrs HW=115.84' (Free Discharge)↑ **1=Exfiltration** (Exfiltration Controls 0.03 cfs)**Primary OutFlow** Max=1.53 cfs @ 12.10 hrs HW=115.84' (Free Discharge)↑ **2=Culvert** (Barrel Controls 1.53 cfs @ 3.33 fps)**Summary for Pond 102P: LG 13/14**

Inflow Area =	0.276 ac, 76.39% Impervious, Inflow Depth > 1.83" for 2 YEAR STORM event
Inflow =	0.60 cfs @ 12.10 hrs, Volume= 0.042 af
Outflow =	0.60 cfs @ 12.10 hrs, Volume= 0.037 af, Atten= 1%, Lag= 0.4 min
Discarded =	0.02 cfs @ 12.10 hrs, Volume= 0.014 af
Primary =	0.58 cfs @ 12.10 hrs, Volume= 0.023 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 115.92' @ 12.10 hrs Surf.Area= 117 sf Storage= 296 cf

Plug-Flow detention time= 66.1 min calculated for 0.037 af (88% of inflow)

Center-of-Mass det. time= 27.4 min (803.6 - 776.2)

Volume	Invert	Avail.Storage	Storage Description
#1	110.86'	235 cf	Custom Stage Data (Conic) Listed below (Recalc) 722 cf Overall - 133 cf Embedded = 588 cf x 40.0% Voids
#2	112.86'	133 cf	Custom Stage Data (Prismatic) Listed below (Recalc) Inside #1
		369 cf	Total Available Storage

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
110.86	117	0	0	117
117.03	117	722	722	354

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
112.86	32	0	0
117.03	32	133	133

Device	Routing	Invert	Outlet Devices
#1	Discarded	110.86'	2.410 in/hr Exfiltration over Wetted area
#2	Primary	115.53'	12.0" Round Culvert L= 31.0' Ke= 0.500 Inlet / Outlet Invert= 115.53' / 115.22' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=0.02 cfs @ 12.10 hrs HW=115.92' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.02 cfs)**Primary OutFlow** Max=0.57 cfs @ 12.10 hrs HW=115.92' (Free Discharge)↑**2=Culvert** (Barrel Controls 0.57 cfs @ 3.00 fps)**Summary for Pond 105P: DW3**

Inflow Area = 0.128 ac, 19.31% Impervious, Inflow Depth > 0.44" for 2 YEAR STORM event
 Inflow = 0.04 cfs @ 12.29 hrs, Volume= 0.005 af
 Outflow = 0.01 cfs @ 13.72 hrs, Volume= 0.005 af, Atten= 80%, Lag= 85.7 min
 Discarded = 0.01 cfs @ 13.72 hrs, Volume= 0.005 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 119.84' @ 13.72 hrs Surf.Area= 81 sf Storage= 68 cf

Plug-Flow detention time= 104.7 min calculated for 0.005 af (96% of inflow)

Center-of-Mass det. time= 92.0 min (946.7 - 854.7)

Volume	Invert	Avail.Storage	Storage Description
#1	117.74'	205 cf	Custom Stage Data (Conic) Listed below (Recalc) 580 cf Overall - 67 cf Embedded = 513 cf x 40.0% Voids
#2	120.74'	67 cf	Custom Stage Data (Prismatic) Listed below (Recalc) Inside #1
		272 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
117.74	81	0	0	81
124.90	81	580	580	309

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
120.74	16	0	0
124.90	16	67	67

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Device	Routing	Invert	Outlet Devices
#1	Primary	123.90'	6.0" Round Culvert L= 28.0' Ke= 0.500 Inlet / Outlet Invert= 123.90' / 123.90' S= 0.0000 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#2	Discarded	117.74'	2.410 in/hr Exfiltration over Wetted area

Discarded OutFlow Max=0.01 cfs @ 13.72 hrs HW=119.84' (Free Discharge)↑**2=Exfiltration** (Exfiltration Controls 0.01 cfs)**Primary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=117.74' (Free Discharge)↑**1=Culvert** (Controls 0.00 cfs)**Summary for Pond 106P: DW2**

Inflow Area = 0.320 ac, 18.14% Impervious, Inflow Depth > 0.12" for 2 YEAR STORM event
 Inflow = 0.02 cfs @ 12.32 hrs, Volume= 0.003 af
 Outflow = 0.01 cfs @ 13.30 hrs, Volume= 0.003 af, Atten= 72%, Lag= 58.6 min
 Discarded = 0.01 cfs @ 13.30 hrs, Volume= 0.003 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 118.77' @ 13.30 hrs Surf.Area= 81 sf Storage= 33 cf

Plug-Flow detention time= 56.5 min calculated for 0.003 af (99% of inflow)

Center-of-Mass det. time= 54.5 min (919.9 - 865.5)

Volume	Invert	Avail.Storage	Storage Description
#1	117.74'	205 cf	Custom Stage Data (Conic) Listed below (Recalc) 580 cf Overall - 67 cf Embedded = 513 cf x 40.0% Voids
#2	120.74'	67 cf	Custom Stage Data (Prismatic) Listed below (Recalc) Inside #1
#3	122.90'	762 cf	Custom Stage Data (Conic) Listed below (Recalc) 1,904 cf Overall x 40.0% Voids
#4	123.90'	12 cf	6.0" D x 62.0'L Pipe Storage
		1,046 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
117.74	81	0	0	81
124.90	81	580	580	309

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
120.74	16	0	0
124.90	16	67	67

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
122.90	952	0	0	952
124.90	952	1,904	1,904	1,171

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Type III 24-hr 2 YEAR STORM Rainfall=3.00"

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Device	Routing	Invert	Outlet Devices
#1	Discarded	117.74'	2.410 in/hr Exfiltration over Wetted area

Discarded OutFlow Max=0.01 cfs @ 13.30 hrs HW=118.77' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.01 cfs)

Summary for Pond 107P: DW1

Inflow Area = 0.085 ac, 29.55% Impervious, Inflow Depth > 0.48" for 2 YEAR STORM event
 Inflow = 0.03 cfs @ 12.20 hrs, Volume= 0.003 af
 Outflow = 0.01 cfs @ 13.11 hrs, Volume= 0.003 af, Atten= 79%, Lag= 54.5 min
 Discarded = 0.01 cfs @ 13.11 hrs, Volume= 0.003 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 119.12' @ 13.11 hrs Surf.Area= 81 sf Storage= 45 cf

Plug-Flow detention time= 70.4 min calculated for 0.003 af (99% of inflow)

Center-of-Mass det. time= 68.5 min (916.7 - 848.2)

Volume	Invert	Avail.Storage	Storage Description
#1	117.74'	206 cf	Custom Stage Data (Conic) Listed below (Recalc) 580 cf Overall - 64 cf Embedded = 516 cf x 40.0% Voids
#2	120.74'	64 cf	Custom Stage Data (Prismatic) Listed below (Recalc) Inside #1
		270 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
117.74	81	0	0	81
124.90	81	580	580	309

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
120.74	16	0	0
124.74	16	64	64

Device	Routing	Invert	Outlet Devices
#1	Discarded	117.74'	2.410 in/hr Exfiltration over Wetted area
#2	Primary	123.90'	6.0" Round Culvert L= 34.0' Ke= 0.500 Inlet / Outlet Invert= 123.90' / 123.90' S= 0.0000 ' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf

Discarded OutFlow Max=0.01 cfs @ 13.11 hrs HW=119.12' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=117.74' (Free Discharge)

↑2=Culvert (Controls 0.00 cfs)

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Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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Summary for Subcatchment 100S: SA100

Runoff = 0.71 cfs @ 12.09 hrs, Volume= 0.055 af, Depth> 4.15"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.70"

Area (sf)	CN	Description
6,877	98	Paved parking, HSG D
6,877		100.00% Impervious Area

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

Summary for Subcatchment 102S: SA102

Runoff = 0.31 cfs @ 12.09 hrs, Volume= 0.022 af, Depth> 2.81"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.70"

Area (sf)	CN	Description
1,495	61	>75% Grass cover, Good, HSG B
2,508	98	Paved parking, HSG D
4,003	84	Weighted Average
1,495		37.35% Pervious Area
2,508		62.65% Impervious Area

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

Summary for Subcatchment 103S: SA103

Runoff = 0.76 cfs @ 12.09 hrs, Volume= 0.055 af, Depth> 3.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.70"

Area (sf)	CN	Description
1,344	61	>75% Grass cover, Good, HSG B
6,677	98	Paved parking, HSG D
8,021	92	Weighted Average
1,344		16.76% Pervious Area
6,677		83.24% Impervious Area

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Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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

Summary for Subcatchment 105S: SA105

Runoff = 0.15 cfs @ 12.24 hrs, Volume= 0.014 af, Depth> 1.32"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.70"

Area (sf)	CN	Description
1,080	98	Unconnected roofs, HSG D
4,513	61	>75% Grass cover, Good, HSG B
5,593	68	Weighted Average, UI Adjusted CN = 65
4,513		80.69% Pervious Area
1,080		19.31% Impervious Area
1,080		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.9	110	0.0200	0.12		Sheet Flow, GRASS Grass: Dense n= 0.240 P2= 3.00"

Summary for Subcatchment 106S: SA106

Runoff = 0.11 cfs @ 12.24 hrs, Volume= 0.010 af, Depth> 1.13"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.70"

Area (sf)	CN	Description
4,300	61	>75% Grass cover, Good, HSG B
360	98	Unconnected pavement, HSG D
4,660	64	Weighted Average, UI Adjusted CN = 62
4,300		92.27% Pervious Area
360		7.73% Impervious Area
360		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	90	0.0150	0.10		Sheet Flow, GRASS Grass: Dense n= 0.240 P2= 3.00"

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Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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Summary for Subcatchment 107S: SA107

Runoff = 0.12 cfs @ 12.17 hrs, Volume= 0.010 af, Depth> 1.39"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.70"

Area (sf)	CN	Description
1,088	98	Unconnected pavement, HSG D
2,594	61	>75% Grass cover, Good, HSG B
3,682	72	Weighted Average, UI Adjusted CN = 66
2,594		70.45% Pervious Area
1,088		29.55% Impervious Area
1,088		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.5	90	0.0300	0.13		Sheet Flow, GRASS Grass: Dense n= 0.240 P2= 3.00"

Summary for Subcatchment 134S: SA134

Runoff = 0.86 cfs @ 12.09 hrs, Volume= 0.066 af, Depth> 4.15"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.70"

Area (sf)	CN	Description
8,370	98	Roofs, HSG D
8,370		100.00% Impervious Area

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

Summary for Reach 100R: SD CB12-LG15/16/17

Inflow Area = 0.626 ac, 89.59% Impervious, Inflow Depth > 3.35" for 10 YEAR STORM event
 Inflow = 2.37 cfs @ 12.10 hrs, Volume= 0.175 af
 Outflow = 2.36 cfs @ 12.10 hrs, Volume= 0.175 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 5.16 fps, Min. Travel Time= 0.0 min
 Avg. Velocity = 1.95 fps, Avg. Travel Time= 0.0 min

Peak Storage= 2 cf @ 12.10 hrs
 Average Depth at Peak Storage= 0.57'
 Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

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Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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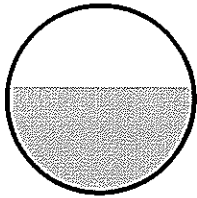
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12.0" Round Pipe

n= 0.012

Length= 4.0' Slope= 0.0100 1'

Inlet Invert= 115.12', Outlet Invert= 115.08'

**Summary for Reach 102R: SD CB11-LG13/14**

Inflow Area = 0.276 ac, 76.39% Impervious, Inflow Depth > 3.33" for 10 YEAR STORM event
Inflow = 1.07 cfs @ 12.09 hrs, Volume= 0.077 af
Outflow = 1.07 cfs @ 12.09 hrs, Volume= 0.077 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 4.21 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 1.53 fps, Avg. Travel Time= 0.2 min

Peak Storage= 4 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.36'

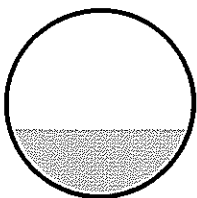
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe

n= 0.012

Length= 15.0' Slope= 0.0100 1'

Inlet Invert= 115.68', Outlet Invert= 115.53'

**Summary for Reach 103R: SD CB10-CB11**

Inflow Area = 0.184 ac, 83.24% Impervious, Inflow Depth > 3.59" for 10 YEAR STORM event
Inflow = 0.76 cfs @ 12.09 hrs, Volume= 0.055 af
Outflow = 0.76 cfs @ 12.09 hrs, Volume= 0.055 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.82 fps, Min. Travel Time= 0.2 min

Avg. Velocity = 1.40 fps, Avg. Travel Time= 0.6 min

Peak Storage= 9 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.30'

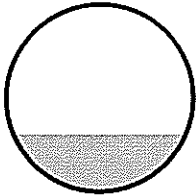
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe

n= 0.012

Length= 47.0' Slope= 0.0100 '/'

Inlet Invert= 116.25', Outlet Invert= 115.78'



Summary for Reach 134R: ROOF DRAIN

Inflow Area = 0.192 ac, 100.00% Impervious, Inflow Depth > 4.15" for 10 YEAR STORM event
 Inflow = 0.86 cfs @ 12.09 hrs, Volume= 0.066 af
 Outflow = 0.61 cfs @ 12.10 hrs, Volume= 0.066 af, Atten= 29%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.51 fps, Min. Travel Time= 0.1 min

Avg. Velocity= 1.66 fps, Avg. Travel Time= 0.3 min

Peak Storage= 6 cf @ 12.05 hrs

Average Depth at Peak Storage= 0.50'

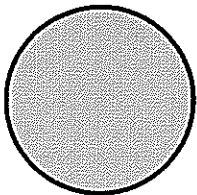
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.61 cfs

6.0" Round Pipe

n= 0.012

Length= 30.0' Slope= 0.0100 '/'

Inlet Invert= 0.00', Outlet Invert= -0.30'



Summary for Pond 100P: LG15/16/17

Inflow Area = 0.626 ac, 89.59% Impervious, Inflow Depth > 3.35" for 10 YEAR STORM event
 Inflow = 2.36 cfs @ 12.10 hrs, Volume= 0.175 af
 Outflow = 2.36 cfs @ 12.10 hrs, Volume= 0.164 af, Atten= 0%, Lag= 0.5 min
 Discarded = 0.03 cfs @ 12.10 hrs, Volume= 0.026 af
 Primary = 2.33 cfs @ 12.10 hrs, Volume= 0.138 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 116.08' @ 12.10 hrs Surf.Area= 162 sf Storage= 563 cf

Plug-Flow detention time= 38.4 min calculated for 0.164 af (94% of inflow)

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Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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Center-of-Mass det. time= 17.2 min (761.2 - 744.0)

Volume	Invert	Avail.Storage	Storage Description
#1	109.00'	412 cf	Custom Stage Data (Conic) Listed below (Recalc) 1,228 cf Overall - 198 cf Embedded = 1,030 cf x 40.0% Voids
#2	112.46'	198 cf	Custom Stage Data (Prismatic) Listed below (Recalc) Inside #1
		610 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
109.00	162	0	0	162
116.58	162	1,228	1,228	504

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
112.46	48	0	0
116.58	48	198	198

Device	Routing	Invert	Outlet Devices
#1	Discarded	109.00'	2.410 in/hr Exfiltration over Wetted area
#2	Primary	115.08'	12.0" Round Culvert L= 12.0' Ke= 0.500 Inlet / Outlet Invert= 115.08' / 114.96' S= 0.0100 ' /' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=0.03 cfs @ 12.10 hrs HW=116.07' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=2.31 cfs @ 12.10 hrs HW=116.07' (Free Discharge)

↑2=Culvert (Barrel Controls 2.31 cfs @ 3.68 fps)

Summary for Pond 102P: LG 13/14

Inflow Area = 0.276 ac, 76.39% Impervious, Inflow Depth > 3.33" for 10 YEAR STORM event
 Inflow = 1.07 cfs @ 12.09 hrs, Volume= 0.077 af
 Outflow = 1.07 cfs @ 12.10 hrs, Volume= 0.070 af, Atten= 0%, Lag= 0.4 min
 Discarded = 0.02 cfs @ 12.10 hrs, Volume= 0.016 af
 Primary = 1.05 cfs @ 12.10 hrs, Volume= 0.054 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 116.08' @ 12.10 hrs Surf.Area= 117 sf Storage= 306 cf

Plug-Flow detention time= 43.4 min calculated for 0.070 af (92% of inflow)
 Center-of-Mass det. time= 15.7 min (779.0 - 763.3)

Volume	Invert	Avail.Storage	Storage Description
#1	110.86'	235 cf	Custom Stage Data (Conic) Listed below (Recalc) 722 cf Overall - 133 cf Embedded = 588 cf x 40.0% Voids
#2	112.86'	133 cf	Custom Stage Data (Prismatic) Listed below (Recalc) Inside #1
		369 cf	Total Available Storage

PARK DANFORTH MODEL II POST

Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
110.86	117	0	0	117
117.03	117	722	722	354

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
112.86	32	0	0
117.03	32	133	133

Device	Routing	Invert	Outlet Devices
#1	Discarded	110.86'	2.410 in/hr Exfiltration over Wetted area
#2	Primary	115.53'	12.0" Round Culvert L= 31.0' Ke= 0.500 Inlet / Outlet Invert= 115.53' / 115.22' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=0.02 cfs @ 12.10 hrs HW=116.08' (Free Discharge)↑ **1=Exfiltration** (Exfiltration Controls 0.02 cfs)**Primary OutFlow** Max=1.05 cfs @ 12.10 hrs HW=116.08' (Free Discharge)↑ **2=Culvert** (Barrel Controls 1.05 cfs @ 3.41 fps)**Summary for Pond 105P: DW3**

Inflow Area = 0.128 ac, 19.31% Impervious, Inflow Depth > 1.32" for 10 YEAR STORM event
 Inflow = 0.15 cfs @ 12.24 hrs, Volume= 0.014 af
 Outflow = 0.06 cfs @ 12.68 hrs, Volume= 0.011 af, Atten= 61%, Lag= 26.0 min
 Discarded = 0.02 cfs @ 12.68 hrs, Volume= 0.010 af
 Primary = 0.04 cfs @ 12.68 hrs, Volume= 0.002 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 124.10' @ 12.68 hrs Surf.Area= 81 sf Storage= 238 cf

Plug-Flow detention time= 150.2 min calculated for 0.011 af (79% of inflow)

Center-of-Mass det. time= 94.9 min (922.8 - 827.8)

Volume	Invert	Avail.Storage	Storage Description
#1	117.74'	205 cf	Custom Stage Data (Conic) Listed below (Recalc) 580 cf Overall - 67 cf Embedded = 513 cf x 40.0% Voids
#2	120.74'	67 cf	Custom Stage Data (Prismatic) Listed below (Recalc) Inside #1
		272 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
117.74	81	0	0	81
124.90	81	580	580	309

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
120.74	16	0	0
124.90	16	67	67

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Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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Device	Routing	Invert	Outlet Devices
#1	Primary	123.90'	6.0" Round Culvert L= 28.0' Ke= 0.500 Inlet / Outlet Invert= 123.90' / 123.90' S= 0.0000 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#2	Discarded	117.74'	2.410 in/hr Exfiltration over Wetted area

Discarded OutFlow Max=0.02 cfs @ 12.68 hrs HW=124.10' (Free Discharge)↑**2=Exfiltration** (Exfiltration Controls 0.02 cfs)**Primary OutFlow** Max=0.04 cfs @ 12.68 hrs HW=124.10' (Free Discharge)↑**1=Culvert** (Barrel Controls 0.04 cfs @ 0.82 fps)**Summary for Pond 106P: DW2**

Inflow Area = 0.320 ac, 18.14% Impervious, Inflow Depth > 0.44" for 10 YEAR STORM event
 Inflow = 0.11 cfs @ 12.24 hrs, Volume= 0.012 af
 Outflow = 0.07 cfs @ 12.82 hrs, Volume= 0.010 af, Atten= 33%, Lag= 35.1 min
 Discarded = 0.07 cfs @ 12.82 hrs, Volume= 0.010 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 122.90' @ 12.80 hrs Surf.Area= 1,033 sf Storage= 190 cf

Plug-Flow detention time= 137.5 min calculated for 0.010 af (83% of inflow)
 Center-of-Mass det. time= 92.9 min (920.0 - 827.1)

Volume	Invert	Avail.Storage	Storage Description
#1	117.74'	205 cf	Custom Stage Data (Conic) Listed below (Recalc) 580 cf Overall - 67 cf Embedded = 513 cf x 40.0% Voids
#2	120.74'	67 cf	Custom Stage Data (Prismatic) Listed below (Recalc) Inside #1
#3	122.90'	762 cf	Custom Stage Data (Conic) Listed below (Recalc) 1,904 cf Overall x 40.0% Voids
#4	123.90'	12 cf	6.0" D x 62.0'L Pipe Storage
		1,046 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
117.74	81	0	0	81
124.90	81	580	580	309

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
120.74	16	0	0
124.90	16	67	67

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
122.90	952	0	0	952
124.90	952	1,904	1,904	1,171

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Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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Device	Routing	Invert	Outlet Devices
#1	Discarded	117.74'	2.410 in/hr Exfiltration over Wetted area

Discarded OutFlow Max=0.07 cfs @ 12.82 hrs HW=122.90' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.07 cfs)

Summary for Pond 107P: DW1

Inflow Area = 0.085 ac, 29.55% Impervious, Inflow Depth > 1.39" for 10 YEAR STORM event
 Inflow = 0.12 cfs @ 12.17 hrs, Volume= 0.010 af
 Outflow = 0.01 cfs @ 13.67 hrs, Volume= 0.008 af, Atten= 88%, Lag= 89.7 min
 Discarded = 0.01 cfs @ 13.67 hrs, Volume= 0.008 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 122.97' @ 13.67 hrs Surf.Area= 81 sf Storage= 191 cf

Plug-Flow detention time= 166.0 min calculated for 0.008 af (82% of inflow)

Center-of-Mass det. time= 117.3 min (939.7 - 822.4)

Volume	Invert	Avail.Storage	Storage Description
#1	117.74'	206 cf	Custom Stage Data (Conic) Listed below (Recalc) 580 cf Overall - 64 cf Embedded = 516 cf x 40.0% Voids
#2	120.74'	64 cf	Custom Stage Data (Prismatic) Listed below (Recalc) Inside #1
		270 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
117.74	81	0	0	81
124.90	81	580	580	309

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
120.74	16	0	0
124.74	16	64	64

Device	Routing	Invert	Outlet Devices
#1	Discarded	117.74'	2.410 in/hr Exfiltration over Wetted area
#2	Primary	123.90'	6.0" Round Culvert L= 34.0' Ke= 0.500 Inlet / Outlet Invert= 123.90' / 123.90' S= 0.0000 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf

Discarded OutFlow Max=0.01 cfs @ 13.67 hrs HW=122.97' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=117.74' (Free Discharge)

↑2=Culvert (Controls 0.00 cfs)

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Type III 24-hr 25YEAR STORM Rainfall=5.50"

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Summary for Subcatchment 100S: SA100

Runoff = 0.83 cfs @ 12.09 hrs, Volume= 0.064 af, Depth> 4.87"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type III 24-hr 25YEAR STORM Rainfall=5.50"

Area (sf)	CN	Description
6,877	98	Paved parking, HSG D
6,877		100.00% Impervious Area

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

Summary for Subcatchment 102S: SA102

Runoff = 0.39 cfs @ 12.09 hrs, Volume= 0.027 af, Depth> 3.51"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type III 24-hr 25YEAR STORM Rainfall=5.50"

Area (sf)	CN	Description
1,495	61	>75% Grass cover, Good, HSG B
2,508	98	Paved parking, HSG D
4,003	84	Weighted Average
1,495		37.35% Pervious Area
2,508		62.65% Impervious Area

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

Summary for Subcatchment 103S: SA103

Runoff = 0.91 cfs @ 12.09 hrs, Volume= 0.066 af, Depth> 4.33"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type III 24-hr 25YEAR STORM Rainfall=5.50"

Area (sf)	CN	Description
1,344	61	>75% Grass cover, Good, HSG B
6,677	98	Paved parking, HSG D
8,021	92	Weighted Average
1,344		16.76% Pervious Area
6,677		83.24% Impervious Area

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Type III 24-hr 25YEAR STORM Rainfall=5.50"

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

Summary for Subcatchment 105S: SA105

Runoff = 0.21 cfs @ 12.23 hrs, Volume= 0.019 af, Depth> 1.82"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YEAR STORM Rainfall=5.50"

Area (sf)	CN	Description
1,080	98	Unconnected roofs, HSG D
4,513	61	>75% Grass cover, Good, HSG B
5,593	68	Weighted Average, UI Adjusted CN = 65
4,513		80.69% Pervious Area
1,080		19.31% Impervious Area
1,080		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.9	110	0.0200	0.12		Sheet Flow, GRASS Grass: Dense n= 0.240 P2= 3.00"

Summary for Subcatchment 106S: SA106

Runoff = 0.15 cfs @ 12.23 hrs, Volume= 0.014 af, Depth> 1.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YEAR STORM Rainfall=5.50"

Area (sf)	CN	Description
4,300	61	>75% Grass cover, Good, HSG B
360	98	Unconnected pavement, HSG D
4,660	64	Weighted Average, UI Adjusted CN = 62
4,300		92.27% Pervious Area
360		7.73% Impervious Area
360		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	90	0.0150	0.10		Sheet Flow, GRASS Grass: Dense n= 0.240 P2= 3.00"

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Type III 24-hr 25YEAR STORM Rainfall=5.50"

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Summary for Subcatchment 107S: SA107

Runoff = 0.17 cfs @ 12.17 hrs, Volume= 0.013 af, Depth> 1.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type III 24-hr 25YEAR STORM Rainfall=5.50"

Area (sf)	CN	Description
1,088	98	Unconnected pavement, HSG D
2,594	61	>75% Grass cover, Good, HSG B
3,682	72	Weighted Average, UI Adjusted CN = 66
2,594		70.45% Pervious Area
1,088		29.55% Impervious Area
1,088		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.5	90	0.0300	0.13		Sheet Flow, GRASS
					Grass: Dense n= 0.240 P2= 3.00"

Summary for Subcatchment 134S: SA134

Runoff = 1.01 cfs @ 12.09 hrs, Volume= 0.078 af, Depth> 4.87"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type III 24-hr 25YEAR STORM Rainfall=5.50"

Area (sf)	CN	Description
8,370	98	Roofs, HSG D
8,370		100.00% Impervious Area

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

Summary for Reach 100R: SD CB12-LG15/16/17

Inflow Area = 0.626 ac, 89.59% Impervious, Inflow Depth > 4.07" for 25YEAR STORM event

Inflow = 2.71 cfs @ 12.09 hrs, Volume= 0.212 af

Outflow = 2.71 cfs @ 12.09 hrs, Volume= 0.212 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 5.32 fps, Min. Travel Time= 0.0 min

Avg. Velocity = 2.08 fps, Avg. Travel Time= 0.0 min

Peak Storage= 2 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.62'

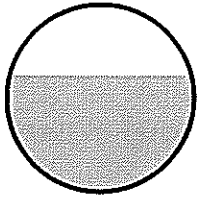
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe

n= 0.012

Length= 4.0' Slope= 0.0100 1/'

Inlet Invert= 115.12', Outlet Invert= 115.08'

**Summary for Reach 102R: SD CB11-LG13/14**

Inflow Area = 0.276 ac, 76.39% Impervious, Inflow Depth > 4.05" for 25YEAR STORM event
Inflow = 1.29 cfs @ 12.09 hrs, Volume= 0.093 af
Outflow = 1.29 cfs @ 12.09 hrs, Volume= 0.093 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 4.43 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 1.63 fps, Avg. Travel Time= 0.2 min

Peak Storage= 4 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.40'

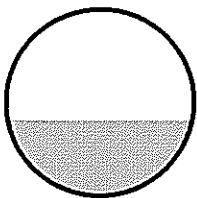
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe

n= 0.012

Length= 15.0' Slope= 0.0100 1/'

Inlet Invert= 115.68', Outlet Invert= 115.53'

**Summary for Reach 103R: SD CB10-CB11**

Inflow Area = 0.184 ac, 83.24% Impervious, Inflow Depth > 4.33" for 25YEAR STORM event
Inflow = 0.91 cfs @ 12.09 hrs, Volume= 0.066 af
Outflow = 0.91 cfs @ 12.09 hrs, Volume= 0.066 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 4.02 fps, Min. Travel Time= 0.2 min

Avg. Velocity = 1.49 fps, Avg. Travel Time= 0.5 min

Peak Storage= 11 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.33'

Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

PARK DANFORTH MODEL II POST

Type III 24-hr 25YEAR STORM Rainfall=5.50"

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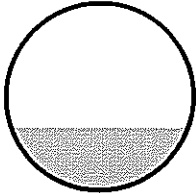
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12.0" Round Pipe

n= 0.012

Length= 47.0' Slope= 0.0100 1'

Inlet Invert= 116.25', Outlet Invert= 115.78'

**Summary for Reach 134R: ROOF DRAIN**

Inflow Area = 0.192 ac, 100.00% Impervious, Inflow Depth > 4.87" for 25YEAR STORM event
Inflow = 1.01 cfs @ 12.09 hrs, Volume= 0.078 af
Outflow = 0.65 cfs @ 12.02 hrs, Volume= 0.078 af, Atten= 36%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.53 fps, Min. Travel Time= 0.1 min

Avg. Velocity= 1.73 fps, Avg. Travel Time= 0.3 min

Peak Storage= 6 cf @ 12.05 hrs

Average Depth at Peak Storage= 0.50'

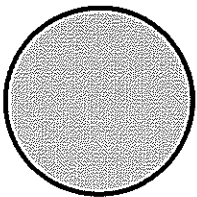
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.61 cfs

6.0" Round Pipe

n= 0.012

Length= 30.0' Slope= 0.0100 1'

Inlet Invert= 0.00', Outlet Invert= -0.30'

**Summary for Pond 100P: LG15/16/17**

Inflow Area = 0.626 ac, 89.59% Impervious, Inflow Depth > 4.07" for 25YEAR STORM event
Inflow = 2.71 cfs @ 12.09 hrs, Volume= 0.212 af
Outflow = 2.68 cfs @ 12.10 hrs, Volume= 0.201 af, Atten= 1%, Lag= 0.5 min
Discarded = 0.03 cfs @ 12.10 hrs, Volume= 0.027 af
Primary = 2.66 cfs @ 12.10 hrs, Volume= 0.174 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 116.18' @ 12.10 hrs Surf.Area= 162 sf Storage= 573 cf

Plug-Flow detention time= 34.1 min calculated for 0.201 af (95% of inflow)

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Type III 24-hr 25YEAR STORM Rainfall=5.50"

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Center-of-Mass det. time= 15.5 min (759.9 - 744.3)

Volume	Invert	Avail.Storage	Storage Description
#1	109.00'	412 cf	Custom Stage Data (Conic) Listed below (Recalc) 1,228 cf Overall - 198 cf Embedded = 1,030 cf x 40.0% Voids
#2	112.46'	198 cf	Custom Stage Data (Prismatic) Listed below (Recalc) Inside #1
		610 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
109.00	162	0	0	162
116.58	162	1,228	1,228	504

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
112.46	48	0	0
116.58	48	198	198

Device	Routing	Invert	Outlet Devices
#1	Discarded	109.00'	2.410 in/hr Exfiltration over Wetted area
#2	Primary	115.08'	12.0" Round Culvert L= 12.0' Ke= 0.500 Inlet / Outlet Invert= 115.08' / 114.96' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=0.03 cfs @ 12.10 hrs HW=116.18' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=2.65 cfs @ 12.10 hrs HW=116.18' (Free Discharge)

↑2=Culvert (Barrel Controls 2.65 cfs @ 3.82 fps)

Summary for Pond 102P: LG 13/14

Inflow Area =	0.276 ac, 76.39% Impervious, Inflow Depth > 4.05" for 25YEAR STORM event
Inflow =	1.29 cfs @ 12.09 hrs, Volume= 0.093 af
Outflow =	1.29 cfs @ 12.10 hrs, Volume= 0.087 af, Atten= 0%, Lag= 0.4 min
Discarded =	0.02 cfs @ 12.10 hrs, Volume= 0.017 af
Primary =	1.28 cfs @ 12.10 hrs, Volume= 0.070 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 116.15' @ 12.10 hrs Surf.Area= 117 sf Storage= 311 cf

Plug-Flow detention time= 38.8 min calculated for 0.087 af (93% of inflow)

Center-of-Mass det. time= 15.0 min (774.3 - 759.3)

Volume	Invert	Avail.Storage	Storage Description
#1	110.86'	235 cf	Custom Stage Data (Conic) Listed below (Recalc) 722 cf Overall - 133 cf Embedded = 588 cf x 40.0% Voids
#2	112.86'	133 cf	Custom Stage Data (Prismatic) Listed below (Recalc) Inside #1
		369 cf	Total Available Storage

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Type III 24-hr 25YEAR STORM Rainfall=5.50"

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
110.86	117	0	0	117
117.03	117	722	722	354

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
112.86	32	0	0
117.03	32	133	133

Device	Routing	Invert	Outlet Devices
#1	Discarded	110.86'	2.410 in/hr Exfiltration over Wetted area
#2	Primary	115.53'	12.0" Round Culvert L= 31.0' Ke= 0.500 Inlet / Outlet Invert= 115.53' / 115.22' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=0.02 cfs @ 12.10 hrs HW=116.15' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.02 cfs)**Primary OutFlow** Max=1.27 cfs @ 12.10 hrs HW=116.15' (Free Discharge)↑**2=Culvert** (Barrel Controls 1.27 cfs @ 3.55 fps)**Summary for Pond 105P: DW3**

Inflow Area = 0.128 ac, 19.31% Impervious, Inflow Depth > 1.82" for 25YEAR STORM event
 Inflow = 0.21 cfs @ 12.23 hrs, Volume= 0.019 af
 Outflow = 0.19 cfs @ 12.41 hrs, Volume= 0.016 af, Atten= 8%, Lag= 10.7 min
 Discarded = 0.02 cfs @ 12.42 hrs, Volume= 0.010 af
 Primary = 0.18 cfs @ 12.41 hrs, Volume= 0.006 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 124.31' @ 12.42 hrs Surf.Area= 81 sf Storage= 247 cf

Plug-Flow detention time= 112.1 min calculated for 0.016 af (82% of inflow)

Center-of-Mass det. time= 62.2 min (882.9 - 820.7)

Volume	Invert	Avail.Storage	Storage Description
#1	117.74'	205 cf	Custom Stage Data (Conic) Listed below (Recalc) 580 cf Overall - 67 cf Embedded = 513 cf x 40.0% Voids
#2	120.74'	67 cf	Custom Stage Data (Prismatic) Listed below (Recalc) Inside #1
		272 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
117.74	81	0	0	81
124.90	81	580	580	309

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
120.74	16	0	0
124.90	16	67	67

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Device	Routing	Invert	Outlet Devices
#1	Primary	123.90'	6.0" Round Culvert L= 28.0' Ke= 0.500 Inlet / Outlet Invert= 123.90' / 123.90' S= 0.0000 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#2	Discarded	117.74'	2.410 in/hr Exfiltration over Wetted area

Discarded OutFlow Max=0.02 cfs @ 12.42 hrs HW=124.28' (Free Discharge)↑**2=Exfiltration** (Exfiltration Controls 0.02 cfs)**Primary OutFlow** Max=0.16 cfs @ 12.41 hrs HW=124.28' (Free Discharge)↑**1=Culvert** (Barrel Controls 0.16 cfs @ 1.38 fps)**Summary for Pond 106P: DW2**

Inflow Area = 0.320 ac, 18.14% Impervious, Inflow Depth > 0.80" for 25YEAR STORM event
 Inflow = 0.29 cfs @ 12.41 hrs, Volume= 0.021 af
 Outflow = 0.07 cfs @ 12.98 hrs, Volume= 0.019 af, Atten= 76%, Lag= 34.1 min
 Discarded = 0.07 cfs @ 12.98 hrs, Volume= 0.019 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 123.33' @ 12.98 hrs Surf.Area= 1,033 sf Storage= 370 cf

Plug-Flow detention time= 95.2 min calculated for 0.019 af (88% of inflow)
 Center-of-Mass det. time= 62.5 min (872.3 - 809.8)

Volume	Invert	Avail.Storage	Storage Description
#1	117.74'	205 cf	Custom Stage Data (Conic) Listed below (Recalc) 580 cf Overall - 67 cf Embedded = 513 cf x 40.0% Voids
#2	120.74'	67 cf	Custom Stage Data (Prismatic) Listed below (Recalc) Inside #1
#3	122.90'	762 cf	Custom Stage Data (Conic) Listed below (Recalc) 1,904 cf Overall x 40.0% Voids
#4	123.90'	12 cf	6.0" D x 62.0'L Pipe Storage
		1,046 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
117.74	81	0	0	81
124.90	81	580	580	309

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
120.74	16	0	0
124.90	16	67	67

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
122.90	952	0	0	952
124.90	952	1,904	1,904	1,171

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Type III 24-hr 25YEAR STORM Rainfall=5.50"

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Device	Routing	Invert	Outlet Devices
#1	Discarded	117.74'	2.410 in/hr Exfiltration over Wetted area

Discarded OutFlow Max=0.07 cfs @ 12.98 hrs HW=123.33' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.07 cfs)**Summary for Pond 107P: DW1**

Inflow Area = 0.085 ac, 29.55% Impervious, Inflow Depth > 1.90" for 25YEAR STORM event
 Inflow = 0.17 cfs @ 12.17 hrs, Volume= 0.013 af
 Outflow = 0.06 cfs @ 12.61 hrs, Volume= 0.011 af, Atten= 66%, Lag= 26.1 min
 Discarded = 0.02 cfs @ 12.61 hrs, Volume= 0.010 af
 Primary = 0.04 cfs @ 12.61 hrs, Volume= 0.001 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 124.10' @ 12.61 hrs Surf.Area= 81 sf Storage= 238 cf

Plug-Flow detention time= 153.8 min calculated for 0.011 af (81% of inflow)

Center-of-Mass det. time= 102.0 min (917.4 - 815.4)

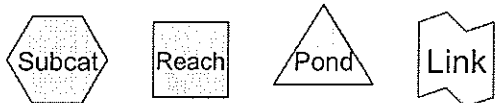
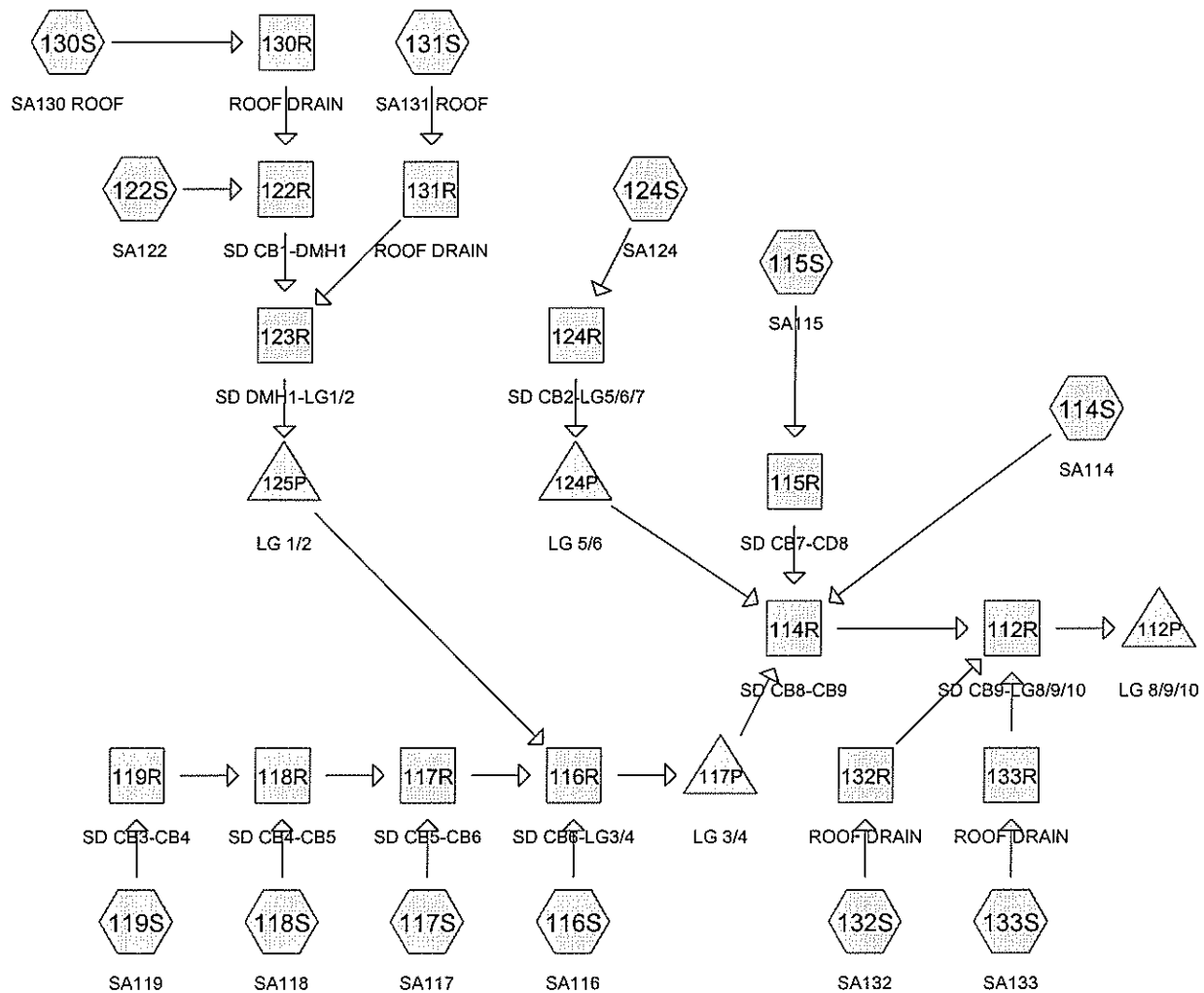
Volume	Invert	Avail.Storage	Storage Description
#1	117.74'	206 cf	Custom Stage Data (Conic) Listed below (Recalc) 580 cf Overall - 64 cf Embedded = 516 cf x 40.0% Voids
#2	120.74'	64 cf	Custom Stage Data (Prismatic) Listed below (Recalc) Inside #1
		270 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
117.74	81	0	0	81
124.90	81	580	580	309

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
120.74	16	0	0
124.74	16	64	64

Device	Routing	Invert	Outlet Devices
#1	Discarded	117.74'	2.410 in/hr Exfiltration over Wetted area
#2	Primary	123.90'	6.0" Round Culvert L= 34.0' Ke= 0.500 Inlet / Outlet Invert= 123.90' / 123.90' S= 0.0000 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf

Discarded OutFlow Max=0.02 cfs @ 12.61 hrs HW=124.10' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.02 cfs)**Primary OutFlow** Max=0.04 cfs @ 12.61 hrs HW=124.10' (Free Discharge)↑**2=Culvert** (Barrel Controls 0.04 cfs @ 0.77 fps)



Routing Diagram for PARK DANFORTH MODEL III POST
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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.023	39	>75% Grass cover, Good, HSG A (124S)
0.080	61	>75% Grass cover, Good, HSG B (116S, 117S, 118S, 119S, 122S)
0.589	98	Paved parking, HSG D (114S, 115S, 116S, 117S, 118S, 119S, 122S, 124S)
0.346	98	Roofs, HSG D (130S, 131S, 132S, 133S)
1.037	94	TOTAL AREA

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.023	HSG A	124S
0.080	HSG B	116S, 117S, 118S, 119S, 122S
0.000	HSG C	
0.934	HSG D	114S, 115S, 116S, 117S, 118S, 119S, 122S, 124S, 130S, 131S, 132S, 133S
0.000	Other	
1.037		TOTAL AREA

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.023	0.080	0.000	0.000	0.000	0.103	>75% Grass cover, Good	116S, 117S, 118S, 119S, 122S, 124S
0.000	0.000	0.000	0.589	0.000	0.589	Paved parking	114S, 115S, 116S, 117S, 118S, 119S, 122S, 124S
0.000	0.000	0.000	0.346	0.000	0.346	Roofs	130S, 131S, 132S, 133S
0.023	0.080	0.000	0.934	0.000	1.037	TOTAL AREA	

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Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	112R	118.50	118.31	19.0	0.0100	0.012	12.0	0.0	0.0
2	114R	119.74	118.60	114.0	0.0100	0.012	12.0	0.0	0.0
3	115R	120.20	119.97	23.0	0.0100	0.012	12.0	0.0	0.0
4	116R	120.03	119.89	14.0	0.0100	0.012	12.0	0.0	0.0
5	117R	120.27	120.13	14.0	0.0100	0.012	12.0	0.0	0.0
6	118R	120.94	120.37	57.0	0.0100	0.012	12.0	0.0	0.0
7	119R	121.15	121.04	11.0	0.0100	0.012	12.0	0.0	0.0
8	122R	121.85	121.21	64.0	0.0100	0.012	12.0	0.0	0.0
9	123R	121.11	120.60	51.0	0.0100	0.012	12.0	0.0	0.0
10	124R	120.90	120.63	27.0	0.0100	0.012	12.0	0.0	0.0
11	130R	0.00	-0.10	10.0	0.0100	0.012	6.0	0.0	0.0
12	131R	0.00	-0.25	25.0	0.0100	0.012	6.0	0.0	0.0
13	132R	0.00	-0.25	25.0	0.0100	0.012	6.0	0.0	0.0
14	133R	0.00	-0.25	25.0	0.0100	0.012	6.0	0.0	0.0
15	112P	118.31	116.40	79.0	0.0242	0.012	12.0	0.0	0.0
16	117P	118.89	118.84	5.0	0.0100	0.012	12.0	0.0	0.0
17	124P	120.63	120.16	47.0	0.0100	0.012	12.0	0.0	0.0
18	125P	120.60	120.41	19.0	0.0100	0.012	12.0	0.0	0.0

PARK DANFORTH MODEL III POST

Type III 24-hr 2 YEAR STORM Rainfall=3.00"

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Summary for Subcatchment 114S: SA114

Runoff = 0.45 cfs @ 12.09 hrs, Volume= 0.034 af, Depth> 2.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.00"

Area (sf)	CN	Description
6,863	98	Paved parking, HSG D
6,863		100.00% Impervious Area

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

Summary for Subcatchment 115S: SA115

Runoff = 0.09 cfs @ 12.09 hrs, Volume= 0.007 af, Depth> 2.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.00"

Area (sf)	CN	Description
1,408	98	Paved parking, HSG D
1,408		100.00% Impervious Area

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

Summary for Subcatchment 116S: SA116

Runoff = 0.24 cfs @ 12.09 hrs, Volume= 0.019 af, Depth> 2.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.00"

Area (sf)	CN	Description
3,708	98	Paved parking, HSG D
35	61	>75% Grass cover, Good, HSG B
3,743	98	Weighted Average
35		0.94% Pervious Area
3,708		99.06% Impervious Area

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

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Type III 24-hr 2 YEAR STORM Rainfall=3.00"

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Summary for Subcatchment 117S: SA117

Runoff = 0.07 cfs @ 12.10 hrs, Volume= 0.005 af, Depth> 0.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.00"

Area (sf)	CN	Description
1,618	61	>75% Grass cover, Good, HSG B
1,116	98	Paved parking, HSG D
2,734	76	Weighted Average
1,618		59.18% Pervious Area
1,116		40.82% Impervious Area

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

Summary for Subcatchment 118S: SA118

Runoff = 0.04 cfs @ 12.10 hrs, Volume= 0.003 af, Depth> 0.93"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.00"

Area (sf)	CN	Description
1,018	61	>75% Grass cover, Good, HSG B
697	98	Paved parking, HSG D
1,715	76	Weighted Average
1,018		59.36% Pervious Area
697		40.64% Impervious Area

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

Summary for Subcatchment 119S: SA119

Runoff = 0.22 cfs @ 12.09 hrs, Volume= 0.016 af, Depth> 2.50"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.00"

Area (sf)	CN	Description
3,261	98	Paved parking, HSG D
100	61	>75% Grass cover, Good, HSG B
3,361	97	Weighted Average
100		2.98% Pervious Area
3,261		97.02% Impervious Area

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Type III 24-hr 2 YEAR STORM Rainfall=3.00"

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

Summary for Subcatchment 122S: SA122

Runoff = 0.14 cfs @ 12.09 hrs, Volume= 0.010 af, Depth> 1.78"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.00"

Area (sf)	CN	Description
710	61	>75% Grass cover, Good, HSG B
2,135	98	Paved parking, HSG D
2,845	89	Weighted Average
710		24.96% Pervious Area
2,135		75.04% Impervious Area

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

Summary for Subcatchment 124S: SA124

Runoff = 0.39 cfs @ 12.09 hrs, Volume= 0.027 af, Depth> 1.86"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.00"

Area (sf)	CN	Description
1,000	39	>75% Grass cover, Good, HSG A
6,449	98	Paved parking, HSG D
7,449	90	Weighted Average
1,000		13.42% Pervious Area
6,449		86.58% Impervious Area

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

Summary for Subcatchment 130S: SA130 ROOF

Runoff = 0.20 cfs @ 12.09 hrs, Volume= 0.015 af, Depth> 2.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.00"

PARK DANFORTH MODEL III POST

Type III 24-hr 2 YEAR STORM Rainfall=3.00"

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Area (sf)	CN	Description
3,082	98	Roofs, HSG D
3,082		100.00% Impervious Area

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

Summary for Subcatchment 131S: SA131 ROOF

Runoff = 0.17 cfs @ 12.09 hrs, Volume= 0.013 af, Depth> 2.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.00"

Area (sf)	CN	Description
2,552	98	Roofs, HSG D
2,552		100.00% Impervious Area

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

Summary for Subcatchment 132S: SA132

Runoff = 0.29 cfs @ 12.09 hrs, Volume= 0.022 af, Depth> 2.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.00"

Area (sf)	CN	Description
4,394	98	Roofs, HSG D
4,394		100.00% Impervious Area

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

Summary for Subcatchment 133S: SA133

Runoff = 0.33 cfs @ 12.09 hrs, Volume= 0.025 af, Depth> 2.59"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2 YEAR STORM Rainfall=3.00"

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Area (sf)	CN	Description
5,035	98	Roofs, HSG D
5,035		100.00% Impervious Area

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

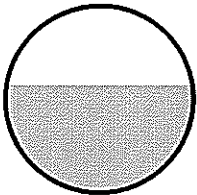
Summary for Reach 112R: SD CB9-LG8/9/10

Inflow Area = 1.037 ac, 90.08% Impervious, Inflow Depth > 1.59" for 2 YEAR STORM event
 Inflow = 2.42 cfs @ 12.12 hrs, Volume= 0.138 af
 Outflow = 2.41 cfs @ 12.12 hrs, Volume= 0.138 af, Atten= 1%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 5.16 fps, Min. Travel Time= 0.1 min
 Avg. Velocity= 1.75 fps, Avg. Travel Time= 0.2 min

Peak Storage= 9 cf @ 12.12 hrs
 Average Depth at Peak Storage= 0.57'
 Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe
 n= 0.012
 Length= 19.0' Slope= 0.0100 '/'
 Inlet Invert= 118.50', Outlet Invert= 118.31'

**Summary for Reach 114R: SD CB8-CB9**

Inflow Area = 0.821 ac, 87.47% Impervious, Inflow Depth > 1.33" for 2 YEAR STORM event
 Inflow = 1.93 cfs @ 12.11 hrs, Volume= 0.091 af
 Outflow = 1.84 cfs @ 12.12 hrs, Volume= 0.091 af, Atten= 5%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 4.86 fps, Min. Travel Time= 0.4 min
 Avg. Velocity= 1.46 fps, Avg. Travel Time= 1.3 min

Peak Storage= 44 cf @ 12.12 hrs
 Average Depth at Peak Storage= 0.49'
 Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

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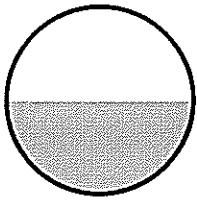
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12.0" Round Pipe

n= 0.012

Length= 114.0' Slope= 0.0100 '/'

Inlet Invert= 119.74', Outlet Invert= 118.60'

**Summary for Reach 115R: SD CB7-CD8**

Inflow Area = 0.032 ac, 100.00% Impervious, Inflow Depth > 2.59" for 2 YEAR STORM event

Inflow = 0.09 cfs @ 12.09 hrs, Volume= 0.007 af

Outflow = 0.09 cfs @ 12.09 hrs, Volume= 0.007 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.05 fps, Min. Travel Time= 0.2 min

Avg. Velocity = 0.78 fps, Avg. Travel Time= 0.5 min

Peak Storage= 1 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.11'

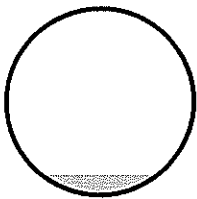
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe

n= 0.012

Length= 23.0' Slope= 0.0100 '/'

Inlet Invert= 120.20', Outlet Invert= 119.97'

**Summary for Reach 116R: SD CB6-LG3/4**

Inflow Area = 0.460 ac, 82.62% Impervious, Inflow Depth > 1.59" for 2 YEAR STORM event

Inflow = 1.05 cfs @ 12.10 hrs, Volume= 0.061 af

Outflow = 1.04 cfs @ 12.10 hrs, Volume= 0.061 af, Atten= 1%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 4.17 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 1.38 fps, Avg. Travel Time= 0.2 min

Peak Storage= 3 cf @ 12.10 hrs

Average Depth at Peak Storage= 0.35'

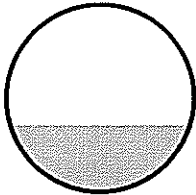
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe

n= 0.012

Length= 14.0' Slope= 0.0100 '/'

Inlet Invert= 120.03', Outlet Invert= 119.89'

**Summary for Reach 117R: SD CB5-CB6**

Inflow Area = 0.179 ac, 64.97% Impervious, Inflow Depth > 1.60" for 2 YEAR STORM event
Inflow = 0.33 cfs @ 12.10 hrs, Volume= 0.024 af
Outflow = 0.32 cfs @ 12.10 hrs, Volume= 0.024 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.99 fps, Min. Travel Time= 0.1 min

Avg. Velocity= 1.10 fps, Avg. Travel Time= 0.2 min

Peak Storage= 2 cf @ 12.10 hrs

Average Depth at Peak Storage= 0.20'

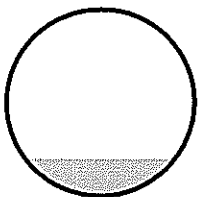
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe

n= 0.012

Length= 14.0' Slope= 0.0100 '/'

Inlet Invert= 120.27', Outlet Invert= 120.13'

**Summary for Reach 118R: SD CB4-CB5**

Inflow Area = 0.117 ac, 77.97% Impervious, Inflow Depth > 1.97" for 2 YEAR STORM event
Inflow = 0.26 cfs @ 12.09 hrs, Volume= 0.019 af
Outflow = 0.26 cfs @ 12.10 hrs, Volume= 0.019 af, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.80 fps, Min. Travel Time= 0.3 min

Avg. Velocity= 1.04 fps, Avg. Travel Time= 0.9 min

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Peak Storage= 5 cf @ 12.10 hrs

Average Depth at Peak Storage= 0.18'

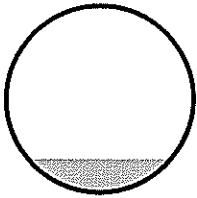
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe

n= 0.012

Length= 57.0' Slope= 0.0100 '/'

Inlet Invert= 120.94', Outlet Invert= 120.37'

**Summary for Reach 119R: SD CB3-CB4**

Inflow Area = 0.077 ac, 97.02% Impervious, Inflow Depth > 2.50" for 2 YEAR STORM event

Inflow = 0.22 cfs @ 12.09 hrs, Volume= 0.016 af

Outflow = 0.21 cfs @ 12.09 hrs, Volume= 0.016 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.64 fps, Min. Travel Time= 0.1 min

Avg. Velocity= 0.99 fps, Avg. Travel Time= 0.2 min

Peak Storage= 1 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.16'

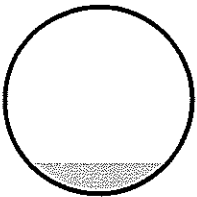
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe

n= 0.012

Length= 11.0' Slope= 0.0100 '/'

Inlet Invert= 121.15', Outlet Invert= 121.04'

**Summary for Reach 122R: SD CB1-DMH1**

Inflow Area = 0.136 ac, 88.02% Impervious, Inflow Depth > 2.20" for 2 YEAR STORM event

Inflow = 0.34 cfs @ 12.09 hrs, Volume= 0.025 af

Outflow = 0.34 cfs @ 12.10 hrs, Volume= 0.025 af, Atten= 1%, Lag= 0.6 min

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Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.03 fps, Min. Travel Time= 0.4 min

Avg. Velocity = 1.11 fps, Avg. Travel Time= 1.0 min

Peak Storage= 7 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.20'

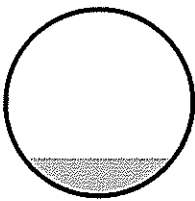
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe

n= 0.012

Length= 64.0' Slope= 0.0100 '/'

Inlet Invert= 121.85', Outlet Invert= 121.21'



Summary for Reach 123R: SD DMH1-LG1/2

Inflow Area = 0.195 ac, 91.63% Impervious, Inflow Depth > 2.32" for 2 YEAR STORM event

Inflow = 0.50 cfs @ 12.10 hrs, Volume= 0.038 af

Outflow = 0.50 cfs @ 12.10 hrs, Volume= 0.038 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.40 fps, Min. Travel Time= 0.3 min

Avg. Velocity = 1.27 fps, Avg. Travel Time= 0.7 min

Peak Storage= 8 cf @ 12.10 hrs

Average Depth at Peak Storage= 0.24'

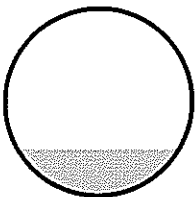
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe

n= 0.012

Length= 51.0' Slope= 0.0100 '/'

Inlet Invert= 121.11', Outlet Invert= 120.60'



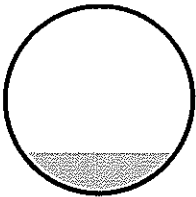
Summary for Reach 124R: SD CB2-LG5/6/7

Inflow Area = 0.171 ac, 86.58% Impervious, Inflow Depth > 1.86" for 2 YEAR STORM event
Inflow = 0.39 cfs @ 12.09 hrs, Volume= 0.027 af
Outflow = 0.38 cfs @ 12.09 hrs, Volume= 0.027 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.14 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.14 fps, Avg. Travel Time= 0.4 min

Peak Storage= 3 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.21'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe
n= 0.012
Length= 27.0' Slope= 0.0100 '/
Inlet Invert= 120.90', Outlet Invert= 120.63'

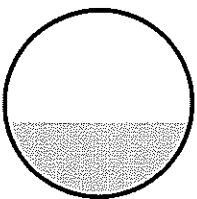
**Summary for Reach 130R: ROOF DRAIN**

Inflow Area = 0.071 ac, 100.00% Impervious, Inflow Depth > 2.59" for 2 YEAR STORM event
Inflow = 0.20 cfs @ 12.09 hrs, Volume= 0.015 af
Outflow = 0.20 cfs @ 12.09 hrs, Volume= 0.015 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.77 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.07 fps, Avg. Travel Time= 0.2 min

Peak Storage= 1 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.20'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.61 cfs

6.0" Round Pipe
n= 0.012
Length= 10.0' Slope= 0.0100 '/
Inlet Invert= 0.00', Outlet Invert= -0.10'



Summary for Reach 131R: ROOF DRAIN

Inflow Area = 0.059 ac, 100.00% Impervious, Inflow Depth > 2.59" for 2 YEAR STORM event
Inflow = 0.17 cfs @ 12.09 hrs, Volume= 0.013 af
Outflow = 0.17 cfs @ 12.09 hrs, Volume= 0.013 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.64 fps, Min. Travel Time= 0.2 min

Avg. Velocity = 1.01 fps, Avg. Travel Time= 0.4 min

Peak Storage= 2 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.18'

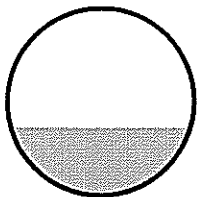
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.61 cfs

6.0" Round Pipe

n= 0.012

Length= 25.0' Slope= 0.0100 '/'

Inlet Invert= 0.00', Outlet Invert= -0.25'

**Summary for Reach 132R: ROOF DRAIN**

Inflow Area = 0.101 ac, 100.00% Impervious, Inflow Depth > 2.59" for 2 YEAR STORM event
Inflow = 0.29 cfs @ 12.09 hrs, Volume= 0.022 af
Outflow = 0.29 cfs @ 12.09 hrs, Volume= 0.022 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.05 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 1.19 fps, Avg. Travel Time= 0.3 min

Peak Storage= 2 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.24'

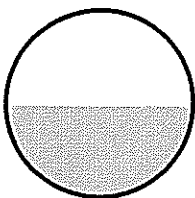
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.61 cfs

6.0" Round Pipe

n= 0.012

Length= 25.0' Slope= 0.0100 '/'

Inlet Invert= 0.00', Outlet Invert= -0.25'



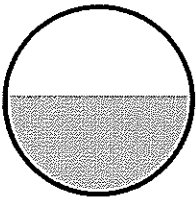
Summary for Reach 133R: ROOF DRAIN

Inflow Area = 0.116 ac, 100.00% Impervious, Inflow Depth > 2.59" for 2 YEAR STORM event
 Inflow = 0.33 cfs @ 12.09 hrs, Volume= 0.025 af
 Outflow = 0.33 cfs @ 12.09 hrs, Volume= 0.025 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 3.15 fps, Min. Travel Time= 0.1 min
 Avg. Velocity = 1.24 fps, Avg. Travel Time= 0.3 min

Peak Storage= 3 cf @ 12.09 hrs
 Average Depth at Peak Storage= 0.26'
 Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.61 cfs

6.0" Round Pipe
 n= 0.012
 Length= 25.0' Slope= 0.0100 '/'
 Inlet Invert= 0.00', Outlet Invert= -0.25'

**Summary for Pond 112P: LG 8/9/10**

Inflow Area = 1.037 ac, 90.08% Impervious, Inflow Depth > 1.59" for 2 YEAR STORM event
 Inflow = 2.41 cfs @ 12.12 hrs, Volume= 0.138 af
 Outflow = 2.38 cfs @ 12.13 hrs, Volume= 0.127 af, Atten= 1%, Lag= 0.8 min
 Discarded = 0.03 cfs @ 12.13 hrs, Volume= 0.027 af
 Primary = 2.35 cfs @ 12.13 hrs, Volume= 0.100 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 119.19' @ 12.13 hrs Surf.Area= 198 sf Storage= 655 cf

Plug-Flow detention time= 44.2 min calculated for 0.126 af (92% of inflow)
 Center-of-Mass det. time= 20.9 min (765.5 - 744.5)

Volume	Invert	Avail.Storage	Storage Description
#1	112.64'	461 cf	Custom Stage Data (Conic) Listed below (Recalc) 1,420 cf Overall - 267 cf Embedded = 1,153 cf x 40.0% Voids
#2	115.64'	267 cf	Custom Stage Data (Prismatic) Listed below (Recalc) Inside #1
		728 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
112.64	198	0	0	198
119.81	198	1,420	1,420	556

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
115.64	64	0	0
119.81	64	267	267

Device	Routing	Invert	Outlet Devices
#1	Discarded	112.64'	2.410 in/hr Exfiltration over Wetted area
#2	Primary	118.31'	12.0" Round Culvert L= 79.0' Ke= 0.500 Inlet / Outlet Invert= 118.31' / 116.40' S= 0.0242 ' S= 0.0242 ' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=0.03 cfs @ 12.13 hrs HW=119.17' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=2.28 cfs @ 12.13 hrs HW=119.17' (Free Discharge)

↑2=Culvert (Inlet Controls 2.28 cfs @ 3.16 fps)

Summary for Pond 117P: LG 3/4

Inflow Area = 0.460 ac, 82.62% Impervious, Inflow Depth > 1.59" for 2 YEAR STORM event
 Inflow = 1.04 cfs @ 12.10 hrs, Volume= 0.061 af
 Outflow = 1.03 cfs @ 12.11 hrs, Volume= 0.056 af, Atten= 1%, Lag= 0.4 min
 Discarded = 0.02 cfs @ 12.11 hrs, Volume= 0.016 af
 Primary = 1.01 cfs @ 12.11 hrs, Volume= 0.040 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 119.51' @ 12.11 hrs Surf.Area= 117 sf Storage= 311 cf

Plug-Flow detention time= 47.1 min calculated for 0.056 af (92% of inflow)
 Center-of-Mass det. time= 21.0 min (774.7 - 753.7)

Volume	Invert	Avail.Storage	Storage Description
#1	114.22'	235 cf	Custom Stage Data (Conic) Listed below (Recalc) 722 cf Overall - 133 cf Embedded = 588 cf x 40.0% Voids
#2	116.22'	133 cf	Custom Stage Data (Prismatic) Listed below (Recalc) Inside #1
		369 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
114.22	117	0	0	117
120.39	117	722	722	354

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
116.22	32	0	0
120.39	32	133	133

Device	Routing	Invert	Outlet Devices
#1	Discarded	114.22'	2.410 in/hr Exfiltration over Wetted area
#2	Primary	118.89'	12.0" Round Culvert L= 5.0' Ke= 0.500 Inlet / Outlet Invert= 118.89' / 118.84' S= 0.0100 ' S= 0.0100 ' Cc= 0.900

PARK DANFORTH MODEL III POST

Type III 24-hr 2 YEAR STORM Rainfall=3.00"

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n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=0.02 cfs @ 12.11 hrs HW=119.50' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.99 cfs @ 12.11 hrs HW=119.50' (Free Discharge)

↑2=Culvert (Barrel Controls 0.99 cfs @ 2.82 fps)

Summary for Pond 124P: LG 5/6

Inflow Area = 0.171 ac, 86.58% Impervious, Inflow Depth > 1.86" for 2 YEAR STORM event
 Inflow = 0.38 cfs @ 12.09 hrs, Volume= 0.027 af
 Outflow = 0.42 cfs @ 12.12 hrs, Volume= 0.023 af, Atten= 0%, Lag= 1.4 min
 Discarded = 0.02 cfs @ 12.12 hrs, Volume= 0.013 af
 Primary = 0.40 cfs @ 12.12 hrs, Volume= 0.010 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 120.98' @ 12.12 hrs Surf.Area= 117 sf Storage= 293 cf

Plug-Flow detention time= 96.2 min calculated for 0.023 af (85% of inflow)

Center-of-Mass det. time= 53.2 min (830.3 - 777.0)

Volume	Invert	Avail.Storage	Storage Description
#1	115.96'	235 cf	Custom Stage Data (Conic) Listed below (Recalc) 722 cf Overall - 133 cf Embedded = 588 cf x 40.0% Voids
#2	117.96'	133 cf	Custom Stage Data (Prismatic) Listed below (Recalc) Inside #1
		369 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
115.96	117	0	0	117
122.13	117	722	722	354

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
117.96	32	0	0
122.13	32	133	133

Device	Routing	Invert	Outlet Devices
#1	Discarded	115.96'	2.410 in/hr Exfiltration over Wetted area
#2	Primary	120.63'	12.0" Round Culvert L= 47.0' Ke= 0.500 Inlet / Outlet Invert= 120.63' / 120.16' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=0.02 cfs @ 12.12 hrs HW=120.92' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.35 cfs @ 12.12 hrs HW=120.92' (Free Discharge)

↑2=Culvert (Inlet Controls 0.35 cfs @ 1.83 fps)

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Type III 24-hr 2 YEAR STORM Rainfall=3.00"

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Summary for Pond 125P: LG 1/2

Inflow Area = 0.195 ac, 91.63% Impervious, Inflow Depth > 2.32" for 2 YEAR STORM event
 Inflow = 0.50 cfs @ 12.10 hrs, Volume= 0.038 af
 Outflow = 0.50 cfs @ 12.11 hrs, Volume= 0.033 af, Atten= 0%, Lag= 0.3 min
 Discarded = 0.02 cfs @ 12.11 hrs, Volume= 0.015 af
 Primary = 0.48 cfs @ 12.11 hrs, Volume= 0.018 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 120.97' @ 12.11 hrs Surf.Area= 117 sf Storage= 276 cf

Plug-Flow detention time= 73.0 min calculated for 0.033 af (88% of inflow)
 Center-of-Mass det. time= 36.5 min (787.8 - 751.2)

Volume	Invert	Avail.Storage	Storage Description
#1	115.96'	260 cf	Custom Stage Data (Conic) Listed below (Recalc) 718 cf Overall - 69 cf Embedded = 649 cf x 40.0% Voids
#2	117.93'	69 cf	Custom Stage Data (Prismatic) Listed below (Recalc) Inside #1
		329 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
115.96	117	0	0	117
122.10	117	718	718	352

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
117.93	32	0	0
120.10	32	69	69

Device	Routing	Invert	Outlet Devices
#1	Discarded	115.96'	2.410 in/hr Exfiltration over Wetted area
#2	Primary	120.60'	12.0" Round Culvert L= 19.0' Ke= 0.500 Inlet / Outlet Invert= 120.60' / 120.41' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=0.02 cfs @ 12.11 hrs HW=120.96' (Free Discharge)

↑ **1=Exfiltration** (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.47 cfs @ 12.11 hrs HW=120.96' (Free Discharge)

↑ **2=Culvert** (Barrel Controls 0.47 cfs @ 2.72 fps)

PARK DANFORTH MODEL III POST

Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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Summary for Subcatchment 114S: SA114

Runoff = 0.71 cfs @ 12.09 hrs, Volume= 0.054 af, Depth> 4.15"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.70"

Area (sf)	CN	Description
6,863	98	Paved parking, HSG D
6,863		100.00% Impervious Area

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

Summary for Subcatchment 115S: SA115

Runoff = 0.15 cfs @ 12.09 hrs, Volume= 0.011 af, Depth> 4.15"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.70"

Area (sf)	CN	Description
1,408	98	Paved parking, HSG D
1,408		100.00% Impervious Area

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

Summary for Subcatchment 116S: SA116

Runoff = 0.39 cfs @ 12.09 hrs, Volume= 0.030 af, Depth> 4.15"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.70"

Area (sf)	CN	Description
3,708	98	Paved parking, HSG D
35	61	>75% Grass cover, Good, HSG B
3,743	98	Weighted Average
35		0.94% Pervious Area
3,708		99.06% Impervious Area

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

PARK DANFORTH MODEL III POST

Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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Summary for Subcatchment 117S: SA117

Runoff = 0.16 cfs @ 12.09 hrs, Volume= 0.011 af, Depth> 2.12"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.70"

Area (sf)	CN	Description
1,618	61	>75% Grass cover, Good, HSG B
1,116	98	Paved parking, HSG D
2,734	76	Weighted Average
1,618		59.18% Pervious Area
1,116		40.82% Impervious Area

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

Summary for Subcatchment 118S: SA118

Runoff = 0.10 cfs @ 12.09 hrs, Volume= 0.007 af, Depth> 2.12"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.70"

Area (sf)	CN	Description
1,018	61	>75% Grass cover, Good, HSG B
697	98	Paved parking, HSG D
1,715	76	Weighted Average
1,018		59.36% Pervious Area
697		40.64% Impervious Area

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

Summary for Subcatchment 119S: SA119

Runoff = 0.34 cfs @ 12.09 hrs, Volume= 0.026 af, Depth> 4.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.70"

Area (sf)	CN	Description
3,261	98	Paved parking, HSG D
100	61	>75% Grass cover, Good, HSG B
3,361	97	Weighted Average
100		2.98% Pervious Area
3,261		97.02% Impervious Area

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Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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

Summary for Subcatchment 122S: SA122

Runoff = 0.25 cfs @ 12.09 hrs, Volume= 0.018 af, Depth> 3.29"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.70"

Area (sf)	CN	Description
710	61	>75% Grass cover, Good, HSG B
2,135	98	Paved parking, HSG D
2,845	89	Weighted Average
710		24.96% Pervious Area
2,135		75.04% Impervious Area

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

Summary for Subcatchment 124S: SA124

Runoff = 0.68 cfs @ 12.09 hrs, Volume= 0.048 af, Depth> 3.39"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.70"

Area (sf)	CN	Description
1,000	39	>75% Grass cover, Good, HSG A
6,449	98	Paved parking, HSG D
7,449	90	Weighted Average
1,000		13.42% Pervious Area
6,449		86.58% Impervious Area

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

Summary for Subcatchment 130S: SA130 ROOF

Runoff = 0.32 cfs @ 12.09 hrs, Volume= 0.024 af, Depth> 4.15"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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Area (sf)	CN	Description
3,082	98	Roofs, HSG D
3,082		100.00% Impervious Area

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

Summary for Subcatchment 131S: SA131 ROOF

Runoff = 0.26 cfs @ 12.09 hrs, Volume= 0.020 af, Depth> 4.15"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.70"

Area (sf)	CN	Description
2,552	98	Roofs, HSG D
2,552		100.00% Impervious Area

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

Summary for Subcatchment 132S: SA132

Runoff = 0.45 cfs @ 12.09 hrs, Volume= 0.035 af, Depth> 4.15"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.70"

Area (sf)	CN	Description
4,394	98	Roofs, HSG D
4,394		100.00% Impervious Area

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

Summary for Subcatchment 133S: SA133

Runoff = 0.52 cfs @ 12.09 hrs, Volume= 0.040 af, Depth> 4.15"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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Area (sf)	CN	Description
5,035	98	Roofs, HSG D
5,035		100.00% Impervious Area

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

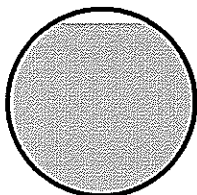
Summary for Reach 112R: SD CB9-LG8/9/10

Inflow Area = 1.037 ac, 90.08% Impervious, Inflow Depth > 2.99" for 10 YEAR STORM event
 Inflow = 4.16 cfs @ 12.10 hrs, Volume= 0.259 af
 Outflow = 4.14 cfs @ 12.11 hrs, Volume= 0.259 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 5.60 fps, Min. Travel Time= 0.1 min
 Avg. Velocity= 2.11 fps, Avg. Travel Time= 0.2 min

Peak Storage= 14 cf @ 12.10 hrs
 Average Depth at Peak Storage= 0.92'
 Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe
 n= 0.012
 Length= 19.0' Slope= 0.0100 '/'
 Inlet Invert= 118.50', Outlet Invert= 118.31'

**Summary for Reach 114R: SD CB8-CB9**

Inflow Area = 0.821 ac, 87.47% Impervious, Inflow Depth > 2.69" for 10 YEAR STORM event
 Inflow = 3.27 cfs @ 12.10 hrs, Volume= 0.184 af
 Outflow = 3.20 cfs @ 12.11 hrs, Volume= 0.184 af, Atten= 2%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 5.51 fps, Min. Travel Time= 0.3 min
 Avg. Velocity= 1.81 fps, Avg. Travel Time= 1.0 min

Peak Storage= 67 cf @ 12.10 hrs
 Average Depth at Peak Storage= 0.70'
 Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

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Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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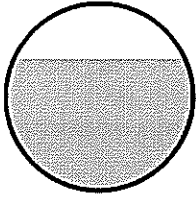
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12.0" Round Pipe

n= 0.012

Length= 114.0' Slope= 0.0100 '/'

Inlet Invert= 119.74', Outlet Invert= 118.60'

**Summary for Reach 115R: SD CB7-CD8**

Inflow Area = 0.032 ac, 100.00% Impervious, Inflow Depth > 4.15" for 10 YEAR STORM event

Inflow = 0.15 cfs @ 12.09 hrs, Volume= 0.011 af

Outflow = 0.14 cfs @ 12.09 hrs, Volume= 0.011 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.35 fps, Min. Travel Time= 0.2 min

Avg. Velocity= 0.90 fps, Avg. Travel Time= 0.4 min

Peak Storage= 1 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.13'

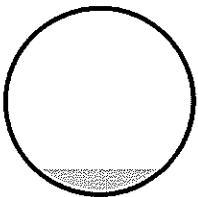
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe

n= 0.012

Length= 23.0' Slope= 0.0100 '/'

Inlet Invert= 120.20', Outlet Invert= 119.97'

**Summary for Reach 116R: SD CB6-LG3/4**

Inflow Area = 0.460 ac, 82.62% Impervious, Inflow Depth > 2.97" for 10 YEAR STORM event

Inflow = 1.79 cfs @ 12.10 hrs, Volume= 0.114 af

Outflow = 1.78 cfs @ 12.10 hrs, Volume= 0.114 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 4.82 fps, Min. Travel Time= 0.0 min

Avg. Velocity= 1.67 fps, Avg. Travel Time= 0.1 min

Peak Storage= 5 cf @ 12.10 hrs

Average Depth at Peak Storage= 0.48'

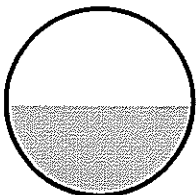
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe

n= 0.012

Length= 14.0' Slope= 0.0100 1'

Inlet Invert= 120.03', Outlet Invert= 119.89'



Summary for Reach 117R: SD CB5-CB6

Inflow Area = 0.179 ac, 64.97% Impervious, Inflow Depth > 2.96" for 10 YEAR STORM event

Inflow = 0.61 cfs @ 12.10 hrs, Volume= 0.044 af

Outflow = 0.61 cfs @ 12.10 hrs, Volume= 0.044 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.58 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 1.32 fps, Avg. Travel Time= 0.2 min

Peak Storage= 2 cf @ 12.10 hrs

Average Depth at Peak Storage= 0.27'

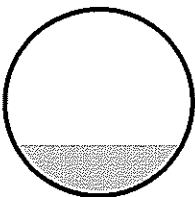
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe

n= 0.012

Length= 14.0' Slope= 0.0100 1'

Inlet Invert= 120.27', Outlet Invert= 120.13'



Summary for Reach 118R: SD CB4-CB5

Inflow Area = 0.117 ac, 77.97% Impervious, Inflow Depth > 3.41" for 10 YEAR STORM event

Inflow = 0.45 cfs @ 12.09 hrs, Volume= 0.033 af

Outflow = 0.44 cfs @ 12.10 hrs, Volume= 0.033 af, Atten= 1%, Lag= 0.5 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.28 fps, Min. Travel Time= 0.3 min

Avg. Velocity = 1.22 fps, Avg. Travel Time= 0.8 min

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Peak Storage= 8 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.23'

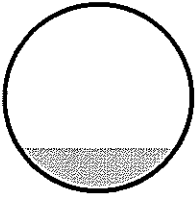
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe

n= 0.012

Length= 57.0' Slope= 0.0100 '/'

Inlet Invert= 120.94', Outlet Invert= 120.37'



Summary for Reach 119R: SD CB3-CB4

Inflow Area = 0.077 ac, 97.02% Impervious, Inflow Depth > 4.07" for 10 YEAR STORM event

Inflow = 0.34 cfs @ 12.09 hrs, Volume= 0.026 af

Outflow = 0.34 cfs @ 12.09 hrs, Volume= 0.026 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.03 fps, Min. Travel Time= 0.1 min

Avg. Velocity= 1.15 fps, Avg. Travel Time= 0.2 min

Peak Storage= 1 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.20'

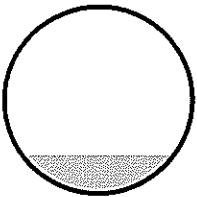
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe

n= 0.012

Length= 11.0' Slope= 0.0100 '/'

Inlet Invert= 121.15', Outlet Invert= 121.04'



Summary for Reach 122R: SD CB1-DMH1

Inflow Area = 0.136 ac, 88.02% Impervious, Inflow Depth > 3.73" for 10 YEAR STORM event

Inflow = 0.57 cfs @ 12.09 hrs, Volume= 0.042 af

Outflow = 0.57 cfs @ 12.10 hrs, Volume= 0.042 af, Atten= 1%, Lag= 0.5 min

PARK DANFORTH MODEL III POST

Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.52 fps, Min. Travel Time= 0.3 min

Avg. Velocity = 1.32 fps, Avg. Travel Time= 0.8 min

Peak Storage= 10 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.26'

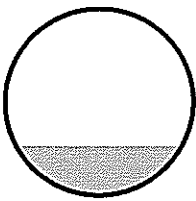
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe

n= 0.012

Length= 64.0' Slope= 0.0100 '/'

Inlet Invert= 121.85', Outlet Invert= 121.21'



Summary for Reach 123R: SD DMH1-LG1/2

Inflow Area = 0.195 ac, 91.63% Impervious, Inflow Depth > 3.86" for 10 YEAR STORM event

Inflow = 0.83 cfs @ 12.09 hrs, Volume= 0.063 af

Outflow = 0.82 cfs @ 12.10 hrs, Volume= 0.063 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.91 fps, Min. Travel Time= 0.2 min

Avg. Velocity = 1.49 fps, Avg. Travel Time= 0.6 min

Peak Storage= 11 cf @ 12.10 hrs

Average Depth at Peak Storage= 0.31'

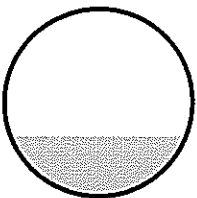
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe

n= 0.012

Length= 51.0' Slope= 0.0100 '/'

Inlet Invert= 121.11', Outlet Invert= 120.60'



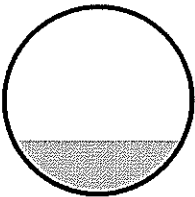
Summary for Reach 124R: SD CB2-LG5/6/7

Inflow Area = 0.171 ac, 86.58% Impervious, Inflow Depth > 3.39" for 10 YEAR STORM event
Inflow = 0.68 cfs @ 12.09 hrs, Volume= 0.048 af
Outflow = 0.68 cfs @ 12.09 hrs, Volume= 0.048 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.70 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.33 fps, Avg. Travel Time= 0.3 min

Peak Storage= 5 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.28'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe
n= 0.012
Length= 27.0' Slope= 0.0100 '/'
Inlet Invert= 120.90', Outlet Invert= 120.63'

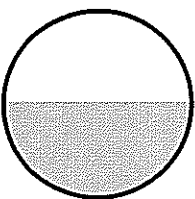
**Summary for Reach 130R: ROOF DRAIN**

Inflow Area = 0.071 ac, 100.00% Impervious, Inflow Depth > 4.15" for 10 YEAR STORM event
Inflow = 0.32 cfs @ 12.09 hrs, Volume= 0.024 af
Outflow = 0.32 cfs @ 12.09 hrs, Volume= 0.024 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.12 fps, Min. Travel Time= 0.1 min
Avg. Velocity = 1.24 fps, Avg. Travel Time= 0.1 min

Peak Storage= 1 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.26'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.61 cfs

6.0" Round Pipe
n= 0.012
Length= 10.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -0.10'



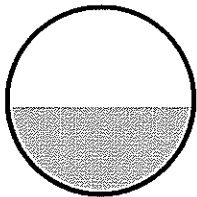
Summary for Reach 131R: ROOF DRAIN

Inflow Area = 0.059 ac, 100.00% Impervious, Inflow Depth > 4.15" for 10 YEAR STORM event
Inflow = 0.26 cfs @ 12.09 hrs, Volume= 0.020 af
Outflow = 0.26 cfs @ 12.09 hrs, Volume= 0.020 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.98 fps, Min. Travel Time= 0.1 min
Avg. Velocity= 1.17 fps, Avg. Travel Time= 0.4 min

Peak Storage= 2 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.23'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.61 cfs

6.0" Round Pipe
n= 0.012
Length= 25.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -0.25'

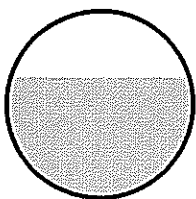
**Summary for Reach 132R: ROOF DRAIN**

Inflow Area = 0.101 ac, 100.00% Impervious, Inflow Depth > 4.15" for 10 YEAR STORM event
Inflow = 0.45 cfs @ 12.09 hrs, Volume= 0.035 af
Outflow = 0.45 cfs @ 12.09 hrs, Volume= 0.035 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.39 fps, Min. Travel Time= 0.1 min
Avg. Velocity= 1.38 fps, Avg. Travel Time= 0.3 min

Peak Storage= 3 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.32'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.61 cfs

6.0" Round Pipe
n= 0.012
Length= 25.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -0.25'



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Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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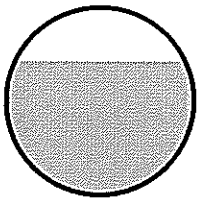
Summary for Reach 133R: ROOF DRAIN

Inflow Area = 0.116 ac, 100.00% Impervious, Inflow Depth > 4.15" for 10 YEAR STORM event
 Inflow = 0.52 cfs @ 12.09 hrs, Volume= 0.040 af
 Outflow = 0.52 cfs @ 12.09 hrs, Volume= 0.040 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 3.47 fps, Min. Travel Time= 0.1 min
 Avg. Velocity = 1.43 fps, Avg. Travel Time= 0.3 min

Peak Storage= 4 cf @ 12.09 hrs
 Average Depth at Peak Storage= 0.36'
 Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.61 cfs

6.0" Round Pipe
 n= 0.012
 Length= 25.0' Slope= 0.0100 '/'
 Inlet Invert= 0.00', Outlet Invert= -0.25'

**Summary for Pond 112P: LG 8/9/10**

Inflow Area = 1.037 ac, 90.08% Impervious, Inflow Depth > 2.99" for 10 YEAR STORM event
 Inflow = 4.14 cfs @ 12.11 hrs, Volume= 0.259 af
 Outflow = 4.07 cfs @ 12.12 hrs, Volume= 0.246 af, Atten= 2%, Lag= 0.6 min
 Discarded = 0.03 cfs @ 12.13 hrs, Volume= 0.029 af
 Primary = 4.04 cfs @ 12.12 hrs, Volume= 0.217 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 119.95' @ 12.12 hrs Surf.Area= 198 sf Storage= 728 cf

Plug-Flow detention time= 29.4 min calculated for 0.245 af (95% of inflow)
 Center-of-Mass det. time= 13.6 min (758.5 - 744.9)

Volume	Invert	Avail.Storage	Storage Description
#1	112.64'	461 cf	Custom Stage Data (Conic) Listed below (Recalc) 1,420 cf Overall - 267 cf Embedded = 1,153 cf x 40.0% Voids
#2	115.64'	267 cf	Custom Stage Data (Prismatic) Listed below (Recalc) Inside #1
		728 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
112.64	198	0	0	198
119.81	198	1,420	1,420	556

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Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
115.64	64	0	0
119.81	64	267	267

Device	Routing	Invert	Outlet Devices
#1	Discarded	112.64'	2.410 in/hr Exfiltration over Wetted area
#2	Primary	118.31'	12.0" Round Culvert L= 79.0' Ke= 0.500 Inlet / Outlet Invert= 118.31' / 116.40' S= 0.0242 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=0.03 cfs @ 12.13 hrs HW=119.87' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.03 cfs)**Primary OutFlow** Max=3.93 cfs @ 12.12 hrs HW=119.89' (Free Discharge)↑**2=Culvert** (Inlet Controls 3.93 cfs @ 5.00 fps)**Summary for Pond 117P: LG 3/4**

Inflow Area = 0.460 ac, 82.62% Impervious, Inflow Depth > 2.97" for 10 YEAR STORM event
 Inflow = 1.78 cfs @ 12.10 hrs, Volume= 0.114 af
 Outflow = 1.78 cfs @ 12.11 hrs, Volume= 0.108 af, Atten= 0%, Lag= 0.3 min
 Discarded = 0.02 cfs @ 12.11 hrs, Volume= 0.017 af
 Primary = 1.76 cfs @ 12.11 hrs, Volume= 0.091 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 119.76' @ 12.11 hrs Surf.Area= 117 sf Storage= 327 cf

Plug-Flow detention time= 30.5 min calculated for 0.107 af (94% of inflow)
 Center-of-Mass det. time= 12.3 min (763.8 - 751.5)

Volume	Invert	Avail.Storage	Storage Description
#1	114.22'	235 cf	Custom Stage Data (Conic) Listed below (Recalc) 722 cf Overall - 133 cf Embedded = 588 cf x 40.0% Voids
#2	116.22'	133 cf	Custom Stage Data (Prismatic) Listed below (Recalc) Inside #1
		369 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
114.22	117	0	0	117
120.39	117	722	722	354

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
116.22	32	0	0
120.39	32	133	133

Device	Routing	Invert	Outlet Devices
#1	Discarded	114.22'	2.410 in/hr Exfiltration over Wetted area
#2	Primary	118.89'	12.0" Round Culvert L= 5.0' Ke= 0.500 Inlet / Outlet Invert= 118.89' / 118.84' S= 0.0100 '/' Cc= 0.900

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Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=0.02 cfs @ 12.11 hrs HW=119.75' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=1.74 cfs @ 12.11 hrs HW=119.75' (Free Discharge)

↑2=Culvert (Barrel Controls 1.74 cfs @ 3.25 fps)

Summary for Pond 124P: LG 5/6

Inflow Area = 0.171 ac, 86.58% Impervious, Inflow Depth > 3.39" for 10 YEAR STORM event

Inflow = 0.68 cfs @ 12.09 hrs, Volume= 0.048 af

Outflow = 0.68 cfs @ 12.10 hrs, Volume= 0.043 af, Atten= 0%, Lag= 0.4 min

Discarded = 0.02 cfs @ 12.10 hrs, Volume= 0.015 af

Primary = 0.66 cfs @ 12.10 hrs, Volume= 0.028 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 121.04' @ 12.10 hrs Surf.Area= 117 sf Storage= 297 cf

Plug-Flow detention time= 61.4 min calculated for 0.043 af (89% of inflow)

Center-of-Mass det. time= 25.7 min (788.6 - 762.8)

Volume	Invert	Avail.Storage	Storage Description
#1	115.96'	235 cf	Custom Stage Data (Conic) Listed below (Recalc) 722 cf Overall - 133 cf Embedded = 588 cf x 40.0% Voids
#2	117.96'	133 cf	Custom Stage Data (Prismatic) Listed below (Recalc) Inside #1
		369 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
115.96	117	0	0	117
122.13	117	722	722	354

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
117.96	32	0	0
122.13	32	133	133

Device	Routing	Invert	Outlet Devices
#1	Discarded	115.96'	2.410 in/hr Exfiltration over Wetted area
#2	Primary	120.63'	12.0" Round Culvert L= 47.0' Ke= 0.500 Inlet / Outlet Invert= 120.63' / 120.16' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=0.02 cfs @ 12.10 hrs HW=121.04' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.66 cfs @ 12.10 hrs HW=121.04' (Free Discharge)

↑2=Culvert (Inlet Controls 0.66 cfs @ 2.18 fps)

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Type III 24-hr 10 YEAR STORM Rainfall=4.70"

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Summary for Pond 125P: LG 1/2

Inflow Area = 0.195 ac, 91.63% Impervious, Inflow Depth > 3.85" for 10 YEAR STORM event
 Inflow = 0.82 cfs @ 12.10 hrs, Volume= 0.063 af
 Outflow = 0.82 cfs @ 12.10 hrs, Volume= 0.057 af, Atten= 0%, Lag= 0.3 min
 Discarded = 0.02 cfs @ 12.11 hrs, Volume= 0.017 af
 Primary = 0.80 cfs @ 12.10 hrs, Volume= 0.040 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 121.09' @ 12.11 hrs Surf.Area= 117 sf Storage= 282 cf

Plug-Flow detention time= 53.3 min calculated for 0.057 af (91% of inflow)
 Center-of-Mass det. time= 23.2 min (768.6 - 745.4)

Volume	Invert	Avail.Storage	Storage Description
#1	115.96'	260 cf	Custom Stage Data (Conic) Listed below (Recalc) 718 cf Overall - 69 cf Embedded = 649 cf x 40.0% Voids
#2	117.93'	69 cf	Custom Stage Data (Prismatic) Listed below (Recalc) Inside #1
		329 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
115.96	117	0	0	117
122.10	117	718	718	352

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
117.93	32	0	0
120.10	32	69	69

Device	Routing	Invert	Outlet Devices
#1	Discarded	115.96'	2.410 in/hr Exfiltration over Wetted area
#2	Primary	120.60'	12.0" Round Culvert L= 19.0' Ke= 0.500 Inlet / Outlet Invert= 120.60' / 120.41' S= 0.0100 ' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=0.02 cfs @ 12.11 hrs HW=121.09' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.79 cfs @ 12.10 hrs HW=121.09' (Free Discharge)
 ↑2=Culvert (Barrel Controls 0.79 cfs @ 3.03 fps)

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Type III 24-hr 25YEAR STORM Rainfall=5.50"

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Summary for Subcatchment 114S: SA114

Runoff = 0.83 cfs @ 12.09 hrs, Volume= 0.064 af, Depth> 4.87"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YEAR STORM Rainfall=5.50"

Area (sf)	CN	Description
6,863	98	Paved parking, HSG D
6,863		100.00% Impervious Area

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

Summary for Subcatchment 115S: SA115

Runoff = 0.17 cfs @ 12.09 hrs, Volume= 0.013 af, Depth> 4.87"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YEAR STORM Rainfall=5.50"

Area (sf)	CN	Description
1,408	98	Paved parking, HSG D
1,408		100.00% Impervious Area

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

Summary for Subcatchment 116S: SA116

Runoff = 0.45 cfs @ 12.09 hrs, Volume= 0.035 af, Depth> 4.87"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YEAR STORM Rainfall=5.50"

Area (sf)	CN	Description
3,708	98	Paved parking, HSG D
35	61	>75% Grass cover, Good, HSG B
3,743	98	Weighted Average
35		0.94% Pervious Area
3,708		99.06% Impervious Area

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

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Type III 24-hr 25YEAR STORM Rainfall=5.50"

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Summary for Subcatchment 117S: SA117

Runoff = 0.21 cfs @ 12.09 hrs, Volume= 0.014 af, Depth> 2.75"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YEAR STORM Rainfall=5.50"

Area (sf)	CN	Description
1,618	61	>75% Grass cover, Good, HSG B
1,116	98	Paved parking, HSG D
2,734	76	Weighted Average
1,618		59.18% Pervious Area
1,116		40.82% Impervious Area

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

Summary for Subcatchment 118S: SA118

Runoff = 0.13 cfs @ 12.09 hrs, Volume= 0.009 af, Depth> 2.75"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YEAR STORM Rainfall=5.50"

Area (sf)	CN	Description
1,018	61	>75% Grass cover, Good, HSG B
697	98	Paved parking, HSG D
1,715	76	Weighted Average
1,018		59.36% Pervious Area
697		40.64% Impervious Area

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

Summary for Subcatchment 119S: SA119

Runoff = 0.40 cfs @ 12.09 hrs, Volume= 0.031 af, Depth> 4.80"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YEAR STORM Rainfall=5.50"

Area (sf)	CN	Description
3,261	98	Paved parking, HSG D
100	61	>75% Grass cover, Good, HSG B
3,361	97	Weighted Average
100		2.98% Pervious Area
3,261		97.02% Impervious Area

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Type III 24-hr 25YEAR STORM Rainfall=5.50"

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

Summary for Subcatchment 122S: SA122

Runoff = 0.31 cfs @ 12.09 hrs, Volume= 0.022 af, Depth> 4.02"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YEAR STORM Rainfall=5.50"

Area (sf)	CN	Description
710	61	>75% Grass cover, Good, HSG B
2,135	98	Paved parking, HSG D
2,845	89	Weighted Average
710		24.96% Pervious Area
2,135		75.04% Impervious Area

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

Summary for Subcatchment 124S: SA124

Runoff = 0.82 cfs @ 12.09 hrs, Volume= 0.059 af, Depth> 4.12"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YEAR STORM Rainfall=5.50"

Area (sf)	CN	Description
1,000	39	>75% Grass cover, Good, HSG A
6,449	98	Paved parking, HSG D
7,449	90	Weighted Average
1,000		13.42% Pervious Area
6,449		86.58% Impervious Area

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

Summary for Subcatchment 130S: SA130 ROOF

Runoff = 0.37 cfs @ 12.09 hrs, Volume= 0.029 af, Depth> 4.87"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YEAR STORM Rainfall=5.50"

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Type III 24-hr 25YEAR STORM Rainfall=5.50"

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Area (sf)	CN	Description
3,082	98	Roofs, HSG D
3,082		100.00% Impervious Area

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

Summary for Subcatchment 131S: SA131 ROOF

Runoff = 0.31 cfs @ 12.09 hrs, Volume= 0.024 af, Depth> 4.87"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YEAR STORM Rainfall=5.50"

Area (sf)	CN	Description
2,552	98	Roofs, HSG D
2,552		100.00% Impervious Area

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

Summary for Subcatchment 132S: SA132

Runoff = 0.53 cfs @ 12.09 hrs, Volume= 0.041 af, Depth> 4.87"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YEAR STORM Rainfall=5.50"

Area (sf)	CN	Description
4,394	98	Roofs, HSG D
4,394		100.00% Impervious Area

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

Summary for Subcatchment 133S: SA133

Runoff = 0.61 cfs @ 12.09 hrs, Volume= 0.047 af, Depth> 4.87"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 25YEAR STORM Rainfall=5.50"

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Type III 24-hr 25YEAR STORM Rainfall=5.50"

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Area (sf)	CN	Description
5,035	98	Roofs, HSG D
5,035		100.00% Impervious Area

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

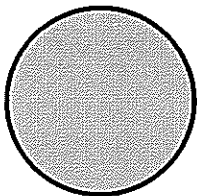
Summary for Reach 112R: SD CB9-LG8/9/10

Inflow Area = 1.037 ac, 90.08% Impervious, Inflow Depth > 3.68" for 25YEAR STORM event
 Inflow = 4.94 cfs @ 12.10 hrs, Volume= 0.318 af
 Outflow = 4.19 cfs @ 12.07 hrs, Volume= 0.318 af, Atten= 15%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 5.59 fps, Min. Travel Time= 0.1 min
 Avg. Velocity= 2.25 fps, Avg. Travel Time= 0.1 min

