PLANNING BOARD

Tuesday, April 28, 2026 at 5:30 PM
Room 24 (Basement Level of City Hall)
and Zoom

MEMBERS
Joseph Zamboni, Chair
Kelsey Robertson, Vice Chair
Eric Din
Nicholas Messina
David Silk
Austin Smith
Beverly Uhlenhake

The Planning Board will conduct this meeting in a hybrid format via Zoom pursuant to the Remote Meeting Policy adopted by the Planning Board. Allow your computer to install the free Zoom app to get the best meeting experience. If you are not able to attend live either in person or via Zoom, a recording will be available in the Agenda Center following the meeting. For more information on how to use zoom, please go here: https://content.civicplus.com/api/assets/18148b5d-f26e-472f-8d2c-245db97e5c27. For public comment via Zoom, you will need to use the "raise your hand" feature. To raise your hand via the telephone, please hit *9. You will be un-muted by the host when it is time for public comment. Please note that the placement of items on this agenda are subject to change – please check the agenda center prior to the meeting for the item start time.

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PUBLIC COMMENT INFORMATION:

To submit written public comment on an agenda item, email planningboard@portlandmaine.gov. Submissions must be received by 12:00 pm the day before the Planning Board meeting to guarantee their inclusion in the agenda packet. All submissions must include the commenter's name and legal address. To help ensure your comment is submitted for the correct item, please include the name of the agenda item (see below).

AGENDA:

WORKSHOP - 4:30 PM

i. Major Site Plan and Subdivision; 410 Auburn Street; GreenMars Real Estate Services, Applicant. The Planning Board will hold a hybrid workshop to consider an application for the creation of a 13-lot conservation residential development (CRD) subdivision and the creation of 130 dwelling units. The subject property totals 4.21 acres and is located within the RN-1 Residential Neighborhood zone. A project and plan summary are available for viewing on the city's CSS Portal (https://css.portlandmaine.gov/) by referencing Plan Number PL-003475-2025. **This workshop item will not be held.**

PUBLIC HEARING - 5:30 PM

1. ROLL CALL AND DECLARATION OF QUORUM

2. COMMUNICATION AND REPORTS

3. REPORT OF ATTENDANCE AT THE MEETING HELD ON 4-14-2026

Workshop
1220 Brighton Avenue: Din, Messina, Robertson, Silk, Smith, Uhlenhake, and Zamboni present.
9 Cedar Street: Din, Messina, Robertson, Silk, Smith, Uhlenhake, and Zamboni present.

Public Hearing
42 Atlantic Street: Din, Messina, Robertson, Silk, Smith, and Zamboni present. Uhlenhake rescued.

4. REPORTS OF DECISIONS AT THE MEETING HELD ON 4-14-2026

i. Appeal of HPBR-002814-2024; 42 Atlantic Street; LB Atlantic, LLC, Applicant. Silk motioned and Robertson seconded a motion to table the appeal to a date uncertain, to provide time for the Superior Court to provide additional clarification around whether the Court retained jurisdiction and whether it is appropriate for the Board to consider this appeal and the Historical Preservation Board's additional findings of fact. Vote 6-0 (Uhlenhake recused).

5. NEW BUSINESS

i. Major Site Plan; 221 Congress Street; GreenMars Real Estate Services, Applicant. The Planning Board will hold a hybrid public hearing to consider an application to facilitate the construction of a seven-story mixed-use building with 87 residential units and ground floor retail space at 221 Congress Street within the B-2b Community Business zone. A project and plan summary is available for viewing on the city's CSS Portal (https://css.portlandmaine.gov/) by referencing Plan Number PL-003525-2026. **Tabled to a date certain.**

ii. Major Site Plan; 97 Warren Avenue; Peachtree Acquisitions, LLC., Applicant. The Planning Board will hold a hybrid public hearing to consider an application to facilitate the construction of a four-story self-storage building with 11 parking spaces at 97 Warren Avenue within the B-4 Commercial Corridor zone. A project and plan summary are available for viewing on the

city's CSS Portal (https://css.portlandmaine.gov/) by referencing Plan Number PL-003487-2025.

Planning and Urban Development
Andrew Graminski, AICP
Planning & Development Review Manager

To: Chair Zamboni & the Portland Planning Board
From: Andrew Graminski, Planning & Development Review Manager, Planning & Urban Development
Re: Tabling Request for 221 Congress Street
Date: April 23, 2026

Staff is requesting that the Planning Board table the public hearing for the 221 Congress Street Major Site Plan Application, submitted by GreenMars Real Estate Services and currently scheduled for April 28, 2026, to the next regularly scheduled meeting, which is May 12, 2026.

The applicant failed to post the required public hearing signage on the property within the 10-day timeframe of the scheduled public hearing outlined in Land Use Code Section 13.5.7.

389 Congress Street, Portland, Maine 04101 | ph: 207.874.8608 | agraminski@portlandmaine.gov

97 Warren Avenue
Major Site Plan Application
PL-003487-2025
Peachtree Acquisitions, LLC and Haley Ward, Inc.

Submitted to:	Portland Planning Board	**Prepared By:**	Neha Sunil Pol
Public Hearing Date:	April 28, 2026	**Date:**	April 22, 2026

I. INTRODUCTION

Peachtree Acquisitions, LLC, in partnership with Haley Ward, Inc., has submitted a Major Site Plan application to facilitate the development of a four-story, 55-foot self-storage building with a 22,200 square foot footprint, and 11 off-street parking spaces at 97 Warren Avenue, located within the B-4 Commercial Corridor zone. This application is being referred to the Planning Board for compliance with the City of Portland's Land Use Code Site Plan Standards, Section 13.6

The Planning and Urban Development Department mailed 103 notices advertising this meeting to property owners within 500 feet of the site. A legal advertisement ran in the April 16 and April 17, 2026 editions of the Portland Press Herald.

Applicant: Peachtree Acquisitions, LLC
Applicant Representative(s): Haley Ward, Inc.

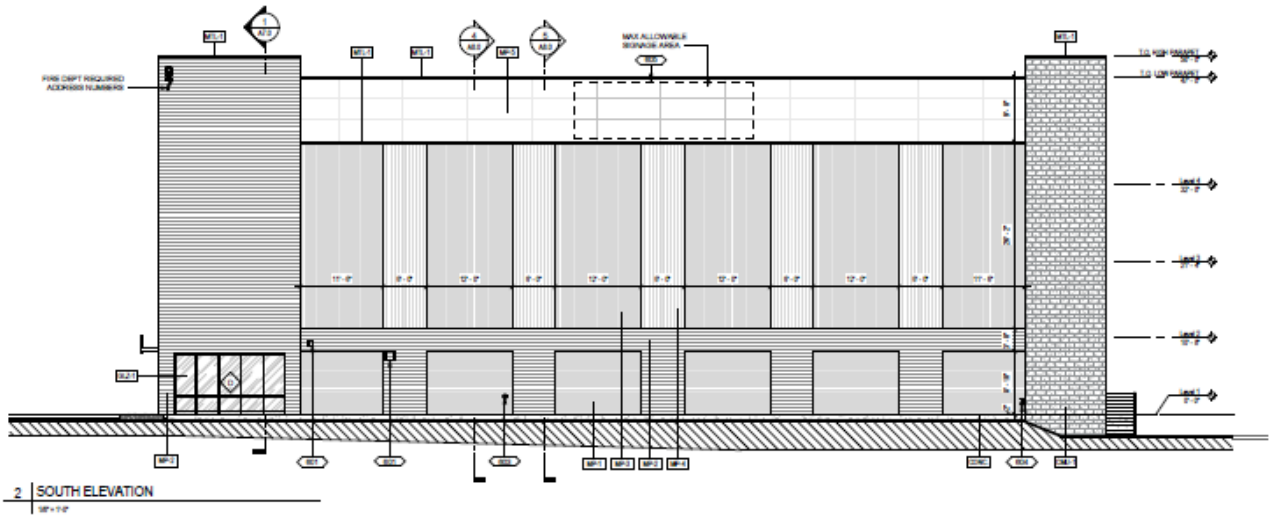


Figure 1. Elevation of the proposed project

II. REQUIRED REVIEWS

Review	*Applicable Standards*
Site Plan	Section 13.6

Project Data	
Existing Zoning	B-4 Commercial Corridor Zone
Property Size	1.32 Acres
Existing Use	Undeveloped and Forested
Proposed Development Program	Four-story self-storage building

III. EXISTING CONDITIONS AND SURROUNDING AREA

The site is currently undeveloped and forested, with frontage along Warren Avenue. The project site is approximately 1.32 acres in size.

The site is served by existing public infrastructure, including water, sewer, stormwater, natural gas, electric, and communication utilities located within and along Warren Avenue. An existing electric transformer is located near the west side of the property. A small portion of paved sidewalk currently exists along the site frontage, this sidewalk will be reconstructed and extended to span the property's street frontage.

To the north, the site abuts a residential area across a vacated paper street, with nearby single-family homes. To the east, the property is surrounded by industrial and business uses. To the west and south, the surrounding area consists primarily of commercial and industrial development along Warren Avenue.

Figure 2. An aerial view of the existing site

Figure 3. Street View image of the site

IV. PROPOSED DEVELOPMENT

The proposed Major Site Plan application would facilitate the development of a four-story self-storage building. The project includes 11 off-street parking spaces, a central loading area, a new sidewalk along Warren Avenue, landscaping, snow storage area, a retaining wall, and an underground stormwater management system.

Access to the site would be provided via a 20-foot-wide entrance/exit on Warren Avenue. Snow storage is proposed along the north side of the parking lot, outside the parking area. The proposed project includes eight street trees along Warren Avenue, fifteen shade and screening trees near the parking area, and additional trees along the northern property line to provide visual screening. A 5-foot-wide paved sidewalk along the site frontage would be connected to the existing pedestrian network.

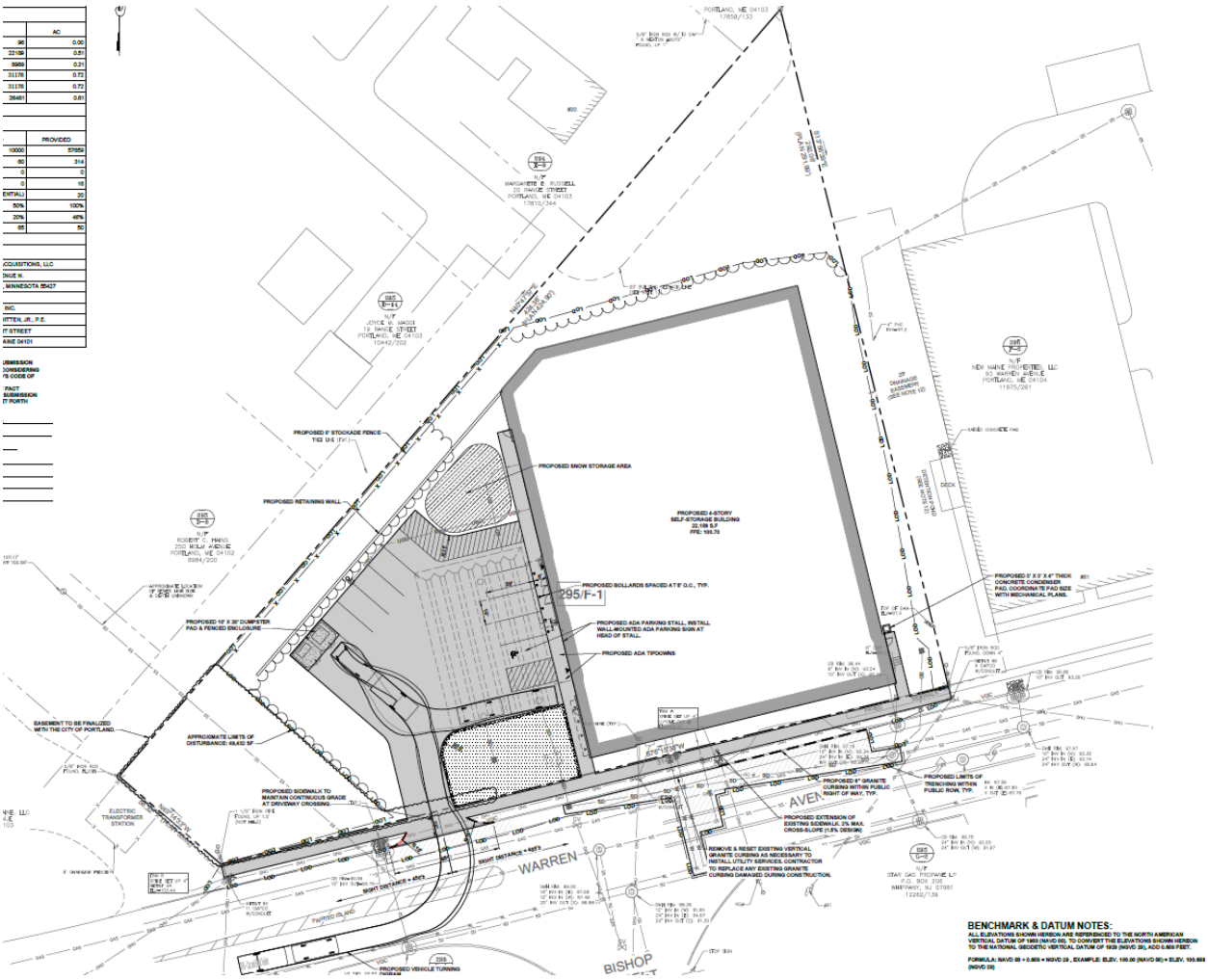


Figure 3. Overall Site Plan

V. RIGHT, TITLE, & INTEREST

The applicant has demonstrated sufficient right, title, and interest in the parcel located at 97 Warren Ave, Portland, ME. Peachtree Acquisitions, LLC has entered into a Real Estate Purchase Agreement with Ameena Shir, the owner, effective August 28, 2025. (See Attachment G for full documentation).

VI. FINANCIAL & TECHNICAL CAPACITY

The applicant has provided a letter from Dacotah Bank demonstrating good financial standing and confirming the financial capacity to complete the proposed project at 97 Warren Avenue.
The applicant team includes firms with proven experience and a successful track record in Portland, including Peachtree Acquisitions, LLC's experience with self-storage developments, Haley Ward, Inc. for civil/site plan engineering, and Onyx Creative for architecture.

VII. ZONING ANALYSIS

The property is located within the B-4 Commercial Corridor zoning district. The purpose of the B-4 zone is "*To provide locations in the city for the development and operation of businesses serving a regional or larger market, to provide locations for large-scale commercial uses that require larger land areas to accommodate their operations, and to support moderate to high-density housing including three-family, four-family, townhouse, and multi-family structures. Standards of the B-4 zone acknowledge the need to maintain automobile access while encouraging improvement of the pedestrian environment and accommodating alternative modes of transportation.*

Zoning Dimensional Review (Article 7)			
Dimensional Standards (Sec. 7.3)			
Standard	***Requirement 1***	***Proposed***	***Finding***
Lot area (min)	***10,000 Sf***	***57,658 Sf***	Met
Street frontage (min)	***60 ft***	***160 ft***	Met
Build-to-zone	***0-20 ft***	***4 ft***	Met
Build-to-percentage (min)	***50%***	***100%***	Met
Blank wall area (max)	***40 ft***	***40 ft***	Met
Rear setback (min)	***20 ft***	***20 ft***	Met
Side Street Setback	***None***	***16 ft***	Met
Structure height (max)	***65 ft***	***50 ft***	Met
Landscaped open space ratio	***20%***	***42%***	Met

VIII. SITE PLAN STANDARDS (Section 13.6)

The proposed development has been reviewed by staff for conformance with the relevant review standards of the City of Portland's Site Plan Ordinance, Section 13.6. Staff comments are below.

1. Transportation Standards (Section 14.6.1)

A. Impact on surrounding street systems:

The applicant is proposing vehicular access to the site via a 20-foot-wide entrance/exit on Warren Avenue. Trip generation was estimated using Institute of Transportation Engineers (ITE) methods. Based on a self-storage facility with 633 units and 88,000 square feet of gross floor area, the project is expected to generate approximately 16 vehicle trips during both the weekday AM and PM peak hours and about 15 trips during the Saturday peak hour. These volumes are considered minimal and are not anticipated to result in congestion or impact safety or mobility along Warren Avenue or the surrounding street network.

Finding of Fact: Based on the submitted application materials, the project's description of components related to impact on surrounding street systems this standard is determined to be met.

B. Access and circulation

The applicant is proposing vehicular access to the site via a 20-foot-wide entrance/exit on Warren Avenue. The internal circulation is designed to accommodate safe vehicle movements, including loading and emergency vehicle access. The applicant proposes to reconstruct and extend a new 5-foot-wide paved sidewalk along the property frontage on Warren Avenue. A continuous internal pedestrian walkway is proposed to connect the site to the Warren Avenue sidewalk, connecting the building entrance and on-site parking area to the existing pedestrian network.

The project site presents an opportunity to support the Riverton Neighborhood Byway, an "all ages/all abilities" bicycle and pedestrian connection. City staff have requested the inclusion of a future access, construction, and maintenance easement in the southwest corner of the site to accommodate a potential multi-use path connection to the Warren Avenue sidewalk. This easement is to be finalized by the City as a Condition of Approval for this project.

In coordination with Department of Public Works Staff (DPW), staff recommended shifting the easterly side of the proposed driveway slightly to the northwest to accommodate space for future pedestrian and bicycle facilities. This adjustment also improves separation for a potential curb ramp. staff also recommended narrowing the driveway width to 20 feet by adjusting its westerly side. This change protects existing infrastructure, such as the catch basins, while remaining sufficient for the anticipated low traffic volumes.

In response to staff comments, the applicant has provided turning movement templates for the largest anticipated vehicle, a 40-foot box truck. Staff have reviewed and find the templates demonstrate no anticipated issues.

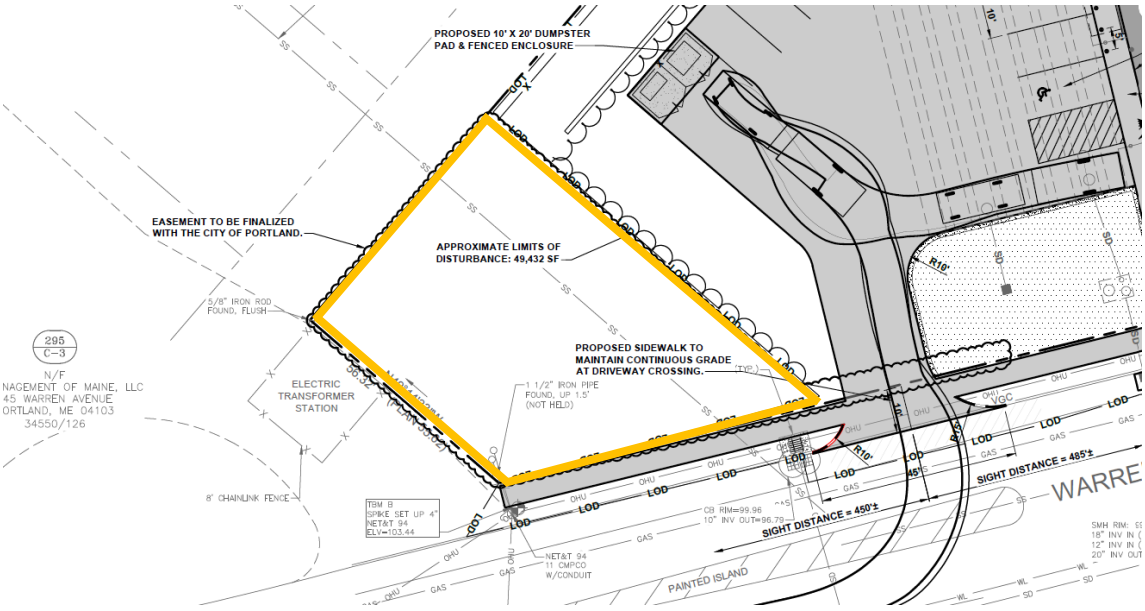


Figure 4. Easement Location to be Finalized

Finding of Fact: Based on the submitted application materials, the project's description of components related to access and circulation this standard is determined to be met subject to conditions of approval.