Peak Storage= 15 cf @ 12.10 hrs
 Average Depth at Peak Storage= 1.00'
 Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe
 n= 0.012
 Length= 19.0' Slope= 0.0100 '
 Inlet Invert= 118.50', Outlet Invert= 118.31'

**Summary for Reach 114R: SD CB8-CB9**

Inflow Area = 0.821 ac, 87.47% Impervious, Inflow Depth > 3.37" for 25YEAR STORM event
 Inflow = 3.90 cfs @ 12.10 hrs, Volume= 0.230 af
 Outflow = 3.83 cfs @ 12.11 hrs, Volume= 0.230 af, Atten= 2%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 5.60 fps, Min. Travel Time= 0.3 min
 Avg. Velocity= 1.96 fps, Avg. Travel Time= 1.0 min

Peak Storage= 79 cf @ 12.10 hrs
 Average Depth at Peak Storage= 0.83'
 Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

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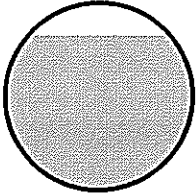
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12.0" Round Pipe

n= 0.012

Length= 114.0' Slope= 0.0100 '/'

Inlet Invert= 119.74', Outlet Invert= 118.60'

**Summary for Reach 115R: SD CB7-CD8**

Inflow Area = 0.032 ac, 100.00% Impervious, Inflow Depth > 4.87" for 25YEAR STORM event
Inflow = 0.17 cfs @ 12.09 hrs, Volume= 0.013 af
Outflow = 0.17 cfs @ 12.09 hrs, Volume= 0.013 af, Atten= 0%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.46 fps, Min. Travel Time= 0.2 min

Avg. Velocity = 0.94 fps, Avg. Travel Time= 0.4 min

Peak Storage= 2 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.14'

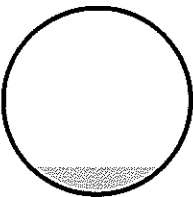
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe

n= 0.012

Length= 23.0' Slope= 0.0100 '/'

Inlet Invert= 120.20', Outlet Invert= 119.97'

**Summary for Reach 116R: SD CB6-LG3/4**

Inflow Area = 0.460 ac, 82.62% Impervious, Inflow Depth > 3.66" for 25YEAR STORM event
Inflow = 2.14 cfs @ 12.10 hrs, Volume= 0.140 af
Outflow = 2.14 cfs @ 12.10 hrs, Volume= 0.140 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 5.04 fps, Min. Travel Time= 0.0 min

Avg. Velocity = 1.78 fps, Avg. Travel Time= 0.1 min

Peak Storage= 6 cf @ 12.10 hrs

Average Depth at Peak Storage= 0.53'

Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

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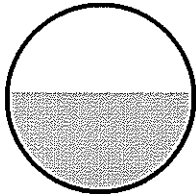
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12.0" Round Pipe

n= 0.012

Length= 14.0' Slope= 0.0100 '/'

Inlet Invert= 120.03', Outlet Invert= 119.89'



Summary for Reach 117R: SD CB5-CB6

Inflow Area = 0.179 ac, 64.97% Impervious, Inflow Depth > 3.63" for 25YEAR STORM event
Inflow = 0.74 cfs @ 12.10 hrs, Volume= 0.054 af
Outflow = 0.74 cfs @ 12.10 hrs, Volume= 0.054 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.80 fps, Min. Travel Time= 0.1 min

Avg. Velocity= 1.40 fps, Avg. Travel Time= 0.2 min

Peak Storage= 3 cf @ 12.10 hrs

Average Depth at Peak Storage= 0.30'

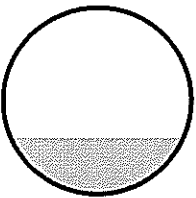
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe

n= 0.012

Length= 14.0' Slope= 0.0100 '/'

Inlet Invert= 120.27', Outlet Invert= 120.13'



Summary for Reach 118R: SD CB4-CB5

Inflow Area = 0.117 ac, 77.97% Impervious, Inflow Depth > 4.11" for 25YEAR STORM event
Inflow = 0.54 cfs @ 12.09 hrs, Volume= 0.040 af
Outflow = 0.53 cfs @ 12.10 hrs, Volume= 0.040 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.46 fps, Min. Travel Time= 0.3 min

Avg. Velocity= 1.30 fps, Avg. Travel Time= 0.7 min

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Peak Storage= 9 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.25'

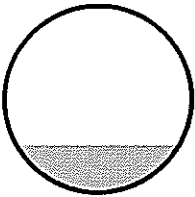
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe

n= 0.012

Length= 57.0' Slope= 0.0100 '/'

Inlet Invert= 120.94', Outlet Invert= 120.37'



Summary for Reach 119R: SD CB3-CB4

Inflow Area = 0.077 ac, 97.02% Impervious, Inflow Depth > 4.80" for 25YEAR STORM event
Inflow = 0.40 cfs @ 12.09 hrs, Volume= 0.031 af
Outflow = 0.40 cfs @ 12.09 hrs, Volume= 0.031 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.18 fps, Min. Travel Time= 0.1 min

Avg. Velocity= 1.21 fps, Avg. Travel Time= 0.2 min

Peak Storage= 1 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.22'

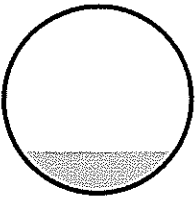
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe

n= 0.012

Length= 11.0' Slope= 0.0100 '/'

Inlet Invert= 121.15', Outlet Invert= 121.04'



Summary for Reach 122R: SD CB1-DMH1

Inflow Area = 0.136 ac, 88.02% Impervious, Inflow Depth > 4.46" for 25YEAR STORM event
Inflow = 0.68 cfs @ 12.09 hrs, Volume= 0.051 af
Outflow = 0.67 cfs @ 12.10 hrs, Volume= 0.051 af, Atten= 1%, Lag= 0.5 min

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Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.70 fps, Min. Travel Time= 0.3 min

Avg. Velocity= 1.39 fps, Avg. Travel Time= 0.8 min

Peak Storage= 12 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.28'

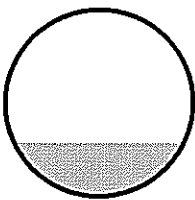
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe

n= 0.012

Length= 64.0' Slope= 0.0100 '/'

Inlet Invert= 121.85', Outlet Invert= 121.21'



Summary for Reach 123R: SD DMH1-LG1/2

Inflow Area = 0.195 ac, 91.63% Impervious, Inflow Depth > 4.58" for 25YEAR STORM event

Inflow = 0.98 cfs @ 12.09 hrs, Volume= 0.074 af

Outflow = 0.97 cfs @ 12.10 hrs, Volume= 0.074 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 4.10 fps, Min. Travel Time= 0.2 min

Avg. Velocity= 1.57 fps, Avg. Travel Time= 0.5 min

Peak Storage= 12 cf @ 12.10 hrs

Average Depth at Peak Storage= 0.34'

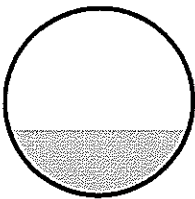
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe

n= 0.012

Length= 51.0' Slope= 0.0100 '/'

Inlet Invert= 121.11', Outlet Invert= 120.60'



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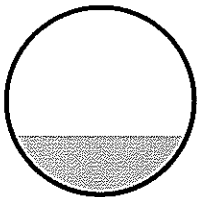
Summary for Reach 124R: SD CB2-LG5/6/7

Inflow Area = 0.171 ac, 86.58% Impervious, Inflow Depth > 4.12" for 25YEAR STORM event
Inflow = 0.82 cfs @ 12.09 hrs, Volume= 0.059 af
Outflow = 0.82 cfs @ 12.09 hrs, Volume= 0.059 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.90 fps, Min. Travel Time= 0.1 min
Avg. Velocity= 1.42 fps, Avg. Travel Time= 0.3 min

Peak Storage= 6 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.31'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe
n= 0.012
Length= 27.0' Slope= 0.0100 '/'
Inlet Invert= 120.90', Outlet Invert= 120.63'

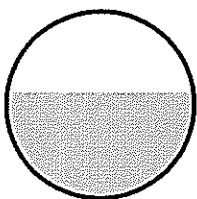
**Summary for Reach 130R: ROOF DRAIN**

Inflow Area = 0.071 ac, 100.00% Impervious, Inflow Depth > 4.87" for 25YEAR STORM event
Inflow = 0.37 cfs @ 12.09 hrs, Volume= 0.029 af
Outflow = 0.37 cfs @ 12.09 hrs, Volume= 0.029 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.24 fps, Min. Travel Time= 0.1 min
Avg. Velocity= 1.30 fps, Avg. Travel Time= 0.1 min

Peak Storage= 1 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.28'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.61 cfs

6.0" Round Pipe
n= 0.012
Length= 10.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -0.10'



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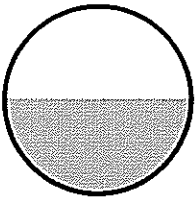
Summary for Reach 131R: ROOF DRAIN

Inflow Area = 0.059 ac, 100.00% Impervious, Inflow Depth > 4.87" for 25YEAR STORM event
Inflow = 0.31 cfs @ 12.09 hrs, Volume= 0.024 af
Outflow = 0.31 cfs @ 12.09 hrs, Volume= 0.024 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.10 fps, Min. Travel Time= 0.1 min
Avg. Velocity= 1.23 fps, Avg. Travel Time= 0.3 min

Peak Storage= 2 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.25'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.61 cfs

6.0" Round Pipe
n= 0.012
Length= 25.0' Slope= 0.0100 '/
Inlet Invert= 0.00', Outlet Invert= -0.25'



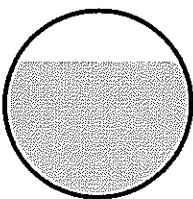
Summary for Reach 132R: ROOF DRAIN

Inflow Area = 0.101 ac, 100.00% Impervious, Inflow Depth > 4.87" for 25YEAR STORM event
Inflow = 0.53 cfs @ 12.09 hrs, Volume= 0.041 af
Outflow = 0.53 cfs @ 12.09 hrs, Volume= 0.041 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.49 fps, Min. Travel Time= 0.1 min
Avg. Velocity= 1.45 fps, Avg. Travel Time= 0.3 min

Peak Storage= 4 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.36'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.61 cfs

6.0" Round Pipe
n= 0.012
Length= 25.0' Slope= 0.0100 '/
Inlet Invert= 0.00', Outlet Invert= -0.25'



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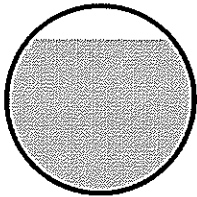
Summary for Reach 133R: ROOF DRAIN

Inflow Area = 0.116 ac, 100.00% Impervious, Inflow Depth > 4.87" for 25YEAR STORM event
 Inflow = 0.61 cfs @ 12.09 hrs, Volume= 0.047 af
 Outflow = 0.61 cfs @ 12.09 hrs, Volume= 0.047 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 3.53 fps, Min. Travel Time= 0.1 min
 Avg. Velocity= 1.51 fps, Avg. Travel Time= 0.3 min

Peak Storage= 4 cf @ 12.09 hrs
 Average Depth at Peak Storage= 0.41'
 Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.61 cfs

6.0" Round Pipe
 n= 0.012
 Length= 25.0' Slope= 0.0100 1/
 Inlet Invert= 0.00', Outlet Invert= -0.25'

**Summary for Pond 112P: LG 8/9/10**

Inflow Area = 1.037 ac, 90.08% Impervious, Inflow Depth > 3.68" for 25YEAR STORM event
 Inflow = 4.19 cfs @ 12.07 hrs, Volume= 0.318 af
 Outflow = 4.20 cfs @ 12.10 hrs, Volume= 0.305 af, Atten= 0%, Lag= 1.9 min
 Discarded = 0.03 cfs @ 12.10 hrs, Volume= 0.030 af
 Primary = 4.16 cfs @ 12.10 hrs, Volume= 0.275 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 120.02' @ 12.10 hrs Surf.Area= 198 sf Storage= 728 cf

Plug-Flow detention time= 26.4 min calculated for 0.305 af (96% of inflow)
 Center-of-Mass det. time= 12.2 min (757.7 - 745.4)

Volume	Invert	Avail.Storage	Storage Description
#1	112.64'	461 cf	Custom Stage Data (Conic) Listed below (Recalc) 1,420 cf Overall - 267 cf Embedded = 1,153 cf x 40.0% Voids
#2	115.64'	267 cf	Custom Stage Data (Prismatic) Listed below (Recalc) Inside #1
		728 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
112.64	198	0	0	198
119.81	198	1,420	1,420	556

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
115.64	64	0	0
119.81	64	267	267

Device	Routing	Invert	Outlet Devices
#1	Discarded	112.64'	2.410 in/hr Exfiltration over Wetted area
#2	Primary	118.31'	12.0" Round Culvert L= 79.0' Ke= 0.500 Inlet / Outlet Invert= 118.31' / 116.40' S= 0.0242 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=0.03 cfs @ 12.10 hrs HW=120.02' (Free Discharge)↑**1=Exfiltration** (Exfiltration Controls 0.03 cfs)**Primary OutFlow** Max=4.15 cfs @ 12.10 hrs HW=120.02' (Free Discharge)↑**2=Culvert** (Inlet Controls 4.15 cfs @ 5.29 fps)**Summary for Pond 117P: LG 3/4**

Inflow Area = 0.460 ac, 82.62% Impervious, Inflow Depth > 3.66" for 25YEAR STORM event
 Inflow = 2.14 cfs @ 12.10 hrs, Volume= 0.140 af
 Outflow = 2.13 cfs @ 12.11 hrs, Volume= 0.134 af, Atten= 0%, Lag= 0.3 min
 Discarded = 0.02 cfs @ 12.11 hrs, Volume= 0.018 af
 Primary = 2.12 cfs @ 12.11 hrs, Volume= 0.116 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 119.87' @ 12.11 hrs Surf.Area= 117 sf Storage= 334 cf

Plug-Flow detention time= 26.9 min calculated for 0.133 af (95% of inflow)
 Center-of-Mass det. time= 11.4 min (761.9 - 750.5)

Volume	Invert	Avail.Storage	Storage Description
#1	114.22'	235 cf	Custom Stage Data (Conic) Listed below (Recalc) 722 cf Overall - 133 cf Embedded = 588 cf x 40.0% Voids
#2	116.22'	133 cf	Custom Stage Data (Prismatic) Listed below (Recalc) Inside #1
		369 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
114.22	117	0	0	117
120.39	117	722	722	354

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
116.22	32	0	0
120.39	32	133	133

Device	Routing	Invert	Outlet Devices
#1	Discarded	114.22'	2.410 in/hr Exfiltration over Wetted area
#2	Primary	118.89'	12.0" Round Culvert L= 5.0' Ke= 0.500 Inlet / Outlet Invert= 118.89' / 118.84' S= 0.0100 '/' Cc= 0.900

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n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=0.02 cfs @ 12.11 hrs HW=119.86' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=2.09 cfs @ 12.11 hrs HW=119.86' (Free Discharge)

↑2=Culvert (Barrel Controls 2.09 cfs @ 3.42 fps)

Summary for Pond 124P: LG 5/6

Inflow Area = 0.171 ac, 86.58% Impervious, Inflow Depth > 4.12" for 25YEAR STORM event
 Inflow = 0.82 cfs @ 12.09 hrs, Volume= 0.059 af
 Outflow = 0.82 cfs @ 12.10 hrs, Volume= 0.053 af, Atten= 0%, Lag= 0.4 min
 Discarded = 0.02 cfs @ 12.10 hrs, Volume= 0.016 af
 Primary = 0.80 cfs @ 12.10 hrs, Volume= 0.037 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 121.09' @ 12.10 hrs Surf.Area= 117 sf Storage= 300 cf

Plug-Flow detention time= 54.0 min calculated for 0.053 af (90% of inflow)

Center-of-Mass det. time= 21.3 min (779.9 - 758.6)

Volume	Invert	Avail.Storage	Storage Description
#1	115.96'	235 cf	Custom Stage Data (Conic) Listed below (Recalc) 722 cf Overall - 133 cf Embedded = 588 cf x 40.0% Voids
#2	117.96'	133 cf	Custom Stage Data (Prismatic) Listed below (Recalc) Inside #1
		369 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
115.96	117	0	0	117
122.13	117	722	722	354

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
117.96	32	0	0
122.13	32	133	133

Device	Routing	Invert	Outlet Devices
#1	Discarded	115.96'	2.410 in/hr Exfiltration over Wetted area
#2	Primary	120.63'	12.0" Round Culvert L= 47.0' Ke= 0.500 Inlet / Outlet Invert= 120.63' / 120.16' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=0.02 cfs @ 12.10 hrs HW=121.08' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.79 cfs @ 12.10 hrs HW=121.08' (Free Discharge)

↑2=Culvert (Barrel Controls 0.79 cfs @ 3.36 fps)

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Summary for Pond 125P: LG 1/2

Inflow Area = 0.195 ac, 91.63% Impervious, Inflow Depth > 4.58" for 25YEAR STORM event
 Inflow = 0.97 cfs @ 12.10 hrs, Volume= 0.074 af
 Outflow = 0.97 cfs @ 12.10 hrs, Volume= 0.069 af, Atten= 0%, Lag= 0.3 min
 Discarded = 0.02 cfs @ 12.10 hrs, Volume= 0.018 af
 Primary = 0.95 cfs @ 12.10 hrs, Volume= 0.051 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 121.14' @ 12.10 hrs Surf.Area= 117 sf Storage= 284 cf

Plug-Flow detention time= 48.5 min calculated for 0.069 af (92% of inflow)
 Center-of-Mass det. time= 20.4 min (764.1 - 743.6)

Volume	Invert	Avail.Storage	Storage Description
#1	115.96'	260 cf	Custom Stage Data (Conic) Listed below (Recalc) 718 cf Overall - 69 cf Embedded = 649 cf x 40.0% Voids
#2	117.93'	69 cf	Custom Stage Data (Prismatic) Listed below (Recalc) Inside #1
		329 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
115.96	117	0	0	117
122.10	117	718	718	352

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
117.93	32	0	0
120.10	32	69	69

Device	Routing	Invert	Outlet Devices
#1	Discarded	115.96'	2.410 in/hr Exfiltration over Wetted area
#2	Primary	120.60'	12.0" Round Culvert L= 19.0' Ke= 0.500 Inlet / Outlet Invert= 120.60' / 120.41' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=0.02 cfs @ 12.10 hrs HW=121.14' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.02 cfs)

Primary OutFlow Max=0.94 cfs @ 12.10 hrs HW=121.14' (Free Discharge)
 ↑2=Culvert (Barrel Controls 0.94 cfs @ 3.15 fps)

APPENDIX F

O&M PLAN

OPERATIONS & MAINTENANCE PLAN
FOR STORMWATER FACILITIES
October 2014

For: The Park Danforth
777 Stevens Avenue
Portland, Maine

The applicant, The Park Danforth, will be responsible for all operation and maintenance of the entire site.

Site Description

The Park Danforth is an existing elderly housing project that will be expanded.

Stormwater Overview and Objectives

The Stormwater Plan has two separate systems:

1. The existing on-site stormwater system that discharges to the City stormdrain in Forest Avenue.
2. The new stormwater system that incorporates infiltration for the “First Flush” therefore providing treatment before discharging to the city stormdrain in Forest Avenue.

Contacts:

Design Engineer: BH2M
28 State Street
Gorham, Me. 04038
(207) 839-2771

Developer: The Park Danforth
777 Stevens Avenue
Portland, Me. 04103

Inspector: _____

Contractors:

Contractor 1 _____

Contractor 2 _____

Purpose

The following O&M Plan provides guidance and schedules for the O&M of the stormwater facility.

Leaching Galleries

1. Inlet Inspections: The inlet of the basin shall be checked periodically to ensure that flows are not blocked by debris. Inspections shall be conducted monthly during wet weather conditions from March to November.
2. Erosion & Instability: The drywell should be inspected annually for erosion, destabilization of side slopes, embankment settling and other signs of structural failure, and loss of storage volume due to sediment accumulation. Corrective action should be taken immediately upon identification of problems.
3. Sediment Removal: Sediment shall be removed from the structure at least annually and from the basin when necessary.
4. Measurement of Sediment Accumulation: Inspect for sediment accumulation. If sediment reaches 1' in depth, the sediment shall be removed.

Storm Drain System Includes Catch Basins & Manholes

1. Inspect catch basin inlets on a monthly basis for debris or conditions which could inhibit flow entry. Remove debris and properly dispose.
2. Inspect the catch basin structures on an annual basis.
 - a) Check that rims are securely attached and properly set to optimize flow entry.

- b) Measure and record silt accumulation, if any. Sumps shall be cleaned at least on a yearly basis in the spring.
3. Check pipelines on an annual basis to determine silt accumulation, if any. Remove excess silt if found.

City of Portland

The owner is required to comply with the annual reporting requirements contained in Chapter 32 of the City of Portland Code of Ordinances.

Housekeeping

1. Use “Inspection & Maintenance Log” and keep records in three-ring binder.
2. See attached Appendix B “Inspection and Maintenance” from Maine DEP Stormwater Regulations.
3. See attached “Appendix C” from Maine DEP Stormwater Regulations for Performance Standards.

INSPECTION SUMMARY
The Park Danforth

<u>Inspection of</u>	<u>Schedule *</u>
• Leaching Galleries	
Inspect	Monthly
Remove Sediment	Yearly
• Storm Drains and Catchbasins	
Inspect	Monthly
Measure Silt & Remove	Yearly

* After significant rainstorm in addition to regular inspections. Inspections shall be within 3 days of significant rainfall.

INSPECTION LOG
The Park Danforth
Stormwater Management
Inspection & Maintenance Log

Date of Inspection: _____

Inspection by: _____

Purpose of Inspection: Monthly, Yearly, Significant Rainfall (circle one)

- **Leaching Galleries**

Description of Conditions:

Maintenance & Date of Repairs:

Sediment Inspection & Removal:

- **Catchbasins**

Description of Conditions:

Maintenance & Date of Repairs:

Sediment Inspection & Removal:

Inspector Signature

Inspector Signature

APPENDIX G

1997 STORMWATER REPORT

**STORMWATER MANAGEMENT
AND
EROSION CONTROL REPORT**

**The Park Danforth
777 Stevens Avenue
Portland, Maine**

Land Use Consultants, Inc. is submitting plans and drainage calculations on behalf of The park Danforth for a proposed three (3) story addition to the existing seven (7) story building. The 2.5 acre site is located adjacent to Poland Street between Stevens Avenue and Forest Avenue. The existing seven (7) story brick building includes 106 residential dwelling units and a small detached garage with a main parking lot along Stevens Avenue and a supplementary parking lot in the rear with access from Forest Avenue.

Drainage for the present site is collected with several existing catch basins around the building which discharge into a separated storm drain in Forest Avenue. No stormwater detention methods are implemented for the existing site. Most of the existing storm drain pipes are installed with flat slopes typically less than 0.5% due to the available invert elevation at Forest Avenue. Drainage patterns for the existing site are depicted on the Pre-Development Drainage Sketch Plan showing 11 small drainage subcatchment areas corresponding to each catch basin or sub-drainage area. These subcatchments combine in the existing storm drain system to determine the total discharge from the site at the point where runoff enters the Forest Avenue storm sewer (Reach#11). Due to the small site and subcatchment areas a variation of the "Rational Method" was used to predict peak runoff rates from the site. Runoff calculations were performed with HydroCAD 4.51 software using the "Modified Rational Method".

The proposed site includes a large three (3) story addition to the existing building, thus increasing the number of dwelling units to 161. The existing parking area in the rear of the building will be relocated as shown to account for the new addition. The parking area along Stevens Avenue will be expanded to provide extra parking for the additional units. As a result of the proposed changes, the total impervious area is increased from 1.2 acres to 1.6 acres for the developed site. This increase in impervious surface resulted in a modest (15±%) increase of stormwater peak flow rates from the developed site. Due to the limited amount of large open areas available a conventional detention pond is not feasible for this site. In order to provide adequate flow control for this project we are proposing to install a hydro-brake vortex valve in the new storm drain line. The existing system was evaluated for potential storage capacity for detention volume using the existing structures and pipes. The system was determined to have adequate storage for the 25 year storm. However, a 24 inch diameter storm drain was added at the end of the line to provide additional capacity and to provide immediate and close storage for small storms such as the one or two year storm events.

Proposed drainage patterns for the developed site are similar to the existing conditions. The Post-development Drainage Sketch Plan shows the proposed site divided into 10 subcatchment areas which discharge to the Forest Avenue storm sewer. Reach #11 is the point of comparison to the pre-development calculations since this point represents the total combined flow from the

developed site and includes the resultant peak flow rates after considering the flow attenuation contributed by the in-line hydro brake.

The results of our drainage calculations are indicated in the Summary Table below. With the addition of the on-line hydro brake the peak runoff rate will be slightly reduced to below the existing peak flow rates for the 2, 10 and 25 year storm events. The calculations and supporting material are included in the Appendix. In order to save on paper and reproduction volume a full report and summary was generated for the 25 year storm event only for the pre-developed and post-developed conditions. A brief summary of each of the subcatchments, reaches or structures only will be listed for the 2 year and 10 year storms.

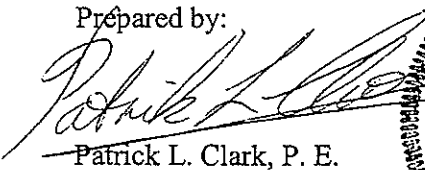
Summary Table		
<u>Storm</u>	<u>Existing (cfs)</u>	<u>Developed (cfs)</u>
2 year	4.26	3.89
10 year	5.99	5.81
25 year	7.01	6.80

(The rates indicated above are the combined peak flow rates evaluated at Reach #11)

Erosion Control measures are limited to siltation fencing around the perimeter of the site and hay bale sediment barriers around the catch basins as shown on the Post-development Drainage Sketch.

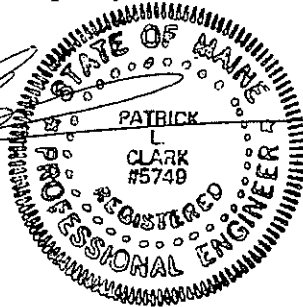
It is our conclusion that the proposed storm drain and hydro brake system will provide adequate control of stormwater runoff from the site without producing any significant downstream impacts. We feel that the proposed measures, if properly constructed and maintained, will be sufficient to control stormwater runoff and erosion from the proposed site without significant degradation of existing water quality.

Prepared by:


Patrick L. Clark, P. E.

PLC/pp

Enclosure: Pre-Development Drainage Sketch (11 in. x 17 in.)
Post-Development Drainage Sketch (11 in. x 17 in.)
Appendix (with calculations)



APPENDIX

STORMWATER MANAGEMENT AND EROSION CONTROL REPORT

**The Park Danforth
777 Stevens Avenue
Portland, Maine**

Calculation & Worksheets

TABLE 2

Runoff Coefficients
(Values of C in $Q=CA$)

Topography and Vegetation	Open Sandy Loam	Clay and Silt Loam	Tight Clay
Woodland			
Flat 0-5% slope	0.10	0.30	0.40
Rolling 5-10% slope	0.25	0.35	0.50
Hilly 10-3% slope	0.30	0.50	0.60
Pasture, Lawn			
Flat	0.10	0.30	0.40
Rolling	0.16	0.36	0.55
Hilly	0.22	0.42	0.60
Cultivated			
Flat	0.30	0.50	0.60
Rolling	0.40	0.60	0.70
Hilly	0.52	0.72	0.82
Urban Areas, General	30% of area impervious	50% of area impervious	70% of area impervious
Flat	0.40	0.55	0.65
Rolling	0.50	0.65	0.80
Roofs	Minimum 0.90	Optimum 0.95	Maximum 1.00
Concrete or asphalt roads and pavements	0.85	0.95	1.00
Bituminous macadam roads and pavements	0.60	0.70	0.80
Gravel areas and walks			
Packed		0.70	
Loose		0.30	
Vacant lots, unpaved streets			
Light plant growth		0.60	
No plant growth		0.75	
Parks, lawns and meadows	0.10	0.40	0.60
Farming country	0.10	0.30	0.60
Woodland		0.20	

Taken from: Tourbier, Joachim and Westmacott, Richard, Water Resources Protection Measures in Land Development - A Handbook, University of Delaware, April, 1974.

REGIONAL RAINFALL INTENSITY-DURATION CURVES

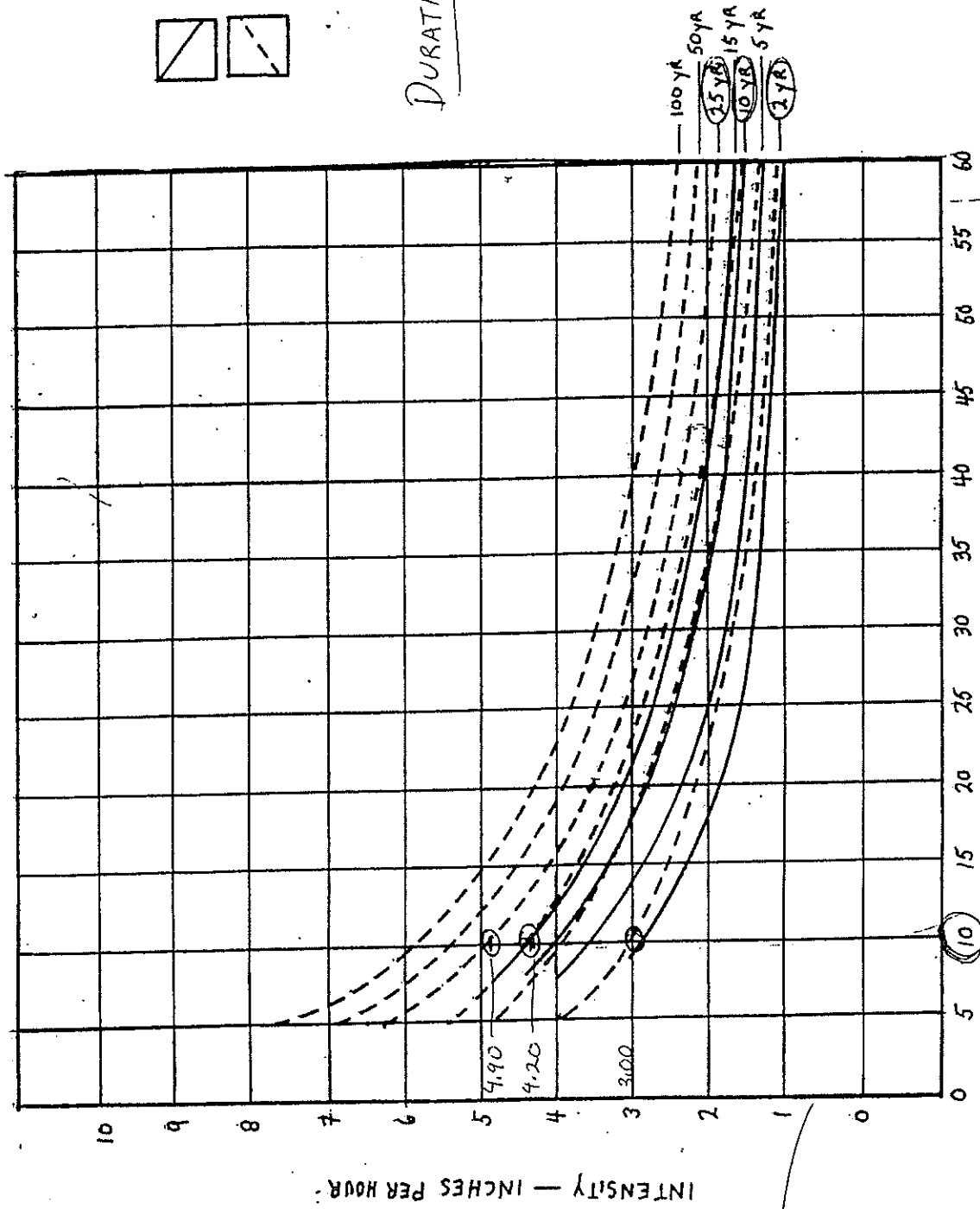


FIGURE 5

Project Park DanforthComputed By PLCJob No. 3042

Checked By _____

Date _____

Sheet _____ of _____

Rational MethodExisting Site $80' / \text{SF/grass} / s = .025$

① CB #1

 $A = 0.164 \text{ ac (7160)}$

Grass .137

 $C = .30$ (.041)

Paved .027

 $C = .95$ (.026).164 Σ (.067) $C = .41$

② CB #2

 $A = 0.25 (10880)$

Grass

 $C = .30$ $180' / \text{SF/grass} / s = .025$

✓ ③ CB #3

 $A = .377 (16922)$

(9170) Grass

.211

 $C = .30$ (.063)

Paved

.166

 $C = .95$ (.158).377 Σ (.221) $C = .67$

✓ ④ CB #4

 $A = .313 (13640 \text{ sf})$

Grass .051

 $C = .30$ (.015)

(3700) Paved

.262

 $C = .95$ (.249).313 Σ (.264) $C = .84$ $30' / \text{SF/Grass} / .025$ $50' / \text{SCF/Paved} / .008$

⑤ CB #5

 $A = 0.098 (4820)$

(800) Grass

.018

 $C = .30$ (.005)

Paved

.080

 $C = .95$ (.076) Σ (.081) $C = .83$ $25' / \text{SF/Grass} / .025$ $65' / \text{SCF/Paved} / .008$

Project PARK DANFORTHComputed By PLCJob No. 3042

Checked By _____

Date _____

Sheet _____ of _____



⑥ CB #6
A = .064 (2800)

40' / SF / Grass / S = .025

Grass	0.054	.30	(.016)
(440) Paved	0.010	.95	(.010)
		Σ	(.026)

C = .41

✓ ⑦ CB #7
A = 0.281 (12280)

100' / SF / Grass / S = .010

(2300) Grass	.053	.30	(.016)
Paved	.229	.95	(.218)
	0.281	Σ	(.234)

C = .83

⑧ CB #8
A = .048 (2080)

80' / SF / Paved / S = .030

(150) Grass	.003	.30	(.001)
Paved	.045	.95	(.043)
	.048	Σ	(.044)

C = .92

⑨ CB #9
A = .211 (9200)

50' / SF / Grass / S = .050

Grass C = .30

100' / SF / Grass / S = .035

⑩ CB #10
A = .220 (9600)

115' / SF / Paved / S = .030

(575) Grass	.013	.30	(.004)
Paved	.207	.95	(.197)
		Σ	(.201)

C = .91

Project Park Danforth

Computed By PLC

Job No. _____

Checked By _____

Date _____

Sheet _____ of _____



⑪ NOT USED

⑫ To Reach #11 (Forest Ave)

$$A = 0.124 \text{ ac (5400 SF)}$$

$$C = 0.95 \text{ (paved)}$$

$$270' / \text{SF} / \text{PAVED} / S = 0.030$$

Date _____ Sheet _____ of _____



EXISTING REACH DESCRIPTION SUMMARY SHEET: WATERSHED # _____

[illegible]

Data for 3042/PARK-DANFORTH/EXISTING SITE/2 YEAR

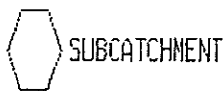
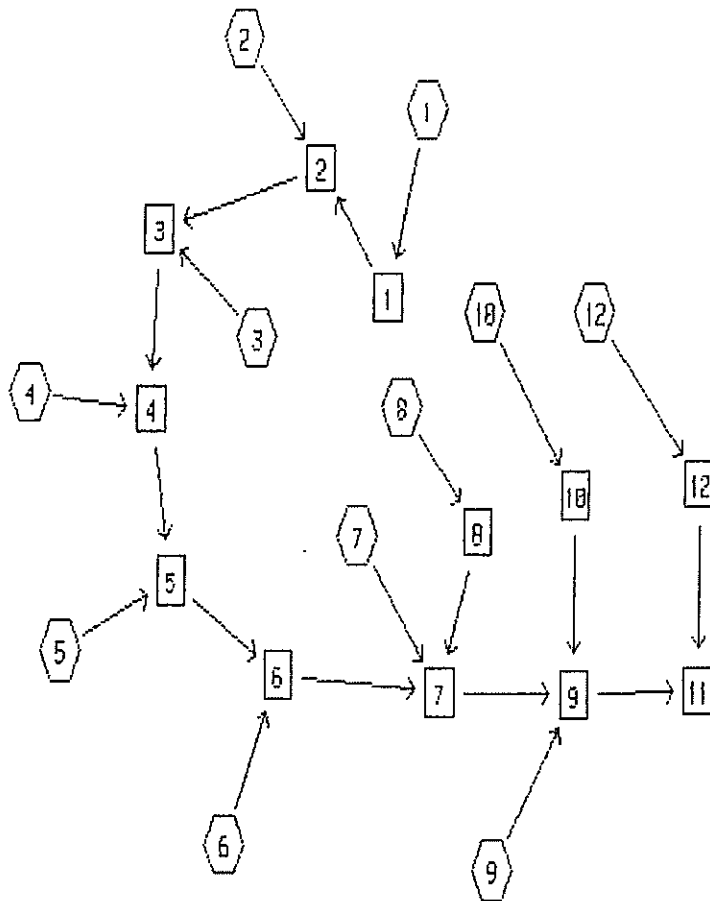
DURATION= 10 MIN INTEN= 3.00 IN/HR

Prepared by Land Use Consultants, Inc.

12 May 97

HydroCAD 4.52 000511 (c) 1986-1996 Applied Microcomputer Systems

WATERSHED ROUTING =====



SUBCATCHMENT



REACH



POND



LINK

Data for 3042/PARK-DANFORTH/EXISTING SITE/2 YEAR

DURATION= 10 MIN INTEN= 3.00 IN/HR

Prepared by Land Use Consultants, Inc.

12 May 97

HydroCAD 4.52 000511 (c) 1986-1996 Applied Microcomputer Systems

RUNOFF BY M-RATIONAL METHOD: DURATION= 10 MIN INTEN= 3.00 IN/HR

RUNOFF SPAN = 10-13 HRS, dt= .01 HRS, 301 POINTS

SUBCAT NUMBER	AREA (ACRE)	Tc (MIN)	--GROUND COVERS (%CN)--						WGT'D CN	C	PEAK (CFS)	Tpeak (HRS)	VOL (AF)
1	.16	11.3	-	-	-	-	-	-	.41	.17	10.17	0.00	
2	.25	21.6	-	-	-	-	-	-	.30	.10	10.17	0.00	
3	.38	1.7	-	-	-	-	-	-	.67	.76	10.03	.01	
4	.31	5.6	-	-	-	-	-	-	.84	.78	10.10	.01	
5	.10	5.0	-	-	-	-	-	-	.83	.25	10.09	0.00	
6	.06	6.5	-	-	-	-	-	-	.41	.07	10.11	0.00	
7	.28	19.4	-	-	-	-	-	-	.83	.36	10.17	.01	
8	.05	.9	-	-	-	-	-	-	.92	.14	10.02	0.00	
9	.21	6.5	-	-	-	-	-	-	.30	.19	10.11	0.00	
10	.22	1.2	-	-	-	-	-	-	.91	.60	10.02	.01	
12	.40	2.4	-	-	-	-	-	-	.95	1.14	10.04	.02	

Data for 3042/PARK-DANFORTH/EXISTING SITE/2 YEAR

DURATION= 10 MIN INTEN= 3.00 IN/HR

Prepared by Land Use Consultants, Inc.

12 May 97

HydroCAD 4.52 000511 (c) 1986-1996 Applied Microcomputer Systems

REACH ROUTING BY STOR-IND+TRANS METHOD

REACH NO.	DIAM (IN)	BOTTOM WIDTH (FT) DEPTH (FT)		SIDE SLOPES (FT/FT)		n	LENGTH (FT)	SLOPE (FT/FT)	PEAK VEL. (FPS)	TRAVEL TIME (MIN)	PEAK Qout (CFS)
1	6.0	-	-	-	-	.010	115	.0040	2.2	.9	.17
2	8.0	-	-	-	-	.010	140	.0030	2.2	1.0	.26
3	10.4	-	-	-	-	.010	80	.0025	2.8	.5	.94
4	12.0	-	-	-	-	.010	60	.0100	5.6	.2	1.70
5	12.0	-	-	-	-	.010	70	.0180	7.2	.2	1.95
6	15.0	-	-	-	-	.010	200	.0030	3.7	.9	2.00
7	15.0	-	-	-	-	.010	125	.0025	3.6	.6	2.45
8	6.0	-	-	-	-	.010	65	.0650	5.7	.2	.14
9	15.0	-	-	-	-	.010	95	.0060	5.4	.3	3.14
10	10.0	-	-	-	-	.010	60	.0350	6.6	.2	.61
11	15.5	-	-	-	-	.010	10	.0060	5.8	0.0	4.26
12	-	1.0	.5	.02	-	.110	100	.0500	.7	2.2	1.13

Data for 3042/PARK-DANFORTH/EXISTING SITE/25 YEAR

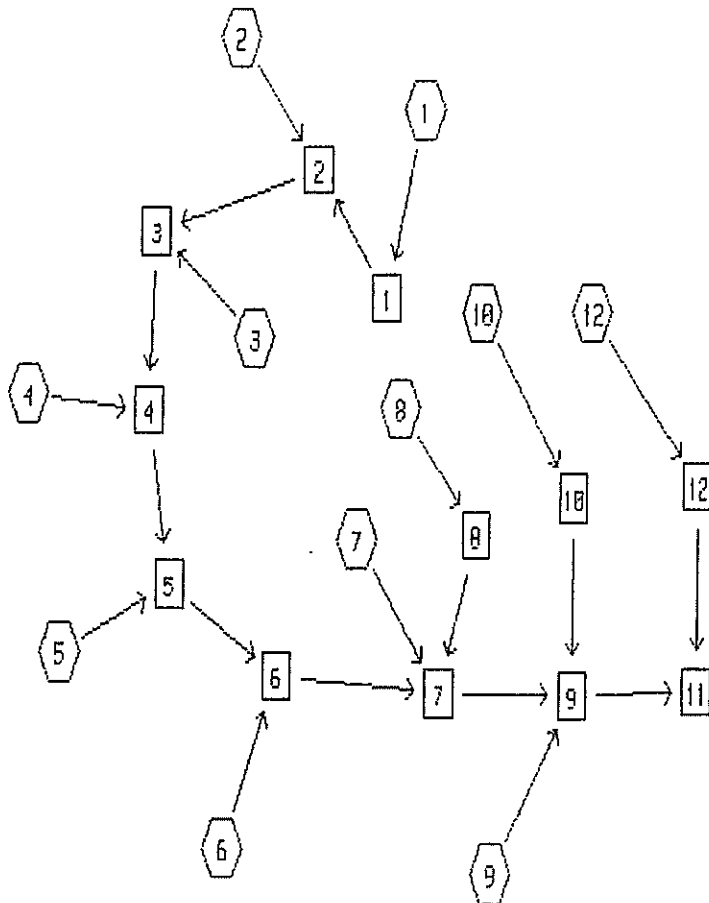
DURATION= 10 MIN INTEN= 4.90 IN/HR

Prepared by Land Use Consultants, Inc.

12 May 97

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WATERSHED ROUTING =====



SUBCATCHMENT



REACH



POND



LINK

Data for 3042/PARK-DANFORTH/EXISTING SITE/10 YEAR

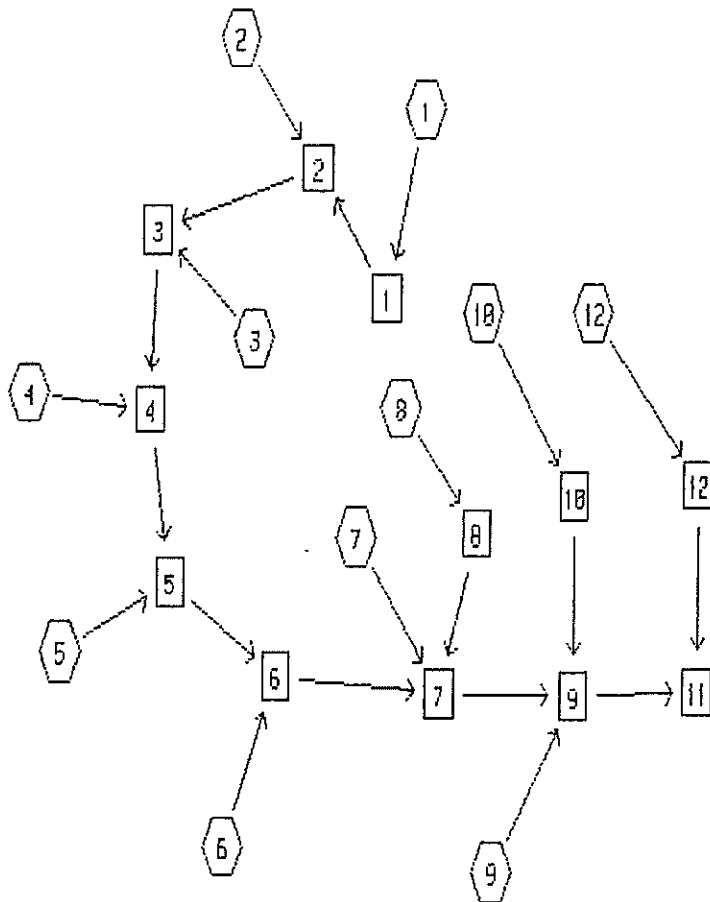
DURATION= 10 MIN INTEN= 4.20 IN/HR

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12 May 97

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WATERSHED ROUTING =====



SUBCATCHMENT



REACH



POND



LINK

Data for 3042/PARK-DANFORTH/EXISTING SITE/10 YEAR

DURATION= 10 MIN INTEN= 4.20 IN/HR

Prepared by Land Use Consultants, Inc.

12 May 97

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RUNOFF BY M-RATIONAL METHOD: DURATION= 10 MIN INTEN= 4.20 IN/HR

RUNOFF SPAN = 10-13 HRS, dt= .01 HRS, 301 POINTS

SUBCAT NUMBER	AREA (ACRE)	Tc (MIN)	--GROUND COVERS (%CN)--					WGT'D CN	C	PEAK (CFS)	Tpeak (HRS)	VOL (AF)
1	.16	11.3	-	-	-	-	-	.41	.24	10.17	.01	
2	.25	21.6	-	-	-	-	-	.30	.14	10.17	0.00	
3	.38	1.7	-	-	-	-	-	.67	1.07	10.03	.02	
4	.31	5.6	-	-	-	-	-	.84	1.09	10.10	.02	
5	.10	5.0	-	-	-	-	-	.83	.35	10.09	.01	
6	.06	6.5	-	-	-	-	-	.41	.10	10.11	0.00	
7	.28	19.4	-	-	-	-	-	.83	.50	10.17	.01	
8	.05	.9	-	-	-	-	-	.92	.19	10.02	0.00	
9	.21	6.5	-	-	-	-	-	.30	.26	10.11	0.00	
10	.22	1.2	-	-	-	-	-	.91	.84	10.02	.01	
12	.40	2.4	-	-	-	-	-	.95	1.60	10.04	.02	

Data for 3042/PARK-DANFORTH/EXISTING SITE/10 YEAR

DURATION= 10 MIN INTEN= 4.20 IN/HR

Prepared by Land Use Consultants, Inc.

12 May 97

HydroCAD 4.52 000511 (c) 1986-1996 Applied Microcomputer Systems

REACH ROUTING BY STOR-IND+TRANS METHOD

REACH NO.	DIAM (IN)	BOTTOM WIDTH (FT)	DEPTH (FT)	SIDE SLOPES (FT/FT)	n	LENGTH (FT)	SLOPE (FT/FT)	PEAK VEL. (FPS)	TRAVEL TIME (MIN)	PEAK Qout (CFS)
1	6.0	-	-	-	.010	115	.0040	2.4	.8	.23
2	8.0	-	-	-	.010	140	.0030	2.4	1.0	.36
3	10.4	-	-	-	.010	80	.0025	3.0	.4	1.33
4	12.0	-	-	-	.010	60	.0100	6.1	.2	2.40
5	12.0	-	-	-	.010	70	.0180	7.9	.1	2.74
6	15.0	-	-	-	.010	200	.0030	4.0	.8	2.82
7	15.0	-	-	-	.010	125	.0025	3.8	.5	3.45
8	6.0	-	-	-	.010	65	.0650	6.2	.2	.19
9	15.0	-	-	-	.010	95	.0060	5.8	.3	4.42
10	10.0	-	-	-	.010	60	.0350	7.3	.1	.85
11	15.5	-	-	-	.010	10	.0060	6.1	0.0	5.99
12	-	1.0	.5	.02	.110	100	.0500	.8	2.0	1.58

Data for 3042/PARK-DANFORTH/EXISTING SITE/25 YEAR

DURATION= 10 MIN INTEN= 4.90 IN/HR

Prepared by Land Use Consultants, Inc.

12 May 97

HydroCAD 4.52 000511 (c) 1986-1996 Applied Microcomputer Systems

RUNOFF BY M-RATIONAL METHOD: DURATION= 10 MIN INTEN= 4.90 IN/HR

RUNOFF SPAN = 10-13 HRS, dt= .01 HRS, 301 POINTS

SUBCAT NUMBER	AREA (ACRE)	Tc (MIN)	--GROUND COVERS (%CN)--					WGT'D CN	C	PEAK (CFS)	Tpeak (HRS)	VOL (AF)
1	.16	11.3	-	-	-	-	-	-	.41	.28	10.17	.01
2	.25	21.6	-	-	-	-	-	-	.30	.17	10.17	0.00
3	.38	1.7	-	-	-	-	-	-	.67	1.25	10.03	.02
4	.31	5.6	-	-	-	-	-	-	.84	1.28	10.10	.02
5	.10	5.0	-	-	-	-	-	-	.83	.41	10.09	.01
6	.06	6.5	-	-	-	-	-	-	.41	.12	10.11	0.00
7	.28	19.4	-	-	-	-	-	-	.83	.58	10.17	.01
8	.05	.9	-	-	-	-	-	-	.92	.23	10.02	0.00
9	.21	6.5	-	-	-	-	-	-	.30	.31	10.11	.01
10	.22	1.2	-	-	-	-	-	-	.91	.98	10.02	.01
12	.40	2.4	-	-	-	-	-	-	.95	1.86	10.04	.03

Data for 3042/PARK-DANFORTH/EXISTING SITE/25 YEAR

DURATION= 10 MIN INTEN= 4.90 IN/HR

Prepared by Land Use Consultants, Inc.

12 May 97

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REACH ROUTING BY STOR-IND+TRANS METHOD

REACH NO.	DIAM (IN)	BOTTOM WIDTH (FT)	DEPTH (FT)	SIDE SLOPES (FT/FT)	n	LENGTH (FT)	SLOPE (FT/FT)	PEAK VEL. (FPS)	TRAVEL TIME (MIN)	PEAK Qout (CFS)
1	6.0	-	-	-	.010	115	.0040	2.5	.8	.27
2	8.0	-	-	-	.010	140	.0030	2.5	.9	.42
3	10.4	-	-	-	.010	80	.0025	3.1	.4	1.55
4	12.0	-	-	-	.010	60	.0100	6.3	.2	2.81
5	12.0	-	-	-	.010	70	.0180	8.2	.1	3.20
6	15.0	-	-	-	.010	200	.0030	4.1	.8	3.30
7	15.0	-	-	-	.010	125	.0025	3.9	.5	4.03
8	6.0	-	-	-	.010	65	.0650	6.5	.2	.23
9	15.0	-	-	-	.010	95	.0060	5.9	.3	5.17
10	10.0	-	-	-	.010	60	.0350	7.5	.1	.99
11	15.5	-	-	-	.010	10	.0060	6.2	0.0	7.01
12	-	1.0	.5	.02	.110	100	.0500	.8	2.0	1.85

Data for 3042/PARK-DANFORTH/EXISTING SITE/25 YEAR

DURATION= 10 MIN INTEN= 4.90 IN/HR

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SUBCATCHMENT 1

PEAK= .28 CFS @ 10.17 HRS, VOLUME= .01 AF

C= .41

TOTAL AREA = .16 AC

M-RATIONAL METHOD

DURATION= 10 MIN

INTEN= 4.90 IN/HR

SPAN= 10-13 HRS, dt=.01 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	Segment ID:AB	11.3
Grass: Dense	n=.24 L=80' P2=3 in s=.025 '/'	

SUBCATCHMENT 2

PEAK= .17 CFS @ 10.17 HRS, VOLUME= 0.00 AF

C= .30

TOTAL AREA = .25 AC

M-RATIONAL METHOD

DURATION= 10 MIN

INTEN= 4.90 IN/HR

SPAN= 10-13 HRS, dt=.01 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	Segment ID:AB	21.6
Grass: Dense	n=.24 L=180' P2=3 in s=.025 '/'	

SUBCATCHMENT 3

PEAK= 1.25 CFS @ 10.03 HRS, VOLUME= .02 AF

C= .67

TOTAL AREA = .38 AC

M-RATIONAL METHOD

DURATION= 10 MIN

INTEN= 4.90 IN/HR

SPAN= 10-13 HRS, dt=.01 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	Segment ID:AB	1.7
Smooth surfaces	n=.011 L=90' P2=3 in s=.008 '/'	

Data for 3042/PARK-DANFORTH/EXISTING SITE/25 YEAR

DURATION= 10 MIN INTEN= 4.90 IN/HR

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SUBCATCHMENT 4

PEAK= 1.28 CFS @ 10.10 HRS, VOLUME= .02 AF

C= .84

TOTAL AREA = .31 AC

M-RATIONAL METHOD

DURATION= 10 MIN

INTEN= 4.90 IN/HR

SPAN= 10-13 HRS, dt=.01 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	Segment ID:AB	5.1
Grass: Dense n=.24 L=30' P2=3 in s=.025 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	Segment ID:BC	.5
Paved Kv=20.3282 L=50' s=.008 '/' V=1.82 fps		
Total Length= 80 ft		Total Tc= 5.6

SUBCATCHMENT 5

PEAK= .41 CFS @ 10.09 HRS, VOLUME= .01 AF

C= .83

TOTAL AREA = .10 AC

M-RATIONAL METHOD

DURATION= 10 MIN

INTEN= 4.90 IN/HR

SPAN= 10-13 HRS, dt=.01 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	Segment ID:AB	4.4
Grass: Dense n=.24 L=25' P2=3 in s=.025 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	Segment ID:BC	.6
Paved Kv=20.3282 L=65' s=.008 '/' V=1.82 fps		
Total Length= 90 ft		Total Tc= 5.0

SUBCATCHMENT 6

PEAK= .12 CFS @ 10.11 HRS, VOLUME= 0.00 AF

C= .41

TOTAL AREA = .06 AC

M-RATIONAL METHOD

DURATION= 10 MIN

INTEN= 4.90 IN/HR

SPAN= 10-13 HRS, dt=.01 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	Segment ID:AB	6.5
Grass: Dense n=.24 L=40' P2=3 in s=.025 '/'		

Data for 3042/PARK-DANFORTH/EXISTING SITE/25 YEAR

DURATION= 10 MIN INTEN= 4.90 IN/HR

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SUBCATCHMENT 7

PEAK= .58 CFS @ 10.17 HRS, VOLUME= .01 AF

C= .83

TOTAL AREA = .28 AC

M-RATIONAL METHOD

DURATION= 10 MIN

INTEN= 4.90 IN/HR

SPAN= 10-13 HRS, dt=.01 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	Segment ID:AB	19.4
Grass: Dense	n=.24 L=100' P2=3 in s=.01 '/'	

SUBCATCHMENT 8

PEAK= .23 CFS @ 10.02 HRS, VOLUME= 0.00 AF

C= .92

TOTAL AREA = .05 AC

M-RATIONAL METHOD

DURATION= 10 MIN

INTEN= 4.90 IN/HR

SPAN= 10-13 HRS, dt=.01 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	Segment ID:AB	.9
Smooth surfaces	n=.011 L=80' P2=3 in s=.03 '/'	

SUBCATCHMENT 9

PEAK= .31 CFS @ 10.11 HRS, VOLUME= .01 AF

C= .30

TOTAL AREA = .21 AC

M-RATIONAL METHOD

DURATION= 10 MIN

INTEN= 4.90 IN/HR

SPAN= 10-13 HRS, dt=.01 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	Segment ID:AB	5.9
Grass: Dense	n=.24 L=50' P2=3 in s=.05 '/'	
SHALLOW CONCENTRATED/UPLAND FLOW	Segment ID:BC	.6
Grassed Waterway	Kv=15 L=100' s=.035 '/' V=2.81 fps	

Total Length= 150 ft Total Tc= 6.5

Data for 3042/PARK-DANFORTH/EXISTING SITE/25 YEAR

DURATION= 10 MIN INTEN= 4.90 IN/HR

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SUBCATCHMENT 10

PEAK= .98 CFS @ 10.02 HRS, VOLUME= .01 AF

C= .91

TOTAL AREA = .22 AC

M-RATIONAL METHOD

DURATION= 10 MIN

INTEN= 4.90 IN/HR

SPAN= 10-13 HRS, dt=.01 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	Segment ID:AB	1.2
Smooth surfaces	n=.011 L=115' P2=3 in s=.03 '/'	

SUBCATCHMENT 12

PEAK= 1.86 CFS @ 10.04 HRS, VOLUME= .03 AF

C= .95

TOTAL AREA = .40 AC

M-RATIONAL METHOD

DURATION= 10 MIN

INTEN= 4.90 IN/HR

SPAN= 10-13 HRS, dt=.01 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	Segment ID:AB	2.4
Smooth surfaces	n=.011 L=270' P2=3 in s=.03 '/'	

Data for 3042/PARK-DANFORTH/EXISTING SITE/25 YEAR

DURATION= 10 MIN INTEN= 4.90 IN/HR

Prepared by Land Use Consultants, Inc.

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REACH 1

EXISTING PIPE (CB#1-CB#2)

Qin = .28 CFS @ 10.17 HRS, VOLUME= .01 AF
Qout= .27 CFS @ 10.19 HRS, VOLUME= .01 AF, ATTEN= 3%, LAG= 1.4 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)		STOR-IND+TRANS METHOD
0.0	0.0	0.00	6" PIPE	PEAK DEPTH= .27 FT
.1	0.0	.01	n= .01	PEAK VELOCITY= 2.5 FPS
.1	0.0	.04	LENGTH= 115 FT	TRAVEL TIME = .8 MIN
.2	0.0	.09	SLOPE= .004 FT/FT	SPAN= 10-13 HRS, dt=.01 HRS
.4	.1	.39		
.4	.2	.45		
.5	.2	.49		
.5	.2	.50		
.5	.2	.49		
.5	.2	.46		

REACH 2

EXISTING PIPE (CB#2-CB#3)

Qin = .43 CFS @ 10.19 HRS, VOLUME= .01 AF
Qout= .42 CFS @ 10.22 HRS, VOLUME= .01 AF, ATTEN= 2%, LAG= 1.7 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)		STOR-IND+TRANS METHOD
0.0	0.0	0.00	8" PIPE	PEAK DEPTH= .32 FT
.1	0.0	.02	n= .01	PEAK VELOCITY= 2.5 FPS
.1	0.0	.08	LENGTH= 140 FT	TRAVEL TIME = .9 MIN
.2	.1	.17	SLOPE= .003 FT/FT	SPAN= 10-13 HRS, dt=.01 HRS
.5	.3	.72		
.5	.3	.84		
.6	.3	.92		
.6	.3	.93		
.6	.3	.92		
.7	.3	.86		

REACH 3

EXISTING 10" PIPE (CB#3-CB#4)

Qin = 1.57 CFS @ 10.16 HRS, VOLUME= .03 AF
Qout= 1.55 CFS @ 10.17 HRS, VOLUME= .03 AF, ATTEN= 1%, LAG= .6 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)		STOR-IND+TRANS METHOD
0.0	0.0	0.00	10.4" PIPE	PEAK DEPTH= .70 FT
.1	0.0	.03	n= .01	PEAK VELOCITY= 3.1 FPS
.2	.1	.14	LENGTH= 80 FT	TRAVEL TIME = .4 MIN
.3	.1	.31	SLOPE= .0025 FT/FT	SPAN= 10-13 HRS, dt=.01 HRS
.6	.4	1.32		
.7	.5	1.55		
.8	.6	1.69		
.8	.6	1.70		
.8	.6	1.69		
.9	.6	1.58		

Data for 3042/PARK-DANFORTH/EXISTING SITE/25 YEAR

DURATION= 10 MIN INTEN= 4.90 IN/HR

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REACH 4 EXISTING PIPE (CB#4-CB#5)

Qin = 2.81 CFS @ 10.16 HRS, VOLUME= .05 AF

Qout= 2.81 CFS @ 10.17 HRS, VOLUME= .05 AF, ATTEN= 0%, LAG= .2 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)	12" PIPE	STOR-IND+TRANS METHOD
0.0	0.0	0.00		PEAK DEPTH= .56 FT
.1	0.0	.10	n= .01	PEAK VELOCITY= 6.3 FPS
.2	.1	.41	LENGTH= 60 FT	TRAVEL TIME = .2 MIN
.3	.2	.91	SLOPE= .01 FT/FT	SPAN= 10-13 HRS, dt=.01 HRS
.7	.6	3.88		
.8	.7	4.53		
.9	.7	4.94		
.9	.8	4.98		
1.0	.8	4.94		
1.0	.8	4.63		

REACH 5 EXISTING PIPE (CB#5-CB#6)

Qin = 3.21 CFS @ 10.17 HRS, VOLUME= .06 AF

Qout= 3.20 CFS @ 10.17 HRS, VOLUME= .06 AF, ATTEN= 0%, LAG= .1 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)	12" PIPE	STOR-IND+TRANS METHOD
0.0	0.0	0.00		PEAK DEPTH= .50 FT
.1	0.0	.13	n= .01	PEAK VELOCITY= 8.2 FPS
.2	.1	.54	LENGTH= 70 FT	TRAVEL TIME = .1 MIN
.3	.2	1.22	SLOPE= .018 FT/FT	SPAN= 10-13 HRS, dt=.01 HRS
.7	.6	5.20		
.8	.7	6.07		
.9	.7	6.62		
.9	.8	6.68		
1.0	.8	6.62		
1.0	.8	6.21		

REACH 6 EXISTING PIPE (CB#6-CB#7)

Qin = 3.32 CFS @ 10.17 HRS, VOLUME= .06 AF

Qout= 3.30 CFS @ 10.19 HRS, VOLUME= .06 AF, ATTEN= 1%, LAG= 1.2 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)	15" PIPE	STOR-IND+TRANS METHOD
0.0	0.0	0.00		PEAK DEPTH= .78 FT
.1	.1	.10	n= .01	PEAK VELOCITY= 4.1 FPS
.3	.2	.40	LENGTH= 200 FT	TRAVEL TIME = .8 MIN
.4	.3	.90	SLOPE= .003 FT/FT	SPAN= 10-13 HRS, dt=.01 HRS
.9	.9	3.85		
1.0	1.1	4.50		
1.1	1.2	4.90		
1.2	1.2	4.95		
1.2	1.2	4.90		
1.3	1.2	4.60		

Data for 3042/PARK-DANFORTH/EXISTING SITE/25 YEAR

DURATION= 10 MIN INTEN= 4.90 IN/HR

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REACH 7

EXISTING PIPE (CB#7-CB#9)

Qin = 4.05 CFS @ 10.17 HRS, VOLUME= .08 AF

Qout= 4.03 CFS @ 10.19 HRS, VOLUME= .08 AF, ATTEN= 1%, LAG= 1.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	.1	.09
.3	.2	.37
.4	.3	.82
.9	.9	3.52
1.0	1.1	4.10
1.1	1.2	4.48
1.2	1.2	4.52
1.2	1.2	4.47
1.3	1.2	4.20

15" PIPE

n= .01

LENGTH= 125 FT

SLOPE= .0025 FT/FT

STOR-IND+TRANS METHOD

PEAK DEPTH= .98 FT

PEAK VELOCITY= 3.9 FPS

TRAVEL TIME = .5 MIN

SPAN= 10-13 HRS, dt=.01 HRS

REACH 8

EXISTING PIPE (CB#8-CB#7)

Qin = .23 CFS @ 10.02 HRS, VOLUME= 0.00 AF

Qout= .23 CFS @ 10.03 HRS, VOLUME= 0.00 AF, ATTEN= 0%, LAG= .6 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	0.0	.04
.1	0.0	.16
.2	0.0	.36
.4	.1	1.56
.4	.2	1.82
.5	.2	1.98
.5	.2	2.00
.5	.2	1.98
.5	.2	1.86

6" PIPE

n= .01

LENGTH= 65 FT

SLOPE= .065 FT/FT

STOR-IND+TRANS METHOD

PEAK DEPTH= .12 FT

PEAK VELOCITY= 6.5 FPS

TRAVEL TIME = .2 MIN

SPAN= 10-13 HRS, dt=.01 HRS

REACH 9

EXISTING PIPE (CB#9-CB#11)

Qin = 5.20 CFS @ 10.17 HRS, VOLUME= .09 AF

Qout= 5.17 CFS @ 10.17 HRS, VOLUME= .09 AF, ATTEN= 1%, LAG= .4 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	.1	.14
.3	.2	.57
.4	.3	1.27
.9	.9	5.45
1.0	1.1	6.36
1.1	1.2	6.93
1.2	1.2	7.00
1.2	1.2	6.93
1.3	1.2	6.50

15" PIPE

n= .01

LENGTH= 95 FT

SLOPE= .006 FT/FT

STOR-IND+TRANS METHOD

PEAK DEPTH= .84 FT

PEAK VELOCITY= 5.9 FPS

TRAVEL TIME = .3 MIN

SPAN= 10-13 HRS, dt=.01 HRS

Data for 3042/PARK-DANFORTH/EXISTING SITE/25 YEAR

DURATION= 10 MIN INTEN= 4.90 IN/HR

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REACH 10

EXISTING PIPE (CB#10-CB#9)

Qin = .98 CFS @ 10.02 HRS, VOLUME= .01 AF

Qout= .99 CFS @ 10.03 HRS, VOLUME= .01 AF, ATTEN= 0%, LAG= .6 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
---------------	---------------------	----------------

0.0	0.0	0.00
-----	-----	------

.1	0.0	.11
----	-----	-----

.2	.1	.47
----	----	-----

.3	.1	1.04
----	----	------

.6	.4	4.46
----	----	------

.7	.5	5.21
----	----	------

.8	.5	5.68
----	----	------

.8	.5	5.73
----	----	------

.8	.5	5.68
----	----	------

.8	.5	5.33
----	----	------

10" PIPE

n= .01

LENGTH= 60 FT

SLOPE= .035 FT/FT

STOR-IND+TRANS METHOD

PEAK DEPTH= .24 FT

PEAK VELOCITY= 7.5 FPS

TRAVEL TIME = .1 MIN

SPAN= 10-13 HRS, dt=.01 HRS

REACH 11

15" PVC OUTLET TO STORM DRAIN (FOREST AVE)

Qin = 7.00 CFS @ 10.17 HRS, VOLUME= .12 AF

Qout= 7.01 CFS @ 10.18 HRS, VOLUME= .12 AF, ATTEN= 0%, LAG= .1 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
---------------	---------------------	----------------

0.0	0.0	0.00
-----	-----	------

.1	.1	.15
----	----	-----

.3	.2	.62
----	----	-----

.4	.3	1.39
----	----	------

.9	1.0	5.94
----	-----	------

1.0	1.1	6.94
-----	-----	------

1.2	1.2	7.57
-----	-----	------

1.2	1.3	7.64
-----	-----	------

1.3	1.3	7.57
-----	-----	------

1.3	1.3	7.10
-----	-----	------

15.5" PIPE

n= .01

LENGTH= 10 FT

SLOPE= .006 FT/FT

STOR-IND+TRANS METHOD

PEAK DEPTH= 1.04 FT

PEAK VELOCITY= 6.2 FPS

TRAVEL TIME = 0.0 MIN

SPAN= 10-13 HRS, dt=.01 HRS

REACH 12

GUTTER FLOW (FOREST AVE)

Qin = 1.86 CFS @ 10.04 HRS, VOLUME= .03 AF

Qout= 1.85 CFS @ 10.19 HRS, VOLUME= .03 AF, ATTEN= 1%, LAG= 9.0 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
---------------	---------------------	----------------

0.0	0.0	0.00
-----	-----	------

.1	.1	.03
----	----	-----

.1	.4	.16
----	----	-----

.2	.7	.41
----	----	-----

.2	1.4	.98
----	-----	-----

.3	2.6	2.24
----	-----	------

.4	4.4	4.63
----	-----	------

.5	6.8	8.19
----	-----	------

1' x .5' CHANNEL

S/S= .02 & 0 '/'

n= .11

LENGTH= 100 FT

SLOPE= .05 FT/FT

STOR-IND+TRANS METHOD

PEAK DEPTH= .27 FT

PEAK VELOCITY= .8 FPS

TRAVEL TIME = 2.0 MIN

SPAN= 10-13 HRS, dt=.01 HRS

Project PARK-DANFORTHComputed By PLCJob No. 3042

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DEVELOPED SITE

$$80' / \text{SF} / \text{grass} / 5 = .025$$

① CB #1

$$A = 0.164 \text{ ac } (7160 \text{ sf})$$

Grass	.137	C = .30	(.041)
Paved	.027	C = .195	(.026)
	<u>.164</u>		

$$\Sigma CA = .067$$

$$C = .41$$

② CB #2

$$A = 0.195 \text{ ac } (8476 \text{ sf})$$

$$180' / \text{SF} / \text{grass} / 5 = .025$$

Grass	= 0.174	C = .30	(0.052)
Paved	= 0.021	C = .195	(0.020)
	<u>0.195</u>		

$$0.072$$

$$C = .37$$

③ CB #3

$$A = 0.444 \text{ ac } (19360 \text{ sf})$$

$$90' / \text{SF} / \text{paved} / 5 = .008$$

Grass	= 0.066	C = .30	0.020
Paved	= 0.378	C = .195	0.360
	<u>0.444</u>		

$$\Sigma = 0.380$$

$$C = .85$$

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④ CB #4

$$A = 0.391 \text{ ac (17020 sf)}$$

$$\text{Grass} \sim 0.032$$

$$C = .30$$

$$(.0096)$$

$$\text{Paved} \sim 0.359$$

$$C = .95$$

$$(.341)$$

$$\Sigma CA = .351$$

$$C = .90$$

$$100' / \text{SF} / \text{Paved} / S = .008$$

⑤ CB #5

$$A = 0.091 \text{ ac (3976 sf)}$$

$$\text{Grass} \sim 0.013$$

$$C = .30$$

$$(.004)$$

$$\text{Paved} \sim 0.078$$

$$C = .95$$

$$(.074)$$

$$0.091$$

$$\Sigma CA = .0780$$

$$C = 0.86$$

$$60' / \text{SF} / \text{grass} / S = .025$$

⑥ CB #6

$$A = 0.062 \text{ ac (2704 sf)}$$

$$\text{Grass} \sim 0.053$$

$$C = .30$$

$$(0.016)$$

$$\text{Paved} \sim 0.009$$

$$C = .95$$

$$(0.009)$$

$$0.062$$

$$\Sigma CA = 0.024$$

$$C = .39$$

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⑦ (C=8)

$T_c = 20 \text{ min.}$

$$A = 0.720 \text{ ac} (31,360 \text{ sf})$$

$$\text{Grass} \sim .207 \quad C = .30 \quad (.062)$$

$$\text{Paved} \sim \frac{.513}{.720} \quad C = .95 \quad (.487)$$

$$\Sigma CA = .549$$

$$C = .76$$

⑧ CB #9

$90' / \text{SF/Grass} / .025$

$$A = 0.082 \text{ ac} (3548 \text{ sf})$$

$$\text{Grass} \sim .039 \quad C = .30 \quad (.012)$$

$$\text{Paved} \sim \frac{.043}{.082} \quad C = .95 \quad (.041)$$

$$\Sigma CA = .053$$

$$C = .65$$

⑨ CB #10

$170' / \text{SF/paved} / s = .025$

$100' / \text{SCF/paved} / s = .025$

$$A = 0.195 \text{ ac} (8495 \text{ sf})$$

$$\text{Grass} \sim 0.028 \quad C = .30 \quad (.008)$$

$$\text{Paved} \sim \frac{0.167}{0.195} \quad C = .95 \quad (.159)$$

$$\Sigma CA = .167$$

$$C = .86$$

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⑩

CB # 11

25' / SF / grass / .04
 70' / SF / paved / .035

$$A = 0.077ac(3355sf)$$

Grass .037

C = .30

(.011)

Paved. .040

C = .95

(.038)

.077

ECA = .049

C = 0.64

Project Park DanForth Computed By PLC

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REACH DESCRIPTION SUMMARY SHEET: WATERSHED # _____

[illegible]

Data for 3042/PARK-DANFORTH/DEVELOPED SITE/2 YEAR

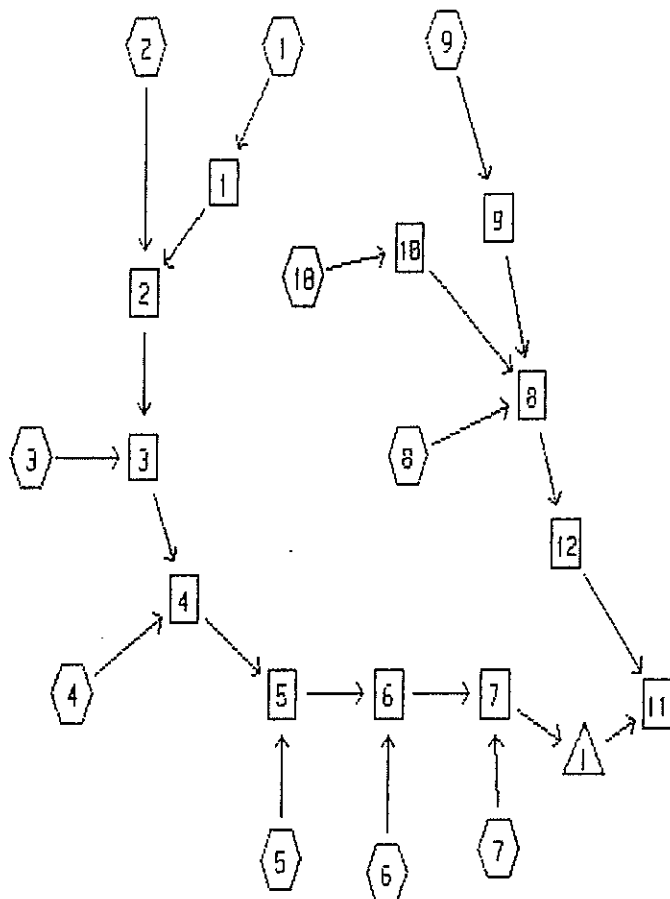
DURATION= 10 MIN INTEN= 3.00 IN/HR

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12 May 97

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WATERSHED ROUTING =====



SUBCATCHMENT



REACH



POND



LINK

Data for 3042/PARK-DANFORTH/DEVELOPED SITE/2 YEAR

DURATION= 10 MIN INTEN= 3.00 IN/HR

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RUNOFF BY M-RATIONAL METHOD: DURATION= 10 MIN INTEN= 3.00 IN/HR

RUNOFF SPAN = 10-13 HRS, dt= .01 HRS, 301 POINTS

SUBCAT NUMBER	AREA (ACRE)	Tc (MIN)	--GROUND COVERS (%CN)--					WGT'D CN	C	PEAK (CFS)	Tpeak (HRS)	VOL (AF)
1	.16	11.3	-	-	-	-	-	-	.41	.17	10.17	0.00
2	.20	21.6	-	-	-	-	-	-	.37	.10	10.17	0.00
3	.44	1.7	-	-	-	-	-	-	.85	1.12	10.03	.02
4	.39	5.6	-	-	-	-	-	-	.90	1.05	10.10	.02
5	.09	1.8	-	-	-	-	-	-	.86	.23	10.04	0.00
6	.06	9.0	-	-	-	-	-	-	.39	.07	10.15	0.00
7	.72	5.0	-	-	-	-	-	-	.76	1.64	10.09	.03
8	.08	12.4	-	-	-	-	-	-	.65	.12	10.17	0.00
9	.19	2.2	-	-	-	-	-	-	.86	.49	10.04	.01
10	.08	4.5	-	-	-	-	-	-	.64	.15	10.08	0.00

Data for 3042/PARK-DANFORTH/DEVELOPED SITE/2 YEAR

DURATION= 10 MIN INTEN= 3.00 IN/HR

Prepared by Land Use Consultants, Inc.

12 May 97

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REACH ROUTING BY STOR-IND+TRANS METHOD

REACH NO.	DIAM (IN)	BOTTOM WIDTH (FT)	DEPTH (FT)	SIDE SLOPES (FT/FT)	n	LENGTH (FT)	SLOPE (FT/FT)	PEAK VEL. (FPS)	TRAVEL TIME (MIN)	PEAK Qout (CFS)
1	6.0	-	-	-	.010	115	.0040	2.2	.9	.17
2	8.0	-	-	-	.010	140	.0030	2.2	1.0	.26
3	11.7	-	-	-	.010	80	.0025	3.1	.4	1.29
4	12.0	-	-	-	.010	60	.0100	6.1	.2	2.34
5	12.0	-	-	-	.010	70	.0180	7.8	.2	2.56
6	15.0	-	-	-	.010	260	.0030	3.9	1.1	2.60
7	24.0	-	-	-	.009	150	.0040	5.2	.5	4.17
8	12.0	-	-	-	.009	30	.0030	3.1	.2	.77
9	12.0	-	-	-	.009	45	.0030	2.7	.3	.49
10	12.0	-	-	-	.009	90	.0100	3.0	.5	.15
11	17.4	-	-	-	.010	20	.0030	4.4	.1	3.89
12	12.0	-	-	-	.009	50	.0030	3.1	.3	.76

Data for 3042/PARK-DANFORTH/DEVELOPED SITE/2 YEAR

DURATION= 10 MIN INTEN= 3.00 IN/HR

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POND ROUTING BY STOR-IND METHOD

POND NO.	START ELEV. (FT)	FLOOD ELEV. (FT)	PEAK ELEV. (FT)	PEAK STORAGE (AF)	----- Qin (CFS)	PEAK FLOW Qout (CFS)	----- Qpri (CFS)	Qsec (CFS)	---Qout--- ATTEN. (%)	LAG (MIN)
1	14.7	21.0	16.9	.02	4.17	3.39			19	3.7

Data for 3042/PARK-DANFORTH/DEVELOPED SITE/10 YEAR

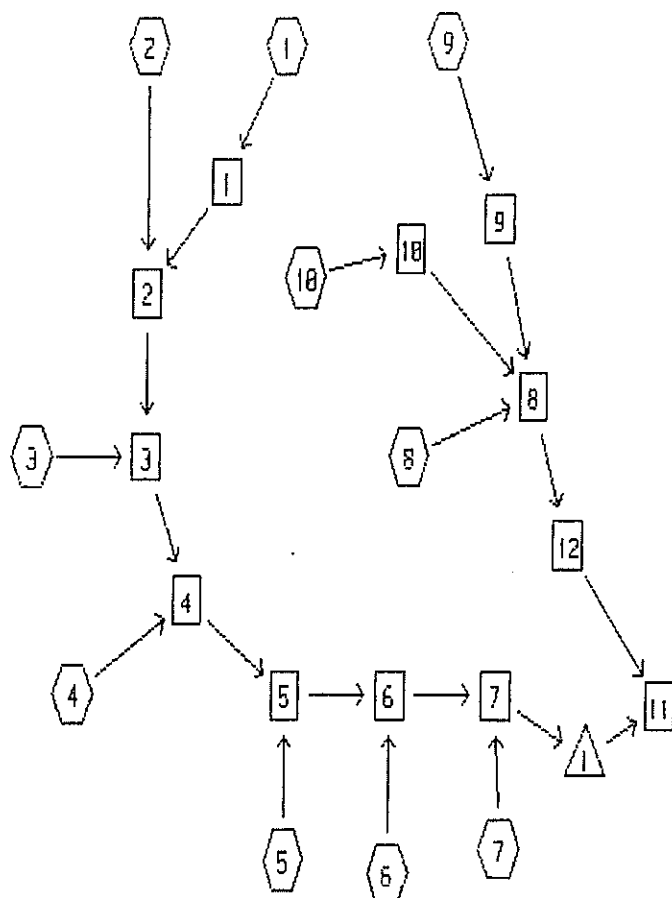
DURATION= 10 MIN INTEN= 4.20 IN/HR

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WATERSHED ROUTING =====



SUBCATCHMENT



REACH



POND



LINK

Data for 3042/PARK-DANFORTH/DEVELOPED SITE/10 YEAR

DURATION= 10 MIN INTEN= 4.20 IN/HR

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RUNOFF BY M-RATIONAL METHOD: DURATION= 10 MIN INTEN= 4.20 IN/HR

RUNOFF SPAN = 10-13 HRS, dt= .01 HRS, 301 POINTS

SUBCAT NUMBER	AREA (ACRE)	Tc (MIN)	--GROUND COVERS (%CN)--					WGT'D CN	C	PEAK (CFS)	Tpeak (HRS)	VOL (AF)
1	.16	11.3	-	-	-	-	-	-	.41	.24	10.17	.01
2	.20	21.6	-	-	-	-	-	-	.37	.14	10.17	0.00
3	.44	1.7	-	-	-	-	-	-	.85	1.57	10.03	.02
4	.39	5.6	-	-	-	-	-	-	.90	1.47	10.10	.03
5	.09	1.8	-	-	-	-	-	-	.86	.33	10.04	0.00
6	.06	9.0	-	-	-	-	-	-	.39	.10	10.15	0.00
7	.72	5.0	-	-	-	-	-	-	.76	2.30	10.09	.04
8	.08	12.4	-	-	-	-	-	-	.65	.17	10.17	0.00
9	.19	2.2	-	-	-	-	-	-	.86	.69	10.04	.01
10	.08	4.5	-	-	-	-	-	-	.64	.22	10.08	0.00

Data for 3042/PARK-DANFORTH/DEVELOPED SITE/10 YEAR

DURATION= 10 MIN INTEN= 4.20 IN/HR

Prepared by Land Use Consultants, Inc.

12 May 97

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REACH ROUTING BY STOR-IND+TRANS METHOD

REACH NO.	DIAM (IN)	BOTTOM WIDTH (FT)	DEPTH (FT)	SIDE SLOPES (FT/FT)	n	LENGTH (FT)	SLOPE (FT/FT)	PEAK VEL. (FPS)	TRAVEL TIME (MIN)	PEAK Qout (CFS)
1	6.0	-	-	-	.010	115	.0040	2.4	.8	.23
2	8.0	-	-	-	.010	140	.0030	2.4	1.0	.36
3	11.7	-	-	-	.010	80	.0025	3.2	.4	1.83
4	12.0	-	-	-	.010	60	.0100	6.4	.2	3.29
5	12.0	-	-	-	.010	70	.0180	8.4	.1	3.60
6	15.0	-	-	-	.010	260	.0030	4.2	1.0	3.66
7	24.0	-	-	-	.009	150	.0040	5.8	.4	5.85
8	12.0	-	-	-	.009	30	.0030	3.5	.1	1.07
9	12.0	-	-	-	.009	45	.0030	3.0	.2	.69
10	12.0	-	-	-	.009	90	.0100	3.4	.4	.22
11	17.4	-	-	-	.010	20	.0030	4.6	.1	5.81
12	12.0	-	-	-	.009	50	.0030	3.5	.2	1.07

Data for 3042/PARK-DANFORTH/DEVELOPED SITE/10 YEAR

DURATION= 10 MIN INTEN= 4.20 IN/HR

Prepared by Land Use Consultants, Inc.

12 May 97

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POND ROUTING BY STOR-IND METHOD

POND NO.	START ELEV. (FT)	FLOOD ELEV. (FT)	PEAK ELEV. (FT)	PEAK STORAGE (AF)	----- Qin (CFS)	PEAK FLOW Qout (CFS)	----- Qpri (CFS)	Qsec (CFS)	---Qout--- ATTEN. (%)	LAG (MIN)
1	14.7	21.0	19.2	.03	5.85	5.07			13	3.1

Data for 3042/PARK-DANFORTH/DEVELOPED SITE/25 YEAR

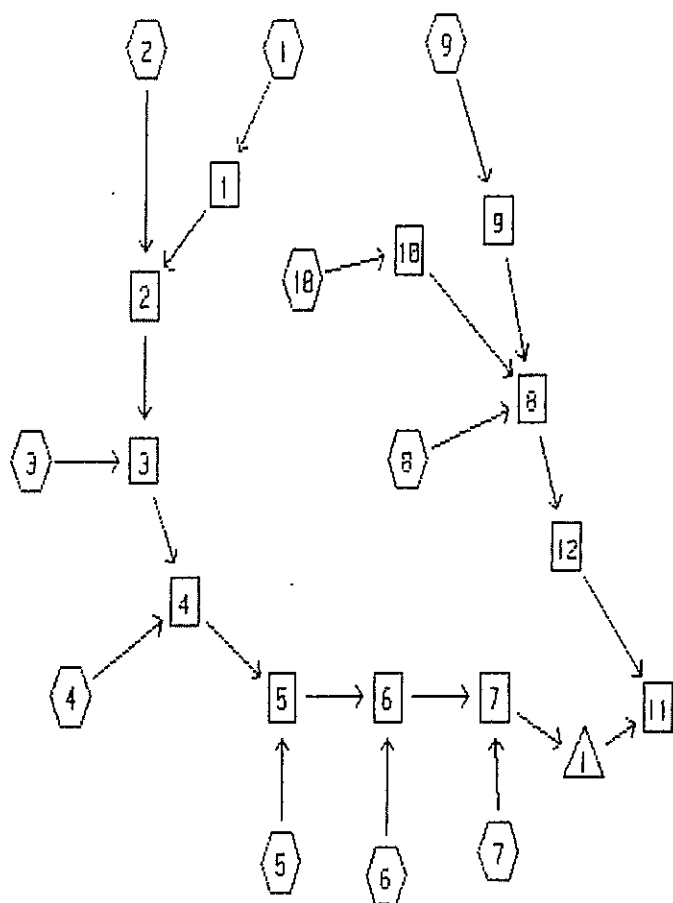
DURATION= 10 MIN INTEN= 4.90 IN/HR

Prepared by Land Use Consultants, Inc.

12 May 97

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WATERSHED ROUTING =====



Data for 3042/PARK-DANFORTH/DEVELOPED SITE/25 YEAR

DURATION= 10 MIN INTEN= 4.90 IN/HR

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12 May 97

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RUNOFF BY M-RATIONAL METHOD: DURATION= 10 MIN INTEN= 4.90 IN/HR

RUNOFF SPAN = 10-13 HRS, dt= .01 HRS, 301 POINTS

SUBCAT NUMBER	AREA (ACRE)	Tc (MIN)	--GROUND COVERS (%CN)--					WGT'D CN	C	PEAK (CFS)	Tpeak (HRS)	VOL (AF)
1	.16	11.3	-	-	-	-	-	-	.41	.28	10.17	.01
2	.20	21.6	-	-	-	-	-	-	.37	.17	10.17	0.00
3	.44	1.7	-	-	-	-	-	-	.85	1.83	10.03	.03
4	.39	5.6	-	-	-	-	-	-	.90	1.72	10.10	.03
5	.09	1.8	-	-	-	-	-	-	.86	.38	10.04	.01
6	.06	9.0	-	-	-	-	-	-	.39	.12	10.15	0.00
7	.72	5.0	-	-	-	-	-	-	.76	2.68	10.09	.05
8	.08	12.4	-	-	-	-	-	-	.65	.20	10.17	0.00
9	.19	2.2	-	-	-	-	-	-	.86	.80	10.04	.01
10	.08	4.5	-	-	-	-	-	-	.64	.25	10.08	0.00

Data for 3042/PARK-DANFORTH/DEVELOPED SITE/25 YEAR

DURATION= 10 MIN INTEN= 4.90 IN/HR

Prepared by Land Use Consultants, Inc.

12 May 97

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REACH ROUTING BY STOR-IND+TRANS METHOD

REACH NO.	DIAM (IN)	BOTTOM WIDTH (FT)	DEPTH (FT)	SIDE SLOPES (FT/FT)	n	LENGTH (FT)	SLOPE (FT/FT)	PEAK VEL. (FPS)	TRAVEL TIME (MIN)	PEAK Qout (CFS)	
1	6.0	-	-	-	-	.010	115	.0040	2.5	.8	.27
2	8.0	-	-	-	-	.010	140	.0030	2.5	.9	.42
3	11.7	-	-	-	-	.010	80	.0025	3.3	.4	2.13
4	12.0	-	-	-	-	.010	60	.0100	6.6	.2	3.84
5	12.0	-	-	-	-	.010	70	.0180	8.6	.1	4.20
6	15.0	-	-	-	-	.010	260	.0030	4.2	1.0	4.27
7	24.0	-	-	-	-	.009	150	.0040	6.1	.4	6.83
8	12.0	-	-	-	-	.009	30	.0030	3.6	.1	1.25
9	12.0	-	-	-	-	.009	45	.0030	3.2	.2	.80
10	12.0	-	-	-	-	.009	90	.0100	3.6	.4	.25
11	17.4	-	-	-	-	.010	20	.0030	4.7	.1	6.80
12	12.0	-	-	-	-	.009	50	.0030	3.6	.2	1.24

Data for 3042/PARK-DANFORTH/DEVELOPED SITE/25 YEAR

DURATION= 10 MIN INTEN= 4.90 IN/HR

Prepared by Land Use Consultants, Inc.

12 May 97

HydroCAD 4.52 000511 (c) 1986-1996 Applied Microcomputer Systems

POND ROUTING BY STOR-IND METHOD

POND NO.	START ELEV. (FT)	FLOOD ELEV. (FT)	PEAK ELEV. (FT)	PEAK STORAGE (AF)	----- Qin (CFS)	PEAK FLOW Qout (CFS)	----- Qpri (CFS)	Qsec (CFS)	---Qout--- ATTEN. (%)	LAG (MIN)
1	14.7	21.0	20.7	.03	6.83	5.95			13	3.0

Data for 3042/PARK-DAMPUR/H/DEVELOPED SITE/25 YEAR

DURATION= 10 MIN INTEN= 4.90 IN/HR

Prepared by Land Use Consultants, Inc.

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SUBCATCHMENT 1

PEAK= .28 CFS @ 10.17 HRS, VOLUME= .01 AF

C= .41

TOTAL AREA = .16 AC

M-RATIONAL METHOD

DURATION= 10 MIN

INTEN= 4.90 IN/HR

SPAN= 10-13 HRS, dt=.01 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	Segment ID:	11.3
Grass: Dense	n=.24 L=80' P2=3 in s=.025 '/'	

SUBCATCHMENT 2

PEAK= .17 CFS @ 10.17 HRS, VOLUME= 0.00 AF

C= .37

TOTAL AREA = .20 AC

M-RATIONAL METHOD

DURATION= 10 MIN

INTEN= 4.90 IN/HR

SPAN= 10-13 HRS, dt=.01 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	Segment ID:	21.6
Grass: Dense	n=.24 L=180' P2=3 in s=.025 '/'	

SUBCATCHMENT 3

PEAK= 1.83 CFS @ 10.03 HRS, VOLUME= .03 AF

C= .85

TOTAL AREA = .44 AC

M-RATIONAL METHOD

DURATION= 10 MIN

INTEN= 4.90 IN/HR

SPAN= 10-13 HRS, dt=.01 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	Segment ID:	1.7
Smooth surfaces	n=.011 L=90' P2=3 in s=.008 '/'	

SUBCATCHMENT 4

PEAK= 1.72 CFS @ 10.10 HRS, VOLUME= .03 AF

C= .90

TOTAL AREA = .39 AC

M-RATIONAL METHOD

DURATION= 10 MIN

INTEN= 4.90 IN/HR

SPAN= 10-13 HRS, dt=.01 HRS

Method	Comment	Tc (min)
DIRECT ENTRY	Segment ID:	5.6

Data for 3042/PARK-DANFORTH/DEVELOPED SITE/25 YEAR

DURATION= 10 MIN INTEN= 4.90 IN/HR

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SUBCATCHMENT 5

PEAK= .38 CFS @ 10.04 HRS, VOLUME= .01 AF

C= .86

TOTAL AREA = .09 AC

M-RATIONAL METHOD

DURATION= 10 MIN

INTEN= 4.90 IN/HR

SPAN= 10-13 HRS, dt=.01 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	Segment ID:	1.8
Smooth surfaces n=.011 L=100' P2=3 in s=.008 '/'		

SUBCATCHMENT 6

PEAK= .12 CFS @ 10.15 HRS, VOLUME= 0.00 AF

C= .39

TOTAL AREA = .06 AC

M-RATIONAL METHOD

DURATION= 10 MIN

INTEN= 4.90 IN/HR

SPAN= 10-13 HRS, dt=.01 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	Segment ID:	9.0
Grass: Dense n=.24 L=60' P2=3 in s=.025 '/'		

SUBCATCHMENT 7

PEAK= 2.68 CFS @ 10.09 HRS, VOLUME= .05 AF

C= .76

TOTAL AREA = .72 AC

M-RATIONAL METHOD

DURATION= 10 MIN

INTEN= 4.90 IN/HR

SPAN= 10-13 HRS, dt=.01 HRS

Method	Comment	Tc (min)
DIRECT ENTRY	Segment ID:	5.0

SUBCATCHMENT 8

PEAK= .20 CFS @ 10.17 HRS, VOLUME= 0.00 AF

C= .65

TOTAL AREA = .08 AC

M-RATIONAL METHOD

DURATION= 10 MIN

INTEN= 4.90 IN/HR

SPAN= 10-13 HRS, dt=.01 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	Segment ID:	12.4
Grass: Dense n=.24 L=90' P2=3 in s=.025 '/'		

data for 3042/PARK-DANFORTH/DEVELOPED SITE/25 YEAR

DURATION= 10 MIN INTEN= 4.90 IN/HR

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SUBCATCHMENT 9

PEAK= .80 CFS @ 10.04 HRS, VOLUME= .01 AF

C= .86

TOTAL AREA = .19 AC

M-RATIONAL METHOD

DURATION= 10 MIN

INTEN= 4.90 IN/HR

SPAN= 10-13 HRS, dt=.01 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	Segment ID:	1.7
Smooth surfaces n=.011 L=170' P2=3 in s=.025 '/'		
SHALLOW CONCENTRATED/UPLAND FLOW	Segment ID:	.5
Paved Kv=20.3282 L=100' s=.025 '/' V=3.21 fps		
Total Length= 270 ft		Total Tc= 2.2

SUBCATCHMENT 10

PEAK= .25 CFS @ 10.08 HRS, VOLUME= 0.00 AF

C= .64

TOTAL AREA = .08 AC

M-RATIONAL METHOD

DURATION= 10 MIN

INTEN= 4.90 IN/HR

SPAN= 10-13 HRS, dt=.01 HRS

Method	Comment	Tc (min)
TR-55 SHEET FLOW	Segment ID:	3.7
Grass: Dense n=.24 L=25' P2=3 in s=.04 '/'		
TR-55 SHEET FLOW	Segment ID:	.8
Smooth surfaces n=.011 L=70' P2=3 in s=.035 '/'		
Total Length= 95 ft		Total Tc= 4.5

Data for 3042/PARK-DANFORTH/DEVELOPED SITE/25 YEAR

DURATION= 10 MIN INTEN= 4.90 IN/HR

Prepared by Land Use Consultants, Inc.

12 May 97

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REACH 1 EX. PIPE (CB#1-CB#2)

Qin = .28 CFS @ 10.17 HRS, VOLUME= .01 AF

Qout= .27 CFS @ 10.19 HRS, VOLUME= .01 AF, ATTEN= 3%, LAG= 1.4 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
---------------	---------------------	----------------

0.0	0.0	0.00
-----	-----	------

.1	0.0	.01
----	-----	-----

.1	0.0	.04
----	-----	-----

.2	0.0	.09
----	-----	-----

.4	.1	.39
----	----	-----

.4	.2	.45
----	----	-----

.5	.2	.49
----	----	-----

.5	.2	.50
----	----	-----

.5	.2	.49
----	----	-----

.5	.2	.46
----	----	-----

6" PIPE

n= .01

LENGTH= 115 FT

SLOPE= .004 FT/FT

STOR-IND+TRANS METHOD

PEAK DEPTH= .27 FT

PEAK VELOCITY= 2.5 FPS

TRAVEL TIME = .8 MIN

SPAN= 10-13 HRS, dt=.01 HRS

REACH 2 EX. PIPE (CB#2-CB#3)

Qin = .43 CFS @ 10.19 HRS, VOLUME= .01 AF

Qout= .42 CFS @ 10.22 HRS, VOLUME= .01 AF, ATTEN= 2%, LAG= 1.7 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
---------------	---------------------	----------------

0.0	0.0	0.00
-----	-----	------

.1	0.0	.02
----	-----	-----

.1	0.0	.08
----	-----	-----

.2	.1	.17
----	----	-----

.5	.3	.72
----	----	-----

.5	.3	.84
----	----	-----

.6	.3	.92
----	----	-----

.6	.3	.93
----	----	-----

.6	.3	.92
----	----	-----

.7	.3	.86
----	----	-----

8" PIPE

n= .01

LENGTH= 140 FT

SLOPE= .003 FT/FT

STOR-IND+TRANS METHOD

PEAK DEPTH= .32 FT

PEAK VELOCITY= 2.5 FPS

TRAVEL TIME = .9 MIN

SPAN= 10-13 HRS, dt=.01 HRS

REACH 3 EX. PIPE (CB#3-CB#4)

Qin = 2.15 CFS @ 10.16 HRS, VOLUME= .04 AF

Qout= 2.13 CFS @ 10.17 HRS, VOLUME= .04 AF, ATTEN= 1%, LAG= .5 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
---------------	---------------------	----------------

0.0	0.0	0.00
-----	-----	------

.1	0.0	.05
----	-----	-----

.2	.1	.19
----	----	-----

.3	.2	.42
----	----	-----

.7	.6	1.81
----	----	------

.8	.6	2.12
----	----	------

.9	.7	2.31
----	----	------

.9	.7	2.33
----	----	------

.9	.7	2.31
----	----	------

1.0	.7	2.16
-----	----	------

11.7" PIPE

n= .01

LENGTH= 80 FT

SLOPE= .0025 FT/FT

STOR-IND+TRANS METHOD

PEAK DEPTH= .79 FT

PEAK VELOCITY= 3.3 FPS

TRAVEL TIME = .4 MIN

SPAN= 10-13 HRS, dt=.01 HRS

Data for 3042/PARK-DANFORTH/DEVELOPED SITE/25 YEAR

DURATION= 10 MIN INTEN= 4.90 IN/HR

12 May 97

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REACH 7

NEW PIPE (DMH#1-DMH#2)

Q_{in} = 6.85 CFS @ 10.16 HRS, VOLUME= .12 AF
Q_{out} = 6.83 CFS @ 10.17 HRS, VOLUME= .12 AF, ATTEN= 0%, LAG= .6 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.2	.2	.43
.4	.4	1.81
.6	.8	4.05
1.4	2.3	17.30
1.6	2.7	20.20
1.8	3.0	22.03
1.9	3.1	22.23
1.9	3.1	22.03
2.0	3.1	20.67

24" PIPE

n= .009
LENGTH= 150 FT
SLOPE= .004 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .77 FT
PEAK VELOCITY= 6.1 FPS
TRAVEL TIME = .4 MIN
SPAN= 10-13 HRS, dt=.01 HRS

REACH 8

NEW PIPE (CB#9-CB#8)

Q_{in} = 1.25 CFS @ 10.16 HRS, VOLUME= .02 AF
Q_{out} = 1.25 CFS @ 10.17 HRS, VOLUME= .02 AF, ATTEN= 0%, LAG= .3 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	0.0	.06
.2	.1	.25
.3	.2	.55
.7	.6	2.36
.8	.7	2.76
.9	.7	3.00
.9	.8	3.03
1.0	.8	3.00
1.0	.8	2.82

12" PIPE

n= .009
LENGTH= 30 FT
SLOPE= .003 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .45 FT
PEAK VELOCITY= 3.6 FPS
TRAVEL TIME = .1 MIN
SPAN= 10-13 HRS, dt=.01 HRS

REACH 9

NEW PIPE (CB#10-CB#9)

Q_{in} = .80 CFS @ 10.04 HRS, VOLUME= .01 AF
Q_{out} = .80 CFS @ 10.06 HRS, VOLUME= .01 AF, ATTEN= 0%, LAG= 1.2 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	0.0	.06
.2	.1	.25
.3	.2	.55
.7	.6	2.36
.8	.7	2.76
.9	.7	3.00
.9	.8	3.03
1.0	.8	3.00
1.0	.8	2.82

12" PIPE

n= .009
LENGTH= 45 FT
SLOPE= .003 FT/FT

STOR-IND+TRANS METHOD
PEAK DEPTH= .36 FT
PEAK VELOCITY= 3.2 FPS
TRAVEL TIME = .2 MIN
SPAN= 10-13 HRS, dt=.01 HRS

Data for 3042/PARK-DANFORTH/DEVELOPED SITE/25 YEAR

DURATION= 10 MIN INTEN= 4.90 IN/HR

12 May 97

Prepared by Land Use Consultants, Inc.

HydroCAD 4.52 000511 (c) 1986-1996 Applied Microcomputer Systems

REACH 10

NEW PIPE (CB#11-CB#9)

Qin = .25 CFS @ 10.08 HRS, VOLUME= 0.00 AF
Qout= .25 CFS @ 10.16 HRS, VOLUME= 0.00 AF, ATTEN= 0%, LAG= 4.8 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	0.0	.11
.2	.1	.45
.3	.2	1.01
.7	.6	4.31
.8	.7	5.03
.9	.7	5.48
.9	.8	5.54
1.0	.8	5.48
1.0	.8	5.15

12" PIPE

n= .009

LENGTH= 90 FT

SLOPE= .01 FT/FT

STOR-IND+TRANS METHOD

PEAK DEPTH= .14 FT

PEAK VELOCITY= 3.6 FPS

TRAVEL TIME = .4 MIN

SPAN= 10-13 HRS, dt=.01 HRS

REACH 11

EX. PIPE (DMH#2-DMH#3)

Qin = 6.81 CFS @ 10.21 HRS, VOLUME= .14 AF
Qout= 6.80 CFS @ 10.21 HRS, VOLUME= .14 AF, ATTEN= 0%, LAG= .2 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	.1	.14
.3	.2	.60
.4	.4	1.34
1.0	1.2	5.72
1.2	1.4	6.68
1.3	1.6	7.28
1.4	1.6	7.35
1.4	1.6	7.28
1.5	1.7	6.83

17.4" PIPE

n= .01

LENGTH= 20 FT

SLOPE= .003 FT/FT

STOR-IND+TRANS METHOD

PEAK DEPTH= 1.19 FT

PEAK VELOCITY= 4.7 FPS

TRAVEL TIME = .1 MIN

SPAN= 10-13 HRS, dt=.01 HRS

REACH 12

NEW PIPE (CB#8-DMH#2)

Qin = 1.25 CFS @ 10.17 HRS, VOLUME= .02 AF
Qout= 1.24 CFS @ 10.17 HRS, VOLUME= .02 AF, ATTEN= 1%, LAG= .2 MIN

DEPTH (FT)	END AREA (SQ-FT)	DISCH (CFS)
0.0	0.0	0.00
.1	0.0	.06
.2	.1	.25
.3	.2	.55
.7	.6	2.36
.8	.7	2.76
.9	.7	3.00
.9	.8	3.03
1.0	.8	3.00
1.0	.8	2.82

12" PIPE

n= .009

LENGTH= 50 FT

SLOPE= .003 FT/FT

STOR-IND+TRANS METHOD

PEAK DEPTH= .45 FT

PEAK VELOCITY= 3.6 FPS

TRAVEL TIME = .2 MIN

SPAN= 10-13 HRS, dt=.01 HRS

Data for 3042/PARK-DANFORTH/DEVELOPED SITE/25 YEAR

DURATION= 10 MIN INTEN= 4.90 IN/HR

Prepared by Land Use Consultants, Inc.

12 May 97

HydroCAD 4.52 000511 (c) 1986-1996 Applied Microcomputer Systems

POND 1

DMH #2 WITH HYDRO-BRAKE

Qin = 6.83 CFS @ 10.17 HRS, VOLUME= .12 AF

Qout= 5.95 CFS @ 10.23 HRS, VOLUME= .12 AF, ATTN= 13%, LAG= 3.0 MIN

ELEVATION (FT)	CUM.STOR (CF)
-------------------	------------------

14.7	0
------	---

17.0	850
------	-----

19.0	1115
------	------

20.0	1250
------	------

21.0	1350
------	------

STOR-IND METHOD

PEAK STORAGE = 1317 CF

PEAK ELEVATION= 20.7 FT

FLOOD ELEVATION= 21.0 FT

START ELEVATION= 14.7 FT

SPAN= 10-13 HRS, dt=.01 HRS

Tdet= 4 MIN (.12 AF)

#	ROUTE	INVERT	OUTLET DEVICES
---	-------	--------	----------------

1	P	14.7'	9.8" ORIFICE/GRATE Q=.6 PI r ² SQR(2g) SQR(H-r)
---	---	-------	---

APPENDIX H

S.W. COLE GEOTECHNICAL REPORT

REPORT

June 18, 2014
14-0065 S

Geotechnical Engineering Services

Proposed Senior Living Facility
The Park Danforth
Arbor Street & Forest Avenue
Portland, Maine

PREPARED FOR:

The Park Danforth
c/o Mitchell & Associates
Attention: Robert Metcalf
70 Center Street
Portland, Maine 04101

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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Sheets 2 - 15	Exploration Logs
Sheet 16	Key to the Notes and Symbols
Sheets 17 – 21	Laboratory Gradation Testing
Sheet 22	Underdrain Detail

14-0065 S

June 18, 2014

The Park Danforth
c/o Mitchell & Associates
Attention: Robert Metcalf
70 Center Street
Portland, Maine 04101

Subject: Geotechnical Engineering Services
Proposed Senior Living Facility
The Park Danforth
Arbor Street and Forest Avenue
Portland, Maine

Dear Bob:

In accordance with our Revised Proposal, dated February 21, 2014, we have performed subsurface explorations for the subject project. This report summarizes 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 test boring explorations, soils laboratory testing, a geotechnical analysis of the subsurface findings and preparation of this report.

1.2 Site and Proposed Construction

The site is located southwest of the intersection of Arbor Street and Forest Avenue in Portland, Maine. The site is currently occupied by residential and retail development and improvements associated with the existing Park Danforth facility.

We understand development plans call for demolition of existing improvements and construction of a new on-grade, two to three story apartment building for senior housing. The new apartment building is proposed in the northeast portion of the site in the vicinity of an existing one-story retail building that will be demolished. Development plans also include a one-story, on-grade addition to the northwest wing of the existing Park Danforth building. The proposed type of building construction and structural loading are not available at this time. We anticipate proposed finish floor elevations will be within 1 foot of existing grades. Paved parking and access drive areas are proposed around the north, east, and west peripheries of the site, adjacent to Forest Avenue, Arbor Street, and Stevens Avenue.

Proposed and existing site features are shown on the "Exploration Location Plan" attached as Sheet 1.

2.0 EXPLORATION AND TESTING

2.1 Explorations

Fourteen test borings (B-101 through B-114) were made at the site on May 22 and 23, 2014 by Great Works Test Boring, Inc. of Rollinsford, New Hampshire working under subcontract to S. W. Cole Engineering, Inc. (S.W.COLE). The exploration locations were selected by Mitchell & Associates and established in the field by S.W.COLE based on measurements from existing site features. The exploration program consisted of the following:

- Five test borings (B-104 through B-108) made for the proposed two to three-story building in the northeast portion of the site;
- Three test borings (B-111 through B-114) made for the proposed one-story Park Danforth building addition;
- Six test borings (B-101 through B-103 and B-109 and B-110) made for the proposed paved areas.

The approximate exploration locations are shown on the "Exploration Location Plan" attached as Sheet 1. Logs of the test borings are attached as Sheets 2 through 15. The elevations shown on the logs were estimated based on topographic information shown on Sheet 1. A key to the notes and symbols used on the logs is attached as Sheet 16.

2.2 Testing

The test borings were drilled using a combination of solid stem auger and hollow stem auger drilling techniques. The soils were sampled at 2 to 5 foot intervals using a split spoon sampler and Standard Penetration Testing (SPT) techniques. SPT blow counts are shown on the logs.

Soil samples obtained from the explorations were returned to our laboratory for further classification and testing. Laboratory testing included five gradation tests and five moisture content tests. Results of the gradation testing are attached as Sheets 17 through 21. Results of the moisture content tests are shown on the logs.

3.0 SITE AND SUBSURFACE CONDITIONS

3.1 Surficial

The site is currently occupied by residential and retail development and associated landscape and pavement areas. The site is an urban site with likely previous development including past structures that are not represented on Sheet 1. The site is relatively level and flat with existing grades generally dropping west to east from about elevation 127 to 120 feet. Existing site features are shown on Sheet 1.

It should be noted that the site is a urban site with likely previous development including past structures that are not represented on Sheet 1.

3.2 Soil and Bedrock

Underlying a surficial layer of topsoil or pavement the borings encountered a subsurface profile generally consisting of a thin layer of uncontrolled granular fill overlying native outwash sands overlying refusal surfaces (probable bedrock). The principal soils encountered at the explorations are summarized below; refer to the attached logs for more detailed descriptions of the subsurface findings.

Uncontrolled Fill: The borings encountered uncontrolled fill consisting of loose to medium dense, brown and dark brown sand with varying portions of silt, gravel, and miscellaneous debris such as coal, porcelain, glass, and brick fragments. Rootlets were observed in the fill at some of the explorations. The fill was penetrated at depths varying from approximately 1.5 to 6 feet at the explorations.

Outwash Sands: Underlying the uncontrolled fill, the borings encountered native outwash sands consisting of stratified medium dense to very dense sand with varying portions of silt and gravel. The borings, with the exception of B-104 through B-108, were terminated in the outwash sands at depths varying from 9 to 21 feet.

Refusal Surfaces: Underlying the outwash sands, borings B-104 through B-108 encountered refusal surfaces (probable bedrock) at depths varying from 22 to 28 feet. A zone of probable bedrock was penetrated by as much as approximately 2 feet by the augers before encountering refusal.

3.3 Groundwater

Free groundwater or saturated soils were encountered at depths varying from about 18 to 21 feet at borings B-105 through B-108. Free water was not encountered at the remainder of the borings. Long term groundwater information is not available. It should be anticipated that seasonal groundwater levels will fluctuate, especially during periods of snowmelt and precipitation.

3.4 Seismic and Frost

The 25-year Air Freezing Index for the Portland, Maine area is about 1,290-Fahrenheit degree-days, which corresponds to a frost penetration depth on the order of 4.5 feet. Based on the subsurface findings, we interpret the site soils to correspond to Seismic Soil Site Class C according to 2009 IBC.

4.0 EVALUATION AND RECOMMENDATIONS

4.1 General Findings

Based on the subsurface findings, the proposed construction appears feasible from a geotechnical standpoint. The principle geotechnical considerations are as follows:

- The site is an urban site likely with past structures and underground improvements that may not become apparent until construction. An assessment of past site uses including historical structures should be completed during the planning phase of the project to help understand the impact of past site development to the proposed construction.
- A 2 to 6 foot layer of uncontrolled granular fill exists within the proposed apartment building and Park Danforth building addition footprints. The uncontrolled fill should be removed and replaced below foundations and densified below on-grade floor slabs. Areas that become soft after densifying should be removed and replaced prior to installing slab gravels. Provided the building pads are properly prepared, spread footing foundations and on-grade floor slabs appear suitable for the proposed construction.
- Native sand subgrades below foundations and on-grade floor slabs should be densified. Pavement subgrades consisting of uncontrolled fill or native sands should be proof-rolled and soft areas repaired prior to installing pavement gravels.
- Imported Granular Borrow, Structural Fill, and Crushed Stone will be needed for construction. Existing native outwash sands appear suitable for reuse as Granular Borrow.
- We recommend completing a historical mapping and records review of the site to explore the potential for buried structures and foundations which may be encountered during construction. S.W.COLE is available to complete this task.

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 and site disturbance. All topsoil and organics should be completely removed from areas of proposed construction. Final cuts to subgrade elevation should be made with a smooth edge bucket to lessen subgrade disturbance. We offer the following

subgrade preparation recommendations for proposed building and paved areas.

Proposed Building Areas: In addition to grubbing all organics, all existing pavement, utilities, foundations, structures, and uncontrolled fill should be completely removed beneath proposed foundations until undisturbed native sands are encountered. The removal of unsuitable materials should extend outward 1 foot laterally from edge of footing for every foot of vertical depth below bottom of footing (1H:1V bearing splay). Overexcavations should be backfilled with compacted Structural Fill. The native sand footing subgrade soils should be densified with 3 to 5 passes of a vibratory plate compactor having a static weight of at least 600 pounds prior to placing new fill or concrete.

Following installation and backfilling of building foundations, we recommend floor slab subgrade be densified with 3 to 5 passes of a vibratory roller having a static weight of at least 5 tons. Floor slab areas that become soft or continue to yield after densifying should be removed and replaced with compacted Structural Fill prior to installing slab gravels.

Proposed Paved Areas: Following grubbing all organics, all pavement and deleterious materials should be removed beneath proposed paved areas. Existing utilities should be removed and existing foundations should be removed to at least 4.5 feet below finish grade and backfilled with compacted Granular Borrow. Pavement subgrades should be proof rolled and densified with 3 to 5 passes of a vibratory roller having a static weight of at least 10 tons. Pavement subgrade areas that become soft or continue to yield should be removed and replaced with compacted Granular Borrow prior to installing pavement gravels.

4.3 Excavation and Dewatering

Excavation work will generally encounter existing uncontrolled granular fill and native outwash sands. Care must be exercised during construction to limit disturbance of the native bearing soils. Earthwork and grading activities should occur during drier Summer and Fall seasons. Final cuts to subgrade should be performed with a smooth-edged bucket to help minimize soil disturbance.

We recommend that the construction documents contain unit pricing for removal and replacement of existing uncontrolled fills, structures, and other unsuitable materials as

described herein.

Groundwater was encountered at the explorations at depths on the order of 20 feet. Sumping and pumping dewatering techniques should be adequate to control groundwater in excavations. Excavations must be properly shored or sloped in accordance with OSHA trenching regulations to prevent sloughing and caving of the sidewalls during construction. Care must be taken to preclude undermining adjacent structures, utilities and roadways. The design and planning of excavations, excavation support systems, and dewatering is the responsibility of the contractor.

4.4 Foundations

We recommend the proposed buildings be supported on spread footings founded on densified native outwash sands or properly compacted Structural Fill overlying densified native outwash sands. As presented herein, it will be necessary to remove and replace existing uncontrolled fills below foundations.

For foundations bearing on properly prepared subgrades, we recommend the following geotechnical parameters for design consideration:

- Design Frost Depth = 4.5 feet
- Net Allowable Soil Bearing Pressure = 4 ksf or less
- Base Friction Factor = 0.30 (concrete to sand)
- Total Unit Weight of Backfill = 125 pcf (compacted Structural Fill)
- At-Rest Lateral Earth Pressure Coefficient = 0.5 (compacted Structural Fill)
- Internal Friction Angle of Backfill = 30° (compacted Structural Fill)
- Seismic Soil Site Class = C (IBC 2009)

4.5 Foundation Drainage

The site soils consist of relatively dry, well-drained sands. However, it is good practice to provide perimeter underdrainage to help reduce the risk of frost heaving of entrance slabs and sidewalks. We recommend an underdrain system be installed along the outside edge the perimeter footings. The underdrain pipe should consist of 4-inch diameter, slotted foundation drain pipe bedded in Underdrain Sand. The underdrain pipe must have a positive gravity outlet protected from freezing, clogging and backflow. Surface grades should be sloped away from the building for positive drainage. General underdrain details

are illustrated on Sheet 22.

4.6 Slab-On-Grade

On-grade floor slabs in heated areas may be designed using a subgrade reaction modulus of 100 pci (pounds per cubic inch) provided the slab is underlain by at least 12-inches of compacted Structural Fill placed over densified native sand subgrades. The structural engineer or concrete consultant must design steel reinforcing and joint spacing appropriate to slab thickness and function.

We recommend a sub-slab vapor retarder particularly in areas of the building where the concrete slab will be covered with an impermeable surface treatment or floor covering that may be sensitive to moisture vapors. 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 direct contact with the sub-slab base material and construction activity. The vapor retarder material should 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 the building must be designed to reduce the effects of differential frost action between adjacent pavement, doorways, and entrances. We recommend that non-frost susceptible Structural Fill be provided to a depth of at least 4.5 feet below the top of entrance slabs. This thickness of Structural Fill should extend the full width of the entrance slab and outward at least 4.5 feet, thereafter transitioning up to the bottom of the adjacent sidewalk or pavement gravels at a 3H:1V or flatter slope. General details of this frost transition zone are attached as Sheet 22.

4.8 Backfill and Compaction

We recommend the following fill and backfill materials:

Granular Borrow: Sand or silty sand meeting the gradation requirements of MDOT Standard Specification 703.19 Granular Borrow. Granular Borrow is recommended for use as:

- Fill to raise site grades in proposed paved areas
- Backfill of overexcavations below proposed paved areas

Structural Fill: Clean, 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:

- Backfill for overexcavations below footings and on-grade floor slabs
- Fill to raise grades in building areas
- Backfill against foundations
- Backfill within frost transition zones below entrances and sidewalks

Underdrain Sand: Underdrain Sand used around underdrain pipes should meet the gradation requirements of MDOT Standard Specifications 703.22 "Underdrain Backfill Type B".

Reuse of Site Soils: The existing uncontrolled fills are unsuitable for reuse below proposed building areas, but may be suitable for reused in proposed pavement and landscape areas. The native sands appear suitable for reuse as Granular Borrow. The contractor should anticipate the need to moisture condition soils for reuse.

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 lift thicknesses for grading, fill and backfill activities should not exceed 12 inches. We recommend that 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.

4.9 Weather Considerations

Construction activity should be limited during wet and freezing weather and the site soils may require drying before construction activities may continue. 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. Considering the site soils and proposed usage, we offer the following pavement section for consideration. Materials are based on Maine Department of Transportation Standard Specifications.

- 1 ¼ inches of 9.5 mm Hot Mix Asphalt (50 Gyraton Design)
- 2 ¼ inches of 12.5 mm Hot Mix Asphalt (50 Gyraton Design)
- 3 inches of MDOT 703.06 Type A, Crushed Aggregate Base
- 15 inches of MDOT 703.06 Type D, Crushed Aggregate Subbase

Pavement subgrades are anticipated to consist of densified existing fills, native sands or compacted Granular Borrow. 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 Recommendation for Additional Study

Given the previously developed nature of the site, we recommend performing a historical mapping and records research review of the site. A review will help to establish the location of historical buildings and underground structures which could be encountered during construction. S.W.COLE is available to provide the historical research services.

4.12 Design Review and Construction Testing

S.W.COLE should be retained to review the civil and foundation construction documents to determine that our earthwork, foundation and pavement recommendations have been properly interpreted and implemented.

A soils and concrete testing program should be implemented during construction to observe compliance with the design concepts, plans, and specifications. S.W.COLE is available to provide subgrade observations for foundations as well as testing 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

Attachment A Limitations

This report has been prepared for the exclusive use of The Park Danforth and Mitchell & Associates for specific application to the proposed Park Danforth Expansion in Portland, Maine. S.W.COLE has endeavored to conduct the work in accordance with generally accepted soil and foundation engineering practices. No warranty, expressed or implied, is made.

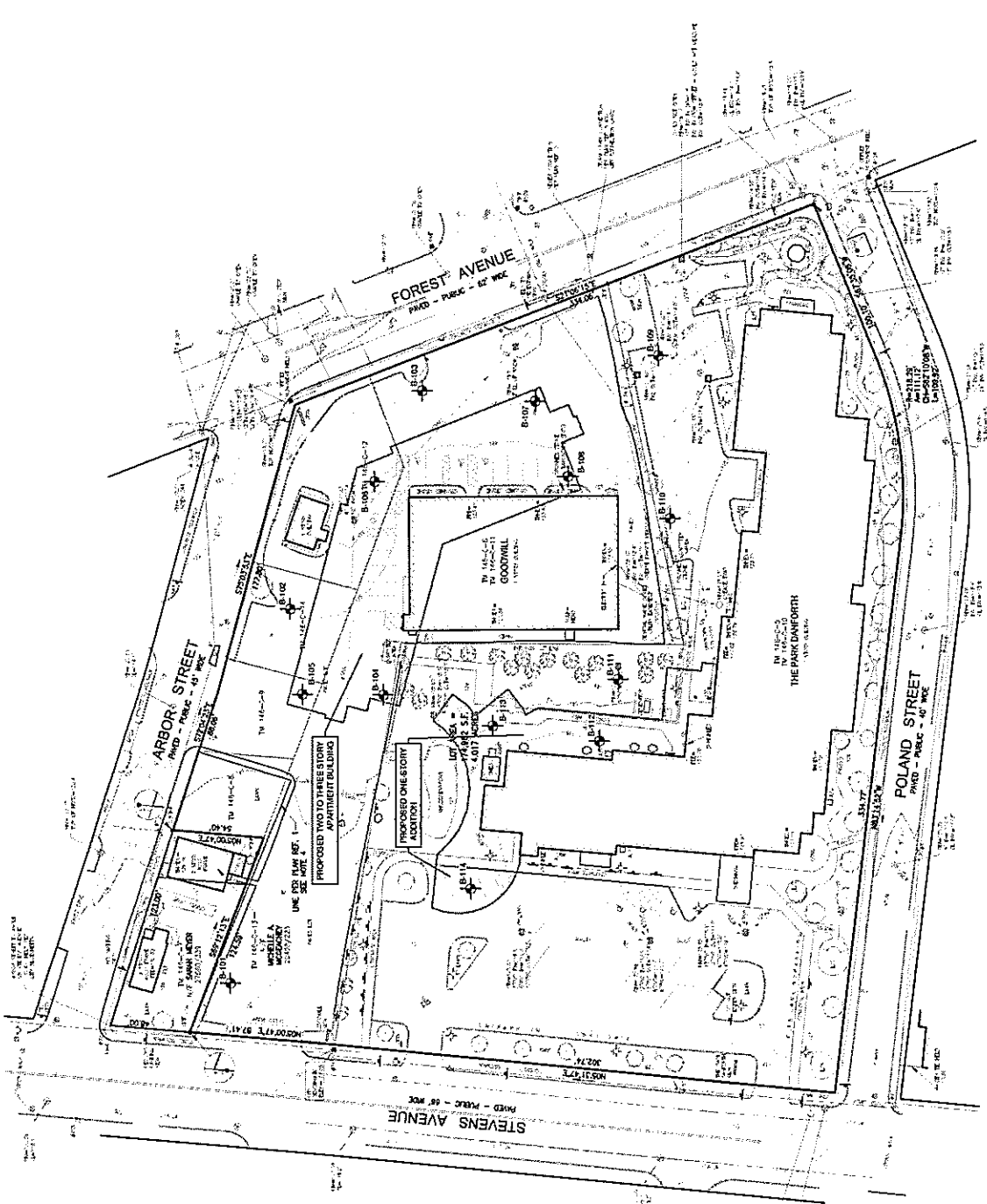
The soil profiles described in the report are intended to convey general trends in subsurface conditions. The boundaries between strata are approximate and are based upon interpretation of exploration data and samples.

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'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 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.



LEGEND



APPROXIMATE EXPLORATION LOCATION

- NOTES
1. EXPLORATION LOCATION PLAN AND PRELIMINARY EXPLORATION REPORT SUBMITTED TO THE PORTLAND PLANNING AND DEVELOPMENT COMMISSION (PPDC) FOR REVIEW AND APPROVAL. THE EXPLORATION LOCATION PLAN IS A PRELIMINARY EXPLORATION REPORT AND IS NOT TO BE USED FOR CONSTRUCTION.
 2. THE EXPLORATION LOCATION PLAN IS A PRELIMINARY EXPLORATION REPORT AND IS NOT TO BE USED FOR CONSTRUCTION.
 3. THE EXPLORATION LOCATION PLAN IS A PRELIMINARY EXPLORATION REPORT AND IS NOT TO BE USED FOR CONSTRUCTION.
 4. THE EXPLORATION LOCATION PLAN IS A PRELIMINARY EXPLORATION REPORT AND IS NOT TO BE USED FOR CONSTRUCTION.

NO.	DATE	DESCRIPTION	BY
1	05/20/2014	REPORT SUBMISSION	CDM
2	05/20/2014	PRELIMINARY EXPLORATION	CDM
3	05/20/2014	EXPLORATION	CDM



THE PARK DANKORTH
COMPELL & ASSOCIATES
EXPLORATION LOCATION PLAN
PORTLAND, MAINE



JOB NO. 14-009
DATE 05/20/2014
SHEET 1 OF 27



BORING LOG

BORING NO.: **B-101**
 SHEET: **1 OF 1**
 PROJECT NO.: **14-0065**
 DATE START: **5/23/2014**
 DATE FINISH: **5/23/2014**
 ELEVATION: **127' ±**
 SWC REP.: **PJO**

PROJECT / CLIENT: **PROPOSED SENIOR LIVING FACILITY / THE PARK DANFORTH c/o MITCHELL & ASSOCIATES**
 LOCATION: **ARBOR STREET & FOREST AVENUE, PORTLAND, ME**
 DRILLING CO.: **GREAT WORKS TEST BORINGS, INC.** DRILLER: **JEFF LEE**

CASING: **SSA 2 1/4"**
 SAMPLER: **SS 1 3/8" 140-LBS 30"**
 CORE BARREL:

WATER LEVEL INFORMATION
NO FREE WATER OBSERVED

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		
										4" ASPHALT DARK BROWN GRAVELLY SAND, SOME SILT WITH ROOTLETS AND BRICK (FILL) ~MEDIUM DENSE TO LOOSE~
	1D	24"	18"	2.5'	9	7	5	5		
	2D	24"	12"	4.5'	4	4	5	4	5.0'	
										BROWN SAND AND GRAVEL, TRACE SILT ~DENSE~
	3D	24"	18"	7.0'	5	12	24	24		
	4D	24"	16"	9.0'	24	25	18	16		
										BOTTOM OF EXPLORATION AT 9.0'

SAMPLES:
 D = SPLIT SPOON
 C = 2" SHELBY TUBE
 S = 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-101**



BORING LOG

BORING NO.: **B-102**
 SHEET: **1 OF 1**
 PROJECT NO.: **14-0065**
 DATE START: **5/23/2014**
 DATE FINISH: **5/23/2014**
 ELEVATION: **123' ±**
 SWC REP.: **PJO**

PROJECT / CLIENT: **PROPOSED SENIOR LIVING FACILITY / THE PARK DANFORTH c/o MITCHELL & ASSOCIATES**
 LOCATION: **ARBOR STREET & FOREST AVENUE, PORTLAND, ME**
 DRILLING CO.: **GREAT WORKS TEST BORINGS, INC.** DRILLER: **JEFF LEE**

CASING: TYPE **HSA** SIZE I.D. **2 3/4"** HAMMER WT. **140-LBS** HAMMER FALL **30"**
 SAMPLER: **SS**
 CORE BARREL:

WATER LEVEL INFORMATION
NO FREE WATER OBSERVED

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'	3"± ASPHALT
	1D	24"	20"	2.5'	4	5	7	9		DARK BROWN GRAVELLY SAND, SOME SILT (FILL) ~MEDIUM DENSE~
	2D	24"	18"	4.5'	7	9	7	7	5.0'	ORANGE-BROWN MEDIUM TO COARSE SAND, SOME GRAVEL, TRACE SILT ~MEDIUM DENSE~
	3D	24"	18"	7.0'	5	8	16	17		LIGHT BROWN MEDIUM TO COARSE SAND, SOME GRAVEL, TRACE SILT ~MEDIUM DENSE TO DENSE~
	4D	24"	19"	9.0'	16	21	22	20		
										BOTTOM OF EXPLORATION AT 9.0'

SAMPLES:
 D = SPLIT SPOON
 C = 2" SHELBY TUBE
 S = 3" SHELBY TUBE
 U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:

☐ 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-102**

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'	3"± ASPHALT BROWN SAND, SOME GRAVEL, SOME SILT WITH GLASS & WOOD PIECES (FILL) ~MEDIUM DENSE~	
	1D	24"	16"	2.5'	5	6	5	8		w = 3.4% BROWN GRAVELLY MEDIUM TO COARSE SAND, TRACE SILT ~DENSE TO VERY DENSE~	
	2D	24"	18"	4.5'	12	16	18	20			
	3D	24"	17"	7.0'	13	23	25	33			
	4D	18"	16"	8.5'	28	28	31		10.0'		
	5D	24"	18"	12.0'	10	14	16	23		w = 4.3% ~DENSE~ BROWN MEDIUM SAND, TRACE GRAVEL, TRACE SILT	
									19.5'		
	6D	24"	20"	17.0'	12	12	15	21		~MEDIUM DENSE~	
										WEATHERED BEDROCK	
										REFUSAL AT 21.8' (PROBABLE BEDROCK)	

SAMPLES:		SOIL CLASSIFIED BY:		REMARKS:
D = SPLIT SPOON			DRILLER - VISUALLY	
C = 2" SHELBY TUBE	X		SOIL TECH. - VISUALLY	
S = 3" SHELBY TUBE	X		LABORATORY TEST	
U = 3.5" SHELBY TUBE				

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BORING NO.: B-104

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.



BORING LOG

PROJECT / CLIENT: PROPOSED SENIOR LIVING FACILITY / THE PARK DANFORTH c/o MITCHELL & ASSOCIATES
 LOCATION: ARBOR STREET & FOREST AVENUE, PORTLAND, ME
 DRILLING CO.: GREAT WORKS TEST BORINGS, INC. DRILLER: JEFF LEE

BORING NO.: B-105
 SHEET: 1 OF 1
 PROJECT NO.: 14-0065
 DATE START: 5/23/2014
 DATE FINISH: 5/23/2014
 ELEVATION: 124' ±
 SWC REP.: PJO

WATER LEVEL INFORMATION
 SOILS WET AT 21'

CASING: TYPE HSA SIZE I.D. 2 3/4" HAMMER WT. HAMMER FALL
 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		
										3"± ASPHALT
	1D	24"	15"	2.5'	5	9	18	8	3.0'	BROWN SAND SOME GRAVEL, SOME SILT WITH CONCRETE FRAGMENTS (FILL) ~MEDIUM DENSE~
	2D	24"	16"	4.5'	5	6	6	8	5.0'	BROWN MEDIUM TO COARSE SAND, SOME GRAVEL, TRACE SILT ~MEDIUM DENSE~
	3D	24"	17"	7.0'	6	16	22	23		~DENSE~ BROWN GRAVELLY MEDIUM TO COARSE SAND, TRACE SILT ~VERY DENSE~
	4D	24"	19"	9.0'	16	20	22	24		
	5D	24"	20"	12.0'	15	23	29	49		
	6D	24"	20"	17.0'	16	23	31	38		BROWN GRAVELLY FINE TO MEDIUM SAND, TRACE SILT ~VERY DENSE~
									21.0'	REFUSAL AT 23' (PROBABLE BEDROCK)
	7D	18"	15"	21.5'	24	34	45		23.0'	

SAMPLES: D = SPLIT SPOON
 C = 2" SHELBY TUBE
 S = 3" SHELBY TUBE
 U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
☐ DRILLER - VISUALLY
☒ SOIL TECH. - VISUALLY
☐ LABORATORY TEST

REMARKS:
 STRATIFICATION LINES REPRESENT THE
 APPROXIMATE BOUNDARY BETWEEN SOIL TYPES
 AND THE TRANSITION MAY BE GRADUAL.



BORING LOG

PROJECT / CLIENT: PROPOSED SENIOR LIVING FACILITY / THE PARK DANFORTH c/o MITCHELL & ASSOCIATES
 LOCATION: ARBOR STREET & FOREST AVENUE, PORTLAND, ME
 DRILLING CO.: GREAT WORKS TEST BORINGS, INC. DRILLER: JEFF LEE

BORING NO.: B-106
 SHEET: 1 OF 1
 PROJECT NO.: 14-0065
 DATE START: 5/22/2014
 DATE FINISH: 5/22/2014
 ELEVATION: 122' ±
 SWC REP.: PJO

WATER LEVEL INFORMATION
 SOILS SATURATED AT 20'

CASING: TYPE HSA SIZE I.D. 2 3/4" HAMMER WT. HAMMER FALL
 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		
										2 1/2" ± ASPHALT
	1D	24"	15"	2.5'	8	9	8	8	3.0'	DARK BROWN TO BROWN SAND, SOME GRAVEL, SOME SILT (FILL) ~MEDIUM DENSE~
	2D	24"	15"	4.5'	9	9	7	3		BROWN FINE TO COARSE SAND, SOME GRAVEL, TRACE SILT ~MEDIUM DENSE~
	3D	24"	16"	7.0'	6	12	16	19	7.0'	
	4D	24"	16"	9.0'	12	15	16	16	10.0'	w = 4.1% BROWN MEDIUM TO COARSE SAND, SOME GRAVEL, TRACE SILT ~DENSE~
	5D	24"	20"	12.0'	15	25	23	25		~DENSE~ BROWN GRAVELLY MEDIUM TO COARSE SAND, TRACE SILT
	6D	24"	18"	17.0'	15	28	32	40		w = 2.4% ~VERY DENSE~
	7D	24"	22"	22.0'	15	17	24	30	21.2'	
									28.0'	w = 19.5% BROWN FINE TO MEDIUM SAND SOME SILT ~DENSE~ ~ DENSE ~
										REFUSAL 28.0' (PROBABLE BEDROCK)

SAMPLES: D = SPLIT SPOON
 C = 2" SHELBY TUBE
 S = 3" SHELBY TUBE
 U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
☐ DRILLER - VISUALLY
☒ SOIL TECH. - VISUALLY
☒ LABORATORY TEST

REMARKS:
 STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.



BORING LOG

BORING NO.: **B-107**
 SHEET: **1 OF 1**
 PROJECT NO.: **14-0065**
 DATE START: **5/22/2014**
 DATE FINISH: **5/22/2014**
 ELEVATION: **121' ±**
 SWC REP.: **PJO**

PROJECT / CLIENT: **PROPOSED SENIOR LIVING FACILITY / THE PARK DANFORTH c/o MITCHELL & ASSOCIATES**
 LOCATION: **ARBOR STREET & FOREST AVENUE, PORTLAND, ME**
 DRILLING CO.: **GREAT WORKS TEST BORINGS, INC.** DRILLER: **JEFF LEE**

CASING: TYPE **HSA** SIZE I.D. **2 3/4"** HAMMER WT. **140-LBS** HAMMER FALL **30"**
 SAMPLER: **SS**
 CORE BARREL:

WATER LEVEL INFORMATION
 SOILS SATURATED AT 18'

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		
										3" ASPHALT
	1D	24"	14"	2.5'	6	9	9	9	2.5'	DARK BROWN SAND, SOME GRAVEL, SOME SILT (FILL) ~MEDIUM DENSE~
	2D	24"	15"	4.5'	12	8	7	6	4.5'	ORANGE-BROWN SAND SOME SILT ~MEDIUM DENSE~
	3D	24"	17"	7.0'	5	9	9	10		~MEDIUM DENSE~ LIGHT BROWN FINE TO MEDIUM SAND, TRACE SILT WITH OCCASIONAL SILT SEAMS BETWEEN 10-12' AND 10" SAND AND GRAVEL LAYER FROM 15.2-16.0'
	4D	24"	18"	9.0'	12	13	12	12		
	5D	24"	22"	12.0'	8	11	16	23		
	6D	24"	22"	17.0'	12	16	15	18		~DENSE~
	7D	24"	18"	22.0'	4	8	9	22		~MEDIUM DENSE~
									23.0'	
									24.0'	WEATHERED BEDROCK
										REFUSAL AT 24.0' (PROBABLE BEDROCK)

SAMPLES: D = SPLIT SPOON
 C = 2" SHELBY TUBE
 S = 3" SHELBY TUBE
 U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:
☐ DRILLER - VISUALLY
☒ SOIL TECH. - VISUALLY
☐ LABORATORY TEST

REMARKS:
 STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

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BORING LOG

PROJECT / CLIENT: PROPOSED SENIOR LIVING FACILITY / THE PARK DANFORTH c/o MITCHELL & ASSOCIATES
 LOCATION: ARBOR STREET & FOREST AVENUE, PORTLAND, ME
 DRILLING CO.: GREAT WORKS TEST BORINGS, INC. DRILLER: JEFF LEE

BORING NO.: B-109
 SHEET: 1 OF 1
 PROJECT NO.: 14-0065
 DATE START: 5/22/2014
 DATE FINISH: 5/22/2014
 ELEVATION: 121' ±
 SWC REP.: PJO

CASING: SSA 2 1/4"
 SAMPLER: SS 1 3/8" 140-LBS 30"
 CORE BARREL:

WATER LEVEL INFORMATION
 NO FREE WATER OBSERVED

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 1/2" ± ASPHALT
	1D	24"	16"	2.5'	7	14	8	8	2.5'	BROWN GRAVELLY SAND, SOME SILT (FILL) ~MEDIUM DENSE~
	2D	24"	18"	4.5'	8	10	11	8	4.5'	BROWN FINE TO MEDIUM SAND, SOME GRAVEL, SOME SILT ~MEDIUM DENSE~
	3D	24"	18"	7.0'	3	5	5	5		LIGHT BROWN FINE TO MEDIUM SAND, TRACE SILT WITH COARSE SAND LAYERS BETWEEN 8-9' ~MEDIUM DENSE~
	4D	24"	17"	9.0'	6	9	9	12		
	5D	24"	16"	12.0'	7	11	14	15		
										BOTTOM OF EXPLORATION AT 12.0'

SAMPLES: D = SPLIT SPOON
 C = 2" SHELBY TUBE
 S = 3" SHELBY TUBE
 U = 3.5" SHELBY TUBE

SOIL CLASSIFIED BY:

	DRILLER - VISUALLY
X	SOIL TECH. - VISUALLY
	LABORATORY TEST

REMARKS:

STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.

BORING NO.: B-109



BORING LOG

BORING NO.: **B-110**
 SHEET: **1 OF 1**
 PROJECT NO.: **14-0065**
 DATE START: **5/22/2014**
 DATE FINISH: **5/22/2014**
 ELEVATION: **125' ±**
 SWC REP.: **PJO**

PROJECT / CLIENT: **PROPOSED SENIOR LIVING FACILITY / THE PARK DANFORTH c/o MITCHELL & ASSOCIATES**
 LOCATION: **ARBOR STREET & FOREST AVENUE, PORTLAND, ME**
 DRILLING CO.: **GREAT WORKS TEST BORINGS, INC.** DRILLER: **JEFF LEE**

WATER LEVEL INFORMATION
NO FREE WATER OBSERVED

CASING: **SSA 2 1/4"**
 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	12"	6"	1.5'	19	50			3.0'	2 1/2" ASPHALT DARK BROWN GRAVELLY SAND, SOME SILT (FILL) <<BLOW COUNT OVERSTATED - PUSHED GRAVEL>>
	2D	24"	15"	5.0'	4	5	5	4	5.0'	ORANGE-BROWN FINE TO MEDIUM SAND TRACE GRAVEL ~LOOSE TO MEDIUM DENSE~
	3D	24"	16"	7.0'	5	4	9	13		~MEDIUM DENSE~ BROWN FINE TO MEDIUM SAND, SOME GRAVEL, TRACE SILT <<BLOW COUNT OVERSTATED - PUSHED GRAVEL>>
	4D	24"	16"	9.0'	17	21	15	14		
	5D	24"	14"	12.0'	9	10	12	14		
										~MEDIUM DENSE~
										BOTTOM OF EXPLORATION AT 12.0'

SAMPLES: D = SPLIT SPOON C = 2" SHELBY TUBE S = 3" SHELBY TUBE U = 3.5" SHELBY TUBE	SOIL CLASSIFIED BY: ☐ DRILLER - VISUALLY ☒ SOIL TECH. - VISUALLY ☐ LABORATORY TEST	REMARKS: STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES AND THE TRANSITION MAY BE GRADUAL.	11
			BORING NO.: B-110



BORING NO.:	B-111
SHEET:	1 OF 1
PROJECT NO.:	14-0065
DATE START:	5/22/2014
DATE FINISH:	5/22/2014
ELEVATION:	124' ±
SWC REP.:	PJO

DATE START:	5/22/2014
DATE FINISH:	5/22/2014
ELEVATION:	124' ±

SWC REP.:	PJO
WATER LEVEL INFORMATION	
NO FREE WATER OBSERVED	

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BORING NO.:	B-112
SHEET:	1 OF 1
PROJECT NO.:	14-0065
DATE START:	5/22/2014
DATE FINISH:	5/22/2014
ELEVATION:	126' ±
SWC REP.:	PJO

DATE START:	5/22/2014
DATE FINISH:	5/22/2014
ELEVATION:	126' ±
SWC REP.:	PJO

SWC REP.: PJO
WATER LEVEL INFORMATION
NO FREE WATER OBSERVED

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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+%
With	Undifferentiated

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.

Project Name PORTLAND ME - PROPOSED SENIOR LIVING - THE PARK
DANFORTH - GEOTECHNICAL ENGINEERING SERVICES

Client THE PARK-DANFORTH

Material Source B-104 2D 2.5-4.5

Project Number 14-0065

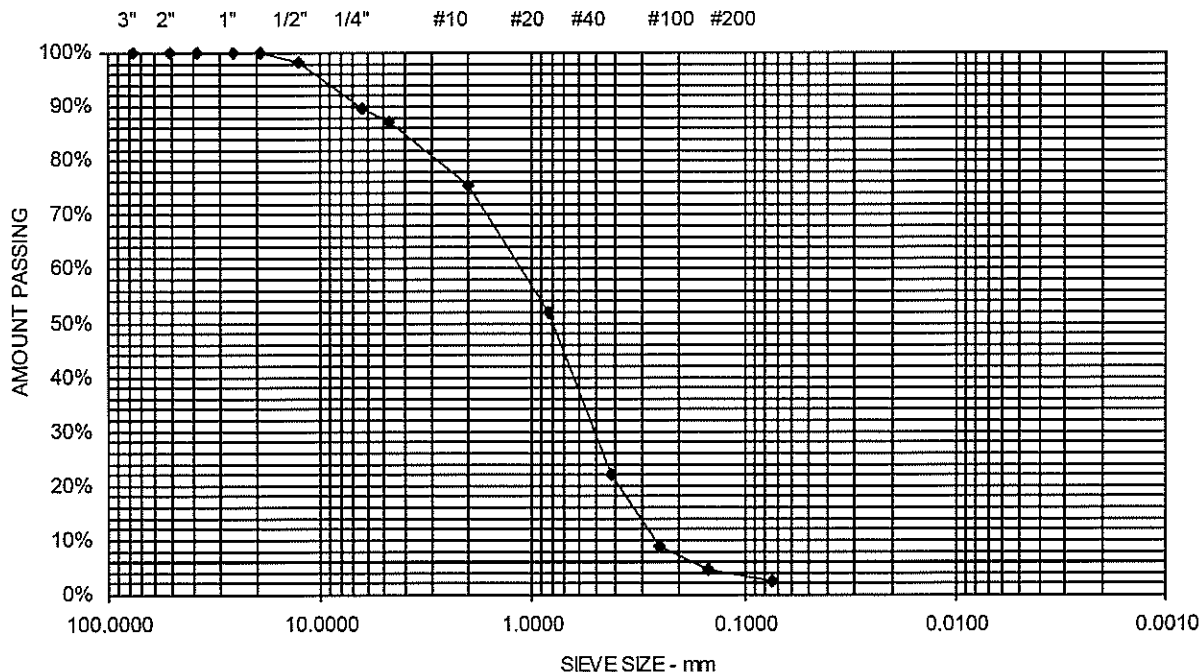
Lab ID 18232G

Date Received 5/28/2014

Date Completed 5/30/2014

Tested By JUSTIN BISSON

<u>STANDARD</u> <u>DESIGNATION (mm/um)</u>	<u>SIEVE SIZE</u>	<u>AMOUNT PASSING (%)</u>	
150 mm	6"	100	
125 mm	5"	100	
100 mm	4"	100	
75 mm	3"	100	
50 mm	2"	100	
38.1 mm	1-1/2"	100	
25.0 mm	1"	100	
19.0 mm	3/4"	100	
12.5 mm	1/2"	98	
6.3 mm	1/4"	90	
4.75 mm	No. 4	87	12.8% Gravel
2.00 mm	No. 10	75	
850 um	No. 20	52	
425 um	No. 40	22	84.8% Sand
250 um	No. 60	9	
150 um	No. 100	5	
75 um	No. 200	2.4	2.4% Fines



Project Name PORTLAND ME - PROPOSED SENIOR LIVING - THE PARK
DANFORTH - GEOTECHNICAL ENGINEERING SERVICES

Client THE PARK-DANFORTH

Material Source B-104 5D 10-12

Project Number 14-0065

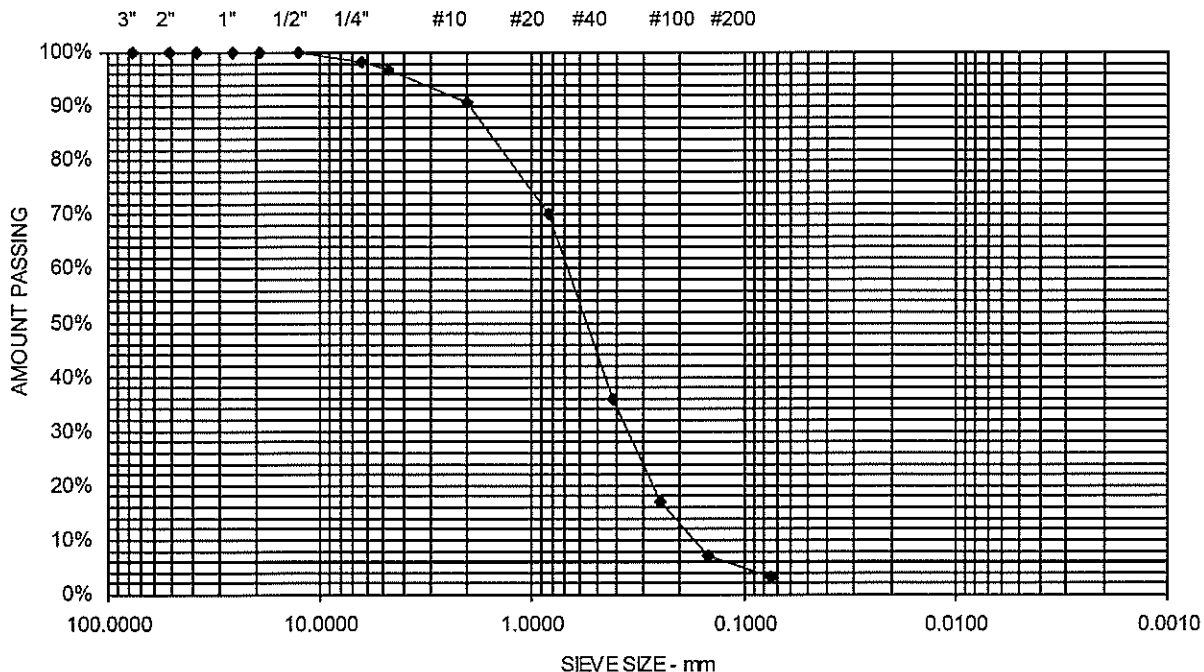
Lab ID 18233G

Date Received 5/28/2014

Date Completed 5/30/2014

Tested By JUSTIN BISSON

<u>STANDARD</u> <u>DESIGNATION (mm/μm)</u>	<u>SIEVE SIZE</u>	<u>AMOUNT PASSING (%)</u>	
150 mm	6"	100	
125 mm	5"	100	
100 mm	4"	100	
75 mm	3"	100	
50 mm	2"	100	
38.1 mm	1-1/2"	100	
25.0 mm	1"	100	
19.0 mm	3/4"	100	
12.5 mm	1/2"	100	
6.3 mm	1/4"	98	
4.75 mm	No. 4	97	3.2% Gravel
2.00 mm	No. 10	91	
850 μm	No. 20	70	
425 μm	No. 40	36	93.4% Sand
250 μm	No. 60	17	
150 μm	No. 100	7	
75 μm	No. 200	3.3	3.3% Fines





Report of Gradation

ASTM C-117 & C-136

Project Name PORTLAND ME - PROPOSED SENIOR LIVING - THE PARK
DANFORTH - GEOTECHNICAL ENGINEERING SERVICES

Client THE PARK-DANFORTH

Project Number 14-0065

Lab ID 18234G

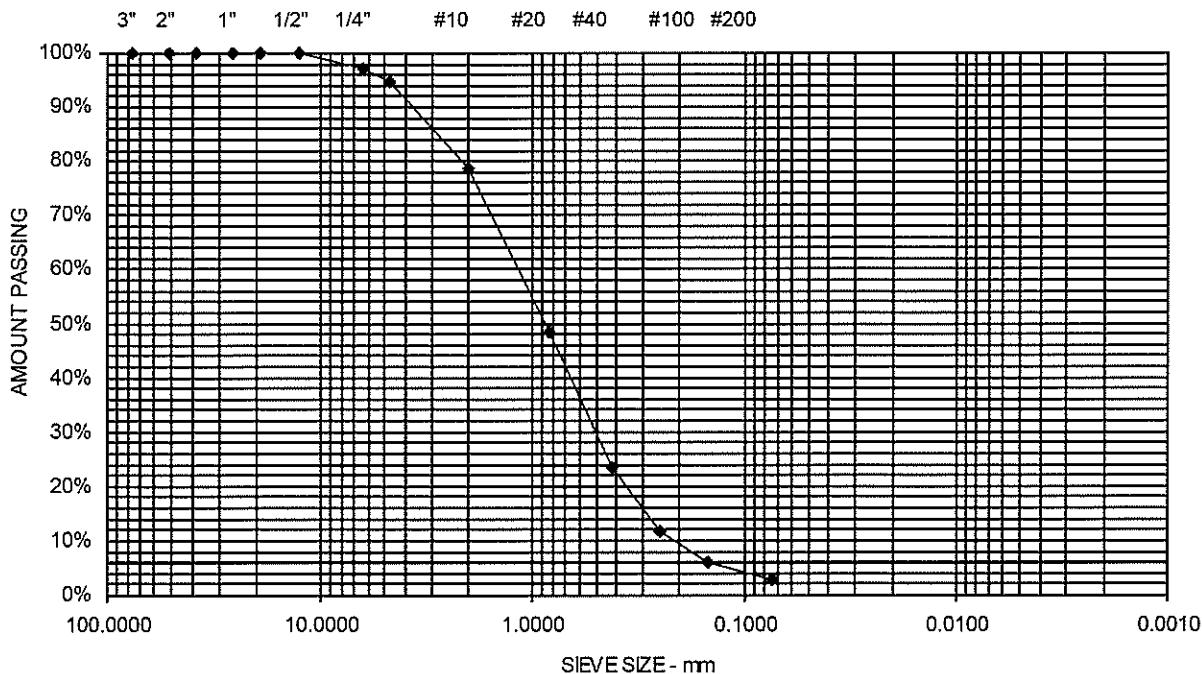
Date Received 5/28/2014

Date Completed 5/30/2014

Material Source B-106 4D 7-9

Tested By JUSTIN BISSON

<u>STANDARD</u> <u>DESIGNATION (mm/μm)</u>	<u>SIEVE SIZE</u>	<u>AMOUNT PASSING (%)</u>	
150 mm	6"	100	
125 mm	5"	100	
100 mm	4"	100	
75 mm	3"	100	
50 mm	2"	100	
38.1 mm	1-1/2"	100	
25.0 mm	1"	100	
19.0 mm	3/4"	100	
12.5 mm	1/2"	100	
6.3 mm	1/4"	97	
4.75 mm	No. 4	95	5.4% Gravel
2.00 mm	No. 10	79	
850 μm	No. 20	48	
425 μm	No. 40	24	91.7% Sand
250 μm	No. 60	12	
150 μm	No. 100	6	
75 μm	No. 200	2.9	2.9% Fines



Report of Gradation

ASTM C-117 & C-136

Project Name PORTLAND ME - PROPOSED SENIOR LIVING - THE PARK
DANFORTH - GEOTECHNICAL ENGINEERING SERVICES

Client THE PARK-DANFORTH

Material Source B-106 6D 15-17

Project Number 14-0065

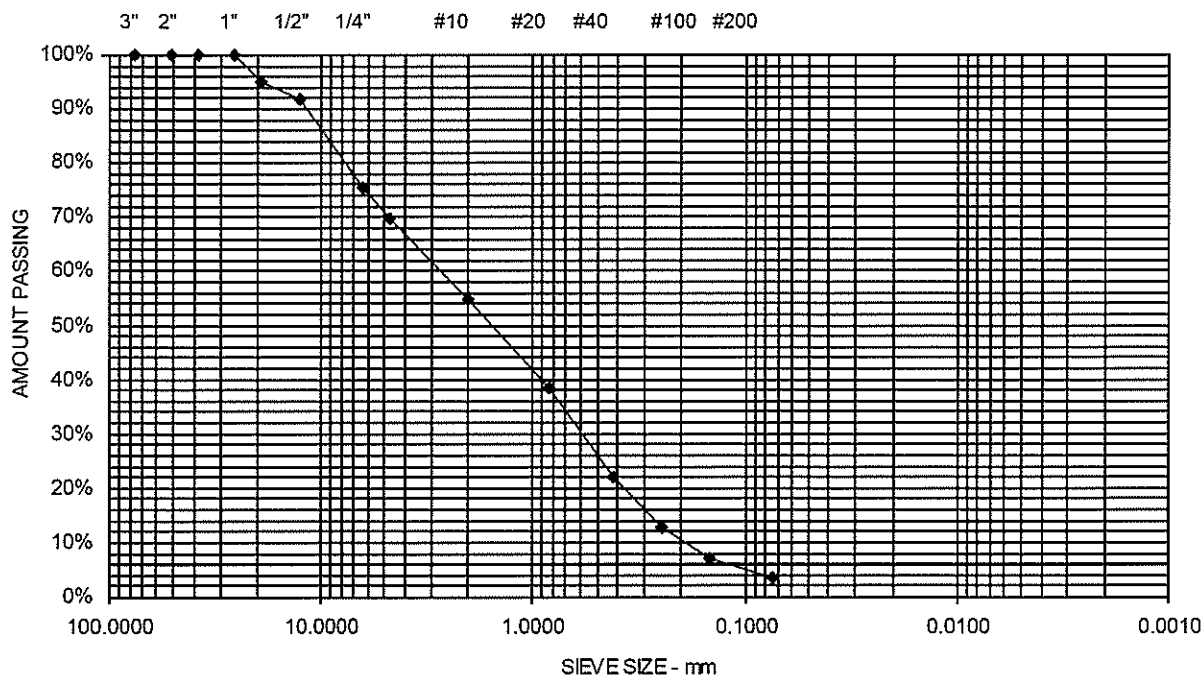
Lab ID 18235G

Date Received 5/28/2014

Date Completed 5/30/2014

Tested By JUSTIN BISSON

<u>STANDARD DESIGNATION (mm/μm)</u>	<u>SIEVE SIZE</u>	<u>AMOUNT PASSING (%)</u>	
150 mm	6"	100	
125 mm	5"	100	
100 mm	4"	100	
75 mm	3"	100	
50 mm	2"	100	
38.1 mm	1-1/2"	100	
25.0 mm	1"	100	
19.0 mm	3/4"	95	
12.5 mm	1/2"	92	
6.3 mm	1/4"	75	
4.75 mm	No. 4	70	30.3% Gravel
2.00 mm	No. 10	55	
850 μm	No. 20	39	
425 μm	No. 40	22	66.2% Sand
250 μm	No. 60	13	
150 μm	No. 100	7	
75 μm	No. 200	3.6	3.6% Fines



Project Name PORTLAND ME - PROPOSED SENIOR LIVING - THE PARK
DANFORTH - GEOTECHNICAL ENGINEERING SERVICES

Client THE PARK-DANFORTH

Material Source B-106 7D 20-22

Project Number 14-0065

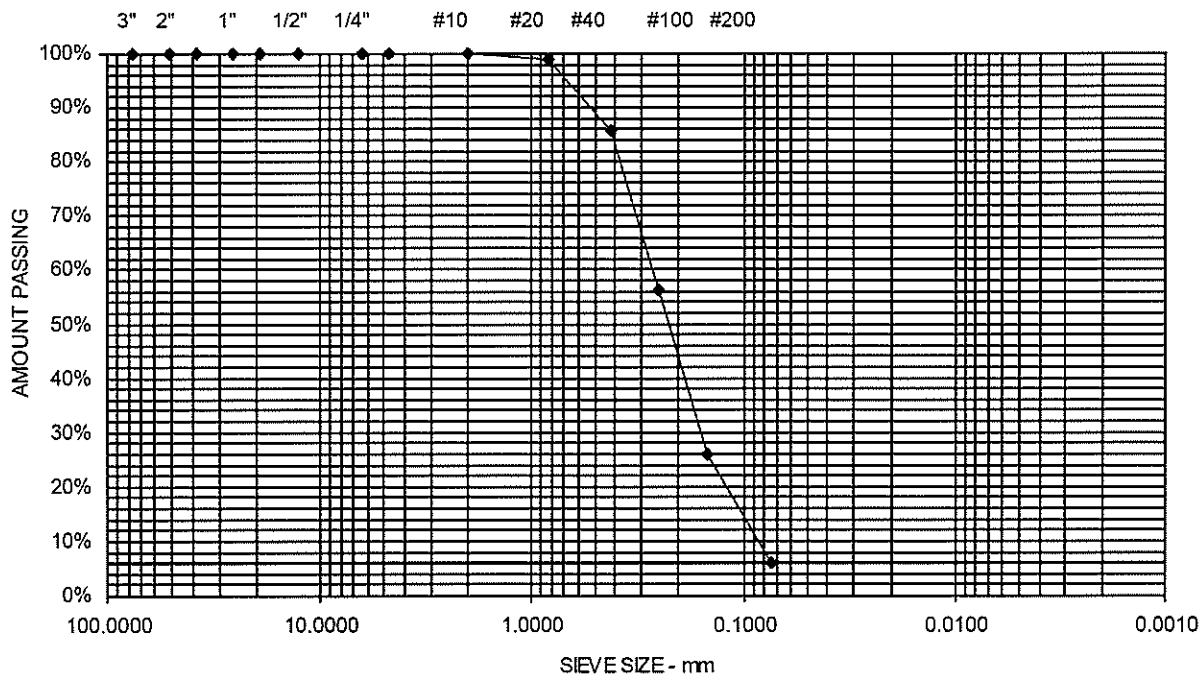
Lab ID 18236G

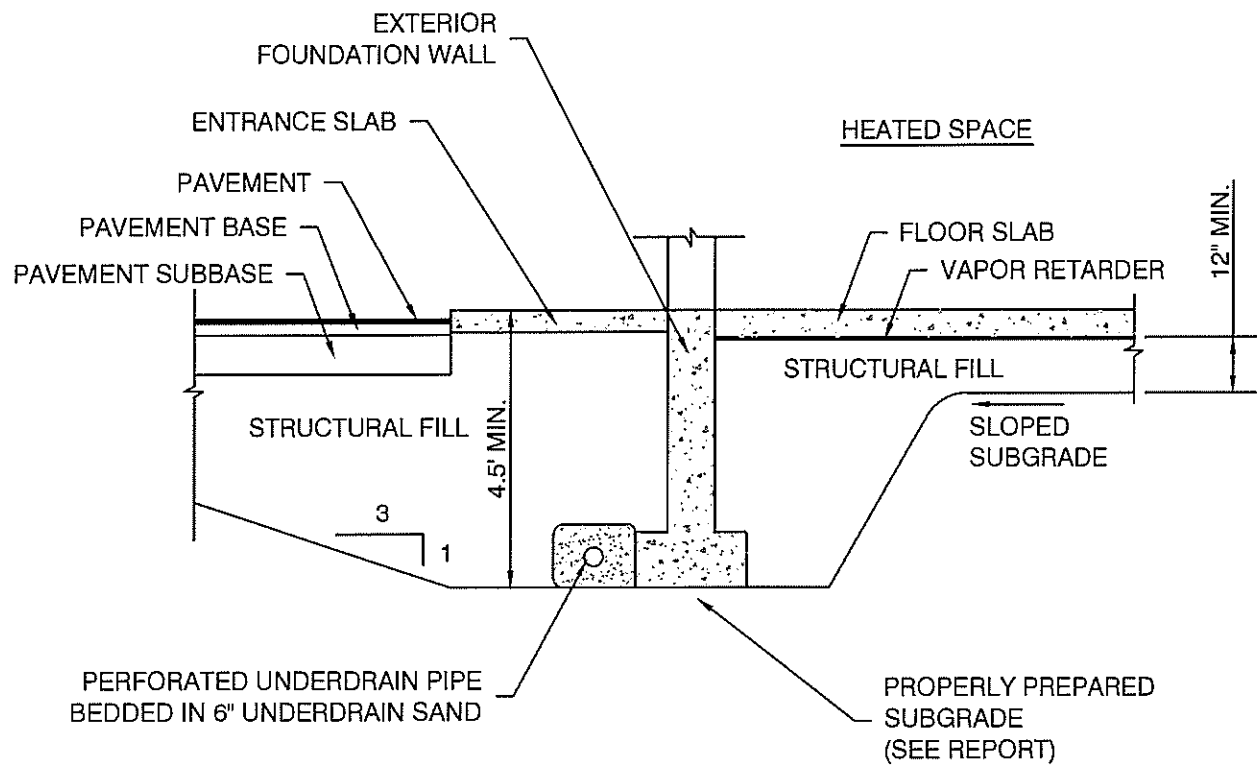
Date Received 5/28/2014

Date Completed 5/30/2014

Tested By JUSTIN BISSON

<u>STANDARD DESIGNATION (mm/μm)</u>	<u>SIEVE SIZE</u>	<u>AMOUNT PASSING (%)</u>	
150 mm	6"	100	
125 mm	5"	100	
100 mm	4"	100	
75 mm	3"	100	
50 mm	2"	100	
38.1 mm	1-1/2"	100	
25.0 mm	1"	100	
19.0 mm	3/4"	100	
12.5 mm	1/2"	100	
6.3 mm	1/4"	100	
4.75 mm	No. 4	100	0% Gravel
2.00 mm	No. 10	100	
850 μm	No. 20	99	
425 μm	No. 40	86	94.1% Sand
250 μm	No. 60	56	
150 μm	No. 100	26	
75 μm	No. 200	5.9	5.9% Fines





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.

THE PARK DANFORTH
C/O MITCHELL & ASSOCIATES

UNDERDRAIN DETAIL

PROPOSED SENIOR LIVING FACILITY
ARBOR STREET AND FOREST AVENUE
PORTLAND, MAINE

Job No.: 14-0065

Date : 06/18/2014

Scale: Not to Scale

Sheet: 22

APPENDIX I

**TEST PITS (2 Reports)
ALBERT FRICK ASSOCIATES INC.**



Albert Frick Associates, Inc
Environmental Consultants
95A County Road Gorham, Maine 04038
(207) 839-5563 FAX (207) 839-5564
www.albertfrick.com info@albertfrick.com

Albert Frick, SS, SE
James Logan, SS, SE
Matthew Logan, SE
Brady Frick, SE
Bryan Jordan, SE
William O'Connor, SE
Noel Dunn, Office Manager

September 16, 2014

Mr. Robert Metcalf
Mitchell Associates
70 Center Street
Portland, ME 04101

Re: The Park at Danforth property, Forest & Stevens Avenue, Portland

Dear Mr. Metcalf:

On September 15, 2014, we evaluated six soil test pits, at locations of your choosing, on the above-referenced property to assist with stormwater design for a project on-site. We excavated these by hand shovel, to minimize damage to landscaping.

Enclosed for your review and use are soil profile classifications for each test pit evaluated, and a generic soil description for the 'nearest fit' series that best matches the filled land conditions of the site.

Soils observed all consist of regraded fill soils of variable gravelly loamy sand and sand textures. These generally become firmer with depth, as the compacted substratum is denser and somewhat resistant to internal drainage. Soils are generally moderately well-drained, with historical seasonal high groundwater generally within 4' of the mineral soil surface for short durations during the wettest seasons.

I trust you will find the enclosed information helpful in the design of a stormwater management plan for the property. Please do not hesitate to call should you have further questions or matters for discussion regarding the site.

Sincerely, 

James Logan
Certified Soil Scientist #213
Licensed Site Evaluator #237
Wetland Scientist

FILLED LAND "SKERRY-LIKE"

SETTING

Parent Material:	Loamy glacial till underlain by sandy textured denser till.
Landform:	Drumlins and glaciated uplands.
Position in Landscape:	Usually occupies upper components of landform.
Slope Gradient Ranges:	(B) 3-8% (C) 8-20%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class:	Moderately well-drained, with a perched water table 1.5 to 3.5 feet below the soil surface from November through May.	
Typical Profile Description:	Surface layer:	Light gray fine sandy loam, 0-4"
	Subsurface layer:	Dark reddish brown fine sandy loam, 4-20"
	Subsoil layer:	Yellowish brown fine sandy loam, 20-25"
	Substratum:	Mixed brown and light olive brown fine sandy loam and sand, 25-65"
Hydrologic Group:	Group C	
Surface Run Off:	Moderate	
Permeability:	Moderate in solum and slow or moderately slow in the compact substratum.	
Depth to Bedrock:	Deep, greater than 40".	
Hazard to Flooding:	None	

INCLUSIONS (Within Mapping Unit)

Similar:	Adams, Croghan, Made Land, Cut & Fill Land
Dissimilar:	Tunbridge, Lyman (less than 40" to bedrock)

USE AND MANAGEMENT

Stormwater design: Skerry soils are moderately well drained. Soil permeabilities are expected to be 0.6 – 2.0 inches/hour in the upper portions of soil profile, and 0.06 – 0.6 inches/hour in the compact substratum, generally 25" – 65" beneath the soil surface.

Town, City, Plantation
PORTLAND

Street, Road Subdivision
THE PARK DANFORTH

Owner's Name
MITCHELL ASSOCIATES

ALL SOIL TEST PITS EXCAVATED BY HAND SHOVEL

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 1 ☒ Test Pit ☐ Boring
" Depth of Organic Horizon Above Mineral Soil

Texture	Consistency	Color	Mottling
0			
SANDY LOAM (FILL)		DARK BROWN	
10			
LOAMY SAND & GRAVELLY SAND (FILL)	FRIABLE	MIXED OLIVE BROWN	
20			
30	SOMEWHAT FIRM TO FIRM IN PLACE	MIXED GRAYISH BROWN	FEW FAINT
40			
50			

Soil Classification: SKERRY-LIKE Slope: 25% Limiting Factor: 35" ☐ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Profile: SKERRY-LIKE Condition: SKERRY-LIKE Drainage Class: SKERRY-LIKE Hydrologic Group: SKERRY-LIKE

Observation Hole TP 2 ☒ Test Pit ☐ Boring
" Depth of Organic Horizon Above Mineral Soil

Texture	Consistency	Color	Mottling
0			
SANDY LOAM (FILL)		DARK BROWN	
10			
LOAMY SAND (FILL)	FRIABLE	DARK YELLOWISH BROWN	
20			
30		YELLOWISH BROWN	
40	SOMEWHAT FIRM TO FIRM IN PLACE	LIGHT OLIVE BROWN	FEW FAINT
50			

Soil Classification: SKERRY-LIKE Slope: 38% Limiting Factor: 38" ☐ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Profile: SKERRY-LIKE Condition: SKERRY-LIKE Drainage Class: SKERRY-LIKE Hydrologic Group: SKERRY-LIKE

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 3 ☒ Test Pit ☐ Boring
" Depth of Organic Horizon Above Mineral Soil

Texture	Consistency	Color	Mottling
0			
BARK MULCH (FILL)		BLACK	
10			
LOAMY SAND & SAND	FRIABLE	OLIVE BROWN	
20			
30			
40	VERY FIRM IN PLACE	OLIVE GRAY	FEW FAINT
50			

Soil Classification: SKERRY-LIKE Slope: 35% Limiting Factor: 35" ☐ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

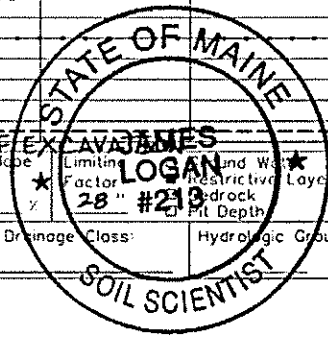
Profile: SKERRY-LIKE Condition: SKERRY-LIKE Drainage Class: SKERRY-LIKE Hydrologic Group: SKERRY-LIKE

Observation Hole TP 4 ☒ Test Pit ☐ Boring
" Depth of Organic Horizon Above Mineral Soil

Texture	Consistency	Color	Mottling
0			
SANDY LOAM (FILL)		DARK BROWN	
10			
LOAMY SAND & SAND (FILL)	FRIABLE	LIGHT OLIVE BROWN TO OLIVE BROWN	
20			
W/ BRICK DEBRIS			
30	SOMEWHAT FIRM TO FIRM IN PLACE		FEW FAINT
40			
50			

Soil Classification: SKERRY-LIKE Slope: 28% Limiting Factor: 28" ☐ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Profile: SKERRY-LIKE Condition: SKERRY-LIKE Drainage Class: SKERRY-LIKE Hydrologic Group: SKERRY-LIKE



FOR WASTEWATER DISPOSAL

FOR SOILS MAPPING

FOR WASTEWATER DISPOSAL

FOR SOILS MAPPING

James Logan
Site Evaluator / Soil Scientist Signature

237/213

SE/CSS

9-15-14

Date

Owner's Name
MITCHELL ASSOCIATES

Observation Hole TP 6 ☒ Test Pit ☐ Boring
" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)	Texture	Consistency	Color	Mottling
0	SANDY LOAM (FILL)		DARK BROWN 10YR 3/3	
10		FRIABLE		
	LOAMY SAND & SAND (FILL)		YELLOWISH BROWN	
20				
				FEW FAINT
30		SOMEWHAT FIRM TO FIRM IN PLACE	OLIVE BROWN	
40				
		VERY FIRM	OLIVE GRAY	
50		LIMIT OF EXCAVATION		

Soil Classification	Slope	Limiting Factor	☐ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth
Profile Condition	%	21"	
Soil Series Name: FILLED LAND "SKERRY-LIKE"	Drainage Class:	Hydrologic Group:	

Observation Hole _____ ☒ Test Pit ☐ Boring
" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)	Texture	Consistency	Color	Mottling
0				
10				
20				
30				
40				
50				

Soil Classification		Soil Profile		☐ Ground Water ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth	
Profile	Condition				
Soil Series Name:		Drainage Class:		Hydrologic Group:	

A circular stamp from the State of Maine. The outer ring contains the text "STATE OF MAINE" at the top and "SON SCIENTIST" at the bottom, separated by two stars. The center of the stamp contains the text "JAMES LOGAN" and "#213". The stamp is placed over a grid of horizontal and vertical lines. Below the stamp, the words "Education" and "of Maine" are partially visible. To the right of the stamp, there are three small squares arranged vertically.

9-15-14
Date



Albert Frick Associates, Inc
Environmental Consultants
95A County Road Gorham, Maine 04038
(207) 839-5563 FAX (207) 839-5564
www.albertfrick.com info@albertfrick.com

Albert Frick, SS, SE
James Logan, SS, SE
Matthew Logan, SE
Brady Frick, SE
Bryan Jordan, SE
William O'Connor, SE
Noel Dunn, Office Manager

September 27, 2014

Mr. Mike King
Mitchell Associates
70 Center Street
Portland, ME 04101

Re: The Park at Danforth, Stevens Avenue, Portland

Dear Mr. King:

We have revisited the above-referenced site to re-excavate soil test pits for stormwater design. Previously our test pits were dug by hand shovel and soil auger, and were not sufficiently deep to fully evaluate soil characteristics. Enclosed for your review and use are revised soil profile descriptions for TP1-6, based on excavations with backhoe, at the on-site locations previously identified by others.

Soil profiles observed in backhoe test pits exhibited similar conditions to those described with hand shovel test pits. These consist of fill soils of variable sandy textures, over original soils that are Croghan (Variant) soils, in that they are glacial outwash soils on nearly level to gently sloping landforms. The area has been developed for many years, with more than one project at this site.

A subsurface layer of somewhat firm to firm, very gravelly loamy sand was observed in all test pits, which had evidence of slower internal drainage than those soil layers above and below this slightly cemented zone. Original soil data provided suggested the soils are "Skerry-like", but over -excavation/removal of the somewhat firm to firm subsurface layer would create soil conditions on-site that more closely resemble Croghan (Deerfield) soil as mapped originally in the USDA Natural Resource Conservation Service Soil Survey of Cumberland County.

While Croghan soils are generally moderately well drained (i.e. seasonal high water tables generally within 4' of the original soil surface), long term development of city streets/infrastructure has likely lowered the traditional water tables in the area. (It is my understanding that soil borings verified static water table levels approaching 20' in depth). A revised generic soil description for fill over Croghan soils is also now enclosed.

I trust you will find this enhanced investigation of soils on the project site will be helpful in redefining parameters and site limiting factors for sound stormwater design.

Otherwise, should you have further questions or matters for discussion regarding the site, please do not hesitate to call.

Sincerely,

A handwritten signature in cursive script that reads "James Logan". The signature is written in black ink and is positioned to the right of the word "Sincerely,".

James Logan
Certified Soil Scientist #213
Licensed Site Evaluator #237
Wetland Scientist

Cc. Lester Berry, P.E. (BH2M)

CROGHAN (Variant)

SETTING

Parent Material:	Derived from outwash or deltaic sand.
Landform:	Occupy outwash terraces and sand plains.
Position in Landscape:	Usually are found in intermediate positions in the landscape.
Slope Gradient Ranges:	(B) 3-8% (C) 8-20%

COMPOSITION AND SOIL CHARACTERISTICS

Drainage Class:	Generally moderately well-drained, with an apparent water table within 4' of the soil surface. On this specific site, city stormwater infrastructure in surrounding streets has likely lowered the water table.	
Typical Profile Description:	Surface layer:	Dark brown sand, 0-7"
	Subsurface layer:	Strong brown/yellowish brown, brown & pale brown sand with mottles below 13", 7-52"
	Substratum:	Grayish brown loose sand, 52-60"
Hydrologic Group:	Group B	
Surface Run Off:	Slow to medium	
Permeability:	Rapid to very rapid in the lower horizons.	
Depth to Bedrock:	Moderately deep, 20-40"	
Hazard to Flooding:	None	

INCLUSIONS

(Within Mapping Unit)

Similar:	Adams, Duane
Dissimilar:	Au Gres, Naumburg, Naskeag

USE AND MANAGEMENT

Development of stormwater management systems: The limiting factor for building site development is wetness due to the presence of a groundwater table. Proper foundation drainage or site modification is recommended. Croghan soils are suitable for creation of stormwater management structures, and permeability is 6"-20"/hr in the upper 7" of soil profile, and in excess of 20"/hr on subsoil.

Owner's Name
MITCHELL ASSOCIATES

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 2 ☒ Test Pit ☐ Boring
" Depth of Organic Horizon Above Mineral Soil

DEPTH BELOW MINERAL SOIL SURFACE (inches)	Texture	Consistency	Color	Mottling
0				
10	SANDY LOAM & LOAMY SAND (FILL)		BROWN	
20		FRIABLE		NONE EVIDENT
30	LOAMY SAND		DARK BROWN	
40	MEDIUM & COARSE SAND		YELLOWISH BROWN	
50	COBBLY SAND	SOMEWHAT FIRM IN COBBLES	OLIVE BROWN	FEW FAINT
60	GRAVELLY COARSE SAND	FRIABLE	YELLOWISH BROWN	NONE EVIDENT
70				
80		LIMIT OF EXCAVATION		
90				
100				

FILL OVER CROGHAN (VARIANT)

9-25-14
Date

A circular professional seal for James Logan, a Soil Scientist in the State of Maine. The outer ring contains the text "STATE OF MAINE" at the top and "SOIL SCIENTIST" at the bottom, separated by two five-pointed stars. The center of the seal contains the name "JAMES LOGAN" and the number "#213".

Town, City, Plantation
PORTLAND

Street, Road Subdivision
THE PARK DANFORTH

Owner's Name
MITCHELL ASSOCIATES

ALL SOIL TEST PITS EXCAVATED BY BACKHOE

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 3 ☒ Test Pit ☐ Boring
" Depth of Organic Horizon Above Mineral Soil

0	Texture	Consistency	Color	Mottling
	BARK MULCH (FILL)		BLACK	
10				
20	SANDY LOAM	FRIABLE	DARK BROWN	
30	LOAMY SAND		DARK YELLOWISH BROWN	
40	MEDIUM & COARSE SAND		YELLOWISH BROWN	
50	GRAVELLY LOAMY SAND & SAND	FIRM IN PLACE	OLIVE BROWN	FEW FAINT
60				
70				
80				
90				
100				

Soil Classification	Slope	Limiting Factor	☒ Ground Water
Profile Condition	%	38"	☐ Restrictive Layer
			☐ Bedrock
			☐ Pit Depth

CROGHAN (VARIANT)

Observation Hole TP 4 ☒ Test Pit ☐ Boring
" Depth of Organic Horizon Above Mineral Soil

0	Texture	Consistency	Color	Mottling
	SANDY LOAM & LOAMY SAND (FILL)		BROWN	
10				
20		FRIABLE		
30	LOAMY SAND		DARK BROWN	
40	FINE & MEDIUM SAND		DARK YELLOWISH BROWN	
50	LOAMY SAND	FIRM IN PLACE	OLIVE BROWN	FEW FAINT
60				
70				
80				
90				
100				

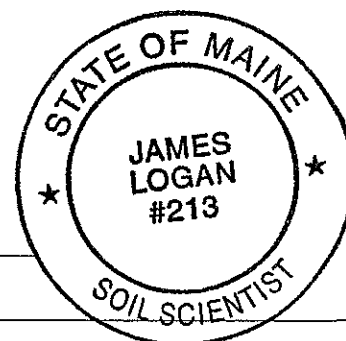
Soil Classification	Slope	Limiting Factor	☒ Ground Water
Profile Condition	%	43"	☐ Restrictive Layer
			☐ Bedrock
			☐ Pit Depth

FILL OVER CROGHAN (VARIANT)

James Logan
Site Evaluator/Soil Scientist Signature

237/243
SE/CSS *

9-25-14
Date



Town, City, Plantation
PORTLAND

Street, Road Subdivision
THE PARK DANFORTH

Owner's Name
MITCHELL ASSOCIATES

ALL SOIL TEST PITS EXCAVATED BY BACKHOE

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP 5 ☒ Test Pit ☐ Boring
" Depth of Organic Horizon Above Mineral Soil

0	Texture	Consistency	Color	Mottling
		FRIABLE		
10	SANDY LOAM & LOAMY SAND (FILL)		VARIABLE BROWN	
20	W/ BRICKS	SOMEWHAT FIRM		
30				
40	GRAVELLY LOAMY COARSE SAND	FIRM IN PLACE (SLIGHTLY CEMENTED)	OLIVE BROWN	COMMON FAINT
50				
60				
70				
80				
90				
100				

Soil Classification
Profile Condition _____ %
Limiting Factor 34"
☒ Ground Water
☐ Restrictive Layer
☐ Bedrock
☐ Pit Depth

FILL OVER CROGHAN (VARIANT)

Observation Hole TP 6 ☒ Test Pit ☐ Boring
" Depth of Organic Horizon Above Mineral Soil

0	Texture	Consistency	Color	Mottling
	SANDY LOAM & LOAMY SAND (FILL)		BROWN	
10				
20	LOAMY SAND	FRIABLE	DARK BROWN	
30				
40	GRAVELLY LOAMY COARSE SAND		DARK YELLOWISH BROWN	
50				
60	GRAVELLY COARSE SAND	SOMEWHAT FIRM IN PLACE	MIXED OLIVE BROWN	FEW FAINT
70				
80				
90				
100				

Soil Classification
Profile Condition _____ %
Limiting Factor 36"
☒ Ground Water
☐ Restrictive Layer
☐ Bedrock
☐ Pit Depth

FILL OVER CROGHAN (VARIANT)

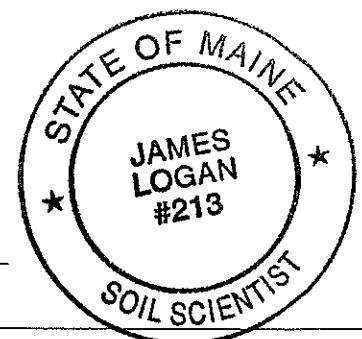
James Logan (for AFA)
Site Evaluator/Soil Scientist Signature

237/213

SE/CSS *

9-25-14

Date



APPENDIX I

TEST PITS BY ALBERT FRICK ASSOCIATES INC.

APPENDIX J

TREATMENT CALCULATIONS

PARK DANFORTH MODEL II POST

Type III 24-hr TREATMENT Rainfall=1.00"

Prepared by BH2M ENGINEERS

Printed 11/17/2014

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Summary for Subcatchment 100S: SA100

Runoff = 0.14 cfs @ 12.09 hrs, Volume= 0.010 af, Depth> 0.75"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr TREATMENT Rainfall=1.00"

Area (sf)	CN	Description
6,877	98	Paved parking, HSG D
6,877		100.00% Impervious Area

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

Summary for Subcatchment 102S: SA102

Runoff = 0.01 cfs @ 12.12 hrs, Volume= 0.001 af, Depth> 0.13"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr TREATMENT Rainfall=1.00"

Area (sf)	CN	Description
1,495	61	>75% Grass cover, Good, HSG B
2,508	98	Paved parking, HSG D
4,003	84	Weighted Average
1,495		37.35% Pervious Area
2,508		62.65% Impervious Area

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

Summary for Subcatchment 103S: SA103

Runoff = 0.08 cfs @ 12.10 hrs, Volume= 0.006 af, Depth> 0.37"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr TREATMENT Rainfall=1.00"

Area (sf)	CN	Description
1,344	61	>75% Grass cover, Good, HSG B
6,677	98	Paved parking, HSG D
8,021	92	Weighted Average
1,344		16.76% Pervious Area
6,677		83.24% Impervious Area

PARK DANFORTH MODEL II POST

Type III 24-hr TREATMENT Rainfall=1.00"

Prepared by BH2M ENGINEERS

Printed 11/17/2014

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

Summary for Subcatchment 105S: SA105

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr TREATMENT Rainfall=1.00"

Area (sf)	CN	Description
1,080	98	Unconnected roofs, HSG D
4,513	61	>75% Grass cover, Good, HSG B
5,593	68	Weighted Average, UI Adjusted CN = 65
4,513		80.69% Pervious Area
1,080		19.31% Impervious Area
1,080		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.9	110	0.0200	0.12		Sheet Flow, GRASS Grass: Dense n= 0.240 P2= 3.00"

Summary for Subcatchment 106S: SA106

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr TREATMENT Rainfall=1.00"

Area (sf)	CN	Description
4,300	61	>75% Grass cover, Good, HSG B
360	98	Unconnected pavement, HSG D
4,660	64	Weighted Average, UI Adjusted CN = 62
4,300		92.27% Pervious Area
360		7.73% Impervious Area
360		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.2	90	0.0150	0.10		Sheet Flow, GRASS Grass: Dense n= 0.240 P2= 3.00"

PARK DANFORTH MODEL II POST

Type III 24-hr TREATMENT Rainfall=1.00"

Prepared by BH2M ENGINEERS

Printed 11/17/2014

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Summary for Subcatchment 107S: SA107

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr TREATMENT Rainfall=1.00"

Area (sf)	CN	Description
1,088	98	Unconnected pavement, HSG D
2,594	61	>75% Grass cover, Good, HSG B
3,682	72	Weighted Average, UI Adjusted CN = 66
2,594		70.45% Pervious Area
1,088		29.55% Impervious Area
1,088		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.5	90	0.0300	0.13		Sheet Flow, GRASS
					Grass: Dense n= 0.240 P2= 3.00"

Summary for Subcatchment 134S: SA134

Runoff = 0.17 cfs @ 12.09 hrs, Volume= 0.012 af, Depth> 0.75"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr TREATMENT Rainfall=1.00"

Area (sf)	CN	Description
8,370	98	Roofs, HSG D
8,370		100.00% Impervious Area

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

Summary for Reach 100R: SD CB12-LG15/16/17

Inflow Area = 0.626 ac, 89.59% Impervious, Inflow Depth > 0.42" for TREATMENT event
 Inflow = 0.30 cfs @ 12.09 hrs, Volume= 0.022 af
 Outflow = 0.30 cfs @ 12.09 hrs, Volume= 0.022 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 2.92 fps, Min. Travel Time= 0.0 min
 Avg. Velocity = 1.06 fps, Avg. Travel Time= 0.1 min

Peak Storage= 0 cf @ 12.09 hrs
 Average Depth at Peak Storage= 0.19'
 Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

PARK DANFORTH MODEL II POST

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Type III 24-hr TREATMENT Rainfall=1.00"

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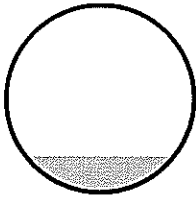
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12.0" Round Pipe

n= 0.012

Length= 4.0' Slope= 0.0100 '/'

Inlet Invert= 115.12', Outlet Invert= 115.08'



Summary for Reach 102R: SD CB11-LG13/14

Inflow Area = 0.276 ac, 76.39% Impervious, Inflow Depth > 0.29" for TREATMENT event

Inflow = 0.09 cfs @ 12.11 hrs, Volume= 0.007 af

Outflow = 0.09 cfs @ 12.11 hrs, Volume= 0.007 af, Atten= 1%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.06 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 0.87 fps, Avg. Travel Time= 0.3 min

Peak Storage= 1 cf @ 12.11 hrs

Average Depth at Peak Storage= 0.11'

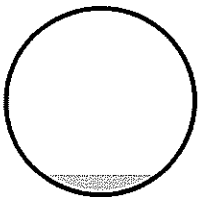
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe

n= 0.012

Length= 15.0' Slope= 0.0100 '/'

Inlet Invert= 115.68', Outlet Invert= 115.53'



Summary for Reach 103R: SD CB10-CB11

Inflow Area = 0.184 ac, 83.24% Impervious, Inflow Depth > 0.37" for TREATMENT event

Inflow = 0.08 cfs @ 12.10 hrs, Volume= 0.006 af

Outflow = 0.08 cfs @ 12.11 hrs, Volume= 0.006 af, Atten= 2%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.00 fps, Min. Travel Time= 0.4 min

Avg. Velocity = 0.82 fps, Avg. Travel Time= 1.0 min

Peak Storage= 2 cf @ 12.10 hrs

Average Depth at Peak Storage= 0.10'

Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

PARK DANFORTH MODEL II POST

Type III 24-hr TREATMENT Rainfall=1.00"

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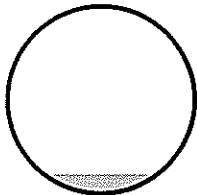
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12.0" Round Pipe

n= 0.012

Length= 47.0' Slope= 0.0100 '/'

Inlet Invert= 116.25', Outlet Invert= 115.78'

**Summary for Reach 134R: ROOF DRAIN**

Inflow Area = 0.192 ac, 100.00% Impervious, Inflow Depth > 0.75" for TREATMENT event
Inflow = 0.17 cfs @ 12.09 hrs, Volume= 0.012 af
Outflow = 0.17 cfs @ 12.09 hrs, Volume= 0.012 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.64 fps, Min. Travel Time= 0.2 min

Avg. Velocity= 0.97 fps, Avg. Travel Time= 0.5 min

Peak Storage= 2 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.18'

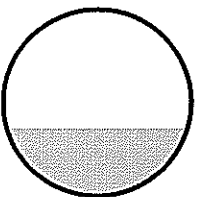
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.61 cfs

6.0" Round Pipe

n= 0.012

Length= 30.0' Slope= 0.0100 '/'

Inlet Invert= 0.00', Outlet Invert= -0.30'

**Summary for Pond 100P: LG15/16/17**

Inflow Area = 0.626 ac, 89.59% Impervious, Inflow Depth > 0.42" for TREATMENT event
Inflow = 0.30 cfs @ 12.09 hrs, Volume= 0.022 af
Outflow = 0.02 cfs @ 13.15 hrs, Volume= 0.017 af, Atten= 92%, Lag= 63.5 min
Discarded = 0.02 cfs @ 13.15 hrs, Volume= 0.017 af
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 115.04' @ 13.15 hrs Surf.Area= 162 sf Storage= 466 cf

Plug-Flow detention time= 174.4 min calculated for 0.017 af (80% of inflow)

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Type III 24-hr TREATMENT Rainfall=1.00"

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Center-of-Mass det. time= 121.4 min (880.2 - 758.9)

Volume	Invert	Avail.Storage	Storage Description
#1	109.00'	412 cf	Custom Stage Data (Conic) Listed below (Recalc) 1,228 cf Overall - 198 cf Embedded = 1,030 cf x 40.0% Voids
#2	112.46'	198 cf	Custom Stage Data (Prismatic) Listed below (Recalc) Inside #1
		610 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
109.00	162	0	0	162
116.58	162	1,228	1,228	504

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
112.46	48	0	0
116.58	48	198	198

Device	Routing	Invert	Outlet Devices
#1	Discarded	109.00'	2.410 in/hr Exfiltration over Wetted area
#2	Primary	115.08'	12.0" Round Culvert L= 12.0' Ke= 0.500 Inlet / Outlet Invert= 115.08' / 114.96' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=0.02 cfs @ 13.15 hrs HW=115.04' (Free Discharge)↑ **1=Exfiltration** (Exfiltration Controls 0.02 cfs)**Primary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=109.00' (Free Discharge)↑ **2=Culvert** (Controls 0.00 cfs)**Summary for Pond 102P: LG 13/14**

Inflow Area = 0.276 ac, 76.39% Impervious, Inflow Depth > 0.29" for TREATMENT event
 Inflow = 0.09 cfs @ 12.11 hrs, Volume= 0.007 af
 Outflow = 0.01 cfs @ 13.05 hrs, Volume= 0.007 af, Atten= 88%, Lag= 56.4 min
 Discarded = 0.01 cfs @ 13.05 hrs, Volume= 0.007 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 113.16' @ 13.05 hrs Surf.Area= 117 sf Storage= 113 cf

Plug-Flow detention time= 110.1 min calculated for 0.007 af (100% of inflow)

Center-of-Mass det. time= 108.2 min (924.0 - 815.8)

Volume	Invert	Avail.Storage	Storage Description
#1	110.86'	235 cf	Custom Stage Data (Conic) Listed below (Recalc) 722 cf Overall - 133 cf Embedded = 588 cf x 40.0% Voids
#2	112.86'	133 cf	Custom Stage Data (Prismatic) Listed below (Recalc) Inside #1
		369 cf	Total Available Storage

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Type III 24-hr TREATMENT Rainfall=1.00"

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
110.86	117	0	0	117
117.03	117	722	722	354

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
112.86	32	0	0
117.03	32	133	133

Device	Routing	Invert	Outlet Devices
#1	Discarded	110.86'	2.410 in/hr Exfiltration over Wetted area
#2	Primary	115.53'	12.0" Round Culvert L= 31.0' Ke= 0.500 Inlet / Outlet Invert= 115.53' / 115.22' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=0.01 cfs @ 13.05 hrs HW=113.16' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=110.86' (Free Discharge)
 ↑2=Culvert (Controls 0.00 cfs)

Summary for Pond 105P: DW3

Inflow Area = 0.128 ac, 19.31% Impervious, Inflow Depth = 0.00" for TREATMENT event
 Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 117.74' @ 5.00 hrs Surf.Area= 81 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	117.74'	205 cf	Custom Stage Data (Conic) Listed below (Recalc) 580 cf Overall - 67 cf Embedded = 513 cf x 40.0% Voids
#2	120.74'	67 cf	Custom Stage Data (Prismatic) Listed below (Recalc) Inside #1
		272 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
117.74	81	0	0	81
124.90	81	580	580	309

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
120.74	16	0	0
124.90	16	67	67

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Type III 24-hr TREATMENT Rainfall=1.00"

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Device	Routing	Invert	Outlet Devices
#1	Primary	123.90'	6.0" Round Culvert L= 28.0' Ke= 0.500 Inlet / Outlet Invert= 123.90' / 123.90' S= 0.0000 ' S= 0.0000 ' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf
#2	Discarded	117.74'	2.410 in/hr Exfiltration over Wetted area

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=117.74' (Free Discharge)↑**2=Exfiltration** (Passes 0.00 cfs of 0.00 cfs potential flow)**Primary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=117.74' (Free Discharge)↑**1=Culvert** (Controls 0.00 cfs)**Summary for Pond 106P: DW2**

Inflow Area = 0.320 ac, 18.14% Impervious, Inflow Depth = 0.00" for TREATMENT event
 Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 117.74' @ 5.00 hrs Surf.Area= 81 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	117.74'	205 cf	Custom Stage Data (Conic) Listed below (Recalc) 580 cf Overall - 67 cf Embedded = 513 cf x 40.0% Voids
#2	120.74'	67 cf	Custom Stage Data (Prismatic) Listed below (Recalc) Inside #1
#3	122.90'	762 cf	Custom Stage Data (Conic) Listed below (Recalc) 1,904 cf Overall x 40.0% Voids
#4	123.90'	12 cf	6.0" D x 62.0'L Pipe Storage
		1,046 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
117.74	81	0	0	81
124.90	81	580	580	309

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
120.74	16	0	0
124.90	16	67	67

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
122.90	952	0	0	952
124.90	952	1,904	1,904	1,171

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Type III 24-hr TREATMENT Rainfall=1.00"

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Device	Routing	Invert	Outlet Devices
#1	Discarded	117.74'	2.410 in/hr Exfiltration over Wetted area

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=117.74' (Free Discharge)↑**1=Exfiltration** (Passes 0.00 cfs of 0.00 cfs potential flow)**Summary for Pond 107P: DW1**

Inflow Area = 0.085 ac, 29.55% Impervious, Inflow Depth = 0.00" for TREATMENT event
 Inflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
 Discarded = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 117.74' @ 5.00 hrs Surf.Area= 81 sf Storage= 0 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= (not calculated: no inflow)

Volume	Invert	Avail.Storage	Storage Description
#1	117.74'	206 cf	Custom Stage Data (Conic) Listed below (Recalc) 580 cf Overall - 64 cf Embedded = 516 cf x 40.0% Voids
#2	120.74'	64 cf	Custom Stage Data (Prismatic) Listed below (Recalc) Inside #1
		270 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
117.74	81	0	0	81
124.90	81	580	580	309

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
120.74	16	0	0
124.74	16	64	64

Device	Routing	Invert	Outlet Devices
#1	Discarded	117.74'	2.410 in/hr Exfiltration over Wetted area
#2	Primary	123.90'	6.0" Round Culvert L= 34.0' Ke= 0.500 Inlet / Outlet Invert= 123.90' / 123.90' S= 0.0000 '/' Cc= 0.900 n= 0.012, Flow Area= 0.20 sf

Discarded OutFlow Max=0.00 cfs @ 5.00 hrs HW=117.74' (Free Discharge)↑**1=Exfiltration** (Passes 0.00 cfs of 0.00 cfs potential flow)**Primary OutFlow** Max=0.00 cfs @ 5.00 hrs HW=117.74' (Free Discharge)↑**2=Culvert** (Controls 0.00 cfs)

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Type III 24-hr TREATMENT Rainfall=1.00"

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Summary for Subcatchment 114S: SA114

Runoff = 0.14 cfs @ 12.09 hrs, Volume= 0.010 af, Depth> 0.75"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type III 24-hr TREATMENT Rainfall=1.00"