C. Public transit access

The proposed project is a commercial self-storage facility greater than 20,000 square feet located along Warren Avenue. Warren Avenue does not currently have an existing public transit route.

Finding of Fact: Based on the submitted application materials the proposed project is not located along an existing public transit route and therefore this standard is not applicable.

D. Parking

Per Table 18-A Off-Street Parking Maximums, the maximum number of vehicle parking spaces for self-storage facilities is one space per 25 storage units. A total of 11 off-street parking spaces are proposed to serve the self-storage facility.

The proposed parking is designed to accommodate both passenger vehicles and larger vehicles associated with the use, such as 40-foot box trucks and vehicles with trailers. The applicant has also proposed electric vehicle charging, including a wall-mounted Level 2 charger serving on-site parking spaces. The applicant is proposing the snow storage area be located north of the parking lot.

Finding of Fact: Based on the submitted application materials, the project's description of components related to Parking this standard is determined to be met.

E. Transportation demand management (TDM)

Transportation Demand Management (TDM) requirements apply only to commercial, institutional, and mixed-use development. The proposed self-storage facility is identified as an industrial use per Table 6-C; therefore, it does not trigger TDM requirements and is not subject to this requirement.

Finding of Fact: Based on the submitted application materials, the project's description of components related to Transportation demand management (TDM) this standard is not applicable.

2. Environmental Quality Standards (Section 14.6.2)

A. Preservation of significant natural features

The existing project site is undeveloped and forested. Approximately 82 percent of existing trees with 16 inches DBH or greater are proposed to be preserved within the rear setback area of the project. The applicant team, Haley Ward, Inc. conducted an on-site natural resources survey on October 10, 2025, which found no evidence of protected resources on the property, such as wetlands, streams, or vernal pools.

The applicant has submitted a Low Impact Development (LID) Scorecard related to the project's compliance with the city's LID standards claiming 80 points, meeting the minimum required points. As part of the proposed LID approach, the project incorporates low-impact landscaping

strategies, including the use of native vegetation and locally sourced landscape materials to minimize environmental disturbance and support site sustainability. In addition, the applicant has claimed 10 bonus points for incorporating Best Management Practices (BMPs) designed to address known water quality impairments within the watershed.

Finding of Fact: Based on the submitted application materials, the project's description of components related to Preservation of significant natural features this standard is determined to be met.

B. Site landscaping and buffers

The site is currently undeveloped and forested. The proposed project will preserve 82 percent (19) of existing trees 16 inches DBH or greater within the rear setback to provide visual buffering from existing residential structures located north of the project site. Additionally, a 20-foot-wide strip of existing forested land within a previously abandoned paper street separates the proposed development from adjacent residential properties.

As per Standard 13.6.2(B), one street tree is required for every 25-35 linear feet of frontage along a city right-of-way. With 160 feet of frontage along Warren Avenue, a total of seven street trees are required; however, the applicant proposes eight street trees through a combination of new plantings and preservation of existing mature trees.

As per standard 13.6.2(B) with parking lot landscaping standards, one shade tree is required per 750 square feet of uncovered asphalt, resulting in a requirement of eleven shade trees. The applicant has proposed fifteen shade and screening trees, near the parking area and additional trees along the northern property line to provide visual screening.

The project would include a central loading area and an enclosed dumpster pad with fencing. Additional screening trees are proposed to provide a visual buffer from the public sidewalk along Warren Avenue. The applicant is proposing to provide an 8-foot-tall privacy fence along the northern property line for overall site screening.

Finding of Fact: Based on the submitted application materials, the project's description of components related to Site landscaping and buffers this standard is determined to be met.

C. Water quality/storm water management/erosion control

The proposed project would include on-site stormwater detention and treatment consisting of underground detention chambers and a Jellyfish filtration system prior to discharge to the City’s storm drainage system in Warren Avenue. A retaining wall is proposed at the rear of the parking lot. Stormwater management would be provided through an underground detention system consisting of 48-inch pipes beneath the parking area.

No groundwater withdrawal or extraction is proposed as part of the development. In addition, the proposed self-storage use does not include storage of hazardous materials and therefore does not require a spill prevention and control plan. Runoff from the building, parking areas, and landscaped areas would be directed to an underground stormwater management system prior to discharge.

The existing detention pond along the eastern property line will remain in service and continue to function under existing conditions, with an updated field inlet to maintain connection to City infrastructure.

Based on the Survey, the revised curb radii for the proposed site entrance tie into the existing granite curb approximately 3.5 feet short of the existing tree box filter. No impacts to the tree box filter are anticipated.

The proposed new catch basin and storm drain alignment for the westerly private drainage connection in Warren Avenue are not approved. In accordance with Section 6 of the Technical Manual, private connections are not permitted in catch basins.

The applicant shall revise the design to extend the existing Warren Avenue storm drain and connect the westerly private drain line to a new terminus manhole, consistent with the referenced sketch. If this option is not feasible, the applicant shall contact DPW Water Resources for further discussion.

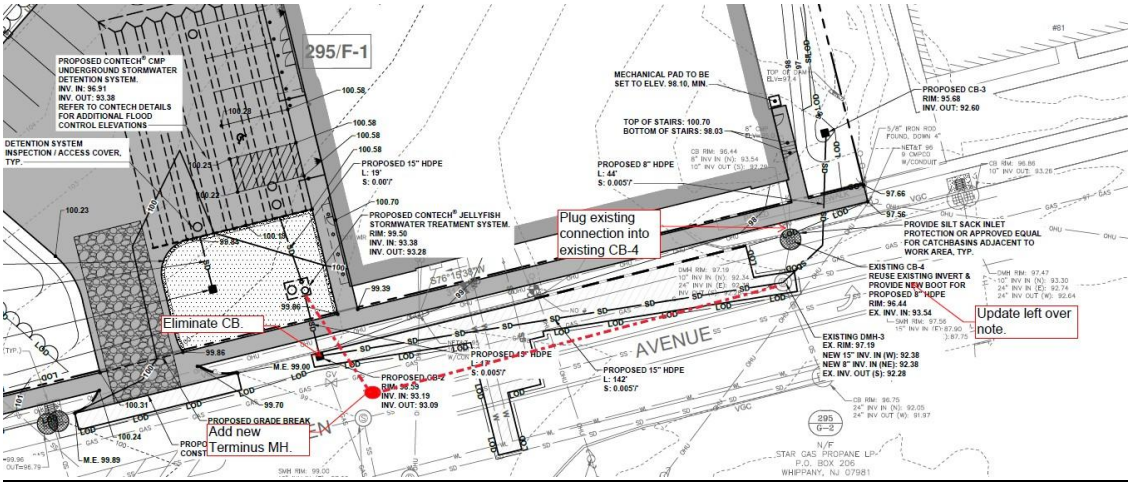


Figure 5. Storm Drain Extension & Manhole Connection

Finding of Fact: Based on the submitted application materials, the project's description of components related to Water quality/storm water management/erosion control this standard is determined to be met subject to conditions of approval.

3. Public Infrastructure and Community Safety Standards (Section 14.6.3)

A. Consistency with City Master Plans

The proposed project is consistent with the City of Portland Comprehensive Plan. The project supports the intent of the B-4 commercial corridor by developing a self-storage building that provides a location within the city for large-scale commercial uses requiring larger land areas to accommodate their operations.

Finding of Fact: Based on the submitted application materials, the project's description of components related to Consistency with City Master Plans this standard is determined to be met.

B. Public safety and fire prevention
The project site is accessed through Warren Avenue, which provides direct access to the proposed development. The building's frontage along Warren Avenue, in proximity to the existing public sidewalk, supports clear site access and visibility.

The proposed development is located along a public street and within a distinct lot configuration, supporting a sense of ownership and surveillance.

Emergency vehicle access is provided from Warren Avenue through the 20-foot-wide proposed site entrance, with sufficient on-site space to accommodate vehicle maneuvering and turnaround. The project also includes a proposed 4-inch fire protection service.

Finding of Fact: Based on the submitted application materials, the project's description of components related to public safety and fire prevention this standard is determined to be met.

C. Availability and capacity of public utilities
The applicant is proposing to connect the development to existing public utilities, including water, sanitary sewer, stormwater, natural gas, and electrical service. Water service will be provided via a proposed 1 ½ inch domestic connected to the existing 18-inch public water main through a wye and tee connection.

The proposed development will connect to the existing public sanitary sewer system located along Warren Avenue.

Existing overhead electrical and communication utilities are located within the Warren Avenue right-of-way and will remain in place.

Staff has received a Wastewater Capacity Authorization confirmation from the Department of Public Works (DPW) Water Resources.

Finding of Fact: Based on the submitted application materials, the project's description of components related to Availability and capacity of public utilities this standard is determined to be met.

4. Site Design Standards (Section 14.6.4)

A. Massing, ventilation, and wind impact:
The proposed building has a height of 50 feet, which complies with the permitted height in the B-4 Zone. The building is set into the existing landscape, with a retaining wall proposed at the rear to reduce the perceived height of the structure. The overall height, massing of the building is not of a scale that would affect ventilation to adjacent properties or create unsafe wind conditions for users of the site or nearby public spaces.
The applicant has noted that if HVAC venting is required, vents will be located on the east side of the building or on the roof and will be oriented away from adjacent residential properties, the parking area, and Warren Avenue.

Finding of Fact: Based on the submitted application materials, the project's description of components massing, ventilation, and wind impact, this standard is determined to be met.

B. Shadows:
The proposed building is not over 65 feet in height; therefore, this site plan standard is not applicable to this project.

Finding of Fact: Based on the submitted application materials, the project's description of components related to shadows, this standard is determined to be met.

C. Snow and ice loading:
The proposed building will have a flat roof, which will collect most snow and ice on the roof. The applicant has noted that the snow storage area is located outside of the parking area, snow and ice will not be stored on or directed toward adjacent properties or public ways.

Finding of Fact: Based on the submitted application materials, the project's description of components related to snow and ice loading, this standard is determined to be met.

D. View corridors
This project is not located in a view corridor as identified in the City's Design Manual; therefore, this site plan standard is not applicable to this project.

Finding of Fact: Based on the submitted application materials, the project's description of components related to view corridors, this standard is not applicable.

E. Historic resources
The proposed development is not located within a designated historic district and has no known archaeological resources on-site. Therefore, this standard is not applicable to this project.

Finding of Fact: Based on the submitted application materials, the project's description of components related to historic resources, this standard is determined to be not applicable.

F. Exterior lighting
A photometric plan shows that lighting levels at the site boundaries are appropriately controlled and that all proposed fixtures are oriented inward toward the site and building, minimizing off-site light spill and glare. No architectural or specialty lighting is proposed as part of this development, and no up-lighting will be utilized.

No new municipal street lighting is proposed. Existing municipal street lighting along Warren Avenue will continue to serve the site frontage.

Finding of Fact: Based on the submitted application materials, the project's description of components related to exterior lighting, this standard is determined to be met.

G. Noise and vibration
Condensing units are proposed to be installed on the roof oriented toward the center of the building to minimize noise impacts on neighboring properties. No significant noise or vibration impacts are expected.

Finding of Fact: Based on the submitted application materials, the project's description of components related to noise and vibration, this standard is determined to be met.

H. Signage and wayfinding
The proposed project is not providing any signage or wayfinding; therefore, this standard is not applicable.

Finding of Fact: Based on the submitted application materials, the project's description of components related to signage and wayfinding, this standard is determined to be not applicable.

IX. NEIGHBORHOOD MEETING & PUBLIC COMMENT

The applicant held a neighborhood meeting on December 17, 2025 at 5:45 PM. The in-person meeting was held at Gerald E. Talbot Community School at 1600 Forest Ave, Portland, ME 04103. A total of 6 members of the public attended the in-person meeting. Comments from attendees centered on:

- Construction management and timeline
- On-site operations and staffing
- Rental policies and restrictions
- Tree preservation
- Neighborhood impact

X. STAFF RECOMMENDATION

Subject to the proposed motions and conditions of approval listed below, Planning Department staff recommends that the Planning Board finds that the Major Site Plan at 97 Warren Avenue (PL-003487-2025) meets the applicable standards of Portland's Land Use Code.

XI. PROPOSED MOTIONS

A. SITE PLAN REVIEW

Based on the information in the application, plans, reports through testimony at the Planning Board hearing, and other information submitted by the applicant, the Planning Board adopts the findings, conclusions and recommendations contained in the Planning Board Report for the public hearing on April 28, 2026 for application PL-003487-2025 97 Warren Avenue, relevant to the site plan regulations and [**finds/does not find**] that the plan is in conformance with the site plan standards of the land use code subject to the following conditions of approval:

PRIOR TO APPLYING FOR A BUILDING PERMIT

1. The applicant shall revise the utility plan to extend the existing Warren Avenue storm drain and connect the westerly private drain line to a new terminus manhole. Final design, sizing, and connection details shall be subject to review and approval by the Department of Public Works.

PRIOR TO ISSUANCE OF A CERTIFICATE OF OCCUPANCY

2. The applicant shall execute and record an access, construction, and maintenance easement in a location acceptable to the City within the southwest portion of the site.

XII. PLANNING BOARD DECISION

On the basis of the findings, conclusions and recommendations contained in the Planning Board report for the public hearing on April 28, 2026 related to application PL-003487-2025 for 97 Warren Avenue, which is attached to the draft approval letter and incorporated therein, the Planning Board **[adopts/does not adopts]** the findings and conclusions in the April 22, 2026 Planning Board Report and the approval letter as drafted as the Planning Board's decision for application PL-003487-2025 and authorizes the Planning Board Chair to sign the approval letter as drafted.

ATTACHMENTS

Public Comment

PC1. Olga Graves

Staff Materials

S1. Site Plan Review Worksheet

Applicants Submittal

A. Project Summary
B. Site Plan Checklist
C. Site Plan Form
D. Tax Map
E. Zoning Map
F. Financial Capacity
G. Right, Title & Interest
H. Technical Capacity
I. Stormwater Management Report
J. Erosion Control Plan Narrative
K. Construction Management Plan Narrative
L. Low-Impact Development Scoring Tool
M. Utility Capacity
N. Solid Waste
O. HVAC Verification
P. Soil Survey
Q. Stormwater Management Credits Application
R. Neighborhood Meeting
S. Public Notice Sign
T. Wastewater Capacity Authorization

Drawings

1. Cover Sheet
2. General Notes and Legend
3. V101 Boundary Survey 04.03.2026
4. V102 Existing Tree Survey
5. C101 Site Plan

6. C102 Grading and ESC Plan
7. C103 Utility Plan
8. C104 Landscaping Plan
9. C105 Lighting Plan
10. C502 Site Details
11. C503 Site Details
12. C504 Site Details
13. C505 Site Details
14. C506 Site Details
15. C701 Pre-Development Hydrology Plan
16. C702 Post-Development Hydrology Plan
17. Architectural Plans
18. Turning Diagram

Zoning Comments

	1. As per Article 7, Chapter 14, Table 7-C, the dimensional standards for the B-4 zoning district limit the maximum allowable blank wall length to forty (40) feet. Section 7-2 defines a "blank wall" as the horizontal linear dimension of a contiguous building facade along a street frontage that lacks fenestration, doors, changes in wall plane, or other architectural or material articulation. Wall areas less than five (5) feet in height are excluded from this calculation. Based on review of the south elevation shown on Sheet A3.01, the proposed design does not appear to comply with this standard and revisions are required to reduce the extent of blank wall area. 2. As Per Article 19, Chapter 14 Sign regulations. A sign permit will be required following site plan approval and issuance of the building permit, at which time all proposed signage will be formally reviewed for compliance. Preliminary review of Sheet A3.01 indicates potential nonconformities related to both the number and size of proposed tenant signs. The subject property is located within the Large Mixed-Use Sign District (Table 19-B), with wall sign standards established in Table 19-G. For a single-tenant building within this district, one (1) wall sign per street frontage is permitted, along with up to two (2) additional wall signs, for a maximum of three (3) signs. The plans currently depict four (4) wall signs. Additionally, wall signs are limited to a maximum of two (2) square feet per linear foot of building façade on which the sign is located, not to exceed 200 square feet per façade. The proposed sign areas on both the west and south façades appear to be approximately 250 square feet, exceeding the maximum permitted area. Revisions will be required to demonstrate compliance with Article 19 standards.	