Area (sf)	CN	Description
6,863	98	Paved parking, HSG D
6,863		100.00% Impervious Area

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

Summary for Subcatchment 115S: SA115

Runoff = 0.03 cfs @ 12.09 hrs, Volume= 0.002 af, Depth> 0.75"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type III 24-hr TREATMENT Rainfall=1.00"

Area (sf)	CN	Description
1,408	98	Paved parking, HSG D
1,408		100.00% Impervious Area

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

Summary for Subcatchment 116S: SA116

Runoff = 0.07 cfs @ 12.09 hrs, Volume= 0.005 af, Depth> 0.75"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type III 24-hr TREATMENT Rainfall=1.00"

Area (sf)	CN	Description
3,708	98	Paved parking, HSG D
35	61	>75% Grass cover, Good, HSG B
3,743	98	Weighted Average
35		0.94% Pervious Area
3,708		99.06% Impervious Area

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

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Type III 24-hr TREATMENT Rainfall=1.00"

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Summary for Subcatchment 117S: SA117

Runoff = 0.00 cfs @ 12.49 hrs, Volume= 0.000 af, Depth> 0.03"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type III 24-hr TREATMENT Rainfall=1.00"

Area (sf)	CN	Description
1,618	61	>75% Grass cover, Good, HSG B
1,116	98	Paved parking, HSG D
2,734	76	Weighted Average
1,618		59.18% Pervious Area
1,116		40.82% Impervious Area

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

Summary for Subcatchment 118S: SA118

Runoff = 0.00 cfs @ 12.49 hrs, Volume= 0.000 af, Depth> 0.03"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type III 24-hr TREATMENT Rainfall=1.00"

Area (sf)	CN	Description
1,018	61	>75% Grass cover, Good, HSG B
697	98	Paved parking, HSG D
1,715	76	Weighted Average
1,018		59.36% Pervious Area
697		40.64% Impervious Area

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

Summary for Subcatchment 119S: SA119

Runoff = 0.06 cfs @ 12.09 hrs, Volume= 0.004 af, Depth> 0.66"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type III 24-hr TREATMENT Rainfall=1.00"

Area (sf)	CN	Description
3,261	98	Paved parking, HSG D
100	61	>75% Grass cover, Good, HSG B
3,361	97	Weighted Average
100		2.98% Pervious Area
3,261		97.02% Impervious Area

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Type III 24-hr TREATMENT Rainfall=1.00"

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

Summary for Subcatchment 122S: SA122

Runoff = 0.02 cfs @ 12.10 hrs, Volume= 0.001 af, Depth> 0.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr TREATMENT Rainfall=1.00"

Area (sf)	CN	Description
710	61	>75% Grass cover, Good, HSG B
2,135	98	Paved parking, HSG D
2,845	89	Weighted Average
710		24.96% Pervious Area
2,135		75.04% Impervious Area

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

Summary for Subcatchment 124S: SA124

Runoff = 0.06 cfs @ 12.10 hrs, Volume= 0.004 af, Depth> 0.29"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr TREATMENT Rainfall=1.00"

Area (sf)	CN	Description
1,000	39	>75% Grass cover, Good, HSG A
6,449	98	Paved parking, HSG D
7,449	90	Weighted Average
1,000		13.42% Pervious Area
6,449		86.58% Impervious Area

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

Summary for Subcatchment 130S: SA130 ROOF

Runoff = 0.06 cfs @ 12.09 hrs, Volume= 0.004 af, Depth> 0.75"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr TREATMENT Rainfall=1.00"

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Type III 24-hr TREATMENT Rainfall=1.00"

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Area (sf)	CN	Description
3,082	98	Roofs, HSG D
3,082		100.00% Impervious Area

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

Summary for Subcatchment 131S: SA131 ROOF

Runoff = 0.05 cfs @ 12.09 hrs, Volume= 0.004 af, Depth> 0.75"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type III 24-hr TREATMENT Rainfall=1.00"

Area (sf)	CN	Description
2,552	98	Roofs, HSG D
2,552		100.00% Impervious Area

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

Summary for Subcatchment 132S: SA132

Runoff = 0.09 cfs @ 12.09 hrs, Volume= 0.006 af, Depth> 0.75"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type III 24-hr TREATMENT Rainfall=1.00"

Area (sf)	CN	Description
4,394	98	Roofs, HSG D
4,394		100.00% Impervious Area

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

Summary for Subcatchment 133S: SA133

Runoff = 0.10 cfs @ 12.09 hrs, Volume= 0.007 af, Depth> 0.75"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Type III 24-hr TREATMENT Rainfall=1.00"

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Type III 24-hr TREATMENT Rainfall=1.00"

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Area (sf)	CN	Description
5,035	98	Roofs, HSG D
5,035		100.00% Impervious Area

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

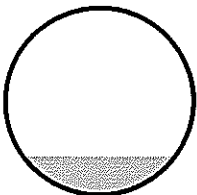
Summary for Reach 112R: SD CB9-LG8/9/10

Inflow Area = 1.037 ac, 90.08% Impervious, Inflow Depth > 0.29" for TREATMENT event
 Inflow = 0.35 cfs @ 12.10 hrs, Volume= 0.025 af
 Outflow = 0.34 cfs @ 12.10 hrs, Volume= 0.025 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 3.04 fps, Min. Travel Time= 0.1 min
 Avg. Velocity= 1.10 fps, Avg. Travel Time= 0.3 min

Peak Storage= 2 cf @ 12.10 hrs
 Average Depth at Peak Storage= 0.20'
 Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe
 n= 0.012
 Length= 19.0' Slope= 0.0100 '/'
 Inlet Invert= 118.50', Outlet Invert= 118.31'

**Summary for Reach 114R: SD CB8-CB9**

Inflow Area = 0.821 ac, 87.47% Impervious, Inflow Depth > 0.17" for TREATMENT event
 Inflow = 0.16 cfs @ 12.09 hrs, Volume= 0.012 af
 Outflow = 0.16 cfs @ 12.11 hrs, Volume= 0.012 af, Atten= 3%, Lag= 1.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Max. Velocity= 2.44 fps, Min. Travel Time= 0.8 min
 Avg. Velocity= 0.88 fps, Avg. Travel Time= 2.2 min

Peak Storage= 8 cf @ 12.10 hrs
 Average Depth at Peak Storage= 0.14'
 Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

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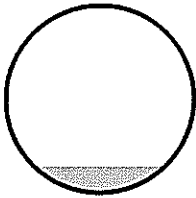
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12.0" Round Pipe

n= 0.012

Length= 114.0' Slope= 0.0100 1'

Inlet Invert= 119.74', Outlet Invert= 118.60'

**Summary for Reach 115R: SD CB7-CD8**

Inflow Area = 0.032 ac, 100.00% Impervious, Inflow Depth > 0.75" for TREATMENT event
Inflow = 0.03 cfs @ 12.09 hrs, Volume= 0.002 af
Outflow = 0.03 cfs @ 12.10 hrs, Volume= 0.002 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 1.43 fps, Min. Travel Time= 0.3 min

Avg. Velocity = 0.55 fps, Avg. Travel Time= 0.7 min

Peak Storage= 0 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.06'

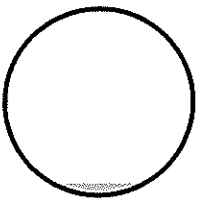
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe

n= 0.012

Length= 23.0' Slope= 0.0100 1'

Inlet Invert= 120.20', Outlet Invert= 119.97'

**Summary for Reach 116R: SD CB6-LG3/4**

Inflow Area = 0.460 ac, 82.62% Impervious, Inflow Depth > 0.26" for TREATMENT event
Inflow = 0.13 cfs @ 12.10 hrs, Volume= 0.010 af
Outflow = 0.13 cfs @ 12.10 hrs, Volume= 0.010 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.30 fps, Min. Travel Time= 0.1 min

Avg. Velocity = 0.83 fps, Avg. Travel Time= 0.3 min

Peak Storage= 1 cf @ 12.10 hrs

Average Depth at Peak Storage= 0.13'

Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

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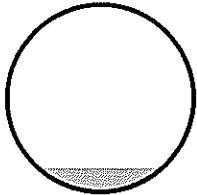
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12.0" Round Pipe

n= 0.012

Length= 14.0' Slope= 0.0100 '/'

Inlet Invert= 120.03', Outlet Invert= 119.89'



Summary for Reach 117R: SD CB5-CB6

Inflow Area = 0.179 ac, 64.97% Impervious, Inflow Depth > 0.30" for TREATMENT event
Inflow = 0.06 cfs @ 12.11 hrs, Volume= 0.005 af
Outflow = 0.06 cfs @ 12.11 hrs, Volume= 0.005 af, Atten= 1%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 1.80 fps, Min. Travel Time= 0.1 min

Avg. Velocity= 0.69 fps, Avg. Travel Time= 0.3 min

Peak Storage= 0 cf @ 12.11 hrs

Average Depth at Peak Storage= 0.09'

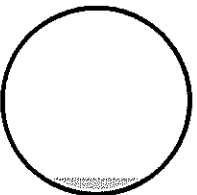
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe

n= 0.012

Length= 14.0' Slope= 0.0100 '/'

Inlet Invert= 120.27', Outlet Invert= 120.13'



Summary for Reach 118R: SD CB4-CB5

Inflow Area = 0.117 ac, 77.97% Impervious, Inflow Depth > 0.45" for TREATMENT event
Inflow = 0.06 cfs @ 12.09 hrs, Volume= 0.004 af
Outflow = 0.06 cfs @ 12.11 hrs, Volume= 0.004 af, Atten= 2%, Lag= 0.8 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 1.82 fps, Min. Travel Time= 0.5 min

Avg. Velocity= 0.68 fps, Avg. Travel Time= 1.4 min

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Peak Storage= 2 cf @ 12.10 hrs

Average Depth at Peak Storage= 0.09'

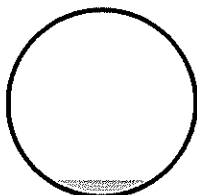
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe

n= 0.012

Length= 57.0' Slope= 0.0100 '/'

Inlet Invert= 120.94', Outlet Invert= 120.37'



Summary for Reach 119R: SD CB3-CB4

Inflow Area = 0.077 ac, 97.02% Impervious, Inflow Depth > 0.66" for TREATMENT event

Inflow = 0.06 cfs @ 12.09 hrs, Volume= 0.004 af

Outflow = 0.06 cfs @ 12.09 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.2 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 1.82 fps, Min. Travel Time= 0.1 min

Avg. Velocity= 0.68 fps, Avg. Travel Time= 0.3 min

Peak Storage= 0 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.09'

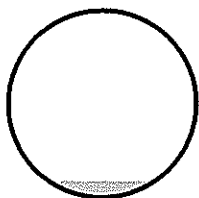
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe

n= 0.012

Length= 11.0' Slope= 0.0100 '/'

Inlet Invert= 121.15', Outlet Invert= 121.04'



Summary for Reach 122R: SD CB1-DMH1

Inflow Area = 0.136 ac, 88.02% Impervious, Inflow Depth > 0.51" for TREATMENT event

Inflow = 0.08 cfs @ 12.09 hrs, Volume= 0.006 af

Outflow = 0.08 cfs @ 12.11 hrs, Volume= 0.006 af, Atten= 2%, Lag= 0.8 min

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Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 1.98 fps, Min. Travel Time= 0.5 min

Avg. Velocity = 0.72 fps, Avg. Travel Time= 1.5 min

Peak Storage= 3 cf @ 12.10 hrs

Average Depth at Peak Storage= 0.10'

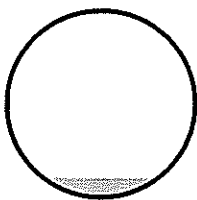
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe

n= 0.012

Length= 64.0' Slope= 0.0100 '/'

Inlet Invert= 121.85', Outlet Invert= 121.21'



Summary for Reach 123R: SD DMH1-LG1/2

Inflow Area = 0.195 ac, 91.63% Impervious, Inflow Depth > 0.58" for TREATMENT event

Inflow = 0.13 cfs @ 12.10 hrs, Volume= 0.009 af

Outflow = 0.13 cfs @ 12.11 hrs, Volume= 0.009 af, Atten= 2%, Lag= 0.6 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.27 fps, Min. Travel Time= 0.4 min

Avg. Velocity = 0.82 fps, Avg. Travel Time= 1.0 min

Peak Storage= 3 cf @ 12.11 hrs

Average Depth at Peak Storage= 0.13'

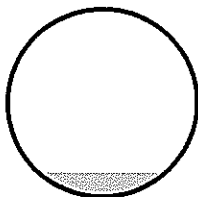
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe

n= 0.012

Length= 51.0' Slope= 0.0100 '/'

Inlet Invert= 121.11', Outlet Invert= 120.60'



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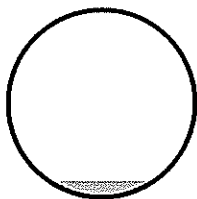
Summary for Reach 124R: SD CB2-LG5/6/7

Inflow Area = 0.171 ac, 86.58% Impervious, Inflow Depth > 0.29" for TREATMENT event
Inflow = 0.06 cfs @ 12.10 hrs, Volume= 0.004 af
Outflow = 0.06 cfs @ 12.11 hrs, Volume= 0.004 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.80 fps, Min. Travel Time= 0.2 min
Avg. Velocity= 0.78 fps, Avg. Travel Time= 0.6 min

Peak Storage= 1 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.09'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 3.86 cfs

12.0" Round Pipe
n= 0.012
Length= 27.0' Slope= 0.0100 '/'
Inlet Invert= 120.90', Outlet Invert= 120.63'



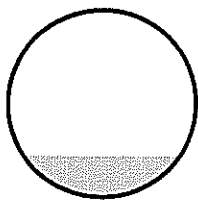
Summary for Reach 130R: ROOF DRAIN

Inflow Area = 0.071 ac, 100.00% Impervious, Inflow Depth > 0.75" for TREATMENT event
Inflow = 0.06 cfs @ 12.09 hrs, Volume= 0.004 af
Outflow = 0.06 cfs @ 12.09 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.1 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.98 fps, Min. Travel Time= 0.1 min
Avg. Velocity= 0.72 fps, Avg. Travel Time= 0.2 min

Peak Storage= 0 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.11'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.61 cfs

6.0" Round Pipe
n= 0.012
Length= 10.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -0.10'



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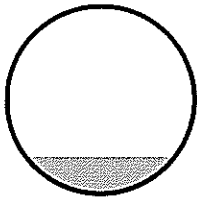
Summary for Reach 131R: ROOF DRAIN

Inflow Area = 0.059 ac, 100.00% Impervious, Inflow Depth > 0.75" for TREATMENT event
Inflow = 0.05 cfs @ 12.09 hrs, Volume= 0.004 af
Outflow = 0.05 cfs @ 12.09 hrs, Volume= 0.004 af, Atten= 1%, Lag= 0.4 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.88 fps, Min. Travel Time= 0.2 min
Avg. Velocity= 0.68 fps, Avg. Travel Time= 0.6 min

Peak Storage= 1 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.10'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.61 cfs

6.0" Round Pipe
n= 0.012
Length= 25.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -0.25'

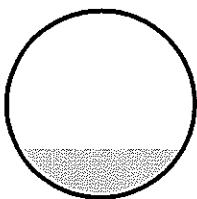
**Summary for Reach 132R: ROOF DRAIN**

Inflow Area = 0.101 ac, 100.00% Impervious, Inflow Depth > 0.75" for TREATMENT event
Inflow = 0.09 cfs @ 12.09 hrs, Volume= 0.006 af
Outflow = 0.09 cfs @ 12.09 hrs, Volume= 0.006 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.20 fps, Min. Travel Time= 0.2 min
Avg. Velocity= 0.80 fps, Avg. Travel Time= 0.5 min

Peak Storage= 1 cf @ 12.09 hrs
Average Depth at Peak Storage= 0.13'
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.61 cfs

6.0" Round Pipe
n= 0.012
Length= 25.0' Slope= 0.0100 '/'
Inlet Invert= 0.00', Outlet Invert= -0.25'



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Summary for Reach 133R: ROOF DRAIN

Inflow Area = 0.116 ac, 100.00% Impervious, Inflow Depth > 0.75" for TREATMENT event
 Inflow = 0.10 cfs @ 12.09 hrs, Volume= 0.007 af
 Outflow = 0.10 cfs @ 12.09 hrs, Volume= 0.007 af, Atten= 1%, Lag= 0.3 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.29 fps, Min. Travel Time= 0.2 min

Avg. Velocity = 0.83 fps, Avg. Travel Time= 0.5 min

Peak Storage= 1 cf @ 12.09 hrs

Average Depth at Peak Storage= 0.14'

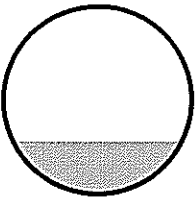
Bank-Full Depth= 0.50' Flow Area= 0.2 sf, Capacity= 0.61 cfs

6.0" Round Pipe

n= 0.012

Length= 25.0' Slope= 0.0100 '/'

Inlet Invert= 0.00', Outlet Invert= -0.25'

**Summary for Pond 112P: LG 8/9/10**

Inflow Area = 1.037 ac, 90.08% Impervious, Inflow Depth > 0.29" for TREATMENT event
 Inflow = 0.34 cfs @ 12.10 hrs, Volume= 0.025 af
 Outflow = 0.03 cfs @ 13.31 hrs, Volume= 0.020 af, Atten= 92%, Lag= 72.6 min
 Discarded = 0.03 cfs @ 13.31 hrs, Volume= 0.020 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 118.24' @ 13.31 hrs Surf.Area= 198 sf Storage= 543 cf

Plug-Flow detention time= 176.9 min calculated for 0.020 af (78% of inflow)

Center-of-Mass det. time= 120.2 min (880.2 - 760.0)

Volume	Invert	Avail.Storage	Storage Description
#1	112.64'	461 cf	Custom Stage Data (Conic) Listed below (Recalc) 1,420 cf Overall - 267 cf Embedded = 1,153 cf x 40.0% Voids
#2	115.64'	267 cf	Custom Stage Data (Prismatic) Listed below (Recalc) Inside #1
		728 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
112.64	198	0	0	198
119.81	198	1,420	1,420	556

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
115.64	64	0	0
119.81	64	267	267

Device	Routing	Invert	Outlet Devices
#1	Discarded	112.64'	2.410 in/hr Exfiltration over Wetted area
#2	Primary	118.31'	12.0" Round Culvert L= 79.0' Ke= 0.500 Inlet / Outlet Invert= 118.31' / 116.40' S= 0.0242 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=0.03 cfs @ 13.31 hrs HW=118.24' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.03 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=112.64' (Free Discharge)

↑2=Culvert (Controls 0.00 cfs)

Summary for Pond 117P: LG 3/4

Inflow Area = 0.460 ac, 82.62% Impervious, Inflow Depth > 0.26" for TREATMENT event
 Inflow = 0.13 cfs @ 12.10 hrs, Volume= 0.010 af
 Outflow = 0.01 cfs @ 12.97 hrs, Volume= 0.009 af, Atten= 90%, Lag= 52.0 min
 Discarded = 0.01 cfs @ 12.97 hrs, Volume= 0.009 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 117.57' @ 12.97 hrs Surf.Area= 117 sf Storage= 183 cf

Plug-Flow detention time= 136.7 min calculated for 0.009 af (93% of inflow)
 Center-of-Mass det. time= 112.6 min (881.9 - 769.4)

Volume	Invert	Avail.Storage	Storage Description
#1	114.22'	235 cf	Custom Stage Data (Conic) Listed below (Recalc) 722 cf Overall - 133 cf Embedded = 588 cf x 40.0% Voids
#2	116.22'	133 cf	Custom Stage Data (Prismatic) Listed below (Recalc) Inside #1
		369 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
114.22	117	0	0	117
120.39	117	722	722	354

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
116.22	32	0	0
120.39	32	133	133

Device	Routing	Invert	Outlet Devices
#1	Discarded	114.22'	2.410 in/hr Exfiltration over Wetted area
#2	Primary	118.89'	12.0" Round Culvert L= 5.0' Ke= 0.500 Inlet / Outlet Invert= 118.89' / 118.84' S= 0.0100 '/' Cc= 0.900

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n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=0.01 cfs @ 12.97 hrs HW=117.57' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=114.22' (Free Discharge)

↑2=Culvert (Controls 0.00 cfs)

Summary for Pond 124P: LG 5/6

Inflow Area = 0.171 ac, 86.58% Impervious, Inflow Depth > 0.29" for TREATMENT event
 Inflow = 0.06 cfs @ 12.11 hrs, Volume= 0.004 af
 Outflow = 0.01 cfs @ 12.77 hrs, Volume= 0.004 af, Atten= 84%, Lag= 39.7 min
 Discarded = 0.01 cfs @ 12.77 hrs, Volume= 0.004 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Peak Elev= 117.29' @ 12.77 hrs Surf.Area= 117 sf Storage= 62 cf

Plug-Flow detention time= 65.1 min calculated for 0.004 af (99% of inflow)

Center-of-Mass det. time= 63.6 min (883.0 - 819.4)

Volume	Invert	Avail.Storage	Storage Description
#1	115.96'	235 cf	Custom Stage Data (Conic) Listed below (Recalc) 722 cf Overall - 133 cf Embedded = 588 cf x 40.0% Voids
#2	117.96'	133 cf	Custom Stage Data (Prismatic) Listed below (Recalc) Inside #1
		369 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
115.96	117	0	0	117
122.13	117	722	722	354

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
117.96	32	0	0
122.13	32	133	133

Device	Routing	Invert	Outlet Devices
#1	Discarded	115.96'	2.410 in/hr Exfiltration over Wetted area
#2	Primary	120.63'	12.0" Round Culvert L= 47.0' Ke= 0.500 Inlet / Outlet Invert= 120.63' / 120.16' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=0.01 cfs @ 12.77 hrs HW=117.29' (Free Discharge)

↑1=Exfiltration (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=115.96' (Free Discharge)

↑2=Culvert (Controls 0.00 cfs)

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Summary for Pond 125P: LG 1/2

Inflow Area = 0.195 ac, 91.63% Impervious, Inflow Depth > 0.58" for TREATMENT event
 Inflow = 0.13 cfs @ 12.11 hrs, Volume= 0.009 af
 Outflow = 0.01 cfs @ 12.99 hrs, Volume= 0.009 af, Atten= 89%, Lag= 52.5 min
 Discarded = 0.01 cfs @ 12.99 hrs, Volume= 0.009 af
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 119.16' @ 12.99 hrs Surf.Area= 117 sf Storage= 174 cf

Plug-Flow detention time= 132.7 min calculated for 0.009 af (94% of inflow)
 Center-of-Mass det. time= 112.0 min (882.3 - 770.3)

Volume	Invert	Avail.Storage	Storage Description
#1	115.96'	260 cf	Custom Stage Data (Conic) Listed below (Recalc) 718 cf Overall - 69 cf Embedded = 649 cf x 40.0% Voids
#2	117.93'	69 cf	Custom Stage Data (Prismatic) Listed below (Recalc) Inside #1
		329 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
115.96	117	0	0	117
122.10	117	718	718	352

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
117.93	32	0	0
120.10	32	69	69

Device	Routing	Invert	Outlet Devices
#1	Discarded	115.96'	2.410 in/hr Exfiltration over Wetted area
#2	Primary	120.60'	12.0" Round Culvert L= 19.0' Ke= 0.500 Inlet / Outlet Invert= 120.60' / 120.41' S= 0.0100 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=0.01 cfs @ 12.99 hrs HW=119.16' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.01 cfs)

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=115.96' (Free Discharge)
 ↑2=Culvert (Controls 0.00 cfs)

WAIVER REQUESTS

Dated November 25, 2014

The following revised waiver request are sought based on staff review:

1. **Driveway Location (Technical Design Manual 1.7.2.7)** Forest Avenue is a 30 mph road. The minimum spacing requirement for curb cuts in this location is 125 feet. The existing driveway for The Park Danforth is approximately 70 feet from the intersection of Read Street and Forest Avenue. The applicant is requesting a waiver from this requirement. This is an existing driveway location providing access to the service area and parking. The applicant has modified the driveway geometry to control right turn in and out movements adding ingress and egress lanes separated by a raised pedestrian mountable concrete median. The drive will be posted right turn out.
2. **Number of Driveways (Technical Design Manual 1.7.2.8)** No more than two (2) ingress & egress driveways are permitted for commercial developments. The applicant is requesting a waiver to allow four driveways to be retained to serve the property which is an entire city block. The existing city block has seven (7) driveways serving the uses with three (3) along Stevens Avenue, three on Arbor Street, one (1) previously eliminated with the removal of a two-family residence in 2013, and two (2) on Forest Avenue.

The applicant is reducing the amount of curb cuts on this block to four (4). Three of the proposed entrance drives (Stevens Avenue, Arbor Street and Forest Avenue) will be for daily use while, at the request of the Portland Fire Department, one of the curb cuts will be for emergency vehicle access only, two sided signs will be posted as emergency vehicle access only on either side of the driveway. This was a request made by the Portland Fire Department during review of site circulation and current EMS history for The Park Danforth.

The middle Stevens Avenue curb cut has been relocated to align with the new main entry and the two (2) current curb openings will be closed. This driveway will be posted as right-turn in, right- turn out only.

The Arbor Street driveway aligns with the new building entry and is located where the former two-family residence was located. This drive location provides for safer access to and from the property with access to Stevens and Forest

Avenue. The existing driveway to the Park Danforth service area has modified to improve delivery vehicle access including the geometry and will be posted as right-turn in, right-turn out.

The four (4) curb cuts will allow easier movement within the site, maintain access into an existing service area, and accommodate full accessibility for emergency vehicles.

3. Drive Aisle Width

The applicant is requesting to reduce the width of the following travel aisles:

- The proposed right turn in and out entry from Stevens Avenue is 20 feet wide and is permitted under the Technical Design Standards. We understand that 24 is the desired width, however we believe the 20 foot width is adequate for the intend egress and meets safety requirements.
- The proposed travel aisle along the Arbor Street frontage is proposed as 22 feet wide. We are requesting the two foot reduction to minimize pavement and allow for a wider buffer planting area in front of the parking along Arbor Street. The travel aisle has single loaded parking on the north side and a 5 FT sidewalk along the building or southerly side of the aisle. This area is adequate to accommodate for vehicles to pass as well as to maneuver the parking spaces. The parking along this section of drive will have a minimal turnover of parking.
- The proposed travel aisle along the Forest Avenue side of the new building is proposed as a 20 FT width. There is limited parallel parking and will not require vehicles backing out into the travel way. There is adequate room for vehicles to pass. The fire department requires a minimum of 20 FT to provide adequate room for emergency vehicle circulation. We reviewed the plans with the fire department and they were supportive of the layout. The narrow width also provide s for less pavement and a greater area for buffer planting along Forest Avenue.

4. Utility Pole Location

The applicant is requesting a waiver to permit the installation of a new utility pole on-site to be located north of the Forest Avenue service entry. There is not adequate space for additional riser conduit on the existing utility pole on Forest Avenue where power and communication services are to be extended from. In order to provide underground utility service the new pole is required. All new

services would be installed underground from this location to feed the transformer and communication pedestals.

Temporary Waiver Request

The applicant requests the following temporary waivers:

1. Lighting Photometric Plan. We are currently working on selection of energy efficient fixtures for the site and building are in the process of having photometric plans prepared to address city lighting standards. We request the ability to provide this at a later time.
2. Sign Plan. The Sign Plan will be in conformance with city zoning. Presently The Park Danforth is undertaking a new branding update that will include signage needs. We request the ability to provide this at a later time for staff review
3. Waste Stream Management: Currently, The Park Danforth is in the process of evaluating the management to accommodate the waste stream in an effort to eliminate the current dumpster service. We request the ability to provide this at a later date.
4. Manufacturers' Verification of Mechanical Systems, HVAC, Emergency Generators, etc.: Emergency generator will now be located in a mechanical room below the east side terrace adjacent to the garage, HVAC equipment will be mounted on the roof. Sizing and selection of equipment is currently being developed. Appropriate documentation will be submitted for staff review. We request the ability to provide at a later date.

January 6, 2015

Ms. Shukria Wiar, Planner
and Planning Board Members
Planning and Urban Development
City of Portland
389 Congress Street
Portland, ME 04101

**RE: Level III Site Plan
The Park Danforth
777 Stevens Avenue**

Dear Shukria and Planning Board Members:

The following documentation has been prepared in response to staff review comments, dated, December 17, 2014, as well as updated responses to our previous letter dated November 25, 2014.

Bruce Hyman/Engineering DPS (12/12/2014)

1) Curb ramps at Arbor and Poland Streets at Forest Avenue – these are one-direction curb ramps (serving one crosswalk only) – it is more desirable to have the curb ramp better aligned with the direction of travel and crosswalks than using a diagonal ramp – the design can incorporate a minimum 4'x4' landing at the top of the ramp (as is done in the current design) or the entire sidewalk can tip down (max 8% and max 2% cross-slope) to curb ramp which itself would have a 2% slope and maximum 2% cross-slope (curbing is typically installed on the back of the sidewalk in this style of ramp design) – if diagonal ramps are maintained in the design, the detectable warning fields should be orientated in the direction of travel to the extent practicable (trailing edge <=5', as discussed with the applicant's representative during our site walk).



- **The crosswalk curb ramps have been revised to address the comments in Bruce Hyman's memo. The curb ramp on the corner of Poland Street and Forest Avenue cannot be constructed as requested due to two existing catch basins situated on either side of the ramp location. To construct this ramp will require adjustments to be made in the field. The maximum run and cross slope of the ramp can be achieved. Refer to Plan Sheet L2.1 for detail enlargements.**

2) Re-configured/relocated crosswalk across Stevens Avenue – the curb ramp on the project (east) side looks good – there should be a companion ramp constructed on the non-project/west side (this crosswalk serves Park Danforth residents)

- **We understand the comment requesting the companion ramp, however we do not believe the construction of this ramp to be the responsibility of The Park Danforth. The proximity of this curb ramp to the recent approved/constructed UNE School of Dentistry also have students, faculty and employees that use the bus stops and perhaps should have been identified during that review.**

3) Street and sidewalk configuration of Arbor Street- the standard typical cross-section for a local street as shown in the Technical Manual shows a 28' curb to curb street with a 5' sidewalk and 6' esplanade – the applicant currently shows a 30' wide street with a 5' sidewalk adjacent to the curb – the applicant should explore opportunities to achieve the sidewalk with esplanade which may involve a 28' wide street and moving the sidewalk to the back of the right of way – resulting dimensions should be provided - it may not be possible to achieve the 6' esplanade but it should be explored what configurations are possible.

- **We have reviewed the request and have made the following changes to the plan. There are several constraints presenting conflicts, these include a right of way that is 45 FT wide, there are angle points in the right of way and the street is not centered in the right of way. Given these constraints as well as a section of existing curbing on the north side, we have shown a 28 FT wide travel way with the exception of a portion of the street, approximately 70 FT, where the curbing on the north side, referenced above creates a width of 25 FT +/- . Due to the configuration of the right of way we have continued to show a 6FT wide sidewalk at the back of the curb.**

While we understand the reason for the esplanade, we strongly believe that the restrictions associated with the right of way are better addressed with the sidewalk at the curb line. Given that the intent, as we understand from previous discussions, staff intends to recommend providing on-street parking on the south side where parking presently does not exist. Winter snow conditions, where an esplanade exist constrain passenger access to the sidewalk. Another consideration, based on the intensity of use, is the long term maintenance requirements of a grassed esplanade.

Given the intensity on demand for parking in the neighborhood, due primarily to UNE, it would seem that having a clear accessible 6 foot wide sidewalk is more beneficial. Having a wider green space/buffer on the back side of the sidewalk, incorporated with The Park Danforth improvements, will provide a greater benefit and will be maintained by The Park Danforth.

We would like to also point out that recent sidewalk improvements made on the south side of Poland Street located the sidewalk at the curb line. There is no esplanade on either Arbor or Poland Street.

4) Crosswalk and Curb Ramp orientation – the entirety of the bottom of a curb ramp landing must be contained within a minimum 4'x4' area within the crosswalk – detectable warning fields should be oriented in the direction of travel to the extent practicable, as discussed with the applicant's representative during our sitewalk.

- **The design of the curb ramps have been revised to respond to the comments with exception of the Poland Street – Forest Avenue ramp, see response in 1) above.**

5) Curb ramp width and detectable warning width – ADA requires detectable warning fields to be the full width of the ramp – i.e. if the ramp is 5' wide, then the DW field is 5' – this is readily achievable within concrete sidewalks and ramps (sometimes it's not as achievable with other ramp materials)

- **We need to point out that the city detail for detectable warning fields requires a 4 inch concrete band around the perimeter. The field for a 4FT DW field is 40 inches per the Technical Manual detail. We have revised our plan and detail enlargement to reflect the full width of the ramp.**

6) Sidewalk and Ramp Cross-slopes and running slopes – it is requested that the applicant document the resulting running and cross-slopes for sidewalks and ramps on the drawings to ensure ADA compliance is achieved.

- **The plan details, Plan Sheet L2.1 – plan enlargements show the slope requirements.**

David Margolis – Pineo/Public Services 12'15/2014

1. All proposed Storm water drainage shall be directed to Forest Ave and Read Street unless demonstrated not feasible. This has not been done. The drainage plan L4.0 is incomplete and requires a stamp by a Professional Engineer. This plan is unacceptable.

- **The plan previously submitted Plan Sheet L4.0, dated November 25, 2014, did separate the storm water to direct the majority of new site impervious area, including more than one-half of the new roof area, and a small portion of pre-existing runoff from The Park Danforth is directed to the Forest Ave-Read Street by-pass. Only a small area of the site perimeter access drive, parking garage and the portion of the new roof along the Forest Avenue frontage continues to flow to the Forest Avenue storm drain. Due to grade/invert issues, the entire area could not be directed to the Forest Ave-Read Street by-pass.**

Plan Sheet L4.0 was stamped by Les Berry PE

2. The intersection of Forest Ave and Read Street is under a five year moratorium until August 16, 2016. No comment required.

- **The applicant understands that any construction activity within the Forest Avenue corridor will be required to address the pavement restoration standards for streets under moratorium.**

3. Storm water manholes do not have three foot sumps. Please provide correct detail on Sheet L6.2. Detail now reflects a three foot sump.

- **No response required.**

4. Applicant is proposing the installation of a grease interceptor. Sizing of this interceptor shall be determined and stated on the plans prior to final approval. Please contact Frank Brancely at 874-8832. Applicant now shows a 2,000 gallon grease trap interceptor.

- **The 2,000 gallon grease interceptor as previously shown was for the new bistro to be located in the existing facility. A grease trap was determined not to be necessary. That said, recent changes in the code require that the existing facility have a 2,000 gallon grease interceptor. The existing tank is a 1,000 gallon unit, the new replacement unit will be installed in the same location as shown on the revised utility plan dated January 5, 2015.**

5. Provide General Note on plans stating that “All proposed construction within the City street right-of-way shall meet City of Portland Design Manual standards. “ It appears some of the plan details do not reflect City Design Manual standards. Applicant may wish to cut and paste Design Manual detail to plan set to avoid construction confusion. Note has been added.

- **No response required**

6. All plans are to be stamped by a professional engineer, except survey plan which is to be stamped by a registered surveyor.

- **All relevant plans requiring a PE stamp and Surveyor stamp have been provided.**

7. Applicant shall install a concrete sidewalk with granite curb on Arbor St. Back of sidewalk shall be placed on the road right of way.

- **New curbing and concrete sidewalk have been provided. Refer to response to Bruce Hyman’s comment 3.) above.**

8. All four corners of this block, Forest at Arbor and Poland Street and Stevens Ave at Poland and Arbor St. shall be constructed with sidewalk ramps that are ADA compliant. All four crosswalks to the adjacent corners shall be painted with block style markings. The applicant shall submit details on how each corner is to be constructed with ramps and warning panels.

- **The site plans and Plan Sheet L2.1, detail enlargements have been revised to address comments, including those of Bruce Hyman. Refer to response to comment 1.), Bruce Hyman's review comments above.**

9. The applicant shall explain how snow removal will be handled. With the absents of snow storage shown on the plans, it is understood that the applicant intends to have snow removed from the site. Is that correct?

- **That is correct, see plan sheet L1.1 for note regarding snow removal.**

David Senus, Woodard & Curran /Civil Engineering on 12/10/2014

1) In accordance with Section 14-527, sub-section (f) of the City of Portland Land Use Ordinance, final site plans must be stamped by a professional engineer; at this time, only the Grading Plan, Stormwater Plans and one detail sheet have been tamped by a professional engineer. The applicant should work with the City Planning Office to identify the specific plans that will be required to be stamped by a professional engineer.

- **All relevant plans have been stamped by a PE**

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 Maine DEP Chapter 500 Stormwater Management Rules, including conformance with the Basic, General, and flooding Standards:

a) Basic Standards: The applicant has provided plans, notes, and details 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, several items were identified in our review that should be addressed prior to approval, specifically:

i) The Erosion and Sediment Control Plan (L3.2) should identify a stabilized construction entrance at each location where trucks/equipment may enter or exit the site; this should be coordinated with the entrances noted on the Construction Management Plan (L1.1)

- **The Erosion and Sediment Control Plan has been revised to correspond with the Construction Management Plan (L1.1)**

ii) The Erosion and Sediment Control Plan (L3.2) should identify additional inlet sediment control devices on existing catch basins that are adjacent to the construction on the south side and east side of the site, specifically CB's 3,4,5, 10.

- **The Erosion and Sediment Control Plan has been revised accordingly**

b) General Standard: The project will result in a net decrease in impervious area of approximately 0.17 acres. As such, the project is not required to include any specific Stormwater management features for Stormwater quality control; however, the applicant has proposed an infiltration system for possible credit reductions on the

City's potential future Stormwater user fee. The design of the infiltration system is considered an acceptable approach for meeting the General Standards for 1.75 acres of the site, pending addressing comments contained herein.

- **No response required.**

c) Flooding Standard: The project will result in a net decrease in impervious area of approximately 0.17 acres. As such, the project is not required to include any specific stormwater management features to control the rate of stormwater runoff from the site. The proposed Stormwater peak flow rate from the site. The proposed Stormwater infiltration system will result in a net reduction of Stormwater volume and Stormwater peak flow rate from the site, as such, the project is in compliance with the Flooding Standard.

- **No response required.**

3) Within the Stormwater Management Report, the Applicant has noted that the infiltration system will require inspection by a Certified Soil Scientist to ensure that all infiltration surfaces are below a cemented restrictive layer. This requirement is also specifically noted on the grading and drainage plan (L3.0). Copies of the field inspection reports generated by the Soil Scientist during installation of the systems should be retained by the Applicant, as these may be required when requesting a credit from a potential future Stormwater user fee.

- **Field reports will be retained by the applicant and also provided to the city upon completion of the project.**

4) Sheet L6.2- The Site Details plan included a Snout for installation on "garage" drainage structures. Because the site catch basins will essentially provide "pre-

treatment” t the infiltration dry wells, all catch basins on the site should include a Snout on the outlet pipe. This should be specifically called out on the Precast Concrete Catch Basin detail, and the title of the Snout detail should be revised to remove the wording”(at garage drainage structures)”.

- **Detail plan sheet L6.2 has been revised accordingly**

5) The applicant has noted that a Permit-By-Rule / Notice of Intent to comply with the Maine General Construction Permit will be submitted to the MaineDEP in advance of construction; a copy should be forwarded to the City (when it is submitted) for the project record.

- **A copy of the PBR will be provided to the City upon submission to MaineDEP.**

6) Per Section 13 of the City’s Technical Manual, the Applicant is required to submit a Boundary Survey that has been Stamped by a Maine Licensed Surveyor; at this time, the applicant has submitted an existing conditions plan and has noted that a certified tamped plan will be submitted under separate cover. A stamped boundary plan should be provided prior to approval.

- **A stamped Boundary Plan was previously submitted under separate cover and has been reviewed by William Clark, Public Services. The survey plan has been revised according to comments, with exceptions as noted. See responses to William Clarks’ comments below.**

7) The applicant has noted that an “ability to serve” letter from Portland Water District has been provided; however, it does not appear that it has been submitted at this time. The applicant should clarify or forward all correspondence with applicable utilities.

- **See attached Portland Water District Ability to Serve letter, dated January 5, 2015.**

8) The Applicant has submitted a City of Portland Wastewater Capacity Application as part of the Site Plan Application and is awaiting a letter from DPS regarding ability to serve sanitary sewer; the Applicant should forward any correspondence received from DPS regarding ability to serve the project’s sewer flow upon receipt.

- **A copy of the letter from DPS is attached**

9) The Applicant should provide a detail for the pavement repair in Arbor Street in accordance with the City of Portland Technical Manual.

- **The detail was shown as detail 7/L6.0, detail taken from the Technical Manual.**

Tom Errico; Comments raised during applicant and staff meeting 12-17-2014

1. Request to provide additional documentation to support request for waiver to permit 3 full access curb cuts; Stevens Avenue, Arbor Street and Forest Avenue.

2. Provide alternative studies showing closure of Arbor Street and Stevens Avenue curb cuts to identify circulation, including emergency vehicle, and parking configuration. Address buffering of parking along street frontage.

3. Provide alternative design of emergency vehicle (one way) access to diminish appearance as a curb cut.

- **We have revised the design of the emergency vehicle entry/curb cut by introducing a slightly raised (2 inches) concrete apron with a scoring pattern to help diminish the appearance of a vehicular entry. New granite curb along the street edge with a 1 inch reveal and new concrete sidewalk will provide further delineation.**

William Clark 12/17/2014

1. There are no property corners to set and no State Plane Coordinates shown.

- ***The plan has been revised to show the State Plane Coordinates and set new pins where feasible. The corner of Stevens Ave and Arbor St has a drill hole set in the concrete sidewalk and the corner of Forest and Arbor Street has a nail set in the concrete sidewalk. These two corners will be modified to meet ADA crosswalk ramp improvements. Final monumentation will occur after completion of improvements.***

2. There is a bearing and distance for a line 54.40' long between CBL 146 CO13 and CBL 146 COO8. Confusing.

- **The bearing and distance reference has been removed.**

3. It appears that the sidewalks along Arbor Street and Forest Avenue may slightly encroach on the property. Would Planning try to obtain sidewalk easements as part of the review process?

- **There is no formal sidewalk on the south side of Arbor Street. New sidewalk and ADA Crosswalk ramps will be provided and there will be easements provided for areas where there is an encroachment on to private property.**

4. I noted a few questions in regard to storm drains on the Poland Street end of the property, how they connect, and connect with the city infrastructure. I make these notations as we are making every effort to map private storm drains and sewers on private property. If there is ever a gas or chemical spill in the future first responders can react to seal off storm drains or sanitary sewers to prevent it reaching the PWD Treatment Plant or Casco Bay.

- **The plans have been updated to address several of these questions showing where the private storm drain is located (included is a revised plan). There is one section that will need to be added to the plan that shows where a 15 inch drain line runs along the Poland Street side of the property. There is a buried CB/MH structure at the terminus of the 12 inch line that runs from the CB directly in front of the existing main entry. Plans prepared by Landuse Consultants for the previous addition have been obtained that show the layout. A subsequent revised plan will be submitted under separate cover that shows the missing information.**

5. A few structures in Forest Avenue are marked "Could Not Open". We can provide assistance if access is needed.

- **Public Services assisted with removing these covers and the invert information was obtained and added to the plan.**
- Final determination of waste management has not been made, updated documentation will be provided under separate cover. As of this submission, the plan reflects the use of a pulper/compactor unit.

Tom Errico Notes from Staff Meeting 12/17/2014

(The following comments are based on notes taken by Mitchell & Associates during meeting with staff.)

1. The design of the emergency vehicle access drive (adjacent to Poland Street) should be designed to diminish the appearance as a drive/curb cut.

- **The emergency vehicle access drive has been revised. The portion of the drive between the public sidewalk and the interior circulation drive has been changed to concrete with a scoring pattern. The area is slightly raised with tapered edges at the interface with the public sidewalk and interior bituminous drive.**

2. Has the applicant met with METRO to discuss the bus stop location and if this has been identified as a location for a bus shelter.

- **Mitchell & Associates has a meeting scheduled for January 9, 2015 to meet with Glenn Fenton, Transportation Officer to discuss the relocation of the stop and bus shelter requirements.**

3. The applicant should provide additional documentation supporting the need for the third full function curb cut. In addition, the applicant should evaluate options to retain either the Stevens Avenue or Arbor Street curb cuts.

- **The applicants desire to maintain the three fully active curb cuts, Stevens Avenue, Arbor Street and Forest Avenue is based upon function of the facility, safety of residents and visitors, and emergency vehicle access. We have prepared additional documentation in support of this position. Refer to attached documentation.**
- **In addition, we have evaluated the design issues associated with closing either the Stevens Avenue or Arbor Street curb cuts. As indicated above, the applicant has documented the need to have the three curb-cuts and would prefer to meet with staff to review these options at a date to be determined by staff.**

Subdivision Recording Plat

We met with Jennifer Thompson to discuss the requirements for the recording plat. The existing Park Danforth is a condominium form of ownership. At this time the ownership makeup including the new addition has not been determined. The following

is the current ownership of the existing condominium (only includes the existing Park Danforth) and non-condominium ownership of recently acquired parcels.

1. 777 Stevens Avenue (current facility) is a three unit condominium; two units are owned by Home for the Aged and the other is owned by HFA HUD Properties, LLC (HFA HUD Properties, LLC is wholly owned by Home for the Aged).
2. The Goodwill parcel is owned by HFA Forest Avenue Properties, LLC (wholly owned by Home for the Aged). Map 146 – C- lots 6,9,11,12,14
3. The Arbor Street and Stevens Avenue (residential) parcels or owned by Home for the Aged. Map 146-C-lots 8-7

A draft of the recording plat has been submitted for review. We understand that we will need to add waiver and conditions of approval to the plan.

The following are updated comments to our previous letter dated November 25, 2014. Updated responses are in bold text.

4. Site Design Standards (previous comments)

a. *Snow and Ice Loading*

- As stated previously, there is limited snow storage available on-site with no designated storage area. Snow from small storms will be plowed to the edge of parking lots onto the grassed areas. Storm events exceeding 3 inches will require snow removal. **The applicant currently contracts for snow removal, when necessary. Given that the need for snow removal will potentially be more extensive, the applicant intends to bid the work and request that, as a condition of approval, an executed contract be provided prior to Certificate of Occupancy.**

b. *Exterior Lighting*

- **The lighting photometric plan has been completed for all of the site pole mounted lighting to address the city lighting requirements. At this time, building mounted fixtures have not been selected and photometric plan will need to be updated once selected. The plan as submitted addresses the perimeter conditions. There are several areas where we exceed the .01 FC level, however these occur on public sidewalk and at the emergency egress drive. We believe these modest**

increase help to provide for a safer walking condition for the neighborhood residents and the UNE Students.

c. *Noise and Vibration*

- Final selection of the mechanical equipment has not been made at this time. All equipment shall meet the city noise standards. We are requesting at this time to have submission of the required documentation be considered as a condition of approval with review by staff. **These components are still being evaluated and information for units as well as any identified sound proofing, if necessary, or screening will be provided before issuance of a building permit.**

d. *Signage and Wayfinding*

- Presently The Park Danforth is updating its branding that includes signage. We have shown several sign locations, however the final plan is subject to change. A sign plan indicating locations will be submitted under separate cover. **The applicant is requesting that the signage plan be a condition of approval to allow adequate time to develop their new signage.**

C. **Subdivision**

- No comment required for items 1 through 5.

6. *Easements*

- An easement agreement with CMP will be provided as a condition of approval. The applicant is presently working with CMP on the design of the new service and will establish the required easement on the subdivision plat prior to signing by the planning board. In addition, pedestrian easements will be granted to the city where public sidewalk occurs on private property. The existing conditions plan is the boundary survey for the entire property. A certified stamped plan will be submitted under separate cover.
- **Easements for pedestrian sidewalk improvements on private property will be provided and shown on the subdivision plat.**

7. *Comprehensive Plan*

- No response required

8. *Financial Capability*

- No response required

IX. Housing Preservation and Replacement (Section 14-483)

- The applicant understands the requirements concerning the housing replacement and performance guarantee.

Waste Management

The applicant at this time has selected to continue to address trash removal as presently handled.

Solid Waste Disposal

- Presently solid waste and recycling are accommodated in 2 YD and 6 CY dumpster units. Solid waste generated by residents of the existing facility is collected inside the building via trash shoot and compactor that empties into an internal 2 YD unit at ground floor. This unit is wheeled out side when full for pick up.
- Trash generated by the general operation of the facility is deposited in the 6 CY unit.
- Recycling is collected by maintenance personal and deposited into a 6 CY dumpster unit. There are 2 dumpster units for trash, one is stored outside along with the recycling unit.
- Presently solid waste is collected three times per week and recycling is collected once per week.
- The proposed expansion will have an internal trash shoot and compactor in an internal trash room located in the garage. Recycling will be collected by maintenance personnel the same as the existing facility. Trash will be wheeled out to the service entry for collection. The schedule for trash pickup may be increased to 4 times per week.

Architectural Responses to staff and Planning Board Comments

- An updated narrative and 3D modeling renderings will be submitted under separate cover.

Enclosed for your review are the following:

- Revised Waiver Request
- Supplemental Documentation Concerning Curb-cut Waiver Request
- Sight Distance Exhibit D
- Sanitary serviceability letter from DPS
- Portland Water District Ability to Serve letter
- Architecture, 3D Renderings (To be submitted under separate cover)
- Architecture Narrative (To be submitted under separate cover)
- Site Lighting Cut Sheets
- Retaining Wall cut sheet
- Revised Plan Set Sheets L1.0 – L7.0
- Revised Boundary and Topographic Survey
- Draft of Subdivision Plat Sheet 1 of 1

Should you or staff have any questions, please do not hesitate to contact me.

Sincerely,
Mitchell & Associates

A handwritten signature in black ink, appearing to read "R. Metcalf", written over a horizontal line.

Robert B. Metcalf, Principal
Maine Licensed Landscape Architect

cc: Denise Vachon
Ron Norton
Les Berry

WAIVER REQUESTS

Dated November 25, 2014

Revised January 5, 2015

The following revised waiver request are sought based on staff review, revisions in Bold:

1. **Driveway Location (Technical Design Manual 1.7.2.7)** Forest Avenue is a 30 mph road. The minimum spacing requirement for curb cuts in this location is 125 feet. The existing driveway for The Park Danforth is approximately 70 feet from the intersection of Read Street and Forest Avenue. The applicant is requesting a waiver from this requirement. This is an existing driveway location providing access to the service area and parking. The applicant has modified the driveway geometry to control right turn in and out movements adding ingress and egress lanes separated by a raised pedestrian mountable concrete median. The drive will be posted right turn out.
2. **Number of Driveways (Technical Design Manual 1.7.2.8)** No more than two (2) ingress & egress driveways are permitted for commercial developments. The applicant is requesting a waiver to allow four driveways to be retained to serve the property which is an entire city block. The existing city block has seven (7) driveways serving the uses with three (3) along Stevens Avenue, three on Arbor Street, one (1) previously eliminated with the removal of a two-family residence in 2013, and two (2) on Forest Avenue. **Refer to attached supplemental information.**

The applicant is reducing the amount of curb cuts on this block to four (4). Three of the proposed entrance drives (Stevens Avenue, Arbor Street and Forest Avenue) will be for daily use while, at the request of the Portland Fire Department, one of the curb cuts will be for emergency vehicle access only, two sided signs will be posted as emergency vehicle access only on either side of the driveway. This was a request made by the Portland Fire Department during review of site circulation and current EMS history for The Park Danforth.

The middle Stevens Avenue curb cut has been relocated to align with the new main entry and the two (2) current curb openings will be closed. This driveway will be posted as right-turn in, right- turn out only.

The Arbor Street driveway aligns with the new building entry and is located where the former two-family residence was located. This drive location provides for safer access to and from the property with access to Stevens and Forest Avenue. The existing driveway to the Park Danforth service area has modified to improve delivery vehicle access including the geometry and will be posted as right-turn in, right-turn out.

The four (4) curb cuts will allow easier movement within the site, maintain access into an existing service area, and accommodate full accessibility for emergency vehicles.

3. Drive Aisle Width

The applicant is requesting to reduce the width of the following travel aisles:

- The proposed right turn in and out entry from Stevens Avenue is 20 feet wide and is permitted under the Technical Design Standards. We understand that 24 is the desired width, however we believe the 20 foot width is adequate for the intend egress and meets safety requirements.
- The proposed travel aisle along the Arbor Street frontage is proposed as 22 feet wide. We are requesting the two foot reduction to minimize pavement and allow for a wider buffer planting area in front of the parking along Arbor Street. The travel aisle has single loaded parking on the north side and a 5 FT sidewalk along the building or southerly side of the aisle. This area is adequate to accommodate for vehicles to pass as well as to maneuver the parking spaces. The parking along this section of drive will have a minimal turnover of parking.
- The proposed travel aisle along the Forest Avenue side of the new building is proposed as a 20 FT width. There is limited parallel parking and will not require vehicles backing out into the travel way. There is adequate room for vehicles to pass. The fire department requires a minimum of 20 FT to provide adequate room for emergency vehicle circulation. We reviewed the plans with the fire department and they were supportive of the layout. The narrow width also provide s for less pavement and a greater area for buffer planting along Forest Avenue.

4. Utility Pole Location

The applicant is requesting a waiver to permit the installation of a new utility pole on-site to be located north of the Forest Avenue service entry. There is not adequate space for additional riser conduit on the existing utility pole on Forest

Avenue where power and communication services are to be extended from. In order to provide underground utility service the new pole is required. All new services would be installed underground from this location to feed the transformer and communication pedestals.

Temporary Waiver Request

The applicant requests the following temporary waivers:

1. Lighting Photometric Plan. We are currently working on selection of energy efficient fixtures for the site and building are in the process of having photometric plans prepared to address city lighting standards. We request the ability to provide this at a later time. **Photometric plan for site pole mounted fixtures submitted. Building mounted fixtures have not been selected and we request as a condition of approval that the final photometric plan be submitted before issuance of a building permit.**
2. Sign Plan. The Sign Plan will be in conformance with city zoning. Presently The Park Danforth is undertaking a new branding update that will include signage needs. We request the ability to provide this at a later time for staff review
3. Waste Stream Management: Currently, The Park Danforth is in the process of evaluating the management to accommodate the waste stream in an effort to eliminate the current dumpster service. We request the ability to provide this at a later date. **Documentation submitted 01/06/2015**
4. Manufacturers' Verification of Mechanical Systems, HVAC, Emergency Generators, etc.: Emergency generator will now be located in a mechanical room below the east side terrace adjacent to the garage, HVAC equipment will be mounted on the roof. Sizing and selection of equipment is currently being developed. Appropriate documentation will be submitted for staff review. We request the ability to provide at a later date.

Waiver Request Supplemental Information 01/06/2015;

The following documentation is in response to discussions with the planning staff on 12/17/2014 concerning the waiver request for number of curb-cuts being proposed.

Number of Driveways (Technical Design Manual 1.7.2.8) No more than two (2) ingress & egress driveways are permitted for commercial developments. The applicant is requesting a waiver to allow four driveways to be retained to serve the property which is an entire city block. The existing city block has seven (7) driveways serving the uses with three (3) along Stevens Avenue, three on Arbor Street, one (1) previously eliminated with the removal of a two-family residence in 2013, and two (2) on Forest Avenue.

We have prepared the following additional documentation in support of the waiver request for more than two curb-cuts to serve The Park Danforth. Based on discussions with staff, the issue comes down to the Stevens Avenue and Arbor Street curb-cuts. The Stevens Avenue designated emergency vehicle access and the Forest Avenue service/resident access curb-cut have been addressed. Documentation includes Exhibit D identifying sight distance conditions.

- Given the high traffic volume along Stevens Avenue and the high demand for on-street parking, sight distance, obstructions and driver reaction time are significant factors to be considered. Avoiding left turns as much as possible is one fact that has been identified for senior drivers and that is why we have proposed the Stevens Avenue curb-cut as a right turn in and right turn out.
- Maintaining the Stevens Avenue curb-cut is important to The Park Danforth to provide continued access for current residents living in the existing facility as well as for emergency vehicle access to and from the site. The current main entry will continue to be the resident access as well as emergency/rescue access to the main building elevator core.
- Ability to exit the site is important and closure of the Stevens Avenue curb-cut would require navigating through the parking lot to exit to Arbor Street. The turning movement for emergency vehicles, specifically larger pieces of fire equipment, will be difficult, time consuming and require significant site modifications and loss of parking.
- In addition, Stevens Avenue is the frontage for The Park Danforth and the relocated Stevens Avenue entry aligns with the new main public entry connector between the existing facility and new addition. This curb-cut also provides direct access to the existing parking and main entry for current residents as well.

- The Arbor Street curb-cut offers a safer means of access for residents of the new wing, visitors and vendors via a quieter street and allows better unobstructed sight lines, due to on-street parking, for turning movements to and from both Stevens and Forest Avenues.
- The alignment of the drive also directs visitors to the new main entry as well as providing access for emergency vehicle/rescue to the elevator core at the connector to the new building as well as at the midpoint of the new addition closer to Forest Avenue.
- Another factor for consideration is the reduced number of turning movements being generated by the entire block area with the redevelopment to senior housing and elimination of the commercial use (Goodwill Industries).
- Currently there are a total of twenty (20) turning movements from the site with the existing curb-cuts serving the property, the proposed layout reduces the total number of turning movements to eight (8).

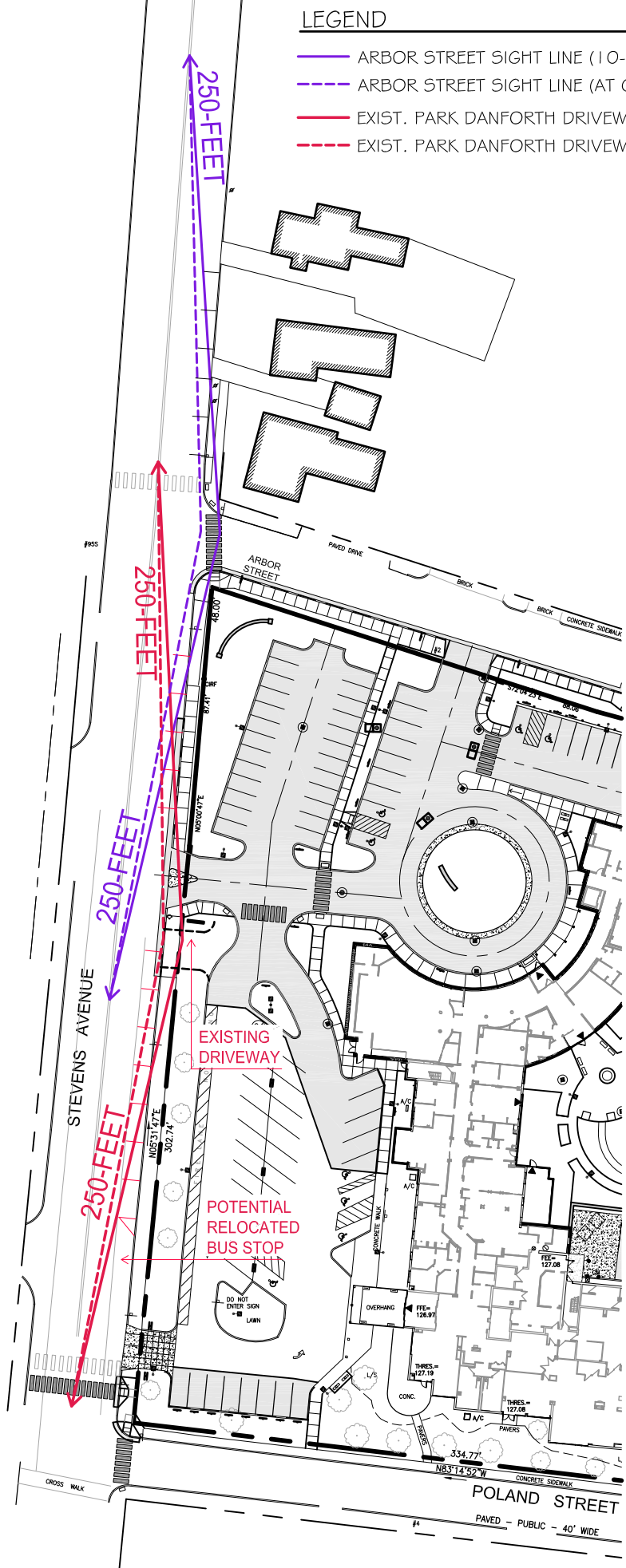
Existing

- One way in Stevens Ave (Poland Street) to main entry – (2) movements
- One way out Stevens Ave (center curb-cut) - (2) movements
- Full access curb-cut Stevens Ave to Goodwill - (4) movements
- Full access curb-cut Arbor Street to Goodwill - (4) movement
- Full access curb-cut Forest Ave to Goodwill - (4) movements
- Full access curb-cut Forest Ave to Park Danforth - (4) movements

Proposed

- Right turn in right turn out Stevens Ave - (2) movements
- Full access curb-cut Arbor Street - (4) movements
- Right turn in right turn out Forest Ave - (2) movements
- The level of activity from this property will have little impact upon the existing street system and in-fact, as proposed/ designed, will provide for a safer means of egress to and from the entire property.
- We have prepared a sight distance exhibit D that shows the current sight distance conditions along Stevens Avenue from Arbor Street and from the existing exit drive from The Park Danforth, that is just south of the proposed relocation. As you can see, the sight distance from the Arbor Street intersection provides greater unobstructed visibility of traffic along Stevens Avenue in both directions.

- The location of the existing curb-cut, that is just south of the proposed curb-cut has a sight line that is more obstructed due to on-street parking and that is why we propose that drive to be a right turn in and out designation.
- While we understand the principal of having limited curb cuts for a given use, this property is unique in that it is an entire city block and is one use strictly for senior living. That said the applicant understands their residents needs and level of function that supports the need to have these locations for safe access to and from the property and request your consideration of this waiver request.



- LEGEND**
- ARBOR STREET SIGHT LINE (10-FOET BEHIND CURB LINE)
 - - - ARBOR STREET SIGHT LINE (AT CURB LINE)
 - EXIST. PARK DANFORTH DRIVEWAY SIGHT LINE (10-FOET BEHIND CURB)
 - - - EXIST. PARK DANFORTH DRIVEWAY SIGHT LINE (AT CURB LINE)

ARBOR STREET PHOTOGRAPHS



ARBOR STREET: LOOKING SOUTH AT STOP SIGN
(10-FOET BEHIND CURB LINE)



ARBOR STREET: LOOKING NORTH AT STOP SIGN
(10-FOET BEHIND CURB LINE)



ARBOR STREET: LOOKING SOUTH - CAR AT CURBLINE

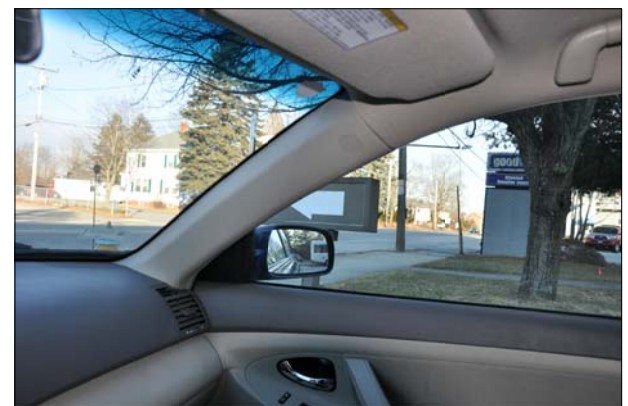


ARBOR STREET: LOOKING NORTH - CAR AT CURBLINE

EXISTING PARK DANFORTH DRIVE PHOTOGRAPHS (APPROXIMATELY 35-FOET SOUTH OF PORPOSED DRIVE)



LOOKING SOUTH AT EDGE OF SIDEWALK



LOOKING NORTH AT EDGE OF SIDEWALK

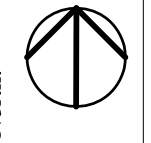


LOOKING SOUTH AT EDGE OF CURB



LOOKING NORTH AT EDGE OF CURB

EXHIBIT
D



Title: STEVENS AVENUE SIGHT DISTANCE EXHIBIT
Date: JANUARY 5, 2015
Scale: 1" = 80'
Project: THE PARK DANFORTH, 777 STEVENS AVENUE, PORTLAND, ME

Mitchell & Associates
LANDSCAPE ARCHITECTS
70 Center Street
Portland, Maine 04101
P: 207.774.4427
F: 207.874-2460



Michael J. Bobinsky
Director of Public Services

9 December 2014

Ms. Sashie Misner, Maine Licensed Landscape Architect,
Mitchell & Associates,
70 Center Street,
Portland, Maine 04101

RE: The Capacity to Handle Wastewater Flows, from Fifty-Four Proposed Independent Living Apartment Units, at The Park Danforth, 777 Stevens Avenue.

Dear Ms. Misner:

The existing ten-inch diameter, vitrified clay, sewer pipe, located in Arbor Street, 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 **2,524 GPD**, from this proposed project.

Anticipated Wastewater Flows from the Proposed Efficiency Units:

54 Proposed Independent Living Units @ 60 gpd per Unit	= 3,240 GPD
Less Acquired Properties Wastewater Flows, in gpd (see reverse side)	= <u>(716 GPD)</u>
Total Net Increase in Proposed Wastewater Flows for this Project	= 2,524 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

Frank J. Brancely, B.A., M.A.
Senior Engineering Technician

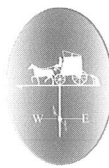
FJB

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
Shukria Wiar, Planner, Department of Planning, and Urban Development, City of Portland
David Margolis-Pineo, Deputy City Engineer, 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
Harold Downs, Senior Wastewater Technician, City of Portland

C:\Frank's\Capacity Letters\Stevens Avenue 777

Acquired Properties Wastewater Flows, in GPD

789 Stevens Avenue	= 70 GPD
24 Arbor Avenue	= 112 GPD
20 Arbor Avenue	= 328 GPD
1104 Forest Avenue	= 8 GPD
1108 Forest Avenue	= <u>198 GPD</u>
Total Acquired Properties Wastewater Flows, in gpd, for this Project = 716 GPD	



Portland Water District

FROM SEBAGO LAKE TO CASCO BAY

January 5, 2015

Mitchell & Associates
The Staples School
70 Center Street
Portland, ME 04101

Attn: Sashie Misner
Re: The Park Danforth 777 Stevens Avenue Portland, ME
Ability to Serve with PWD Water

Dear Ms. Misner:

The Portland Water District has received your request for an Ability to Serve Determination for the noted site submitted on September 29, 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 is 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 currently have existing water services. 4-inch and two 6" diameter ductile iron water service lines for 777 Stevens Avenue off Poland Street, a 1" copper service line for 22 Arbor Street, a 3/4" copper service line for 789 Stevens Avenue and a 2" copper service line for 1104 Forest Avenue 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 a 12-inch diameter cast iron water main on the northerly side of Arbor 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: Stevens Avenue at #777
Hydrant Number: POD-HYD01292
Last Tested: 3/19/1993
Static Pressure: 63 psi
Residual Pressure: ##
Flow: #,### GPM

PO - 777 Stevens Avenue - Ability to Serve Determination - December 2014



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.

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 out of date or 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

The existing services at this site may be used by the proposed development as long as the project team determines that they will provide adequate flow and pressure for the proposed use. If any of the existing services will no longer be used as a result of the development then they must be retired per PWD standards. This includes shutting the corporation valve and cutting the pipe from the water main for services 2-inch in diameter or less and removing the 6-inch gate valve and capping the tapping sleeve for services greater than 2".

Your site plan also shows a new service line serving the new building off Arbor Street. If this service is to provide both domestic and fire service, please be aware that two separate services will be required.

As your project progresses, we advise that you submit any preliminary design plans to the MEANS group 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. 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

Type:
Project Name:
Notes:

Turtle Friendly

rev. 06.16.2014

VIPER - SMALL (LED)

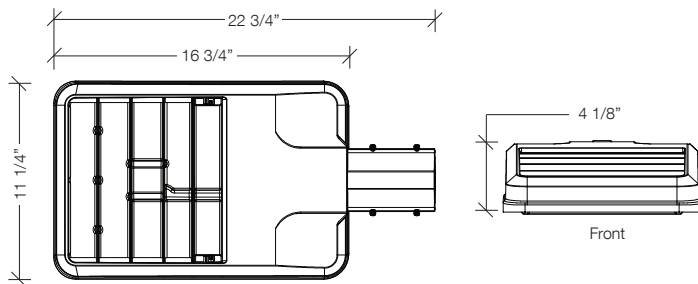
Small Viper Luminaire

Max Weight: 15.0 lbs

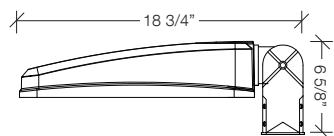
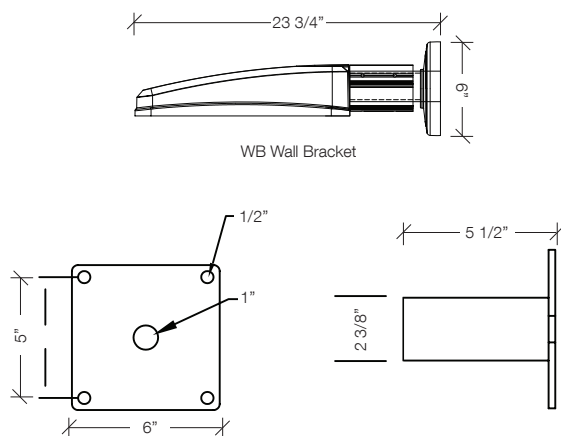
Max EPA: 0.67 sq ft

Sample	VP-S	22E-29	AMB	T5R	180	UNV	PCR-TL	RA	BBT
Ordering									
	A	B	C	D	E	F	G	H	I

DETAILS



MOUNTING OPTIONS



PK2 2-3/8" Adjustable Knuckle



SF2 2-3/8" OD Slip Fitter



RA Rectangular Arm

A. MODEL

VP-S Viper - Small

B. ENGINE-WATTS

22E-29 29 Watts - LED array

30E-40 40 Watts - LED array

C. LED CHIP WAVELENGTH

AMB amber 590nm (std.)

D. OPTICS

T2 type II

T3 type III

T4 type IV

T5R type V, rectangular

T5QM type V, square medium

T5W type V, round wide

E. SHIELDING

90 90° shield

180 180° shield

270 270° shield

F. VOLTAGE

UNV 120-277V

347V 347V

480V 480V

G. ELECTRICAL OPTIONS

PCR-TL photocell, twist-lock

PCR-SC photocell, shorting cap

2PF dual power feed^{1,2}

H. MOUNTING OPTIONS

RA rectangular arm

SF2 2 3/8" OD slip-fitter

PK2 2 3/8" adjustable knuckle

WB wall bracket

I. COLOR

BBT basic black textured

BMT black matte textured

WHT white textured

MBT metallic bronze textured

BZT bronze textured

DBT dark bronze textured

GYS gray smooth

DPS dark platinum smooth

GNT green textured

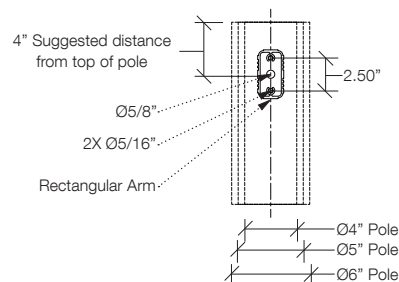
MST metallic silver textured

MTT metallic titanium textured

OWI old world iron

RAL _____

DRILL PATTERN



¹ not available on 64NB-135

² not available @ 347V or 480V input

**VIPER - SMALL (LED)**

Small Viper Luminaire

Max Weight: 15.0 lbs**Max EPA:** 0.67 sq ft

General: The Beacon Viper luminaire is available in two sizes with a wide choice of different LED Wattage configurations and optical distributions designed to replace HID lighting up to 1000W MH or HPS and with 5 different mounting options for application in a wide variety of new and existing installations. Luminaires are suitable for wet locations.

Bezel Optic System: Each Viper luminaire is supplied with an one piece optical cartridge system consisting of an LED engine, LED lamps, optics, gasket and stainless steel bezel. The cartridge is held together with internal brass standoffs soldered to the board so that it can be field replaced as a one piece optical system. Two-piece silicone and micro-cellular polyurethane foam gasket ensures a weather-proof seal around each individual LED.

The optical cartridge is secured to the die cast housing with fasteners. The optics are held in place without the use of adhesives. The cartridge assembly is available in various lighting distributions using TIR designed acrylic optical lenses over each LED.

Lifesield™ Circuit: Thermal circuit shall protect the luminaire from excessive temperature by interfacing with the 0-10V dimmable drivers to reduce drive current as necessary. The factory-preset temperature limits shall be designed to ensure maximum hours of operation to assure L70 rated lumen maintenance. The device shall activate at a specific, factory-preset temperature, and progressively reduce power over a finite temperature range.

A luminaire equipped with the device may be reliably operated in any ambient temperature up to 55°C (131°F). The thermal circuit will allow higher maximum Wattages than would be permissible on an unregulated luminaire (if some variation in light output is permissible), without risk of premature LED failure or lumen depreciation. Operation shall be smooth and undetectable to the eye. Thermal circuit shall directly measure the temperature at the LED solder point. Thermal circuit shall consist of surface mounted components mounted on the LED engine (printed circuit board). For maximum simplicity and reliability, the device shall have no dedicated enclosure, circuit board, wiring harness, gaskets, or hardware. Device shall have no moving parts, and shall operate entirely at low voltage. The device shall be located in an area of the luminaire that is protected from the elements. Thermal circuit shall be designed to "fail on", allowing the luminaire to revert to full power in the event of an interruption of its power supply, or faulty wiring connection to the drivers.

Device shall be able to co-exist with other 0-10V control devices (occupancy sensors, external dimmers, etc.). The device will effectively control the solder point temperature as needed; otherwise it will allow the other control device(s) to function unimpeded.

Printed Circuit Board (PCB): Aluminum thermal clad board with 0.062" thick aluminum base layer, thermally conductive dielectric layer, 0.0014" thick copper circuit layer circuit layer designed with copper pours to minimize thermal impedance across dielectric. Board will be mounted to the heat sink using minimum 12 #4-40 screws to ensure contact with thermal pad and heat sink. Use of thermal grease will not be allowed.

Housing and LED Thermal Management: The Viper' monolithic housing design creates over 4.5 square feet (small Viper) or 7.7 square feet (large Viper) of heat-sinking surface area. Vertical fins, combined with flow-thru openings prevent sediment and moisture buildup on critical heat sinking surfaces without the need for grates, screens or other debris control tactics. The Viper housing, electrical compartment and fitter are made from die cast aluminum that is pre-treated and powder-coated to meet the most rugged industry standards. The finish is corrosion resistant to meet ASTM-B-117, resists cracking or loss of adhesion per ASTM D522, resists surface impacts of up to 160 inch-pound. All external hardware is corrosion resistant. The housing serves as a heat-sink for the LED bezel with a separate compartment for the drivers.

Electrical Assembly: The fixture electrical compartment shall contain all LED driver components and shall be provided with a push-button terminal block for AC power connections. The housing is designed for an optional twist lock photo control receptacle.

Accessibility: Although the Viper luminaire is designed to operate for many years without maintenance, accessibility is a key component in its design. The Drivers are mounted on a removable door that is secured with keyslotted screws and hinges down for convenient access. The drivers are field replaceable using quick disconnects.

Drivers: Luminaires are equipped with an LED driver that accepts 100V through 277V, 50 Hz to 60 Hz (UNIV), or a driver that accepts 347V or 480V input. Power factor is .92 at full load. All electrical components are rated at 50,000 hours at full load and 25°C ambient conditions per MIL- 217F Notice 2. Dimming drivers are standard, with connections for external dimming equipment available upon request. Component-to-component wiring within the luminaire may carry no more than 80% of rated load and is listed by UL for use at 600VAC at 50°C or higher. Plug disconnects are listed by UL for use at 600 VAC, 13A or higher. 13A rating applies to primary (AC) side only.

Surge Protector: The on-board surge protector shall be a UL recognized component for the United States and Canada and have a surge current rating of 20,000 Amps using the industry standard 8/20 pSec wave. The LSP shall have a clamping voltage of 825V and surge rating of 540J. The case shall be a high-temperature, flame resistant plastic enclosure.

Fasteners: All fasteners shall be stainless steel. When tamper resistant fasteners are required, spanner HD (snake eye) style shall be provided (special tool required, consult factory).

Operating Environment: Shall be able to operate normally in ambient temperatures from -40°C to 40°C

Finish: Finish shall be a Beacote V polyester powder-coat electro-statically applied and thermocured. Beacote V finish shall consist of a five stage iron phosphate chemical pre-treatment regimen with a polymer primer sealer, oven dry off, and top coated with a thermoset super TGIC polyester powder coat finish. The finish shall meet the AAMA 605.2 performance specification which includes passing a 3000 hour salt spray test for corrosion resistance and resists cracking or loss of adhesion per ASTM D522 and resists surface impacts of up to 160 inch-pound.

Agency Certification: The luminaire shall bear a CSA label and be marked suitable for wet locations.

Warranty: Beacon luminaires feature a 5 year limited warranty. Beacon LED luminaires with LED arrays feature a 5 year limited warranty covering the LED arrays. LED drivers are covered by a 5 year limited warranty. PIR sensors carry a 5 year limited warranty from the sensor manufacturer. See Warranty Information on www.beaconproducts.com complete details and exclusions.

Due to our continued efforts to improve our products, product specifications are subject to change without notice.

Accent Scale LED

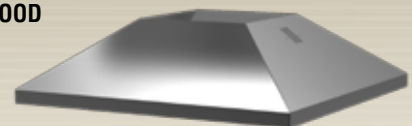
Small Housing



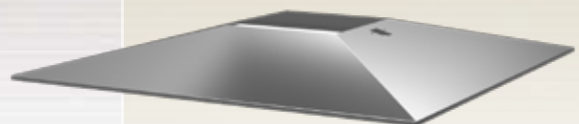
CodeLinkSM

Scan code
to download
PKWS Spec
Sheet

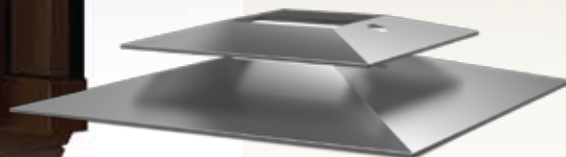
HOOD



ANG – Angled Hood



STR – Straight Hood

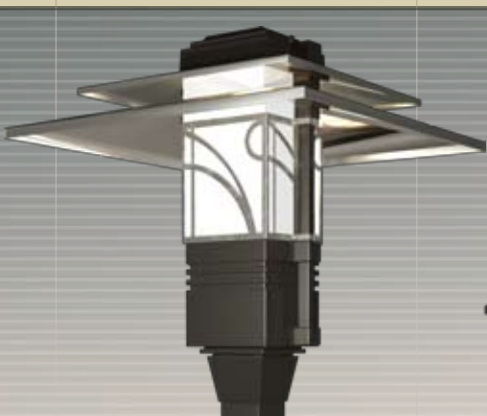


DBL – Double Hood

ORDERING EXAMPLE – ACCENT (SMALL) SCALE

1. LUMINAIRE PKWS	2. HOOD DBL	3. OPTICS GLA	4. BALLAST/DRIVER 18LED-VWW	5. DECORATIVE SCREEN DSOF	6. OPTIONS –	7. COLOR MAL	8. MOUNTING PSA-TU
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LED Solutions

Pedestrian Scale For mounting heights up to 15'		Accent Scale For mounting heights up to 10'	
Horizontal LED <i>Higher Performance</i>	Vertical LED <i>Decorative</i>	Horizontal LED <i>Higher Performance</i>	Vertical LED <i>Decorative</i>
• 71.7W MicroEmitter™ (60 LEDs) • 3281 Lumens • 46 LPW • 3500K or 5100K • Types II, III, IV, and V	• 53W LED (42 LEDS) • 2300 LUMENS • 43 LPW • 5100K • Types III and V	• 39W LED (36 LEDS) • 1961 LUMENS • 50 LPW • 3500K or 5100K • Types I, III and V	• 20.6W LED (18 LEDS) • 933 LUMENS • 45 LPW • 5100K • Types III and V
			
• Exclusive upgradeable LED technology • Replaceable MicroEmitter modules • LifeShield diode protection standard • Available with Angled Hood only	• Bright, beautiful decorative illumination • Available with all five decorative screens • Available with all three hood styles • Lightly diffused acrylic lens standard	• Direct illumination of the ground plane • Canted LEDs offer three distribution options • Available with Angled Hood only	• High aesthetic option for lower mounting heights • Available with all five decorative screens • Available with all three hood styles • Lightly diffused acrylic lens standard
AAL CodeLinkSM  PKWM LED Spec Sheet		AAL CodeLinkSM  PKWS LED Spec Sheet	

ORDERING INFORMATION

1. LUMINAIRE

PKWS Parkway Square Small
W: 14"-21" H: 21.75"-23"
WT: 34-46 lbs
EPA: 1.46-1.68

2. HOOD (Please see page 14 for hoods)

ANG – Angled Hood
STR – Straight Hood
DBL – Double Hood

3. OPTICS

HORIZONTAL LED SYSTEM
Available with ANG only
T1 IES Type 1 distribution
T3 IES Type 3 distribution
T5 IES Type 5 distribution

VERTICAL OPTICAL SYSTEM

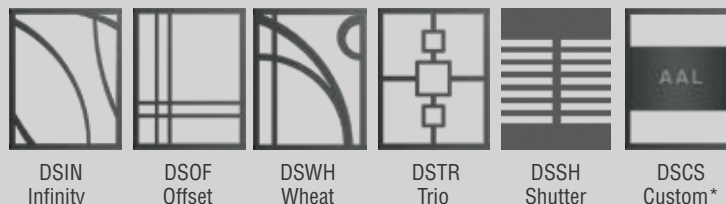
GLA Frosted Glass Diffuser

4. BALLAST/DRIVER

9LED-WW	9 light emitting diode array. Warm white (3500K). Class 2, 120 thru 277 volt. GLA only.
9LED-BW	9 light emitting diode array. Bright white (5100K). Class 2, 120 thru 277 volt. GLA only.
18LED-WW	18 light emitting diode array. Warm white (3500K). Class 2, 120 thru 277 volt. GLA only.
18LED-BW	18 light emitting diode array. Bright white (5100K). Class 2, 120 thru 277 volt. GLA only.
36LED-WW	36 light emitting diode array. Warm white (3500K). Class 1, 120 thru 277 volt. Horizontal LED only.
36LED-BW	36 light emitting diode array. Bright white (5100K). Class 1, 120 thru 277 volt. Horizontal LED only.

5. DECORATIVE SCREENS (OPTIONAL)

*Painted to match fixture. Also available in stainless steel or copper. Not available with horizontal LED system. *Contact factory for custom designs.*



6. OPTIONS

GENERAL

ULS	Upper lens shield above the hood. Reduces light above hood.
LDL	Lightly diffused lens
TEN	2 3/8" O.D. x 4" long tenon. Required for all poles, except for PS4.
TA23	Tenon adaptor slips over a 2-3/8" O.D. x 4" long tenon. Required for poles by others or used in conjunction with the TEN pole option by AAL.

HOOD

COP	Brushed copper hood
STS	Stainless steel hood

DECORATIVE SCREENS

SSP	Screen in brushed stainless steel
CPR	Screen in brushed copper

7. COLOR

All 13 standard and 4 premium AAL colors available. For RAL, please submit a 4-digit RAL number or color chip for custom colors.

8. MOUNTING

Please see page 17 for arm mounting options.

SPECIFICATIONS

HOUSING

Parkway Square housings shall be cast aluminum A356 alloy, free of any porosity, foreign materials, or cosmetic fillers. The driver shall be mounted internally and accessed by loosening four captive bolts and lifting away the lamp compartment. The lamp compartment shall be sealed with a molded silicone gasket. All lenses shall be molded, seamless high impact lighting grade acrylic. The lens shall be sealed to the housing with a molded silicone gasket on the top and bottom. The GLA element shall be frosted borosilicate glass. The vertical struts shall be cast aluminum and painted to match the fixture. All internal and external hardware shall be stainless steel. The fixture shall slip over a 3"/76mm square post top and secured with four stainless steel set screws. The hood shall be formed from 5052 H32 aluminum, 304 stainless steel or 110 copper. The underside of the hood shall be finished in a high reflectance white powder coating. Copper hoods shall be unfinished to develop a patina.

The horizontal optical system door shall be cast aluminum painted to match the fixture. The internal horizontal optical system shall be sealed from the outer housing with a silicone gasket. The tempered glass lens shall be sealed to the housing with a silicone gasket. A pair of stainless steel latches shall release the door to allow access to the optical compartment. The horizontal optical system shall be rotatable on 90° centers for orienting the light distribution. The horizontal optical system shall meet ANSI IES standards for full cutoff reflector systems when using arm in the BU or BD configuration.

ELECTRICAL

The driver shall be integral to the fixture, mounted on a prewired module with a quick disconnect plug, and shall be removable by loosening four screws. The driver shall accept 120 thru 277 volts input, with output drive current of 350mA. Standard color temperatures for LEDs shall be 3500K and 5100K. Rated luminous efficacy of luminaire shall be >40 lm/W, with rated light output of >1600 for 5100K LED.

INSTALLATION & MOUNTING

The PKWS shall be factory supplied as a complete, prewired assembly. The fixture shall slip over a 3"/76mm open top square pole and secured and leveled with 4 stainless steel set screws or arm mounted to the side 4"/100mm round or square pole.

FINISH

Fixture finish shall consist of a five stage pretreatment regimen with a polymer primer sealer, oven dry off, and top coated with a thermoset super TGIC polyester powder coat finish. The finish shall meet the AAMA 605.2 performance specification which includes passing a 3000 hour salt spray test for corrosion resistance.

CERTIFICATION

The fixture is listed with ETL for outdoor, wet location use and shall conform to UL1598 and Canadian CSA Std. C22.2 No.9. IP65 rated for horizontal configurations and IP66 rated for vertical configurations.

WARRANTY

Fixture is warranted for five years. Any unauthorized return, repair, replacement or modification of the product(s) shall void this warranty. This warranty applies only to the use of the product(s) as intended by AAL and does not cover any misapplication or misuse of said product(s), or installation in hazardous or corrosive environments. Contact AAL for complete warranty language, exceptions, and limitations.

Bollard LED



CodeLinkSM

Scan code
to download
PKWB Spec
Sheet

ORDERING EXAMPLE – BOLLARD

1. LUMINAIRE PKWB	2. HOOD ANG	3. OPTICS GLA	4. BALLAST/DRIVER 12LED-WW	5. DECORATIVE SCREEN DSOF	6. OPTIONS –	7. COLOR MAL
----------------------	----------------	------------------	-------------------------------	------------------------------	-----------------	-----------------

ORDERING INFORMATION

1. LUMINAIRE

PKWB Parkway Square Bollard
W: 14" H: 42"
WT: 42 lbs
EPA: 2.84

2. OPTICS

HORIZONTAL LED SYSTEM

T1 IES Type 1 distribution
T3 IES Type 3 distribution
T5 IES Type 5 distribution

VERTICAL OPTICAL SYSTEM

GLA Frosted Glass Diffuser

3. BALLAST/DRIVER

6LED-WW	6 light emitting diode array. Warm white (3500K). Class 2, 120 thru 277 volt. GLA only.
6LED-BW	6 light emitting diode array. Bright white (5100K). Class 2, 120 thru 277 volt. GLA only.
12LED-WW	12 light emitting diode array. Warm white (3500K). Class 2, 120 thru 277 volt. GLA only.
12LED-BW	12 light emitting diode array. Bright white (5100K). Class 2, 120 thru 277 volt. GLA only.
36LED-WW	36 light emitting diode array. Warm white (3500K). Class 1, 120 thru 277 volt. Horizontal LED only.
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4. DECORATIVE SCREENS (OPTIONAL)

*Painted to match fixture. Also available in stainless steel or copper. Not available with horizontal LED system. *Contact factory for custom designs.*



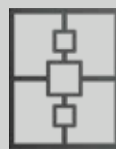
DSIN
Infinity



DSOF
Offset



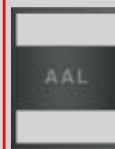
DSWH
Wheat



DSTR
Trio



DSSH
Shutter



DSCS
Custom*

5. OPTIONS

GENERAL

ULS Upper lens shield above the hood. Reduces light above hood.
LDL Lightly diffused lens

HOOD

COP Brushed copper hood
STS Stainless steel hood

DECORATIVE SCREENS

SSP Screen in brushed stainless steel
CPR Screen in brushed copper

6. COLOR

All 13 standard and 4 premium AAL colors available. For RAL, please submit a 4-digit RAL number or color chip for custom colors.

SPECIFICATIONS

HOUSING

Parkway Square housings shall be cast aluminum, A356 alloy, free of any porosity, foreign materials, or cosmetic fillers. The shaft shall be 5" wide and 22" tall, extruded 6061-T6 aluminum yielding a fixture height of 42 inches. The driver shall be mounted internally and accessed by loosening four set screws and lifting the fixture head off of the shaft and loosening an additional four bolts on the underside of the fixture head. One stainless steel screw shall release the top cap to allow access to the lamp compartment and shall be sealed with a molded silicone gasket. All lenses shall be molded, seamless high impact lighting grade acrylic. The lens shall be sealed to the housing with a molded silicone gasket on the top and bottom. The GLA element shall be frosted borosilicate glass. The vertical struts shall be cast aluminum and painted to match the fixture. All internal and external hardware shall be stainless steel. The hood shall be formed from 5052 H32 aluminum, 304 stainless steel or 110 copper. The underside of the hood shall be finished in a high reflectance white powder coating. Copper hoods shall be unfinished to develop a patina. The fixture features tamper resistant hardware.

The horizontal optical system door shall be cast aluminum painted to match the fixture. The internal horizontal optical system is sealed from the outer housing with a silicone gasket. The tempered glass lens shall be sealed to the housing with a silicone gasket. A pair of stainless steel screws shall release the door to allow access to the optical compartment. The optical assembly shall be removed by loosening four screws and lifting it out. The horizontal optical system shall be rotatable on 90° centers for orienting the light distribution.

ELECTRICAL

The driver shall be integral to the fixture, mounted on a prewired module with a quick disconnect plug, and shall be removable by loosening four screws. The driver shall accept 120 thru 277 volts input, with output drive current of 350mA. Standard color temperatures for LEDs shall be 3500K and 5100K. Rated luminous efficacy of luminaire shall be >40 lm/W, with rated light output of >1600 for 5100K LED.

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CERTIFICATION

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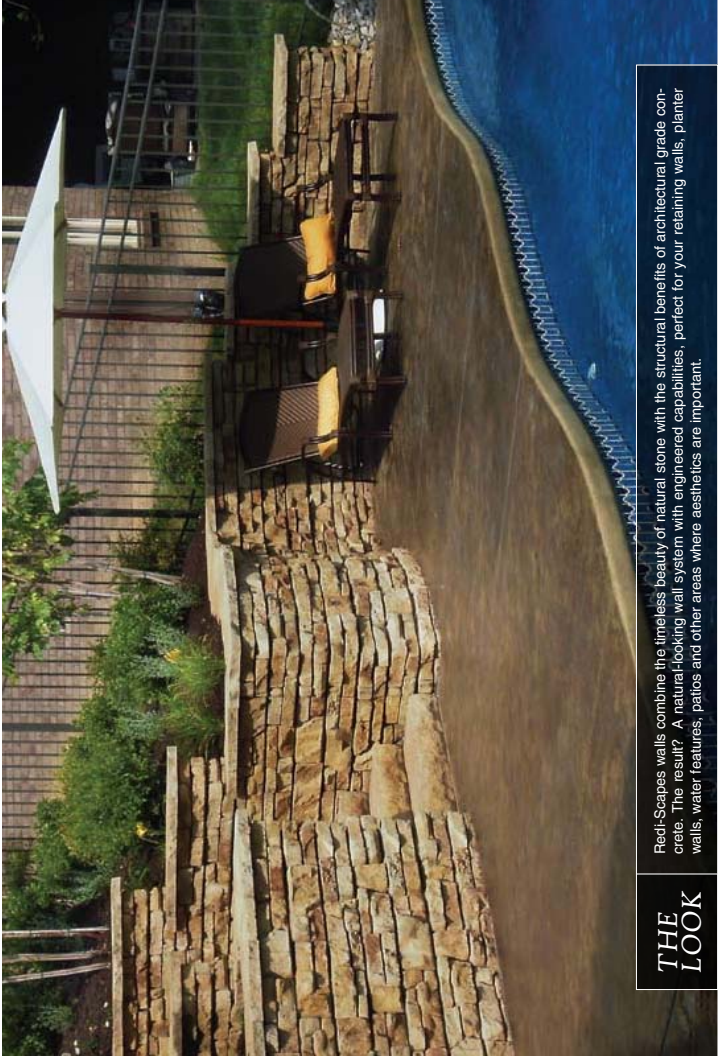
www.redi-scapes.com



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HARDSCAPING
solution

Every REDI-Scapes Distributor/Manufacturer
is independently owned and operated

a division of **REDI-ROCK** International LLC.



THE LOOK

Redi-Scapes walls combine the timeless beauty of natural stone with the structural benefits of architectural grade concrete. The result? A natural-looking wall system with engineered capabilities, perfect for your retaining walls, planter walls, water features, patios and other areas where aesthetics are important.

INTRODUCING REDI-SCAPES...

A new wall system that combines the timeless beauty of natural stone with the structural benefits of a manufactured wall system.

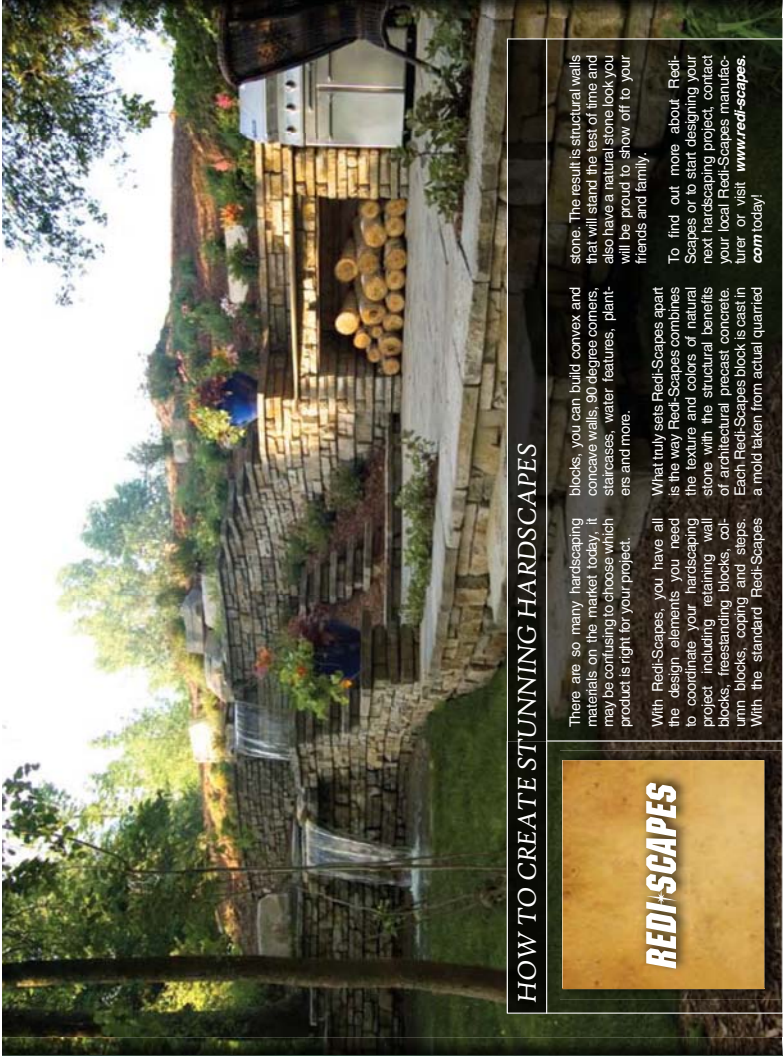
Rich stone color. Detailed stone texture. Organic stone appearance. All of these factors combine to create a wall system so natural, it's hard to distinguish from the real thing.

Redi-Scapes offers all of the design elements you need to create your next hardscaping project. You can build stunning outdoor living areas, retaining walls, patios, seat walls, staircases, planter walls, water features and more when you choose Redi-Scapes.

Redi-Scapes' natural-looking blocks are made of architectural-grade pre-cast concrete, which means they will stand the test of time. With consistent heights and lengths on each block, Redi-Scapes doesn't require sorting and eliminates the expense of wasted product that is common with natural stone, saving you money on installation time and costs. Redi-Scapes can also be engineered and reinforced for taller or more technical projects.



- Natural stone texture
- Natural stone color*
- Engineerable
- Consistent dimensions
- Design flexibility
- Durable wet-cast concrete



HOW TO CREATE STUNNING HARDSCAPES



There are so many hardscaping materials on the market today, it may be confusing to choose which product is right for your project.

With Redi-Scapes, you have all the design elements you need to coordinate your hardscaping project including retaining wall blocks, freestanding blocks, coping blocks, coping and steps. With the standard Redi-Scapes blocks, you can build convex and concave walls, 90 degree corners, staircases, water features, planters and more.

What truly sets Redi-Scapes apart is the way Redi-Scapes combines the texture and colors of natural stone with the structural benefits of architectural precast concrete. Each Redi-Scapes block is cast in a mold taken from actual quarried stone. The result is structural walls that will stand the test of time and also have a natural stone look you will be proud to show off to your friends and family.

To find out more about Redi-Scapes or to start designing your next hardscaping project, contact your local Redi-Scapes manufacturer or visit www.redi-scapes.com today!