Site Plan Review Standards (Sec. 13.6)

Transportation Standards (Sec. 13.6.1)

Standard		***How the standard is being met***	***Finding***
Impact on Surrounding Street Systems	**13.6.1.A.1** The provisions for vehicular loading and unloading, parking, and vehicular and pedestrian circulation on the site and onto adjacent public streets and ways and the incremental volume of vehicular, bicycle, pedestrian, and transit traffic will not: 3. Create or aggravate any significant hazard to safety on the surrounding street network.	Traffic generation for the proposed development was estimated using the Institute of Transportation Engineers (ITE) trip generation methods. Based on a self-storage facility consisting of approximately 633 units and a total gross floor area of approximately 88,000 square feet the project is anticipated to generate sixteen (16) vehicle trips during both the weekday AM and PM peak hours, and approximately fifteen (15) vehicle trips during the Saturday peak hour. Given the low anticipated trip generation, the proposed development is not expected to create mobility or traffic safety impacts to the surrounding roadway network. Therefore, a Traffic Movement Permit (TMP) is not required.	Met

		What still needs to be addressed: Staff are not requesting any additional information related to this standard.	
	13.6.1.A.2 The provisions for vehicular loading and unloading, parking, and vehicular and pedestrian circulation on the site and onto adjacent public streets and ways and the incremental volume of vehicular, bicycle, pedestrian, and transit traffic will not: 4. Substantially increase congestion on any street without mitigation proportionate to the level of impact.	Based on ITE Trip Generation, the proposed self-storage facility is expected to generate minimal traffic volumes during both weekday and weekend peak hours. The traffic levels are not anticipated to cause congestion or create traffic safety concerns along Warren Avenue or the surrounding street network. **What still needs to be addressed:** Staff are not requesting any additional information related to this standard.	Met
Access and Circulation	**13.6.1.B.1.a *In General*** All development subject to this article shall provide safe and reasonable access and internal circulation for all users of the site and shall comply with the transportation systems and street design standards of the Technical Manual.	The site is accessed from Warren Avenue via a single curb cut providing both ingress and egress. The internal parking and circulation areas are designed to accommodate loading and emergency vehicle access. **What still needs to be addressed:** Staff are not requesting any additional information related to this standard.	Met
	13.6.1.B.1.b *In General* Shared circulation, parking, and transportation infrastructure shall be provided to the extent practicable, with utilization of joint curb cuts, walkways, service alleys, bus pull-out areas, and related infrastructure shared with abutting lots and roadways. Easements for access for abutting properties and shared internal access points at property lines shall be provided where possible to facilitate present or future sharing of access and infrastructure.	A new sidewalk is proposed along Warren Avenue with internal pedestrian connections provided to link the public sidewalk to the building entrance and on-site parking area. **What still needs to be addressed:** • The applicant shall revise the site plan to show dimension curb radii at access points along Warren Avenue.	More Information Required
	13.6.1.B.1.c *In General* Continuous internal walkways shall be provided between existing or planned public sidewalks adjacent to the site, transit stops and street crossings, and building entrances on the site.	Internal pedestrian walkways are provided to connect the public sidewalk to the building entrance and on-site parking area ensuring continuous and accessible pedestrian circulation. **What still needs to be addressed:** Staff are not requesting any additional information related to this standard.	Met
	13.6.1.B.1.d *In General* Where the site abuts or includes an existing or planned publicly accessible trail, a connection to or integration of such trail shall be provided to the extent practicable, including rights of public access.	The application does not have access to a trail. **What still needs to be addressed:** This standard is not applicable to the proposed project, and no additional information is required.	N/A
	13.6.1.B.1.e *In General* Points of access and egress shall be located to avoid conflicts with turning movements and traffic flows.	The proposed driveway location along Warren Avenue is considered acceptable in relation to its proximity to Bishop Street. The driveway alignment and internal circulation are designed to minimize conflicts with existing traffic movements.	More Information Required

		What still needs to be addressed: • The applicant shall provide documentation demonstrating adequate sight distance from the proposed driveway.	
	13.6.1.B.2.a *Curb and sidewalks* All development shall provide curb and sidewalks along all frontages, installed to specifications as described in the transportation systems and street design standards of the Technical Manual.	An existing paved sidewalk is present along the site's frontage on Warren Avenue. As part of the proposed development, the sidewalk will be reconstructed and extended along the full length of the site's Warren Avenue frontage in accordance with City standards. The applicant also proposes 6-inch granite curbing within the public right-of-way. **What still needs to be addressed:** • The sidewalk must have a minimum width of 5 feet, in accordance with Technical Manual Section 1.6.2.A. • The limited spot grades provided do not allow confirmation that the proposed sidewalks are compliant (meeting the minimum cross slope and running slope). The applicant shall update the plans to provide spot grades and slopes at grade breaks for the proposed sidewalks, driveways, and at the ends of the limits of the proposed improvements for the property. • The proposed building foundation cannot encroach into the right-of-way (ROW).	Not Met
	13.6.1.B.2.b *Curb and sidewalks* Where sidewalks already exist but are in substandard condition, they shall be repaired or replaced in conformance with Chapter 25 of the City of Portland Code of Ordinances and the transportation systems and street design standards of the Technical Manual.	The applicant proposes to reconstruct and extend the existing paved sidewalk along the site's street frontage to meet current City standards. **What still needs to be addressed:** Staff are not requesting any additional information related to this standard.	Met
	13.6.1.B.2.c *Curb and sidewalks* An applicant may request a waiver from sidewalk installation requirements if they meet two or more applicable waiver criteria as listed below: i. There is no reasonable expectation for pedestrian usage coming from, going to, and traversing the site. ii. There is no sidewalk in existence or expected within 1000 feet and the construction of sidewalks does not contribute to the development of pedestrian-oriented infrastructure. iii. A safe alternative walking route is reasonably available, for example, by way of a sidewalk on the other side of the street that is lightly traveled.	The applicant is not requesting a waiver from sidewalk installation requirements. **What still needs to be addressed:** Staff are not requesting any additional information related to this standard.	N/A

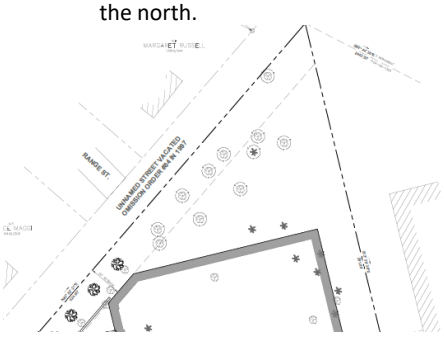
	iv. The reconstruction of the street is specifically identified and approved in the first or second year of the current Capital Improvement Program (CIP) or has been funded through an earlier CIP or through other sources. v. The street has been constructed or reconstructed without sidewalks within the last 24 months. vi. Strict adherence to the sidewalk requirement would result in the loss of significant site features related to landscaping or topography that are deemed to be of a greater public value.		
	13.6.1.B.2.d ***Curb and sidewalks*** An applicant may request a waiver from curb installation requirements if they meet two or more applicable waiver criteria as listed below: i. The cost to construct the curbing, including any applicable street opening fees, is in excess of 5% of the overall project cost. ii. The reconstruction of the street is specifically identified and approved in the first or second year of the current CIP or has been funded through an earlier CIP or through other sources. iii. The street has been rehabilitated without curbing in the last 60 months and the proposed use and design of the site does not necessitate the installation of curbing. iv. Strict adherence to the curb requirement would result in the loss of significant site features related to landscaping or topography that are deemed to be of a greater public value. v. Runoff from the development site or within the street does not require curbing for stormwater management.	The applicant is not requesting a waiver from sidewalk installation requirements. **What still needs to be addressed:** Staff are not requesting any additional information related to this standard.	N/A
Public Transit Access	**13.6.1.C.1** All residential development consisting of 20 or more dwelling units and all commercial and institutional developments of at least 20,000 square feet gross floor area shall provide a transit shelter adjacent to or within the public right-of-way along its frontage, or at a nearby high-volume transit stop without a transit shelter, when the following criteria are met: A. The development is proposed along an existing public transit route on a principal or minor arterial roadway, as shown in the Federal Street Classification Map. B. The nearest existing transit shelter on the route is more than ¼ mile from the site, measured along rights-of-way.	The proposed project is a commercial self-storage facility and is expected to generate low visitor volumes. **What still needs to be addressed:** This standard is not applicable to the proposed project, and no additional information is required.	N/A
			N/A

	13.6.1.C.2 Transit facilities shall be connected to the public sidewalk system.	**What still needs to be addressed:** This standard is not applicable to the proposed project, and no additional information is required.	
	13.6.1.C.3 All or some of this standard may be waived if the review authority determines that the development is not anticipated to generate public transit usage due to particular characteristics of the development or proposed use.	**What still needs to be addressed:** This standard is not applicable to the proposed project, and no additional information is required	N/A
Parking	**13.6.1.D.1.a** ***Vehicular parking*** Developments shall comply with the parking standards of Article 18.	The proposed self-storage facility proposes eleven off-street parking spaces that serve the operational needs of the building. **What still needs to be addressed:** Staff are not requesting any additional information related to this standard.	Met
	13.6.1.D.1.b ***Vehicular parking*** Where provided, parking spaces and aisles shall not be located in front and corner side yards, unless the applicant can demonstrate that site constraints preclude the location of parking elsewhere on the site.	The proposed self-storage facility proposes eleven off-street parking spaces that serve the operational needs of the building. **What still needs to be addressed:** Staff are not requesting any additional information related to this standard.	Met
	13.6.1.D.1.c ***Vehicular parking*** Where provided, parking spaces and aisles shall meet applicable dimensional standards as detailed in the transportation systems and street design standards of the Technical Manual.	Per Table 18-A Off-Street Parking Maximums, the maximum number of vehicle parking spaces for self-storage facilities is one space per 25 storage units. Eleven off-street parking spaces are proposed to serve the self-storage facility. **What still needs to be addressed:** • The applicant shall identify the maximum vehicle size anticipated to access and utilize the site and provide supporting documentation demonstrating that the proposed parking stall dimensions are adequate to safely accommodate such vehicles in compliance with applicable standards.	More Information Required
	13.6.1.D.2.a ***Bicycle parking*** All development shall provide secure bicycle parking in accordance with the parking requirements of Article 18 and the transportation systems and street design standards of the Technical Manual.	No Bicycle parking is proposed as part of this application. **What still needs to be addressed:** This standard is not applicable to the proposed project, and no additional information is required	N/A
	13.6.1.D.2.b ***Bicycle parking*** The review 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 particular site characteristics or proposed uses.	No Bicycle parking is proposed as part of this application. **What still needs to be addressed:** Self-storage facilities are not required to provide bicycle parking under article 18.	N/A
		Snow storage area is located outside of parking and stormwater management area.	More Info

	13.6.1.D.3.a *Snow storage* All developments shall include areas for snow storage or provide an acceptable snow removal plan.	**What still needs to be addressed:** • The applicant shall indicate the snow storage area on the site plan to comply with this requirement.	
	13.6.1.D.3.b *Snow storage* Snow storage areas may not encroach on adjacent properties, public ways, and pedestrian walkways, and shall not be located where they would adversely impact the functionality of stormwater management systems.	Snow storage area is located outside of parking and stormwater management area. **What still needs to be addressed:** Staff are not requesting any additional information related to this standard.	Met
	13.6.1.D.3.c *Snow storage* Landscaping in designated snow storage areas shall be such that it can withstand the snow pile.	**What still needs to be addressed:** Staff are not requesting any additional information related to this standard.	Met
	13.6.1.D.4 *Electric vehicle (EV) charging* All development shall meet applicable EV standards as provided in Section 1 of the Technical Manual.	The application proposes 11 off-street parking spaces, which triggers the EV infrastructure requirement of Technical Manual Section 1.14. A proposed wall mounted Level 2 charger serving the parking spaces has been provided. **What still needs to be addressed:** Staff are not requesting any additional information related to this standard.	Met
Transportation Demand Management	**13.6.1.E.1** The following types of development shall design and implement a Transportation Demand Management (TDM) plan: A. All commercial, institutional, or mixed-use developments of 50,000 square feet or more in total floor area. B. All commercial or institutional uses designed to accommodate 100 or more employees or, for educational institutions, 100 or more students.	The proposed self-storage facility contains approximately 22,178 square feet and is not anticipated to generate commuter or employee-based travel demand. **What still needs to be addressed:** This standard is not applicable to the proposed project, and no additional information is required.	N/A
	13.6.1.E.2 The TDM Plan shall comply with the standards for transportation studies and plans as contained in the Technical Manual.	**What still needs to be addressed:** This standard is not applicable to the proposed project, and no additional information is required.	N/A
Environmental Quality Standards (Sec. 13.6.2)			
Standard		***How the standard is being met***	***Finding***
Preservation of Significant Natural Features	**13.6.2.A.1** All development shall preserve and protect significant natural features by incorporating the principles of Low-Impact Development (LID) in accordance with the LID standards of the Technical Manual.	The site is currently undeveloped and forested. Per Standard 13.6.2(A), all new developments shall preserve and protect significant natural features by incorporating principles of Low-Impact Development (LID) in accordance with the LID standards of the Technical Manual. The applicant has provided a LID scorecard, receiving a score of 83 which satisfies the minimum of 80 points required for approval of LID strategies and techniques.	Not Met

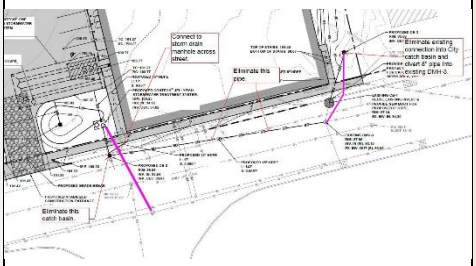
		What still needs to be addressed: **LID Review:** • The project has claimed 2 points for >50% of the permeable areas on site being densely planted landscaping (not lawn). The landscape plan does not provide sufficient detail to support these points. Please clearly show which areas are proposed lawn and which areas are proposed to be densely planted landscaping. • The project has claimed 2 points of using only locally-sourced landscape materials. This requirement must be noted on the landscape plan. Please update the plan accordingly for these points to be awarded. • The project has claimed 4 points for providing a detailed winter maintenance agreement to reduce chlorides. Please provide a draft of the agreement to be reviewed as part of the Site Plan approval process. A finalized agreement must be recorded at the Registry of Deeds prior to issuance of any C of O for the property. • This project has claimed points for using BMPs designed for a specific water quality impairment within the watershed. The points in this category are meant to incentivize pollutant-specific BMPs (such as gravel wetlands) for known impairments (such as excess nutrients) in specific watersheds. Please provide a narrative explaining how treatment systems proposed are for specific pollutants of concern in the watershed. • The applicant is claiming 6 points for providing 1.5 * the required detention volume for the project. Please provide further calculation documentation demonstrating this requirement is met.	
	13.6.2.A.2 Where complete preservation of significant natural features substantially compromises development of the site as otherwise permitted by	No wetland or other protected preserved natural features have been identified on the site.	Met

	zoning, the review authority may reduce the requirement in accordance with the LID standards of the Technical Manual provided that the applicant implements preservation measures to the extent practicable and demonstrates compliance with applicable state and federal regulations.	**What still needs to be addressed:** Staff are not requesting any additional information related to this standard.	
	13.6.2.A.3 The site plan shall include adequate measures to protect significant natural features to be preserved from construction impacts, in accordance with the LID standards of the Technical Manual.	**What still needs to be addressed:** • The project has claimed 3 points for tilling soils prior to revegetation. This requirement must be noted on the landscape plan. Please update the plan accordingly for these points to be awarded. • The applicant has claimed 6 points for limiting site disturbance and earthwork. Please provide dimensions for all undeveloped areas which will remain undisturbed. All areas remaining undisturbed must be outside the limit of work and shown on the ESC plan.	Not Met
Site Landscaping and Buffers	**13.6.2.B.1.a *On-site landscaping*** All development subject to this article shall provide a minimum of one shade tree consisting of species identified on the City of Portland Recommended Tree list or six plantings, defined as one shrub, one ornamental grass, and/or three perennials, per 5,000 square feet of lot area in accordance with the landscaping standards of the Technical Manual.	The project site has a total Lot area of 57,658 sq. ft., which requires twelve shade trees. **What still needs to be addressed:** • The applicant shall revise the landscaping plan to show the minimum required shade trees. • The applicant shall add new trees within the gap area between the proposed building and the vacated paper street to the northeast of the site.	Not Met
	13.6.2.B.1.b *On-site landscaping* Existing vegetation to be preserved on the site may be counted towards this requirement as described in the landscaping and landscape preservation standards of the Technical Manual.	The site is currently undeveloped and forested. The proposed project will preserve 82 percent (19) of existing trees with a DBH of 16 inches or greater within the rear setback. Three street trees are also proposed along the street frontage. **What still needs to be addressed:** • The project has claimed 2 points for using only native vegetation but is proposing to use non-native plant species. Please update plant species and note the requirement for only native vegetation on the landscape plan. • The applicant shall show existing trees on landscaping plan and	Not Met

		number of trees that are being removed.	
	13.6.2.B.1.c ***On-site landscaping*** Where site constraints prevent the planting of required shade trees or plantings at the development site, the reviewing authority may approve an alternative as described in the landscaping standards of the Technical Manual.	The proposed project is required to meet the shade tree requirement. **What still needs to be addressed:** Refer to Section 13.6.2.B.1.a.	Not Met
	13.6.2.B.2.a ***Buffers and screening*** Loading and servicing areas, trash and recycling areas, storage areas, and roof- and ground-mounted utility structures, except for renewable energy systems, shall be screened from view from public sidewalks, streets and adjacent properties by dense evergreen and deciduous landscaping, fencing, architectural screening products, masonry walls, building walls, or a combination thereof.	The proposed project includes a new central loading area and an enclosed dumpster pad with fencing. Screening trees are proposed to provide a visual barrier from public sidewalks along warren avenue. **What still needs to be addressed:** Staff are not requesting any additional information related to this standard.	Met
	13.6.2.B.2.b ***Buffers and screening*** Where immediately visible from the right-of-way, surface parking areas shall be screened with dense evergreen and deciduous landscaping, fencing, or masonry wall in accordance with the landscaping standards of the Technical Manual.	The proposed project provides screening trees for the parking area, with street trees proposed along Warren Avenue. Additionally, 19 existing trees with a DBH of 16 inches or greater are being preserved within the rear setback to provide visual buffering from existing residential structures located north of the project site. 20 feet of existing forested land within a previously abandoned paper street also separates the project from neighboring residential lots. **What still needs to be addressed:** • The applicant shall install an 8-foot-tall privacy fence along the north property line to supplement landscaping and enhance screening. • The applicant shall add trees toward the rear of the property to create visual buffering between the proposed building and the existing residential structures to the north. 	More Information Required
	13.6.2.B.2.c ***Buffers and screening*** For nonresidential development abutting a residential zone, an	While the site is located near residential properties to the north, 19 existing trees	Met

	evergreen, densely landscaped buffer of not less than 10 feet in depth and six feet tall is required along the side abutting the residential zone. In cases where architectural fencing is used, the depth of the landscaped buffer may be reduced, so long as the fencing is at least six feet in height and a mix of evergreen and deciduous trees spaced no further than 20 feet apart is planted abutting the residential zone.	with a DBH of 16 inches or greater are being preserved within the rear setback. These preserved trees provide visual buffering between the proposed project and the existing residential structures. **What still needs to be addressed:** Staff are not requesting any additional information related to this standard.	
	13.6.2.B.2.d ***Buffers and screening*** All residential development shall provide and/or preserve evergreen vegetated buffers where necessary to buffer the development from detrimental impacts of existing surrounding development.	The proposed development is nonresidential. **What still needs to be addressed:** This standard is not applicable to the proposed project, and no additional information is required.	N/A
	13.6.2.B.3.a ***Parking and vehicle display lot landscaping*** Developments with more than five parking spaces shall include at least one tree for every 750 square feet of uncovered asphalt parking area (including drive aisles), planted in landscaped islands to screen, shade, and break up parking. Trees and shrubs in parking lots may be in informal groups, straight rows, or concentrated in clusters as described in the landscaping standards of the Technical Manual.	The project is proposing 11 parking spaces. **What still needs to be addressed:** • The site plan shall identify the total square footage of uncovered asphalt parking area, including drive aisles, and provide a minimum of one (1) tree per 750 square feet of uncovered asphalt area.	More Information Required
	13.6.2.B.3.b ***Parking and vehicle display lot landscaping*** Landscaped islands shall be distributed so that uninterrupted pavement does not exceed forty parking spaces.	**What still needs to be addressed:** This standard is not applicable to the proposed project, and no additional information is required.	N/A
	13.6.2.B.3.c ***Parking and vehicle display lot landscaping*** Where site constraints prevent implementation of all or a portion of required parking lot landscaping, as determined by the review authority, the reviewing authority may approve an alternative as described in the landscaping standards of the Technical Manual.	**What still needs to be addressed:** Staff are not requesting any additional information related to this standard.	Met
	13.6.2.B.4 ***Non-vehicular hardscape*** All uncovered paving for non-vehicular use, including pathways and patios, must either have a minimum Solar Reflective Index (SRI) of 33 initially and 28 once aged three years or include one tree for every 750 square feet of asphalt paving.	The proposed building will have a white TPO roof membrane, which typically exceeds the minimum SRI requirements outlined in the Portland Site Design Standards. **What still needs to be addressed:** Staff are not requesting any additional information related to this standard.	Met
	13.6.2.B.5.a ***Street trees*** All development shall include one street tree per 25-35 linear feet of frontage along a city right-of-way or private roadway as specified in	The applicant has provided a landscape plan that proposes 3 street trees along Warren Avenue.	Not Met

	the landscaping standards of the Technical Manual. The provision of measures to enhance tree survival (such as raised planters, irrigation, and structural soils as recommended by the City Arborist) shall be required.	**What still needs to be addressed:** As per Standard 13.6.2(B), one street tree is required for every 25-35 linear feet of frontage along a city right-of-way. With 160 feet of street frontage, the proposed project requires a total of 7 street trees.	
	13.6.2.B.5.b *Street trees* Where the applicant can demonstrate that site constraints prevent the planting of required street trees in the city right-of-way, the review authority may permit an alternative subject to the landscaping standards of the Technical Manual.	The proposed project is required to provide the minimum number of street trees. **What still needs to be addressed: Confirm this?** Refer to section 13.6.2.B.5.a	Not Met
	13.6.2.B.5.c *Street trees* Where the proposed development includes the removal of an existing street tree determined by the City Arborist to be a heritage or feature mature tree, the applicant shall be required to contribute to the Tree Fund at the designated rate in the Technical Manual so that the total replacement cost is significantly higher than planting a new street tree/contributing for a new street tree.	**What still needs to be addressed:** Staff are not requesting any additional information related to this standard.	Met
Water Quality, Stormwater Management and Erosion Control	**13.6.2.C.1.a** All development shall be designed to minimize total area of impervious surface on the site and both the volume and rate of runoff from the lot. Provisions for stormwater management shall demonstrate the following: a) Any stormwater draining onto or across the lot in its pre-improvement state will not be impeded or redirected so as to create ponding on, or flooding of, adjacent lots.	The project proposes on site stormwater detention and treatment, including underground detention chambers and a jellyfish filtration system, prior to discharge to city's drainage system in warren avenue. **What still needs to be addressed:** Staff are currently reviewing and have not requested any additional information related to this standard.	Met
	13.6.2.C.1.b All development shall be designed to minimize total area of impervious surface on the site and both the volume and rate of runoff from the lot. Provisions for stormwater management shall demonstrate the following: b) Any increase in volume or rate of stormwater draining from the lot onto an adjacent lot or City property following the improvement can be handled on the adjacent lot or City property without creating ponding, flooding or other drainage problems and that the owner of the lot being improved has the legal right to increase the flow of stormwater onto the adjacent lot or City property.	The project proposes the removal of 96 square feet of existing impervious area and the development of 31,178 square feet of total impervious surface. **What still needs to be addressed:** • The project's stormwater design proposes to direct a significant off-site drainage area into an existing detention basin located on an adjacent neighboring property to the east (93 Warren). The amount of runoff volume for each storm event running through this detention basin is shown to increase significantly in the post development condition. The modeling provided by the applicant is making the case that the detention basin still functions at an acceptable level. The applicant should provide documentation that they have reviewed this updated condition with the neighboring property	Not Met

		owner and have received written permission for this change. DPW recommends that a drainage easement be established between the two properties to formally establish drainage rights between the two parcels and to provide documentation that the proposed conditions are acceptable to both parties.	
	13.6.2.C.1.c All development shall be designed to minimize total area of impervious surface on the site and both the volume and rate of runoff from the lot. Provisions for stormwater management shall demonstrate the following: c) Any increase in volume or rate of stormwater draining from the lot into the City's storm sewer system can be accommodated in the system without creating downstream problems or exceeding the capacity of the storm sewer system.	The project proposes on site stormwater detention and treatment, including underground detention chambers and a jellyfish filtration system, prior to discharge to city's drainage system in warren avenue. **What still needs to be addressed:** • DPW requests that the applicant revises both proposed storms drain connections into the City's drainage system in Warren Avenue based on the following sketch:  • The applicant should provide further justification for the need to connect a 15" storm drain into the City's existing 24" storm drainage system. All of the current runoff draining to the system either flows over land into a street catch basin or through an 8" culvert pipe into the City's drainage system. The modeling calculations suggest that the project is controlling peak flow rates through the on-site detention system for the 2, 10 and 25 Year Storm Events. Please provide further information for review. • The applicant should verify that the radial curb associated with the proposed driveway will not interfere with or negatively impact the City's existing Filterra unit. • The applicant has provided a stormwater credit application, DPW will review and complete a	Not Met

		condition of approval for these credits. Credits will be activated as part of the certificate of occupancy process as outlined in the standard stormwater management condition of approval.	
	13.6.2.C.2 All development shall comply with the stormwater management standards of the Technical Manual.	The applicant has submitted a stormwater management report and plans to address the applicable standards. No groundwater uses or extraction is proposed for this development. Additionally, the proposed self-storage building will not store hazardous materials that would require a spill prevention plan. **What still needs to be addressed:** Staff are currently reviewing and have not requested any additional information related to this standard.	Met
	13.6.2.C.3 Development shall not pose a risk of groundwater contamination either during or post-construction, as described in the stormwater management and water supply standards of the Technical Manual.	The site is located within the Capisic Brook Urban Impaired Stream watershed. In accordance with Section 5.2.5 of the Technical Manual, projects within an urban impaired stream watershed must comply with the Urban Impaired Stream Standard as outlined in Maine DEP Chapter 500 Stormwater Management requirements. **What still needs to be addressed:** Staff are currently reviewing and have not requested any additional information related to this standard.	Met
	13.6.2.C.4 Applicants shall demonstrate that subsurface and/or any adjacent slope conditions are suitable to support the development, and where determined necessary, shall prepare a geotechnical study to demonstrate that the development as designed will not adversely impact the development site or any abutting property. Soil surveys and/or geotechnical studies shall be prepared in accordance with the requirements of the Technical Manual.	Applicant has submitted the Stormwater Management Report and Erosion Control Plan with Housekeeping and Maintenance Plans **What still needs to be addressed:** Staff are currently reviewing and have not requested any additional information related to this standard.	Met
Public Infrastructure and Community Safety Standards (Sec. 13.6.3)			
Standard		***How the standard is being met***	***Finding***
Consistency with City Master Plans	**13.6.3.A.1** All developments shall be designed so as to be consistent with City Council-approved master plans and facilities plans and with off-premises infrastructure.	The proposed project is consistent with City Council approved master plans and the City of Portland Comprehensive Plan. The project supports the intent of the B-4 commercial corridor by developing a self-storage building that provides a location within the city for large-scale commercial uses requiring larger land areas to accommodate their operations. **What still needs to be addressed:** Staff are not requesting any additional information related to this standard.	Met

	13.6.3.A.2 The site plan shall include suitable easements, rights, and improvements to connect or continue off-premises public infrastructure as may be required by the review authority.	The applicant has provided a 2018 boundary survey showing existing site conditions. **What still needs to be addressed:** • The applicant shall submit a boundary survey stamped within at least one year of the site plan submittal date, prepared by a professional surveyor licensed in the State of Maine. The survey must be drawn to scale and tied into the State Plane Coordinates, NAD 1983, Maine West Zone, as specified in Section 14 of the Technical Manual.	Not Met
Public Safety and Fire Prevention	**13.6.3.B.1.a** All development shall incorporate the following public safety principles for Crime Prevention through Environmental Design (CPTED) into site design to enhance the security of public and private spaces and to reduce the potential for crime: a) Natural surveillance that promotes visibility of public spaces and areas.	The applicant shall include natural surveillance of public and private spaces and access control measures. **What still needs to be addressed:** Staff are not requesting any additional information related to this standard.	Met
	13.6.3.B.1.b All development shall incorporate the following public safety principles for Crime Prevention through Environmental Design (CPTED) into site design to enhance the security of public and private spaces and to reduce the potential for crime: b) Access control that promotes authorized and/or appropriate access to the site.	Access to the site is defined and provides appropriate access from warren avenue. The proposed building is adjacent to Warren Avenue and its associated sidewalk making easy access to the building. **What still needs to be addressed:** Staff are not requesting any additional information related to this standard.	Met
	13.6.3.B.1.c All development shall incorporate the following public safety principles for Crime Prevention through Environmental Design (CPTED) into site design to enhance the security of public and private spaces and to reduce the potential for crime: c) Territorial reinforcement that promotes a sense of ownership and responsibility through environmental design.	The development is proposed along a public street with separate lot which reinforces territorial boundaries and promotes a sense of ownership. **What still needs to be addressed:** Staff are not requesting any additional information related to this standard.	Met
	13.6.3.B.2 All developments shall be designed to provide adequate emergency vehicle access to the site and comply with the Public Safety standards of the Technical Manual.	Emergency vehicle access is provided from Warren Avenue through the proposed entrance, with adequate space for vehicle turnaround. The project also proposes a 4-inch fire protection service. **What still needs to be addressed:** • The applicant shall install a sprinkler system in the proposed building to ensure fire safety.	More Information Required
Pu bli	**13.6.3.C.1** The development shall not overburden sanitary sewers and storm drains, water lines or	The proposed project is required to comply with section 5.2.4 of city of Portland	Mor e Inf

	supply, or other public infrastructure and utilities. Development shall provide adequate utility infrastructure on-site and in connection to surrounding locations and facilities.	technical manual. The utility plan shows proposed connections for water service, fire protection service, sanitary sewer, storm drains, and natural gas. Water service will be provided via a proposed 1 ½ inch domestic connected to the existing 18-inch public water main through a wye and tee connection. An underground stormwater management system will handle runoff from the building, parking, and landscaped areas without impacting the city system. **What still needs to be addressed:** • The applicant has provided a wastewater capacity application which is currently under review by DPW. • The applicant shall show proposed pavement repair trenches for utilities on the site plan.	
	13.6.3.C.2 Electrical service shall be underground unless otherwise specified for industrial uses, or if it is determined to be unfeasible due to extreme cost, the need to retrofit properties not owned by the applicant, or complexity of revising existing overhead facilities.	The utility plan indicates that existing overhead utilities are located within the Warren Avenue right-of-way. however, all proposed electrical and communications services serving the site will be underground and coordinated with existing utilities. **What still needs to be addressed:** • The applicant shall confirm whether existing overhead utility lines will remain in their current location or require relocation as a part of the proposed development.	More Information Required
	13.6.3.C.3 All sanitary sewer lines, storm drains, water lines, and other utilities proposed as part of the development shall be designed to conform with the sanitary sewer and storm drain and water supply standards of the Technical Manual.	The proposed development will utilize public utility system on Warren Avenue **What still needs to be addressed:** • The Applicant shall provide Ability to Serve Letter. • The applicant must confirm with Central Maine Power that the distance between the proposed building and existing utility lines is adequate.	Not Met
	13.6.3.C.4 All development within 200 feet of a public sanitary collection and treatment system shall connect sanitary sewer lines into the nearest available public sewer. If a public sanitary collection and treatment system is not available, a private wastewater system may be used according to the requirements of Chapter 24 of the City Code and the sanitary sewer and storm drain standards of the Technical Manual.	The project site is located near an existing public sanitary sewer system along Warren Avenue. The proposed development will connect to the public sanitary sewer system. **What still needs to be addressed:** Staff are not requesting any additional information related to this standard.	Met

	13.6.3.C.5 All residential development of 20 units or more, commercial development, and industrial development shall provide for the temporary storage and timely removal of all trash and recyclable materials including, at a minimum, paper, corrugated cardboard, plastics, and metals. Storage containers for recyclable materials shall be separated from trash containers. All exterior storage of trash and recyclables shall be screened from view from public sidewalks, streets, and adjacent properties.	The development includes an enclosed dumpster pad for trash and recyclables, separated and screened from public view. **What still needs to be addressed:** Staff are not requesting any additional information related to this standard.	Met
Site Design Standards (Sec. 13.6.4)			
Standard		***How the standard is being met***	***Finding***
Massing, Ventilation and Wind Impact	**13.6.4.A.1** The bulk, location, or height of proposed buildings and structures shall not result in health or safety problems from a reduction in ventilation to abutting structures or changes to the existing wind climate that would result in unsafe wind conditions for users of the site and/or adjacent public spaces.	The proposed building has a height of 50 feet, which complies with the permitted height in the B-4 Zone. The building is set into the existing landscape, with a retaining wall proposed at the rear to reduce the perceived height of the structure. The overall height, massing of the building is not of a scale that would affect ventilation to adjacent properties or create unsafe wind conditions for users of the site or nearby public spaces. **What still needs to be addressed:** Staff are not requesting any additional information related to this standard.	Met
	13.6.4.A.2 Development shall locate all HVAC venting mechanisms to direct exhaust away from public spaces and residential properties directly adjacent to the site.	The applicant has noted that if HVAC venting is required, vents will be located on the east side of the building or on the roof and will be oriented away from adjacent residential properties, the parking area, and Warren Avenue. **What still needs to be addressed:** Staff are not requesting any additional information related to this standard.	Met
	13.6.4.A.3 In proposed buildings or additions with an aggregate roof area greater than 2,000 square feet, measured horizontally, and, for residential projects, greater than nine residential units, a minimum of 75% of the roof area must meet the following "cool roof" Solar Reflective Index (SRI) standards: a) Roofs with a slope less than 2:12: SRI of 82+ (initial)/64+ (3-year aged) b) Roofs with a slope greater than 2:12: SRI of 25+ (initial)/25+ (3-year aged)	The roof of the proposed building will have a white TPO membrane, which surpasses the minimum SRI requirements in the Portland Site Design standards for low-slope roofs. **What still needs to be addressed:** Staff are not requesting any additional information related to this standard.	Met

	Roof areas covered by shade structures with an SRI of 39+, including photovoltaic panels that shade the roof, are considered exempt from roof area calculations for the purposes of this standard.		
Shadow	**13.6.4.B** All development over 65 feet in height shall be designed to avoid and/or mitigate the adverse impacts of shadows cast by new structures or building additions from falling on publicly accessible open space in accordance with the shadow standards of the Technical Manual.	The proposed building is 50ft height. **What still needs to be addressed:** This standard is not applicable to the proposed project, and no additional information is required.	N/A
Snow and Ice Loading	**13.6.4.C** All development shall be designed to prevent significant amounts of accumulated snow and ice from loading or falling onto adjacent properties or public ways.	The proposed building will have a flat roof slope, which will collect most snow and ice on the roof. The applicant has noted that the snow storage area is located outside of the parking and stormwater management area, snow and ice will not be stored on or directed toward adjacent properties or public ways. **What still needs to be addressed:** • The applicant shall indicate the snow storage area on the site plan to comply with this requirement.	Not Met
View Corridors	**13.6.4.D** The massing, location, and height of development shall not substantially obstruct public view corridors identified in the City of Portland Design Manual.	**What still needs to be addressed:** This standard is not applicable to the proposed project, and no additional information is required.	N/A
Historic Resources	**13.6.4.E.1** When a development affects a designated landmark or lies within a designated historic district or historic landscape district, such development shall be required to obtain historic preservation approval under Article 16.	Not Applicable, the site is not located in historical district. **What still needs to be addressed:** This standard is not applicable to the proposed project, and no additional information is required.	N/A
	13.6.4.E.2.a All development shall document and protect state or local archaeological resources known to exist or discovered on the site. a) Protection may include leaving archaeological resources untouched beneath a new development through adaptation of foundation design or architectural layout.	**What still needs to be addressed:** This standard is not applicable to the proposed project, and no additional information is required.	N/A
			N/A

	13.6.4.E.2.b All development shall document and protect state or local archaeological resources known to exist or discovered on the site. b) Where the applicant can demonstrate that complete protection is not feasible, the applicant shall excavate and document archeological resources. Such measures shall be conducted in consultation with the City's historic preservation program and Maine Historic Preservation Commission. For resources of state significance, excavation and documentation shall be conducted by a qualified professional, in coordination with Maine Historic Preservation Commission. Local archeological resources may or may not be recognized by the Maine Historic Preservation Commission as significant and shall include the following: i. Original seawall structure located landward of Commercial Street. ii. Inactive historic family cemetery plots. iii. Historic railroad beds including but not limited to the Portland-Lewiston interurban railroad. iv. Original structure and/or landforms associated with the Cumberland and Oxford Canal. v. Buried portions of colonial and post-colonial period structures or built features located on the Portland Peninsula predating the Great Fire of 1866. vi. Pre-colonial occupation sites identified by shell middens or other evidence. vii. Sites listed or eligible for listing on the National Register of Historic Places.	**What still needs to be addressed:** This standard is not applicable to the proposed project, and no additional information is required.	
	13.6.4.E.2.c All development shall document and protect state or local archaeological resources known to exist or discovered on the site. c) In order to preserve archeological resources, the review authority may waive standards listed in the City of Portland Technical Manual where necessary if it is determined that such a waiver would not jeopardize the health, safety, or welfare of the development's occupants, the public, or the natural environment.	**What still needs to be addressed:** This standard is not applicable to the proposed project, and no additional information is required.	N/A