3' COLUMN KIT



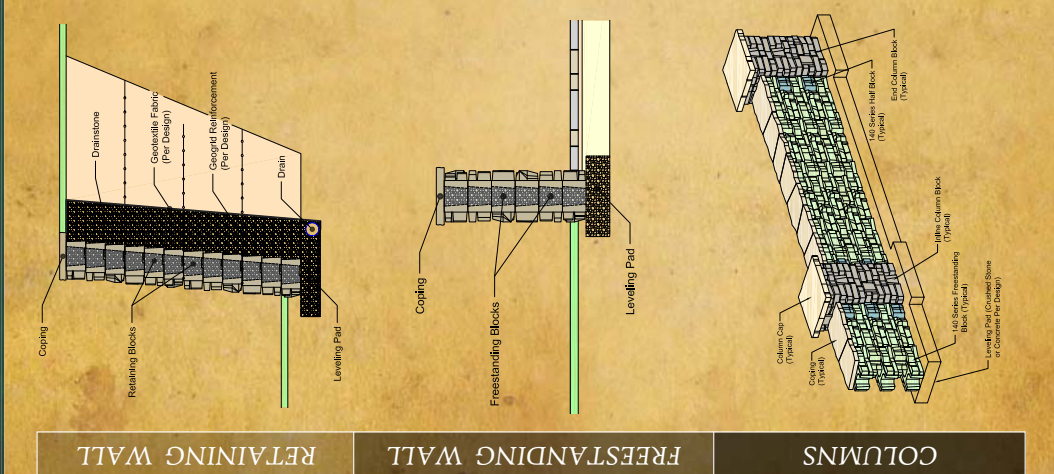
- Easy to install: No sorting, cutting or mortar required
- Just 7 pieces to make a 3' column and cap
- Hollow core 6" block makes it easy to install
- Integrates with retaining and freestanding walls



THE APPLICATION

From retaining walls to staircases, freestanding walls to water features, you can build a stunning variety of coordinating hardscapes with Redi-Scapes. Contact your local Redi-Scapes manufacturer to start your Redi-Scapes project today.

McKINLEY TEXTURE	
	115 RETAINING SERIES 6 1/16" Height 11 1/2" Depth 18" Width 56 lb/block .75 sf/block
	140 FREESTANDING SERIES 6 1/16" Height 14" Depth 18" Width (front) 14 5/8" Width (back) 67 lb/block .69 sf/block
	CORNER BLOCK <i>(Texture on three sides)</i> 6 1/16" Height 14" Depth 21 1/4" Width (front) 19 1/2" Width (back) approx. 88 lb/corner 1.46 sf/corner
	COPING 2" Height 16 1/2" Depth 19 1/4" Width (front) 13 1/2" Width (back) 1.38 lf/coping
	COLUMN BLOCK 6 1/16" Height 23" x 23" Width 130 lbs./block Available as End Column, Inline Column, 90° Corner and Stand-Alone Column.
*Regional colors available. Check with your local manufacturer for details.	



RETAINING WALL

FREESTANDING WALL

COLUMNS

The Park Danforth currently consists of a seven-story building along Stevens Avenue, and a three-story building along Poland Street. With the acquired parcels along Arbor Street and Forest Avenue, The Park Danforth seeks to build a new structure along Forest Avenue and Arbor Street comprised of 55 new Independent Living units five floors with one level of underground parking for approximately 38 cars. The new building and connecting structures will be approximately 81,000 square feet excluding the parking level, and a maximum roof height of 60 feet tall.

The majority of the building will be five-stories some areas along Forest and Arbor Streets only four stories. The main entrance will face the corner of Forest and Arbor Streets and will feature larger fenestration and a canopy. At the fifth floor level, the corner entrance piece will be flanked by two large rooftop terraces, emphasizing the entrance and allowing residents exterior access. The interior of the building that faces the existing Park Danforth building will be five-stories. The new building will connect to the existing seven-story Park Danforth building with a one-story structure at the new entry turn around. The building will feature varied window sizes, balconies, and a combination of stone and brick, to coordinate and complement the existing Park Danforth building, and give the new building scale.

February 3, 2015

Michael W. King, PLA, LEED AP
Mitchell & Associates
70 Center Street, Portland, ME 04101

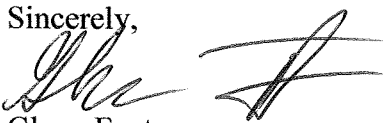
Dear Mr. King,

I appreciate you taking the time to meet with METRO Transit Operation Manager Tom Ridge and myself on January 9, 2015 regarding the proposed site improvements to the Park Danforth at 777 Stevens Ave. Per our discussion we agreed:

- Relocate the existing bus stop on Stevens Ave to the area directly north of the existing curb cut closest to the Stevens Avenue/Poland Street intersection. (This existing curb cut will be used by emergency vehicles only upon completion of the site improvements.)
- The Stevens Ave bus stop is currently not identified on METRO's list of bus stops to receive new bus shelters but could be considered for a shelter in the future.
- The Forest Ave bus stop is a location where METRO would like to install a bus shelter but there is not adequate space at this location to accommodate a standard shelter. METRO would like to investigate the possibility of installing a bench and/or trash receptacle at this location.
- It is preferred that at both the Stevens Avenue bus stop and the Forest Avenue bus stop, the Park Danforth study the possibility of adding an 8'-wide extended pad to allow a 5' x 8' area for ADA accessibility.

Please feel free to give my contact information to your general contractor so that we can work together during construction to make sure that METRO customers are made aware of the bus stop changes.

Sincerely,



Glenn Fenton
Chief Transportation Officer
Greater Portland Transit District
114 Valley Street
Portland ME 04102

Memorandum

Date: February 3, 2015

To: Barbara Barhydt

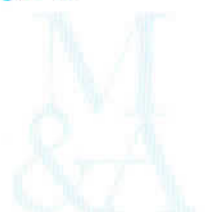
From: Bob Metcalf

Re: The Park Danforth

The following is in regards to our discussion yesterday concerning parking alternatives to address internal circulation concerns expressed by staff. As discussed, we are providing two concepts, the one reviewed yesterday and the alternative configuration aligning with the circulation along the Arbor Street side (north) of the new expansion.

Concept A (concept discussed yesterday)

- This is the preferred alternative to address internal circulation and to maintain as much of the parking as possible. As discussed throughout the review process, parking is an issue. This concept has the least impact with the loss of 3 parking spaces. While the applicant has expressed and documented the parking need we believe this configuration addresses the circulation concerns and minimizes the reduction in number of parking spaces'.
- We are proposing to maintain the circulation as a two way design with the two drive access points. By eliminating one of the drive locations, as discussed, creates a dead end situation that would necessitate someone having to make several turning movements to turn around to exit if there were no available space. This would create confusion as well as inconvenience.
- In addition to the changes discussed, yesterday, we are proposing to eliminate the right turn out movement on to Stevens Avenue. That being said, this should be reviewed with the fire department to confirm their acceptance. We will reach out to Craig Messinger to review the proposed revision to the site circulation.



- Auto-turn template was run to confirm emergency vehicle accessibility to exit out on to Arbor Street. As a result of a conflict, we have modified the drive alignment exiting the existing resident parking area to permit a clear turning movement to the right to allow access to Arbor Street.

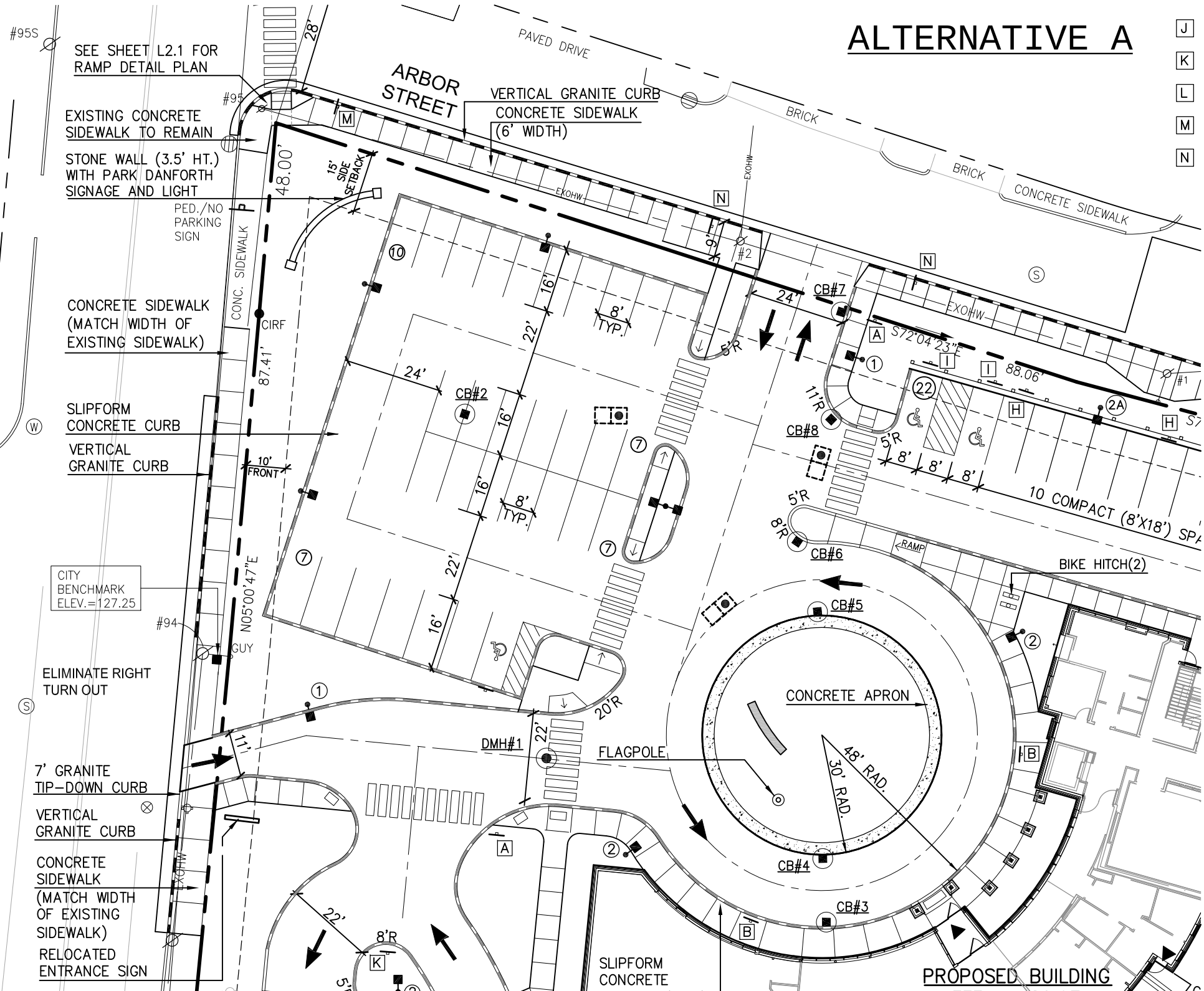
Concept B

- This concept was designed to align the circulation with the proposed drive along the north side (Arbor Street) of the proposed addition. Under this configuration nine (9) parking spaces are lost. As stated above, parking is a significant issue to provide the quality of service for the residents and visitors of The Park Danforth.
- As with Concept A, we are proposing to eliminate the right turn out movement on Stevens Avenue, further reducing the number of turning movements from the property.
- Auto-turn movements were completed for this configuration. The exiting movement on to Arbor Street would require a significant realignment of the exit drive and create an offset of the internal circulation.

Enclosure

Cc Denise Vachon
Tom Gorrill

J
K
L
M
N



ALTERNATIVE B

#95S

SEE SHEET L2.1 FOR
RAMP DETAIL PLAN

EXISTING CONCRETE
SIDEWALK TO REMAIN

STONE WALL (3.5' HT.)
WITH PARK DANFORTH
SIGNAGE AND LIGHT

PED./NO
PARKING
SIGN

CONCRETE SIDEWALK
(MATCH WIDTH OF
EXISTING SIDEWALK)

SLIPFORM
CONCRETE CURB

VERTICAL
GRANITE CURB

CITY
BENCHMARK
ELEV.=127.25

ELIMINATE RIGHT
TURN OUT

7' GRANITE
TIP-DOWN CURB

VERTICAL
GRANITE CURB

CONCRETE
SIDEWALK
(MATCH WIDTH
OF EXISTING
SIDEWALK)

RELOCATED
ENTRANCE SIGN

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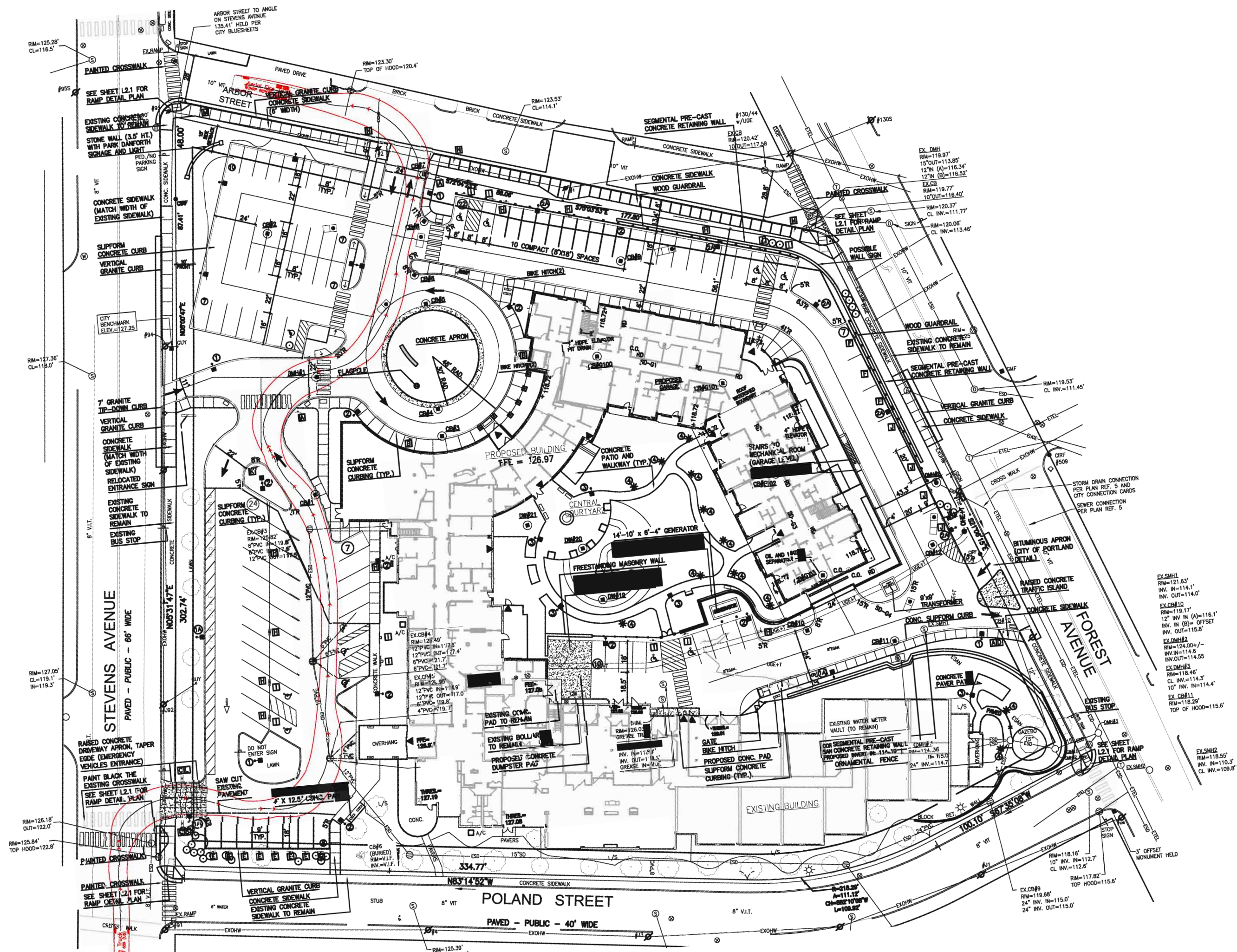
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February 4, 2015

Ms. Barbara Barhydt, Development Review Coordinator
and Planning Board Members
Planning and Urban Development
City of Portland
389 Congress Street
Portland, ME 04101

**RE: Level III Site Plan
The Park Danforth
777 Stevens Avenue**

Dear Barbara and Planning Board Members:

The following documentation has been prepared in response to staff review comments, we discussed on February 2, 2015.

Bruce Hyman/Engineering DPS 01-28-15

Comment regarding design of ADA ramps at the four street corners.

- **The applicant is requesting as a condition of approval, to meet with the planning staff to further revise these details**

*2) Re-configured/relocated crosswalk across Stevens Avenue – the curb ramp on the project (east) side looks good – there should be a companion ramp constructed on the non-project/west side (this crosswalk serves Park Danforth residents) **From December 2014 comments***

- **Based on discussions with David Margolis Pineo, the applicant will provide the matching ADA ramp on the west side of Stevens Avenue. Existing curb reveal is such that construction of the ramp should be minimal. We will work with staff to refine the final detail.**



3) Street and sidewalk configuration of Arbor Street- the standard typical cross-section for a local street as shown in the Technical Manual shows a 28' curb to curb street with a 5' sidewalk and 6' esplanade – the applicant currently shows a 30' wide street with a 5' sidewalk adjacent to the curb – the applicant should explore opportunities to achieve the sidewalk with esplanade which may involve a 28' wide street and moving the sidewalk to the back of the right of way – resulting dimensions should be provided - it may not be possible to achieve the 6' esplanade but it should be explored what configurations are possible. (From December 2014 Comments)

- **Based upon discussion with staff we have prepared the attached plan revision with the 28 FT wide road section as previously submitted to now include an esplanade configured to keep the two existing utility poles out of the sidewalk and provide a 6 FT sidewalk. Coordination with CMP will be required to address the guy wire locations for these poles. Final Plans will be prepared upon approval of the proposed alignment. Note, this change will impact all of the submission plans that will be revised upon approval of the proposed layout.**

Bike Racks:

- *In general Note # 12 on Sheet 1 Of 1 (subdivision Plat), the applicant states that 7 bike hitches are proposed: I can only locate 5 on the plans. [Has the applicant requested a reduction to 14 bike parking spaces from the 22 that are required per ordinance?]*
- **In addition to the exterior surface mounted hitches there are two located in the parking garage. Regarding the waiver, the applicant submitted a waiver request with the initial submission.**
- *The concrete pad with 2 bike hitches closest to the intersection of Stevens/Poland should be increased to a minimum of 6' x 12.5' (shown 4' x 12.5') if there is not a firm and stable area surrounding the pad to make it most functional for users.*
- **We will revise the Subdivision Plat as well as the site plan as requested.**

Driveways: *Driveways should be, to the extent feasible, constructed to ensure that there is an ADA compliant access route along the streets. Generally, this means a cross-slope no greater than 2% across the driveway within the pedestrian route.*

- **Additional notation shall be added to the plans to meet to the greatest extent possible to comply with the 2% slope requirement.**

Note – Detectable Warning Panels Internal to the site: *It is not a requirement of the city (nor ADA) to have the panels internal to the site at pedestrian crossings within the parking lots and across driveways. No response required.*

David Margolis – Pineo/Public Services January 29, 2015

- **With exception of comments 7 & 9, no responses are required**

7. The applicant has chosen not to follow the City's Technical Design Manual for local roadway design. The applicant is making an argument for placing the sidewalk along the curb line and not along the street right of way of Arbor Street as required. This design would require a waiver that is not supported by staff.

- **Refer to response above to Bruce Hyman's comment 3 above.**

9. The applicant is proposing a raised concrete island within the right of way of the Forest Ave driveway cut. A license agreement is required between the City and the Applicant stipulating that any required maintenance of said island is the responsibility of the applicant.

- **The applicant understands this requirement and will coordinate a license agreement with the city in addition to the pedestrian easements over the applicants property to accommodate for the ADA sidewalk – crosswalk locations.**

David Senus, Woodard & Curran /Civil Engineering on 12/10/2014

The comments contained in David Senus's memo were addressed in our previous submission dated January 6, 2015 with exception of a note correction regarding the use of The Snout on all catch basins, this note has been revised and will be submitted with the final submission.

Tom Errico Staff Meeting 02/02/2015

Based upon our conversation concerning the reconfigured parking layout we prepared the attached two parking scenarios;

Concept A

- This is the preferred alternative to address internal circulation and to maintain as much of the parking as possible. As discussed throughout the review process, parking is an issue. This concept has the least impact with the loss of 3 parking spaces. While the applicant has expressed and documented the parking need we believe this configuration addresses the circulation concerns and minimizes the reduction in number of parking spaces’.
- We are proposing to maintain the circulation as a two way design with the two drive access points. By eliminating one of the drive locations, as discussed, creates a dead end situation that would necessitate someone having to make several turning movements to turn around to exit if there were no available space. This would create confusion as well as inconvenience.
- In addition to the changes discussed, yesterday, we are proposing to eliminate the right turn out movement on to Stevens Avenue. That being said, this should be reviewed with the fire department to confirm their acceptance. We met with Craig Messinger, and David Petrucelli this morning to review the proposed revision to the site circulation. Based upon our discussion we have made an additional modification to the geometry of the drive exiting the existing resident parking to allow greater turning movement for emergency vehicles exiting to Arbor Street.

Concept B

- This concept was designed to align the circulation with the proposed drive along the north side (Arbor Street) of the proposed addition. Under this configuration nine (9) parking spaces are lost. As stated above, parking is a significant issue to provide the quality of service for the residents and visitors of The Park Danforth.
- As with Concept A, we are proposing to eliminate the right turn out movement on Stevens Avenue, further reducing the number of turning movements from the property.

- Auto-turn movements were completed for this configuration. The exiting movement on to Arbor Street would require a significant realignment of the exit drive and create an offset of the internal circulation.

Metro

- Mitchell & Associates met on January 9, 2015 with Glenn Fenton, Metro Transportation Officer to discuss the relocation of the existing outbound bus stop and bus shelter requirements. They concurred with relocating the east side bus stop to its previous location near the emergency vehicle access drive. This location has not been identified as a location for a bus shelter. That said, they have asked if the applicant might entertain providing a 5 FT x 8 FT concrete ADA accessible pad for a future shelter and bench. The applicant will discuss this further with Metro. The Forest Ave bus stop is not on the list identified for a shelter. Metro did express an interest in having a pad for future use however recognized the existing space constraints.

Utility Modifications;

- **Emergency Generator:** Since our last submission it has been determined that the emergency generator for the project cannot be located inside the building or on the roof as previously entertained. The emergency generator will now be located along the service drive near the garden court yard. See attached sketch. The generator will be a gas fired unit. The proposed new gas service from Arbor Street is being currently re-evaluated due to the main being a low pressure main. A new service may be available off of the main that serves the existing facility. Attached is a cut sheet for the generator.
- **Sanitary Sewer Connection:** Due to an increase in pipe size from a 6 inch to an 8 inch pipe, a new sanitary manhole will now be required to be installed in Arbor Street to conform with the City Technical Manual. Revised plans will be submitted to address all of the changes and conditions of approval.

Attached for your review are the following:

- Parking lot concepts A & B.
- Auto- Turn movement plan for Concept A
- Arbor Street sidewalk esplanade concept plan
- Letter from Metro
- Emergency Generator Location
- Emergency Generator manufacture cut sheet

Should you or staff have any questions, please do not hesitate to contact me.

Sincerely,
Mitchell & Associates

A handwritten signature in black ink, appearing to read "R. Metcalf", with a stylized flourish at the end.

Robert B. Metcalf, Principal
Maine Licensed Landscape Architect

cc: Denise Vachon
Ron Norton
Tom Gorrill

ALTERNATIVE B

#95S

SEE SHEET L2.1 FOR
RAMP DETAIL PLAN

EXISTING CONCRETE
SIDEWALK TO REMAIN

STONE WALL (3.5' HT.)
WITH PARK DANFORTH
SIGNAGE AND LIGHT

PED./NO
PARKING
SIGN

CONCRETE SIDEWALK
(MATCH WIDTH OF
EXISTING SIDEWALK)

SLIPFORM
CONCRETE CURB

VERTICAL
GRANITE CURB

CITY
BENCHMARK
ELEV.=127.25

ELIMINATE RIGHT
TURN OUT

7' GRANITE
TIP-DOWN CURB

VERTICAL
GRANITE CURB

CONCRETE
SIDEWALK
(MATCH WIDTH
OF EXISTING
SIDEWALK)

RELOCATED
ENTRANCE SIGN

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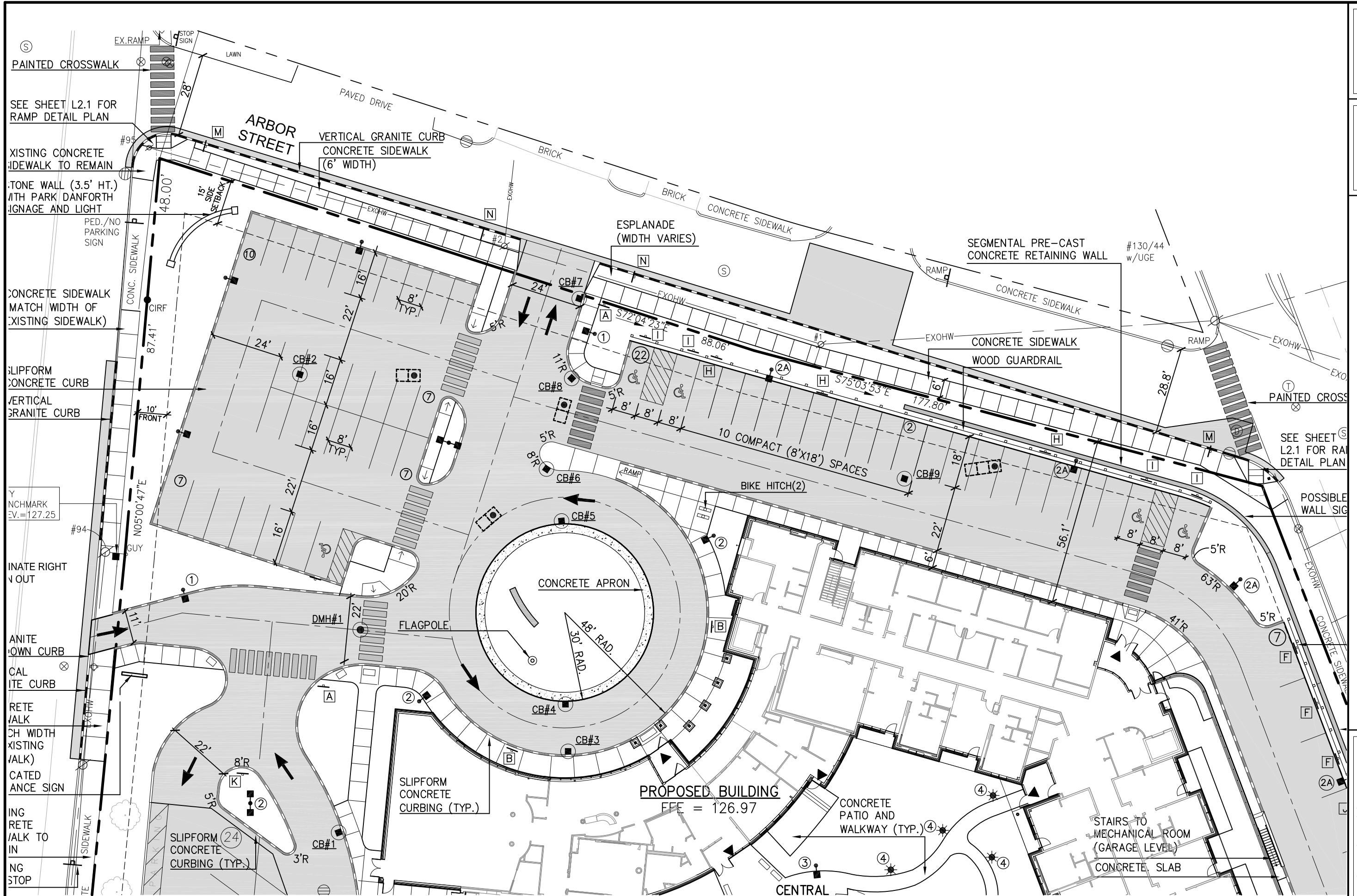
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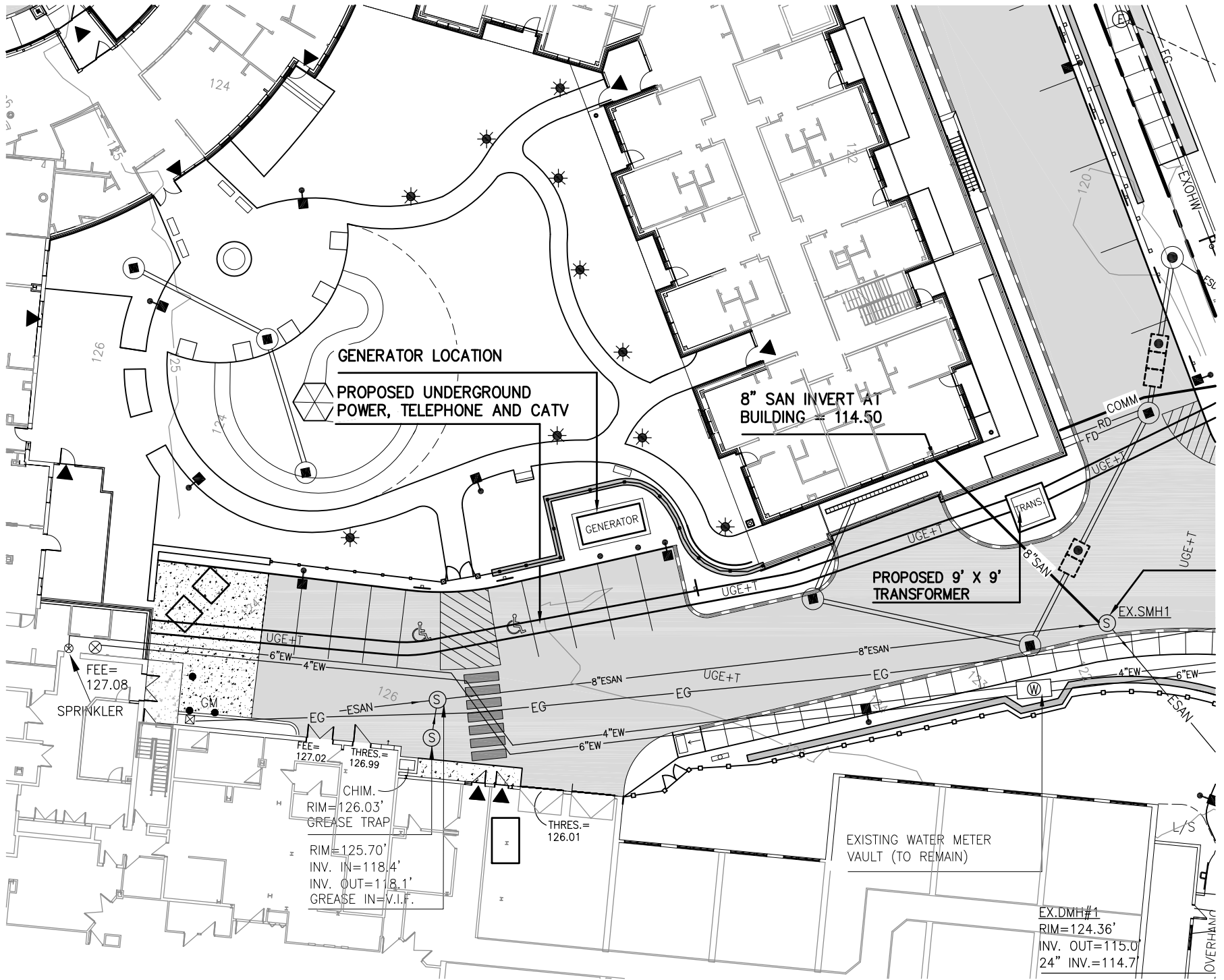
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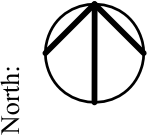
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EXHIBIT



North:

Title: GENERATOR EXHIBIT

Date: FEBRUARY 4, 2015

Scale: 1" = 30'

Project: THE PARK DANFORTH

Mitchell & Associates
LANDSCAPE ARCHITECTS

70 Center Street
Portland, Maine 04101
P: 207.774.4427
F: 207.874-2460

MEMORANDUM

DATE: February 5, 2015
TO: Barbara Barhydt, Development Review Coordinator
FROM: Bob Metcalf
RE: The Park Danforth

The following responses are in regards to questions raised by Tom Errico in your email dated February 5, 2015.

1. What are the constraints to providing a concrete bus shelter pad along Forest Avenue:
 - **There is an existing retaining wall along Forest Avenue opposite the existing bus stop. The area between the retaining wall and back side of the sidewalk is 4 feet, shelter pad requires a 5 foot x 8 foot pad as prescribed by Metro.**
 - **In addition to the insufficient width, there are three (3) existing street trees within this narrow strip. The roots of these trees are at the surface due to confined growing conditions. Excavation for a pad would significantly impact the health of these trees.**
2. What are the constraints to providing pedestrian access to Forest Avenue from the Arbor Street – Forest Avenue entry.
 - **There is an significant grade change at this location, there is a retaining wall along Arbor Street and Forest Avenue.**



- **As discussed previously, stairs at this location leading to Arbor Street is not an option. Due to the population age, stairs are a safety concern that The Park Danforth will not incur.**
- **There is insufficient area along the Forest Avenue side of the building to provide a sidewalk. The area between the foundation/stone -faced wall and 20 foot wide circulation drive is too narrow. In addition, per Jeff Tarling's request, we are providing landscaping, including green screens on the wall to break up the mass-length and height of the wall.**
- **The east side of the circulation drive is constrained by the continuation of the Arbor Street retaining wall and the required buffer width along Forest Avenue.**
- **Residents can access Forest Avenue via the walkway along the Arbor Street, north side, of the building that leads to the new sidewalk along Arbor Street.**

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FROM: Bob Metcalf
RE: The Park Danforth

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1. What are the constraints to providing a concrete bus shelter pad along Forest Avenue:
 - **There is an existing retaining wall along Forest Avenue opposite the existing bus stop. The area between the retaining wall and back side of the sidewalk is 4 feet, shelter pad requires a 5 foot x 8 foot pad as prescribed by Metro. In our discussions, Metro knew what the constraints were.**
 - **In addition to the insufficient width, there are three (3) existing street trees within this narrow strip. The roots of these trees are at the surface due to confined growing conditions. Excavation for a pad would significantly impact the health of these trees.**
 - **In our discussions with Metro they asked if they might be able to install a bench and trash receptacle on the Park Danforth property. The applicant will work out details with Metro to determine where these improvements can be located.**



2. What are the constraints to providing pedestrian access to Forest Avenue from the Arbor Street – Forest Avenue entry.

- **There is a significant grade change at this location, there is a retaining wall along Arbor Street and Forest Avenue.**
- **As discussed previously, stairs at this location leading to Arbor Street is not an option. Due to the population age, stairs are a safety concern that The Park Danforth will not incur.**
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The Park Danforth

777 Stevens Avenue, Portland, Maine

Resubmission: January 5, 2015



PREPARED BY:

LANDSCAPE ARCHITECT AND SITE PLANNER:

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FAX: 207.874.2460
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GEOTECHNICAL ENGINEER

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286 PORTLAND ROAD
GRAY, MAINE 04039
207.657.2866
CONTACT: TIMOTHY BOYCE, P.E.

SOIL SCIENTIST

ALBERT FRICK ASSOCIATES, INC.
95A COUNTY ROAD
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PHONE: 207.839.5563
CONTACT: ALBERT FRICK

TRAFFIC ENGINEER

GORRILL-PALMER CONSULTING ENGINEERS, INC.
15 SHAKER ROAD
GORHAM, MAINE 04038
PHONE: 207.675.6910
CONTACT: RANDALL DUNTON, P.E.

UTILITIES:

ELECTRIC:

CENTRAL MAINE POWER
ELECTRICAL DISTRIBUTION ENGINEERING
162 CANCO ROAD
PORTLAND, MAINE 04103
PHONE: 207.842.2367
CONTACT: JAMIE COUGH
E-MAIL: JAMES.COUGH@CMPCO.COM

TELEPHONE:

FAIRPOINT COMMUNICATIONS
45 FOREST AVENUE
PORTLAND, MAINE 04101
PHONE: 866.984.2001

WATER:

PORTLAND WATER DISTRICT
225 DOUGLASS STREET
P.O. BOX 3553
PORTLAND, MAINE 04104-3553
PHONE: 207.774.5961 x.3199
FAX: 207.761.8307
CONTACT: RICO SPUGNARDI, P.E.
E-MAIL: RSPUGNARDI@PWD.ORG

SANITARY SEWER:

CITY OF PORTLAND
PUBLIC SERVICES DEPARTMENT
55 PORTLAND STREET
PORTLAND, MAINE 04101
PHONE: 207.874.8832
FAX: 207.874.8816
CONTACT: FRANK BRANCELY
E-MAIL: FJB@PORTLANDMAINE.GOV

CABLE:

TIME WARNER CABLE OF MAINE
118 JOHNSON ROAD
PORTLAND, MAINE 04102
PHONE: 207.253.2324
CONTACT: MARK PELLETIER, CONSTRUCTION PROJECT COORDINATOR
E-MAIL: MARK.PELLETIER@TWCABLE.COM

NATURAL GAS:

UNITIL SERVICE CORPORATION
1075 FOREST AVENUE
PORTLAND, MAINE 04103
PHONE: 207.541.2505
CONTACT: SCOTT CARPENTER

OWNER

HOME FOR THE AGED

777 STEVENS AVENUE
PORTLAND, MAINE 04103
PHONE: 207.797.7710

APPLICANT

THE PARK DANFORTH

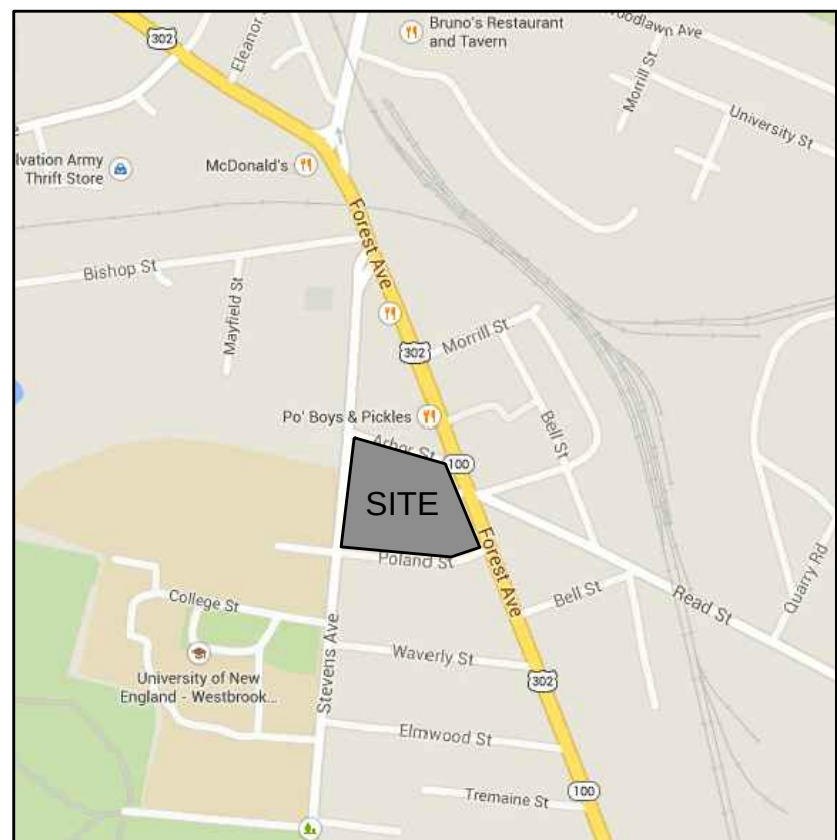
777 STEVENS AVENUE
PORTLAND, MAINE 04103
PHONE: 207.797.7710

SHEET INDEX:

SHEET	TITLE
1	COVER PAGE
1 OF 1	BOUNDARY AND TOPOGRAPHIC SURVEY SUBDIVISION PLAT
L1.0	EXISTING CONDITIONS PLAN
L1.1	CONSTRUCTION MANAGEMENT PLAN
L2.0	LAYOUT PLAN
L2.1	DETAIL PLANS: RAMPS AND CROSSWALKS
L3.0	GRADING AND DRAINAGE PLAN
L3.1	GRADING PLAN -- GARAGE LEVEL
L3.2	EROSION AND SEDIMENT CONTROL PLAN
L4.0	UTILITIES PLAN
L5.0	PLANTING PLAN
L6.0	SITE DETAILS
L6.1	SITE DETAILS
L6.2	SITE DETAILS
L6.3	SITE DETAILS
L7.0	LIGHTING PHOTOMETRICS PLAN
D1.0	PRE DEVELOPMENT WATERSHED MAP (PREVIOUSLY SUBMITTED)
D2.0	POST DEVELOPMENT WATERSHED PLAN (PREVIOUSLY SUBMITTED)
D3.0	STORMWATER TREATMENT PLAN (PREVIOUSLY SUBMITTED)

PROPOSED GARAGE LEVEL (PREVIOUSLY SUBMITTED)
PROPOSED LEVEL ONE (PREVIOUSLY SUBMITTED)
PROPOSED LEVEL TWO (PREVIOUSLY SUBMITTED)
PROPOSED LEVEL THREE (PREVIOUSLY SUBMITTED)
PROPOSED LEVEL FOUR (PREVIOUSLY SUBMITTED)
PROPOSED LEVEL FIVE (PREVIOUSLY SUBMITTED)
PROPOSED CONNECTOR AND AUDITORIUM (PREVIOUSLY SUBMITTED)
PROPOSED RENOVATIONS -- MAIN STREET (PREVIOUSLY SUBMITTED)
PROPOSED EXTERIOR ELEVATIONS (PREVIOUSLY SUBMITTED)
PROPOSED EXTERIOR ELEVATIONS (PREVIOUSLY SUBMITTED)
PROPOSED EXTERIOR ELEVATIONS (PREVIOUSLY SUBMITTED)

SITE LOCATION MAP:



PERMITS:

TYPE OF PERMIT:

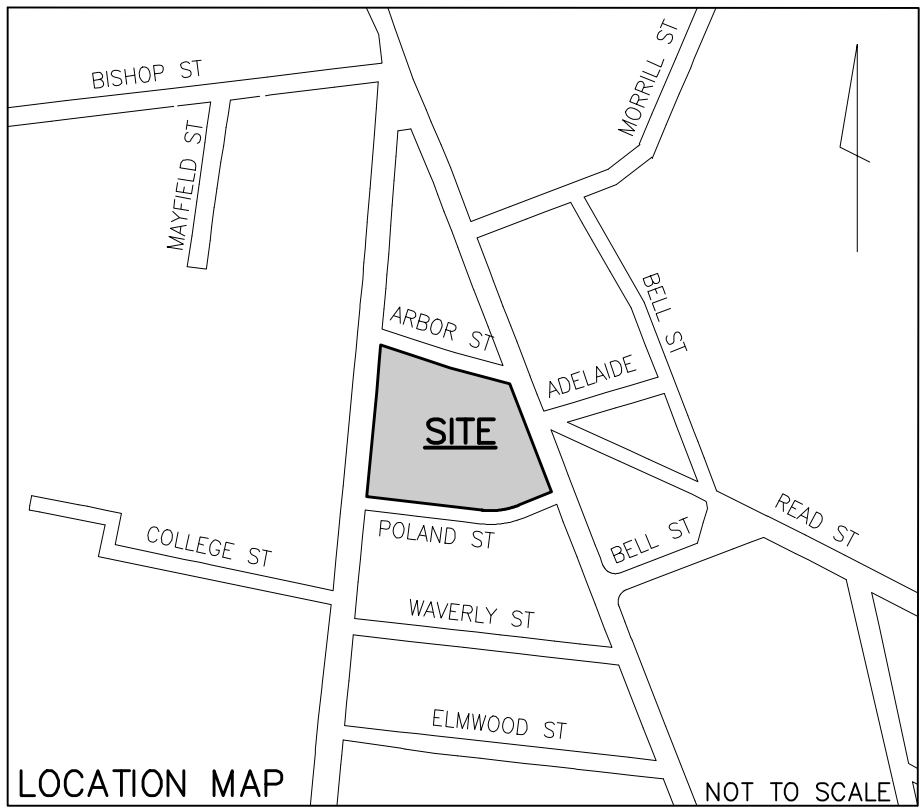
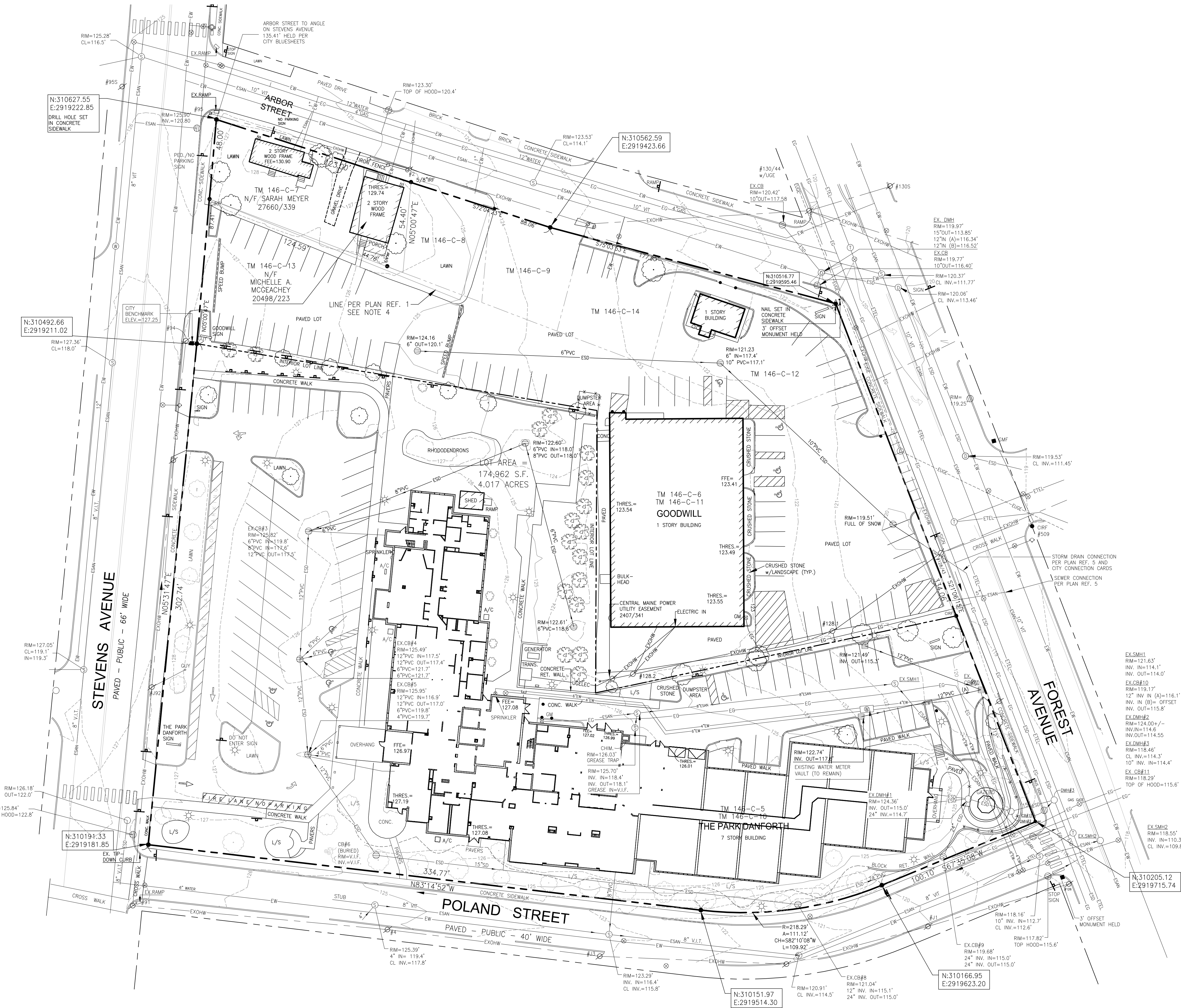
SITE PLAN REVIEW:

GOVERNING BODY:

CITY OF PORTLAND
389 CONGRESS STREET
4TH FLOOR
PORTLAND, MAINE 04101
TEL: 207.874.8728
CONTACT: BARBARA BARHYDT
E-MAIL: BAB@PORTLANDMAINE.GOV

STATUS:

SUBMITTED: OCTOBER 17, 2014



GENERAL NOTES

1. OWNERS OF RECORD:

HFA FOREST AVENUE PROPERTIES, LLC LOTS 146-C-6, 146-C-9, 146-C-11, 146-C-12, 146-C-14 (ALL IN BOOK 29524 PAGE 325)

HOME FOR THE AGED LOTS 146-C-8 BOOK 30933 PAGE 330, 146-C-5, 146-C-10 BOOK 6354 PAGE 117.

2. BEARINGS ARE BASED ON CITY DATUM, MAINE STATE PLANE WEST ZONE (NAD83).

3. ELEVATIONS ARE ON CITY DATUM, BASED ON BENCH MARK AT 3' OFFSET MONUMENT UNDER COVER ON EASTERLY SIDE OF STEVENS AVENUE.

4. THE LINES AROUND THE LAND OF MCGEACHEY ARE BASED ON THE DEED DIMENSIONS. THE DASHED LINES ARE AS SHOWN ON PLAN REFERENCE 1. A BOUNDARY AGREEMENT IS RECOMMENDED WITH MCGEACHEY AND MEYER.

PLAN REFERENCES

1. "PLAN OF PROPERTY IN PORTLAND, MAINE FOR DR. LLOYD B. WOLF AUG. 1973 H.I. & E.C. JORDAN - SURVEYORS"

2. "PARK-DANFORTH CONDOMINIUM PLANS SITE PLAN HOUSING FOR THE ELDERLY, A CONDOMINIUM SITUATE AT: STEVENS AND FOREST AVENUES AT POLAND STREET, PORTLAND, CUMBERLAND, MAINE 12/7/83 LARRY SLAUGHTER -SURVEYOR" RECORDED IN PLAN BOOK 140 PAGE 37

3. "THE PARK-DANFORTH CONDOMINIUM 777 STEVENS AVE PORTLAND, MAINE RECORDING PLAT 09-23-97 LAND USE CONSULTANTS, INC." RECORDED IN PLAN BOOK 197 PAGE 515

4. BLUE BOOK SHEETS FOR STEVENS AVE., FOREST AVE., POLAND STREET, AND ARBOR STREET, FROM THE PORTLAND ENGINEERING DEPARTMENT

5. "FOREST AVENUE DEVELOPMENT PORTLAND MAINE SITE PLAN MADE FOR HANNAFORD BROS. CO. SOUTH PORTLAND, MAINE" BY E.C. JORDAN CO. CONSULTING ENGINEERS DATED JAN 6 1986.

UTILITIES NOTES

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.

LEGEND

PROPERTY LINE	
GRANITE MONUMENT	
CATCHBASIN	
MANHOLE	
HYDRANT	
UTILITY POLE	
WATER VALVE	
SANITARY SEWER	
STORM DRAIN	
WATER	
TELEPHONE	
GAS	
OVERHEAD WIRES	
CMP CABLE LINES	
CURB	
FENCE	
SIGN	
TREE	
CONTOUR	
LIGHT FIXTURE	

Prepared For:

Owner:
Home For The Aged
777 Stevens Avenue
Portland, Maine 04103
Tel.: 207-797-7710

Applicant:

The Park Danforth
777 Stevens Avenue
Portland, Maine 04103
Tel.: 207-797-7710

Prepared By:

MITCHELL & ASSOCIATES
Landscape Architects
The Staples School
70 Center Street
Portland, Maine 04101
Tel.: 207-774-4427

The Park Danforth

Portland, Maine

777 Stevens Avenue

Date:

OCTOBER 17, 2014

Issued For:

PERMITTING

Revisions:

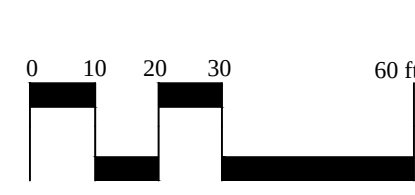
NOV. 25, 2014: Per City of Portland
Staff Review Comments
JAN. 5, 2015: Per City of Portland
Staff Review Comments

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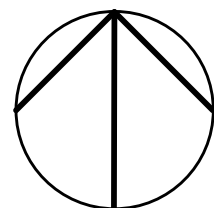
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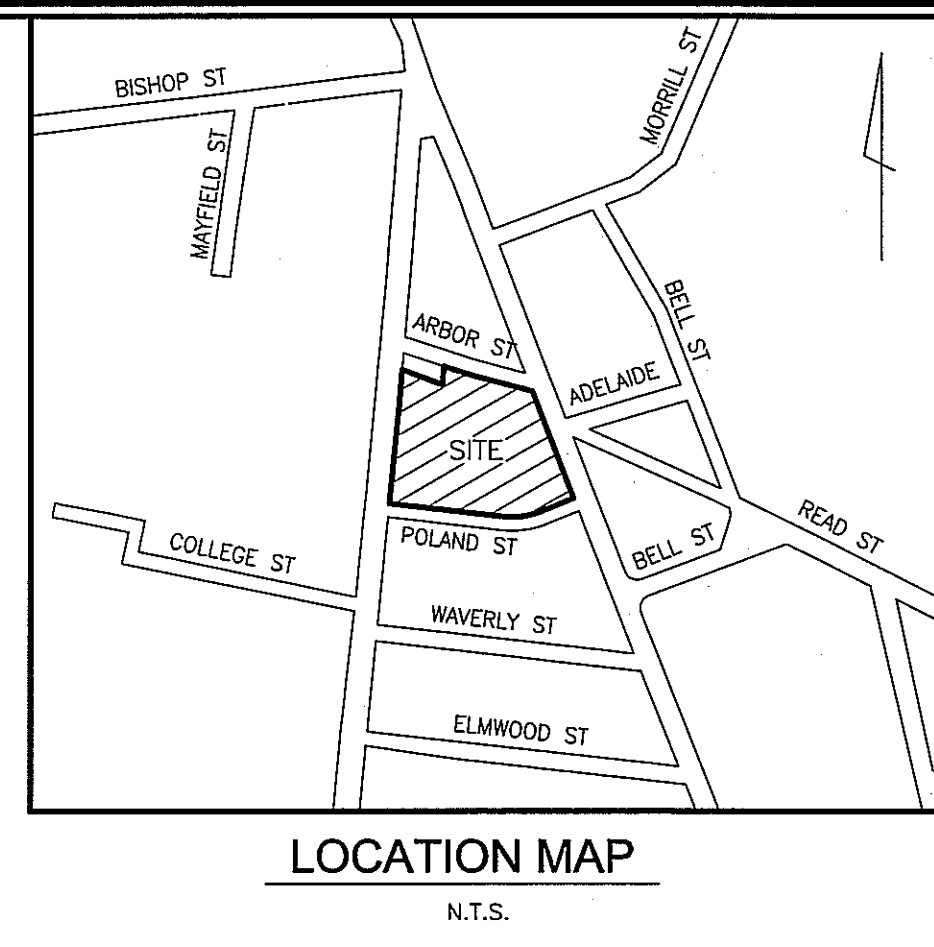
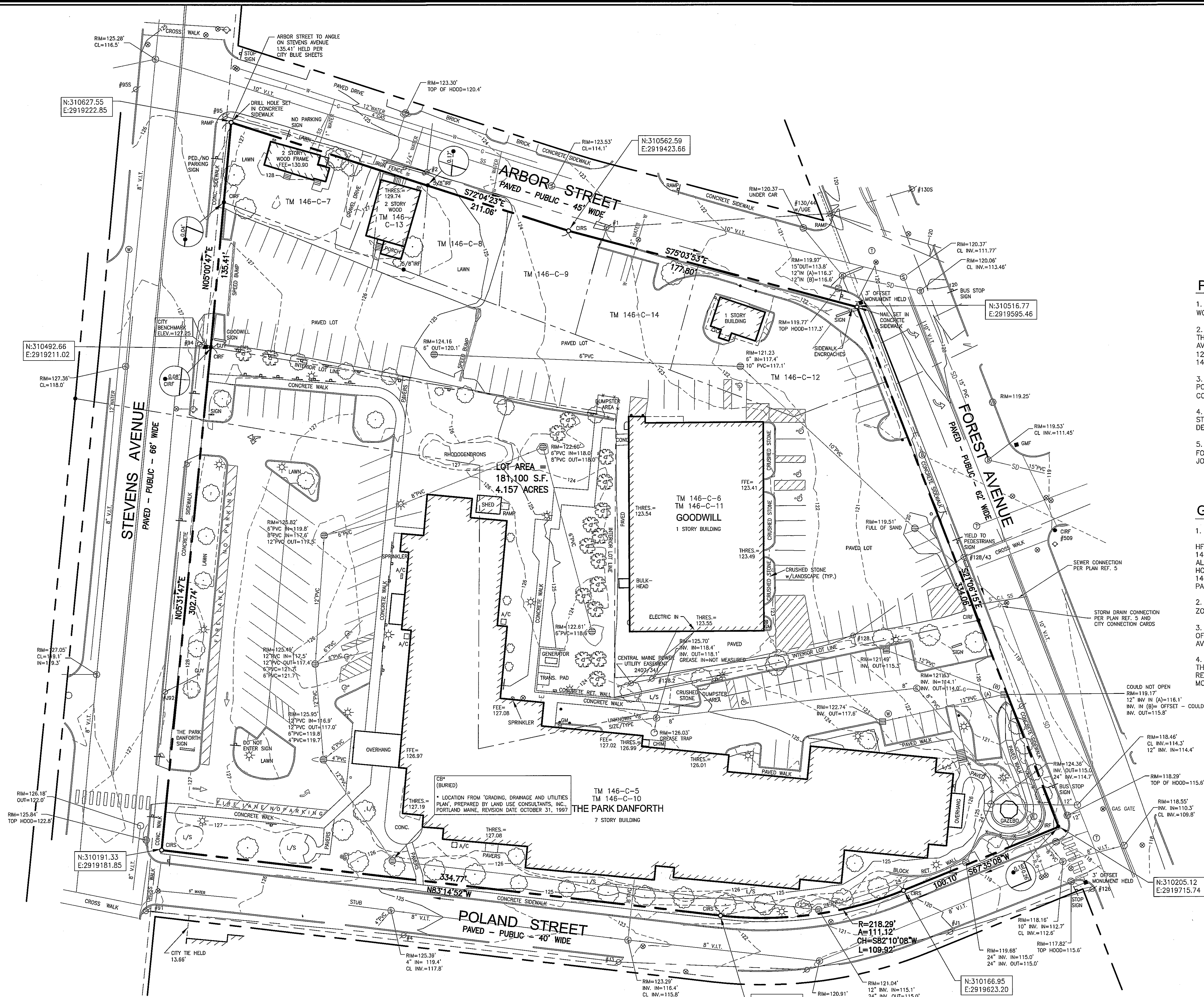


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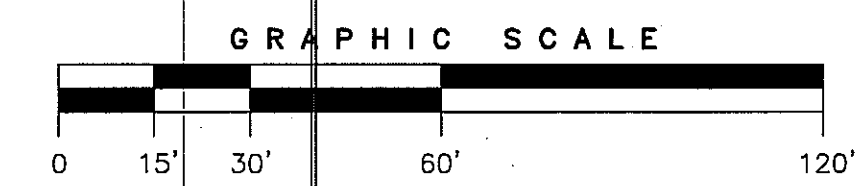
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HFA FOREST AVENUE PROPERTIES, LLC LOTS 146-C-6, 146-C-9, 146-C-11, 146-C-12, 146-C-14;
ALL IN BOOK 29524 PAGE 325
HOME FOR THE AGED LOTS 146-C-8 BOOK 30933 PAGE 330, 146-C-5, 146-C-10 BOOK 6354 PAGE 117, 146-C-7 BOOK 31525 PAGE 324, 146-C-13 BOOK 31909 PAGE 268
2. BEARINGS ARE BASED ON CITY DATUM, MAINE STATE PLANE WEST ZONE (NAD83).
3. ELEVATIONS ARE ON CITY DATUM, BASED ON BENCH MARK AT 3' OFFSET MONUMENT UNDER COVER ON EASTERLY SIDE OF STEVENS AVENUE.
4. THE LINES AROUND THE LAND OF MCGEACHEY ARE BASED ON THE DEED DIMENSIONS. THE DASHED LINES ARE AS SHOWN ON PLAN REFERENCE 1. A BOUNDARY AGREEMENT IS RECOMMENDED WITH MCGEACHEY AND MEYER.

- LEGEND
- CIRS
 - CAPPED IRON ROD SET
 - IRON PIPE OR ROD FOUND
 - MONUMENT FOUND
 - UTILITY POLE
 - MANHOLE
 - ELECTRIC/GAS METER
 - SIGN
 - CATCH BASIN
 - HYDRANT
 - WATER VALVE OR SHUTOFF
 - LIGHT POLE
 - IRRIGATION CONTROL VALVE
 - BOLLARD
 - DECIDUOUS TREE
 - CONIFEROUS TREE
 - INTERIOR LOT LINE
 - FENCE
 - CURB
 - OVERHEAD WIRES
 - UNDERGROUND ELECTRIC
 - WATER LINE
 - GAS LINE
 - STORM DRAIN
 - SANITARY SEWER
 - 1' CONTOUR



UTILITY NOTE

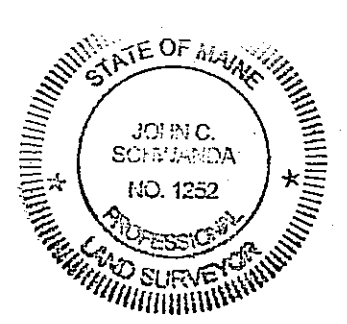
THE UNDERGROUND UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND 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.

CERTIFICATE

OWEN HASKELL, INC. HEREBY CERTIFIES THAT THIS PLAN IS BASED ON, AND THE RESULT OF, AN ON THE GROUND FIELD SURVEY AND THAT TO THE BEST OF OUR KNOWLEDGE, INFORMATION AND BELIEF, IT CONFORMS TO THE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS CURRENT STANDARDS OF PRACTICE.

1-5-2015
DATE

John C. Schwanda
JOHN C. SCHWANDA, PLS NO. 1252



REV. 2	12-30-14	MARKERS SET, COORDINATES, INVERTS
REV. 1	12-01-14	ADD TAX LOTS 146-C-7, 13
BOUNDARY & TOPOGRAPHIC SURVEY ON STEVENS AVE., ARBOR ST., FOREST AVE. & POLAND ST. PORTLAND, MAINE MADE FOR MITCHELL & ASSOCIATES		
OWEN HASKELL, INC. 390 U.S. ROUTE ONE, FALMOUTH, ME 04105 (207) 774-0424 PROFESSIONAL LAND SURVEYORS		
Drwn By	SDG	Date
Trace By	JLW	JANUARY 2, 2014
Check By	JCS	Scale
Book No.	1123	1" = 30'
Job No.	2013-217P	Drwg. No.
		1

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WAIVERS
THE PARK DANFORTH MAJOR SITE PLAN AND SUBDIVISION PLAN APPLICATION WAS APPROVED WITH THE FOLLOWING WAIVERS GRANTED ON JANUARY 27, 2014 FROM THE CITY OF PORTLAND TECHNICAL STANDARDS:

1. BICYCLE PARKING [SEC. 14-526 A.4 B.(1) (A)] THE 54 ELDERLY INDEPENDENT LIVING UNITS REQUIRE TWENTY-TWO (22) BICYCLE PARKING SPACES. THE OWNER BELIEVES THE RESIDENT AND EMPLOYEE POPULATION WILL NOT REQUIRE THIS AMOUNT. WE REQUEST TO REDUCE THE REQUIREMENT TO 6 BICYCLE PARKING SPACES. FOUR SPACES LOCATED ON THE EXTERIOR OF THE BUILDING AND TWO IN THE PARKING GARAGE.

2. STREET TREE REQUIREMENT (SEC. 14-526 2.B. ILL. A & TECHNICAL DESIGN MANUAL 4.6) THE PROPOSED 54 UNIT MULTI-FAMILY RESIDENTIAL DEVELOPMENT EXPANSION REQUIRES THE PLANTING OF 54 TREES (1 TREE/UNIT), DUE TO THE SIZE OF PROPERTY AND AVAILABLE STREET FRONTAGE, PLANTING THIS QUANTITY OF TREES IS NOT FEASIBLE. THE APPLICANT REQUESTS A WAIVER FOR 26 TREES AND SHALL CONTRIBUTE TO THE STREET TREE FUND IN AN AMOUNT PROPORTIONATE TO THE COST OF THE REQUIRED TREES.

3. DRIVEWAY LOCATION (TECHNICAL DESIGN MANUAL 1.7.2.7) FOREST AVENUE IS A 30 MPH ROAD. THE MINIMUM SPACING REQUIREMENT FOR CURB CUTS IN THIS LOCATION IS 125 FEET. THE EXISTING DRIVEWAY FOR THE PARK DANFORTH IS APPROXIMATELY 70 FEET FROM THE INTERSECTION OF READ STREET AND FOREST AVENUE. THE APPLICANT IS REQUESTING A WAIVER FROM THIS REQUIREMENT. THIS IS AN EXISTING DRIVEWAY LOCATION PROVIDING ACCESS TO THE SERVICE AREA AND PARKING. THE APPLICANT IS WIDENING THE DRIVEWAY AND ADDING INGRESS AND EGRESS LANES SEPARATED BY A RAISED PEDESTRIAN MOUNTABLE CONCRETE MEDIAN. THE DRIVE WILL BE POSTED RIGHT TURN IN, RIGHT TURN OUT.

4. NUMBER OF DRIVEWAYS (TECHNICAL DESIGN MANUAL 1.7.2.8) NO MORE THAN TWO (2) INGRESS & EGRESS DRIVEWAYS ARE PERMITTED FOR COMMERCIAL DEVELOPMENTS. THE APPLICANT IS REQUESTING A WAIVER TO ALLOW FOUR DRIVEWAYS TO SERVE THE PROPERTY WHICH IS AN ENTIRE CITY BLOCK. THE EXISTING CITY BLOCK HAS SEVEN (7) DRIVEWAYS SERVING THE USES WITH THREE (3) ALONG STEVENS AVENUE, THREE ON ARBOR STREET, ONE (1) PREVIOUSLY ELIMINATED WITH THE REMOVAL OF A TWO-FAMILY RESIDENCE IN 2013, AND TWO (2) ON FOREST AVENUE. THE APPLICANT IS REDUCING THE AMOUNT OF CURB CUTS ON THIS BLOCK TO FOUR (4). THREE OF THE PROPOSED ENTRANCE DRIVES (STEVENS AVENUE, ARBOR STREET AND FOREST AVENUE) WILL BE FOR DAILY USE WHILE, AT THE RECOMMENDATION OF THE PORTLAND FIRE DEPARTMENT, ONE OF THE CURB CUTS WILL BE FOR EMERGENCY VEHICLE ACCESS ONLY. THE EXISTING ONE-WAY IN DRIVEWAY NEAR POLAND STREET WILL BE POSTED AS EMERGENCY VEHICLE ACCESS ONLY. THIS WAS A REQUEST MADE BY THE PORTLAND FIRE DEPARTMENT DURING REVIEW OF SITE CIRCULATION AND CURRENT EMS HISTORY FOR THE PARK DANFORTH. THE MIDDLE STEVENS AVENUE CURB CUT HAS BEEN RELOCATED TO ALIGN WITH THE NEW MAIN ENTRY AND THE TWO (2) CURRENT CURB OPENINGS WILL BE CLOSED. THIS DRIVEWAY WILL BE POSTED AS RIGHT-TURN IN, RIGHT-TURN OUT ONLY. THE ARBOR STREET DRIVEWAY ALIGNS WITH THE NEW BUILDING ENTRY AND IS LOCATED WHERE THE FORMER TWO-FAMILY RESIDENCE WAS LOCATED. THE EXISTING DRIVEWAY TO THE PARK DANFORTH SERVICE AREA IS BEING MODIFIED TO IMPROVE DELIVERY VEHICLE ACCESS AND WILL BE POSTED AS RIGHT-TURN IN, RIGHT-TURN OUT. THE FOUR (4) CURB CUTS WILL ALLOW EASIER MOVEMENT WITHIN THE SITE, MAINTAIN ACCESS INTO AN EXISTING SERVICE AREA, AND ACCOMMODATE ACCESSIBILITY FOR EMERGENCY VEHICLES.

CERTIFICATION:

OWEN HASKELL, INC. HEREBY CERTIFIES THAT THIS PLAN IS BASED ON, AND THE RESULT OF, AN ON THE GROUND FIELD SURVEY AND THAT TO THE BEST OF OUR KNOWLEDGE, INFORMATION AND BELIEF, IT CONFORMS TO THE BOARD OF LEICENSURE FOR PROFESSIONAL LAND SURVEYORS CURRENT STANDARDS OF PRACTICE.

JOHN C. SCHWANDA, PLS NO. 1252

DATE

Approved: Portland Planning Board

Date:

Chair,

Board Members,

LEGEND

	EXISTING	PROPOSED
PROPERTY LINE		
GRANITE MONUMENT		
CATCHBASIN		
MANHOLE		
HYDRANT		
UTILITY POLE		
WATER VALVE		
SANITARY SEWER		
STORM DRAIN		
WATER		
TELEPHONE		
GAS		
OVERHEAD WIRES		
UNDERGROUND ELECTRIC		
LEACHING GALLEY		
CLEAN OUT		
CURB		
FENCE		
SIGN		

Prepared For:

Owner:
Home For The Aged
777 Stevens Avenue
Portland, Maine 04103
Tel.: 207-797-7710

Applicant:

The Park Danforth
777 Stevens Avenue
Portland, Maine 04103
Tel.: 207-797-7710

Prepared By:

MITCHELL & ASSOCIATES
Landscape Architects
The Staples School
70 Center Street
Portland, Maine 04101
Tel.: 207-797-4427

The Park Danforth

Portland, Maine

777 Stevens Avenue

Date:

OCTOBER 17, 2014

Issued For:

PERMITTING

Revisions:

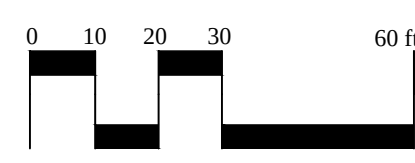
NOV. 25, 2014: Per City of Portland
Staff Review Comments
JAN. 5, 2015: Per City of Portland
Staff Review Comments

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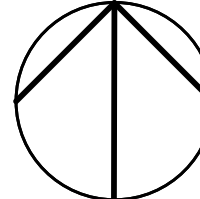
Title:

SUBDIVISION PLAT

Scale: 1"=30'



North:



Sheet No.:

1 of 1

PLAN REFERENCES

- "PLAN OF PROPERTY IN PORTLAND, MAINE FOR DR. LLOYD B. WOLF AUG. 1973 H.I. & E.C. JORDAN - SURVEYORS"
- "PARK-DANFORTH CONDOMINIUM PLANS SITE PLAN HOUSING FOR THE ELDERLY, A CONDOMINIUM SITUATE AT: STEVENS AND FOREST AVENUES AT POLAND STREET, PORTLAND, CUMBERLAND, MAINE 12/7/83 LARRY SLAUGHTER -SURVEYOR" RECORDED IN PLAN BOOK 140 PAGE 37
- "THE PARK-DANFORTH CONDOMINIUM 777 STEVENS AVE PORTLAND, MAINE RECORDING PLAT 09-23-97 LAND USE CONSULTANTS, INC." RECORDED IN PLAN BOOK 197 PAGE 515
- BLUE BOOK SHEETS FOR STEVENS AVE., FOREST AVE., POLAND STREET, AND ARBOR STREET, FROM THE PORTLAND ENGINEERING DEPARTMENT
- "FOREST AVENUE DEVELOPMENT PORTLAND MAINE SITE PLAN MADE FOR HANNAFORD BROS. CO. SOUTH PORTLAND, MAINE" BY E.C. JORDAN CO. CONSULTING ENGINEERS DATED JAN 6 1986.

GENERAL NOTES:

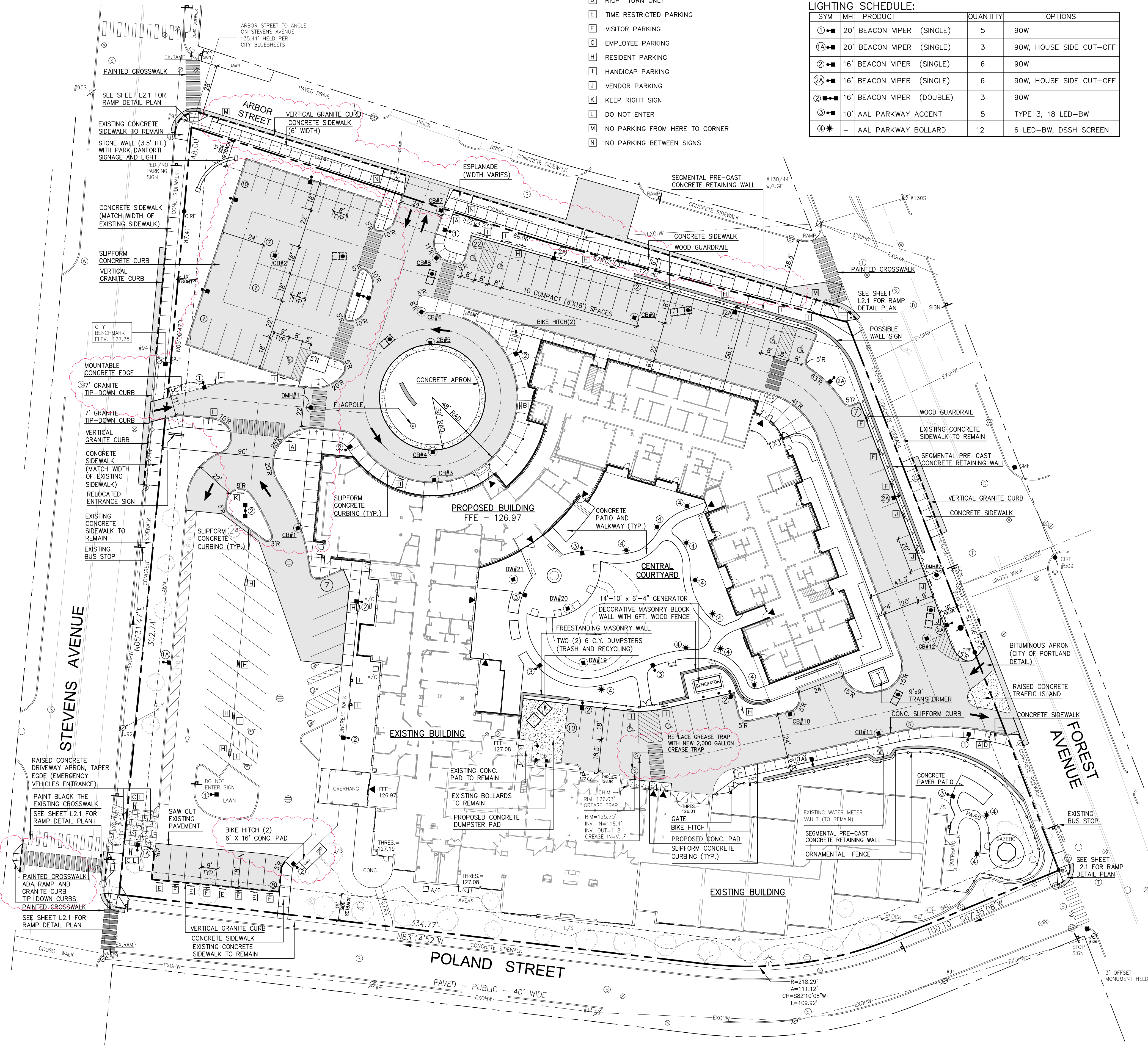
- SITE AREA: 181,100 SF OR 4.16 ACRES
- APPLICANT: THE PARK DANFORTH
C/O DENISE VAGHON C.E.O.
777 STEVENS AVENUE
PORTLAND, MAINE 04103
- OWNERS: HFA FOREST AVENUE PROPERTIES, LLC LOTS 146-C-6, 146-C-9, 146-C-11, 146-C-12, 146-C-14 (ALL IN BOOK 29524 PAGE 325)

HOME FOR THE AGED LOTS 146-C-8 (BOOK 30933, PAGE 330), 146-C-5, 146-C-10 (BOOK 6354 PAGE 117).
- ZONING DISTRICT: R-6A RESIDENTIAL DISTRICT
- PARCELS ARE IS SHOWN AS LOTS 5, 6, 8, 9, 10, 11, 12, 13 AND 14, BLOCK C ON CITY OF PORTLAND ASSESSORS MAP 146.
- DEEDS RECORDED IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS: BOOK 29524, PAGE 325; BOOK 30933, PAGE 330; AND BOOK 6354, PAGE 117.
- SPACE AND BULK STANDARDS:

	REQUIRED	PROPOSED
MINIMUM LOT SIZE:	4 ACRES	4.16 ACRES
MINIMUM LOT WIDTH	40 FEET	380 FEET
MINIMUM STREET FRONTAGE:	40 FEET	389 FEET
FRONT YARD SETBACK	10 FEET	89 FEET
REAR YARD SETBACK	20 FEET	43 FEET
SIDE YARD SETBACK	15 FEET	55 FEET
SIDE YARD IN SIDE STREET	10 FEET	10 FEET
MAXIMUM LOT COVERAGE	40-50%	30%
MAXIMUM HEIGHT OF STRUCTURES:	65 FEET	60 FEET
LANDSCAPED OPEN SPACE	20%	26%
- EXISTING CONDITIONS AND BOUNDARY INFORMATION TAKEN FROM A PLAN ENTITLED 'BOUNDARY & TOPOGRAPHIC SURVEY ON STEVENS AVE., ARBOR ST., FOREST AVE. AND POLAND ST., PORTLAND, MAINE, MADE FOR MITCHELL & ASSOCIATES', DATED JANUARY 3, 2014, PREPARED BY OWEN HASKELL INC., FALMOUTH MAINE
- ELEVATIONS ARE ON CITY DATUM, BASED ON BENCH MARK AT 3' OFFSET MONUMENT UNDER COVER ON EASTERLY SIDE OF STEVENS AVENUE.
- PROPOSED DWELLING UNITS: 55 INDEPENDENT LIVING UNITS
EXISTING DWELLING UNITS: 160 (124 SNLU AND 36 INTERMEDIATE CARE)
- OFF-STREET PARKING REQUIREMENTS:

REQUIRED		
SNLU UNITS (124)	1 SPACE/4 UNITS	31 SPACES
INTERMEDIATE CARE (36 UNITS)	1 SPACE/5 UNITS	8 SPACES
NEW UNITS (55)	1 SPACE/1 UNIT	55 SPACES
EMPLOYEE PARKING (PEAK SHIFT)	1 SPACE/EMPLOYEE	32 SPACES
TOTAL		126 SPACES

PROPOSED (PER PARKING ANALYSIS)	VEHICULAR PARKING	134 SPACES
	HANDICAP PARKING	15 SPACES
	TOTAL	149 SPACES
- BICYCLE PARKING:
REQUIRED: 2 SPACES/5 DWELLING UNITS
22 SPACES (55 NEW DWELLING UNITS)
PROPOSED: 14 SPACES (7 HITCHES)
- SNOW STORAGE AREA IS LIMITED ON-SITE FOR CURRENT AND PROPOSED IMPROVEMENTS. THE PARK DANFORTH INTENDS TO CONTRACT FOR SNOW REMOVAL FOR LARGE STORM EVENTS EXCEEDING 3 INCH EVENTS, OR AS NEEDED. THERE IS LIMITED LANDSCAPE/GRASS AREAS ALONG THE PERIMETER OF THE PROPERTY WHERE SNOW STORAGE CAN BE ACCOMMODATED. DUE TO THE AGE OF THE POPULATION OF THE PARK DANFORTH SNOW REMOVAL AND MAINTAINING SAFE ACCESS AND WALKING CONDITIONS HAVE HIGH PRIORITY.
- BEARINGS ARE BASED ON CITY DATUM, MAINE STATE PLANE WEST ZONE (NAD83).
- ELEVATIONS ARE ON CITY DATUM, BASED ON BENCH MARK AT 3' OFFSET MONUMENT UNDER COVER ON EASTERLY SIDE OF STEVENS AVENUE



SIGN SCHEDULE:

- A STOP SIGN
- B FIRE LANE 'NO PARKING'
- C EMERGENCY VEHICLES ONLY
- D RIGHT TURN ONLY
- E TIME RESTRICTED PARKING
- F VISITOR PARKING
- G EMPLOYEE PARKING
- H RESIDENT PARKING
- I HANDICAP PARKING
- J VENDOR PARKING
- K KEEP RIGHT SIGN
- L DO NOT ENTER
- M NO PARKING FROM HERE TO CORNER
- N NO PARKING BETWEEN SIGNS

SNOW REMOVAL NOTE:

SNOW STORAGE AREA IS LIMITED ON-SITE FOR CURRENT AND PROPOSED IMPROVEMENTS. THE PARK DANFORTH INTENDS TO CONTRACT FOR SNOW REMOVAL FOR LARGE STORM EVENTS EXCEEDING 3 INCH EVENTS, OR AS NEEDED. THERE IS LIMITED LANDSCAPE/GRASS AREAS ALONG THE PERIMETER OF THE PROPERTY WHERE SNOW STORAGE CAN BE ACCOMMODATED. DUE TO THE AGE OF THE POPULATION OF THE PARK DANFORTH SNOW REMOVAL AND MAINTAINING SAFE ACCESS AND WALKING CONDITIONS HAVE HIGH PRIORITY.

LIGHTING SCHEDULE:

SYM	MH	PRODUCT	QUANTITY	OPTIONS
1	20'	BEACON VIPER (SINGLE)	5	90W
1A	20'	BEACON VIPER (SINGLE)	3	90W, HOUSE SIDE CUT-OFF
2	16'	BEACON VIPER (SINGLE)	6	90W
2A	16'	BEACON VIPER (SINGLE)	6	90W, HOUSE SIDE CUT-OFF
2B	16'	BEACON VIPER (DOUBLE)	3	90W
3	10'	AAL PARKWAY ACCENT	5	TYPE 3, 18 LED-BW
4	*	AAL PARKWAY BOLLARD	12	6 LED-BW, DSSH SCREEN

GENERAL NOTES:

- SITE AREA: 181,100 SF OR 4.16 ACRES
- APPLICANT: THE PARK DANFORTH
C/O DENISE VAGHON C.E.O.
777 STEVENS AVENUE
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- OWNERS: HFA FOREST AVENUE PROPERTIES, LLC LOTS 146-C-6, 146-C-9, 146-C-11, 146-C-12, 146-C-14 (ALL IN BOOK 29524 PAGE 325)
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- ELEVATIONS ARE ON CITY DATUM, BASED ON BENCH MARK AT 3' OFFSET MONUMENT UNDER COVER ON EASTERLY SIDE OF STEVENS AVENUE.
- PROPOSED DWELLING UNITS: 55 INDEPENDENT LIVING UNITS
EXISTING DWELLING UNITS: 160 (124 SNLU AND 36 INTERMEDIATE CARE)

11. OFF-STREET PARKING REQUIREMENTS:

REQUIRED	REQUIRED	PROPOSED
SNLU UNITS (124)	1 SPACE/4 UNITS	31 SPACES
INTERMEDIATE CARE (36 UNITS)	1 SPACE/5 UNITS	8 SPACES
NEW UNITS (55)	1 SPACE/1 UNIT	55 SPACES
EMPLOYEE PARKING	1 SPACE/EMPLOYEE	32 SPACES
	TOTAL	126 SPACES

REQUIRED (PER PARKING ANALYSIS)	PROPOSED PARKING
0.70 SPACES PER UNIT X 215 UNITS	151 SPACES
	HANDICAP PARKING 12 SPACES
	TOTAL 146 SPACES

12. BICYCLE PARKING:

REQUIRED:	PROPOSED:
2 SPACES/5 DWELLING UNITS	22 SPACES (55 NEW DWELLING UNITS)
22 SPACES (55 NEW DWELLING UNITS)	14 SPACES (7 HITCHES (5 AT GRADE, 2 IN GARAGE))

13. EXISTING IMPERVIOUS

PROPOSED IMPERVIOUS	PROPOSED IMPERVIOUS
3.22 ACRES (77.4% OF SITE)	3.05 ACRES (73.3% OF SITE)

14. FLOOR AREA CALCULATIONS:

GARAGE	16,817 G.S.F.
FIRST FLOOR:	14,975 G.S.F.
CONNECTOR:	3,848 G.S.F.
AUDITORIUM:	2,954 G.S.F.
SECOND FLOOR:	14,619 G.S.F.
THIRD FLOOR:	14,619 G.S.F.
FORTH FLOOR:	14,619 G.S.F.
FIFTH FLOOR:	14,955 G.S.F.
TOTAL	97,406 G.S.F.

15. PARKING SUMMARY:

BACK OF HOUSE LOT:	10 SPACES
FOREST AVENUE LOT:	7 SPACES
ARBOR STREET LOT:	22 SPACES
STAFF AND VISITOR LOT:	31 SPACES
STEVENS AVENUE LOT:	39 SPACES
GARAGE PARKING	37 SPACES
TOTAL	146 SPACES

LEGEND

	EXISTING	PROPOSED
PROPERTY LINE	---	---
GRANITE MONUMENT	■	■
CATCHBASIN	⊙	⊙
MANHOLE	⊙	⊙
HYDRANT	⊕	⊕
UTILITY POLE	⊕	⊕
WATER VALVE	⊕ WV	⊕ WV
SANITARY SEWER	ESAN	SAN
STORM DRAIN	ESD	ESD
WATER	EW	H2O
TELEPHONE	ETEL	ETEL
GAS	EG	GAS
OVERHEAD WIRES	EXOHV	EXOHV
UNDERGROUND ELECTRIC	EUGE	EUGE
LEACHING GALLEY	---	---
CLEAN OUT	---	C.O.
CURB	---	---
FENCE	X X	X X
SIGN	---	---
DECIDUOUS TREE	⊙	⊙
EVERGREEN TREE	⊙	⊙
CONTOUR	---72---	---72---
SPOT ELEVATION	---	+ 74.00
WALL MOUNTED LIGHT	---	---

Prepared For:

Owner:
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777 Stevens Avenue
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Tel.: 207-797-7710

Applicant:

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The Park Danforth

Portland, Maine
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Date:

OCTOBER 17, 2014

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PERMITTING

Revisions:

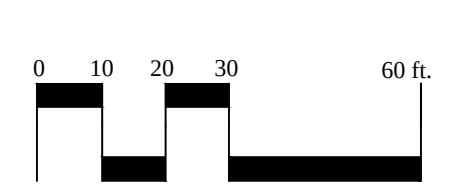
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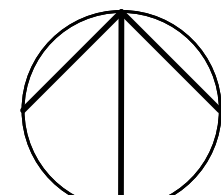
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LAYOUT AND
MATERIALS PLAN

Scale: 1"=30'



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CONSTRUCTION OVERSIGHT:

THE OWNER WILL RETAIN THE SERVICES OF A PROFESSIONAL ENGINEER TO INSPECT THE CONSTRUCTION AND STABILIZATION OF ALL STORMWATER MANAGEMENT STRUCTURES. IF NECESSARY, THE INSPECTING ENGINEER WILL INTERPRET THE DRYWELL CONSTRUCTION PLANS AND DETAILS FOR THE CONTRACTOR. ONCE ALL STORMWATER MANAGEMENT STRUCTURES ARE CONSTRUCTED AND STABILIZED, THE INSPECTING ENGINEER WILL NOTIFY THE DEPARTMENT IN WRITING WITHIN 30 DAYS TO STATE THAT THE STORMWATER SYSTEM HAS BEEN COMPLETED. ACCOMPANYING THE ENGINEER'S INSPECTIONS GIVING THE DATE OF EACH INSPECTION, THE TIME OF EACH INSPECTION, THE ITEMS INSPECTED ON EACH VISIT, AND INCLUDING ANT TESTING DATA OR SIEVE ANALYSIS DATA OF EVERY MINERAL SOIL AND SOIL MEDIA SPECIFIED IN THE PLANS AND USED ON THE SITE.

DEWATERING (IF REQUIRED):

INSPECTIONS BY A PROFESSIONAL ENGINEER WILL CONSIST OF A VISIT TO THE SITE PRIOR TO CONSTRUCTION TO ESTABLISH THE APPROPRIATE LOCATION FOR DISCHARGING FILTERED WATER FROM DISCHARGING OPERATIONS. A DEWATERING PLAN IS NEEDED TO ADDRESS EXCAVATION DE-WATERING FOLLOWING HEAVY RAINFALL EVENTS OR WHERE EXCAVATION MAY INTERCEPT THE GROUNDWATER TABLE DURING CONSTRUCTION. THE COLLECTED WATER NEEDS TREATMENT AND A DISCHARGE POINT THAT WILL NOT CAUSE DOWN GRADIENT EROSION AND OFF SITE SEDIMENTATION OR WITHIN A RESOURCE. PLEASE FOLLOW THE DETAILS OF SUCH A PLAN.

SOIL INSPECTION:

THE OWNER WILL RETAIN THE SERVICES OF A CERTIFIED SOIL SCIENTIST TO INSPECT THE SOILS BEFORE CRUSHED STONE IS INSTALLED FOR THE STORMWATER FACILITIES. THE PURPOSE IS TO INSURE ALL FACILITIES ARE BELOW THE "HARDPAN" LAYERS AND THE SOILS ARE SUITABLE FOR STORMWATER INFILTRATION.

SITE GRADING AND DRIVEWAY LOCATION:

INSPECTIONS BY A PROFESSIONAL ENGINEER WILL CONSIST OF A VISIT TO THE SITE PRIOR TO CONSTRUCTION TO CONSULT WITH THE EARTHWORK CONTRACTOR AND A POST-CONSTRUCTION MEETING TO CONFIRM GRADING ON LOTS FOR ALL DRIVEWAYS TO ENSURE RUNOFF IS DIRECTED ACCORDING TO PLANS AND TO OVERSEE THE RE-STABILIZATION OF THE LOT INTO A VEGETATED COVER.

BASIC STANDARDS -- EROSION CONTROL MEASURES:

MINIMUM EROSION CONTROL STANDARDS WILL NEED TO BE IMPLEMENTED AND THE APPLICANT WILL BE RESPONSIBLE TO MAINTAIN ALL COMPONENTS OF THE EROSION CONTROL PLAN UNTIL THE SITE IS FULLY STABILIZED. HOWEVER, BASED ON SITE AND WEATHER CONDITIONS DURING CONSTRUCTION, ADDITIONAL EROSION CONTROL MEASURES MAY NEED TO BE IMPLEMENTED. ALL AREAS OF INSTABILITY AND EROSION MUST BE REPAIRED IMMEDIATELY DURING CONSTRUCTION AND NEED TO BE MAINTAINED UNTIL THE SITE IS FULLY STABILIZED OR VEGETATION IS ESTABLISHED. A CONSTRUCTION LOG MUST BE MAINTAINED FOR THE EROSION AND SEDIMENT CONTROL INSPECTIONS AND MAINTENANCE.

STORM DRAIN SCHEDULE

SD NO.	PIPE TYPE	LENGTH	SLOPE (FT/FT)
SD#1	12" HDPE	64 L.F.	0.01
SD#2	12" HDPE	51 L.F.	0.01
SD#3	12" HDPE	19 L.F.	0.01
SD#4	12" HDPE	11 L.F.	0.01
SD#5	12" HDPE	57 L.F.	0.01
SD#6	12" HDPE	14 L.F.	0.01
SD#7	12" HDPE	14 L.F.	0.01
SD#8	12" HDPE	5 L.F.	0.01
SD#9	12" HDPE	23 L.F.	0.01
SD#10	12" HDPE	27 L.F.	0.01
SD#11	12" HDPE	47 L.F.	0.01
SD#12	12" HDPE	114 L.F.	0.01
SD#13	12" HDPE	19 L.F.	0.01
SD#14	12" HDPE	79 L.F.	0.024
SD#15	NOT USED		
SD#17	NOT USED		
SD#18	12" HDPE	22 L.F.	0.005
SD#19	12" HDPE	47 L.F.	0.01
SD#20	12" HDPE	15 L.F.	0.01
SD#21	12" HDPE	31 L.F.	0.01
SD#22	12" HDPE	4 L.F.	0.01
SD#23	12" HDPE	16 L.F.	0.01

LEACHING GALLEY SCHEDULE

NOTE: EACH LEACHING GALLEY TO BE 4' X 4' PRECAST CONCRETE STRUCTURE AS MANUFACTURED BY AMERICAN CONCRETE INDUSTRIES (ITEM #2840), AUBURN, MAINE (OR APPROVED EQUAL). SEE DETAIL SHEET L6.2.

LG NO.	INV. IN	INV. OUT
LG 1+2	120.60	120.60
LG 3+4	119.89	119.89
LG 5+6	120.63	120.63
LG 8,9+10	118.31	118.31
LG 11+12	NOT USED	
LG 13+14	115.53	115.53
LG 15,16,17	115.08	115.08

DRAINAGE STRUCTURE SCHEDULE

ALL CATCH BASIN AND MANHOLE PRECAST CONCRETE STRUCTURES SHALL BE 4'-0" DIAMETER (INSIDE).

CB#	RM	INV. IN (RD)	INV. OUT	CB#	RM	INV. IN (RD)	INV. OUT
CB#1	126.35	121.95	121.85	CB#11	120.20	115.78	115.68
CB#2	125.40	120.90		CB#12	120.15	115.40	115.22
CB#3	125.65	121.15		CB#13	120.15	115.22	115.12
CB#4	126.65	121.04	120.94	EX DMH	119.97		
CB#5	125.50	120.37	120.27	EX IN (RD)	119.97	119.97	119.97
CB#6	125.75	120.41	120.31	EX IN (RD)	119.97	119.97	119.97
CB#7	124.70	120.20		EX IN (RD)	119.97	119.97	119.97
CB#8	125.70	119.84	119.74	EX IN (RD)	119.97	119.97	119.97
CB#9	126.85	121.00	118.50	EX IN (RD)	119.97	119.97	119.97
CB#10	121.50	116.35	116.25	EX IN (RD)	119.97	119.97	119.97

GRADING NOTES:

- DO NOT SCALE THESE DRAWINGS. ANY DISCREPANCIES BETWEEN DRAWINGS, DETAILS, NOTES AND SPECIFICATIONS SHALL BE IMMEDIATELY REPORTED TO THE LANDSCAPE ARCHITECT FOR FURTHER DIRECTION AND RESOLUTION BEFORE ADDITIONAL WORK PROCEEDS.
- CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND GRADES ON THE GROUND. ANY DISCREPANCIES SHALL BE REPORTED IMMEDIATELY TO THE LANDSCAPE ARCHITECT FOR DIRECTION AND RESOLUTION PRIOR TO ANY FURTHER WORK.
- CONTRACTOR SHALL FIELD VERIFY LOCATION AND DEPTH OF ALL EXISTING UTILITIES WITH THE APPROPRIATE UTILITY COMPANIES PRIOR TO EXCAVATION OR INSTALLATION OF ANY PART OF THIS WORK.
- CONTRACTOR SHALL AVOID ALL AREAS NOT REQUIRING GRADING. CONTRACTOR SHALL NOT DISTURB THESE AREAS.
- 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 DIGSAFE (1-888-344-7233) AT LEAST THREE BUSINESS DAYS BEFORE PERFORMING ANY CONSTRUCTION.
- CONTRACTOR SHALL CONDUCT TEST PIT EXCAVATION TO CONFIRM LOCATION OF EXISTING UTILITIES WHERE NEW BUILDING SANITARY SERVICE AND WATER SERVICE ARE PROPOSED.
- WHERE STORM DRAINS OR SEWER MAINS HAVE LESS THAN FOUR (4) FEET OF COVER BETWEEN TOP OF PIPE AND FINISH GRADE, INSULATE PIPE USING TWO (2) INCH THICK STYROFOAM INSULATION BOARD OVER AND ALONG SIDES OF THE PIPE.
- EXISTING DRAINAGE MANHOLES SHALL BE CORED TO ACCEPT NEW DRAINAGE PIPES AS NOTED.
- PIPE LENGTH EQUALS THE CENTER TO CENTER DISTANCES BETWEEN CATCH BASINS AND/OR MANHOLES MINUS ONE-HALF OF THE DIAMETER OF EACH CATCH BASIN OR MANHOLE.
- ROOF DRAIN CONNECTIONS SHALL BE CONFIRMED WITH FINAL BUILDING PLANS.
- ALL UTILITIES SHALL BE INSTALLED IN CONFORMANCE WITH INDIVIDUAL UTILITY DISTRICT REQUIREMENTS; CONTRACTOR SHALL COORDINATE INSTALLATION WITH APPROPRIATE UTILITY DISTRICT BEFORE INSTALLATION.
- ALL WORK WITHIN THE ROAD RIGHT-OF-WAY AND ALL UTILITIES CONNECTING TO INFRASTRUCTURE WITHIN THE ROAD SHALL MEET CITY OF PORTLAND TECHNICAL MANUAL STANDARDS.
- ELEVATIONS ARE ON CITY DATUM, BASED ON BENCH MARK AT 3' OFFSET MONUMENT UNDER COVER ON EASTERLY SIDE OF STEVENS AVENUE. BENCHMARK = 127.25
- GRADING FOR THE A.D.A. COMPLIANT PARKING SPACES TO THE A.D.A. BUILDING ENTRANCES SHALL COMPLY WITH ACCESSIBILITY REQUIREMENTS INCLUDING MAXIMUM 2% SLOPE IN ANY DIRECTION AND SURFACE TREATMENT. ANY REPAIRS TO ACHIEVE COMPLIANCE SHALL BE COMPLETED AT NO EXTRA EXPENSE TO THE OWNER.
- INSTALLATION OF NEW OR UPGRADES TO EXISTING SANITARY SEWERS, STORM DRAINS, WATER LINES OR OTHER UTILITIES SHALL MEET THE PROVISIONS OUTLINED IN SECTION 2 AND SECTION 9 OF THE CITY OF PORTLAND TECHNICAL MANUAL.