Exterior Lighting	**13.6.4.F.1.a** ***Site lighting*** All exterior site lighting shall be full cutoff with no light emitted above the horizontal plane or spilled onto adjacent properties. Illumination levels shall be adequate but not excessive for the safety, comfort, and convenience of occupants and users of the site, and shall conform to the lighting standards of the Technical Manual.	A photometric lighting plan has been prepared for this development **What still needs to be addressed:** Staff are not requesting any additional information related to this standard.	Met
	13.6.4.F.1.a ***Site lighting*** Where light from a proposed development may adversely impact adjacent residential properties, exterior lighting shall employ building-side shielding.	The photometric lighting plan noted that lighting levels are appropriately controlled at the site boundaries, and fixtures are inward toward the site and building. **What still needs to be addressed:** • The applicant shall confirm that all exterior fixtures are full cut-off. • The applicant shall minimize lighting levels along the north side of the property adjacent to residential uses.	More Information Required
	13.6.4.F.2.a ***Architectural and specialty lighting*** Architectural and specialty lighting of such features as architectural details, monuments, public art, or other site features shall be designed to illuminate specific details or attributes only and shall meet the lighting standards of the Technical Manual.	No architectural or specialty lighting is proposed as part of this development. **What still needs to be addressed:** Staff are not requesting any additional information related to this standard.	Met
	13.6.4.F.2.b ***Architectural and specialty lighting*** Up-lighting by any method is prohibited except for public buildings and parklands; clock towers and steeples; landscape features; designated historic landmarks; flags of state, federal, or national jurisdictions; and public art. Such light fixtures, brackets, conduits, and all other components shall be designed by a lighting professional and shall be scaled and placed to minimize their visibility and installed in accordance with the lighting standards of the Technical Manual.	No up-lighting is proposed for the project. **What still needs to be addressed:** Staff are not requesting any additional information related to this standard.	Met
	13.6.4.F.3 ***Street lighting*** All development shall provide municipal street lighting adequate for the safety and comfort of pedestrians, bicyclists, and motorists and, where applicable, conforming to specific lighting district requirements as specified in the street lighting standards of the Technical Manual.	No new municipal street lights are proposed as part of this project. The site frontage is currently served by existing municipal street lighting along Warren Avenue. **What still needs to be addressed:** • The applicant shall confirm that the presence of an overhead right-of-way does not affect street-lighting coverage or require additional municipal street lighting improvements. • The applicant shall provide information as to how the project will comply with the City's Street lighting standards, as specified in Section 8.2 of the Technical Manual.	More information required
Noise and Vibr	**13.6.4.G** All heating, ventilation and air conditioning equipment (HVAC), air handling units (AHU), emergency generators, and similar equipment shall	Condensing units are proposed to be installed on the roof oriented toward the center of the building to minimize noise	Met

	meet applicable state and federal emissions requirements and shall be located to the interior of the site, away from abutting properties.	impacts on neighboring properties. No significant noise or vibration impacts are expected. **What still needs to be addressed:** Staff are not requesting any additional information related to this standard.	
Signage and Wayfinding	**13.6.4.H.1** On-site directional traffic signage may be provided to enable users to safely and easily navigate into, around and out of the site.	**What still needs to be addressed:** This standard is not applicable to the proposed project, and no additional information is required.	Met
	13.6.4.H.2 Signage shall not adversely affect visibility at intersections on or off the site.	**What still needs to be addressed:** This standard is not applicable to the proposed project, and no additional information is required.	Met
Design Standards	**13.6.4.I.1** Development of certain types and/or proposed in certain zones, as specified in the City of Portland Design Manual, shall meet the design standards of the Design Manual in order to ensure that building and site design contribute to and enhance the goals and policies for specific zones within the city. The City of Portland Design Manual is incorporated by reference as part of this Land Use Code.	This project is within the B-4 zone **What still needs to be addressed:** This standard is not applicable to the proposed project, and no additional information is required.	N/A
	13.6.4.I.2 If the development is located in a historic district or associated with a historic landmark, the standards of Article 16 shall supersede.	**What still needs to be addressed:** This standard is not applicable to the proposed project, and no additional information is required.	N/A

HALEY WARD

RESPONSE TO COMMENTS/MAJOR SITE PLAN REVIEW

TO: **CITY OF PORTLAND**
FOR: **4-STORY SELF-STORAGE BUILDING**
97 WARREN AVENUE, PORTLAND, ME
PARCEL 295/F001001

APPLICANT:
Peachtree Acquisitions, LLC
7119 31st Avenue N.
Minneapolis, MN 55247

Revised March 31, 2026
JN: 15191.001

REPORT PREPARED BY:
Haley Ward, Inc.
12 Mountfort Street | Portland, ME 04101

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March 31, 2026

City of Portland, Planning & Urban Development
Attn: Neha Sunil Pol, Planner
389 Congress Street
Portland, Maine 04101
npol@portlandmaine.gov

Re: Response to Comments | Major Site Plan Application |4-Story Self-Storage Building |97 Warren Avenue |Portland, ME

Dear Neha,

On behalf of the Applicant Peachtree Acquisitions, LLC, Haley Ward, Inc. (Haley Ward) is pleased to submit this Response to Comments Packet for the Major Site Plan Application for the proposed development of a new 4-story self-storage-unit building, with a 22,178 square foot (s.f.) footprint, a building height of 50 feet and 11 new parking spaces. The application has been prepared in accordance with the City of Portland's Chapter 14, Land Use Code with an effective date of October 3, 2025, and applicable sections with the City's Technical Manual. The application includes narratives, exhibits, and plans depicting and describing the project.

This application package is intended to meet the City's submission requirements as outlined in the Major Site Plan application procedures. Please see the Table of Contents below for the material submitted as part of this application and uploaded to the EPlan (ProjectDox) portal.

We look forward to working with City of Portland Staff to get this initial information finalized for Planning Board review over the coming weeks. Please do not hesitate to contact us with any questions.

Sincerely,

Jon H. Whitten, Jr., PE
Senior Project Manager

Response to Staff Review Comments	**31-Mar-26**
Owner / applicant name:	Peachtree Acquisitions, LLC
Representative name:	Haley Ward, Inc. - Jon Whitten, Jr., PE
Project address:	97 Warren Ave.
Project CBL:	295 F001001
Application ID (if known):	PL-003487-2025

Zoning Comments		Response Comment
	1. As per Article 7, Chapter 14, Table 7-C, the dimensional standards for the B-4 zoning district limit the maximum allowable blank wall length to forty (40) feet. Section 7-2 defines a "blank wall" as the horizontal linear dimension of a contiguous building facade along a street frontage that lacks fenestration, doors, changes in wall plane, or other architectural or material articulation. Wall areas less than five (5) feet in height are excluded from this calculation. Based on review of the south elevation shown on Sheet A3.01, the proposed design does not appear to comply with this standard and revisions are required to reduce the extent of blank wall area. 2. As Per Article 19, Chapter 14 Sign regulations. A sign permit will be required following site plan approval and issuance of the building permit, at which time all proposed signage will be formally reviewed for compliance. Preliminary review of Sheet A3.01 indicates potential nonconformities related to both the number and size of proposed tenant signs. The subject property is located within the Large Mixed-Use Sign District (Table 19-B), with wall sign standards established in Table 19-G. For a single-tenant building within this district, one (1) wall sign per street frontage is permitted, along with up to two (2) additional wall signs, for a maximum of three (3) signs. The plans currently depict four (4) wall signs. Additionally, wall signs are limited to a maximum of two (2) square feet per linear foot of building façade on which the sign is located, not to exceed 200 square feet per façade. The proposed sign areas on both the west and south façades appear to be approximately 250 square feet, exceeding the maximum permitted area. Revisions will be required to demonstrate compliance with Article 19 standards.	The project Architect, Onyx Creative has revised the building design to meet the Maximum Allowable Blank Wall Length standards and the Sign standards. See updated architectural plans.

Site Plan Review Standards (Sec. 13.6)

Transportation Standards (Sec. 13.6.1)

Standard		*How the standard is being met*	*Finding*	*Response Comment*
Access and Circulation	**13.6.1.B.1.b** ***In General*** Shared circulation, parking, and transportation infrastructure shall be provided to the extent practicable, with utilization of joint curb cuts, walkways, service alleys, bus pull-out areas, and related infrastructure shared with abutting lots and roadways. Easements for access for abutting properties and shared internal access points at property lines shall be provided where possible to facilitate present or future sharing of access and infrastructure.	A new sidewalk is proposed along Warren Avenue with internal pedestrian connections provided to link the public sidewalk to the building entrance and on-site parking area. **What still needs to be addressed:** • The applicant shall revise the site plan to show dimension curb radii at access points along Warren Avenue.	More Information Required	Site plan has been revised to show 10-foot and 15-foot dimensions for curb radii at the entrance. See Sheet C101.
	13.6.1.B.1.e ***In General*** Points of access and egress shall be located to avoid conflicts with turning movements and traffic flows.	The proposed driveway location along Warren Avenue is considered acceptable in relation to its proximity to Bishop Street. The driveway alignment and internal circulation are designed to minimize conflicts with existing traffic movements. **What still needs to be addressed:** • The applicant shall provide documentation demonstrating adequate sight distance from the proposed driveway.	More Information Required	Site plan has been revised to show Sight Distances of more than 450-feet in either direction. Sight distance was measured in the field by Haley Ward staff. See Sheet C101.
	13.6.1.B.2.a ***Curb and sidewalks*** All development shall provide curb and sidewalks along all frontages, installed to specifications as described in the transportation systems and street design standards of the Technical Manual.	An existing paved sidewalk is present along the site's frontage on Warren Avenue. As part of the proposed development, the sidewalk will be reconstructed and extended along the full length of the site's Warren Avenue frontage in accordance with City standards. The applicant also proposes 6- inch granite curbing within the public right- of-way. **What still needs to be addressed:** • The sidewalk must have a minimum width of 5 feet, in accordance with Technical Manual Section 1.6.2.A. • The limited spot grades provided do not allow confirmation that the proposed sidewalks are compliant (meeting the minimum cross slope and running slope). The applicant shall update the plans to provide spot grades and slopes at grade breaks for the proposed sidewalks, driveways, and at the ends of the limits of the proposed improvements for the property. • The proposed building foundation cannot encroach into the right-of- way (ROW).	Not Met	1.Site plan has been revised to show a 5-foot wide proposed sidewalk along the Warren Ave. frontage. See Sheet C101. 2.Additional spot grades have been added to clarify the proposed grading and compliance with ADA access standards. Seet Sheet C102. 3.The position of the building has been revised to be set back approxiamtely 6.33 feet from the front property line. This allows for the building's foundation to be outside of the right-of-way, while establishing a minimum 10-foot setback from existing power lines. See Sheet C101.

Parking	**13.6.1.D.1.c** ***Vehicular parking*** Where provided, parking spaces and aisles shall meet applicable dimensional standards as detailed in the transportation systems and street design standards of the Technical Manual.	Per Table 18-A Off-Street Parking Maximums, the maximum number of vehicle parking spaces for self-storage facilities is one space per 25 storage units. Eleven off- street parking spaces are proposed to serve the self-storage facility. **What still needs to be addressed:** • The applicant shall identify the maximum vehicle size anticipated to access and utilize the site and provide supporting documentation demonstrating that the proposed parking stall dimensions are adequate to safely accommodate such vehicles in compliance with applicable standards.	More Information Required	The largest vehicle size anticipated for this use is a 40-foot box truck and a pickup truck with trailer. The parking lot area includes purposeful positioning parking spaces and pavement hatching to allow for manuevering and parking of longer vehicles near the central loading area without interfering with other passenger cars.
	13.6.1.D.3.a ***Snow storage*** All developments shall include areas for snow storage or provide an acceptable snow removal plan.	Snow storage area is located outside of parking and stormwater management area. **What still needs to be addressed:** • The applicant shall indicate the snow storage area on the site plan to comply with this requirement.	More Information Required	The Site plan has been updated to show a hatched snow storage area, north of the parking lot. See Sheet C101.
Environmental Quality Standards (Sec. 13.6.2)				
Standard		***How the standard is being met***	***Finding***	***Response Comment***
Preservation of Significant Natural Features	**13.6.2.A.1** All development shall preserve and protect significant natural features by incorporating the principles of Low-Impact Development (LID) in accordance with the LID standards of the Technical Manual.	The site is currently undeveloped and forested. Per Standard 13.6.2(A), all new developments shall preserve and protect significant natural features by incorporating principles of Low-Impact Development (LID) in accordance with the LID standards of the Technical Manual. The applicant has provided a LID scorecard, receiving a score of 83 which satisfies the minimum of 80 points required for approval of LID strategies and techniques.	Not Met	1. We are no longer claiming these points. 2. We have added a note to the Landscaping Plan requiring that all plants are to be native species and locally sourced. See Sheet C104. 3. We are no longer claiming these points. 4. We are proposing the installation of an underground storage system with Jellyfish filter outlet. This system was designed by Contech Engineered Solutions LLC. Their Jellyfish filter reports removal rates of 85% for TSS, 75% for total phosphorus, 67% for total copper and 60% for total zinc. See attached Stormwater Report and Jellyfish Contech Brochure provided. 5. The underground detention/treatment system has been up-sized to better control the peak rate of runoff entering the City's stormdrain system and therefore now detains and treats more than 1.5 times the required volumes for detention and treatment. Please see attached stormwater sections. Given these changes, our LID score is now 80, meeting the minimum score needed.
		What still needs to be addressed: **LID Review:** •1 The project has claimed 2 points for >50% of the permeable areas on site being densely planted landscaping (not lawn). The landscape plan does not provide sufficient detail to support these points. Please clearly show which areas are proposed lawn and which areas are proposed to be densely planted landscaping. •2 The project has claimed 2 points of using only locally-sourced landscape materials. This requirement must be noted on the landscape plan. Please update the plan accordingly for these points to be awarded. •3 The project has claimed 4 points for providing a detailed winter maintenance agreement to reduce chlorides. Please provide a draft of the agreement to be reviewed as part of the Site Plan approval process. A finalized agreement must be recorded at the Registry of Deeds prior to issuance of any C of O for the property. •4 This project has claimed points for using BMPs designed for a specific water quality impairment within the watershed. The points in this category are meant to incentivize pollutant-specific BMPs (such as gravel wetlands) for known impairments (such as excess nutrients) in specific watersheds. Please provide a narrative explaining how treatment systems proposed are for specific pollutants of concern in the watershed. •5 The applicant is claiming 6 points for providing 1.5 * the required detention volume for the project. Please provide further calculation documentation demonstrating this requirement is met.		
	13.6.2.A.3 The site plan shall include adequate measures to protect significant natural features to be preserved from construction impacts, in accordance with the LID standards of the Technical Manual.	**What still needs to be addressed:** • 6 The project has claimed 3 points for tilling soils prior to revegetation. This requirement must be noted on the landscape plan. Please update the plan accordingly for these points to be awarded. •7 The applicant has claimed 6 points for limiting site disturbance and earthwork. Please provide dimensions for all undeveloped areas which will remain undisturbed. All areas remaining undisturbed must be outside the limit of work and shown on the grading plan.	Not Met	6.A note about tilling the land prior to planting has been added to the Landscape Plan, Sheet C104 7.We are no longer claiming points for limiting disturbance.

Site Landscaping and Buffers	**13.6.2.B.1.a** ***On-site landscaping*** All development subject to this article shall provide a minimum of one shade tree consisting of species identified on the City of Portland Recommended Tree list or six plantings, defined as one shrub, one ornamental grass, and/or three perennials, per 5,000 square feet of lot area in accordance with the landscaping standards of the Technical Manual.	The project site has a total Lot area of 57,658 sq. ft., which requires twelve shade trees. **What still needs to be addressed:** • The applicant shall revise the landscaping plan to show the minimum required shade trees. • The applicant shall add new trees within the gap area between the proposed building and the vacated paper street to the northeast of the site.	Not Met	1.Landscape plan has been updated to illustrate that there is a total of a total of credit of 18 street trees proposed within 20 feet of the Warren Ave ROW, and an additional 15 shade trees in close proximity to the parking lot. was updated, see attachment M, sheet C104 for added trees 2.Landscape plan has been updated to show additional trees along the northern property line. See Sheet C 104.
	13.6.2.B.1.b ***On-site landscaping*** Existing vegetation to be preserved on the site may be counted towards this requirement as described in the landscaping and landscape preservation standards of the Technical Manual.	The site is currently undeveloped and forested. The proposed project will preserve 82 percent (19) of existing trees with a DBH of 16 inches or greater within the rear setback. Three street trees are also proposed along the street frontage. **What still needs to be addressed:** • The project has claimed 2 points for using only native vegetation but is proposing to use non-native plant species. Please update plant species and note the requirement for only native vegetation on the landscape plan. • The applicant shall show existing trees on landscaping plan and number of trees that are being removed.	Not Met	Landscape plan has been updated to show existing trees to be preserved and removed and a note about using native species has been added. See Sheet C104.
	13.6.2.B.1.c ***On-site landscaping*** Where site constraints prevent the planting of required shade trees or plantings at the development site, the reviewing authority may approve an alternative as described in the landscaping standards of the Technical Manual.	The proposed project is required to meet the shade tree requirement. **What still needs to be addressed:** Refer to Section 13.6.2.B.1.a.	Not Met	Landscape plan has been updated with shade tree numbers. See Sheet C104.
	13.6.2.B.2.b ***Buffers and screening*** Where immediately visible from the right-of-way, surface parking areas shall be screened with dense evergreen and deciduous landscaping, fencing, or masonry wall in accordance with the landscaping standards of the Technical Manual.	The proposed project provides screening trees for the parking area, with street trees proposed along Warren Avenue. Additionally, 19 existing trees with a DBH of 16 inches or greater are being preserved within the rear setback to provide visual buffering from existing residential structures located north of the project site. 20 feet of existing forested land within a previously abandoned paper street also separates the project from neighboring residential lots. **What still needs to be addressed:** • The applicant shall install an 8- foot-tall privacy fence along the north property line to supplement landscaping and enhance screening. • The applicant shall add trees toward the rear of the property to create visual buffering between the proposed building and the existing residential structures to the north. 	More Information Required	1.The Site Plan has been updated to show a 8-foot tall privacy fence along the norhtern property line. See Sheet C101. 2.We have attached existing conditions photos, in winter conditions, showing the tree cover of the northern and western portions of the site. We are reluctant to plant new trees in an an area where more than 7,400 S.F. of existing forest will be preserved.
	13.6.2.B.3.a ***Parking and vehicle display lot landscaping*** Developments with more than five parking spaces shall include at least one tree for every 750 square feet of uncovered asphalt parking area (including drive aisles), planted in landscaped islands to screen, shade, and break up parking. Trees and shrubs in parking lots may be in informal groups, straight rows, or concentrated in clusters as described in the landscaping standards of the Technical Manual.	The project is proposing 11 parking spaces. **What still needs to be addressed:** • The site plan shall identify the total square footage of uncovered asphalt parking area, including drive aisles, and provide a minimum of one (1) tree per 750 square feet of uncovered asphalt area.	More Information Required	Landscape plan has been updated with shade tree numbers. See Sheet C104.
	13.6.2.B.5.a ***Street trees*** All development shall include one street tree per 25-35 linear feet of frontage along a city right-of-way or private roadway as specified in the landscaping standards of the Technical Manual. The provision of measures to enhance tree survival (such as raised planters, irrigation, and structural soils as recommended by the City Arborist) shall be required.	The applicant has provided a landscape plan that proposes 3 street trees along Warren Avenue.	Not Met	The Landscape Plan has been updated to note the planting of street trees in combination with the preservation of large existing trees. This combination of trees exceeds the minimum street tree requirement. See Landscape Plan, Sheet C104
		What still needs to be addressed: As per Standard 13.6.2(B), one street tree is required for every 25-35 linear feet of frontage along a city right-of-way. With 160 feet of street frontage, the proposed project requires a total of 7 street trees.		
	13.6.2.B.5.b ***Street trees*** Where the applicant can demonstrate that site constraints prevent the planting of required street trees in the city right-of-way, the review authority may permit an alternative subject to the landscaping standards of the Technical Manual.	The proposed project is required to provide the minimum number of street trees. **What still needs to be addressed: Confirm this?** Refer to section 13.6.2.B.5.a	Not Met	The Landscape Plan has been updated to note the planting of street trees in combination with the preservation of large existing trees. This combination of trees exceeds the minimum street tree requirement. See Landscape Plan, Sheet C104

	13.6.2.C.1.b All development shall be designed to minimize total area of impervious surface on the site and both the volume and rate of runoff from the lot. Provisions for stormwater management shall demonstrate the following: b) Any increase in volume or rate of stormwater draining from the lot onto an adjacent lot or City property following the improvement can be handled on the adjacent lot or City property without creating ponding, flooding or other drainage problems and that the owner of the lot being improved has the legal right to increase the flow of stormwater onto the adjacent lot or City property.	The project proposes the removal of 96 square feet of existing impervious area and the development of 31,178 square feet of total impervious surface. **What still needs to be addressed:** • The project's stormwater design proposes to direct a significant off- site drainage area into an existing detention basin located on an adjacent neighboring property to the east (93 Warren). The amount of runoff volume for each storm event running through this detention basin is shown to increase significantly in the post development condition. The modeling provided by the applicant is making the case that the detention basin still functions at an acceptable level. The applicant should provide documentation that they have reviewed this updated condition with the neighboring property owner and have received written permission for this change. DPW recommends that a drainage easement be established between the two properties to formally establish drainage rights between the two parcels and to provide documentation that the proposed conditions are acceptable to both parties.	Not Met	Since our intitial submittal, we have conducted an updated survey of the site and found that there were some changes to the contributing watershed boundaries within our stormwater modeling for the project. This change, combined with a larger underground detention/treatment system better controls peak rates of runoff leaving the site in the 2-, 10-, and 25-year storm events, while maintaining existing performance levels in the existing detention pond along the eastern property line. See our updated stormwater management report, HydroCAD calculations, and Pre- and Post-Development Hydrology Maps for more information.
	13.6.2.C.1.c All development shall be designed to minimize total area of impervious surface on the site and both the volume and rate of runoff from the lot. Provisions for stormwater management shall demonstrate the following: c) Any increase in volume or rate of stormwater draining from the lot into the City's storm sewer system can be accommodated in the system without creating downstream problems or exceeding the capacity of the storm sewer system.	The project proposes on site stormwater detention and treatment, including underground detention chambers and a jellyfish filtration system, prior to discharge to city's drainage system in warren avenue. **What still needs to be addressed:** • DPW requests that the applicant revises both proposed storms drain connections into the City's drainage system in Warren Avenue based on the following sketch: • The applicant should provide further justification for the need to connect a 15" storm drain into the City's existing 24" storm drainage system. All of the current runoff draining to the system either flows over land into a street catch basin or through an 8" culvert pipe into the City's drainage system. The modeling calculations suggest that the project is controlling peak flow rates through the on-site detention system for the 2, 10 and 25 Year Storm Events. Please provide further information for review. • The applicant should verify that the radial curb associated with the proposed driveway will not interfere with or negatively impact the City's existing Filterra unit. • The applicant has provided a stormwater credit application, DPW will review and complete a condition of approval for these credits. Credits will be activated as part of the certificate of occupancy process as outlined in the standard stormwater management condition of approval. 	Not Met	1.We have studied Plan and Profile sheets of Warren Ave. provided to us from the City Archives and found that the stormdrain connection layout proposed within our initial submittal is the most realistic connection path to existing stormdrain manholes. There is a large water main pipe between the site and the stormdrain pipe on the south side of Warren Ave. Given the elevation and size of that water main, we do not see a reasonable way to avoid the water main with a new stormdrain pipe. Therefore, we are proposing to connect to the stormdrain system on the north side of Warren Ave. 2.Our proposal for a minimum pipe size of 15" is based on an understanding that smaller pipe sizes can be more difficult to maintain. Based on this review comment, we have maintained an 8" pipe on the outlet of the existing detention pond along the eastern property line. 3.Based on the updated survey and Site Plan, the new curb radii for the proposed entrance ties into the existing granite curb 3.5 feet short of the existing tree box filter. There is not expected impact of that feature. 4.Understood about stormwater credit applications being reviewed and conditional approval

Public Infrastructure and Community Safety Standards (Sec. 13.6.3)

Standard	*How the standard is being met*	*Finding*	*Response Comment*
13.6.3.A.2 The site plan shall include suitable easements, rights, and improvements to connect or continue off-premises public infrastructure as may be required by the review authority.	The applicant has provided a 2018 boundary survey showing existing site conditions. **What still needs to be addressed:** • The applicant shall submit a boundary survey stamped within at least one year of the site plan submittal date, prepared by a professional surveyor licensed in the State of Maine. The survey must be drawn to scale and tied into the State Plane Coordinates, NAD 1983, Maine West Zone, as specified in Section 14 of the Technical Manual.	Not Met	Haley Ward, Inc. conducted a new boundary and existing conditions survey for the site. No significant changes were made to the property boundary lines. The datum for the project has been updated and proper notes have been added to adhere to City standards. Please see the new survey plan within the Civil Plan Set.
13.6.3.B.2 All developments shall be designed to provide adequate emergency vehicle access to the site and comply with the Public Safety standards of the Technical Manual.	Emergency vehicle access is provided from Warren Avenue through the proposed entrance, with adequate space for vehicle turnaround. The project also proposes a 4- inch fire protection service. **What still needs to be addressed:** • The applicant shall install a sprinkler system in the proposed building to ensure fire safety.	More Information Required	The applicant and the project Architect, Onyx Creative, have included a sprinkler system within the building design plans.

Public	**13.6.3.C.1** The development shall not overburden sanitary sewers and storm drains, water lines or supply, or other public infrastructure and utilities. Development shall provide adequate utility infrastructure on-site and in connection to surrounding locations and facilities.	The proposed project is required to comply with section 5.2.4 of city of Portland technical manual. The utility plan shows proposed connections for water service, fire protection service, sanitary sewer, storm drains, and natural gas. Water service will be provided via a proposed 1 ½ inch domestic connected to the existing 18-inch public water main through a wye and tee connection. An underground stormwater management system will handle runoff from the building, parking, and landscaped areas without impacting the city system. **What still needs to be addressed:** • The applicant has provided a wastewater capacity application which is currently under review by DPW. • The applicant shall show proposed pavement repair trenches for utilities on the site plan.	More Information Required	1.Understood 2.The Site Plan has been updated to show the proposed pavement repair trenches for utilities.
	13.6.3.C.2 Electrical service shall be underground unless otherwise specified for industrial uses, or if it is determined to be unfeasible due to extreme cost, the need to retrofit properties not owned by the applicant, or complexity of revising existing overhead facilities.	The utility plan indicates that existing overhead utilities are located within the Warren Avenue right-of-way. however, all proposed electrical and communications services serving the site will be underground and coordinated with existing utilities. **What still needs to be addressed:** • The applicant shall confirm whether existing overhead utility lines will remain in their current location or require relocation as a part of the proposed development.	More Information Required	Existing overehead power and communications conductors will remain as-is. We are proposing underground services to the new building and have moved the building back to establish a 10-foot setback from existing power conductors.
	13.6.3.C.3 All sanitary sewer lines, storm drains, water lines, and other utilities proposed as part of the development shall be designed to conform with the sanitary sewer and storm drain and water supply standards of the Technical Manual.	The proposed development will utilize public utility system on Warren Avenue **What still needs to be addressed:** • The Applicant shall provide Ability to Serve Letter. • The applicant must confirm with Central Maine Power that the distance between the proposed building and existing utility lines is adequate.	Not Met	1.The PWD and Portland DPW are reviewing our request for Ability to Serve letters. We will forward any responses as we receive them. 2.Maine State Statute Title 35-A, Chapter 7-A, Section 754 (2) says that nothing can be constructed or maintained within 10 feet of an Overhead High-Voltage line. Therefore we are maintaining a 10 foot setback, minimum from the existing overhead power lines.
Site Design Standards (Sec. 13.6.4)				
Standard		***How the standard is being met***	***Finding***	***Response Comment***
Snow and Ice Loading	**13.6.4.C** All development shall be designed to prevent significant amounts of accumulated snow and ice from loading or falling onto adjacent properties or public ways.	The proposed building will have a flat roof slope, which will collect most snow and ice on the roof. The applicant has noted that the snow storage area is located outside of the parking and stormwater management area, snow and ice will not be stored on or directed toward adjacent properties or public ways. **What still needs to be addressed:** • The applicant shall indicate the snow storage area on the site plan to comply with this requirement.	Not Met	The designated snow storage area is hatched on the Site Plan, please see Sheet C101.
Exterior Lighting	**13.6.4.F.1.a *Site lighting*** Where light from a proposed development may adversely impact adjacent residential properties, exterior lighting shall employ building-side shielding.	The photometric lighting plan noted that lighting levels are appropriately controlled at the site boundaries, and fixtures are inward toward the site and building. **What still needs to be addressed:** • The applicant shall confirm that all exterior fixtures are full cut-off. • The applicant shall minimize lighting levels along the north side of the property adjacent to residential uses.	More Information Required	1.All lighting fixtures are full cut-off. 2.Light levels have been minimized on the north side of the project. Please see the Lighting Plan within the Civil Plan Set.
	13.6.4.F.3 *Street lighting* All development shall provide municipal street lighting adequate for the safety and comfort of pedestrians, bicyclists, and motorists and, where applicable, conforming to specific lighting district requirements as specified in the street lighting standards of the Technical Manual.	No new municipal street lights are proposed as part of this project. The site frontage is currently served by existing municipal street lighting along Warren Avenue. **What still needs to be addressed:** • The applicant shall confirm that the presence of an overhead right- of-way does not affect street- lighting coverage or require additional municipal street lighting improvements. • The applicant shall provide information as to how the project will comply with the City's Street lighting standards, as specified in Section 8.2 of the Technical Manual.	More Information required	Existing streetlights were reviewed for inclusion in the photometric plan; however, fixture data is unavailable as the original manufacturer is no longer in business. Coordination with City staffmember Matthew Grooms confirmed this is a known issue and that Warren Avenue has adequate existing lighting, see conversations included by Matt Grooms. The locations of existing streetlights to remain are shown on the Lighting plan, Sheet C105.

SECTION 2 – PROJECT SUMMARY

1.1 Project Description

The Applicant is proposing to develop a 4-story self-storage-unit building to be supported by a new 11-space parking lot and central loading area at 97 Warren Avenue, Portland, Maine. The site is located within the City's B-4 Zoning District and is described as Parcel 295/F001001 on the City of Portland's Parcel and Tax Map Viewer.

The project site is approximately 1.32 acres in size, currently forested and undeveloped, and located within the Capisic Brook Urban Impaired Stream Watershed. A natural resources review of the site did not identify any existing wetlands or other protected natural resources. The land slopes generally north to south (toward Warren Ave.) at an average grade of 5 percent. There is a relative low point in the southeast corner of the site, at the down-gradient end of an existing stormwater impoundment feature. There is access to existing water, sewer, stormdrain, natural gas, power, and communications utility systems within and along Warren Avenue.

The proposed building will have a footprint of approximately 22,000 square feet (s.f.), that will be duplicated on each of the 4 stories, generating a building height of approximately 50 feet. One hundred percent of the building façade will front on Warren Avenue, and will be setback approximately 7 feet from the front property line. The site is to be accessed by a new entrance/exit that will provide access to the proposed central loading area, 11 new parking spaces, and an enclosed dumpster pad. A paved sidewalk is proposed to be constructed, within Warren Avenue's right-of-way, along the site's 314 feet of street frontage. Stormwater runoff from the proposed building, parking areas, walkways, and landscaped areas will be collected, detained and treated by a proprietary underground stormwater management system, prior to its controlled release to the City's stormdrain system.

A new retaining wall is to be constructed along the northerly edge of the parking area and extend to the back corner of the new building. The retaining wall allows the building's finish floor elevation to be in concert with surrounding buildings and Warren Avenue, while allowing for the preservation of several mature trees along the northern

property line. This is important to the applicant, as there is a residential zoning district to the north of a vacated paper street, which abuts a portion of the site's northern property line, and they would like to minimize the potential negative visual impacts of the project from nearby residential lots.

Other existing conditions within the site's neighborhood include an existing building supporting industrial/business uses adjacent to the eastern property line, Warren Avenue's intersection with Bishop Street Extension directly across the street and several other industrial/business uses along either side of Warren Ave.

Recently, the City of Portland approached the applicant to request inclusion of a future access, construction, and maintenance easement within the southwest corner of the site. This easement could allow connection of a bike/ped style pathway to cross the site and connect to the City's sidewalk along Warren Avenue. The applicant had us add a general area to the Site Plan so that the actual definition of the easement can be finalized by the City as a condition of final approval. It is the applicant's understanding that there will be no additional costs to be borne by the applicant related to the establishment of the final easement, nor the construction of any portion of the pathway.

SECTION 3 – PERMITTING AND ZONING ASSESSMENT

This application is for a Major Site Plan due to the applicant's proposal to construct a new building that is greater than 10,000 s.f. in building footprint area. The proposed work will meet the Site Plan and Zoning requirements for a project located with the City of Portland's B-4 Commercial Corridor Zone, as outlined within the City's Land Use Code.

2.1 Dimensional Requirements

The site meets the dimensional requirements of the B-4 zone as described below:

Setbacks

Since a portion of the site's northern property boundary abuts a residential property, within a residential zone, the applicant is not developing or disturbing land within a minimum of 20 feet of that abutting property. There are no side setbacks defined for portions of the property that are not directly abutting a residential zone.

Build-to Zone and Percentage

The build-to zone within B-4 is 0 to 20 feet from Warren Ave. The proposed building is to be situated 7 feet from the front property line. The minimum build-to percentage is 50 percent and 100 percent of the proposed building's front length

will be adjacent to the front property line.

Blank Wall Area
In the B-4 zone, the maximum blank wall area is 40 feet, meaning no section of the contiguous building façade without fenestration, doors, change in wall plane, or other architectural embellishment will be greater than 40 feet. The proposed building design meets this requirement.

Building Height
The maximum building height within the B-4 zone is 65 feet. The proposed building height is approximately 50 feet.

2.2 Off-Street Parking
The proposed number of vehicle parking spaces for this project is 11, which is less than the 26 maximum spaces allowed. (The maximum number of vehicle parking spaces for self-storage facilities is 1 space per 25 storage units. With a total of 633 storage units proposed, the maximum number of parking spaces allowed is 26 spaces. There is no defined minimum number of bicycle spaces for self-storage facilities.

2.3 Off-Street Loading
Off-street loading for retail use of under 100,000 s.f. is one (1) loading bay or berth. The applicant is offering a single, central loading area to meet this requirement. Ample maneuvering area is available for vehicles to turn around and approach the loading area appropriately.

2.4 Signage
Signage will comply with the requirements of the Land Use Code. See Architectural Plans for more information.

2.5 Waiver Requests
There are no waivers being requested at this time.

2.6 Evidence of State and/or Federal Permits
To the best of our knowledge, the project does not trigger any permitting thresholds related to State or Federal Land Use Development Permits.

2.7 Evidence of Financial Capacity
The applicant has provided a letter from Dacotah Bank stating they are in good standing and adequate financial credit availability for the project.

2.8 Evidence of Right, Title, and Interest

A copy of the P&S Agreement for the project site is attached.

2.9 Evidence of Technical Capability

This project is being developed by an Applicant (Peachtree Acquisitions, LLC and Engelsma Construction, Inc.) and Architectural (Onyx Creative) Team with experience in designing, permitting, and constructing self-storage facilities and other large retail buildings in a variety of locations across the United States. Haley Ward, Inc. joins the team with over 40 years of experience in designing and permitting a wide variety of land development projects in Maine. Information regarding technical capabilities is attached.

SECTION 4 – SITE PLAN STANDARDS ASSESSMENT

The narratives provided below describe how the proposed development adheres to the Site Plan Review Standards listed in Section 14.6 of the Land Use Code. The ordinance standard has been provided in bold, with the project conformance statement below

3.1 (14.6) SITE PLAN REVIEW STANDARDS

14.6.1 Transportation standards

A. Impact on surrounding street systems.

Based on the findings from a trip generation analysis performed using *ITE TripGen, 11th Edition* software, the proposed development provisions for vehicular loading and unloading, parking, vehicular and pedestrian circulation will not create any significant traffic hazard to safety on the surrounding street network.

B. Access and circulation

1. **In general**
   a. **All development subject to this article shall provide safe and reasonable access and internal circulation for all users of the site and shall comply with the transportation systems and street design standards of the Technical Manual.**

   The proposed single entrance access to the site and internal parking lot circulation systems are in compliance with the Technical Manual. Parking lot area has been designed to accommodate loading and emergency vehicle access.

   b. **Continuous internal walkways shall be provided between existing or planned public sidewalks adjacent to the site, transit stops and street crossings and building entrances on the site.**

A paved sidewalk will be extended along the site's frontage, within Warren Avenue right-of-way and a walkway to the new building and parking area is shown to connect to the Warren Ave. sidewalk.

c. **Points of access and egress shall be located to avoid conflicts with turning movements and traffic flows. The site must have stacking capacity for vehicles waiting to use these service features without impeding onsite vehicular circulation or creating hazards to vehicular circulation on adjoining streets.**

The proposed entrance is located across from the Bishop Street Extension intersection and although stacking of vehicles is expected to be very rare, there is ample room for vehicles to temporarily stack within the parking lot, outside of Warren Ave.

2. **Loading and servicing. All developments served by delivery or other service vehicles shall provide access that permits safe turning and backing for all vehicles that would service the development. Loading and servicing access shall not impede vehicle circulation, bicycle or pedestrian movements, or parking.**

The proposed development is commercial in use and has a central loading area/ entrance and vehicle circulation will not be impeded because circulation has been accounted for in the parking lot layout design for safe loading

3. **Curb and sidewalks**
   a. **All development shall provide curb and sidewalks along all frontages, installed to specifications as described in the transportation systems and street design standards of the Technical Manual.**
   b. **Where sidewalks already exist but are in substandard condition, they shall be repaired or replaced in conformance with Chapter 25 of the City of Portland Code of Ordinances and the transportation systems and street design standards of the Technical Manual**
   c. **An applicant may request a waiver from sidewalk installation requirements if they meet two or more applicable waiver criteria as listed below:**
   d. **An applicant may request a waiver from curb installation requirements if they meet two or more applicable waiver criteria as listed below:**

This development has an existing small piece of paved sidewalk on the front of the property. The sidewalk will be reconstructed and extended across the site's full street frontage, meeting applicable standards for curbs and sidewalks. No waivers

are being requested.

B. Public transit access

1. **All residential development consisting of 20 or more dwelling units and all commercial and institutional developments of at least 20,000 square feet gross floor area shall provide a transit shelter adjacent to or within the public right-of-way along its frontage when the following criteria are met:**
   a. **The development is proposed along an existing public transit route on a principal or minor arterial roadway, as shown in the Federal Street Classification Map.**
   b. **The nearest existing transit shelter on the route is more than ¼ mile from the site, measured along rights-of-way.**
2. **Transit facilities shall be connected to the public sidewalk system.**
3. **All or some of this standard may be waived if the review authority determines one or more of the following:**
   a. **That some or all of the required improvements cannot reasonably be made due to site constraints and/or insufficient right of way width.**
   b. **That the development is not anticipated to generate public transit usage due to particular characteristics of the development or proposed use.**

The applicant has added an area to the southwest corner of the property (Shown on the Site Plan) that is available to the City to finalize an access, construction, and maintenance easement. The City has requested this action in support of a future bike/ped pathway connection to Warren Ave. This easement is to be finalized by the City as a Conditions of Final Approval for this project.