LEGEND

	EXISTING	PROPOSED
PROPERTY LINE	---	---
GRANITE MONUMENT	■	■
CATCHBASIN	⊙	⊙
MANHOLE	⊙	⊙
HYDRANT	⊙	⊙
UTILITY POLE	⊙	⊙
WATER VALVE	⊙	⊙
SANITARY SEWER	ESAN	SAN
STORM DRAIN	ESD	H2O
WATER	EW	
TELEPHONE	ETEL	
GAS	EG	GAS
OVERHEAD WIRES	EXOHV	
UNDERGROUND ELECTRIC	EUGE	
LEACHING GALLEY		LG
CLEAN OUT		CO
CURB		
FENCE	XX	XX
SIGN		
DECIDUOUS TREE	⊙	⊙
EVERGREEN TREE	⊙	⊙
CONTOUR	---72---	---73---
SPOT ELEVATION		+ 74.00
WALL MOUNTED LIGHT		

Prepared For:

Owner:
Home For The Aged
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Tel.: 207-797-7710

Applicant:
The Park Danforth
777 Stevens Avenue
Portland, Maine 04103
Tel.: 207-797-7710

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MITCHELL & ASSOCIATES
Landscape Architects
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Tel.: 207-794-4427

The Park Danforth
Portland, Maine
777 Stevens Avenue

Date:
OCTOBER 17, 2014

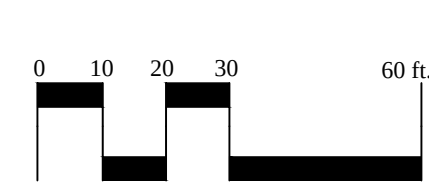
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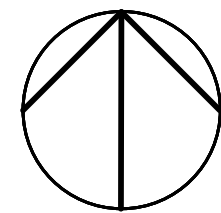
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Title:
GRADING AND
DRAINAGE PLAN

Scale: 1" = 30'



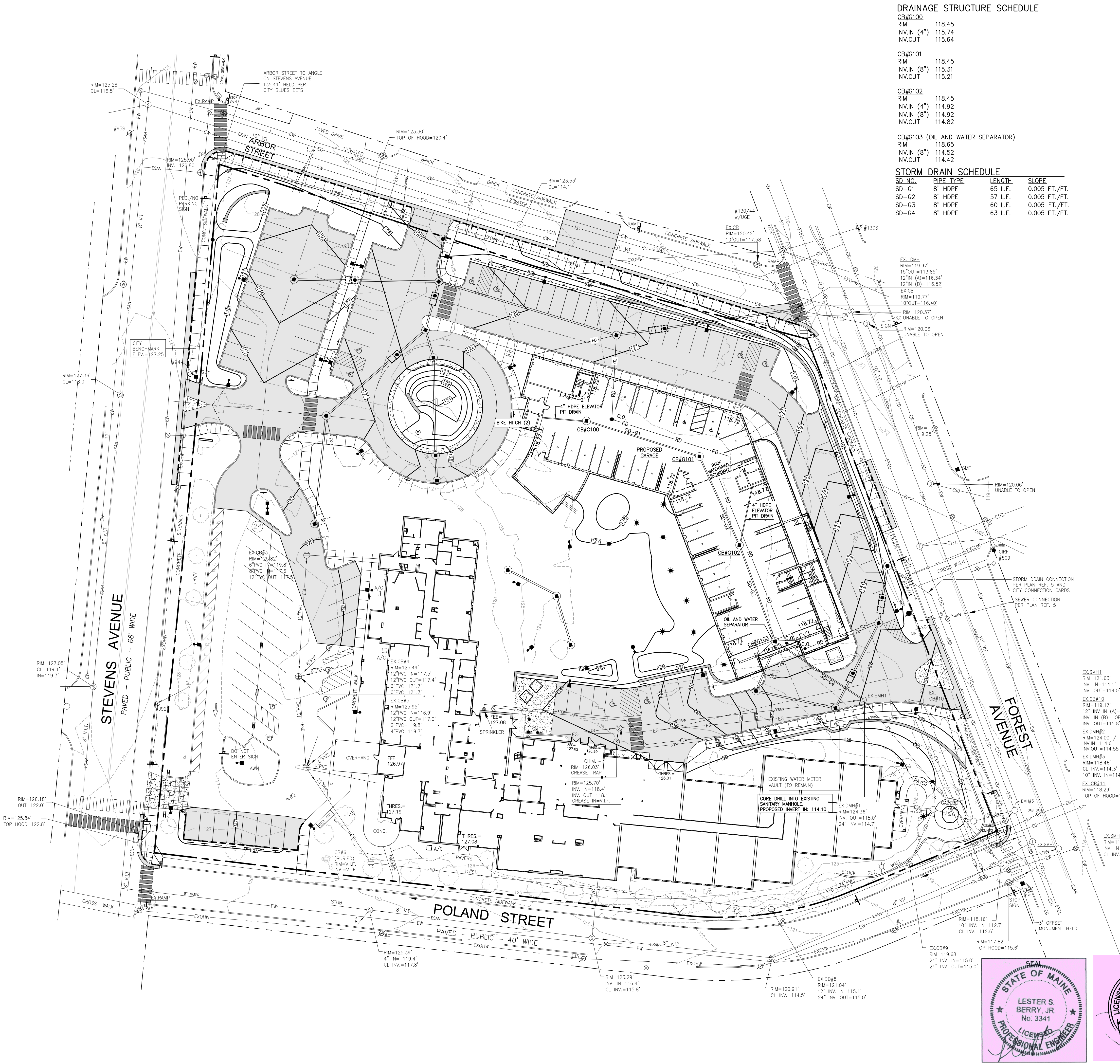
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DRAINAGE STRUCTURE SCHEDULE

CB#G100
RIM 118.45
INV.IN (4") 115.74
INV.OUT 115.64

CB#G101
RIM 118.45
INV.IN (8") 115.31
INV.OUT 115.21

CB#G102
RIM 118.45
INV.IN (4") 114.92
INV.IN (8") 114.92
INV.OUT 114.82

CB#G103 (OIL AND WATER SEPARATOR)

RIM 118.65
INV.IN (8") 114.52
INV.OUT 114.42

STORM DRAIN SCHEDULE

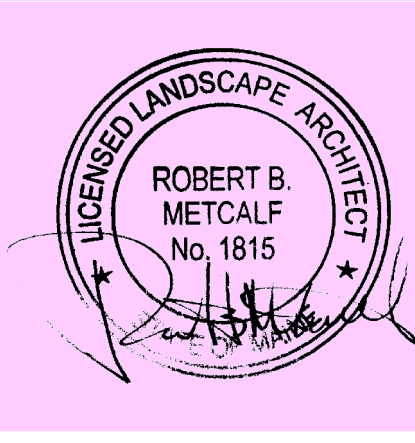
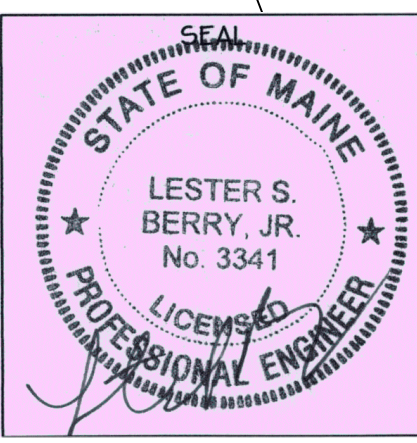
SD NO.	PIPE TYPE	LENGTH	SLOPE
SD-G1	8" HDPE	65 L.F.	0.005 FT./FT.
SD-G2	8" HDPE	57 L.F.	0.005 FT./FT.
SD-G3	8" HDPE	60 L.F.	0.005 FT./FT.
SD-G4	8" HDPE	63 L.F.	0.005 FT./FT.

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LEGEND

	EXISTING	PROPOSED
PROPERTY LINE		
GRANITE MONUMENT		
CATCHBASIN		
MANHOLE		
HYDRANT		
UTILITY POLE		
WATER VALVE		
SANITARY SEWER		
STORM DRAIN		
WATER		
TELEPHONE		
GAS		
OVERHEAD WIRES		
CMP CABLE LINES		
FOUNDATION DRAIN		
CLEAN OUT		
CURB		
FENCE		
SIGN		
DECIDUOUS TREE		
EVERGREEN TREE		
CONTOUR		
SPOT ELEVATION		
WALL MOUNTED LIGHT		
POLE MOUNTED LIGHT		



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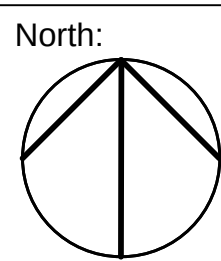
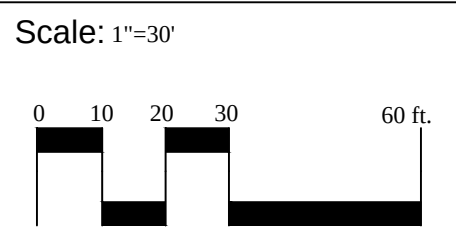
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Revisions:
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Title:
GRADING PLAN:
GARAGE LEVEL



Sheet No.:
L3.1

EROSION AND SEDIMENT CONTROL PLAN

THIS PLAN HAS BEEN DEVELOPED AS A STRATEGY TO CONTROL SOIL EROSION AND SEDIMENTATION DURING AND AFTER THE EXPANSION OF THE PARK DANFORTH AT 777 STEVENS AVENUE IN PORTLAND, MAINE. THIS PLAN IS BASED ON THE MAINE EROSION AND SEDIMENTATION CONTROL HANDBOOK FOR CONSTRUCTION, BEST MANAGEMENT PRACTICES, MARCH, 2003.

A. PROPOSED DEVELOPMENT

THE PROJECT CONSISTS OF THE CONSTRUCTION OF A FIVE-STORY, 21,777 SQUARE FOOT BUILDING. THE BUILDING WILL INCLUDE 54 APARTMENT UNITS, A PARKING GARAGE, A GARAGE LEVEL MECHANICAL ROOM AND SERVICE CORE. THE 4.16-ACRE PARCEL CURRENTLY CONSISTS OF BUILDING AND A PARKING LOT; 77.4% OF THE EXISTING SITE IS IMPERVIOUS. THE PROPOSED IMPERVIOUS LOT IMPERVIOUS IS 3.05-ACRES OR 73.3% OF THE SITE.

B. EROSION CONTROL PRACTICES/TEMPORARY MEASURES

THE FOLLOWING TEMPORARY MEASURES TO CONTROL EROSION AND SEDIMENTATION SHALL BE UTILIZED:

EACH GROUND AREA, OPENED OR EXPOSED, WHETHER DIRECTLY OR INDIRECTLY DUE TO THE DEVELOPMENT, SHALL BE MINIMIZED AND SHALL BE STABILIZED WITHIN 15 DAYS OF INITIAL DISTURBANCE OF SOIL AND SHALL BE PERMANENTLY STABILIZED WITHIN SEVEN DAYS OF FINAL GRADING. THIS STATEMENT APPLIES TO DISTURBED AREAS BEYOND THE LIMITS OF THE PROPOSED BUILDING. EXPOSED AREAS SHALL BE STABILIZED PRIOR TO A RAIN EVENT.

TEMPORARY SOIL STABILIZATION SHALL BE EITHER BY TEMPORARY MULCHING, TEMPORARY SEEDING, PERMANENT BASE GRAVEL, OR ASPHALT BINDER COURSE AS FOLLOWS:

TEMPORARY SEEDING: SEED SHALL BE AROOSTOOK RYE APPLIED AT 2.60#/1000 SF. LIME SHALL BE AGRICULTURAL GROUND LIMESTONE APPLIED AT 130#/1000 SF. FERTILIZER SHALL BE 10-10-10 CLASSIFICATION APPLIED AT 13.0#/1000 SF. MULCH SHALL CONSIST OF HAY AND STRAW MULCH AND SPREAD EVENLY AT A RATE OF 10-40#/1000 SF. TEMPORARY SEEDINGS SHALL ONLY BE MADE BETWEEN APRIL 15 AND OCTOBER 1, AND SHALL NOT BE PLACED OVER SNOW.

TEMPORARY MULCHING: MULCH SHALL CONSIST OF CHOPPED HAY OR STRAW MULCH AND SPREAD BY MECHANICAL BLOWER EVENLY AT A RATE OF 150-200#/1000 SF. TEMPORARY MULCH SHALL BE REMOVED PRIOR TO PERMANENT SOIL STABILIZATION. MULCH MUST NOT BE PLACED OVER SNOW. SNOW SHALL BE REMOVED PRIOR TO MULCHING.

PERMANENT BASE GRAVEL: BASE GRAVEL UNDER PAVEMENT SHALL BE SUITABLE AS TEMPORARY SOIL STABILIZATION UNDER THE FOLLOWING CONDITIONS:

- a) SLOPES SHALL BE LESS THAN EIGHT PERCENT;
- b) GRAVEL SHALL MEET THE SPECIFICATIONS FOR BASE OR SUBBASE GRAVEL FOR THE PROPOSED COMPLETED PAVEMENT.

C. EROSION CONTROL PRACTICES/PERMANENT MEASURES

THE FOLLOWING PERMANENT MEASURES TO CONTROL EROSION AND SEDIMENTATION SHALL BE UTILIZED:

1. PERMANENT SEEDING SHALL BE PERFORMED DURING CONSTRUCTION OPERATIONS AS EACH DISTURBED AREA HAS BEEN BROUGHT TO FINISH GRADE. PERMANENT SEEDINGS SHALL BE MADE AS DORMANT SEEDING AFTER THE FIRST KILLING FROST. DORMANT SEEDING AND MULCH SHALL BE USED AT TWO TIMES THE PERMANENT SEEDING AND MULCHING RATE SHOWN BELOW FOR BOTH LAWN AS WELL AS EMBANKMENTS. SEED, LOAM, LIME, FERTILIZER AND MULCH ARE TO BE AS FOLLOWS:

SEED: THE SEED MIXTURE SHALL CONSIST OF SEED PROPORTIONED BY WEIGHT. ALL SEED SHALL BE FRESH, CLEAN, "NEW CROP" SEED. HARMLESS INERT MATTER AND WEED SEEDS SHALL BE PERMITTED UP TO ONE PERCENT OF THE GROSS WEIGHT OF EACH VARIETY OF SEED. ALL SEED SUPPLIED SHALL BE PACKED IN APPROVED CONTAINERS BEARING THE MANUFACTURER'S NAME AND ANALYSIS OF CONTENTS. THE FOLLOWING MATERIALS AND APPLICATION RATES SHALL BE REQUIRED FOR PERMANENT SEEDING:

LAWN:	
CREeping RED RESCUE:	0.69#/1000 SF
KENTUCKY BLUEGRASS:	0.57#/1000 SF
PERENNIAL RYEGRASS:	0.46#/1000 SF
REDTOP:	0.12#/1000 SF
TOTAL:	1.84#/1000 SF

LOAM: SHALL BE FREE OF GRASSES, ROOTS, LARGE STONE AND INORGANIC DEBRIS. PLACE LOAM AT FOUR INCHES MINIMUM DEPTH OVER ALL DISTURBED AREAS. FINAL GRADING OF ALL LAWN AREAS TO BE APPROVED BY LANDSCAPE ARCHITECT BEFORE SEEDING.

LIME: LIME SHALL BE AGRICULTURAL GROUND LIMESTONE AND APPLIED AS PER RECOMMENDATION OF A STATE COMMERCIAL SOIL TESTING LABORATORY. FERTILIZER: FERTILIZER SHALL BE 10-20-20 CLASSIFICATION AND APPLIED AS PER RECOMMENDATION OF A STATE COMMERCIAL SOIL TESTING LABORATORY.

MULCH: MULCH SHALL CONSIST OF HAY OR STRAW MULCH. MULCH SHALL BE SPREAD EVENLY AT A RATE OF TWO AND ONE HALF TONS PER ACRE OVER ALL SEEDING. AFTER APPLICATION, THE MULCH SHALL BE THOROUGHLY WETTED. IN STEEP AREAS, THE MULCH SHALL BE HELD IN PLACE BY THE USE OF JUTE EROSION CONTROL NETTING OR APPROVED ALTERNATIVE NETTING MATERIAL. NOTE: ALL EXPOSED SOIL MUST BE COVERED REGARDLESS OF MULCHING RATES SPECIFIED.

THE CONTRACTOR SHALL MAINTAIN THE SEEDING AND MULCHING AREAS UNTIL FINAL ACCEPTANCE OF THE WORK. MAINTENANCE SHALL CONSIST OF PROVIDING PROPER WATERING, PROTECTION AGAINST TRAFFIC AND REPAIRING ANY AREAS DAMAGED DUE TO WIND, WATER, EROSION, FIRE OR OTHER CAUSES. SUCH DAMAGED AREAS SHALL BE REPAIRED TO REESTABLISH THE CONDITION AND GRADE OF THE SOIL PRIOR TO SEEDING AND SHALL THEN BE RESEEDING, RESEEDING AND REMULCHING.

D. WINTER CONDITIONS

EXCAVATION AND EARTHWORK SHALL BE COMPLETED SUCH THAT NO MORE THAN 1 ACRE OF THE SITE IS WITHOUT STABILIZATION AT ANY ONE TIME. LIMIT THE EXPOSED AREA TO THOSE AREAS IN WHICH WORK IS EXPECTED TO BE UNDERTAKEN DURING THE PROCEEDING 15 DAYS AND THAT CAN BE MULCHED IN ONE DAY PRIOR TO ANY SNOW EVENT. HAY AND STRAW MULCH RATE SHALL BE A MINIMUM OF 150 LBS./ACRE (3 TONS/ACRE) AND SHALL BE PROPERLY ANCHORED. THE CONTRACTOR SHALL INSTALL ANY ADDED MEASURES WHICH MAY BE NECESSARY TO CONTROL EROSION/SEDIMENTATION FROM THE SITE, DEPENDENT UPON THE ACTUAL SITE AND WEATHER CONDITIONS. CONTINUATION OF EARTHWORK OPERATIONS ON ADDITIONAL AREAS SHALL NOT BEGIN UNTIL THE EXPOSED SOIL SURFACE ON THE AREA BEING WORKED HAS BEEN STABILIZED, IN ORDER TO MINIMIZE AREAS WITHOUT EROSION CONTROL PROTECTION.

E. CONSTRUCTION SEQUENCE

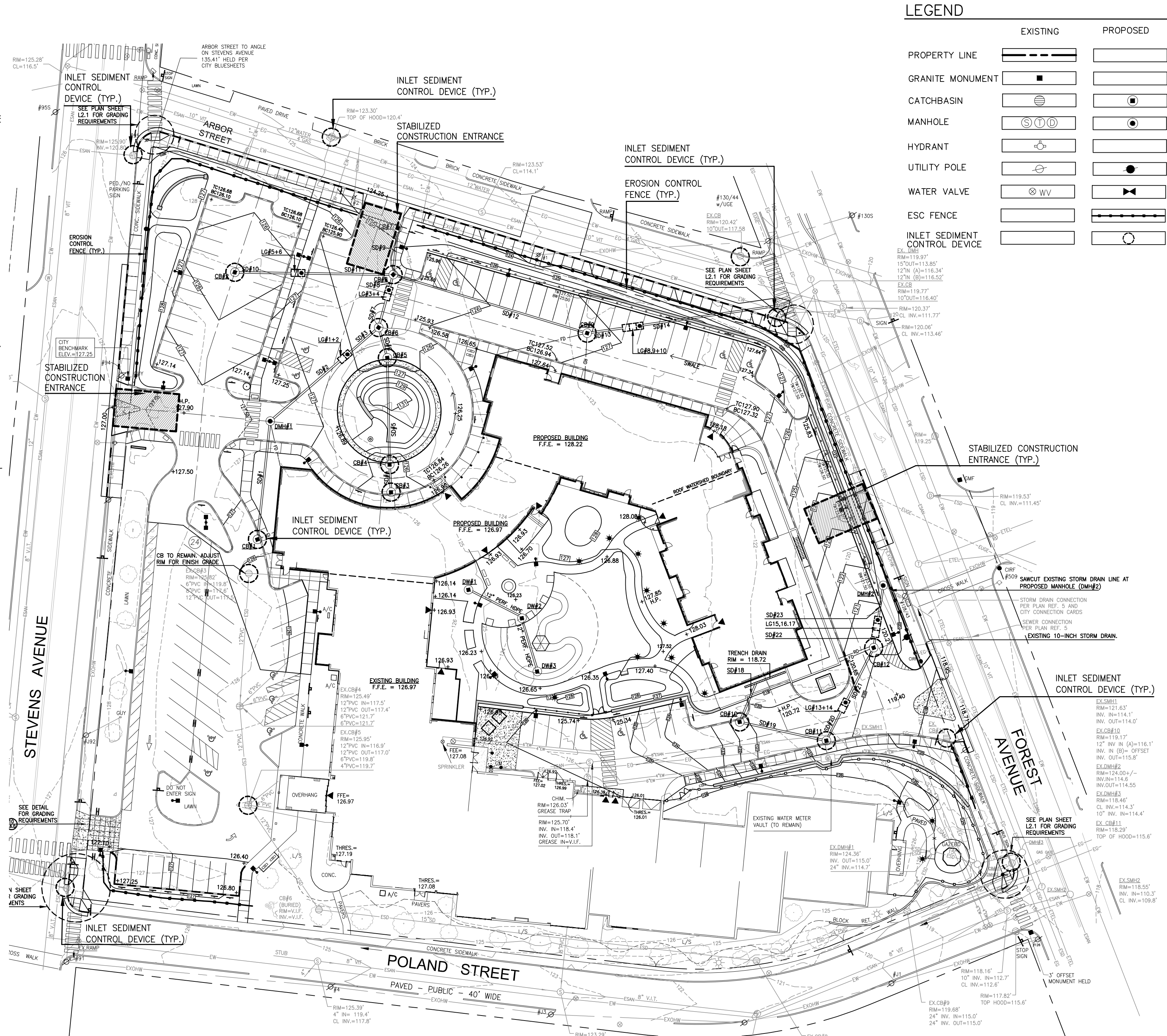
THE GENERAL SEQUENCE OF WORK SHALL BE AS FOLLOWS:

1. INSTALL EROSION CONTROL DEVICES, (SILT FENCE, STABILIZED CONSTRUCTION ENTRANCE AND OR SEDIMENT BARRIER.)
2. TEMPORARILY STABILIZE DISTURBED AREAS BY MULCHING ALL EXPOSED SOIL WITHIN 15 DAYS OF INITIAL DISTURBANCE.
3. INSTALL STORMWATER SYSTEM;
4. COMPLETE SITE CONSTRUCTION WORK;
5. CONSTRUCT PAVED ACCESS AND PARKING AREAS;
6. INSTALL PERMANENT VEGETATION ON ALL EXPOSED AREAS WITHIN 15 DAYS OF FINAL GRADING; AND
7. PERFORM CONTINUING MAINTENANCE ON ALL EROSION AND SEDIMENTATION CONTROL DEVICES AND MEASURES.

F. SITE INSPECTION & MAINTENANCE

WEEKLY INSPECTIONS, AS WELL AS ROUTINE INSPECTIONS FOLLOWING RAINFALLS OF 0.5" OVER A CONSECUTIVE 24-HOUR PERIOD, SHALL BE CONDUCTED BY THE SITE CONTRACTOR OF ALL TEMPORARY AND PERMANENT EROSION CONTROL DEVICES UNTIL FINAL ACCEPTANCE OF THE PROJECT. NECESSARY REPAIRS SHALL BE MADE TO CORRECT UNDERMINING OR DETERIORATION. FINAL ACCEPTANCE SHALL INCLUDE A SITE INSPECTION TO VERIFY THE STABILITY OF ALL DISTURBED AREAS AND SLOPES. UNTIL FINAL INSPECTION, ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL IMMEDIATELY BE CLEANED, AND REPAIRED BY THE SITE CONTRACTOR AFTER STORM EVENTS. DISPOSAL OF ALL TEMPORARY EROSION CONTROL DEVICES SHALL BE THE RESPONSIBILITY OF THE SITE CONTRACTOR.

CONTINUED TEMPORARY MAINTENANCE AND LONG TERM PROVISIONS FOR PERMANENT MAINTENANCE OF ALL EROSION AND SEDIMENTATION CONTROL FACILITIES AFTER ACCEPTANCE OF THE PROJECT SHALL BE THE RESPONSIBILITY OF THE PARK DANFORTH.



LEGEND

	EXISTING	PROPOSED
PROPERTY LINE		
GRANITE MONUMENT		
CATCHBASIN		
MANHOLE		
HYDRANT		
UTILITY POLE		
WATER VALVE		
ESC FENCE		
INLET SEDIMENT CONTROL DEVICE		

Prepared For:

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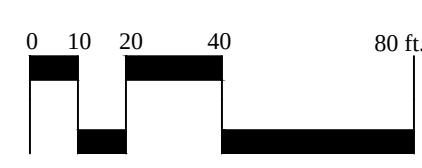
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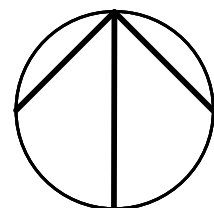
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Title:
EROSION AND SEDIMENT
CONTROL PLAN

Scale: 1" = 40'

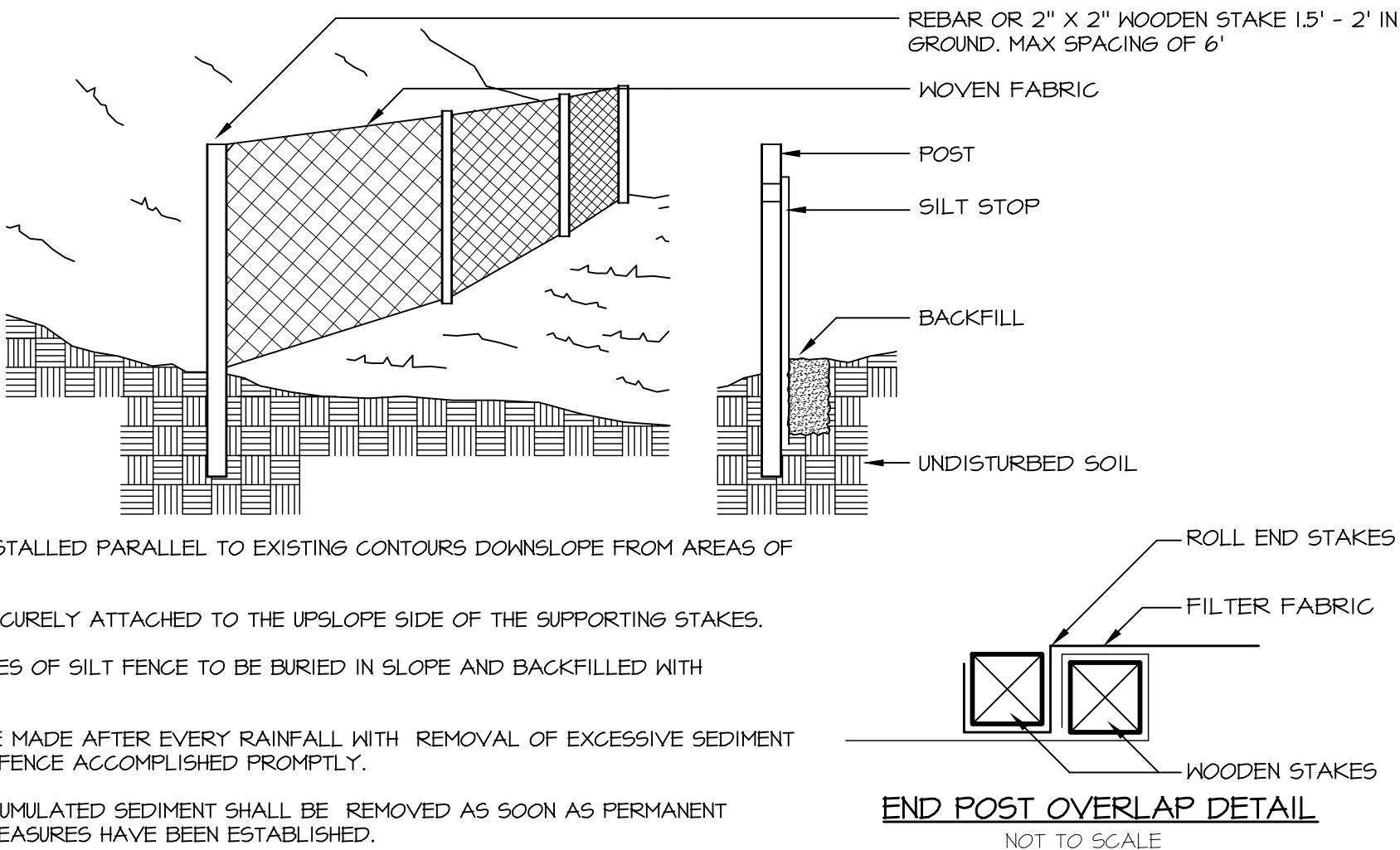


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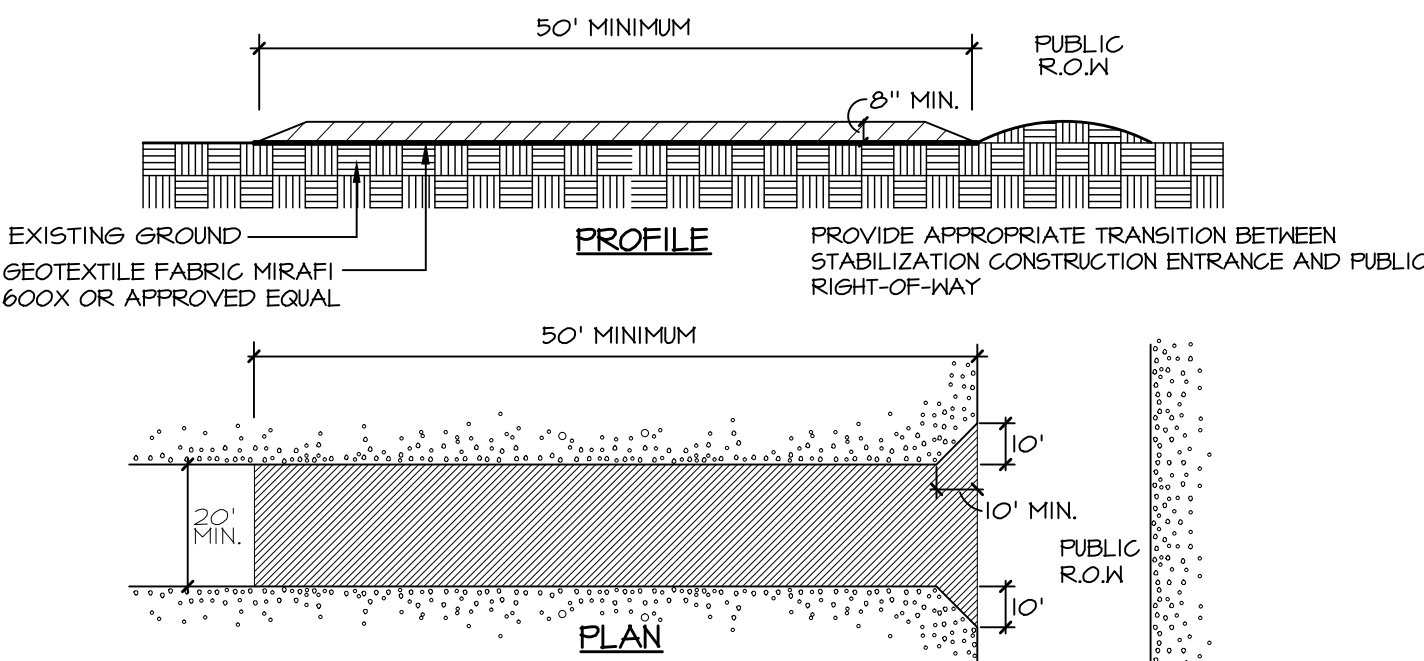
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SILT FENCE

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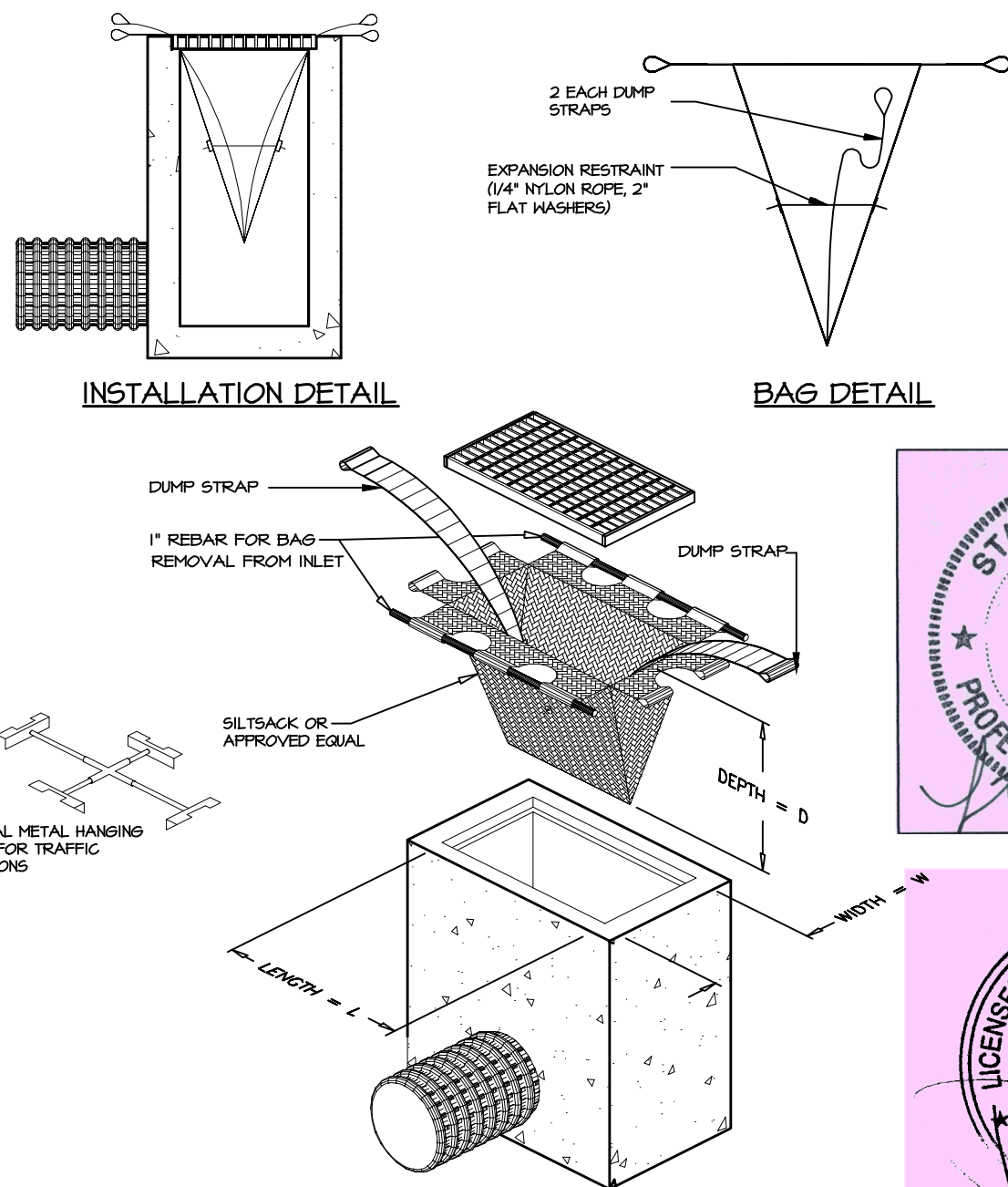


CONSTRUCTION SPECIFICATIONS:

1. STONE SIZE: AASHTO DESIGNATION M 43, SIZE NO. 2 (2.5" TO 1.5"). USE CRUSHED STONE.
2. LENGTH: AS EFFECTIVE, BUT NOT LESS THAN 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. WASHING: WHEN NECESSARY, WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE WHICH DRAINS INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING ANY STORM DRAIN, DITCH, OR WATERCOURSE THROUGH THE USE OF SAND BAGS, GRAVEL, BOARDS OR OTHER APPROVED METHODS.
6. 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 STONES AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED IMMEDIATELY.

STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE



INLET SEDIMENT CONTROL DEVICE

NOT TO SCALE

L4.0

PLANT SCHEDULE

KEY	QTY	BOTANICAL NAME	COMMON NAME	SIZE	KEY	QTY	BOTANICAL NAME	COMMON NAME	SIZE
TREES					SHRUBS				
A. FAR	5	ACER FREEMANII 'ARMSTRONG'	ARMSTRONG MAPLE	2.5" CAL	A. FIR	16	AZALEA 'FIRESTAR'	EVERGREEN FIRESTAR AZALEA	#3
A. GRI	5	ACER GRISEUM	PAPERBARK MAPLE	2.5" CAL	C. ALN	10	CLETHRA ALNIFOLIA 'SIXTEEN CANDLES'	SIXTEEN CANDLES SUMMERSWEET	#3
C. JAP	5	CERCIDIPHYLLUM JAPONICUM	KATSURA TREE	2.5" CAL	D. BUR	15	DAPHNE BURKWOODII 'CAROL MACKIE'	CAROL MACKIE DAPHNE	#3
C. KOU	7	CORNUS KOUSA	KOUSA DOGWOOD	2.5" CAL	E. MOO	4	EUONYMUS 'MOONSHADOW'	MOONSHADOW EVERGREEN EUONYMUS	#3
*LOWEST BRANCHES SHALL BE 5' MIN HT.					F. GAR	15	FOTHERGILLA GARDENII	DWARF BOTTLEBRUSH	#3
C. KOW	1	CORNUS KOUSA 'WOLF EYES'	VARIEGATED KOUSA DOGWOOD	2" CAL	H. MAC	39	HYDRANGEA MACROPHYLLA 'ENDLESS SUMMER'	ENDLESS SUMMER HYDRANGEA	#3
F. SYL	1	FAGUS SYLVATICA 'TRICOLOR'	TRICOLOR BEECH	2.5" CAL	H. PAN	9	HYDRANGEA PANICULATA 'QUICKFIRE'	QUICKFIRE HYDRANGEA	#3
M. ROR	13	MALUS 'ROYAL RAINDROPS'	ROYAL RAINDROPS FLOWERING CRAB	1.75" CAL	J. COM	4	JUNIPER COMMUNIS 'REPANDA'	REPANDA JUNIPER	#3
P. SNO	1	PRUNUS SNOFOZAM	SNOW FOUNTAIN WEEPING CHERRY	1.5" CAL	J. HOL	25	JUNIPER 'HOLGER'	HOLGER JUNIPER	#3
S. PSE	1	STEWARTIA PSEUDOCAMELLIA	JAPANESE STEWARTIA	#15	J. OBE	15	JUNIPER CHINESE 'OBELISK'	OBELISK JUNIPER	#5
T. COR	7	TILIA CORDATA 'GREENSPIRE'	GREENSPIRE LINDEN	2.5" CAL	J. VIR	6	JUNIPER VIRGINIANA 'GREY OWL'	GREY OWL JUNIPER	#3
U. AVF	5	ULMUS AMERICANA 'VALLEY FORGE'	VALLEY FORGE ELM	2.5" CAL	M. DDB	18	MICROBIOTA DECUSATA 'DREW'S BLUE'	DREW'S BLUE CARPET CYPRESS	#3
					M. GAL	11	MYRICIA GALE	SWEETGALE	#3
					P. JAP	11	PIERIS JAPONICA 'MT FIRE'	MT FIRE ANDROMEDA	#3
					R. ARO	13	RHUS AROMATICA 'LOW GRO'	LOW-GRO SUMAC	#3
					R. KNO	12	ROSE 'KNOCK OUT'	KNOCK OUT ROSE	#3
					R. BUB	10	RHODODENDRON 'BUBBLEGUM'	BUBBLEGUM RHODODENDRON	#3
					R. OLM	17	RHODODENDRON 'OLGA MEZITT'	OLGA MEZITT RHODODENDRON	#3
					S. PAT	17	SYRINGA PATULA 'MISS KIM'	MISS KIM LILAC	4'-5' HT.
					T. CUS	1	TAXUS CUSPIDATA 'CAPITATA '	UPRIGHT JAPANESE YEW	4'-5' HT.
					T. OCC	6	THUJA OCCIDENTALIS 'DOUGLASII'	DOUGLAS ARBORVITAE	4'-5' HT.
					T. MTA	30	TAXUS MEDIA 'TAUNTONII'	TAUNTONII YEW	#3
					V. COR	12	VACCINIUM CORYMBOSUM	HIGHBUSH BLUEBERRY	#3
					V. DHE	15	VIBURNUM DILATATUM 'HENNEKE'	HENNEKE VIBURNUM	4'-5' HT.
					VINES				
					C. PAN	4	CLEMATIS PANICULATA	SWEET AUTUMN CLEMATIS	#3

ARBOR STREET

V. COR (4)

T. MTA (10)

PERENNIALS-TYPICAL

GENERAL PLANTING NOTES

1. CALL DIG-SAFE (1-888-344-7233) PRIOR TO BEGINNING WORK. THE LANDSCAPE CONTRACTOR IS ADVISED OF THE PRESENCE OF UNDERGROUND UTILITIES AND SHALL VERIFY THE EXISTENCE AND LOCATION OF SAME BEFORE COMMENCING AND DIGGING OPERATIONS. THE LANDSCAPE CONTRACTOR SHALL REPLACE OR REPAIR UTILITIES PAVING, WALKS, CURBING, ETC. DAMAGED IN PERFORMANCE OF THIS JOB AT NO ADDITIONAL COST TO OWNER.
2. CONTRACTOR SHALL THOROUGHLY FAMILIARIZE HIMSELF WITH ALL SITE CONDITIONS PRIOR TO CONSTRUCTION BIDDING.
3. DO NOT SCALE FROM DRAWINGS. ANY OMISSIONS IN DIMENSIONING SHALL BE REPORTED IMMEDIATELY TO THE LANDSCAPE ARCHITECT. ANY DISCREPANCIES BETWEEN DRAWINGS, DETAILS, NOTES AND SPECS SHALL BE IMMEDIATELY REPORTED TO THE LANDSCAPE ARCHITECT FOR FURTHER DIRECTION AND RESOLUTION BEFORE ANY ADDITIONAL WORK PROCEEDS.
4. PROVIDE SMOOTH TRANSITION WHERE NEW WORK MEETS EXISTING CONDITIONS.
5. CONTRACTOR SHALL FURNISH AND PLACE 12 INCHES OF LOAM IN ALL SHRUB BEDS, 30 INCHES IN ALL TREE PITS, AND 6 INCHES UNDER ALL TURF AREAS. THE LANDSCAPE CONTRACTOR SHALL COORDINATE SUBGRADE PREPARATION WITH THE GENERAL CONTRACTOR PRIOR TO PLACING LOAM.
6. ALL PLANT MATERIAL INSTALLED SHALL MEET THE SPECIFICATIONS OF "AMERICAN STANDARDS FOR NURSERY STOCK" BY THE AMERICAN ASSOCIATION OF NURSERYMEN" LATEST EDITION.
7. ALL PLANT MATERIAL SHALL BE FREE FROM INSECTS AND DISEASE.
8. ALL PLANTING SHALL BE DONE IN ACCORDANCE WITH ACCEPTABLE HORTICULTURAL PRACTICES. THIS IS TO INCLUDE PROPER PLANTING MIX, PLANT BED AND TREE PIT PREPARATION, PRUNING, STAKING OR GUYING, WRAPPING, SPRAYING, FERTILIZATION, PLANTING AND ADEQUATE MAINTENANCE UNTIL ACCEPTANCE FROM THE OWNER.
9. ALL GRASS, OTHER VEGETATION AND DEBRIS SHALL BE REMOVED FROM ALL PLANTING AREAS PRIOR TO PLANTING.
10. EXISTING TREES TO BE PRESERVED SHALL BE PROTECTED DURING CONSTRUCTION AND SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR.
11. ALL SHRUB BEDS AND TREE PITS SHALL BE MULCHED WITH 3" CLEAN SHREDDED BLACK MULCH (DO NOT EXCEED 3" DEPTH).
12. ANY DEVIATION FROM THE LANDSCAPE PLAN, INCLUDING PLANT LOCATION, SELECTION, SIZE, QUANTITY, OR CONDITION SHALL BE REVIEWED AND APPROVED BY THE OWNER AND LANDSCAPE ARCHITECT AND MUNICIPAL AUTHORITY, IF APPLICABLE, PRIOR TO INSTALLATION ON SITE.
13. WHERE INDICATED ON PLAN, PLANTING SOIL MIXTURE FOR GROUND COVER AND PERENNIAL BED AREAS SHALL CONSIST OF FOUR PARTS TOPSOIL, TWO PARTS SPHAGNUM PEAT MOSS, AND ONE PART HORTICULTURAL PERLITE BY VOLUME. PEAT MOSS MAY BE SUBSTITUTED WITH WELL-ROTTED OR DEHYDRATED MANURE OR COMPOST. ROTOTILL BEDS TO A DEPTH OF 8 INCHES.
14. DAMAGE TO EXISTING SITE IMPROVEMENTS DURING INSTALLATION OF LANDSCAPE MATERIAL SHALL BE THE RESPONSIBILITY OF THE LANDSCAPE CONTRACTOR.

NOTES:

DIG HOLE AT LEAST 2 TIMES THE WIDTH OF ROOT BALL AND AS DEEP AS THE ROOT BALL (NO DEEPER). SET ROOT BALL CENTERED WITH TOP AT GROUND LEVEL OR SLIGHTLY HIGHER, CORRECT HOLE DEPTH AS NEEDED.

FOR DECIDUOUS AND NEEDLED EVERGREEN TREES AND SHRUBS 1 FULL WHEELBARROW EXISTING SOIL, 2 SHOVELS PEAT, 1 SHOVEL WELL ROTTED MANURE, OR OTHER COMPOSTED ORGANIC MATERIAL FOR BROKLEAVED EVERGREENS AND RELATED ERICACEAE PLANTS, 1 FULL WHEELBARROW EXISTING SOIL, 3-4 SHOVELS PEAT, 1 SHOVEL WELL ROTTED MANURE, OR OTHER COMPOSTED ORGANIC MATERIAL OF LOW pH (RECOMMENDATIONS ARE FOR ACCEPTABLE PLANTING AREAS).

CONTAINER GROWN STOCK: REMOVE CONTAINER PROTECTING ROOT BALL. GENTLY COMB OUT ROOTS, PRUNE DAMAGED ROOTS.

BACKFILL 2/3 OF HOLE WITH AMENDED SOIL THEN FILL HOLE WITH WATER, LET DRAIN, REPEAT WATER AND DRAIN. BACK FILL TO FINISH GRADE, TAMP GENTLY, AND CREATE EARTH SAUCER. WATER THOROUGHLY ONCE AGAIN TO REMOVE REMAINING AIR POCKETS.

2" x 2" OR 2 1/2" DIAMETER STAKES WITH 2 #12 GAUGE WIRES ENCASED IN 2-PLY REINFORCED RUBBER HOSE 1/2" DIAMETER OR CHAINLOCK AS APPROVED BY LANDSCAPE ARCHITECT. 2 STAKES LOCATED 180° APART (STAKES SHALL BE FIRMLY SET TO PROVIDE NECESSARY TENSION).

3" WELL ROTTED BLACK PINE BARK MULCH OVER PLANTING AREA AND AWAY FROM TRUNK.

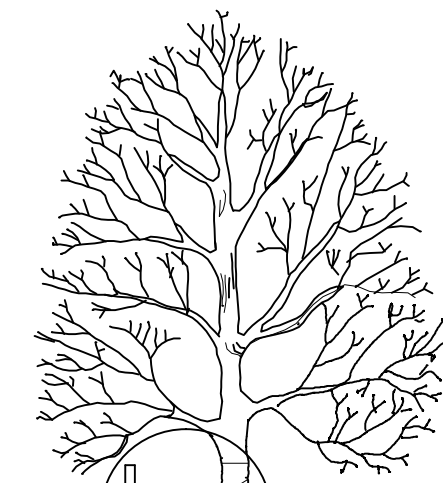
REMOVE PLASTIC BURLAP. REMOVE NATURAL FIBER BURLAP FROM AT LEAST THE TOP 1/3 OF ROOTBALL, OR MORE IF THE ROOTBALL IS FIRM.

REMOVE TOP 1/2 OF WIRE BASKET.

EARTH SAUCER (3" HT.).

SOIL MIX--SEE NOTE ABOVE.

UNDISTURBED SUBGRADE.



1 5 TREE AND SHRUB INSTALLATION NOT TO SCALE

LEGEND

	EXISTING	PROPOSED
PROPERTY LINE		
GRANITE MONUMENT		
CATCHBASIN		
MANHOLE		
HYDRANT		
UTILITY POLE		
WATER VALVE		
TELEPHONE		
OVERHEAD WIRES		
CMP CABLE LINES		
CLEAN OUT		
CURB		
FENCE		
SIGN		
DECIDUOUS TREE		
EVERGREEN TREE		
WALL MOUNTED LIGHT		

Prepared For:

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Applicant:

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The Park Danforth

Portland, Maine

777 Stevens Avenue

Date:

OCTOBER 17, 2014

Issued For:

PERMITTING

Revisions:

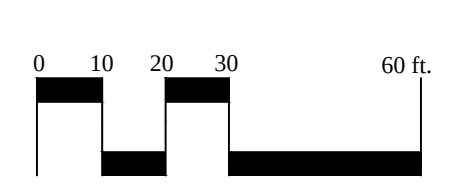
NOV. 25, 2014: Per City of Portland
Staff Review Comments
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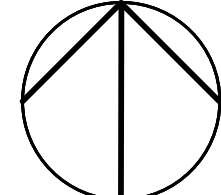
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PLANTING PLAN

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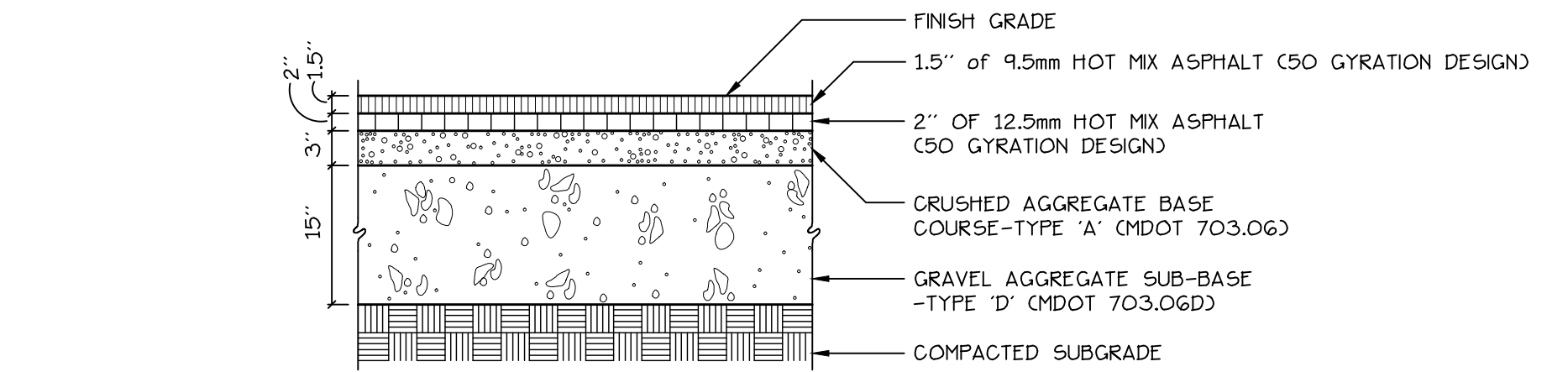
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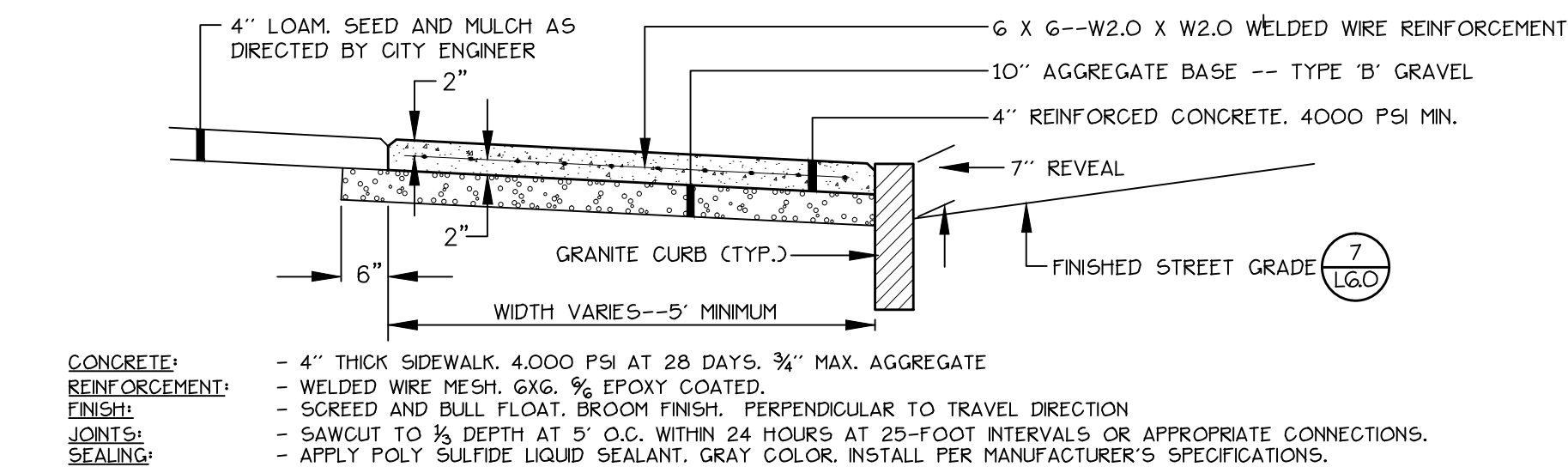
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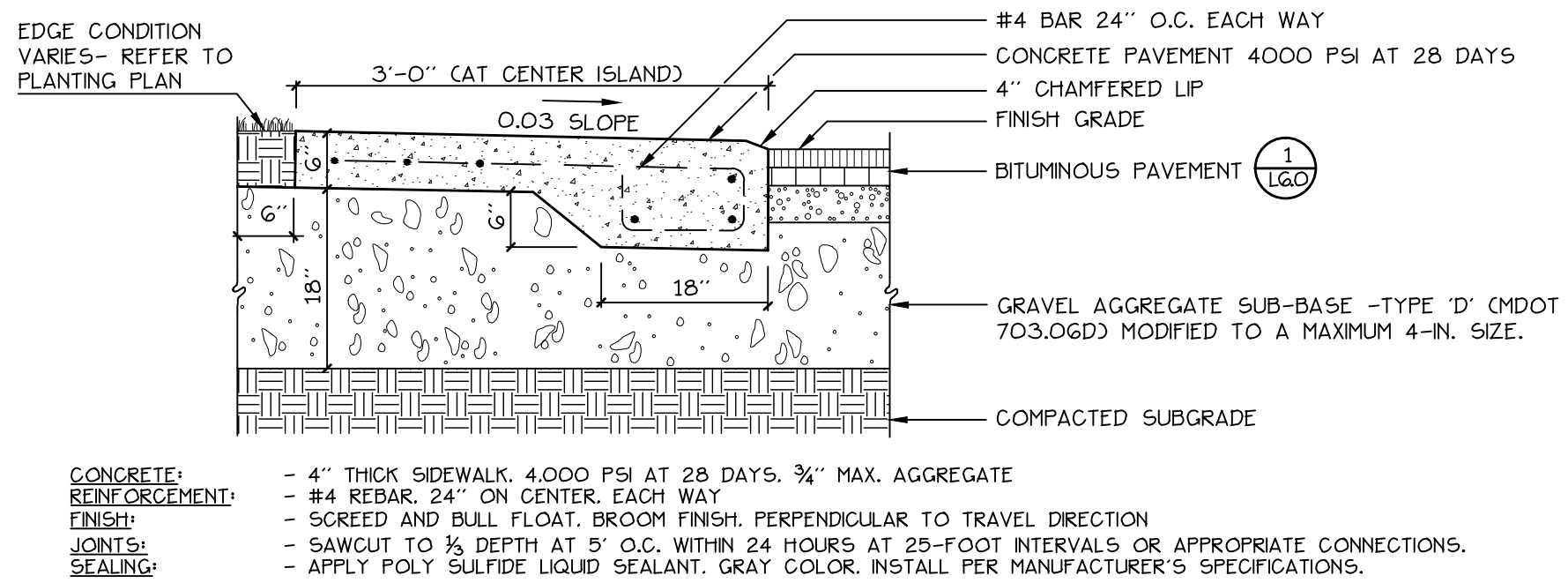
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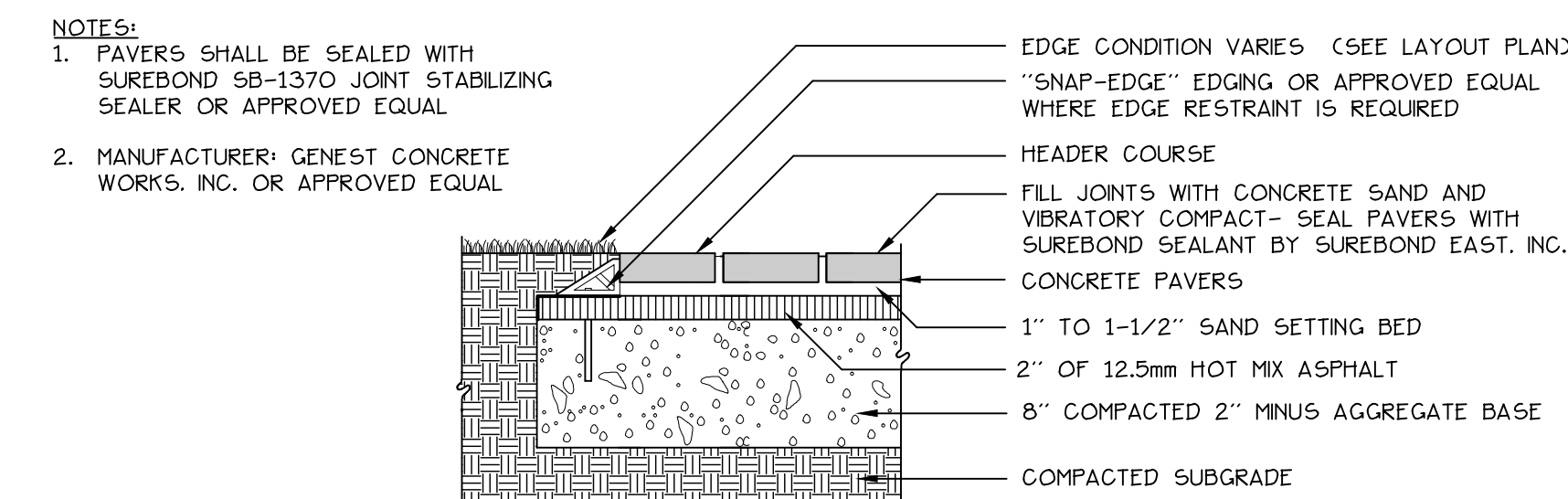
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BITUMINOUS PAVEMENT- PARKING LOT, ROAD AND GARAGE
NOT TO SCALE



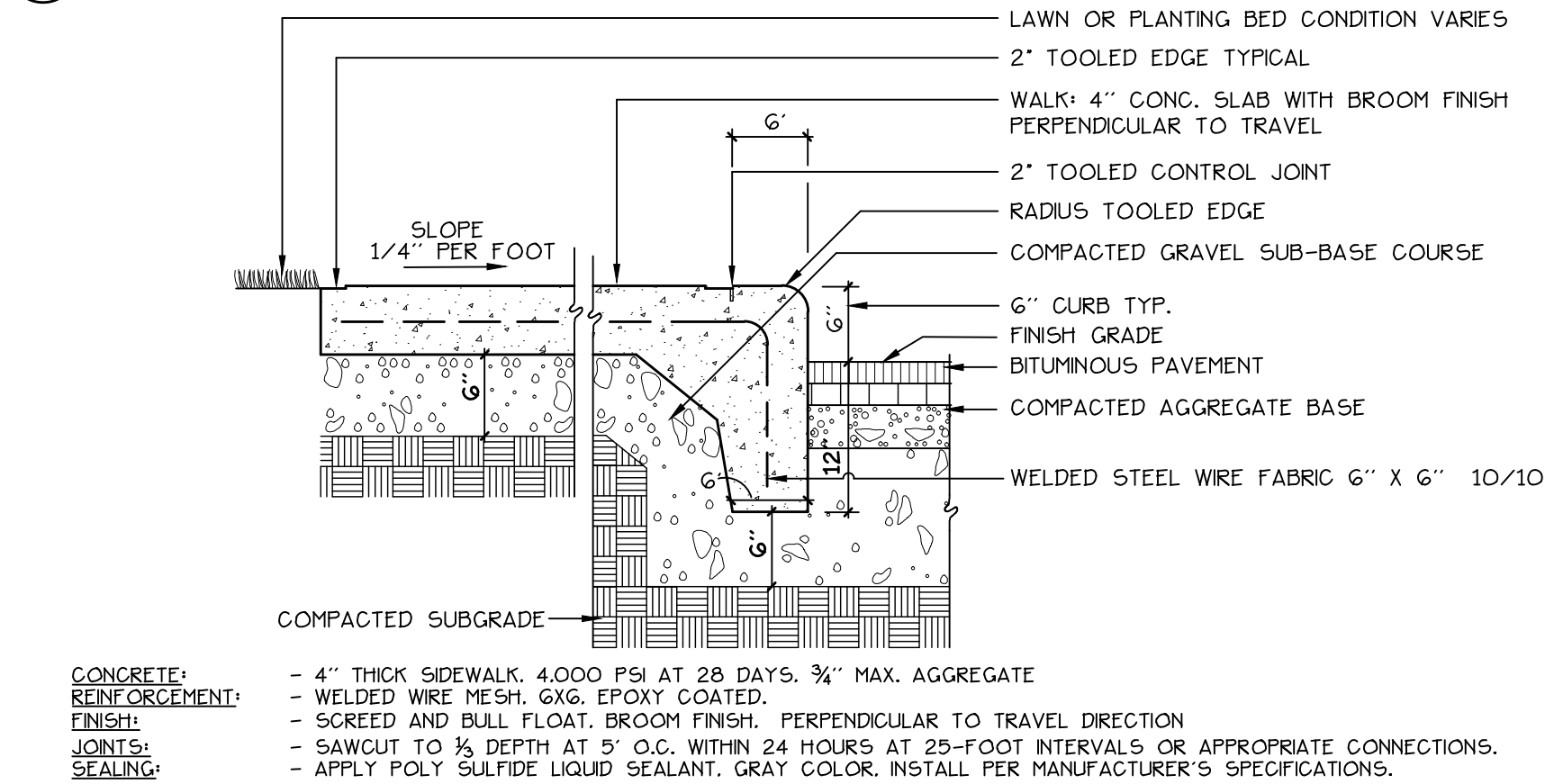
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CITY OF PORTLAND STANDARD DETAIL: REINFORCED CONCRETE SIDEWALK
NOT TO SCALE



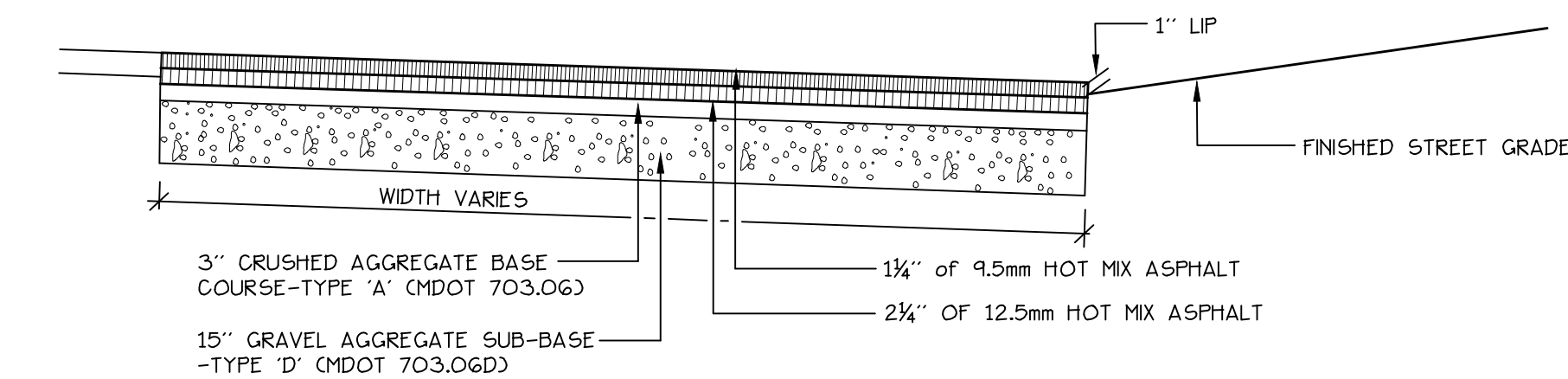
3 L6.0
CONCRETE PAVEMENT: TRAFFIC ISLANDS AND CENTER ISLAND AT ENTRANCE
NOT TO SCALE



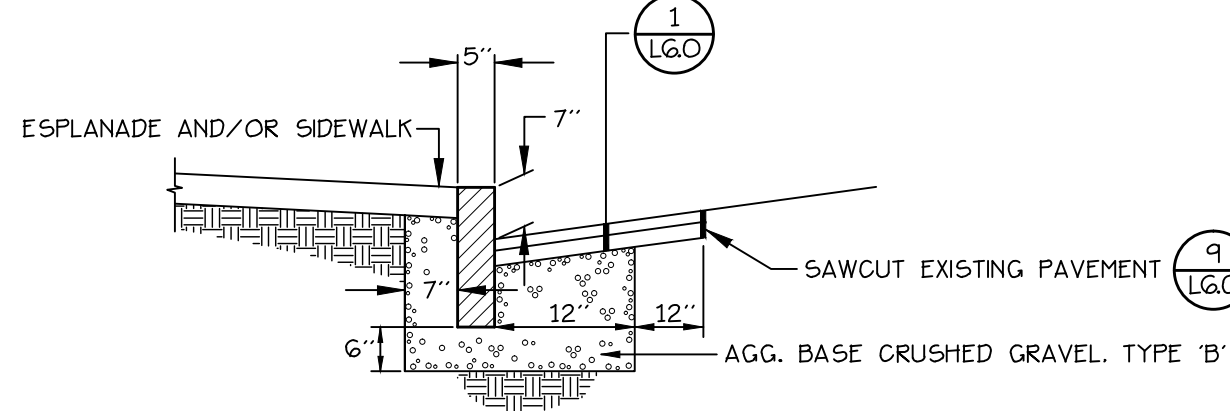
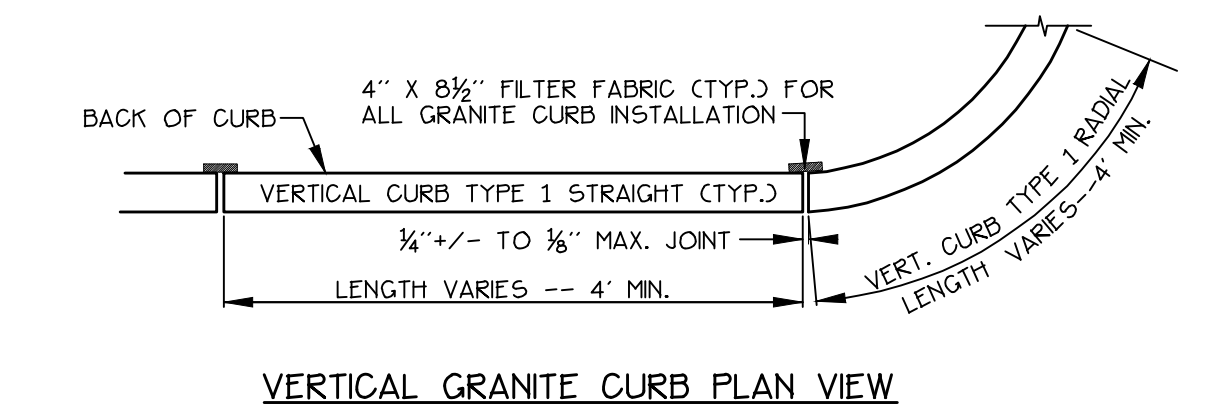
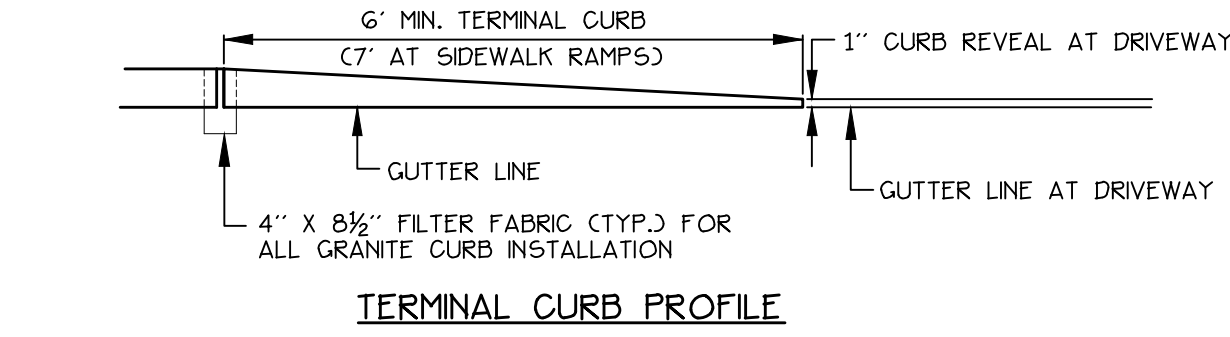
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CONCRETE PAVERS
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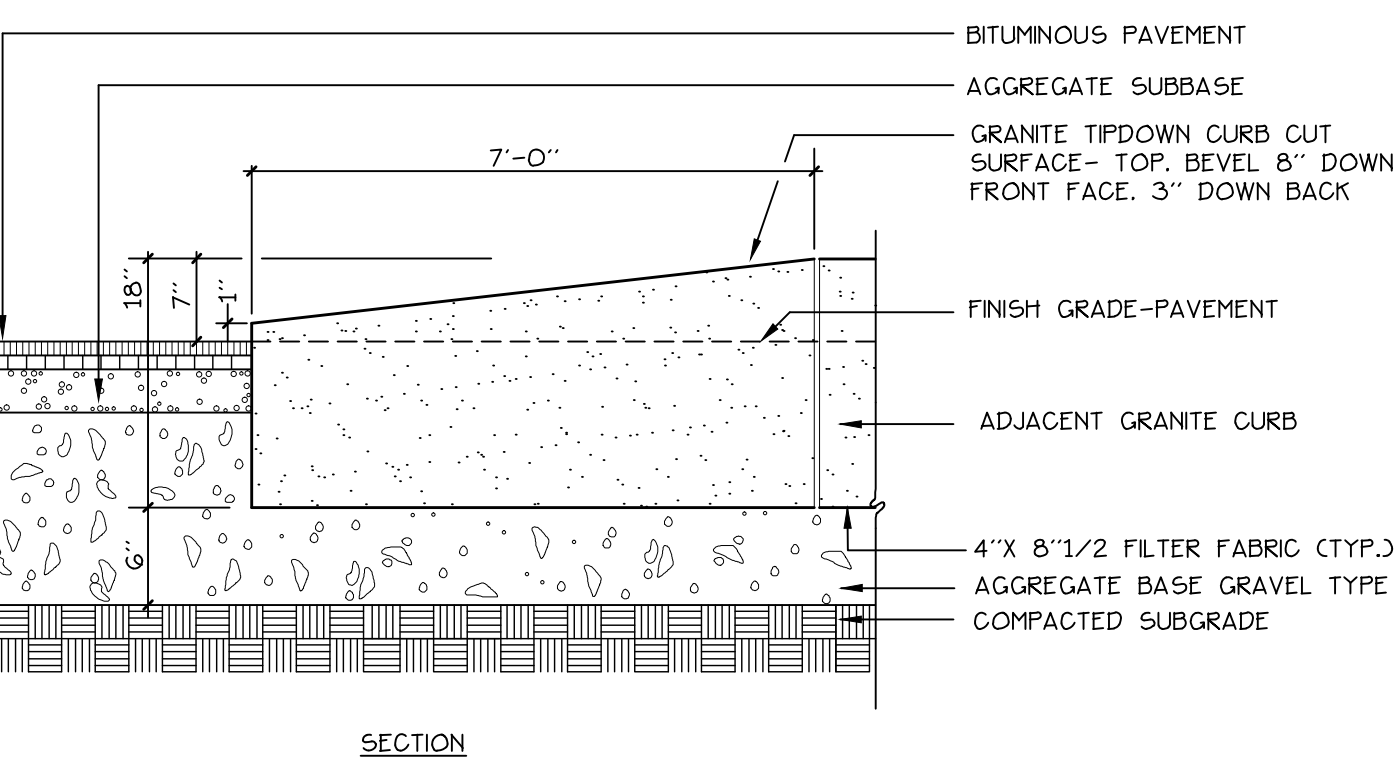
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INTEGRAL CONCRETE WALK/CURB
NOT TO SCALE



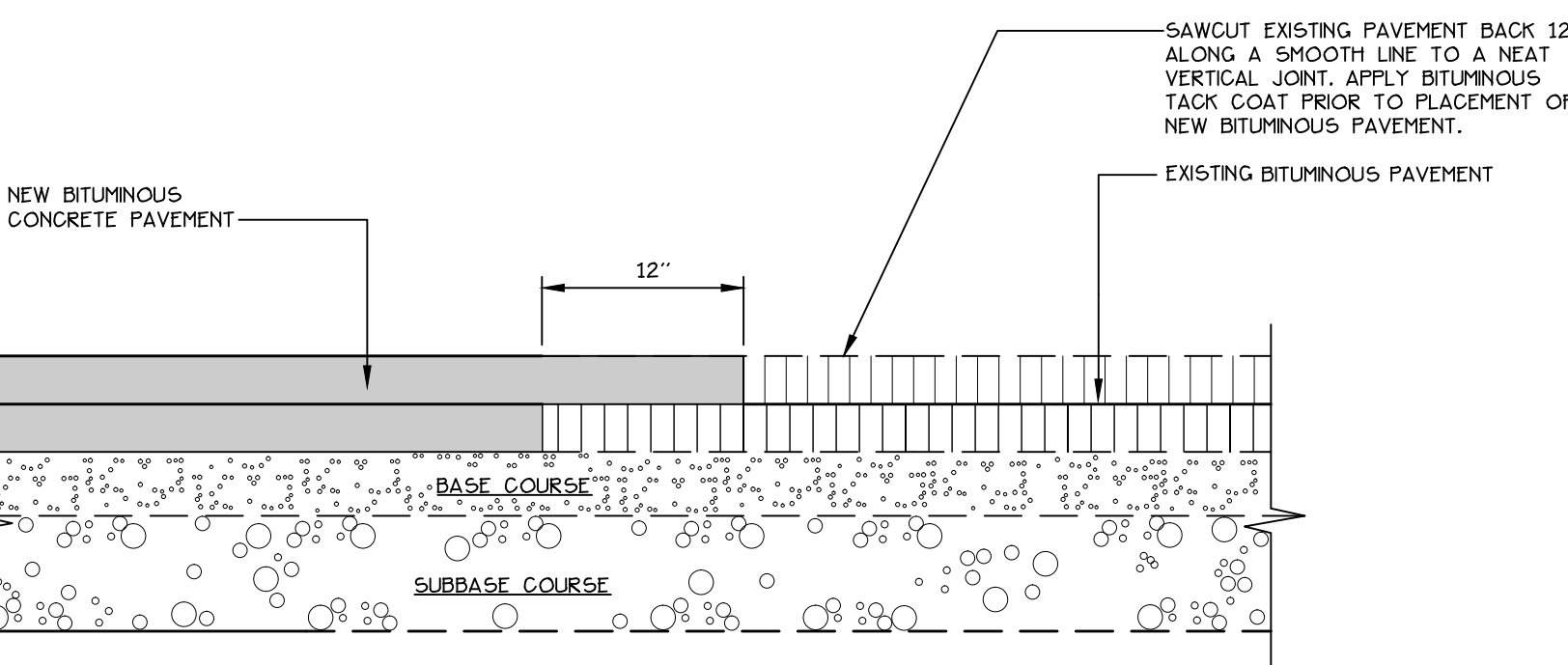
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BITUMINOUS DRIVEWAY APRON
NOT TO SCALE



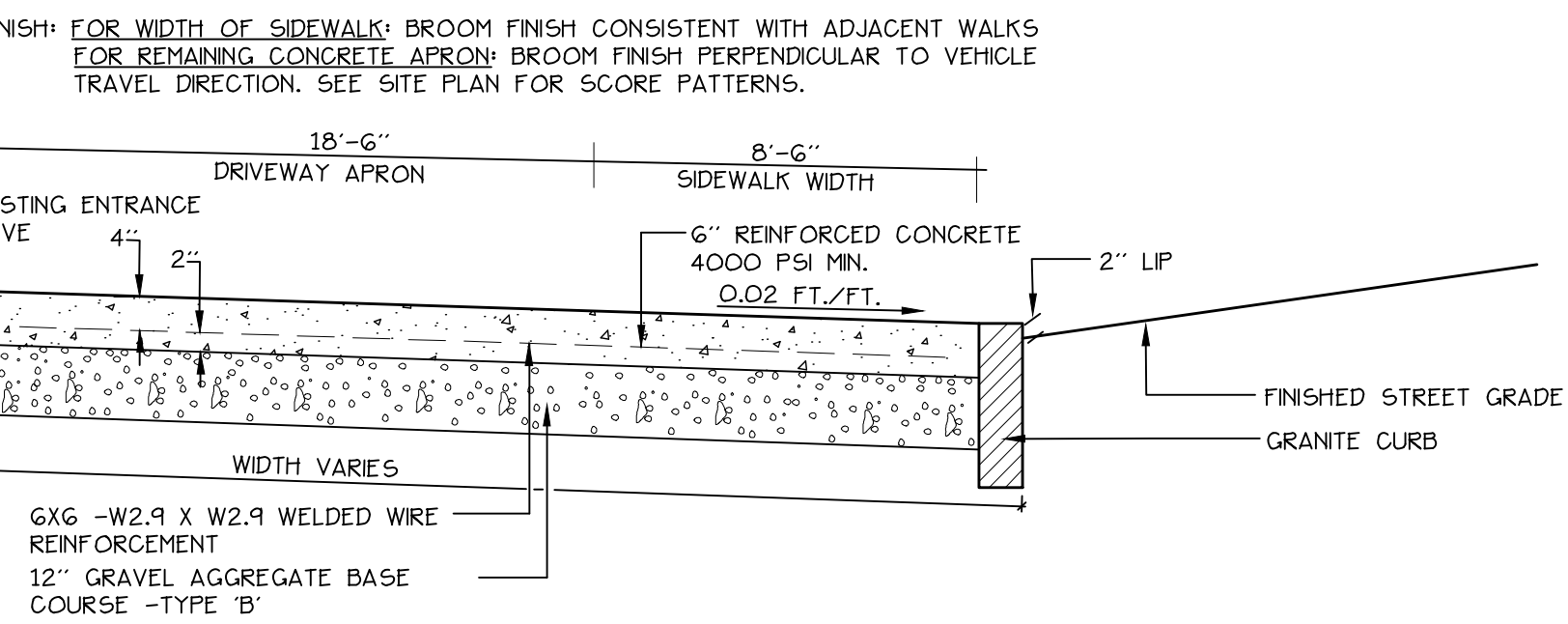
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CITY OF PORTLAND STANDARD DETAIL: VERTICAL GRANITE CURB INSTALLATION IN EXISTING STREETS
NOT TO SCALE



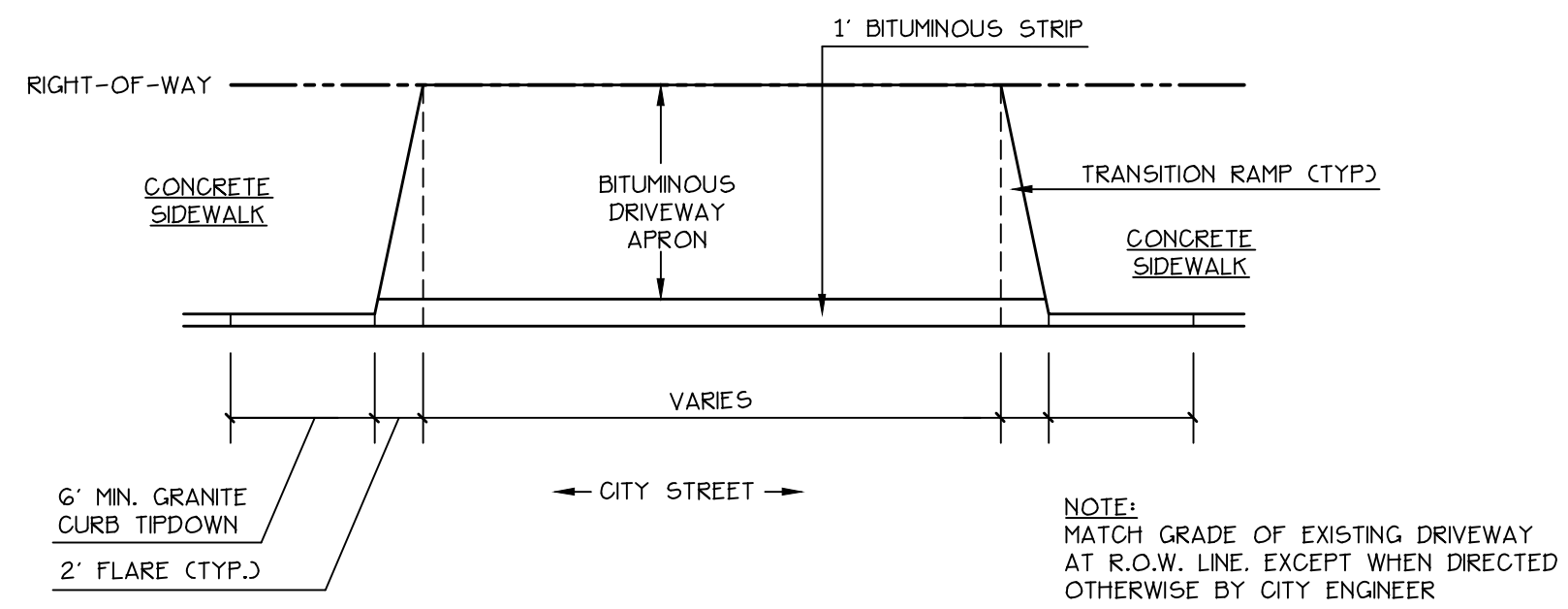
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GRANITE TIP-DOWN CURB
NOT TO SCALE



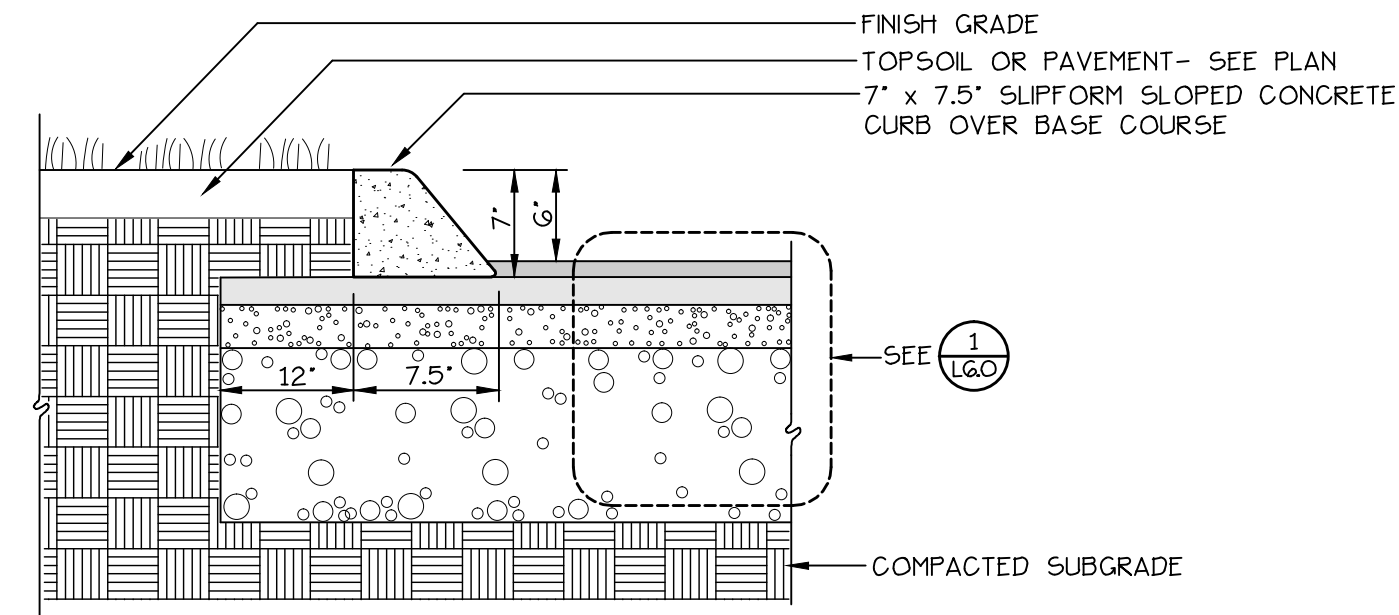
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PAVEMENT SAWCUT DETAIL
NOT TO SCALE



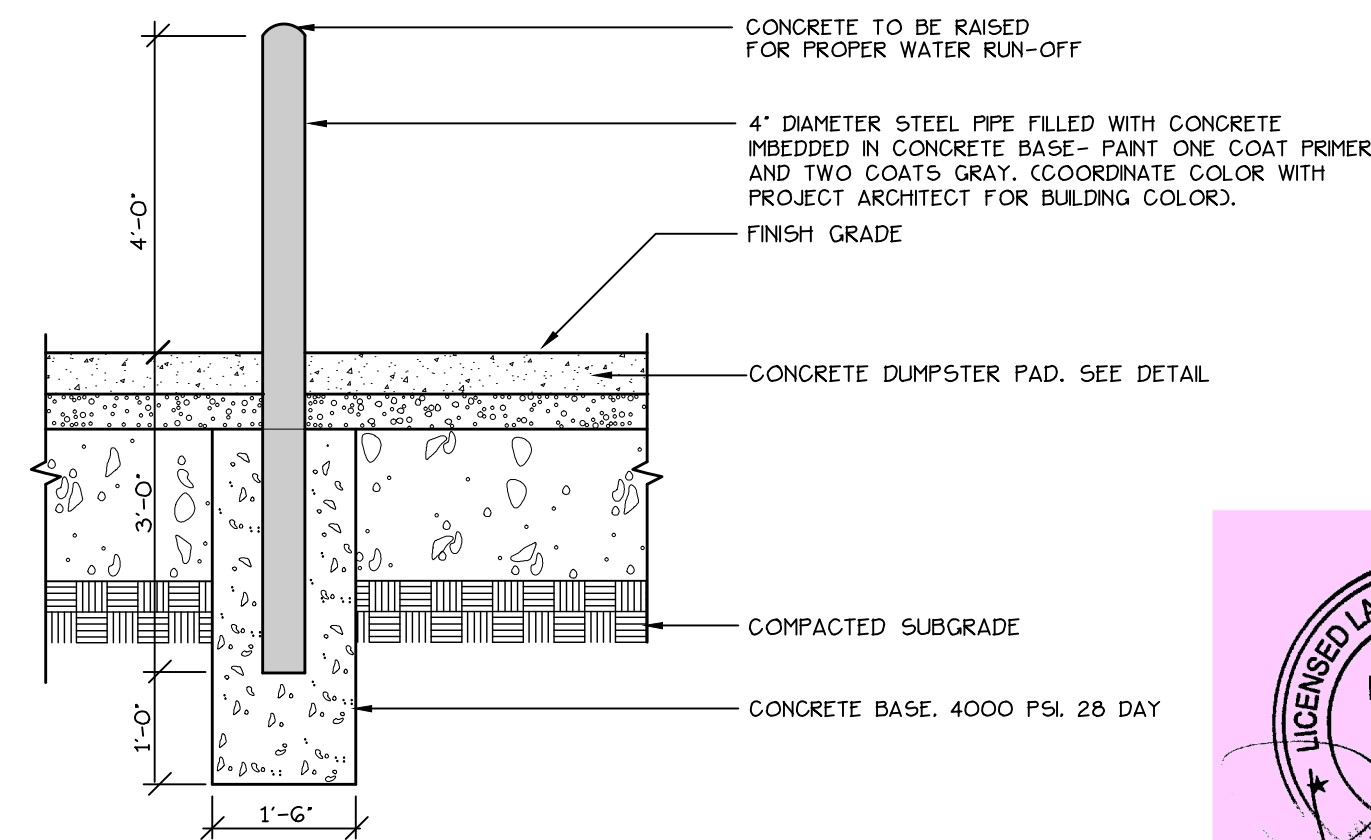
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REINFORCED CONCRETE DRIVEWAY APRON
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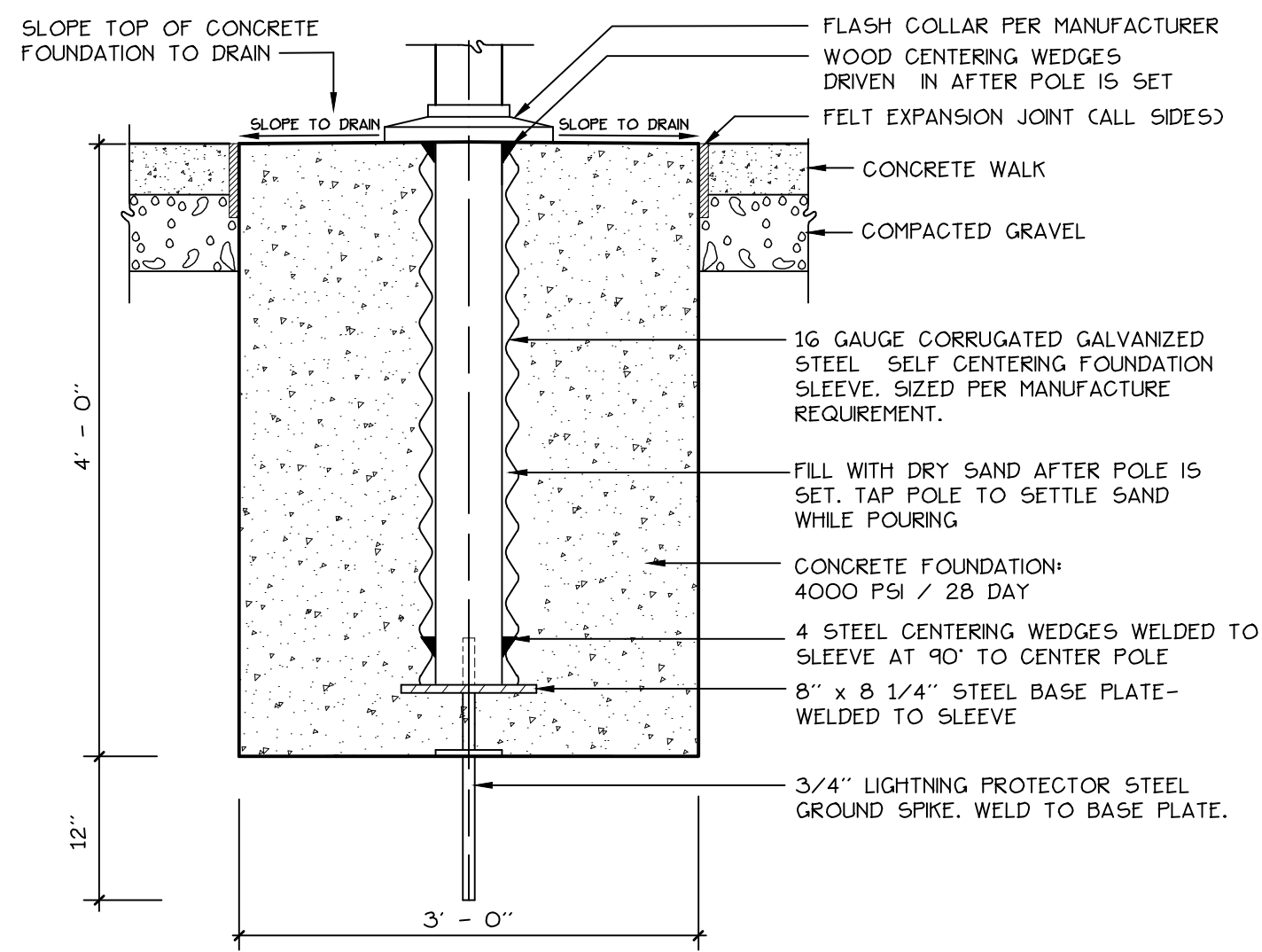
11 L6.0
DRIVEWAY APRON LAYOUT
NOT TO SCALE



12 L6.0
SLIPFORM CONCRETE CURB
NOT TO SCALE



13 L6.0
PIPE BOLLARD DETAIL
NOT TO SCALE



14 L6.0
FLAGPOLE BASE
NOT TO SCALE

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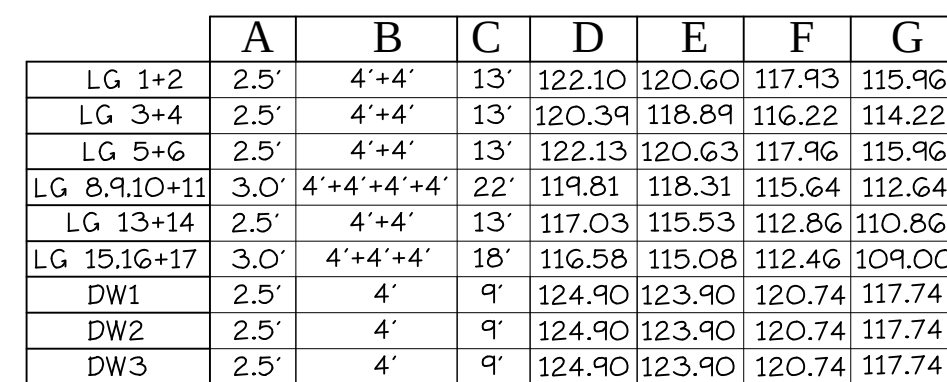
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Title:
SITE DETAILS

Scale: AS SHOWN

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Sheet No.:
L6.0

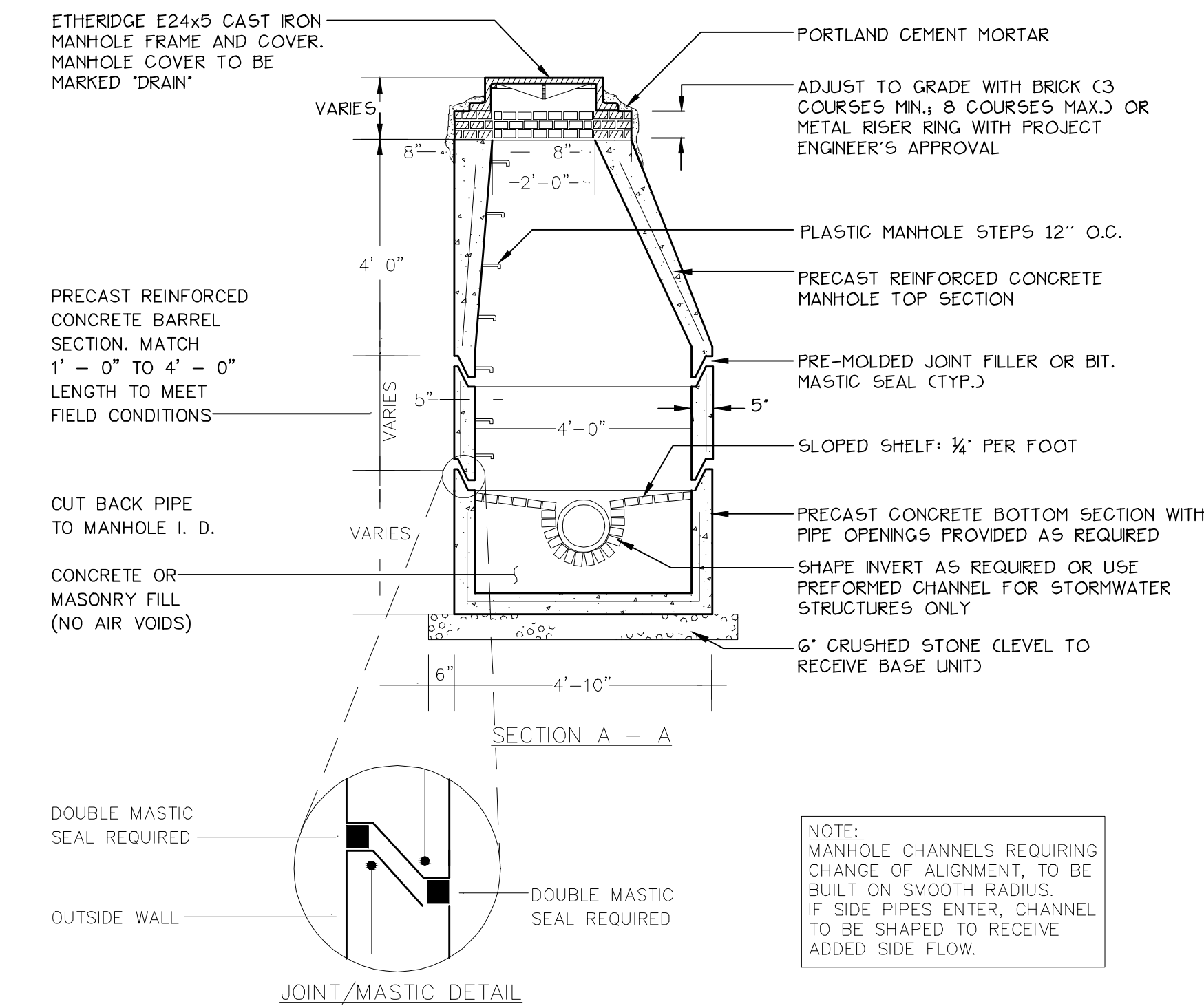


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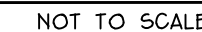


- PRECAST NOTES:
1. CONCRETE 4000 PSI IN 28 DAYS.
2. CORE SECTION IS FIBER REINFORCED CONCRETE.
3. DESIGNED TO CONFORM TO A.S.T.M. C-478.
4. ALL MANHOLE MATERIAL MEETS H-20 LOADING REQUIREMENTS.
5. JOINTS SEALED WITH BUTYL RUBBER JOINT SEALANT ASHTO M-19.
6. ALL PIPE BOOTHS TO HAVE FLEXIBLE WATERTIGHT DOOTS A.S.T.M. G-923
7. EXTERIOR TO RECEIVE DAMP PROOF COATING.
8. SEE PROJECT MANUAL FOR CAST IRON FRAMES AND GRATES.
9. PRODUCT ITEM #111 MANUFACTURED BY PRECAST CONCRETE PRODUCTS ON NAME, INC. (207-729-1628) OR APPROVED EQUAL.

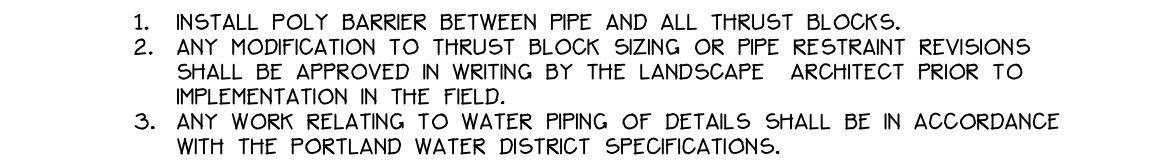
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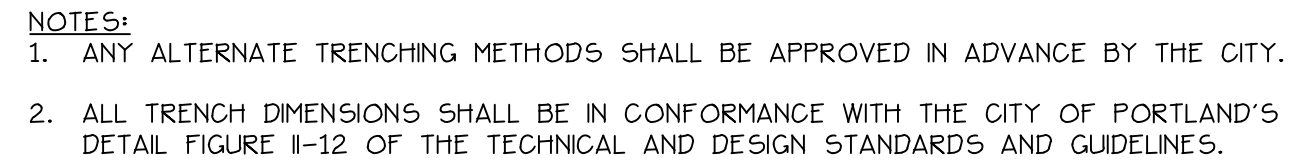
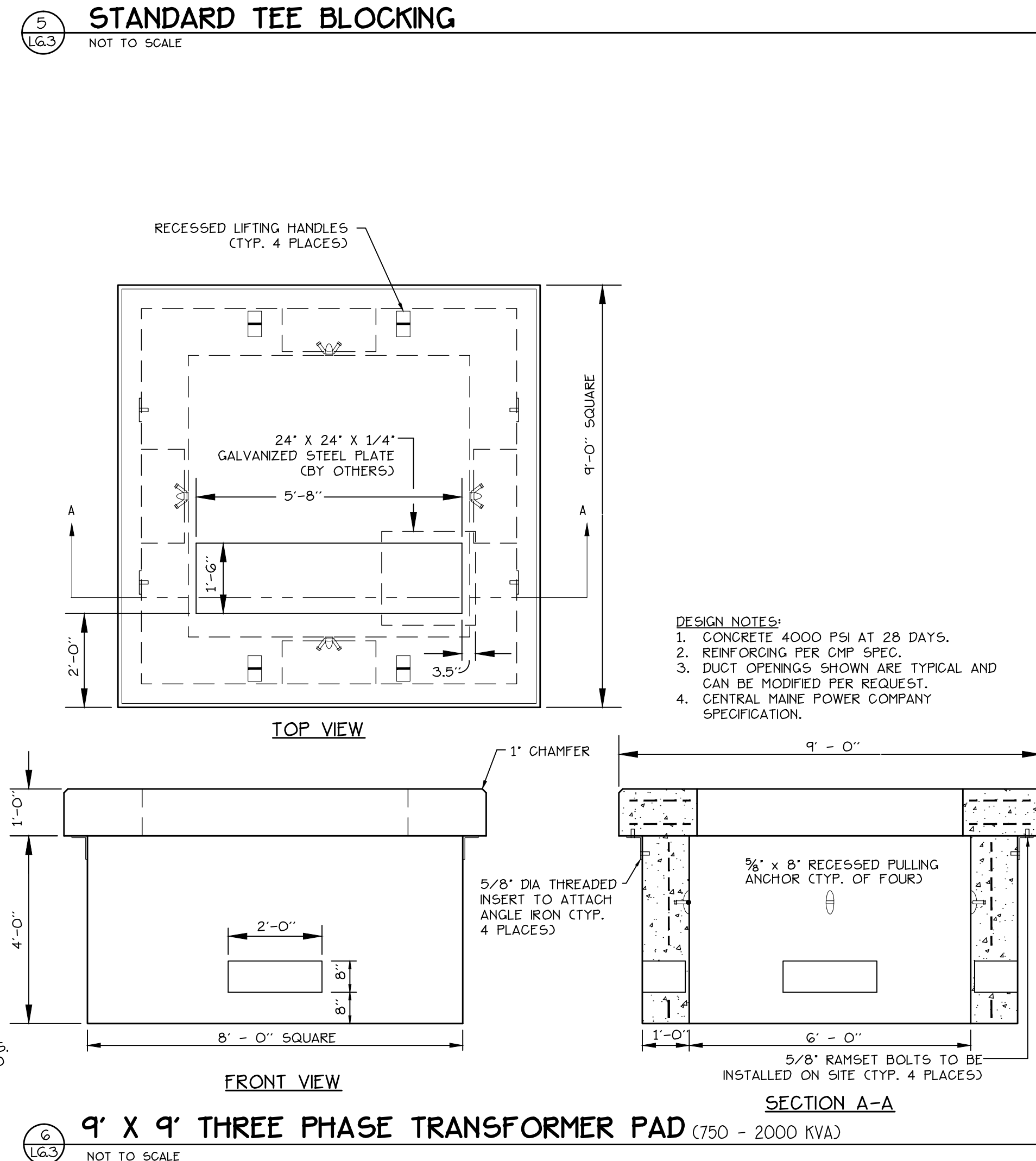
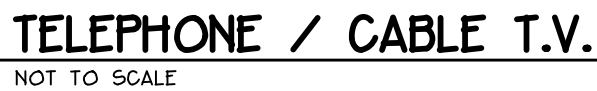
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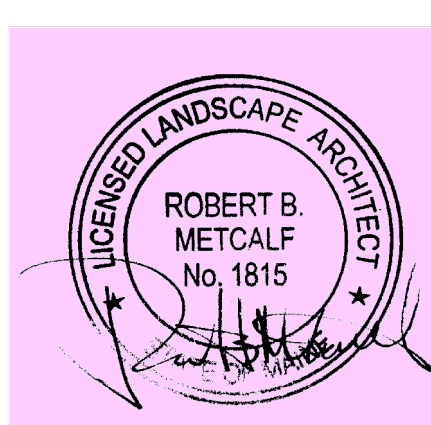
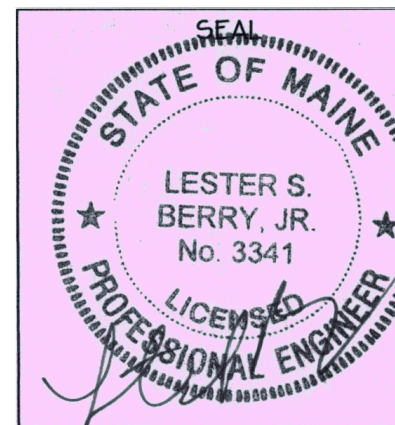
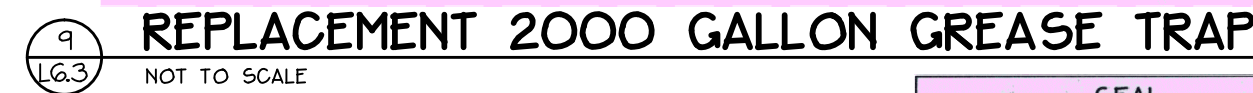


BEARING SURFACE REQUIRED IN SQUARE FEET					
PIPE SIZE	1/32 BEND	1/16 BEND	1/8 BEND	1/4 BEND	TEES/CAPS
6"	1.0	1.5	2.5	4.5	3.5
8"	1.5	2.5	4.5	8.0	5.5



The drawing consists of two views of a rectangular container:

- PLAN VIEW:** Shows the top of the container. It features a dashed rectangular outline representing the internal structure. Key features include:
 - Three "4" INLET" ports on the left side.
 - Two circular "18" ACCESS COVER" ports on the right side.
 - "INSPECTION COVERS" indicated by arrows pointing to the top edge.
 - Dimensions: "A" for the total width and "B" for the total height.
- SIDE ELEV. VIEW SECTIONED:** Shows a cross-section of the container. Key features include:
 - A "1" TAPER" on the top left edge.
 - A "4" INLET" port on the left side.
 - A "18" dimension across the top opening.
 - "VENT" ports on the top surface.
 - A "LIQUID LEVEL" line inside the container.
 - A "4" OUTLET" port on the right side.
 - A "1'-0" dimension for the internal height.
 - A "4" PVC" note at the bottom right corner.
 - Dimensions: "D" for the total height, "E" for the internal height, and "C" for the total width.



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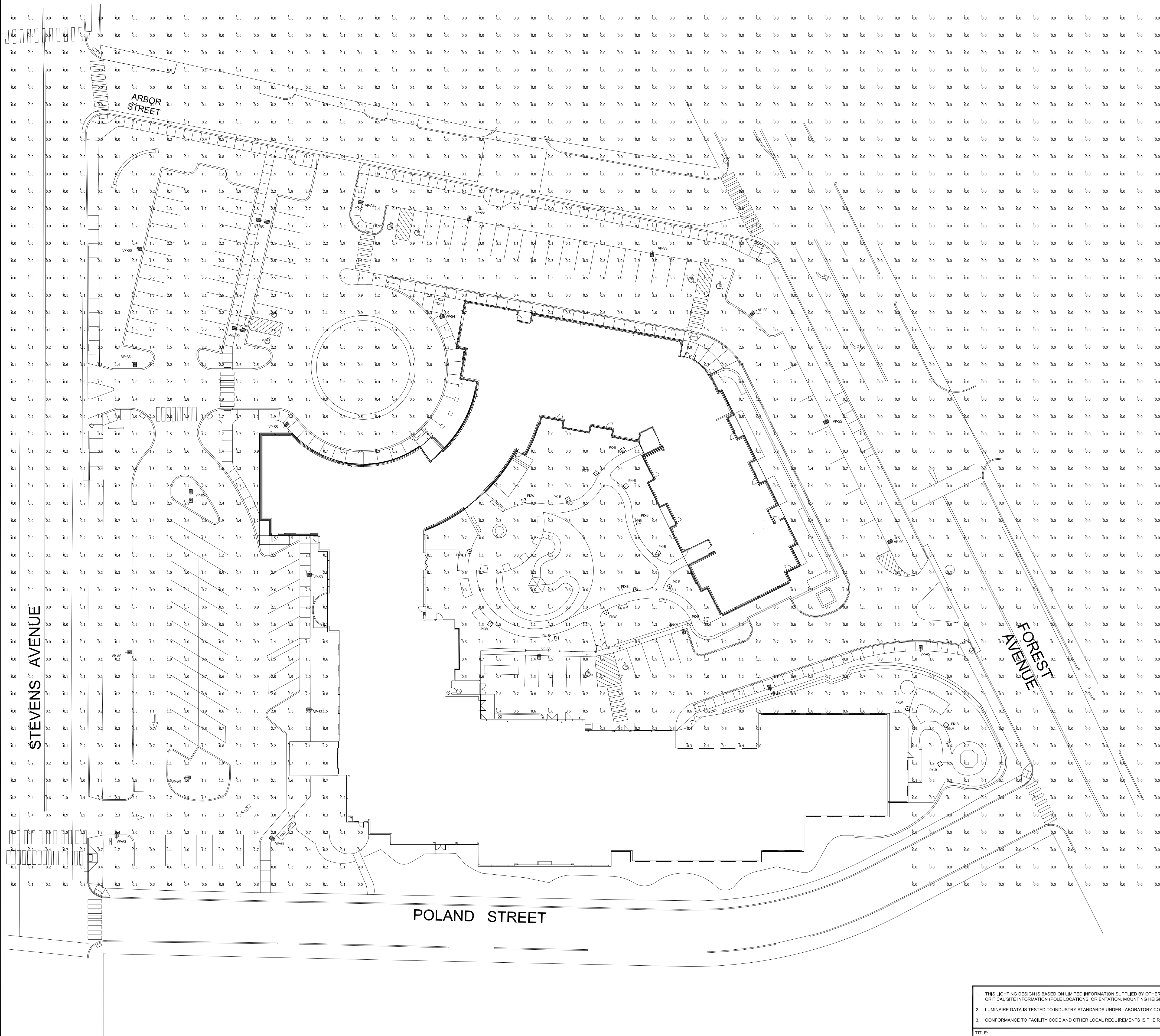
Title: SITE DETAILS

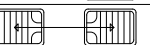
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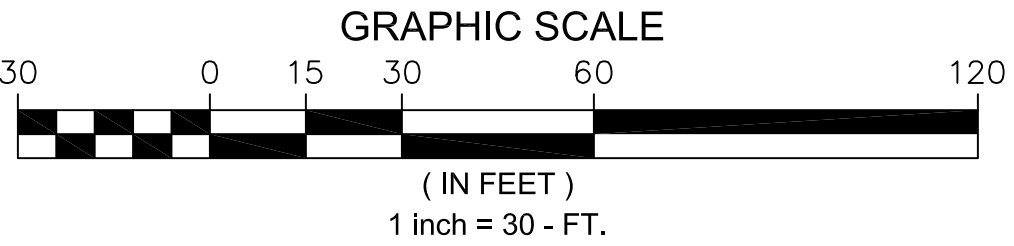
Sheet No.:

L6.3



Luminaire Schedule							
Symbol	Qty	Label	Mounting Height	LLF	Lum. Watts	Lum. Lumens	Description
	3	VP-A3	20' - 0" AFG	0.850	90	7707	VPS-30NB-90-T3
	3	VP-A5	20' - 0" AFG	0.850	90	7615	VPS-30NB-90-T5W
	1	VP-AS	20' - 0" AFG	0.850	90	5580	VPS-30NB-90-BLC
	3	VP-B5	16' - 0" AFG	0.850	90	7615	VPS-30NB-90-T5W
	3	VP-S3	16' - 0" AFG	0.850	90	7707	VPS-30NB-90-T3
	1	VP-S4	16' - 0" AFG	0.850	90	7615	VPS-30NB-90-T4
	3	VP-S5	16' - 0" AFG	0.850	90	7615	VPS-30NB-90-T5W
	6	VP-SS	16' - 0" AFG	0.850	90	5580	VPS-30NB-90-BLC
	5	PKW	10' - 0" AFG	0.850	20.6	933	PKWS-18LED-BW
	12	PK-B	3' - 6" AFG	0.850	35.5	1695	PKWB-T3-36LED-LDL-BW

Calculation Summary							
Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min
Courtyard	Illuminance	Fc	2.59	65.1	0.1	25.90	651.00
Overall Area	Illuminance	Fc	0.56	65.1	0.0	N.A.	N.A.
Parking Lot	Illuminance	Fc	1.43	3.6	0.1	14.30	36.00



1. THIS LIGHTING DESIGN IS BASED ON LIMITED INFORMATION SUPPLIED BY OTHERS TO HUBBELL LIGHTING. SITE DETAILS PROVIDED HEREON ARE REPRODUCED ONLY AS A VISUALIZATION AID. FIELD DEVIATIONS MAY SIGNIFICANTLY AFFECT PREDICTED PERFORMANCE. PRIOR TO INSTALLATION, CRITICAL SITE INFORMATION (POLE LOCATIONS, ORIENTATION, MOUNTING HEIGHT, ETC.) SHOULD BE COORDINATED WITH THE CONTRACTOR AND/OR SPECIFIER RESPONSIBLE FOR THE PROJECT.

2. LUMINAIRE DATA IS TESTED TO INDUSTRY STANDARDS UNDER LABORATORY CONDITIONS. OPERATING VOLTAGE AND NORMAL MANUFACTURING TOLERANCES OF LAMP, BALLAST, AND LUMINAIRE MAY AFFECT FIELD RESULTS.

3. CONFORMANCE TO FACILITY CODE AND OTHER LOCAL REQUIREMENTS IS THE RESPONSIBILITY OF THE OWNER AND/OR THE OWNER'S REPRESENTATIVE.

TITLE:

THE PARK DANFORTH
PORTLAND, ME
SITE PHOTOMETRIC PLAN

REVISED FROM DRAWING NUMBER(S):

1472622
1472745



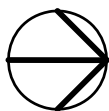
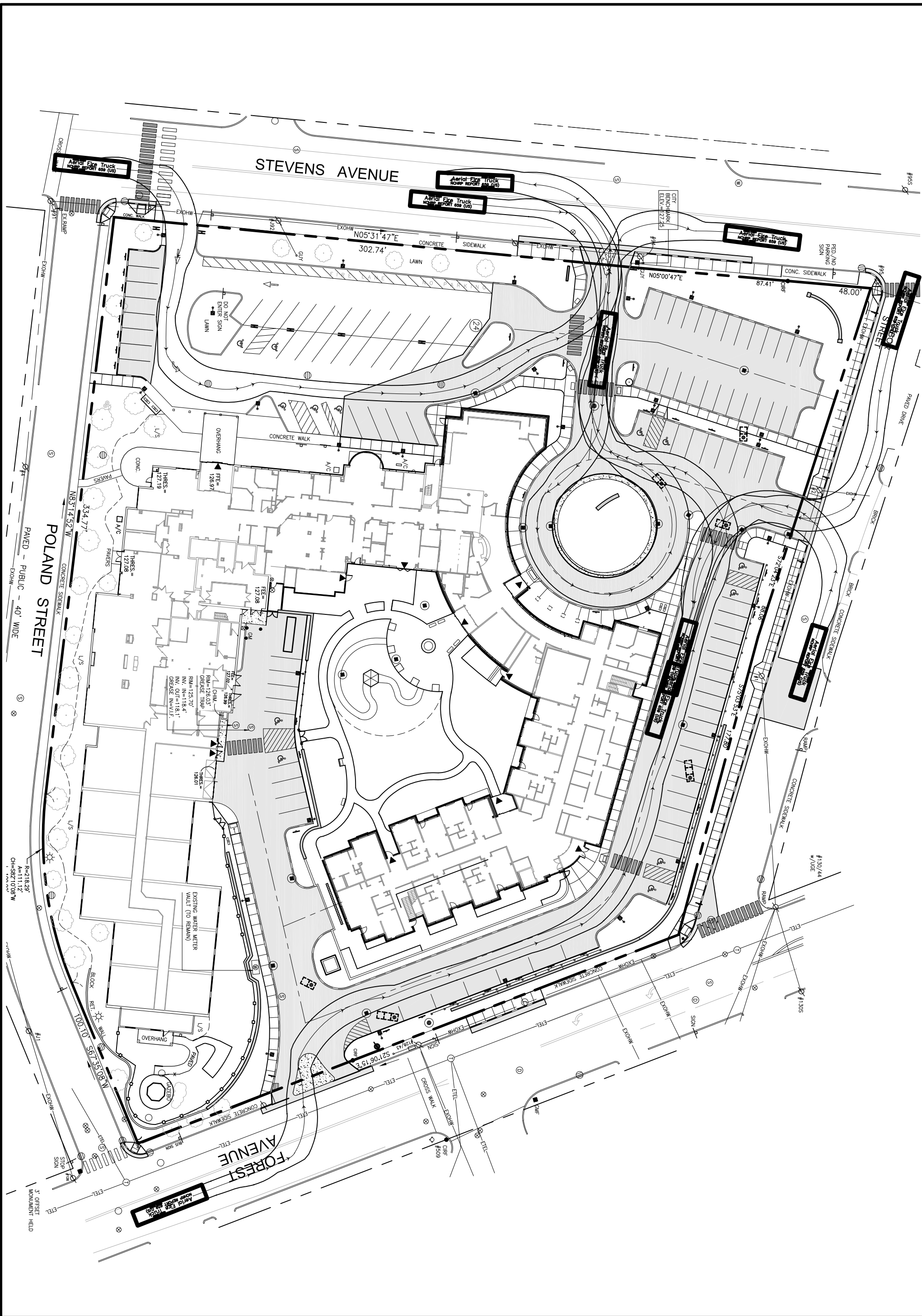
Hubbell Lighting, Inc.
701 MILLENNIUM BLVD.
GREENVILLE, SC 29607

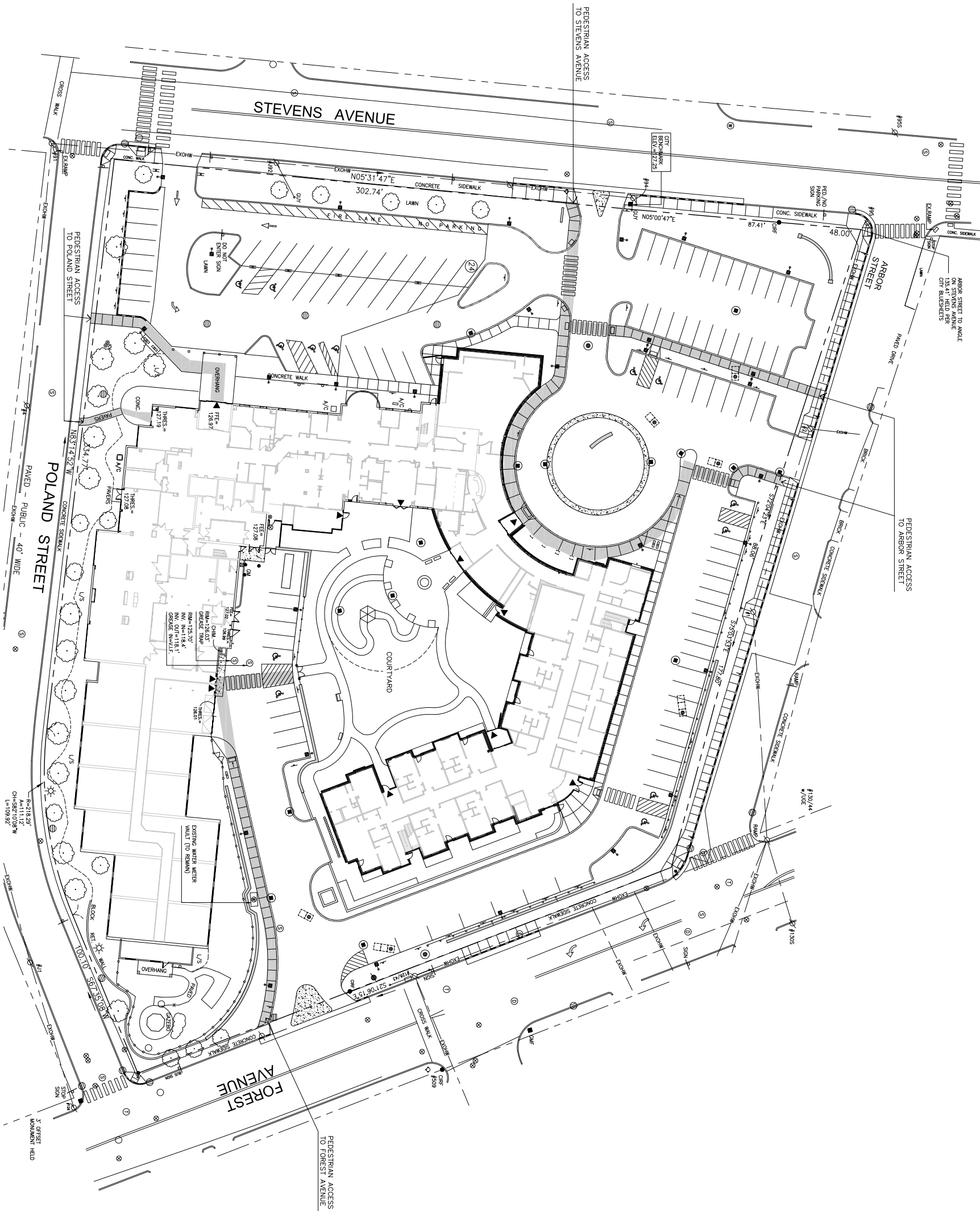
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DHK
REV BY:
DHK
QUOTE:
N/A

DATE:
12/02/14
DATE:
01/05/14
SCALE:
AS NOTED

CHK BY:
N/A
DRAWING / DESIGN NO.:
1572963

L7.0 -- PHOTOMETRICS PLAN





Prepared For:
Owner:
Home For The Aged
777 Stevens Avenue
Portland, ME 04103
Tel.: 207-792-7710

Applicant:
The Park Danforth
777 Stevens Avenue
Portland, ME 04103
Tel.: 207-792-7710

Prepared By:
MITCHELL & ASSOCIATES
Landscape Architects
The Staples School
177 Grand Street
Portland, ME 04101
Tel.: 207-774-4427

The Park Danforth

777 Stevens Avenue Portland, Maine

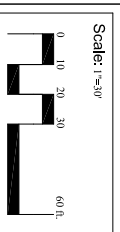
Date:
OCTOBER 17, 2014

Issued For:
PERMITTING

Revisions:
NOV. 25, 2014: Per City of Portland
Staff Review Comments

Title:
PEDESTRIAN
CIRCULATION PLAN

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North:

Sheet No.:
EXHIBIT B

Park Danforth Construction Management Plan

The Park Danforth construction project will be managed by a project team located in PC Construction's Portland, Maine, office. Day-to-day project oversight will be conducted by field staff and various support personnel who will be on site throughout the duration of construction.

The project is located at 777 Stevens Ave, Portland ME, and involves the construction of a senior living facility with a below ground parking level and five stories of apartment units and support space. The project also includes a connection from the new building to the existing seven story structure, renovations to one area of the first floor of the existing building, demolition of existing structures and site improvements.

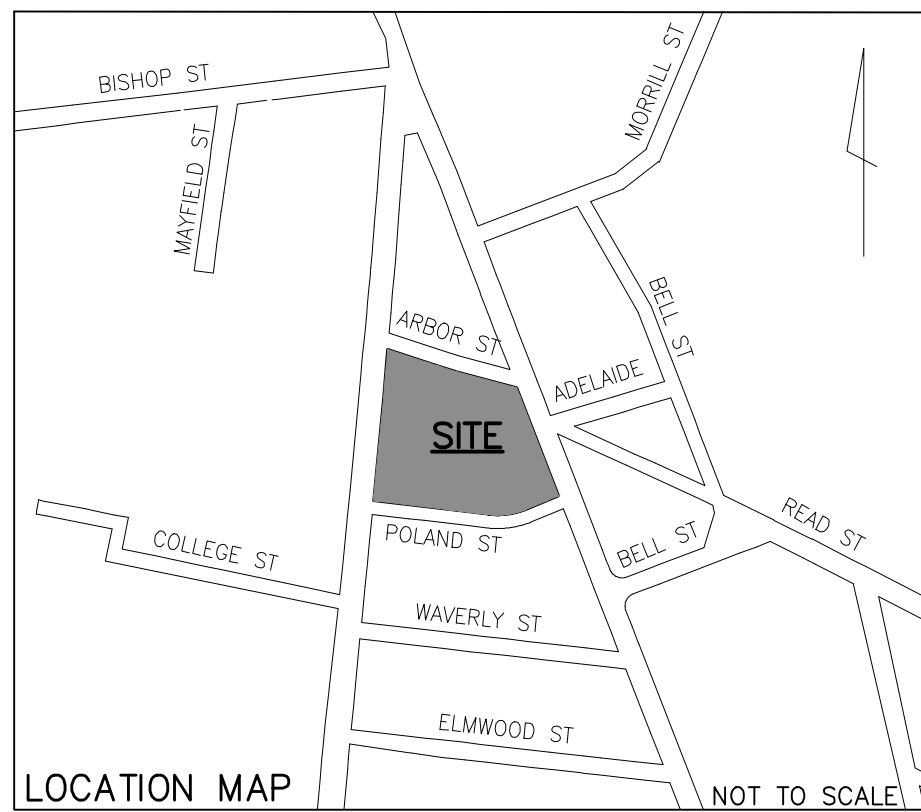
The Park Danforth project construction approach is to perform the construction in one phase starting with the site utilities and demolition of the existing site structures. In order to keep pedestrians, neighbors and adjacent businesses safe and segregated from construction activities, the project team will secure the site with fencing and ensure that the Park Danforth residents, staff, visitors and public are segregated from the construction activities. This will be accomplished by using the following as applicable:

- Fencing
- Crosswalks
- Signage
- Education
- Coordination
- Temporary surfaces

The proposed location of the construction trailers and office will be inside the fence and out of the way of construction. The laydown area for construction will be adjacent to the work in any open spaces inside the fence and, as needed, at offsite locations. Excess contractor parking will be located offsite as necessary.

Key issues that will be addressed include:

- Public safety
- Coordination with the City of Portland, neighbors and utilities
- Coordination with Park Danforth ongoing operations
- Groundwater control/treatment
- Waste management and site clean-up
- Coordination of material deliveries
- Material laydown/storage, office trailers and contractor parking
- Dust and erosion control
- Clean streets surrounding the project
- Construction entrances



GENERAL NOTES

1. OWNERS OF RECORD:

HFA FOREST AVENUE PROPERTIES, LLC LOTS 146-C-6, 146-C-9, 146-C-11, 146-C-12, 146-C-14 (ALL IN BOOK 29524 PAGE 325)

HOME FOR THE AGED LOTS 146-C-8 BOOK 30933 PAGE 330, 146-C-5, 146-C-10 BOOK 6354 PAGE 117.

2. BEARINGS ARE BASED ON CITY DATUM, MAINE STATE PLANE WEST ZONE (NAD83).

3. ELEVATIONS ARE ON CITY DATUM, BASED ON BENCH MARK AT 3' OFFSET MONUMENT UNDER COVER ON EASTERLY SIDE OF STEVENS AVENUE.

4. THE LINES AROUND THE LAND OF MCGEEACHEY ARE BASED ON THE DEED DIMENSIONS. THE DASHED LINES ARE AS SHOWN ON PLAN REFERENCE 1. A BOUNDARY AGREEMENT IS RECOMMENDED WITH MCGEEACHEY AND MEYER.

PLAN REFERENCES

1. "PLAN OF PROPERTY IN PORTLAND, MAINE FOR DR. LLOYD B. WOLF AUG. 1973 H.I. & E.C. JORDAN - SURVEYORS"

2. "PARK-DANFORTH CONDOMINIUM PLANS SITE PLAN HOUSING FOR THE ELDERLY, A CONDOMINIUM SITUATE AT: STEVENS AND FOREST AVENUES AT POLAND STREET, PORTLAND, CUMBERLAND, MAINE 12/7/83 LARRY SLAUGHTER -SURVEYOR" RECORDED IN PLAN BOOK 140 PAGE 37

3. "THE PARK-DANFORTH CONDOMINIUM 777 STEVENS AVE PORTLAND, MAINE RECORDING PLAT 09-23-97 LAND USE CONSULTANTS, INC." RECORDED IN PLAN BOOK 197 PAGE 515

4. BLUE BOOK SHEETS FOR STEVENS AVE., FOREST AVE., POLAND STREET, AND ARBOR STREET, FROM THE PORTLAND ENGINEERING DEPARTMENT

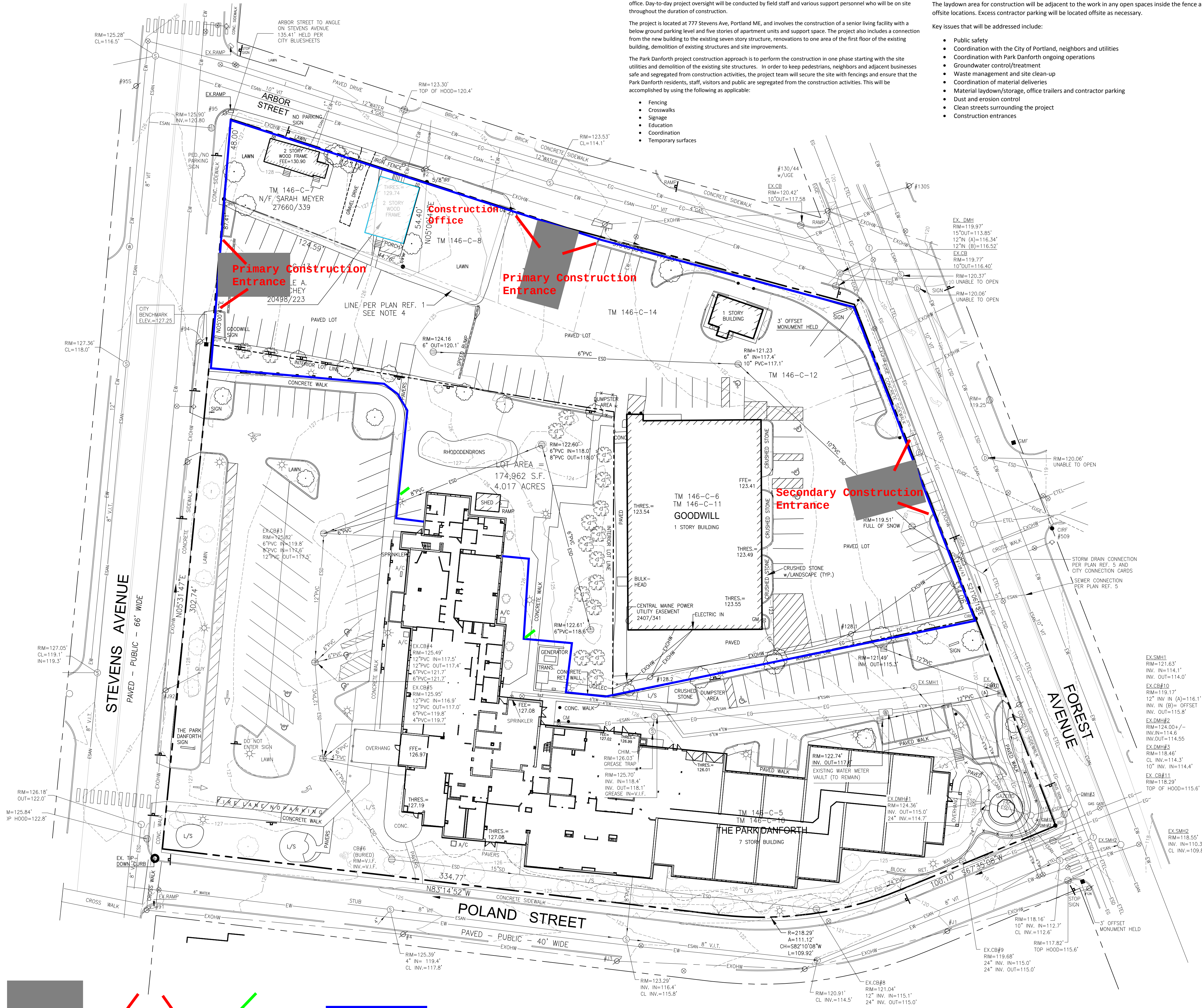
5. "FOREST AVENUE DEVELOPMENT PORTLAND MAINE SITE PLAN MADE FOR HANNAFORD BROS. CO. SOUTH PORTLAND, MAINE" BY E.C. JORDAN CO. CONSULTING ENGINEERS DATED JAN 6 1986.

UTILITIES NOTES

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.

LEGEND

PROPERTY LINE	
GRANITE MONUMENT	
CATCHBASIN	
MANHOLE	
HYDRANT	
UTILITY POLE	
WATER VALVE	
SANITARY SEWER	
STORM DRAIN	
WATER	
TELEPHONE	
GAS	
OVERHEAD WIRES	
CMP CABLE LINES	
CURB	
FENCE	
SIGN	
TREE	
CONTOUR	
LIGHT FIXTURE	



Construction Entracne 20' Vehicle Gate Pedestrian Gate Chain Link Construction Fence

Prepared For:

Owner:
Home For The Aged
777 Stevens Avenue
Portland, Maine 04103
Tel.: 207-797-7710

Applicant:
The Park Danforth
777 Stevens Avenue
Portland, Maine 04103
Tel.: 207-797-7710

Prepared By:

MITCHELL & ASSOCIATES
Landscape Architects
The Staples School
70 Center Street
Portland, Maine 04101
Tel.: 207-774-4427

The Park Danforth

Portland, Maine

777 Stevens Avenue

Date:

OCTOBER 17, 2014

Issued For:

PERMITTING

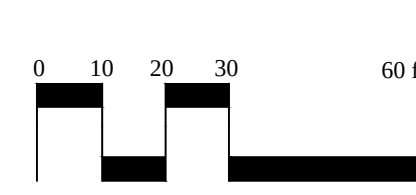
Revisions:

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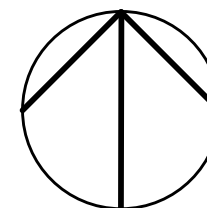
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CONSTRUCTION
MANAGEMENT PLAN

Scale: 1"=30'

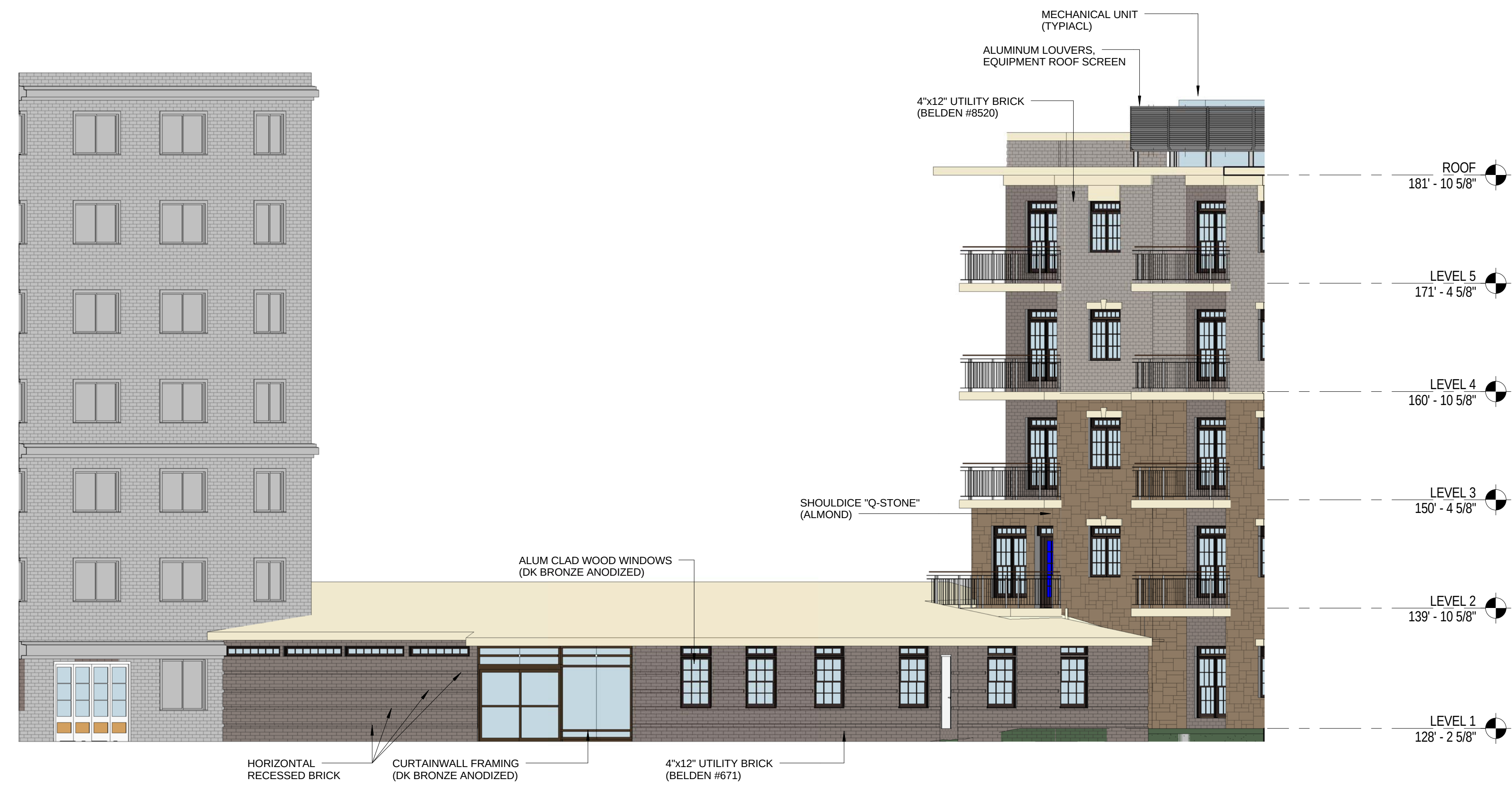


North:



Sheet No.:

L1.1

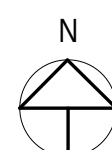


The Park Danforth

RENOVATIONS AND ADDITIONS

PROPOSED EXTERIOR ELEVATIONS-NEW CONNECTOR & AUDITORIUM

SCALE: 1/8" = 1'-0"



11/25/14

LAVALLEE BRENSINGER ARCHITECTS



A NEW BUILDING - NORTH ELEVATION
007 1/8" = 1'-0"



B NEW BUILDING - NORTHEAST ELEVATION
007 1/8" = 1'-0"

The Park Danforth

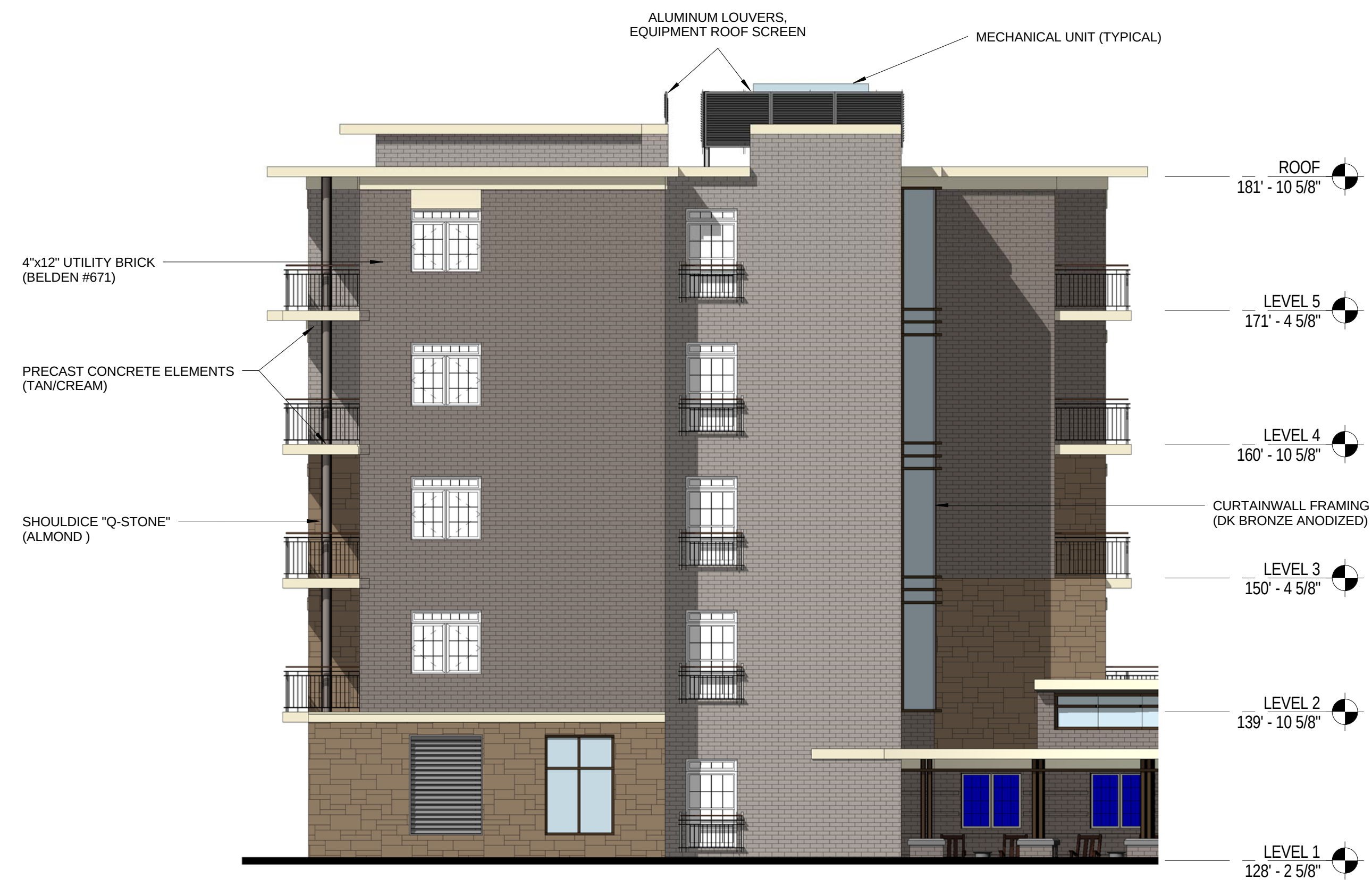
RENOVATIONS AND ADDITIONS

PROPOSED EXTERIOR ELEVATIONS

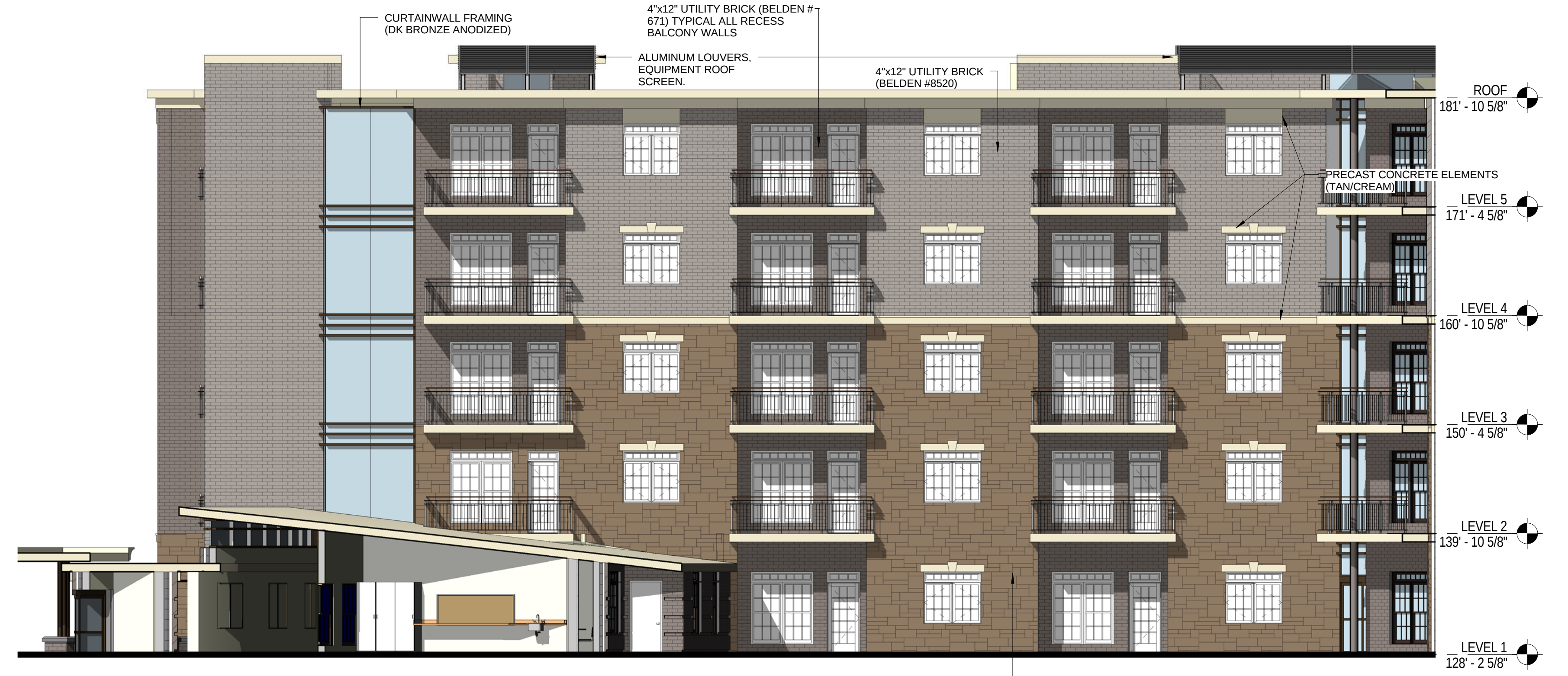
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11/25/14

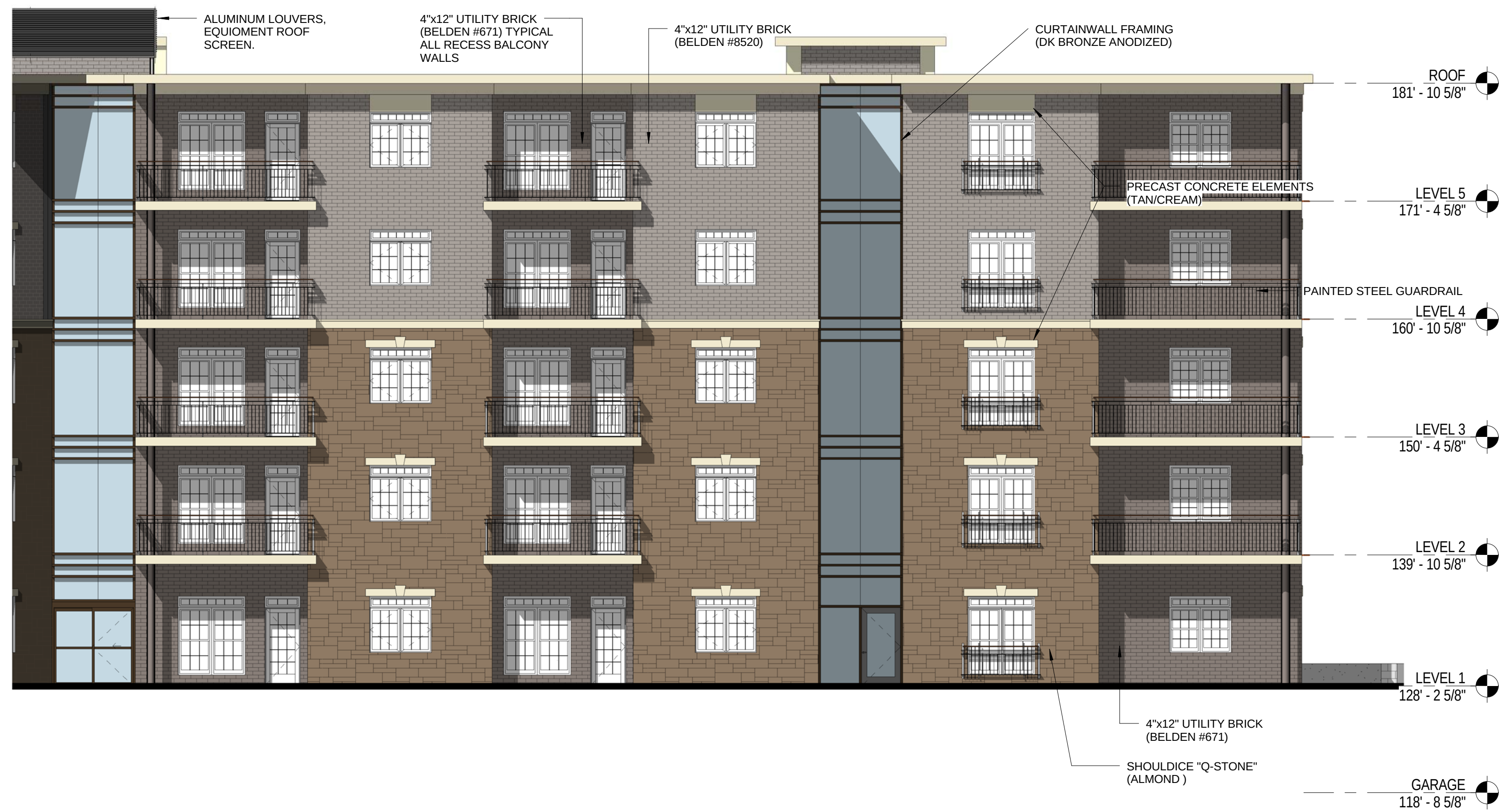
LAVALLEE BRENSINGER ARCHITECTS



A NEW BUILDING - WEST ELEVATION
008 1/8" = 1'-0"



B NEW BUILDING - SOUTH ELEVATION
008 1/8" = 1'-0"



C NEW BUILDING - SOUTHWEST ELEVATION
008 1/8" = 1'-0"



D NEW BUILDING - SOUTHEAST ELEVATION
008 1/8" = 1'-0"

The Park Danforth

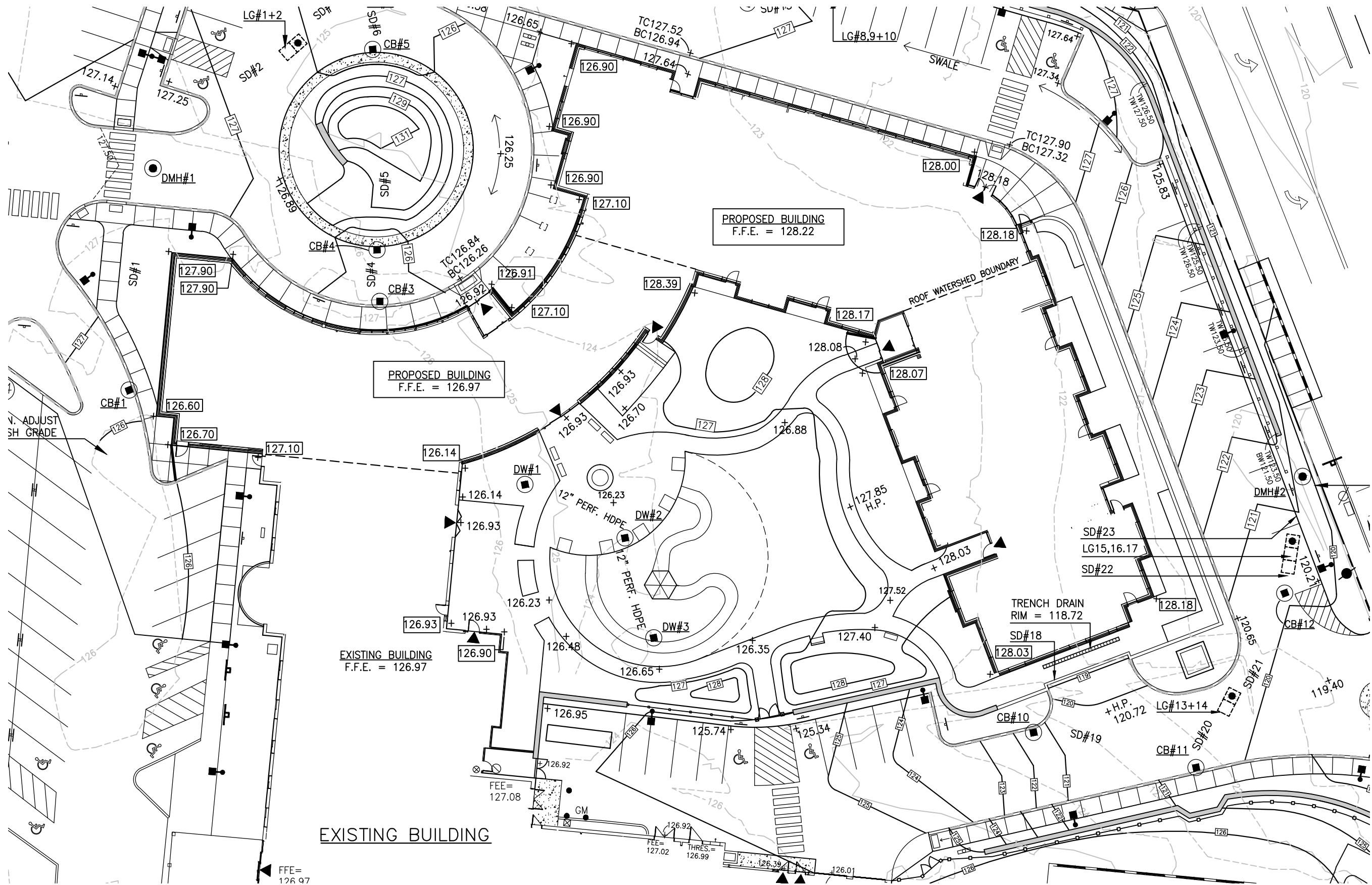
RENOVATIONS AND ADDITIONS

PROPOSED EXTERIOR ELEVATIONS

SCALE: 1/8" = 1'-0"

11/25/14

LAVALLEE BRENSINGER ARCHITECTS



AVERAGE GRADE :127.32
CALCULATIONS

127.10 + 126.70 + 126.60 + 127.90 + 127.7 + 126.91+ 127.10 + 127.10 + 126.90 + 126.90 + 126.90 + 128.00 + 128.18 + 128.18 + 128.03 + 128.07 + 128.17 + 127.39 + 126.14 + 126.93 +126.90=
2673.80/ 21 = 127.32

EXHIBIT
A



Title: AVERAGE GRADE CALCULATIONS

Date: 11/25/14

Scale:

Project: THE PARK DANFORTH

Mitchell

&Associates

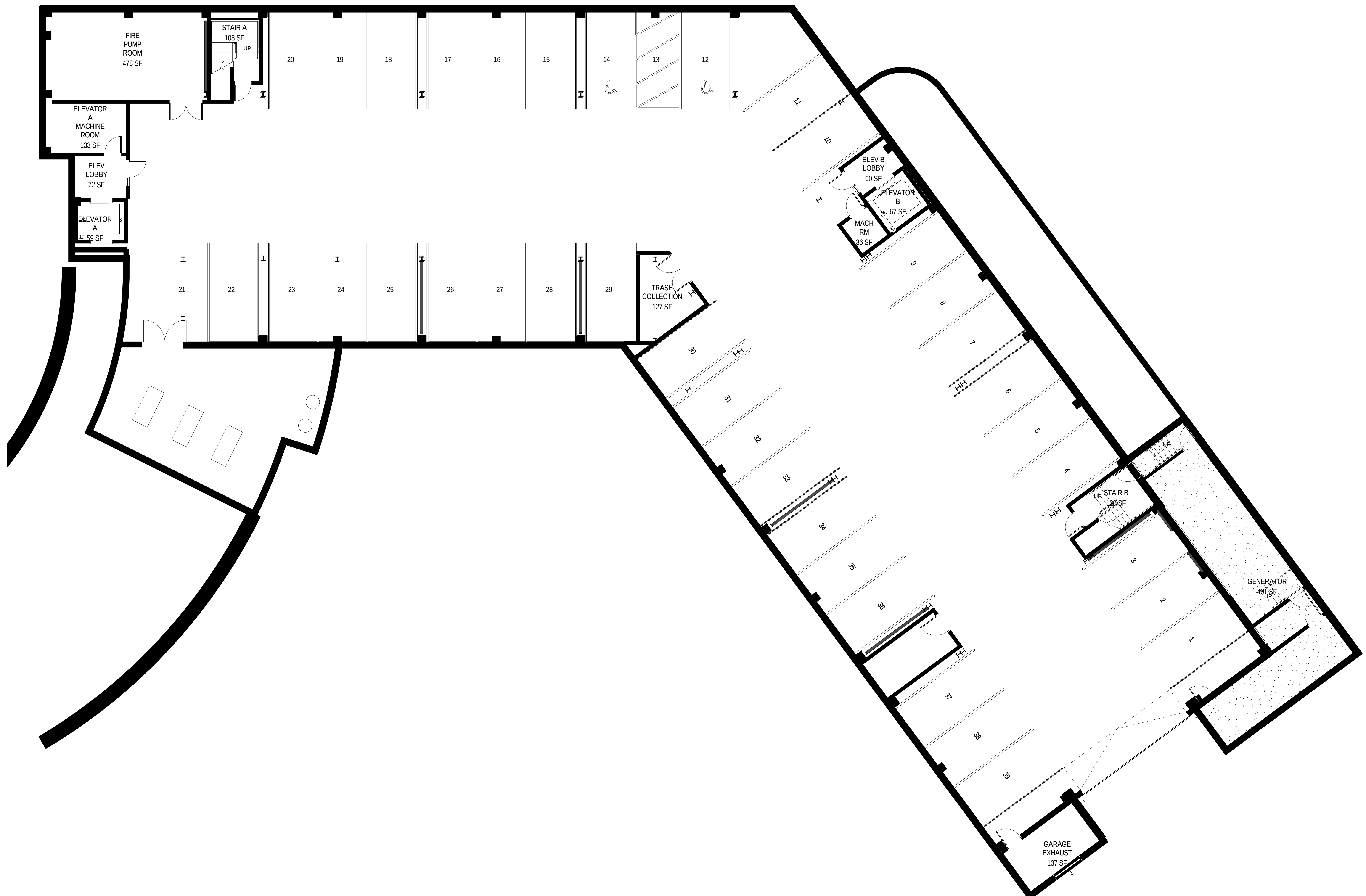
LANDSCAPE ARCHITECTS

70 Center Street

Portland, Maine 04101

Tel: (207) 774-4427

Fax: (207) 874-2460

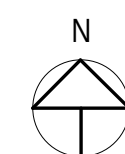


The Park Danforth

RENOVATIONS AND ADDITIONS

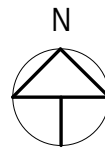
PROPOSED GARAGE LEVEL - NEW BUILDING

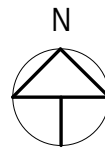
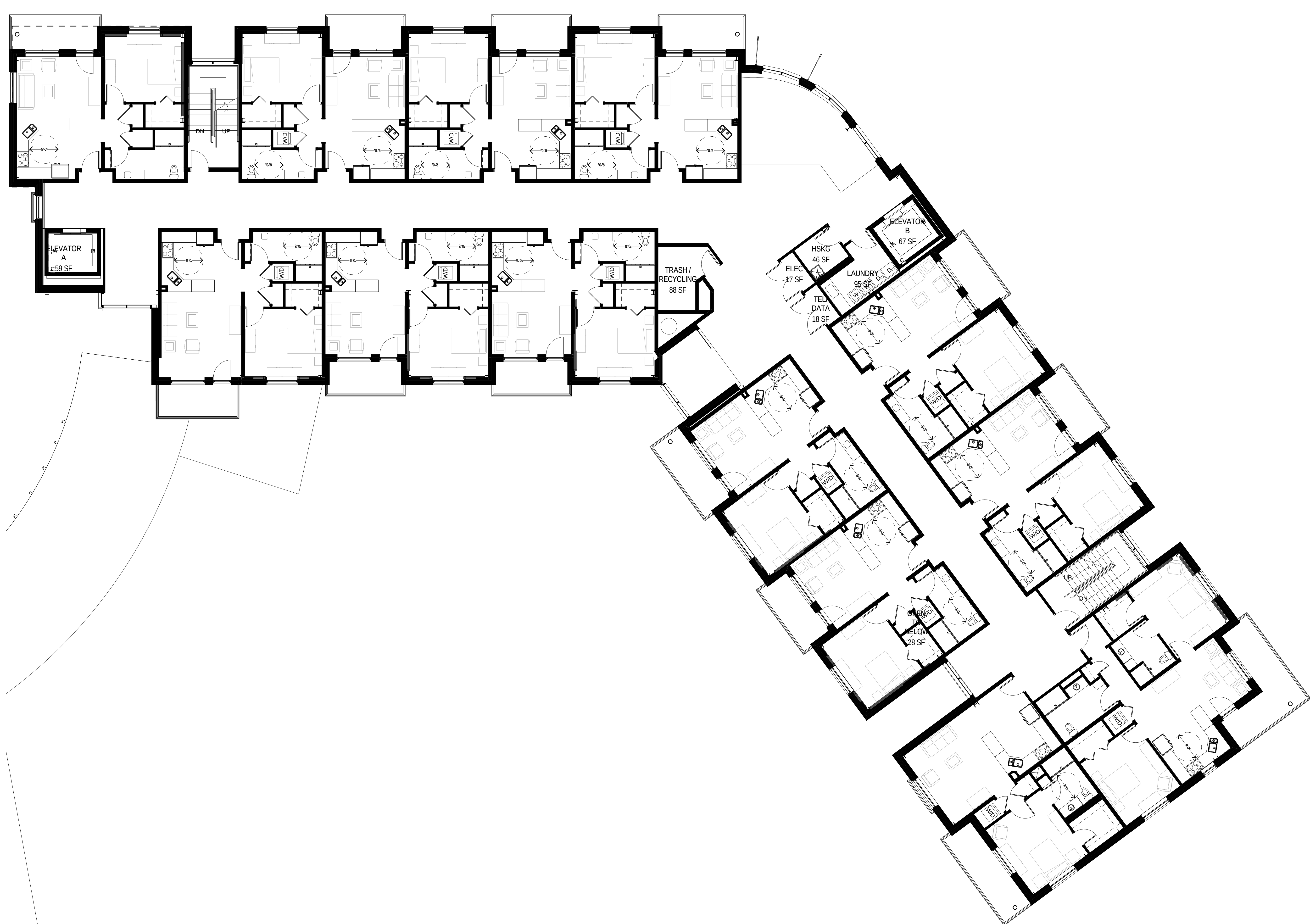
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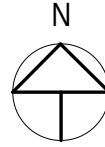
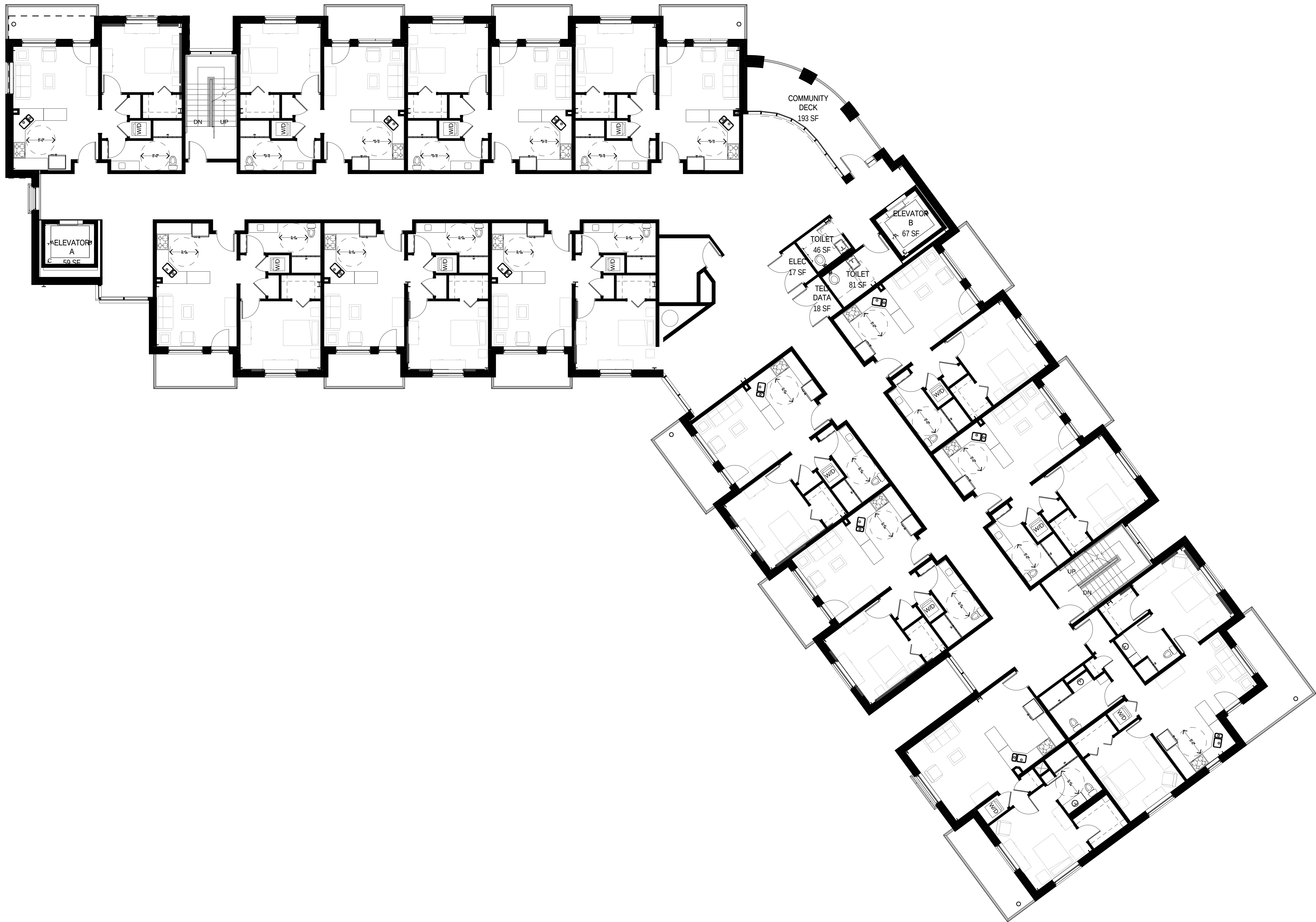


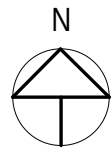
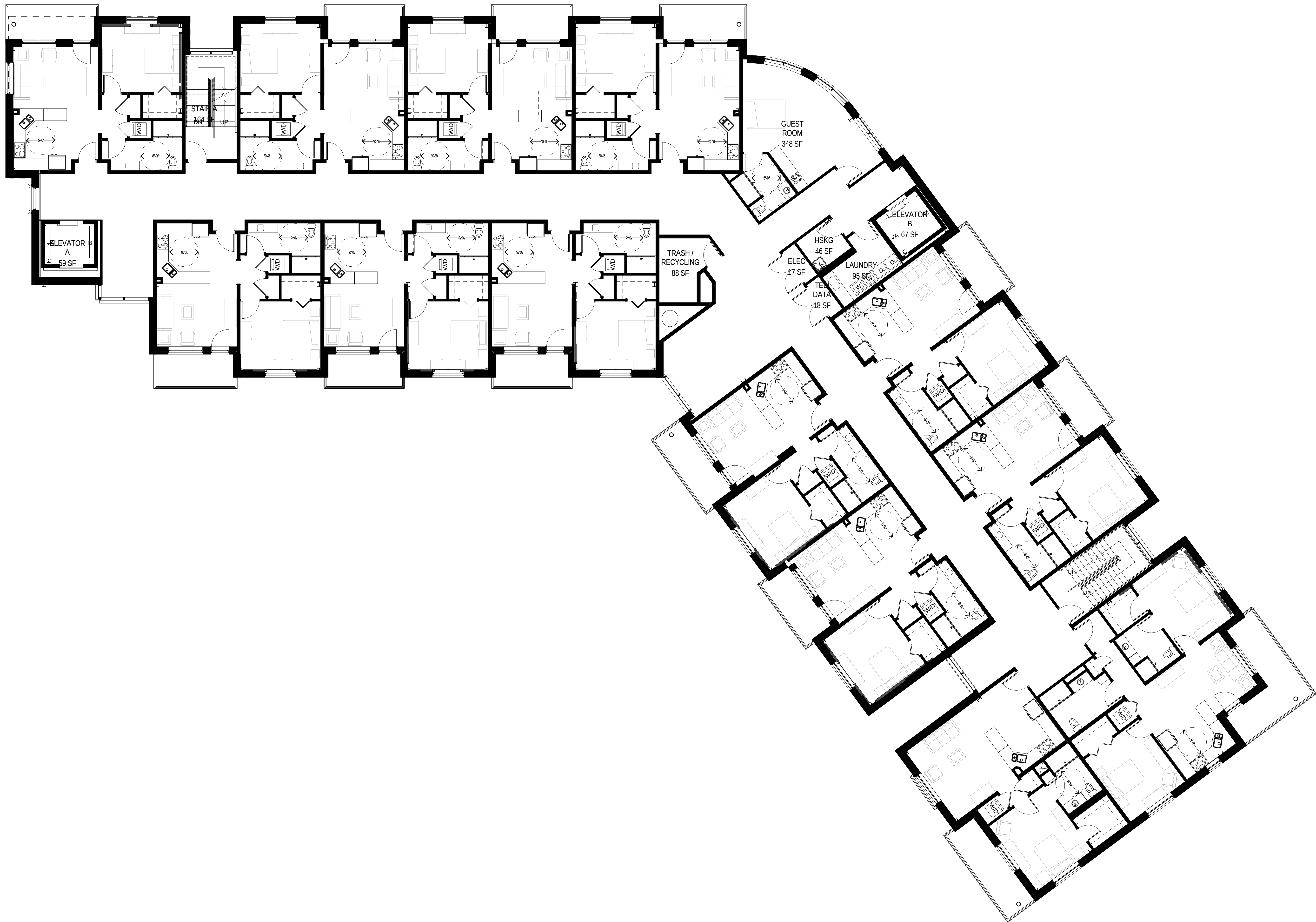
11/25/14

LAVALLEE BRENSINGER ARCHITECTS









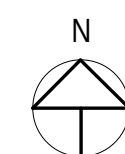


The Park Danforth

RENOVATIONS AND ADDITIONS

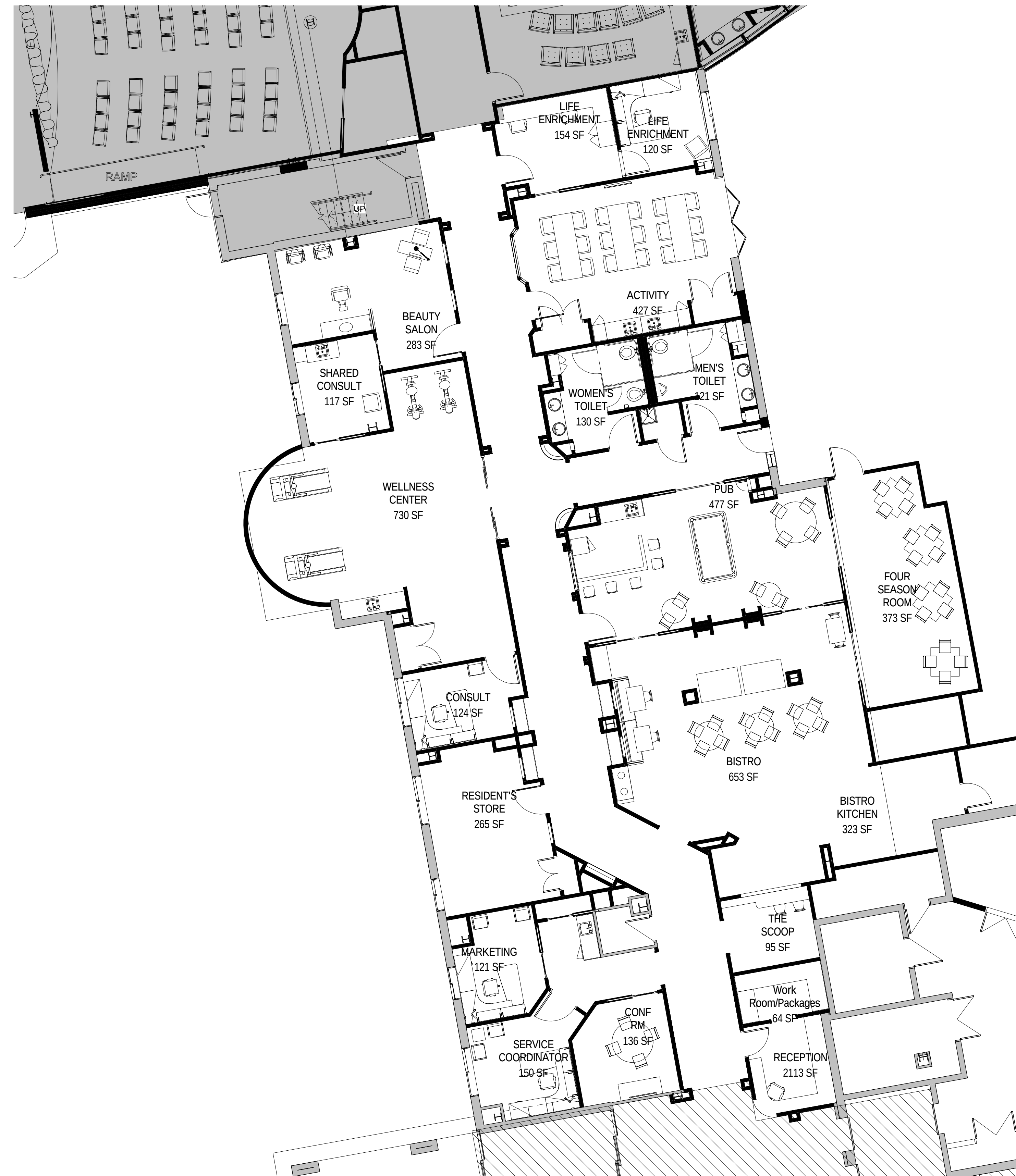
PROPOSED LEVEL 5 - NEW BUILDING

SCALE: 1/8" = 1'-0"



11/25/14

LAVALLEE BRENSINGER ARCHITECTS

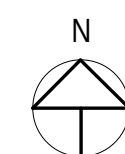


The Park Danforth

RENOVATIONS AND ADDITIONS

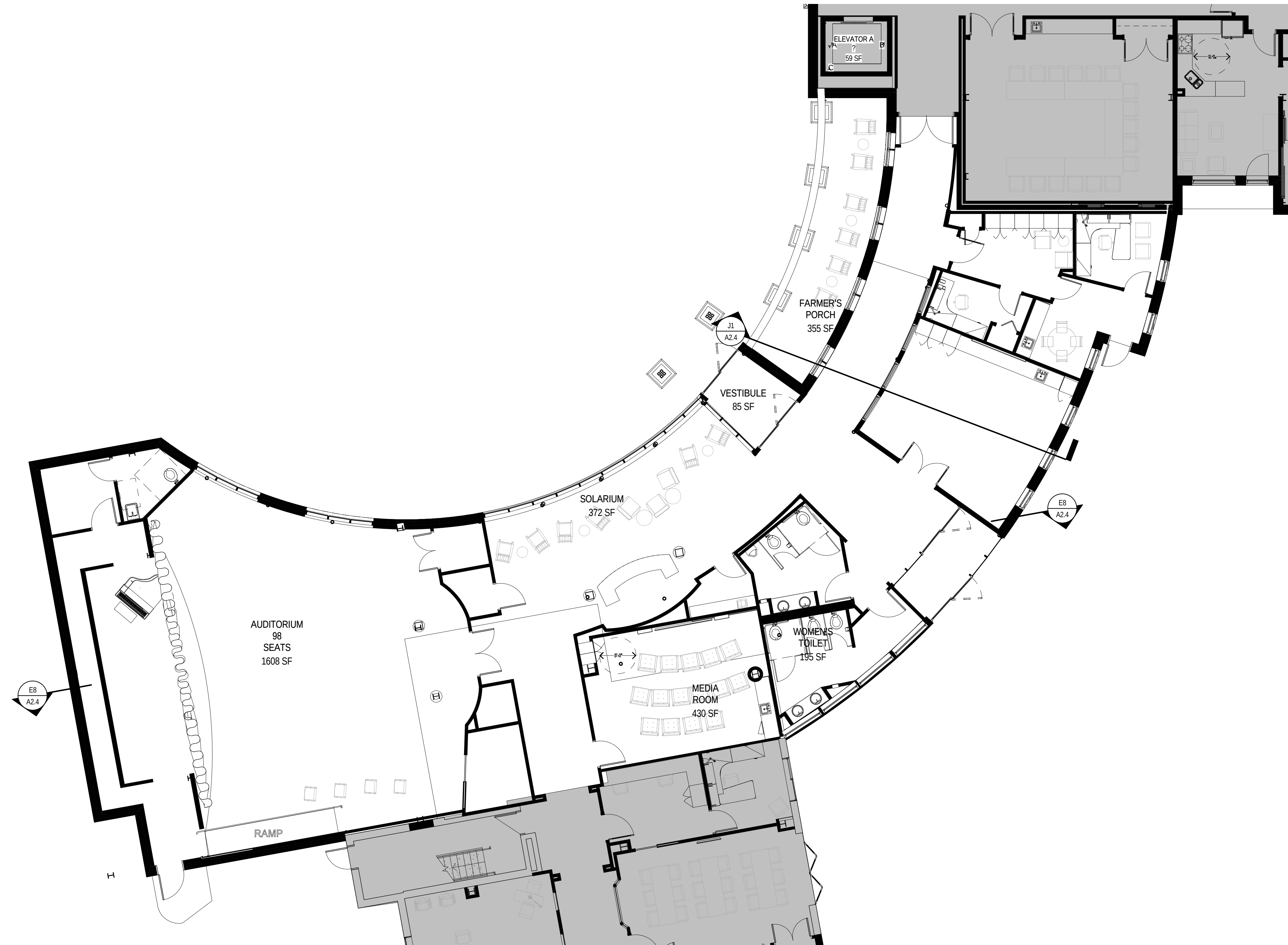
PROPOSED RENOVATIONS - MAIN STREET

SCALE: 1/8" = 1'-0"



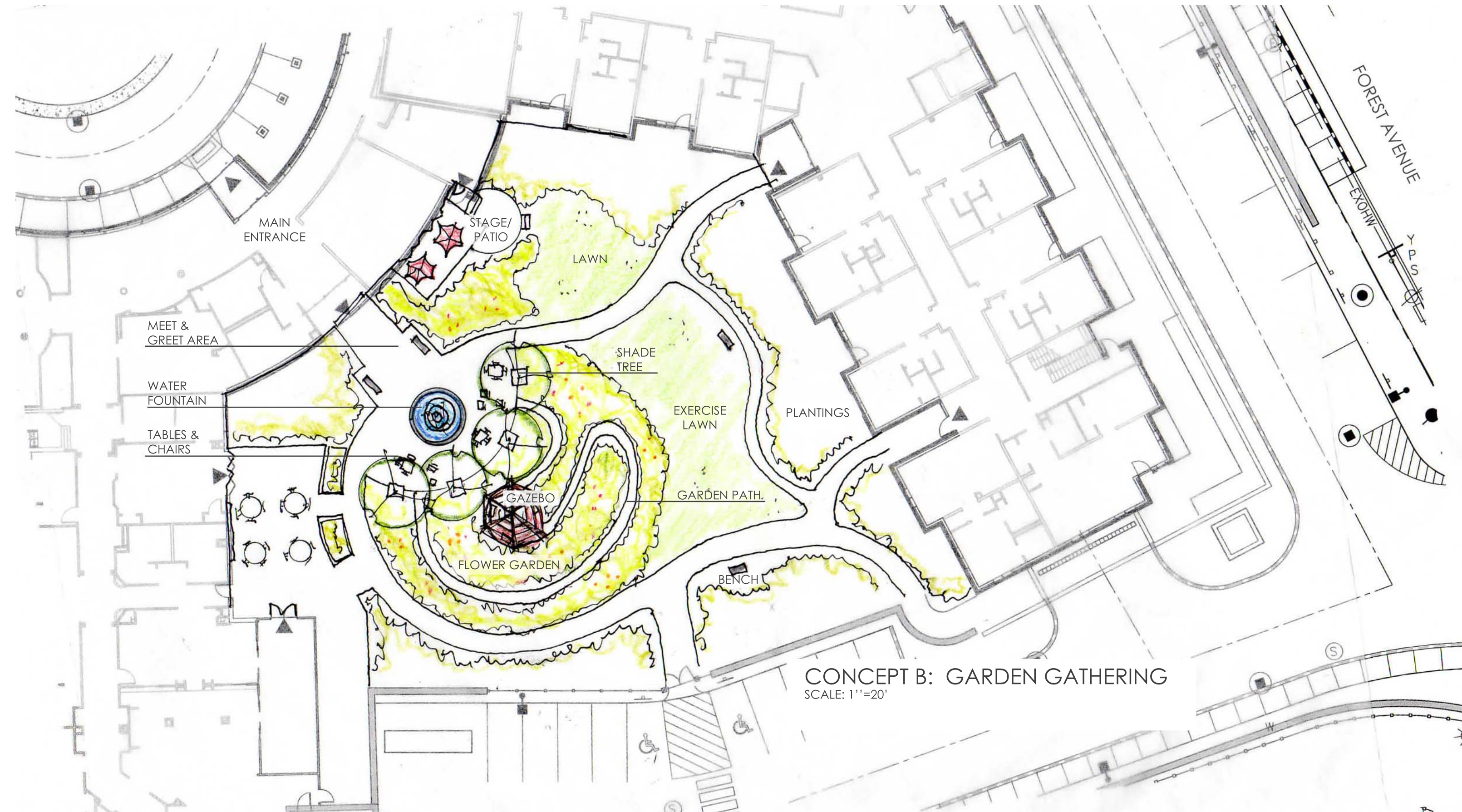
11/25/14

LAVALLEE BRENSINGER ARCHITECTS





CONCEPT A: LET'S PLAY
SCALE: 1" = 20'





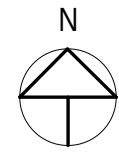
CONCEPT C: SITTING BY THE STREAM
SCALE: 1"=20'



The Park Danforth
RENOVATIONS AND ADDITIONS

VIEW FROM STEVENS AVE

SCALE:

 **LAVALLEE | BRENSINGER** ARCHITECTS

01/05/15



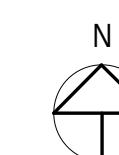
The Park Danforth

RENOVATIONS AND ADDITIONS

VIEW FROM FOREST AVE

SCALE:

LAVALLEE | BRENSINGER ARCHITECTS



01/05/15

Prepared For:

Owner:
Home For The Aged
777 Stevens Avenue
Portland, Maine 04103
Tel.: 207-797-7710

Applicant:
The Park Danforth
777 Stevens Avenue
Portland, Maine 04103
Tel.: 207-797-7710

Prepared By:
MITCHELL & ASSOCIATES
Landscape Architects
The Staples School
70 Center Street
Portland, Maine 04101
Tel.: 207-774-4427

Portland, Maine

777 Stevens Avenue

The Park Danforth

Date:

OCTOBER 17, 2014

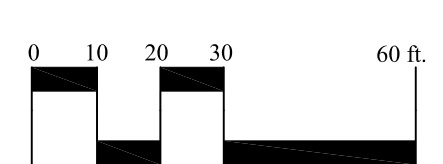
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Revisions:

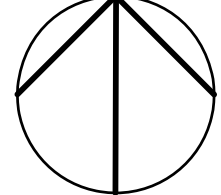
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Title:
PRE-DEVELOPMENT
STORMWATER PLAN

Scale: 1"=30'



North:



Sheet No.:

D1.0

REDEVELOPMENT PEAK FLOWRATE SUMMARY

Results @ DMH#1 (POND 9)

STORM	TOTAL	TO CITY SD	DISCARDED
2 YEAR	3.73 cfs	2.12 cfs	1.60 cfs
10 YEAR	5.57 cfs	2.16 cfs	3.40 cfs
25 YEAR	6.00 cfs	2.17 cfs	3.83 cfs

Results @ AP#1 (REACH 11)

STORM	PEAK
2 YEAR	2.77 cfs
10 YEAR	3.28 cfs
25 YEAR	3.52 cfs

Results @ AP#2 (POND 31)

STORM	PEAK FLOWRATE TO CITY STORM DRAIN
2 YEAR	2.94 cfs
10 YEAR	5.00 cfs
25 YEAR	5.59 cfs

STORM DRAINAGE NOTES:

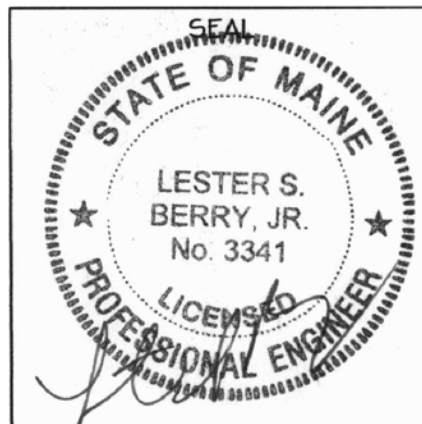
- EXISTING CONDITIONS AND BOUNDARY INFORMATION TAKEN FROM A PLAN ENTITLED 'BOUNDARY & TOPOGRAPHIC SURVEY ON STEVENS AVE., ARBOR ST., FOREST AVE. AND POLAND ST., PORTLAND, MAINE, MADE FOR MITCHELL & ASSOCIATES', DATED JANUARY 3, 2014, PREPARED BY OWN HASKELL INC., FALMOUTH MAINE
- ELEVATIONS ARE ON CITY DATUM, BASED ON BENCH MARK AT 3' OFFSET MONUMENT UNDER COVER ON EASTERLY SIDE OF STEVENS AVENUE. BENCHMARK = 127.25.
- EXISTING SOIL INFORMATION IS TAKEN FROM CUMBERLAND COUNTY MEDIUM INTENSITY SOIL SURVEY MAPS, SOIL CONSERVATION SERVICE SOIL SURVEY, 1974.
- SOIL TEST PITS PERFORMED BY ALBERT FRICK ASSOCIATES, INC., GORHAM, MAINE, SEPTEMBER 2014.

WATERSHED LEGEND

- WATERSHED BOUNDARY
- SA-33 SUB-CATCHMENT AREA
- STORMWATER FLOW
- Tc SF = 70' TIME OC CONCENTRATION (SF=Sheet Flow / SC=Shallow Concentrated)
- R-2 REACH
- WmB De SOIL BOUNDARY (WmB = Windsor / De = Deerfield)
- 8" PVC STORM DRAIN
- AP#1 POINT OF ANALYSIS
- 1 STRUCTURE
- TEST PIT

LEGEND

- IRON PIPE OR ROD FOUND
- MONUMENT FOUND
- UTILITY POLE
- MANHOLE
- ELECTRIC/GAS METER
- SIGN
- CATCH BASIN
- HYDRANT
- WATER VALVE OR SHUTOFF
- LIGHT POLE
- IRRIGATION CONTROL VALVE
- BOLLARD
- DECIDUOUS TREE
- CONIFEROUS TREE
- INTERIOR LOT LINE
- FENCE
- CURB
- OVERHEAD WIRES
- UNDERGROUND ELECTRIC
- WATER LINE
- GAS LINE
- STORM DRAIN
- SANITARY SEWER
- 1' CONTOUR



REDEVELOPMENT PEAK FLOWRATE SUMMARY

Results @ DMH#1 (POND 9)	STORM	TOTAL	TO CITY SD	DISCARDED
2 YEAR	3.35 cfs	2.12 cfs	1.70 cfs	
10 YEAR	5.39 cfs	2.16 cfs	3.30 cfs	
25 YEAR	6.06 cfs	2.17 cfs	3.88 cfs	

Results @ AP#1 (REACH 11)	STORM	PEAK	(PRE)
2 YEAR	2.19 cfs	(2.77 cfs)	
10 YEAR	2.32 cfs	(3.28 cfs)	
25 YEAR	2.39 cfs	(3.32 cfs)	

Results @ AP#2 (REACH 100--MODEL II)	STORM	PEAK FLOWRATE TO CITY STORMDRAIN	(PRE)
2 YEAR	0.31 cfs	(2.94 cfs)	
10 YEAR	2.10 cfs	(5.00 cfs)	
25 YEAR	2.65 cfs	(5.59 cfs)	

STORM DRAINAGE NOTES:

- EXISTING CONDITIONS AND BOUNDARY INFORMATION TAKEN FROM A PLAN ENTITLED "BOUNDARY & TOPOGRAPHIC SURVEY ON STEVENS AVE., ARBOR ST., FOREST AVE. AND POLAND ST., PORTLAND, MAINE, MADE FOR MITCHELL & ASSOCIATES", DATED JANUARY 3, 2014, PREPARED BY OWN HASKELL INC., FALMOUTH MAINE.
- ELEVATIONS ARE ON CITY DATUM, BASED ON BENCH MARK AT 3' OFFSET MONUMENT UNDER COVER ON EASTERLY SIDE OF STEVENS AVENUE. BENCHMARK = 127.25.
- EXISTING SOIL INFORMATION IS TAKEN FROM CUMBERLAND COUNTY MEDIUM INTENSITY SOIL SURVEY MAPS, SOIL CONSERVATION SERVICE SOIL SURVEY, 1974.
- SOIL TEST PITS PERFORMED BY ALBERT FRICK ASSOCIATES, INC., GORHAM, MAINE, SEPTEMBER 2014.

POST MODEL I = SA-3 TO SA-9 AND SA-20 TO SA-25

POST MODEL II = SA-100, SA-102, SA-103 AND SA-105 TO SA-107

POST MODEL III = SA-112, SA-114 TO SA-119, SA-122, SA-124 AND SA-131 TO SA-133

Prepared For:

Owner:
Home For The Aged
777 Stevens Avenue
Portland, Maine 04103
Tel.: 207-797-7710

Applicant:

The Park Danforth
777 Stevens Avenue
Portland, Maine 04103
Tel.: 207-797-7710

Prepared By:

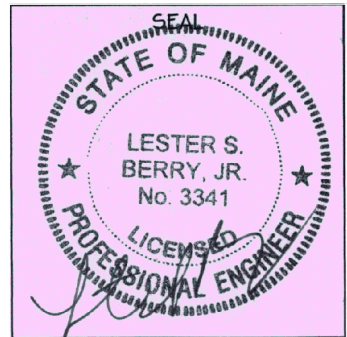
MITCHELL & ASSOCIATES
Landscape Architects
The Staples School
70 Center Street
Portland, Maine 04101
Tel.: 207-774-4427

WATERSHED LEGEND

- WATERSHED BOUNDARY
- SUB-CATCHMENT AREA
- STORMWATER FLOW
- TIME OC CONCENTRATION
(SF=Sheet Flow / SC=Shallow Concentrated)
- REACH
- STORM DRAIN
- POINT OF ANALYSIS
- STRUCTURE
- TEST PIT

LEGEND

	EXISTING	PROPOSED
PROPERTY LINE		
GRANITE MONUMENT		
CATCHBASIN		
MANHOLE		
HYDRANT		
UTILITY POLE		
WATER VALVE		
SANITARY SEWER	ESAN	SAN
STORM DRAIN	ESD	H2O
WATER	EW	
TELEPHONE	ETEL	
GAS	EG	GAS
OVERHEAD WIRES	EXOHV	
UNDERGROUND ELECTRIC	EUGE	
LEACHING GALLEY		
CLEAN OUT		C.O.
CURB		
FENCE		
SIGN		
DECIDUOUS TREE		
EVERGREEN TREE		
CONTOUR		
SPOT ELEVATION		+ 74.00
WALL MOUNTED LIGHT		



The Park Danforth
777 Stevens Avenue
Portland, Maine

Date:
OCTOBER 17, 2014

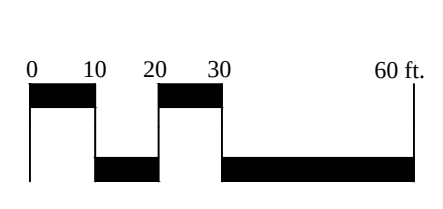
Issued For:
PERMITTING

Revisions:
NOV. 25, 2014: Per City of Portland
Staff Review Comments

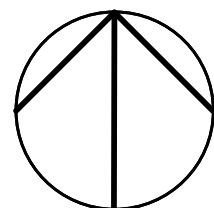
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Title:
POST-DEVELOPMENT
DRAINAGE PLAN

Scale: 1"=30'



North:



Sheet No.:

D2.0

TREATMENT SUMMARY

PROJECT AREA: 4.16 ACRES
 TOTAL PROPOSED IMPERVIOUS AREA: 3.05 ACRES OR 133,033 S.F.
 IMPERVIOUS AREA TREATED: 1.75 ACRES OR 76,237 S.F.
 IMPERVIOUS AREA NOT TREATED: 1.30 ACRES OR 56,628 S.F.

STORM DRAINAGE NOTES:

- EXISTING CONDITIONS AND BOUNDARY INFORMATION TAKEN FROM A PLAN ENTITLED "BOUNDARY & TOPOGRAPHIC SURVEY ON STEVENS AVE., ARBOR ST., FOREST AVE. AND POLAND ST., PORTLAND, MAINE, MADE FOR MITCHELL & ASSOCIATES", DATED JANUARY 3, 2014, PREPARED BY OWN HASKELL INC., FALMOUTH MAINE.
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The Park Danforth

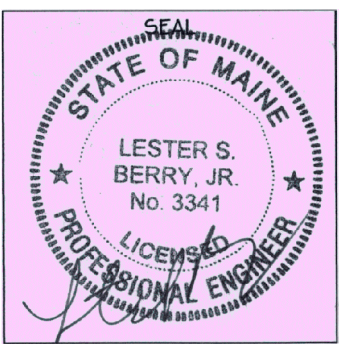
Portland, Maine
 777 Stevens Avenue

WATERSHED LEGEND

- WATERSHED BOUNDARY
- SUB-CATCHMENT AREA
- STORMWATER FLOW
- TIME OC CONCENTRATION
(SF=Sheet Flow / SC=Shallow Concentrated)
- REACH
- STORM DRAIN
- POINT OF ANALYSIS
- STRUCTURE
- TEST PIT
- AREA OF STORMWATER TO BE TREATED (93,153 S.F.)