C. Parking

1. **Vehicular parking**
   a. **All developments shall provide offstreet parking in accordance with the parking requirements of this Land Use Code.**
   b. **Where a parking study is required, the City encourages Transportation Demand Management (TDM) strategies to be employed.**
   c. **Developments proposing to exceed minimum parking requirements by 10% or more must demonstrate through a parking study that the amount of parking is appropriate for the proposed use of the site.**
   d. **Parking spaces and aisles shall meet applicable dimensional standards as detailed in the transportation systems and street design standards of the Technical Manual.**

2. **Bicycle parking**
   a. **All development shall provide secure bicycle parking in accordance with the parking requirements of this Land Use Code and the transportation systems and street design standards of the Technical Manual.**
   b. **Waiver: The review 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 particular site characteristics or proposed uses.**
3. **Snow storage**
   a. **All developments shall include areas for snow storage or provide an acceptable snow removal plan.**
   b. **Snow storage areas may not encroach on areas designed to meet minimum parking requirements or on pedestrian walkways and shall not be located where they would adversely impact the functionality of stormwater management systems. Landscaping in designated snow storage areas shall be such that it can withstand the snow pile.**
4. **Electric Vehicle (EV) charging**
   a. **All development shall adhere to applicable EV standards as provided in Section 1 of the Technical Manual.**

This is a proposed commercial development with off-street parking that would be limited to 1 space per 25 storage units and consisting only of 11 parking spaces. No bicycle parking is required. Snow storage area is outside of the parking/ stormwater areas. EV parking standards are being met.

D. Transportation Demand Management (TDM)

1. **The following types of development shall design and implement a Transportation Demand Management (TDM) plan:**
   a. **All major site plan triggering development in the B-7 zone.**
   b. **All commercial, institutional, or mixed-use developments of 50,000 square feet or more total floor area.**
   c. **All commercial or institutional uses designed to accommodate 100 or more employees or, for educational institutions, 100 or more students.**
2. **The TDM Plan shall comply with the transportation systems and street design standards of the Technical Manual.**

The building area is around 22,000 square feet, is in B-4 zone and does not meet the applicability criteria for needing a TDM plan therefore this standard is not

applicable.

14.6.2 Environmental quality standards

A. Preservation of significant natural features

1. All developments shall preserve and protect significant natural features by incorporating them into site design. Significant natural features shall be defined as:

a. Populations of trees and plants listed on the Official List of Endangered and Threatened Plants in Maine, published by the Maine Natural Areas Program.

b. Habitat for species appearing on the official state or federal list of endangered or threatened animal species.

c. High and moderate value waterfowl and wading bird habitat including nesting and feeding areas, as defined by the Department of Inland Fisheries and Wildlife.

d. Aquifers on islands in Casco Bay, as identified in the City of Portland Island Groundwater Management Study and/or by the Maine Geological Survey.

e. Waterbodies including wetlands, watercourses, significant vernal pools and floodplains.

Haley Ward, Inc. conducted an on-site natural resources survey on October 10, 2025 and there was no indication of protected resources (wetlands, streams, vernal pools, etc.) hence this development does not meet the applicability criteria for needing preservation of significant natural features

2. Where areas set aside for preservation are part of a larger existing habitat block extending beyond the boundaries of the site, the contiguity of these features shall be preserved where possible.

This is not applicable.

3. Waiver: Where complete preservation of significant natural features substantially compromises development of the site as otherwise permitted by zoning, the review authority may reduce the requirement to accommodate development provided that the applicant demonstrates compliance with applicable state and federal regulations and implements preservation measures to the extent practicable.

This is not applicable.

B. Landscape preservation

1. **Site development shall be designed to incorporate, limit disturbance to, and limit removal of existing trees.**
2. **The site plan shall include adequate measures to protect vegetation to be preserved from construction impacts, in accordance with the landscaping and landscape preservation standards of the Technical Manual.**
3. **All development subject to zoning setbacks shall preserve a minimum of 30% of existing trees 10 inches DBH or greater within the required setback area unless trees are non-native invasive species, as identified in the landscaping and landscape preservation standards of the Technical Manual, or are deemed unsalvageable by the Portland City Arborist or their designee.**
4. **Waiver: Where the applicant can demonstrate that preservation of existing vegetation would compromise development of the site, the review authority may permit the substitution of landscaping in other areas of the site as described in Table 14-D and/or a financial contribution to the City of Portland Tree Fund for an amount proportionate to the cost of trees removed. Replacement trees shall be of a species identified on the City of Portland Recommended Tree List as described in the landscaping and landscape preservation standards of the Technical Manual.**
5. **Where the planting of replacement trees on the site is not feasible, the applicant shall contribute an amount proportionate to the cost of required replacement trees to the City of Portland Tree Fund, as described in the Landscaping and landscape preservation standards of the Technical Manual.**

   82 percent of existing trees with a 16-inch DBH or greater are being preserved within the rear setback for this project.

C. Site landscaping and buffers

1. **Landscaping. All development subject to required zoning setbacks shall include a minimum of one shade tree or six plantings per 30 linear feet of all frontages as measured along the property line. A planting shall be defined as one shrub, one ornamental grass, and/or three perennials. Required plantings may be installed anywhere on the site, including a**

green roof, if proposed, and may be planted in any arrangement. Existing vegetation to be preserved on the site may be counted towards this requirement as described in the landscaping and landscape trees preservation standards of the Technical Manual.

A Preliminary Landscaping Plan has been provided with the Plans folder for this development and is included within the drawing set. A combination of existing, large trees and the planting of new trees along the site's Warren Ave. frontage meets this requirement.

2. **Buffers**
   a. **Loading and servicing areas, trash and recycling areas, storage areas, and roof- and ground-mounted utility structures, except for renewable energy systems, shall be screened from view from public sidewalks, streets and adjacent properties by dense evergreen landscaping, fencing, architectural screening products, masonry walls, building walls, or a combination thereof.**
   b. **For nonresidential development abutting a residential zone, an evergreen, densely landscaped buffer of not less than 10 feet wide and six feet tall is required along the side abutting the residential zone. Where site constraints prevent such a buffer from being established, the width of the landscaped buffer may be reduced but shall include architectural fencing of not less than six feet tall and a mix of evergreen and deciduous trees spaced no further than 20 feet apart abutting the residential zone.**
   c. **All residential development shall provide and/or preserve evergreen vegetated buffers where necessary to buffer the development from detrimental impacts of existing surrounding development.**

      82 percent (19 trees) of the existing trees with a 16-inch DBH are being preserved along the rear property boundary. This is expected to provide visual buffering of the project from existing residential structures located northerly of the project site. There is at least 20 feet of existing forested land within a previously abandoned paper street between the project site and neighboring residential lots. This area provides additional visual buffering.

3. **Parking and vehicle display lot landscaping**

a. **Developments shall include at least two trees (or one tree and three shrubs) per five parking spaces planted in landscaped islands to screen, shade, and break up parking. Trees and shrubs in parking lots may be in informal groups, straight rows, or concentrated in clusters as described in the landscaping and landscape preservation standards of the Technical Manual.**
b. **Landscaped islands shall be distributed so that uninterrupted pavement does not exceed forty parking spaces.**
c. **Where site constraints prevent implementation of all or a portion of required parking lot landscaping, as determined by the review authority, the requirements may be all or partially waived, and the applicant shall contribute an amount proportionate to the cost of required parking lot trees to the City of Portland Tree Fund.**

   Due to the limited size of the proposed parking lot, this standard is not applicable.

4. **Street trees**
   a. **All development shall include street trees in numbers and locations as specified in the Landscaping and landscape preservation standards of the Technical Manual. Street trees are intended to benefit public spaces by providing green and natural elements that contribute to the streetscape and the urban forest ecosystem, provide health benefits, and increase the tree canopy to maximize shade and reduce energy use. Street trees shall be of a species identified on the City of Portland Recommended Tree List, unless otherwise approved by the City Arborist or his/her designee. The provision of measures to enhance tree survival (such as raised planters, irrigation, and structural soils as recommended by the City Arborist) shall be required.**
   b. **Where the applicant can demonstrate that site constraints prevent the planting of required street trees in the city right-of-way, the review authority may permit the following to be counted towards the street tree requirement, subject to the standards set out in the Technical Manual:**
      1. **The preservation of existing healthy trees that are six inches or more DBH on the site within twenty feet of the property line, and visible from the right-of-way.**
      2. **The planting of street trees on the site within 20 feet of the property line where visible from the right-of-way.**

3. **The installation of other planted features in the right-of-way or within 10 feet of the right-of-way and visible from the right-of-way, which are documented to the satisfaction of the City Arborist and Planning Authority to meet the objectives of the street tree requirement.**
4. **The planting of new street trees on public land or public facilities in the neighborhood where a reasonable chance of good health and longevity is documented.**
5. **Where other alternatives are not feasible, a contribution for each required street tree made to the City of Portland's Tree Fund. The contribution would primarily be for new trees in the neighborhood of the development but would include an element of maintenance.**
6. **Where the proposed development includes the removal of an existing street tree determined by the City Arborist to be a heritage or feature tree, the applicant shall be required to contribute to the Tree Fund at the designated rate in the Technical Manual so that the total replacement cost is significantly higher than planting a new street tree/contributing for a new street tree.**

Refer to the Preliminary Landscaping Plan for the location of existing to remain and proposed vegetation. Street trees and other proposed vegetation are illustrated to show compliance with this standard.

D. Water quality, stormwater management, and erosion control

1. **All development shall be designed to minimize total area of impervious surface on the site and both the volume and rate of runoff from the lot. Provisions for stormwater management shall demonstrate the following:**
    a. **Any stormwater draining onto or across the lot in its pre-improvement state will not be impeded or redirected so as to create ponding on, or flooding of, adjacent lots.**
    b. **Any increase in volume or rate of stormwater draining from the lot onto an adjacent lot or City property following the improvement can be handled on the adjacent lot or City property without creating ponding, flooding or other drainage problems and that the owner of the lot being improved has the legal right to increase the flow of stormwater onto the adjacent lot or City property.**
    c. **Any increase in volume or rate of stormwater draining from the lot into the City's separated storm sewer system can be**

accommodated in the system without creating downstream problems or exceeding the capacity of the storm sewer system.

2. **All development shall comply with the Stormwater management standards of the Technical Manual.**
3. **Development shall not pose a risk of groundwater contamination either during or post-construction, as described in the stormwater management and water supply standards of the Technical Manual.**

The project has been designed to meet the City's standards for Stormwater management, water quality and erosion and sedimentation control. A Stormwater Management Report and Erosion Control Plan with Housekeeping and Maintenance Plans have been prepared for this development and are attached within the Documents folder.

No groundwater use or extraction is proposed for this development. There will be no storage of hazardous materials that would necessitate a spill prevention plan.

14.6.3 Public infrastructure and community safety standards

A. Consistency with City master plans

1. **All developments shall be designed so as to be consistent with City Council-approved master plans and facilities plans and with off-premises infrastructure.**
2. **The site plan shall include suitable easements, rights, and improvements to connect or continue off-premises public infrastructure as may be required by the review authority.**

This use is consistent with the Warren Avenue Mixed Use Zoning and master plans.

B. Public safety and fire prevention

1. **All development shall incorporate the following public safety principles for Crime Prevention through Environmental Design (CPTED) into site design to enhance the security of public and private spaces and to reduce the potential for crime:**
    a. **Natural surveillance that promotes visibility of public spaces and areas.**
    b. **Access control that promotes authorized and/or appropriate access to the site.**

c. **Territorial reinforcement that promotes a sense of ownership and responsibility through environmental design.**

2. **All developments shall be designed to provide adequate emergency vehicle access to the site and comply with the Public Safety standards of the Technical Manual.**

Emergency vehicles can enter the site through the proposed entrance and will have adequate space to turn around. The proposed building will also be adjacent to Warren Avenue and its associated sidewalk, so access to the building is readily available from Warren Ave.

C. Public utilities

1. **The development shall not overburden sanitary sewers and storm drains, water lines or supply, or other public infrastructure and utilities. Development shall provide adequate utility infrastructure on-site and in connection to surrounding locations and facilities.**
2. **Electrical service shall be underground unless otherwise specified for industrial uses, or if it is determined to be unfeasible due to extreme cost, the need to retrofit properties not owned by the applicant or complexity of revising existing overhead facilities.**
3. **All sanitary sewer lines, storm drains, water lines, and other utilities proposed as part of the development shall be designed to conform with the sanitary sewer and storm drain and water supply standards of the Technical Manual.**
4. **All development within 200 feet of a public sanitary collection and treatment system shall connect sanitary sewer lines into the nearest available public sewer. If a public sanitary collection and treatment system is not available, a private wastewater system may be used according to the requirements of Chapter 24 of the City Code and the sanitary sewer and storm drain standards of the Technical Manual.**
5. **All residential development of 20 units or more, commercial development, and industrial development shall provide for the temporary storage and timely removal of all trash and recyclable materials including, at a minimum, paper, corrugated cardboard, plastics, and metals. Storage containers for recyclable materials shall be separated from trash containers. All exterior storage of trash and recyclables shall be screened from view from public sidewalks, streets, and adjacent properties.**

The development will utilize public utility systems on Warren Avenue. Submittals to applicable utility districts and City Departments are being

made concurrently with the initial submittal of this application. Ability to Serve letters will be attached to the Site Plan Application as those letters are finalized.

14.6.4 Site design standards

A. Massing, ventilation, and wind Impact

1. **The bulk, location, or height of proposed buildings and structures shall not result in health or safety problems from a reduction in ventilation to abutting structures or changes to the existing wind climate that would result in unsafe wind conditions for users of the site and/or adjacent public spaces.**
2. **The bulk, location, or height of proposed buildings and structure shall minimize, to the extent feasible, any substantial diminution in the value or utility to neighboring structures under different ownership and not subject to a legal servitude in favor of the site being developed.**
3. **Development shall locate all HVAC venting mechanisms to direct exhaust away from public spaces and residential properties directly adjacent to the site.**

The building will be set into the existing landscape with a retaining wall at the rear to minimize the height of the structure. The overall height and mass of the building are not large enough or close enough to adjacent structures to result in health and safety problems resulting from a reduction in ventilation or unsafe wind conditions. Additionally, if any venting is required, it would likely fall on the east side of the building or on the roof, aimed away from the adjacent residential properties, the parking area, and the street. Finally, the roof of the building will have a white TPO membrane, which typically surpasses the minimum SRI requirements in the Portland Site Design standards.

B. Shadow. All development outside the B-3, B-5, B-6 and B-7 zones shall be designed to avoid and/or mitigate the adverse impacts of shadows cast by new structures or building additions from falling on publicly accessible open space in accordance with the shadow standards of the Technical Manual.

The building is only 50 feet tall; this standard is not applicable.

C. Snow and ice loading. All development shall be designed to prevent significant amounts of accumulated snow and ice from loading or falling onto adjacent properties or public ways.

The building will have a flat roof slope which will collect most of the snow and ice and there is also a snow storage allocation area on the proposed site plan, therefore snow and ice will not be stored or created on adjacent properties or public ways.

D. View corridors. The massing, location, and height of development shall not substantially obstruct public view corridors identified in the Downtown Vision View Corridor Protection Plan.

This project site is not included in the Downtown Vision View Corridor Protection Plan; therefore this standard is not applicable.

E. Historic resources

1. When developments affect designated landmarks or lie within designated historic districts or historic landscape districts, such development shall be required to obtain a Certificate of Appropriateness under Article 17….

This is not applicable for this development because the property is not within or adjacent to any historic districts or historic landmark districts.

F. Exterior lighting

1. Site lighting

a. All exterior site lighting shall be full cutoff with no light emitted above the horizontal plane or spilled onto adjacent properties and streets. Illumination levels shall be adequate but not excessive for the safety, comfort, and convenience of occupants and users of the site, and shall conform to the lighting standards of the Technical Manual.

b. Where light from a proposed development may adversely impact adjacent residential properties, exterior lighting shall employ house-side shielding.

2. Architectural and specialty lighting.

a. Architectural and specialty lighting of such features as architectural details, monuments, public art, or other site features shall be designed to illuminate specific details or attributes only and shall meet the lighting standards of the Technical Manual.

b. Up-lighting by any method is prohibited except for public buildings and parklands; clock towers and steeples; landscape features; designated historic landmarks; flags of state, federal, or national

jurisdictions; and public art. Such light fixtures, brackets, conduits, and all other components shall be designed by a lighting professional and shall be scaled and placed to minimize their visibility and installed in accordance with the lighting standards of the Technical Manual.

3. **Street lighting. All development shall provide municipal street lighting adequate for the safety and comfort of pedestrians and motorists and, where applicable, conforming to specific lighting district requirements as specified in the street lighting standards of the Technical Manual.**

   A photometric lighting plan has been prepared for this development and has been included in the drawing set.

G. **Noise and vibration. All heating, ventilation and air conditioning equipment (HVAC), air handling units (AHU), emergency generators, and similar equipment shall meet applicable state and federal emissions requirements and shall be located to the interior of the site, away from abutting residential properties**

No significant noise or vibration impacts are anticipated. All condensing units will be installed on the roof with a bias towards the center to keep noise from bleeding onto adjacent properties. Specifications for HVAC equipment will be submitted as those items are finalized as part of the building design.

H. **Signage and wayfinding**

1. **The size, scale, proportions, design, materials, placement, and source and intensity of illumination of all permanent building or freestanding signs shall be designed to complement the subject building and its immediate context, as follows:**
   a. **Signage shall not conceal architectural features such as window sills, lintels or cornices from view.**
   b. **Signs shall be designed and sized to fit the scale and proportions of the building and the feature or area of the building to which it is affixed.**
   c. **Freestanding signs shall not adversely affect visibility at intersections or access drives.**
   d. **Sign lighting shall be downwardly directed, internally-illuminated and/or shielded to avoid glare and light spillover towards the sky.**
   e. **Signs shall not be affixed to rooftop mechanicals, mechanical penthouses or other rooftop appurtenances unless those**

appurtenances have been screened and integrated into the architecture of the development.

2. **On-site directional traffic signage may be provided to enable users to safely and easily navigate into, around and out of the site. Directional signage shall not adversely affect visibility at intersections on or off the site.**

Final signage location and design will be finalized by tenant. Maximum allowable signage areas with anticipated locations are indicated on preliminary architectural elevations.

I. **Design standards**

1. **Development of certain types and/or proposed in certain zones, as specified below, are subject to the design standards of the City of Portland Design Manual in order to ensure that building and site design contribute to and enhance the goals and policies for specific zones within the City. The City of Portland design standards are listed in the City of Portland Design Manual, which is incorporated by reference as part of the City of Portland Land Use Code…..**

This project is within the B-4 zone and no other zone or districts; therefore, this standard is not applicable.

3.2 Construction Management Plan

A draft Construction Management Plan (Plan) is attached under the Documents folder of this application. No contractor(s) have been selected for this project yet, so modifications to the Plan may be required, prior to the start of construction.

3.3 Summary of Existing and/or Proposed Easements or Covenants

There is an existing drainage easement located along the eastern property boundary supporting an existing stormwater runoff impoundment area. The easement was granted from the project property to the abutting property to the east. The applicant has the right to continue the use of the detention pond and is not proposing to lessen the storage volume or capacity of the pond or it's outlet control structure with this development; therefore, the project complies with the drainage easement that runs with the abutting property.

CITY OF PORTLAND
Planning & Urban Development Department

MAJOR SITE PLAN
GENERAL DOCUMENT AND DRAWINGS CHECKLIST
Please submit each document as a separate PDF file.
Please confirm by electronically checking the boxes in the left-hand column.