LEGEND

	EXISTING	PROPOSED
PROPERTY LINE		
GRANITE MONUMENT		
CATCHBASIN		
MANHOLE		
HYDRANT		
UTILITY POLE		
WATER VALVE		
SANITARY SEWER	ESAN	SAN
STORM DRAIN	ESD	H2O
WATER	EW	
TELEPHONE	ETEL	
GAS	EG	GAS
OVERHEAD WIRES	EXOHW	
UNDERGROUND ELECTRIC	EUGE	
LEACHING GALLEY		
CLEAN OUT		C.O.
CURB		
FENCE		
SIGN		
DECIDUOUS TREE		
EVERGREEN TREE		
CONTOUR		
SPOT ELEVATION		+ 74.00
WALL MOUNTED LIGHT		



PLANNING BOARD REPORT PORTLAND, MAINE



Pre-owned Automobile Dealership
Conditional Use and Site Plan Review Amendments

Changiz Fard, Applicant

Project No: 2015-035 & 2015-036

CBL: 130-C-001

Submitted to: Portland Planning Board Public Hearing Date: February 10 th , 2015	Prepared by: Jean Fraser, Planner Date: February 6 th , 2015
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I. INTRODUCTION

Changiz Fard, applicant, has requested Planning Board approval for proposed amendments to the Conditional Use and Level I: Site Alteration site plans that were previously approved in June 2014 for a used car dealership on a leased site at 783 Forest Avenue.

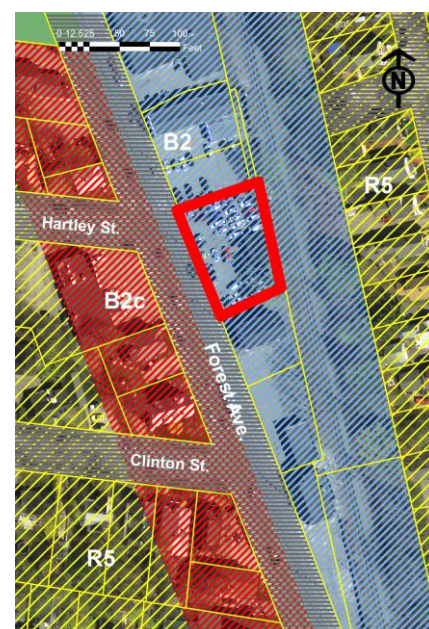
The site is located in a B-2 Community Business Zone, where automobile dealerships are listed as a conditional use and therefore are reviewed by the Planning Board.

Required Reviews:

- Conditional Use in the B2 zone;
- Level I (Site Alteration) Site Plan.

The project was previously before the Board in June 2014 and the approval letter and associated site plan from that review are included in as [Attachment 1](#).

The applicant discovered that the approved layout, with the northern curb cut closed, was unworkable and therefore did not implement the associated required improvements. The site was then in violation of the ordinance and the applicant was asked by City staff to remove all the cars until the amended plans were approved and the associated conditions met. The applicant removed all of the cars in December 2014; at the time of preparing this Report there are no display cars though a several cars are parked along the rear of the site near the small building.



The amendment applications include the following revisions:

- Retain both existing curb cuts but narrow both substantially (the approved plan closed the northern curb cut)
- Extend the areas of landscaped buffer that are required under the B2 conditional use provisions;
- Reduce display parking area by approximately 2 car spaces; and
- Modify the sidewalk and apron repairs accordingly.

A total of 148 notices of the Hearing were sent to property owners within 500 feet and to interested citizens and a notice was published in the February 2nd and 3rd, 2015 editions of the *Portland Press Herald*. The applicant is not required to hold a neighborhood meeting for this proposal. The Planning office has not received any public comments regarding the amendment application, although several were received during the June review.

Required Waivers: The previous review required a waiver for the width of the remaining curb cut, but the amended plan shows this reduced to the City's standard. However, the retention of the existing curb cut to the north now requires the following waiver even though the existing drive separation has been increased:

Requested Waiver	Standard and any waiver provisions
Driveway Separation: The existing curb cuts are not in compliance with the City standards; the proposals make them more in compliance reducing the width of driveways, better defining driveways and moving the centerlines farther from nearby driveways..	<i>Technical Manual Section 1.7.1.7</i> sets out standards for minimum driveway separation and the Traffic Engineer supports the waiver as they are an existing condition and the proposed use has limited traffic volumes entering and exiting the site and there is no history of safety issues (Att 5).

II. PROJECT DATA:

Zone:	B-2 Business
Proposed Use:	Automobile Sales
Previous (Legal) Use:	Office and oil truck storage (use of former Gas Station)
Required Minimum Lot Area:	10,000 sq ft
Proposed Lot Area:	12,111 sq ft
Existing impervious area:	10,408 sq ft
Proposed impervious area:	10,258 sq ft
Total floorspace of existing bldg:	652 sq.ft. (included in above impervious area)
Required parking:	not specified in ordinance
Proposed parking:	6 spaces for employees and customers, up to 13 vehicle display spaces
Required Bicycle Parking:	2 spaces
Proposed bicycle parking:	2 spaces
Existing Driveways:	2
Proposed Driveways:	2 (narrowed from over 40 feet to 24 feet)

III. EXISTING CONDITIONS

The site is located between a parking lot with drive access serving the adjacent restaurant and hairdressers to the north, and a driveway and commercial building to the south. Opposite the site (across Forest Avenue) is Hartley Street, a residential street with commercial uses nearest Forest Avenue where it is zoned B2c (see below under **VII A** Zoning Assessment). A pedestrian crosswalk is located across Forest Avenue just north of the site.

The parcel is largely a rectangle with 134 feet of frontage along Forest Avenue, but includes a sliver of land running along the back of the abutting lot along the railway (Plan P1.) The aerial at right is now out of date as the cars were removed in the last couple of months and currently there are a few cars parked at the rear facing the railway.

The 12,111 sq ft site was formerly a gas station; the gas tanks were removed and filled with sand in 2005 and the site is currently paved, with the former gas station building remaining on the rear part of the site. The site has a legal use as “office and oil truck storage” and the existing building was recently renovated by the applicant who leases the site from the owner Steve Mardigan (Attachment C) .

The site backs onto the railway line and there are mature trees along the rear boundary (photo left). The B2 zone extends over the railway and some 50 feet beyond before the R5 zone begins.



IV. PROPOSED AMENDMENTS

In June 2014 the applicant received conditional use for the car sales use and site plan approval for improvements. These included curb stops, customer and employee parking and bicycle parking which remain a part of the proposed improvements along with the key elements listed below, as compared with the proposed amendments (see Plans P2, P3 and P4):

Approved June 2014	Proposed Amendments February 2015
Close northern curb cut/drive access	Keep open the northern curb cut / drive access, but narrow it from 38.9 feet to 24 feet in width
Keep open the southern curb cut / drive access, but narrow it from 40.6 feet to 28 feet in width	Keep open the southern curb cut/ drive access, but narrow it from 40.6 feet to 24 feet in width
Landscaped buffer approx. 240 sq ft in central section	Three sections of landscaped buffer totaling approx. 380 sq ft 2 street trees
No street trees	
Display parking for 15/16 cars	Display parking for 13/14 cars
Create new sections of sidewalk totaling 56 feet	Create new sections of sidewalk totaling 32 feet
Repair 28 linear feet of apron	Repair of 48 linear feet of apron

The plans do not include any proposals for the existing building (former gas station) as the work has already been completed.

V. PUBLIC COMMENT

At the time of completing this report no public comments have been received. During the June 2014 review we received three letters of objection from neighbors in Hartley Street. In the fall of 2014 staff received some complaints about the use impacting areas outside of the site, but staff discussed this with the applicant and no further complaints have been received.

VI. RIGHT, TITLE AND INTEREST AND FINANCIAL/TECHNICAL CAPABILITY

The lease is included in Attachment C and staff have discussed the current proposals with the owner Mr Mardigan. It is understood that Mr Mardigan is supportive of the improvements as long as they are done correctly ie with granite curbing.

Staff have not seen an estimate of the costs of these improvements but anticipate these would be substantial given the 30+ feet of new concrete sidewalk, the need for considerable lengths of granite curbing, and the need to prepare the landscaped areas adequately for planting. The applicant has already done some work in the ROW using unlicensed contractors and staff are concerned that the applicant may not be able to fund the cost of implementing the improvements using licensed contractors and materials/details as required by the approved plans/conditions of approval and the City Standards.

VII. STAFF REVIEW

A. ZONING ASSESSMENT

The site is located in the B-2 Community Business zone where automobile dealerships are permitted as a Conditional Use. The site is within a long band of B2 on the east side of Forest Avenue and is at least 90 feet from the R5 zone on the other side of the railway tracks. Marge Schmuckal submitted comments for the previous review in June 2014 and these would still apply (Attachment 3). The proposals and suggested conditions address the zoning requirements.

B. CONDITIONAL USE REVIEW (Section 14-183):

Sec. 14-183. Conditional uses identifies auto dealership in the B-2 zone as a conditional business use if they meet the following requirements, and *“the Planning Board shall be substituted for the board of appeals as the reviewing authority over conditional business uses”*. The applicant has submitted a conditional use application (Attachment B) and an analysis of how the proposal complies with the conditional use standards in Attachment D.

Section 14-183 specifies (in relation to automobile dealerships):

In addition to approval by the Planning Board with respect to the requirements of article V (site plan), sections 14-522 and 14-523 notwithstanding, these uses shall comply with the following conditions and standards in addition to the provisions of section 14-474:

The requirements taken from the Ordinance 14-183 (a) 5 (as in place at the time the applications were accepted) are in italics below, together with a staff comment in respect of the proposals.

- a. *Signs: Signs shall not adversely affect visibility at intersections or access drives. Such signs shall be constructed, installed and maintained so as to ensure the safety of the public. Such signs shall advertise only services of goods available on the premises.*

Staff comment: The applicant is not proposing any signs as part of the current applications. A potential condition requiring the separate sign review and approval is included in the proposed motion for the Board to consider.

- b. *Circulation: No ingress and egress driveways shall be located within thirty (30) feet from an intersection. No entrance or exit for vehicles shall be in such proximity to a playground, school, church, other places of public assembly, or any residential zone that the nearness poses a threat or potential danger to the safety of the public.*

Staff comment: This requirement is met both in the existing conditions and as proposed to be modified.

Clause 6 g.i. *A landscaped buffer, no less than five (5) feet wide, shall be located along street frontages (excluding driveways). The buffer shall consist of a variety of plantings in accordance with the City of Portland Technical Manual.*

Staff comment: The proposals include a 5 foot wide landscaped buffer along three sections of the Forest Avenue frontage, including a street tree in each of the two corner sections and low grass and shrubs in all three buffer areas (Plans P2, P3 and P4). The City Arborist, Jeff Tarling, has confirmed the proposals are acceptable (Attachment 4).

The following standards apply to all conditional uses:

Section 14-474(c)(2) *Standards. The Board shall, after review of required materials, authorize issuance of a conditional use permit, upon a showing that the proposed use, at the size and intensity contemplated at the proposed location, will not have substantially greater negative impacts than would normally occur from surrounding uses or other allowable uses in the same zoning district. The Board shall find that this standard is satisfied if it finds that:*

- a. *The volume and type of vehicle traffic to be generated, hours of operation, expanse of pavement, and the number of parking spaces required are not substantially greater than would normally occur at surrounding uses or other allowable uses in the same zone; and*

Staff comment: Tom Errico, the Traffic Engineer, did not have any concerns regarding these aspects of the proposal as shown on the submitted plans (Attachment 5).

- b. *The proposed use will not create unsanitary or harmful conditions by reason of noise, glare, dust, sewage disposal, emissions to the air, odor, lighting, or litter; and*

Staff comment: The location of the proposed car dealership is within a large section of B2/B2c. The site abuts the railway to the east, where mature trees contribute to the buffering and screening of the site from the nearest residential zone. To the north and south are commercial premises and associated parking. During the June review the residents in Hartley Street, opposite the site, objected to the proposal based on the way the applicant has used the surrounding streets as part of the business. The conditions included in the June 2014 approval, requiring the use and associated activities stay on-site, have been included in the potential conditions for the amendments.

- c. *The design and operation of the proposed use, including but not limited to landscaping, screening, signs, loading, deliveries, trash or waste generation, arrangement of structures, and materials storage will not have a substantially greater effect/impact on surrounding properties than those associated with surrounding uses or other allowable uses in the zone.*

Staff comment: The impacts of this use, assuming it remains within the site, would not differ substantially from the impacts associated with the surrounding uses or other allowable uses in the zone.

C. DEVELOPMENT REVIEW

The proposed development has been reviewed by staff for conformance with the relevant review standards of Section 14-526- Site Plan. As this is a Level I: Site Alteration Site Plan, not all of the standards are applicable and there are fewer submittal requirements. Staff comments are highlighted in this report.

1 SITE PLAN SUBMISSION REQUIREMENTS (Section 14-527)

The proposal is subject to a Level I: Site Alteration Site Plan and the submission requirements are listed in 14-527 (b). The Site Plan application (Attachment A), narratives and plans have addressed the ordinance requirements.

2 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. A Level I site Alteration is not subject to all of the Site Plan Standards. Staff comments are listed below.

A. Transportation Standards (1,2 and 4)

1. Impact on Surrounding Street system and 2. Access and circulation

The proposed used car dealership is located on Forest Avenue along a straight stretch of single lane traffic with good visibility; there are two existing curb cuts on the site, each about 40 feet in width. The proposed use does not have high trip generation, with limited loading and servicing. The Technical Standards allow two drives for a commercial site but the existing curb cuts do not meet City Standards in terms of width and distance from other driveways.

The previous "solution" to close the northern curb cut is not workable for the applicant and Tom Errico confirmed at a meeting with the applicant on 1.12.2015 that retention of the existing drives is acceptable for this particular use as long as they are improved to be more in compliance with City Standards.

The applicant has reduced existing curb cuts to meet the City standard of 24 feet and better define their location within the sidewalk; the proposals also move the centerline of both drives so that they are further away from nearby driveways.

Tom Errico, the Traffic Engineering reviewer, has commented (Attachment 5):

- *Given limited traffic volumes entering and exiting the site and no history of safety issues (the non-compliant driveway separation is a current issue), I support a waiver from the City's Technical Standards as it relates to driveway separation. I would note that the applicant is reducing the width of driveways and better defining driveways and thus will improve upon existing conditions.*
- *The approval of the proposed driveway design is based upon the assumption that the project will not generate a significant amount of traffic. If changes in the business operations occur that increase traffic levels, the applicant shall be required to provide a review of traffic impacts associated with the change for review and approval by the City.*
- *The location of parked vehicles shall not encroach on parking circulation aisles, sidewalks and block the proposed driveways. The number of vehicles allowed to park on the site shall conform to those illustrated on the site plan.*

Two suggested conditions of approval (for the conditional use application) require the applicant to address the Traffic Engineer's comments.

2. Access and circulation- Sidewalks

The proposal creates 32 feet of new sidewalk where the driveway aprons have been narrowed. The driveway aprons need some repair and the plans confirm that these will be repaired with materials approved by DPS.

David Margolis-Pineo of DPS has commented (Attachment 6):

1. *The plan view and detail of the driveway apron area is shown incorrectly. Please correct by referring to the City of Portland Technical Manual, Figures I-9, I-13 and I-15.*
2. *The reinforced concrete sidewalk detail is incorrect. Please correct by referring to the City of Portland Technical Manual, Figures I-14.*
3. *Either asphalt or concrete is acceptable as a driveway apron material in this area.*
4. *Please indicate that the sidewalk cross slope will not exceed 2% required by City Code.*
5. *Add notes stating:*
 - a. *Obtain a Street Opening Permit by a licensed contractor before starting work.*
 - b. *A mandatory pre-construction meeting with City staff to include Rhonda Zazzara, Phil DiPierro and David Margolis-Pineo shall take place on site after issuance of the Street Opening Permit and prior to starting work.*

A suggested condition of approval requires the applicant to address the DPS comments.

4. Parking Requirements

The ordinance does not specify minimum vehicle parking provision for this use. The Ordinance requires 2 bicycle parking spaces where the parking requirement is 0 to 10 vehicle parking spaces for this proposal, which have been included in the site improvements on Plan P2.

B. Environmental Quality Standards (1 and 3)

1. Preservation of Significant natural Features

There are no significant natural features on this site, which is largely paved or built. There are several large trees along the rear boundary line that are not impacted by the proposal. Planting along the frontage at the back of the sidewalk is proposed (see conditional use review above). The plans indicate that these will be preserved.

3. Water quality; Stormwater Management; Erosion control:

The applicant has reduced the overall impervious surface through the addition of the planted area at the front and therefore does not trigger Chapter 500 requirements. Dave Senus, the Peer Engineering reviewer, has commented that during the construction of the planter (and any other construction eg laying of new curbing)that :

The plans should show or note catch basin inlet protection (silt sacks) to be installed at the first down-gradient catch basin in Forest Ave during construction. The plans should state that the Forest Ave Right-of-Way shall be kept clean from dust and construction debris and swept daily or as requested by the City of Portland during construction to minimize dust and sediment originating from the site. (Att.2):

C. Public Infrastructure and Community Safety Standards (1)

1. Consistency with Master Plans:

The proposals do not impact city infrastructure except the repairs/sidewalk reinstatement to the drive apron areas which is discussed above.

D. Site Design Standards (5,6,8,9)

5. Historic Resources:

The proposed site alterations do not affect any historic resource.

6. Exterior Lighting:

The proposals do not include any specific lighting proposals. It is noted that two existing light bases are on site and if these are re-fitted or new lighting is proposed, the proposals would need to be reviewed and approved to ensure that they meet the City's Technical Standards.

The existing building includes bright lighting under the canopy (open fluorescent with no shield) and residents have stated it is on all night. This does not meet City Technical standards which require cut-off lighting and that the light levels should be halved during night time hours. A potential condition of approval is included in the motion for the Board to consider to address both of these issues.

8. Signage and Wayfinding:

The proposals do not include any new signs, but a potential condition of approval is included to clarify that any new signs would require separate permits.

9. Zoning Related Design Standards

There are B2 standards that would apply if there was a new building. The existing gas station building is legally nonconforming regarding setbacks. The B2 design standards do require landscaping and buffers, which is largely addressed by the Conditional Use requirement for a frontage buffer. Staff recommend the preservation of the mature trees along the rear of the site to address this requirement regarding the residential properties on the other side of the railway line, and this has been noted on the Site Plan (Plan P2).

VIII. STAFF RECOMMENDATION

Staff recommends that the Planning Board approve the Pre-owned Automobile Dealership amended conditional use and site plan, with the proposed waiver and suggested conditions of approval.

IX. PROPOSED MOTIONS FOR THE PLANNING BOARD'S CONSIDERATION

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 February 10th, 2015 for amendment applications #2014-035 and #2014-036 (783 Forest Avenue) relevant to the Portland Technical and Design Standards and Guidelines and other regulations and the testimony presented at the Planning Board hearing:

1. *Driveway Separation*

The Planning Board **waives / does not waive** the requirements of *Technical Manual Section 1.7.1.7*, which sets out standards for minimum driveway separation, to allow the existing curb cuts/driveways to remain as modified by the approved proposals in Plan P2. This waiver is based on the fact that the driveways are an existing condition with no history of safety issues, and the proposed use involves limited traffic volumes entering and exiting the site; and the applicant is reducing the width of and better defining the driveways and thus will improve upon existing conditions.

CONDITIONAL USE

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 February 10th, 2015 for amendment applications #2014-035 and #2014-036 (783 Forest Avenue), relevant to Portland's Conditional Use Standards and other regulations, and the testimony presented at the Planning Board hearing:

The Planning Board finds that the proposed conditional use for Auto Dealership at 783 Forest Avenue in the B-2 zone **does / does not** meet the standards of Section 14-474 and the standards of Section 14-183 for the B2 zone, subject to the following conditions:

- i. That the site access/egress conditions for vehicles are considered to be acceptable in view of the low traffic generation and minimal service requirements of the used car sales use. If changes in the business operations occur on the site that increase traffic levels, the Planning Authority will require the applicant to provide a review of traffic impacts associated with the change, for review and approval by the Planning Authority; and
- ii. The location of parked vehicles shall not encroach on parking circulation aisles, sidewalks nor block the proposed driveways. The number of vehicles allowed to park on the site shall conform to those illustrated on the site plan and not exceed 20 in total (including display, customer and employee parking); and
- iii. That no vehicles associated with this site and the dealership use shall be parked on any adjoining or nearby streets (including, but not limited to, any part of Hartley Street) nor overhang the City's right-of-way, sidewalk or property outside of the site; if such parking is documented as taking place, enforcement action may be pursued by the City; and
- iv. That all car sales and other activities associated with the car dealership use shall take place only on the privately owned part of the site. No car sales or any other activities associated with the car dealership may take place in the City right of way, sidewalk, or on property outside of the site; and
- v. A Performance Guarantee shall be posted covering the cost of the improvements shown on the approved amended plans. No cars may be parked on the site and no car sales or other activities associated with the car dealership use may take place from the site until the Performance Guarantee described herein has been posted and a change of use permit has been obtained from the Inspections Division. All of the approved improvements shall be completed within 4 calendar months of the date the Performance Guarantee is posted.

Failure to comply with any of the above-stated conditions of approval, in whole or in part, shall render this approval void.

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 the public hearing on February 10th, 2015 for amendment applications #2014-035 and #2014-036 (783 Forest Avenue), relevant to the Site Plan Ordinance and other 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:

- i. No work shall commence on any site improvements until such time as the applicant has:
 - 1) posted a Performance Guarantee in accordance with the standard conditions of approval;
 - 2) obtained all required City permits including a street opening permit (obtained by a licensed contractor) from the Department of Public Services; and
 - 3) attended a mandatory preconstruction meeting with City staff.
- ii. That the site plan and detail plans shall be revised to address the comments of David Margolis-Pineo dated 2.5.2015, for review and approval of the Planning Authority and Department of Public Services prior to any work starting on the site; and
- iii. That the improvements to the sidewalks, aprons and curbing be completed in accordance with the City of Portland Technical Standards (which include specifications requiring granite curbing); and
- iv. That the applicant shall obtain a license from the State of Maine Bureau of Motor Vehicles prior to the start of car sales from this site; and
- v. That erosion control measures, as outlined in the Peer Engineer comments dated 5.30.2014, be in place prior to the start of construction of the planter and relocation of curbs; and
- vi. That the storage of snow shall not impede sight distance for vehicles exiting the site, and on-site parking of vehicles should not block access and egress movements; and
- vii. That no car repairs shall take place on the site unless an amended site plan is approved by the Planning Authority, with the amendments showing where and how these would be accommodated, and all other necessary permits are obtained; and
- viii. That any new lighting shall be in compliance with the site lighting requirements as set out in the City's Technical Standard 12 "Site Lighting"; and
- ix. That separate permits are required for any signs on the site prior to their installation.

Failure to comply with any of the above-stated conditions of approval, in whole or in part, shall render this approval void.

ATTACHMENTS

Report attachments

1. Approval letter and plan as from June 2014 PB review
2. Peer Engineering Reviewer, Dave Senus 5.30.2014
3. Zoning Administrator, Marge Schmuckal 6.5.2014
4. City Arborist, Jeff Tarling, 2.4.2015
5. Traffic Engineering Reviewer, Tom Errico, 2.6.2015
6. Department of Public Services, David Margolis-Pineo 2.5.2015

Applicants submittal

- A. Level I: Amended Site Alteration Site Plan Application
- B. Amendment Conditional Use Application
- C. Right, title and interest
- D. Conditional use analysis (letter) January 2015

Plans

- P1. Existing conditions/survey
- P2. Proposed improvements (Site Plan C2)
- P3. Details C5 Curb and Sidewalk
- P4. Details C3

CITY OF PORTLAND, MAINE

PLANNING BOARD

Stuart O'Brien, Chair
Timothy Dean, Vice Chair
Elizabeth Boepple
Sean Dundon
Bill Hall
Carol Morrisette
Jack Soley

July 7th, 2014

Changiz Fard
684 Baxter Blvd.
Portland, ME 04103

Robert T. Greenlaw, PLS
134 Portland Ave.
Old Orchard Beach, ME 04064

Project Name: **Auto Dealership selling pre-owned cars**
Project ID: #2014-025 & #2013-044 CBL: 130-C-001
Address: 783 Forest Avenue
Applicant: Changiz Fard
Planner: Jean Fraser

Dear Mr Fard and Mr Greenlaw:

On June 24th, 2014, the Planning Board considered the proposed change of use and site alterations for an Auto Dealership selling pre-owned cars at 783 Forest Avenue. The Planning Board reviewed the proposals for conformance with the standards of the Conditional Use and Site Plan Ordinances.

The approval is based upon 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 June 24, 2014 for application #2013-044 and 2014-025 (attached), and the testimony presented at the Planning Board hearing. The Planning Board voted 4-0 (Hall and Soley absent; O'Brien abstaining) to approve the application with the following waivers and conditions as presented below:

WAIVER

1. The Planning Board voted 4-0 (Hall and Soley absent; O'Brien abstaining) to waive the requirements of *Technical Manual Section 1.7.1.4* which specifies a maximum of 24 feet wide for a minor commercial driveway, to allow one driveway (only) at this site at a maximum of 28 feet wide.

CONDITIONAL USE

The Planning Board voted 4-0 (Hall and Soley absent; O'Brien abstaining) that the proposed conditional use for an Auto Dealership at 783 Forest Avenue in the B-2 zone does meet the standards of Section 14-474 and the standards of Section 14-183 for the B2 zone, subject to the following conditions:

- i. That no vehicles associated with this site and the dealership use shall be parked on any adjoining or nearby streets (including any part of Hartley Street) nor overhang the ROW, sidewalk or property outside of the site; if such parking is documented by the City as taking place, enforcement action may be pursued by the City in accordance with the Portland City Code, 30-A M.R.S. § 4452, M.R. Civ. P. 80K, or in any other manner available by law; and
- ii. That all activities associated with the car dealership use shall take place on the privately owned part of the site; if activities in violation of this requirement are documented as taking place, enforcement action may be pursued by the City in accordance with the Portland City Code, 30-A M.R.S. § 4452, M.R. Civ. P. 80K, or in any other manner available by law; and
- iii. That the “Improvements Plan” (Plan P2 in this report) shall be revised for review and approval by the Planning Authority prior to implementation, to: 1) expand the planted buffer along Forest Avenue to be approximately twice the length shown on the plan; 2) show that the existing trees along the rear of the site are to be preserved; and 3) show that the existing lights on the building shall be modified to be “cut-off” in type and on a timer that lowers the light levels at night (one hour after the business closing to one hour before business opening, per City Technical Standards 12.2.8) ; and
- iv. That no car sales take place from this site until all of the improvements shown on the revised and finally approved “Improvements Plan” are completed to the satisfaction of the Planning Authority.

SITE PLAN

The Planning Board voted 4-0 (Hall and Soley absent; O’Brien abstaining) that the proposed site plan is in conformance with the site plan standards of the land use code, subject to the following conditions:

- i. No work shall be done on any site or Right of Way improvements until such time as the applicant has: 1) posted a Performance Guarantee in accordance with the standard conditions of approval; and 2) obtained all required City permits, including a street opening permit from the Department of Public Services and a Change of Use permit from the Inspections Division; and 3) held a Preconstruction Meeting; and
- ii. That a revised final site plan (“Improvements Plan”) shall be submitted for review and approval prior to implementation, to: 1) expand the planted buffer along Forest Avenue to be approximately twice the length shown on the plan; 2) show that the existing trees along the rear of the site are to be preserved; and 3) show that the existing lights on the building shall be modified to be “cut-off” in type and on a timer that lowers the light levels at night; and
- iii. That the improvements to the sidewalks, aprons and curbing be completed in accordance with the City of Portland Technical Standards and the final approved site plan (“Improvements Plan”), and that no car sales may commence from this site until the Department of Public Services confirms the completed improvements meet the Technical Standards for these improvements; and
- iv. That the applicant shall obtain a license from the State of Maine Bureau of Motor Vehicles prior to the start of car sales from this site; and
- v. That erosion control measures, as outlined in the Peer Engineer comments dated 5.30.2014, be in place prior to the start of construction of the planter and relocation of curbs; and

- vi. That the storage of snow shall not impede sight distance for vehicles exiting the site, and on-site parking of vehicles should not block access and egress movements; and
- vii. That no car repairs shall take place on the site unless an amended site plan is approved by the Planning Authority, with the amendments showing where and how these would be accommodated, and all other necessary permits are obtained; and
- viii. That any new lighting shall be in compliance with the site lighting requirements as set out in the City's Technical Standard 12 "Site Lighting" and the approved Improvements Plan; and
- ix. That separate permits are required for any signs on the site prior to their installation.

The approval is based on the applications, plans, reports and other information submitted by the applicant, findings and recommendations related to conditional use and site plan standards and other regulations as contained in the Planning Board Report for the public hearing on June 24, 2014 for application #2013-044 and #2014-025 (attached).

STANDARD CONDITIONS OF APPROVAL

Please note the following standard conditions of approval and requirements for all approved site plans:

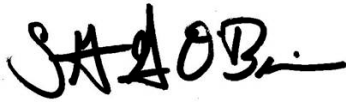
1. **Develop Site According to Plan** The site shall be developed and maintained as depicted on the site plan and in the written submission of the applicant. Modification of any approved site plan or alteration of a parcel which was the subject of site plan approval after May 20, 1974, shall require the prior approval of a revised site plan by the Planning Board or Planning Authority pursuant to the terms of Chapter 14, Land Use, of the Portland City Code.
2. **Separate Building Permits Are Required** This approval does not constitute approval of building plans, which must be reviewed and approved by the City of Portland's Inspection Division.
3. **Site Plan Expiration** The site plan approval will be deemed to have expired unless work has commenced within one (1) year of the approval or within a time period up to three (3) years from the approval date as agreed upon in writing by the City and the applicant. Requests to extend approvals must be received before the one (1) year expiration date.
4. **Performance Guarantee and Inspection Fees** A performance guarantee covering the site improvements, inspection fee payment of 2.0% of the guarantee amount and seven (7) final sets of plans must be submitted to and approved by the Planning Division and Public Services Department prior to the release of a building permit, street opening permit or certificate of occupancy for site plans. If you need to make any modifications to the approved plans, you must submit a revised site plan application for staff review and approval.
5. **Defect Guarantee** A defect guarantee, consisting of 10% of the performance guarantee, must be posted before the performance guarantee will be released.
6. **Preconstruction Meeting** Prior to the release of a building permit or any site construction, a pre-construction meeting shall be held at the project site. This meeting will be held with the contractor, Development Review Coordinator, Public Service's representative and owner to review the construction schedule and critical aspects of the site work. At that time, the Development Review Coordinator will confirm that the contractor is working from the approved site plan. The site/building contractor shall provide three (3) copies of a detailed construction schedule to the attending City representatives. It shall be the contractor's responsibility to arrange a mutually agreeable time for the pre-construction meeting.

7. **Department of Public Services Permits** If work will occur within the public right-of-way such as utilities, curb, sidewalk and driveway construction, a street opening permit(s) is required for your site. Please contact Carol Merritt at 874-8300, ext. 8828. (Only excavators licensed by the City of Portland are eligible.)
8. **As-Built Final Plans** Final sets of as-built plans shall be submitted digitally to the Planning Division, on a CD or DVD, in AutoCAD format (*.dwg), release AutoCAD 2005 or greater.

The Development Review Coordinator must be notified five (5) working days prior to the date required for final site inspection. The Development Review Coordinator can be reached at the Planning Division at 874-8632. All site plan requirements must be completed and approved by the Development Review Coordinator prior to issuance of a Certificate of Occupancy. Please schedule any property closing with these requirements in mind.

If there are any questions, please contact Jean Fraser, Planner at (207) 874- 8728.

Sincerely,



Stuart O'Brien, Chair
Portland Planning Board

Attachments:

1. City Technical Standards: *Site Lighting* (extract including 12.2.8 and "cut-off" type requirements)
2. Peer Engineer, Dave Senus of Woodard & Curran, comments dated 5.30.2014
3. Planning Board Report for the public hearing on June 24, 2014
4. Performance Guarantee Packet

Electronic Distribution:

CC:

Jeff Levine, AICP, Director of Planning and Urban Development
Alexander Jaegerman, FAICP, Planning Division Director
Barbara Barhydt, Development Review Services Manager
Jean Fraser, Planner
Philip DiPierro, Development Review Coordinator, Planning
Marge Schmuckal, Zoning Administrator, Inspections Division
Tammy Munson, Inspection Division Director
Lannie Dobson, Administration, Inspections Division
Michael Bobinsky, Public Services Director
Katherine Earley, Engineering Services Manager, Public Services
Bill Clark, Project Engineer, Public Services
David Margolis-Pineo, Deputy City Engineer, Public Services
Doug Roncarati, Stormwater Coordinator, Public Services

Greg Vining, Associate Engineer, Public Services
Michelle Sweeney, Associate Engineer
John Low, Associate Engineer, Public Services
Rhonda Zazzara, Field Inspection Coordinator, Public Services
Mike Farmer, Project Engineer, Public Services
Jane Ward, Administration, Public Services
Jeff Tarling, City Arborist, Public Services
Jeremiah Bartlett, Public Services
Captain Chris Pirone, Fire Department
Danielle West-Chuhta, Corporation Counsel
Thomas Errico, P.E., TY Lin Associates
David Senus, P.E., Woodard and Curran
Rick Blackburn, Assessor's Department
Approval Letter File

Extract from City of Portland Technical Manual Section 12- Site Lighting as adopted 7.19.2010**12.2. STANDARDS**

12.2.1. Unless otherwise specified below, exterior lighting shall conform to the recommendations put forth in Lighting for Exterior Environments RP-33-99, or its successor, published by the Illuminating Engineering Society of North America (IESNA). Proposed uses that demonstrate a need to exceed the specific site lighting limits shown below for safe and reasonable exercise of the proposed use must provide a professionally produced lighting plan which adheres to the current Illuminating Engineering Society of North America (IESNA) recommendations for the proposed use.

12.2.2. Uniformity: As measured in foot candles at grade, maximum to minimum illumination levels shall not exceed a ratio of twenty (20) to one (1.)

12.2.3. Illumination Levels: Minimum, Maximum, and Average illumination levels for areas intended to be lighted, as measured at grade, shall be:

Minimum	0.2 foot candles (fc)
Maximum	5.0 foot candles (fc)
Average	1.25 foot candles (fc)

12.2.4. Wattage: No fixture shall exceed 250 watts, except in industrial areas.

12.2.5. Light Trespass: The maximum illumination level at a property line shall not exceed 0.1 foot candle, as measured at grade, except where abutting industrial, or other non-sensitive uses. All residential uses and natural resource protection areas are to be considered sensitive to light trespass. In certain instances where a proposed development is adjacent to a sensitive use, house-side shielding may be necessary to comply with this standard.

12.2.6. Luminaire Types: All fixtures, including pole mounted and wall mounted luminaires, shall be a "cut-off" type where lenses, refractors or lamp sources do not extend below the surface of the fixture housing and no direct light shall be directed at or above the horizontal plane. Sites which are part of an historic district or require specific decorative lighting fixtures as means to achieve compatibility within an existing architectural context may propose non-cutoff fixtures providing that they have built in reflectors to mitigate uplighting and that photometrics fall within IESNA guidelines. Low pressure sodium bulbs are prohibited.

12.2.7. Fixture Height: Fixtures shall be mounted at the lowest height necessary with no fixture height to exceed twenty (20) feet above grade, except in sites proposed for large industrial and/or commercial uses, where the fixture height shall not exceed thirty (30) feet above grade. For the purposes of this standard only, a large industrial and/or commercial use is defined to have greater than fifty thousand (50,000) gross square feet of building space.

12.2.8. Lighting Curfew: For non-residential uses, lighting in vehicle parking areas containing twenty (20) or more parking spaces shall be reduced to 50% of permitted levels from one hour after the business closing to one hour before business opening. If lighting levels are already below 50% of permitted levels, no curfew adjustment is required. Motion sensor activated lighting shall be permitted during closed hours to activate additional lighting above the 50% permitted, for the purposes of public safety.

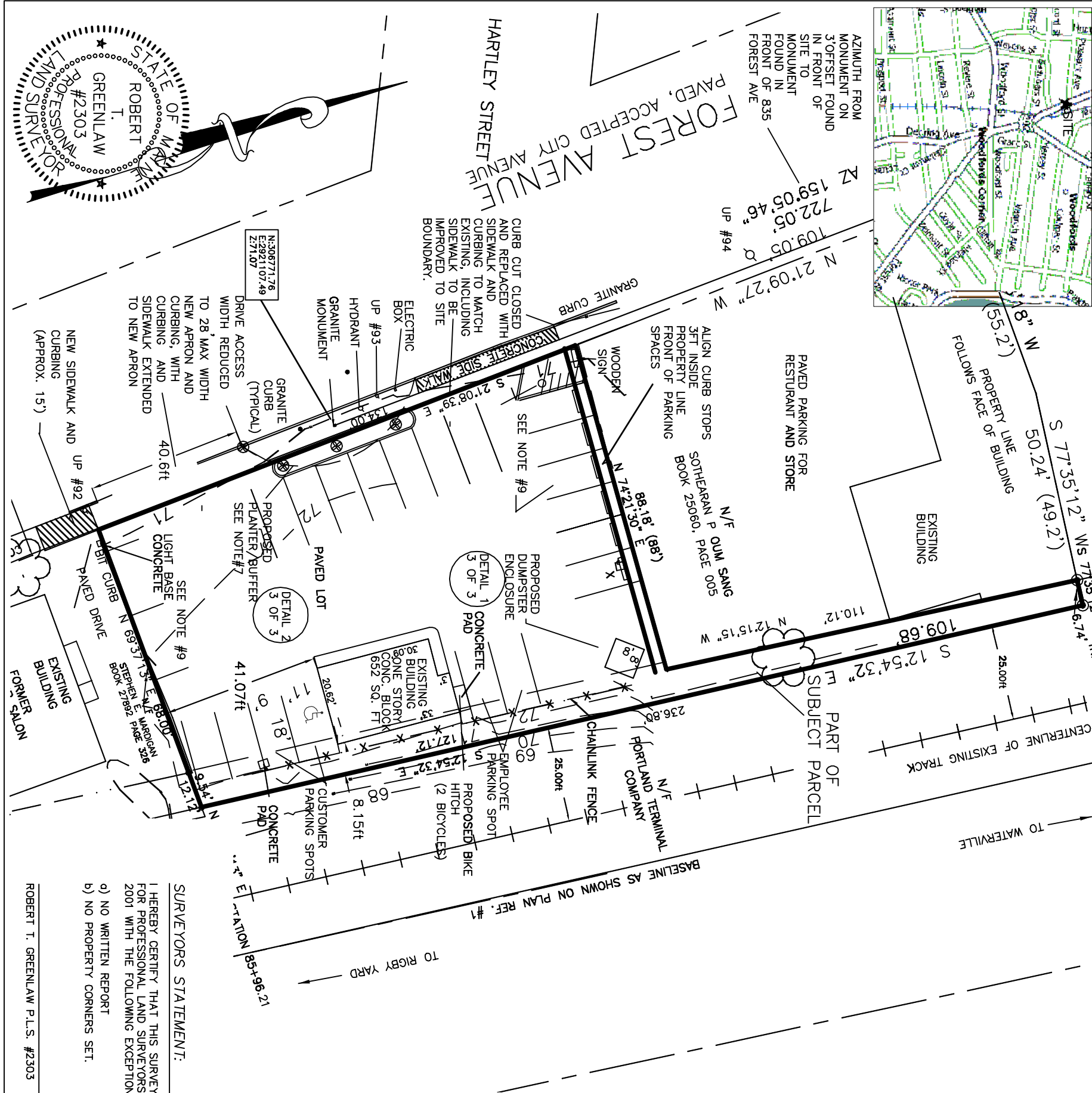
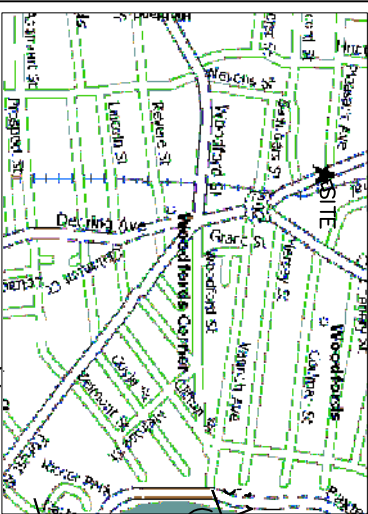
From: David Senus <dsenus@woodardcurran.com>
To: Jean Fraser <JF@portlandmaine.gov>
CC: David Margolis-Pineo <DMP@portlandmaine.gov>, "Thomas.Errico@tylin.com" <Thomas.Errico@tylin.com>, "Barbara Barhydt (bab@portlandmaine.gov)" <bab@portlandmaine.gov>
Date: 5/30/2014 10:16 AM
Subject: RE: Site Plan & Cond Use 783 Forest Ave Car Dealership (2014-025)

Hi Jean:

The plans should show or note catch basin inlet protection (silt sacks) to be installed at the first down-gradient catch basin in Forest Ave during construction. The plans should state that the Forest Ave Right-of-Way shall be kept clean from dust and construction debris and swept daily or as requested by the City of Portland during construction to minimize dust and sediment originating from the site.

Thanks,
Dave

David Senus, PE (Maine), Project Manager
Woodard & Curran, Inc.
41 Hutchins Drive
Portland, ME 04102
Phone: (800) 426-4262 x3241
Cell: (207) 210-7035
Fax: (207) 774-6635



GENERAL NOTES:

1. RECORD OWNER OF PARCEL: STEPHEN E. MARDIGAN AS RECORDED IN BOOK 25010, PAGE 160 IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS.
2. BEARINGS ARE BASED UPON THE MAINE STATE GRID WEST ZONE 1983 DATUM. BASIS OF BEARINGS IS THE MONUMENT SHOWN HEREON IN FRONT THE SUBJECT PARCEL. THE COORDINATES ARE LABELED HEREON AND WERE SUPPLIED BY THE CITY OF PORTLAND ENGINEERING DEPARTMENT IN 2006.
3. THE MONUMENT THE AZIMUTH EXTENDS TO IS A 3' OFFSET MONUMENT FOUND ON THE EASTERLY SIDE OF FOREST AVENUE IN FRONT OF #835 FOREST AVE.
4. ITS COORDINATES ARE NORTH 307°46.28, EAST 2920849.86.
5. AREA OF PARCEL : 12111.3 SQ. FT., 0.28 ACRES
6. REFERENCE IS MADE TO THE FOLLOWING PLANS:
a.) RIGHT OF WAY AND TRACK MAP PORTLAND, MAINE CITY OF PORTLAND MAINE. VALUATION SHEET 1A, MAP 2.
7. CITY OF PORTLAND MAINE STREETLINE SHEET OF FOREST AVE. DATED 3/4/27
8. CITY OF PORTLAND MAINE ASSESSORS PLAN #137-BLOCK C-LOT 1.
9. ZONING: B-2 ZONE - SETBACKS: FRONT - NONE
REAR - 10 FT
SIDE - NONE
10. EXISTING PARKING: 10 9'X19' SPACES, 1-11'-19' HANDICAP SPACE. THE PARKING SPACES NOT DESIGNATED ARE FOR AUTOMOBILE DISPLAY.
11. PROPOSED 5 FOOT WIDE BUFFER SHALL CONTAIN PLANTINGS THAT CONFORM TO THE CITY OF PORTLAND ORDINANCES.
12. AS NOTED IN THE N.F.P.A. SECTION 220 THIS BUILDING IS CLASSIFIED AS A TYPE III (ORDINARY) EXTERIOR PROTECTED. THE EXISTING STRUCTURE IS A SINGLE STORY STRUCTURE WITH CINDER BLOCK WALLS. THE ONLY INTERIOR PARTITION WALL ENCLOSES THE BATHROOM. THE BUILDING IS COVERED WITH A WOOD FRAMED FLAT ROOF COVERED IN RUBBER.
13. FIRE PROTECTION IS ACHIEVED WITH TWO HARD WIRED SMOKE DETECTORS AND A FIRE EXTINGUISHER LOCATED NEAR THE FRONT DOOR. A CITY OF PORTLAND FIRE HYDRANT IS ALSO LOCATED DIRECTLY INFRONT OF THE SUBJECT PARCEL.
14. PARKING SPACES NOT MARKED CUSTOMER PARKING, EMPLOYEE OR HANDICAP ARE FOR THE DISPLAY OF CARS FOR SALE.

LEGEND

- Capped 5/8" Rebar Found
- Iron Pipe or Solid Pin Found
- ◁ Survey Instrument Point
- Abutter Line
- Property Line
- Street Line
- (50.00') Distance from reference plan or deed.
- N/F Now Or Formerly
- Overhead Utility
- Utility Pole
- Edge of traveled way
- Set Back Line
- Handicap Parking Spot
- Existing Contour Line

PREPARED BY:
Robert T. Greenlaw PLS
LAND SURVEYING

134 PORTLAND AVENUE
OLD ORCHARD BEACH, MAINE
207-749-9471 BOBGREENLAW@MFAIRPOINT.NET

0' 30' 60' 90'

GRAPHIC SCALE

REV 7 06-19-14: ADDED MORE PARKING SPACES AND EDITED NOTES

REV 3 06-9-14: ADDED NOTES ON PLAN PER CITY COMMENTS

PLAN SHOWING IMPROVEMENTS FOR A

PROPOSED AUTO DEALER

LOCATION

783 FOREST AVE. PORTLAND, ME.

FOR

CHANGIZ FARD

SCALE: 1" = 30'

DATE OF SURVEY: FEBRUARY 25, 2013

BACK BAY FILE# 2006090

C2 PROPOSED AUTO DEALER IMPROVEMENTS

SURVEYORS STATEMENT:

I HEREBY CERTIFY THAT THIS SURVEY CONFORMS TO THE MAINE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS' STANDARDS OF PRACTICE AS ADOPTED APRIL 01, 2001 WITH THE FOLLOWING EXCEPTIONS:

- a) NO WRITTEN REPORT
- b) NO PROPERTY CORNERS SET.

ROBERT T. GREENLAW P.L.S. #2303

DATE: JUNE 19, 2014



From: David Senus <dsenus@woodardcurran.com>
To: Jean Fraser <JF@portlandmaine.gov>
CC: David Margolis-Pineo <DMP@portlandmaine.gov>, "Thomas.Errico@tylin.com" <Thomas.Errico@tylin.com>, "Barbara Barhydt (bab@portlandmaine.gov)" <bab@portlandmaine.gov>
Date: 5/30/2014 10:16 AM
Subject: RE: Site Plan & Cond Use 783 Forest Ave Car Dealership (2014-025)

Hi Jean:

The plans should show or note catch basin inlet protection (silt sacks) to be installed at the first down-gradient catch basin in Forest Ave during construction. The plans should state that the Forest Ave Right-of-Way shall be kept clean from dust and construction debris and swept daily or as requested by the City of Portland during construction to minimize dust and sediment originating from the site.

Thanks,
Dave

David Senus, PE (Maine), Project Manager
Woodard & Curran, Inc.
41 Hutchins Drive
Portland, ME 04102
Phone: (800) 426-4262 x3241
Cell: (207) 210-7035
Fax: (207) 774-6635

Woodard & Curran
www.woodardcurran.com<<http://www.woodardcurran.com>>
Commitment & Integrity Drive Results

MEMORANDUM

To: FILE
From: Jean Fraser
Subject: Application ID: 2014-025
Date: 6/19/2014

Comments Submitted by: Marge Schmuckal/Zoning on 6/5/2014

This property is located in the B-2 business zone. This is an after-the-fact application. Automobile sales are considered a conditional use appeal to the Planning Board. There may be a question as to which conditional use standards to use for the PB meeting since the new standards just went into effect.

The existing building is legally nonconforming for the maximum front yard setback. It is noted that the current car parking arrangement is not reflected in the existing conditions plan.

The applicant is showing a 5' strip of landscaped buffer. As required. Once the use has been approved by the PB, separate permits are required to establish that use on the property. Separate permits are required for any signage for this lot.

Marge Schmuckal
Zoning Administrator

From: Jeff Tarling
To: Jean Fraser
Date: 2/4/2015 3:44 PM
Subject: 783 Forest Avenue

Hi Jean -

I have reviewed the proposed tree / landscape improvements for the 783 Forest Avenue project and find them acceptable. We are willing to work with the project team if they need any recommendations when planting.

Thanks,

Jeff Tarling
City Arborist

From: Tom Errico <thomas.errico@tylin.com>
To: Jean Fraser <JF@portlandmaine.gov>
CC: David Margolis-Pineo <DMP@portlandmaine.gov>, Katherine Earley <KAS@port...>
Date: 2/5/2015 3:48 PM
Subject: 783 Forest Avenue

Hi Jean - I have reviewed the site plan for the project and I find it to be acceptable with the following comments:

* Given limited traffic volumes entering and exiting the site and no history of safety issues (the non-compliant driveway separation is a current issue), I support a waiver from the City's Technical Standards as it relates to driveway separation. I would note that the applicant is reducing the width of driveways and better defining driveways and thus will improve upon existing conditions.

* The approval of the proposed driveway design is based upon the assumption that the project will not generate a significant amount of traffic. If changes in the business operations occur that increase traffic levels, the applicant shall be required to provide a review of traffic impacts associated with the change for review and approval by the City.

* The location of parked vehicles shall not encroach on parking circulation aisles, sidewalks and block the proposed driveways. The number of vehicles allowed to park on the site shall conform to those illustrated on the site plan.

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.

From: David Margolis-Pineo
To: Barbara Barhydt; Jean Fraser
Date: 2/5/2015 1:43 PM
Subject: Review comment for 783 Forest Ave – Proposed Auto Dealership

The following comments have also been entered into Urban Insight.

February 5, 2015

Memo To: Jean Fraser
Barbara Barhydt
Urban Insight
From: David Margolis-Pineo
Re: 783 Forest Ave – Proposed Auto Dealership

The Department of Public Services has the following comments for this proposed project.

1. The plan view and detail of the driveway apron area is shown incorrectly. Please correct by referring to the City of Portland Technical Manual, Figures I-9, I-13 and I-15.
2. The reinforced concrete sidewalk detail is incorrect. Please correct by referring to the City of Portland Technical Manual, Figures I-14.
3. Either asphalt or concrete is acceptable as a driveway apron material in this area.
4. Please indicate that the sidewalk cross slope will not exceed 2% required by City Code.
5. Add notes stating:
 - a. Obtain a Street Opening Permit by a licensed contractor before starting work.
 - b. A mandatory pre-construction meeting with City staff to include Rhonda Zazzara, Phil DiPierro and David Margolis-Pineo shall take place on site after issuance of the Street Opening Permit and prior to starting work.



Level I – Site Alteration 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 I: Site Alteration site plan.

Level I: Site Alteration Development includes:

- Alteration of a watercourse or wetland as defined in Section 14-47 of the City Code.
- Alteration of a site. The disturbance of land areas of less than one (1) acre that are stripped, graded, grubbed, filled or excavated. The Planning Authority shall exempt from review the loam and seeding of lawns and the cumulative placement of less than fifteen (15) cubic yards of fill on any lot provided such loaming or placement does not alter a drainage course, swale, wetland or redirect water onto adjoining property and does not violate any other provision of the Portland City Code or state or federal law. "Disturbed area" does not include routine maintenance, but does include re-development and new impervious areas.
- The construction of any temporary or permanent parking area, paving of existing unpaved surface parking areas between 1,000 and 7,500 sq. ft., or creation of other impervious surface areas between 1,000 and 7,500 sq. ft..
- The rehabilitation or reconstruction, but not new construction, of piers, docks, wharves, bridges, retaining walls, and other structures located within the shoreland zone.
- A site alteration in which vehicle access is proposed from more than one (1) street;

The Land Use Code (including Article V), the Technical Manual, and the Design Manual are available on the City's web site at <http://www.portlandmaine.gov/planning/default.asp> or copies may be purchased at the Planning Division Office.

Planning Division

Fourth Floor, City Hall
389 Congress Street
(207) 874-8721 or (207) 874-8719

Office Hours

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

PROJECT NAME: Auto Dealership selling pre-owned cars

PROPOSED DEVELOPMENT ADDRESS:

783 Forest Avenue Portland Maine

PROJECT DESCRIPTION:

Conditional use application to sell used cars at the above address. Includes site alteration that replaces pavement with a planter box and replacing substandard sidewalks with required sidewalk.

CHART/BLOCK/LOT: _130-C-001_____

CONTACT INFORMATION:

Applicant – must be owner, Lessee or Buyer Name: Changiz Fard Business Name, if applicable: Address: 684 Baxter Blvd. City/State : Portland Zip Code:04103	Applicant Contact Information Work # Home# Cell # 207-650-1100 Fax# e-mail:
Owner – (if different from Applicant) Name: Stephen E. Mardigan Address:460 Baxter Blvd City/State : Portland Maine Zip Code: 04103	Owner Contact Information Work # Home# Cell # 207-831-8762 Fax# e-mail:
Agent/ Representative Name: Robert T. Greenlaw PLS Address:32 Old Orchard Street City/State :Old Orchard Beach Zip Code:04064	Agent/Representative Contact information Work # Cell #207-289-4546 e-mail:Bobgreenlaw504@gmail.com
Billing Information Name:Changiz Fard Address:684 Baxter Blvd City/State : Portland Zip Code:04064	Billing Information Work # Cell # 207-650-1100 Fax# e-mail:

Application Submittal

Refer to the application checklist (page 5) for a detailed list of submittal requirements.

All site plans and written application materials must be submitted in digital format. Each plan shall be submitted as a separate file and named as noted on page ____?. In addition, one (1) paper set of the plans (full size), one (1) paper set of plans (11 x 17), written materials, and application fee must be submitted to the Planning Division Office to start the review process.

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).

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 Site Plan review only. A Performance Guarantee, Inspection Fee, Building Permit Application and associated fees will be required prior to construction.

Signature of Applicant: Robert T. Greenlaw	Date: December 23, 2014
--	-----------------------------------

PROJECT DATA

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

Total Area of Site	12,111.3	sq. ft.
Proposed Total Disturbed Area of the Site	555.4	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 (Existing)	10299.7	sq. ft.
Impervious Area (Proposed)	9744.2	sq. ft.
Parking Spaces		
Parking Spaces (Existing)	18	
Parking Spaces (Proposed)	17	
Handicapped Spaces (Proposed)	1	

General Submittal Requirements – Level I Site Alteration

Applicant Checklist	Planner Checklist	Number of Paper Copies	Submittal Requirement
€x	€	1	Completed application form.
€	€	1	Application fees.
€x	€	1	Written description of project.
€x	€	1	Evidence of right, title and interest.
€	€	1	Copies of required state and/or federal permits.
€x	€	1	Written assessment of proposed project's compliance with applicable zoning requirements.
€	€	1	Written description of existing and proposed easements or other burdens.
€	€	1	Written requests for waivers from individual site plan and/or technical standards.
€x	€	1	Evidence of financial and technical capacity.

Site Plans and Boundary Survey Requirements – Level I Site Alteration

Applicant Checklist	Planner Checklist	Number of Copies	Submittal Requirement
€x	€	1	Boundary Survey meeting the requirements of Section 13 of the City of Portland Technical Manual.
€x	€	1	Site Plan Including the following:
€x	€		▪ Existing structures with distance from property line (including location of proposed piers, docks or wharves if in Shoreland Zone)
€x	€		▪ Location and dimension of existing and proposed paved areas.
€x	€		▪ Location and details of proposed infrastructure improvements (e.g. - curb and sidewalk improvements, utility connections, roadway improvements).
€x	€		▪ Identification of and proposed protection measures for any significant natural features on the site (including wetlands, ponds, watercourses, floodplains, significant wildlife habitats and fisheries or other important natural features listed in Section 14-526 (b)1. of the Land Use Code.
€	€		▪ Details of proposed pier rehabilitation (Shoreland areas only).
€x	€		▪ Existing utilities.
€x	€		▪ Existing and proposed grading and contours.
€x	€		▪ Proposed stormwater management and erosion controls.
€x	€		▪ Total area and limits of proposed land disturbance.
€x	€		▪ Existing vegetation to be preserved and proposed site landscaping.
€x	€		▪ Existing and proposed easements or public or private rights of way.

Reminder: All items submitted must be submitted in digital format in addition to the paper copies referenced above on page 4.

Site Plan Standards for Review of Level I: Site Alteration

Level I: Site alteration plans shall only be subject to the following site plan standards, as applicable, as contained in section 14-526:

- (a) Transportation standards:
 - 1. Impact on surrounding street systems,
 - 2. Access and circulation, and
 - 4. Parking
- (b) Environmental quality standards
 - 1. Preservation of significant natural features,
 - 2. Landscaping and landscape preservation, and
 - 3. Water quality, stormwater management and erosion control.
- (c) Public infrastructure and community safety standards.
 - 1. Consistency with city master plans.
- (d) Site design standards
 - 5. Historic resources,
 - 6. Exterior lighting,
 - 8. Signage and wayfinding, and
 - 9. Zoning related design standards.

Except as provided in article III, or to conditions imposed under section 14-526(e) only, or to those submission requirements set forth in section 14-527 as relate solely thereto.



PORTLAND FIRE DEPARTMENT SITE REVIEW FIRE DEPARTMENT CHECKLIST



A separate drawing[s] shall be provided to the Portland Fire Department for all site plan reviews.

- 1. Name, address, telephone number of applicant.
- 2. Name address, telephone number of architect
- 3. Proposed uses of any structures [NFPA and IBC classification]
- 4. Square footage of all structures [total and per story]
- 5. Elevation of all structures
- 6. 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.)**
- 7. Hydrant locations



Conditional Use Application 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 Conditional Use Review. General information pertaining to the thresholds of review for site plans, public noticing procedures and the fee structure is contained in site plan applications and within the Developer's Packet.

(Please submit the Conditional Use Application in addition to an applicable site plan application.)

PROJECT NAME: _783 Forest Avenue

CHART/BLOCK/LOT: ____137 C 001____

RIGHT, TITLE OR INTEREST: (Please identify the status of the applicant's right, title, or interest in the subject property.)

Changiz Fard is the lessee of 783 Forest Ave. Stephen E. Mardigan is the owner

(Please provide documentary evidence, attached to this application, of the applicant's right, title, or interest in the property. For Example – a deed, option or contract to purchase or least the subject property.)

VICINITY MAP: (Please attach a map showing the subject parcel and abutting parcels, labeled as to ownership and/or current use.)

EXISTING USE: Describe the existing use of the subject property.

The property was previously used as an office for CN Brown Oil. It also had oil delivery trucks parked there when not in use. Before that it was a gas station. The tanks have been removed.

TYPE OF CONDITIONAL USE PROPOSED:

Used automobile dealer.

SITE PLAN: Provide a site plan of the property, showing existing and proposed improvements, which meets the submission requirements of the applicable level of site plan review.

CONDITIONAL USE AUTHORIZED BY: SECTION 14- 183

Address any specific conditional use standards for the specific use contained in the zoning code in the written submission.

STANDARDS – CRITERIA FOR CONDITIONAL USE APPEAL – Section 14-474

Address the following criteria in your written application and any applicable conditional use standards
Dept. of Planning and Urban Development ~ Portland City Hall ~ 389 Congress St. ~ Portland, ME 04101 ~ ph (207)874-8721 or 874-8719 - 1 -

contained in the zoning code for the specific use.

Upon showing that a proposed use is a conditional use under this article, a conditional use permit shall be granted unless the Board determines that:

- a. There are unique or distinctive characteristics or effects associated with the proposed conditional use;
- b. There will be an adverse impact upon the health, safety, or welfare of the public or the surrounding areas;
- c. Such impact differs substantially from the impact which would normally occur from such a use in that zone; and
- d. Zone Related Criteria

CONTACT INFORMATION:

	Applicant's Contact for electronic plans Name: Robert T. Greenlaw PLS e-mail: Bobgreenlaw504@gmail.com work #: 207-289-4546
Applicant – must be owner, Lessee or Buyer Name: Changiz Fard Business Name, if applicable: Address: 684 Baxter Blvd City/State : Portland Zip Code: 04103	Applicant Contact Information Work # Home# Cell # 207-650-1100 Fax# e-mail:
Owner – (if different from Applicant) Name: Stephen E. Mardigan Address: 460 Baxter Blvd City/State : Portland Zip Code: 04103	Owner Contact Information Work # Home# Cell # 207-831-8762 Fax# e-mail:
Billing Information Name: Changiz Fard Address: 684 Baxter Blvd City/State : Portland Zip Code: 04103	Billing Information Work # Cell # 207-650-1100 Fax# e-mail:

APPLICATION FEES:

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

___ Conditional Use \$100.00

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.

Site Plan Application

Please submit a separate application for the applicable site plan review. Fees and charges are listed within the site plan application

APPLICATION SUBMISSION

All site plans and written application materials must be uploaded to a website for review. At the time of application, instructions for uploading the plans will be provided to the applicant. One paper set of the plans, written materials and application fee must be submitted to the Planning Division Office to start the review process.

The application for a conditional use review must contain the following items:

- a. Conditional Use Application form that is completed and signed.
- b. Cover letter stating the nature of the project.
- c. Evidence of right, title and interest.
- d. Written Submittals that address the conditional use standards of Section 14-474 and any applicable standards of review contained in the zoning code for the specific use.
- e. One set of the paper plans and maps based upon the boundary survey at a scale not less than one (1) inch to fifty (50) feet and containing the information required for the applicable level of site plan review. The plan requirements and submission requirements are listed in the Site Plan Ordinance (Section 14 -527) of the Land Use Code. Refer to the application checklist for a detailed list of submittal requirements.
- f. One set of the plans at 11X17.
- g. The conditional use application fee and all other applicable fees as determined on the site plan application.

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) and the Conditional Use Standards (Section 14-474). 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 Conditional Use 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: Robert T. Greenlaw	Date: December 23, 2014
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The Portland Land Use Code (including Article V), the Technical Manual, and the Design Manual are available on the City's web site at <http://www.portlandmaine.gov/planning/default.asp> or copies may be purchased at the Planning Division Office.

Planning Division
Fourth Floor, City Hall
389 Congress Street
(207) 874-8721 or 874-8719

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

3/27/14

MODIFIED GROSS LEASE

785 Forest Avenue, Portland, Maine

This LEASE AGREEMENT (the "Lease") is made as of July 12, 2011 between Stephen E. Mardigan ("Landlord"), and Changiz(aka Marco) Fard ("Tenant").

Landlord hereby agrees to lease to Tenant and Tenant hereby agrees to hire from Landlord, subject to all of the terms and conditions hereinafter set forth, a portion of the land and building at 785 Forest Ave, Portland, Maine (the "Leased Premises").

BASIC LEASE TERMS

1. **Building:** 785 Forest Ave, Portland, Maine.
2. **Leased Premises and Leased Premises Areas:** Rentable Area of the Leased Premises: 660 square feet. See attached.
3. **Initial Base Rent:** Initial Rent Monthly Installments: \$2,000.00 through June 30, 2012. Beginning July 1, 2012 monthly rent will go up to \$2,500.00.
4. **Initial Term:** One (1) Year, commencing on July 1, 2011. Plus one (1) year renewal at \$2,500 per month.
5. **Tenant Responsibilities:** Tenant is responsible for all repairs and maintenance (including snow plowing and removal) on the property and building. Tenant is responsible for all utilities servicing the property.
6. **Tenant Insurance:** Tenant is required to carry liability insurance naming the Landlord as additional insured and must show proof of insurance prior to any work commencing on the property.
7. **Rent Commencement Date:** July 12, 2011. Rent will be due on the first of the month starting on August 1, 2011.
8. **Late Fee:** \$200 late fee will be assessed after the 3rd of the month.
9. **Termination:** If the rent is not paid by the 10th of the month, this agreement is terminated and the Tenant shall immediately vacate.
10. **Permitted Uses:** Used car sales and related business.
11. **Landlord's Work:** None. The Leased Premises are provided "AS IS." Tenant acknowledges that Tenant may be required to make additional improvements to the Leased Premises to make it usable for its purposes, and that the Rent reflects the "AS IS" nature of the Leased Premises and the limited nature of the Landlord's Work. Landlord is not responsible for any permitting or worked required by the State or City of Portland pertaining to the licensing or use of property for auto sales.

12. Addresses for Notices:

Landlord:

460 Baxter Boulevard
Portland, ME 04103
Attn: Stephen E. Mardigan

Tenant:

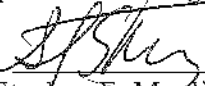
684 Baxter Boulevard
Portland, ME 04103
Attn: Changiz Fard

13. All payments payable under this Lease will be picked up by the Landlord on the 1st of every month.

IN WITNESS WHEREOF, the parties hereto have executed this Lease, consisting of the foregoing provisions incorporated herein by this reference, as of the date first above written.

"Landlord"

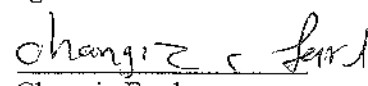
Stephen E. Mardigan

By: 

Stephen E. Mardigan

"Tenant"

Changiz Fard

By: 

Changiz Fard



Index Number - 15W

April 1 2005 by 2010

TRUSTEE'S DEED

GERALD GROSS, in his capacity as Successor Trustee of the J.G. REALTY TRUST dated February 1, 1973 with any amendments thereto,

of 17489 Via Capri, Boca Raton, FL 33496

for consideration paid, grants to

STEPHEN E. MARDIGAN

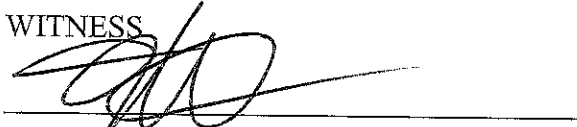
of 460 Baxter Blvd., Portland, ME 04103, with WARRANTY COVENANTS, the following described real property in Portland, County of Cumberland and State of Maine:

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 hand and seal this 9th day of May, 2006.

WITNESS



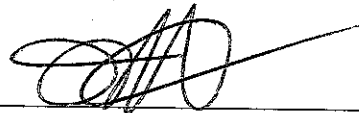
Gerald Gross, Successor Trustee of the
J.G. Realty Trust dated February 1, 1973
With any amendments thereto

State of Maine
Cumberland, ss.

May 9, 2006

Personally appeared before me the above-named Gerald Gross, Successor Trustee of the J.G. Realty Trust and acknowledged the foregoing instrument to be his free act and deed and the free act and deed of the J.G. Realty Trust dated February 1, 1973, with any amendments thereto.

Before me,



James A. Hopkinson, Attorney-at-Law

H-MARDIGAN.ST.FA

G:\CLIENTS\M\Mardigan\783.789Forest\Deed.DOC

MAINE REAL ESTATE TAX PAID

EXHIBIT A

A certain lot or parcel of land with the buildings thereon, situated on Forest Avenue in the City of Portland, County of Cumberland, State of Maine, bounded and described as follows:

Beginning on the easterly side of Forest Avenue, at the southerly sideline of a parcel of land conveyed by Frederick E. Leighton to E.P. Jillson by deed recorded in Cumberland County Registry of Deeds, Book 874, Page 450; thence easterly 88 feet to the right of way of the Portland Terminal Co.; thence southerly along the westerly boundary of said Terminal Co., right of way 128 feet to land conveyed to Clifford S. Libby, et al.; thence westerly by said Libby land 68 feet to the easterly sideline of Forest Avenue; thence northerly along said sideline of Forest Avenue 134 feet to the point of beginning.

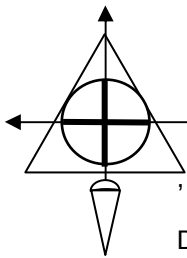
For title reference see Deed given by Gergro Realty Corp. of Maine to Laura A. MacMullin, Trustee of the J.G. Realty Trust, dated February 1, 1973 and recorded in the Cumberland County Registry of Deeds in Book 3359, Page 122.

H-MARDIGAN.ST.FA

G:\CLIENTS\M\Mardigan\783.789Forest\ExhibitA.DOC

Received
Recorded Register of Deeds
May 10, 2006 09:50:50A
Cumberland County
John B O'Brien

After Recording Return to:
Hopkinson, Abbondanza & Backer
511 Congress Street, Ste. 801
Portland, Maine 04101
(207) 772-5845



December 23, 2014

City of Portland
Planning and Urban Development Department
Planning Division
389 Congress Street
Portland Maine 04101

Conditional Use Appeal for an Automobile Dealership at 783 Forest Ave

As a representative of the lessee of 783 Forest Avenue, Changiz Fard, I would like to ask the planning department and or Planning Board to grant our request to authorize a conditional use of the above address to operate as a Pre Owned Automobile Dealership.

Listed as a conditional use in section 14-183 of the zoning ordinance for the B-2 zone this property will continue to serve the neighborhood as it has since 1968. Originally a Citgo Gas Station, this property has always been associated with automobiles in some way.

Most recently C. N. Brown owned the property and used it as an oil delivery location.

The site will remain as it has with two entrances/exits that are not within 30 feet of intersection No entrance or exit for vehicles is proximity to a playground, school, church, other places of public assembly, or any residential zone that the nearness poses a threat or potential danger to the safety of the public.

The proposed conditional use is actually a traditional use along Forest Avenue. There are currently two used car dealers along Forest Avenue. This property is suited for the proposed use as there enough space to park at least 10 automobiles while still meeting the design guidelines of creating a 5 foot wide planted buffer in front of the property. The applicant will repair the sidewalk in front of the site to City of Portland specifications. They will also add approximately 15 feet of new curb on the southern most entrance and 17 feet to the northern most entrance to make the width 24 feet as requested by the City.

The parking lot is paved and in fair condition with the City of Portland concrete sidewalks providing safe passage for pedestrians.

To the north and south of the property are commercial buildings with the railroad to rear of the property. Commercial properties are directly across the street with two residences to the south of the commercial uses.

No sign is planned for the property at this time. There are two abandoned sign bases that are still in place but these will not be used at this time.

No mechanic work will take place on the parcel with very limited auto detailing taking place. Also, no dumpster is planned as the trash is currently picked up once a week by a private contractor.

We look forward to working with the planning staff in developing this conditional use.

Sincerely,

134 Portland Ave.
Old Orchard Beach, Maine 04064
Bobgreenlaw504@gmail.com
207-289-4546

ROBERT T. GREENLAW, PLS

Robert T. Greenlaw PLS

Written Response to Conditional Use Standards:

Section 14-183:

(a) Business permitted to in the B-2 zone

(a) 5. Automobile dealerships

Signs:

No signs are planned on the street line side of the property.

Circulation:

The existing entrances shall be used for the dealership as shown on the attached proposed site plan. They are not within 30 feet of any intersection.

6. Drive through:

No drive through window is planned for the dealership.

(g) Conditions specific to major or minor auto service stations, car washes and automobile dealerships.

i. A 5 foot wide landscape buffer is planned to be installed along the street line as shown on the attached " C-2 Proposed Site Plan".

Section 14-474

1. An application has been submitted with the appropriate fee

a. The applicant's name and address is Changiz Fard 684 Baxter Blvd Portland, Maine 04103. Changiz is a lessee of the of the subject property.

b. The owner is Stephen E. Mardigan 460 Baxter Blvd Portland Maine 04103

c. The address of the subject property is 783 Forest Ave Portland Maine

d. The subject parcel falls in the B2 zone and is currently a former gas station last used as a home oil delivery office.

e. As noted above, an automobile dealership is a conditional accepted use in the B2 zone as mentioned in Section 14-183.

f. The applicant seeks to use the property as a previously owned automobile dealership.

g. A preliminary site plan is attached hereto.

134 Portland Ave.
Old Orchard Beach, Maine 04064
Bobgreenlaw504@gmail.com
207-289-4546

ROBERT T. GREENLAW, PLS

Assessment of Zoning Compliance:

The building was constructed in 1968 with gas pumps and a canopy in front of the building. The pumps, tanks and canopy have been removed and the site remediated. While the building does not meet the B2 zone requirement of having the building near the street it does meet setback requirements for the side and rear setbacks.

The volume of traffic will be less than the surrounding businesses as the dealership will generate an average of 5 customers a day.

The site will have trash picked up by a private contractor once a week or as needed. Snow will be removed from the site by a private contractor. Lights shall be cut-off type lights that will not cast glare over the boundary line to abutting lots. Also the time of business shall be approximately 8:00 am to 6:00 pm thus limiting the activity on the site.

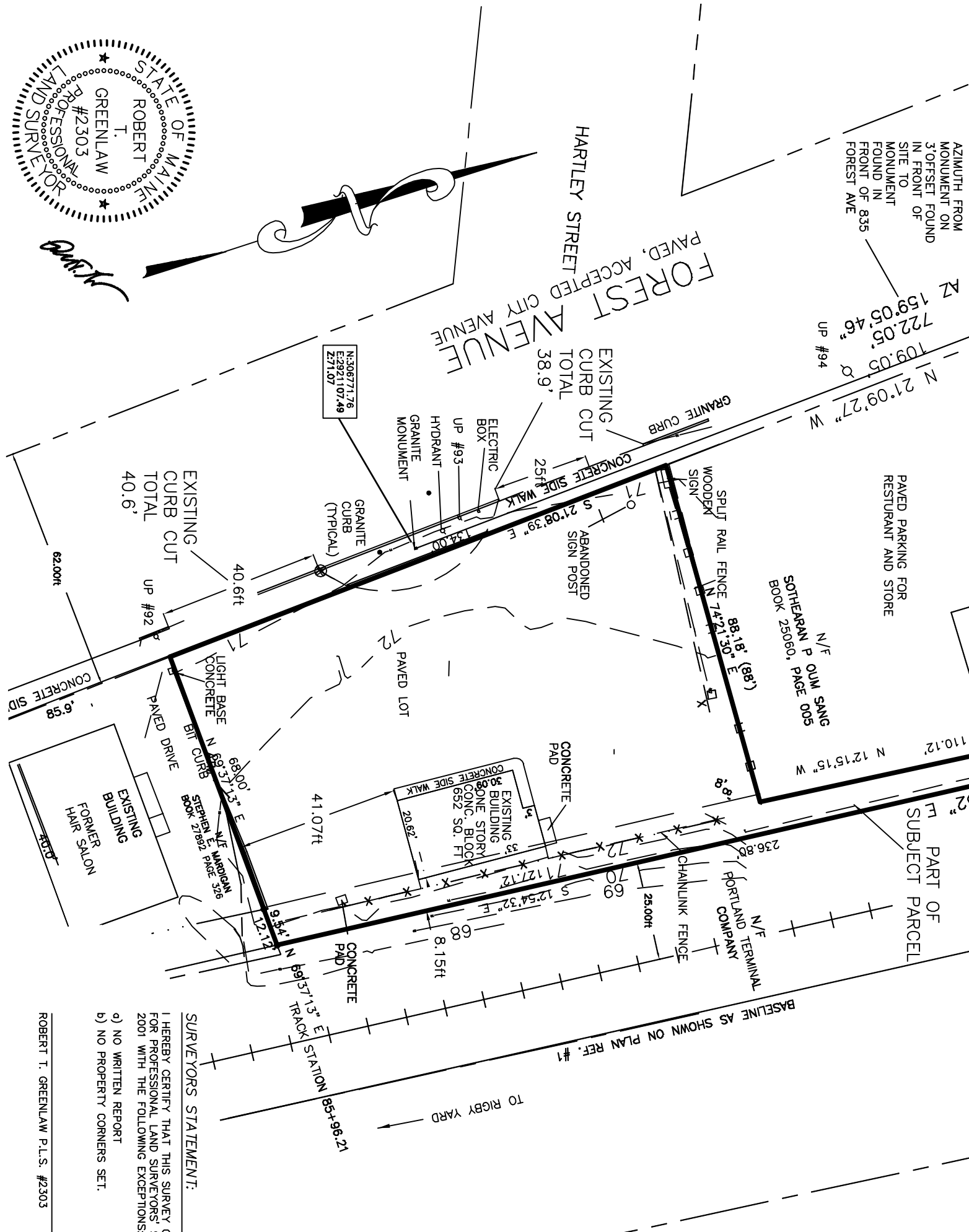
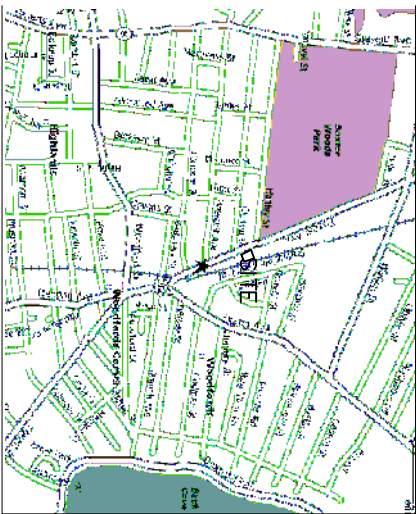
The planted buffer, reduced automobile display and prohibition of off-site parking will make this site more compatible with the surrounding neighborhood.

Evidence of Financial and Technical capacity:

A statement of Mr. Fard's financial capability has been submitted to the Building Inspection Department.

Required State and Federal Permits:

The State of Maine Car dealer's license has been submitted to the State and is waiting on the Conditional Use being approved by the City of Portland.



GENERAL NOTES:

1. RECORD OWNER OF PARCEL: STEPHEN E. MARDIGAN AS RECORDED IN BOOK 25010, PAGE 160 IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS.
2. BEARINGS ARE BASED UPON THE MAINE STATE GRID WEST ZONE 1983 DATUM. BASIS OF BEARINGS IS THE MONUMENT SHOWN HEREON IN FRONT OF THE SUBJECT PARCEL. THE COORDINATES ARE LABELED HEREON AND WERE SUPPLIED BY THE CITY OF PORTLAND ENGINEERING DEPARTMENT IN 2006.
3. THE MONUMENT THE AZIMUTH EXTENDS TO IS A 3' OFFSET MONUMENT FOUND ON THE EASTERLY SIDE OF FOREST AVENUE IN FRONT OF #835 FOREST AVE.
4. ITS COORDINATES ARE NORTH 307446.28, EAST 2920849.86.
5. AREA OF PARCEL : 12111.3 SQ. FT., 0.28 ACRES
6. REFERENCE IS MADE TO THE FOLLOWING PLANS:
 - a.) RIGHT OF WAY AND TRACK MAP PORTLAND, MAINE CITY OF PORTLAND MAINE. VALUATION SHEET 1A, MAP 2.
 - b.) CITY OF PORTLAND MAINE STREETLINE SHEET OF FOREST AVE. DATED 3/4/27
 - c.) CITY OF PORTLAND MAINE ASSESSORS PLAN #137-BLOCK C-LOT 1.
7. ZONING: B-2 ZONE - SETBACKS: FRONT - NONE
REAR - 10 FT
SIDE - NONE

8. EXISTING PARKING: 10 9'X19' SPACES, 1-11'-19' HANDICAP SPACE. THE PARKING SPACES NOT DESIGNATED ARE FOR AUTOMOBILE DISPLAY.
9. PROPOSED 5 FOOT WIDE BUFFER SHALL CONTAIN PLANTINGS THAT CONFORM TO THE CITY OF PORTLAND ORDINANCES. NAMELY 1 2-1/2" STREET TREE NOT MORE THAN 15' FEET APART.

LEGEND

- Capped 5/8" Rebar Found
- Iron Pipe or Solid Pin Found
- ◁ Survey Instrument Point
- Abutter Line
- Property Line
- Street Line
- (50.00') Distance from reference plan or deed.
- N/F Now Or Formerly
- Overhead Utility
- Utility Pole
- Edge of traveled way
- Set Back Line
- Handicap Parking Spot
- 72— Existing Contour Line
- Detail 1 3 of 3 Detail # Shown on Sheet 3 of 3

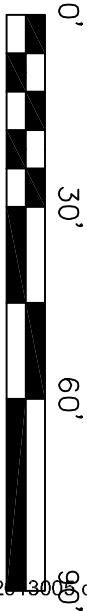
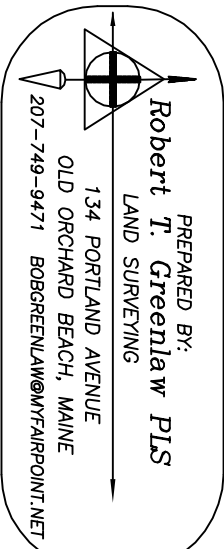
SURVEYORS STATEMENT:

I HEREBY CERTIFY THAT THIS SURVEY CONFORMS TO THE MAINE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS' STANDARDS OF PRACTICE AS ADOPTED APRIL 01, 2001 WITH THE FOLLOWING EXCEPTIONS:

- a) NO WRITTEN REPORT
- b) NO PROPERTY CORNERS SET.

ROBERT T. GREENLAW P.L.S. #2303

DATE: MAY 19, 2014



GRAPHIC SCALE

REVISED 02-25-2013: VARIOUS EDITS FOR CLARITY
REVISED 02-04-2013: ADDED SITE FEATURES

EXISTING CONDITIONS PLAN FOR A
PROPOSED AUTO DEALER
LOCATION

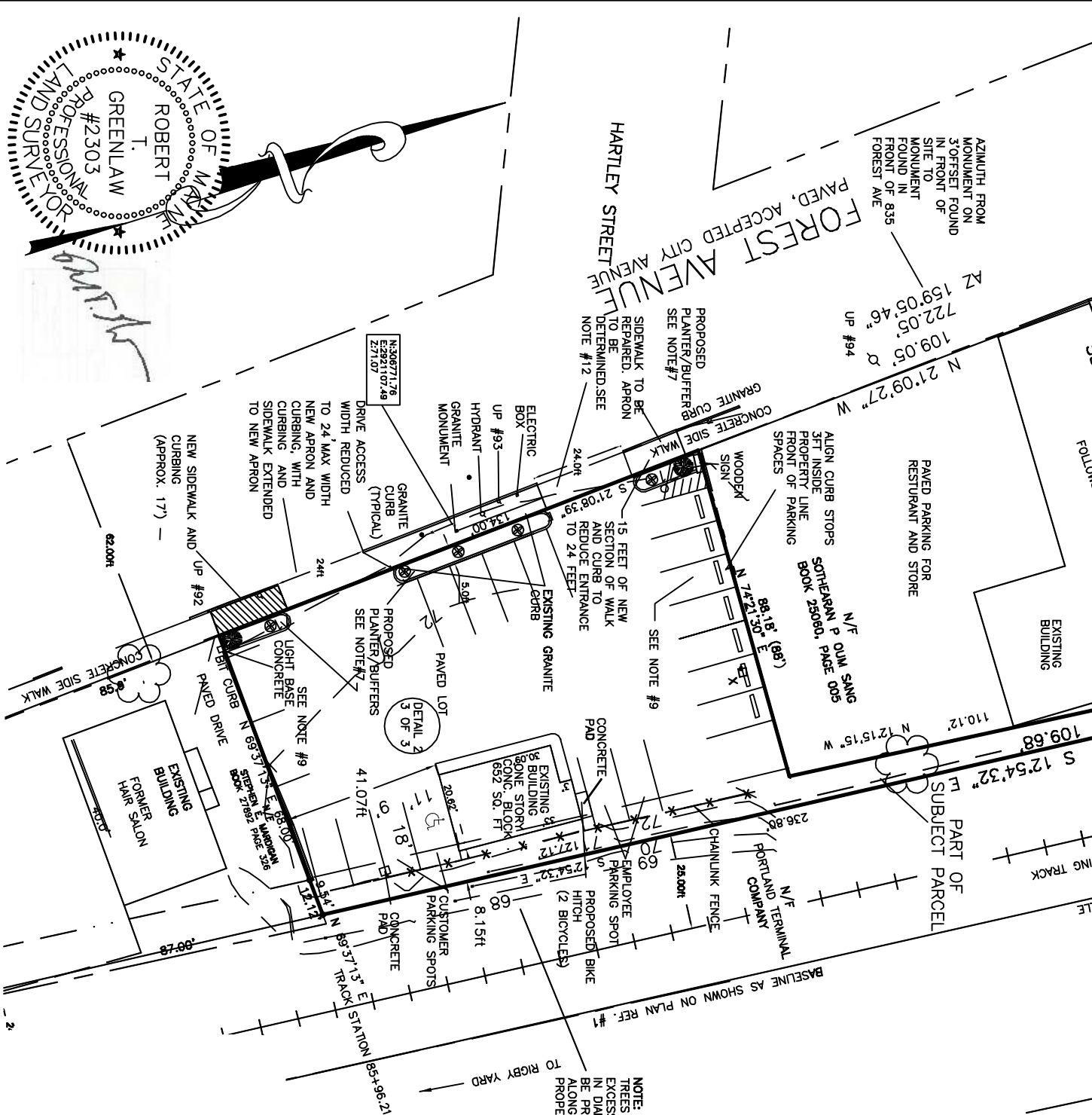
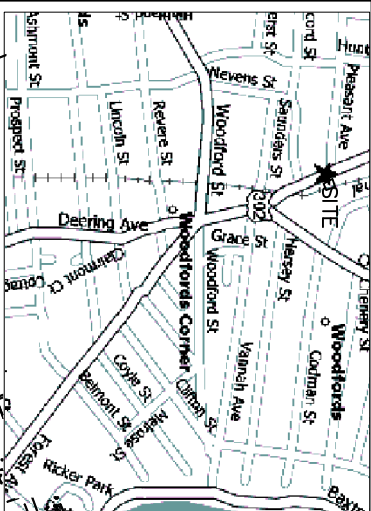
783 FOREST AVE. PORTLAND, ME.

FOR
CHANGIZ FARD

SCALE: 1" = 30' DATE OF SURVEY: OCTOBER 18, 2006

BACK BAY FILE# 2006090 SHEET C1 EXISTING CONDITIONS





- CONDITIONAL REQUIREMENTS:
- i. EXISTING TREES TO THE REAR OF THE SITE ARE TO BE PRESERVED.
 - ii. EXISTING LIGHTS ON THE BUILDING SHALL MODIFIED TO BE "OUT-OFF" IN TYPE AND HAVE A TIMER THAT LOWERS THE LIGHT LEVEL AT NIGHT.
 - iii. THE APPLICANT SHALL OBTAIN A LICENSE FROM THE STATE OF MAINE BUREAU OF MOTOR VEHICLES PRIOR TO THE START OF CAR SALES.
 - iv. EROSION CONTROL MEASURES, AS OUTLINED IN THE PEER ENGINEER COMMENTS DATED 06-30-14, BE IN PLACE PRIOR TO THE START CONSTRUCTION OF THE PLANTER AND CURBING.
 - v. THE STORAGE OF SNOW SHALL NOT IMPERE SIGHT DISTANCES FOR VEHICLES EXITING THE STREET, AND ON SITE PARKING OF VEHICLES SHOULD NOT BLOCK ACCESS AND EGRESS MOVEMENTS.
 - vi. NO CAR REPAIRS SHALL TAKE PLACE ON THE SITE UNLESS AN ADJACENT SITE IS APPROVED BY THE PLANNING AUTHORITY.
 - vii. ANY NEW LIGHTING SHALL BE IN COMPLIANCE WITH SITE LIGHTING REQUIREMENTS AS SET OUT IN THE CITY'S TECHNICAL STANDARD 12 SITE LIGHTING AND THE APPROVED IMPROVEMENTS PLAN.
 - viii. SEPARATE PERMITS ARE REQUIRED FOR ANY SIGNS ON THE SITE PRIOR TO THEIR INSTALLATION.

- GENERAL NOTES:
1. RECORD OWNER OF PARCEL: STEPHEN E. MARDIGAN AS RECORDED IN BOOK 25010, PAGE 160 IN THE CUMBERLAND COUNTY REGISTRY OF DEEDS.
 2. ADDRESS OF OWNER: 480 BAXTER BLVD. PORTLAND MAINE 04103
 3. APPLICANT: CHANIZ FARD 684 BAXTER BLVD. PORTLAND MAINE 04103
 4. BEARINGS ARE BASED UPON THE MAINE STATE GRID WEST ZONE 1983 DATUM. BASIS OF BEARINGS IS THE MONUMENT SHOWN HEREON IN FRONT THE SUBJECT PARCEL. THE COORDINATES ARE LABELED HEREON AND WERE SUPPLIED BY THE CITY OF PORTLAND ENGINEERING DEPARTMENT IN 2008.
 5. THE MONUMENT THE AZIMUTH EXTENDS TO IS A 3' OFFSET MONUMENT FOUND ON THE EASTERLY SIDE OF FOREST AVENUE IN FRONT OF #835 FOREST AVE.
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 - b. CITY OF PORTLAND MAINE STREETLINE SHEET OF FOREST AVE. DATED 3/4/27
 - c. CITY OF PORTLAND MAINE ASSESSORS PLAN #137-BLOCK C-LOT 1.
 9. ZONING: B-2 ZONE - SETBACKS: FRONT - NONE REAR - 10 FT SIDE - NONE
 10. EXISTING PARKING: 10 9'X19' SPACES, 1-11'-19' HANDICAP SPACE. THE PARKING SPACES NOT DESIGNATED ARE FOR AUTOMOBILE DISPLAY. PROPOSED 19 SPACES WHICH INCLUDES ONE HANDICAP SPACE.
 11. PROPOSED 5 FOOT WIDE BUFFER SHALL CONTAIN PLANTINGS THAT CONFORM TO THE CITY OF PORTLAND ORDINANCES (LOW GRASS AND SHRUBS). A MINIMUM OF TWO STREET TREES SHALL BE PLANTED ALONG THE STREET SIDE OF THE PROPERTY. TREES SHALL BE A MINIMUM OF 2-1/2 INCHES IN DIAMETER. REFER TO PLAN C5 FOR SPECIFICATIONS ON PLANTINGS.
 12. AS NOTED IN THE N.F.P.A. SECTION 220 THIS BUILDING IS CLASSIFIED AS A TYPE III (ORDINARY) EXTERIOR PROTECTED. THE EXISTING STRUCTURE IS A SINGLE STORY STRUCTURE WITH A WOOD FRAMED FLAT ROOF COVERED IN RUBBER.
 13. FIRE PROTECTION IS ACHIEVED WITH TWO HARD WIRED SMOKE DETECTORS AND A FIRE EXTINGUISHER LOCATED NEAR THE FRONT DOOR. A CITY OF PORTLAND FIRE HYDRANT IS ALSO LOCATED DIRECTLY INFRONT OF THE SUBJECT PARCEL.
 14. PARKING SPACES NOT MARKED CUSTOMER PARKING, EMPLOYEE OR HANDICAP ARE FOR THE DISPLAY OF CARS FOR SALE.
 15. SOLID WASTE IS REMOVED FROM THE SITE ONCE A WEEK BY A PRIVATE CONTRACTOR. NO DUMPSTER IS PLANNED FOR THE SITE.
 16. SNOW WILL BE REMOVED BY PRIVATE CONTRACTOR TO OFFSITE DUMP.14
 17. THE FINAL DRIVEWAY APRON MATERIAL WILL BE DECIDED BY THE CITY OF PORTLAND SERVICES DEPARTMENT.

NOTE: ALL TREES IN EXCESS OF 6" IN DIAMETER TO BE PRESERVED ALONG REAR PROPERTY LINE

SURVEYORS STATEMENT:

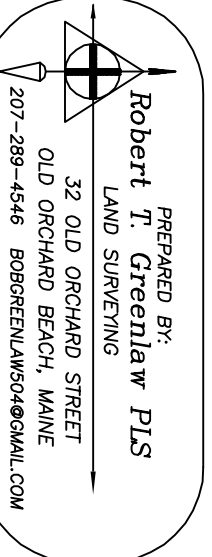
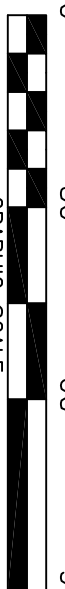
I HEREBY CERTIFY THAT THIS SURVEY CONFORMS TO THE MAINE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS' STANDARDS OF PRACTICE AS ADOPTED APRIL 01, 2001 WITH THE FOLLOWING EXCEPTIONS:

- a) NO WRITTEN REPORT
- b) NO PROPERTY CORNERS SET.

ROBERT T. GREENLAW P.L.S. #2303

DATE: JANUARY 27, 2015

- LEGEND**
- Capped 5/8" Rebar Found
 - Iron Pipe or Solid Pin Found
 - ▽ Survey Instrument Point
 - Abutter Line
 - Property Line
 - Street Line
 - (50.00') Distance from reference plan or deed.
 - N/F Now Or Formerly
 - Overhead Utility
 - Utility Pole
 - Set Back Line
 - Handicap Parking Spot
 - 72' Existing Contour Line
 - New Curb
 - New City Street Tree
 - New Shrub/Low Grass



REV 12: 01-27-15: ADDED TWO STREET TREES, REVISED NOTES.
REV 11: 01-18-15: REMOVED HATCHING ON NORTHERN ENTRANCE, ADDED DIMENSIONS AND NOTES
REV 10: 12-23-14: REMOVED PROPOSED CURB ON NORTH ENTRANCE
REV 10: 07-01-14: ANNOTATED EXISTING CURB AND NEW CURB, MOVED ENTRANCE
REV 9: 06-30-14: ADDED NEW CURB AND LABELS PER CITY COMMENTS

PROPOSED AUTO DEALER LOCATION

783 FOREST AVE. PORTLAND, ME.

FOR

CHANIZ FARD

SCALE: 1" = 30'	DATE OF SURVEY: FEBRUARY 25, 2013
BACK BAY FILE# 2006090	C2 PROPOSED AUTO DEALER IMPROVEMENTS

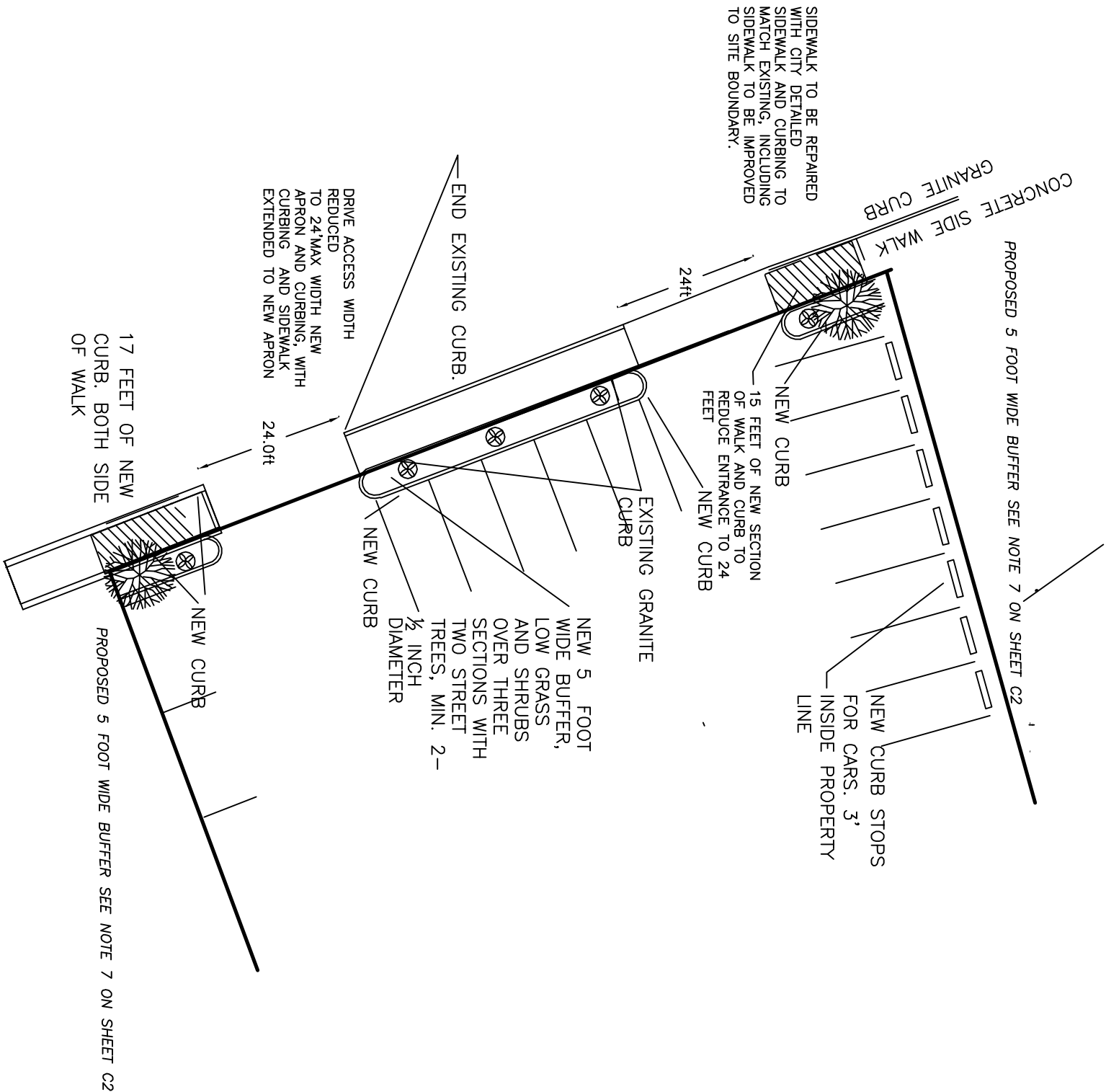


⊗ SHRUB WITH LOW GRASS

LEGEND:

MINIMUM 2-1/2 INCH DIAMETER TREE

SEE SHEET
C3-DETAIL SHEET
FOR SPECIFIED
CONSTRUCTION
REQUIREMENTS.



REVISED 01-27-15: ADDED LEGEND AND REVISED NOTES PER COMMENTS
REVISED 01-16-15: REDUCED ENTRANCE WIDTHS AND ADDED NOTES
REVISED 12-23-14: REMOVED PROPOSED CURB FROM NORTHERN ENTRANCE
REVISED 06-10-14: ADDED TIP DOWN, WALK AND BIKE DETAIL

CURB & WALK DETAIL SHEET
783 FOREST AVENUE PORTLAND, MAINE

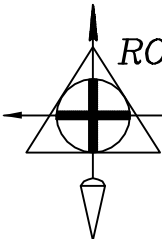
FOR:
A PROPOSED AUTOMOBILE DEALER

DRAWN BY: RTG
CHECKED BY: KGG
SCALE: NOT TO SCALE
DATE: FEBRUARY 25, 2013
JOB NUMBER: 2004013
PRINT DATE: 02/25/2013
SHEET: C4 CURB DETAILS

PREPARED BY:
ROBERT T. GREENLAW PLS
LAND SURVEYING

32 OLD ORCHARD STREET
OLD ORCHARD BEACH, MAINE

207-749-9471 Bobgreenlaw@myfairpoint.net



DRAWER: 2013 NO: 005