**** PLEASE FILL OUT AND UPLOAD THE ZONING ASSESSMENT TABLE AND WAIVER TABLE SEPARATELY AS NOTED BELOW ****

At the time of application submission, please contact the Department of Public Works regarding E-911 addressing for your project.

GENERAL APPLICATION DOCUMENTS	
Yes NA	**Project Description** ● Cover letter with detailed project description
Yes NA	**Completed Checklist** (this document)
Yes NA	**Evidence of Right, Title, and Interest** ● Deeds, leases, or purchase and sales agreements
Yes NA	**Evidence of State or Federal Approvals** ● Permits or letters of non-jurisdiction, if applicable
Yes NA	**Zoning Assessment** (see Zoning Assessment Table) Summary of compliance with use and dimensional standards of the land use code
Yes NA	**Site Plan Standards Assessment** (see Section 14.6 of the land use code) • Summary of project compliance with site plan standards of the land use code
Yes NA	**Summary of Existing and/or Proposed Easements or Covenants, applicable.** ● Evidence of existing easements and any proposed easements, covenants, public or private rights-of-way
Yes NA	**Waiver Requests** (see Waiver Table) ● Written request for waiver describing request and compliance with applicable waiver standards
Yes NA	**Financial Capability** ● Letter or evidence from a financial institution or third party verifying financial capacity to undertake project
Yes NA	**Technical Capability** ● Evidence of technical capability of applicant and consultants – resumes and/or examples of past projects

MAJOR SITE PLAN
STANDARDS AND SUBMISSION CHECKLIST

Provide assessment of compliance with standards and include supplemental documentation, as applicable.
Please submit each document as a separate PDF file.

TRANSPORTATION	
Yes **NA**	**Impact on Surrounding Street Systems (14-14.6.1(A))** ● Describe incremental volume of traffic impacts and mitigation measures. If needed
Yes **NA**	**Access and Circulation (14-14.6.1(B))** Identify and describe the following: ● Site access and internal circulation, including ADA access ● Drive-up features, if applicable ● Loading and servicing needs, routes, and geometry, providing turning templates for delivery vehicles, if applicable ● Sidewalks and condition along street frontages and internal walkways ● Engineered details for ADA ramps and public sidewalks, meeting sidewalk material policy and construction requirements (Technical Manual, Section 1)
Yes **NA**	**Public Transit (14-14.6.1(C)), if applicable** Identify and describe the following: ● Existing available transit service and proposed transit improvements, including design details, such as easement, pad base, and shelter
Yes **NA**	**Off-Street Parking (14-14.6.1(D)), if applicable** Identify and describe the following: ● Proposed vehicular and bicycle parking supply (including ADA-compliant parking) in relation to applicable parking requirements in Article 19 of the land use code ● Curb cut separation and parking layout (Technical Manual, Section 1) ● Construction details for bicycle racks ● Management plan for snow storage and removal
Yes **NA**	**Transportation Demand Management (TDM) (14-14.6.1(E)), if applicable** ● Provide TDM plan drafted in accordance with Technical Manual Section 1 requirements

ENVIRONMENTAL	
Yes **NA**	**Preservation of Significant Natural Features (14-14.6.2(A)), if applicable** Identify and describe the following: ● High and moderate value waterfowl and wading habitat ● Aquifers (for Casco Bay Islands) ● Waterbodies (including wetlands, watercourses, significant vernal pools and floodplains) ● Proposed preservation areas and protection measures ● Documentation from environmental compliance consultants and determinations from applicable state and federal agencies
Yes **NA**	**Landscape Preservation (14-14.6.2(B))** Identify and describe the following: ● Measures to preserve trees, including within required zoning setbacks (Technical Manual, Section 4) ● Measures to protect existing vegetation during construction
Yes **NA**	**Site Landscaping and Buffers (14-14.6.2(C))** Identify and describe the following: ● Overall landscaping approach and consistency with standards ● The use of screening and buffering of service areas and between non-residential and residential uses ● Existing Heritage or Feature Trees on site and measures to preserve ● Compliance with street tree requirements
Yes **NA**	**Water Quality, Stormwater Management, and Erosion Control (14-14.6.2(D))** Identify and describe the following: ● Erosion and sedimentation control plan and measures ● Evidence of compliance with Urban Impaired Stream Standards pursuant to DEP Chapter 500 stormwater law, as applicable ● Subsurface sanitary sewage disposal and groundwater protection measures

PUBLIC INFRASTRUCTURE AND COMMUNITY SAFETY	
Yes **NA**	**Consistency with City Master Plans (14-14.6.3(A))** ● Describe proposed easements, rights and improvements to connect or continue off-premises public infrastructure, as applicable
Yes **NA**	**Public Safety and Fire Prevention (14-14.6.3(B))** Identify and describe the following: ● Compliance with Crime Prevention through Environmental Design (CPTED) requirements (Technical Manual, Section 3) ● Emergency vehicle access ● Consistency with public safety standards (Technical Manual, Section 3)
Yes **NA**	**Availability and Adequacy of Public Utilities (14-14.6.3(C)) (Technical Manual, Sections 2 & 9)** Identify and describe the following: ● Electrical services, including providing underground services ● Existing and proposed connections for public utilities and required public utility upgrades ● Sewer line connections
SITE DESIGN	
Yes **NA**	**Massing, Ventilations and Wind Impact (14-14.6.4(A))** Identify and describe the following: ● Wind and ventilation impacts on adjoining structures and/or adjacent public spaces, including wind study, if applicable ● Bulk, location, or height impacts on adjoining structures
Yes **NA**	**Shadows (14-14.6.4(B)), if applicable** ● Provide shadow analysis of impacts on publicly accessible open space (Technical Manual, Section 11)
Yes **NA**	**Snow and Ice Loading (14-14.6.4(C))** ● Describe building design measures to prevent snow and ice from loading or falling onto adjacent properties or public ways
Yes **NA**	**View Corridors (14-14.6.4(D)), if applicable** ● Describe any protection of designated view corridors (Portland Design Manual, Appendix. 1)
Yes **NA**	**Historic Resources (14-14.6.4(E)), if applicable** Identify and describe the following: ● The site's status as a designated landmark, within a historic district or historic landscape district, or within 100 feet of any designated landmark, historic district, or historic landscape district ● Compliance with standards for preservation and documentation of archaeological resources

Yes **NA**	**Exterior Lighting (14-14.6.4(F))** ● Describe how the proposed site lighting will adhere to photometrics requirements as it relates to light trespass and full cutoff fixture design, pursuant to Technical Manual Section 12
Yes **NA**	**Noise and Vibration (14-14.6.4(G))** ● Provide data on noise levels for HVAC and other mechanical equipment, such as design specifications, to demonstrate consistency with state and federal noise emissions requirements as well as City code
Yes **NA**	**Signage and Wayfinding (14-14.6.4(H)), if applicable** ● Provide signage plan showing the location, dimensions, height and setback of all existing and proposed signs ● Provide drawings of all commercial and directional signage on site
Yes **NA**	**Zone-Related Design Standards (14-14.6.4(I))** ● Address any applicable design review standards by zone, including compliance with Design Manual

MAJOR SITE PLAN
DRAWINGS CHECKLIST

Please upload the following DRAWINGS with the listed details into e-Plan as separate pdfs.

All drawings must be submitted in a 24 x 36 sheet size.

BOUNDARY SURVEY (stamped by a Maine Licensed Surveyor and drawn as per Technical Manual Sec. 13)

SITE PLAN(s) (stamped by a Maine Licensed Professional Engineer) including:

All sheets – Include a title block with project title and the following information:

- Project street address
- Name and address of property owner & applicant
- Licensed design professional, incl firm that produced plans
- North arrow
- Date of preparation and revision history block
- Tax parcel (chart, block, and lot) number

Existing Conditions Plan with the following:

- Existing structures, with distance from primary building façade(s) to the property line
- Approximate location of structures on abutting properties
- All streets and intersections adjacent to the site
- Existing driveways, pedestrian ways, and bicycle infrastructure, including dimensions and materials
- Existing public transit infrastructure
- Existing vehicle & bicycle parking areas
- Existing utilities on site and within adjacent rights-of-way
- Existing grades (two-foot contours preferred)
- Location of water courses, wetlands, and vegetation, or other significant natural features
- Existing soil conditions and location of test pits and borings
- Zoning boundary lines, including overlays
- Location of all existing easements and rights-of-way

Proposed Site Plan with the following:

- Proposed structures, including distance from primary building façade(s) to property lines
- Ground floor area, and finished floor elevations for all buildings
- Any proposed geometric modifications to streets and intersections adjacent to site
- Location, dimensions and materials of all proposed driveways, vehicle, bicycle, & pedestrian access ways with corresponding curb lines
- Engineered specifications/ cross-sections for proposed driveways, sidewalks & paved areas
- Location and dimensions of proposed loading areas, including turning templates
- Proposed transit infrastructure with dimensions/ engineering specifications
- Location of vehicle and bicycle parking with dimensions and engineering specifications
- Location of all snow storage areas
- Exterior lighting (please see Technical Manual Sec. 12 for photometrics requirements)

- Location of fire hydrants
- Location of solid waste management receptacles
- Location of all proposed HVAC and mechanical equipment, including proposed screening, where applicable
- Location of proposed easements and rights-of-way, including dimensions
- Please utilize color-coding and/or hatches and shading to delineate changes between the pre and post development condition as needed

UTILITY PLAN including:

- Proposed electrical infrastructure
- Location, sizing and directional flows of all proposed sewer and stormwater infrastructure
- Location and dimensions of off-premises public or publicly accessible infrastructure adjacent to site
- Electric utility infrastructure

GRADING AND DRAINAGE PLAN including:

- Proposed grades
- Proposed stormwater management measures meeting Technical Manual (Section 5) standards
- Any proposed alteration of a watercourse or wetlands
- Any groundwater protection measures
- Proposed buffers and preservation measures for wetlands or significant natural features

LANDSCAPE PLAN including:

- Existing vegetation to be preserved and preservation measures
- Proposed landscaping, screening, and street trees, including caliper widths for trees
- Planting schedule, including street trees

ARCHITECTURAL PLANS AND RENDERINGS including:

- Exterior building elevations, color renderings, illustrations of all sides
- Axonometric and street-level views for structures greater than three stories in height
- Provide context drawings, if applicable (Design Manual, page 1)
- Floor plans

CONSTRUCTION MANAGEMENT PLAN including:

- Specifics on traffic control, sidewalk sheds, and pedestrian rerouting
- Include a drawing and written narrative

OTHER

- Details and cross-sections, as necessary

City of Portland Site Plan Form

Part 1. Project Description & Site Information			
Application type:	Major Site Plan	Submission type:	Initial Submission
	Address:	CBL number:	Lot area (square feet):
Main property:	97 Warren Avenue	295 F001001	57,658
Additional properties (if applicable):			
Project description:	New 4-Story Self Storage Unit Building on a 22,189 s.f. footprint to be connected to public sewer, water, power, communications, and natural gas. Project will include 11 new parking spaces.		

Type(s) of work: (Select which type(s) of work apply from the dropdown list. If not applicable, select N/A.)	
New residential construction or additions	N/A
New non-residential construction or additions	>20,000 square feet of new construction
Creation of disturbed area	1,000 square feet - 3 acres
Creation of impervious surface	1,000 square feet - 1 acre
Construction or paving of parking	Construction or paving of 5-25 parking spaces
Change of use	N/A

Does this project include State or Federal funding, permits, review, or sponsorship?				☐ Yes	☐ No
If yes, list applicable entities:					
Associated applications: (Check all that apply)		☐	Maine DEP- GC Permit	☐	Subdivision
☐	Army Corps of Engineers General Permit	☐	Maine DEP - NRPA	☐	Traffic Movement Permit
☐	Floodplain Development Permit	☐	Site Location of Development	☐	Zoning Amendment
☐	Harbor Commission Construction Permit	☐	Stormwater Quality	☐	Other:

Part 2. Use Information				Total Existing	Total Proposed	Net New
Residential	General	Residential floor area (square feet)		0	0	
		For Group Living uses with no dwelling units, list the number of rooming units				
		Dwelling units		0	0	
		Ownership units				
		Rental units				
	Bedrooms	Studio units				
		1-bedroom units				
		2-bedroom units				
		3-bedroom units				
		4+ bedroom units				
	Affordability	Market-rate units				
			% AMI			
			% AMI			
			% AMI			
Non-Residential	Commercial/Service floor area (square feet)			0	88,756	88,756
	Industrial floor area (square feet)					
	Institutional floor area (square feet)					
	Other floor area (square feet)					

Part 3. Inclusionary Zoning			Total Existing	Total Proposed	Net New
Inclusionary Zoning (IZ) dwelling units					
Ownership IZ units		% AMI			
Rental IZ units		% AMI			
Bedrooms	Studio IZ units				
	1-bedroom IZ units				
	2-bedroom IZ units				
	3-bedroom IZ units				
	4-bedroom IZ units				
IZ fee-in-lieu	$	for	of the required	IZ dwelling units	

City of Portland Site Plan Form

Part 4. Building & Site Metrics	Total Existing	Total Proposed	Net New
Number of buildings	0	1	1
Building floor area (square feet)	0	88,756	88,756
Building footprint (square feet)	0	22,189	22,189
Street trees	17	8	-9
Automobile parking spaces	0	11	11
ADA-accessible parking spaces	0	1	1
Compact parking spaces	0	0	
Level 2 Electric Vehicle (EV) charging spaces	0	2	2
Level 3 Electric Vehicle (EV) charging spaces	0	0	
Bicycle parking spaces	0	0	
Number of water service connections	0	2	2
Number of sewer service connections	0	1	1
Impervious area (square feet)	0	31,178	31,178
New developed area (square feet)		3390	
Non-roof redeveloped impervious area (square feet)		0	
Limits of disturbance (square feet)		34568	
Alteration to wetlands or watercourses (square feet)		0	

Part 5. Zoning (You can use this link to view the zoning for your property)					
Base Zone	B-4		Base Zone #2 (if applicable)		
Local Historic District?		Overlay Zone #1 (if applicable)	Select from List	Overlay Zone #2 (if applicable)	

Zoning Standards – Project Site	B-4 Requirements	Proposed	Requirements	Proposed
Lot area (square feet)	10,000	57658		
Street frontage, Minimum (feet)	60	314		
Lot coverage, Maximum (%)	80.0	58		
Landscaped open space ratio, Minimum (%)	20.0	42		
Build-to Zone (feet)	20.0	4		
Build-to percentage, Minimum (%)	50.0	100		
Blank wall area, Maximum (feet)	40.0	40		
Additional standard:				

Zoning Standards by Building (Use Extra Sheets if >2 Buildings)	Building #1 Zone Requirements	Proposed	Building #2 Zone Requirements	Proposed
Front setback, Minimum/Maximum (feet)	0	0		
Rear setback, Minimum (feet)	20	20		
Side setback, Minimum (feet)	0	16		
Structure height, Maximum (feet)	65	50		
Additional standard:				

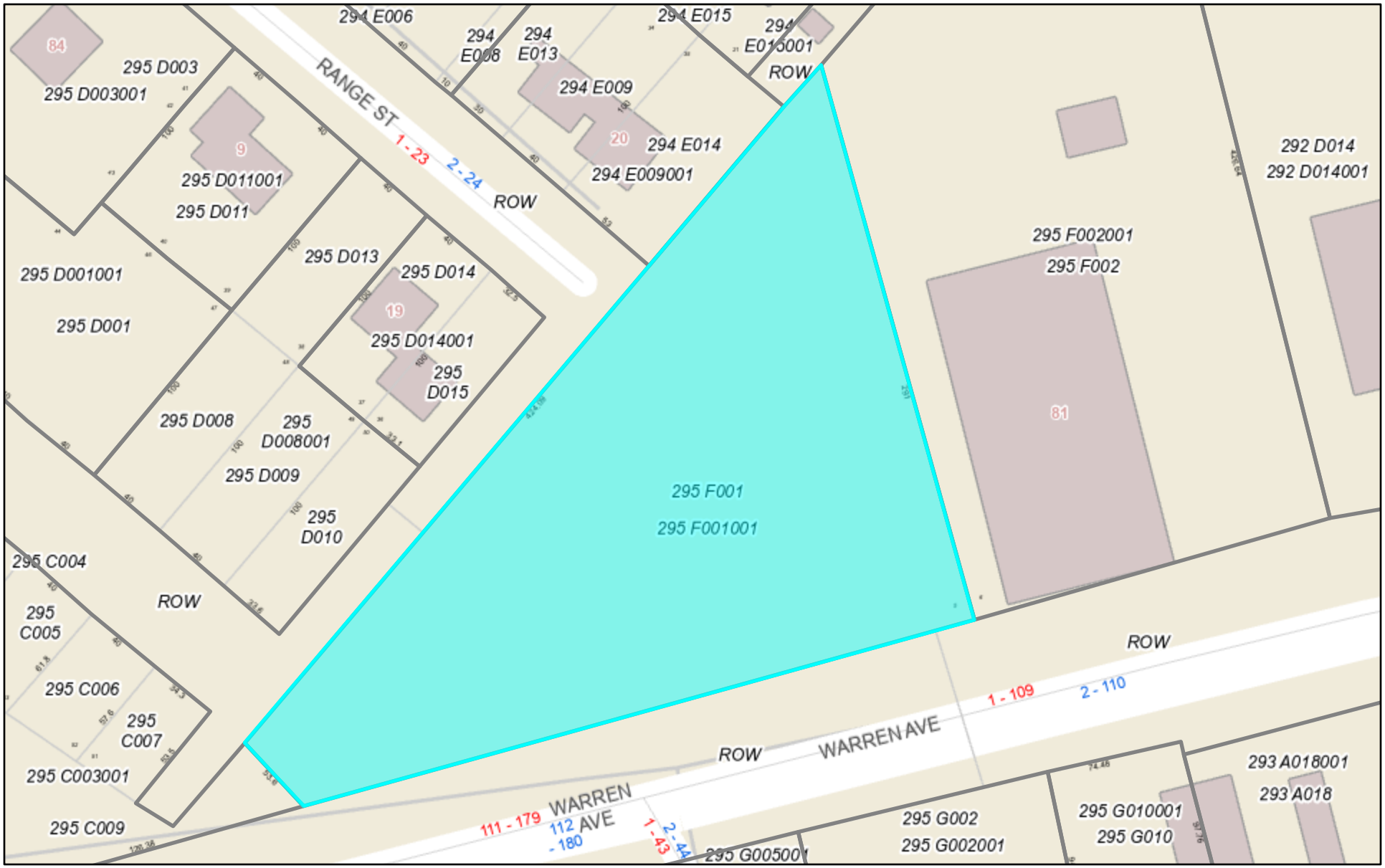
Affordable Housing Density Bonuses (if applicable)	Maximum Allowable with Bonus	Proposed
Density, Maximum (x base)		
Height, Maximum (feet)		

If Needed, Explanatory Text Can Be Provided Below

Existing Street Trees include trees of 16" DBH or greater within 20 feet of front property boundary.

ArcGIS Web Map

Att. D



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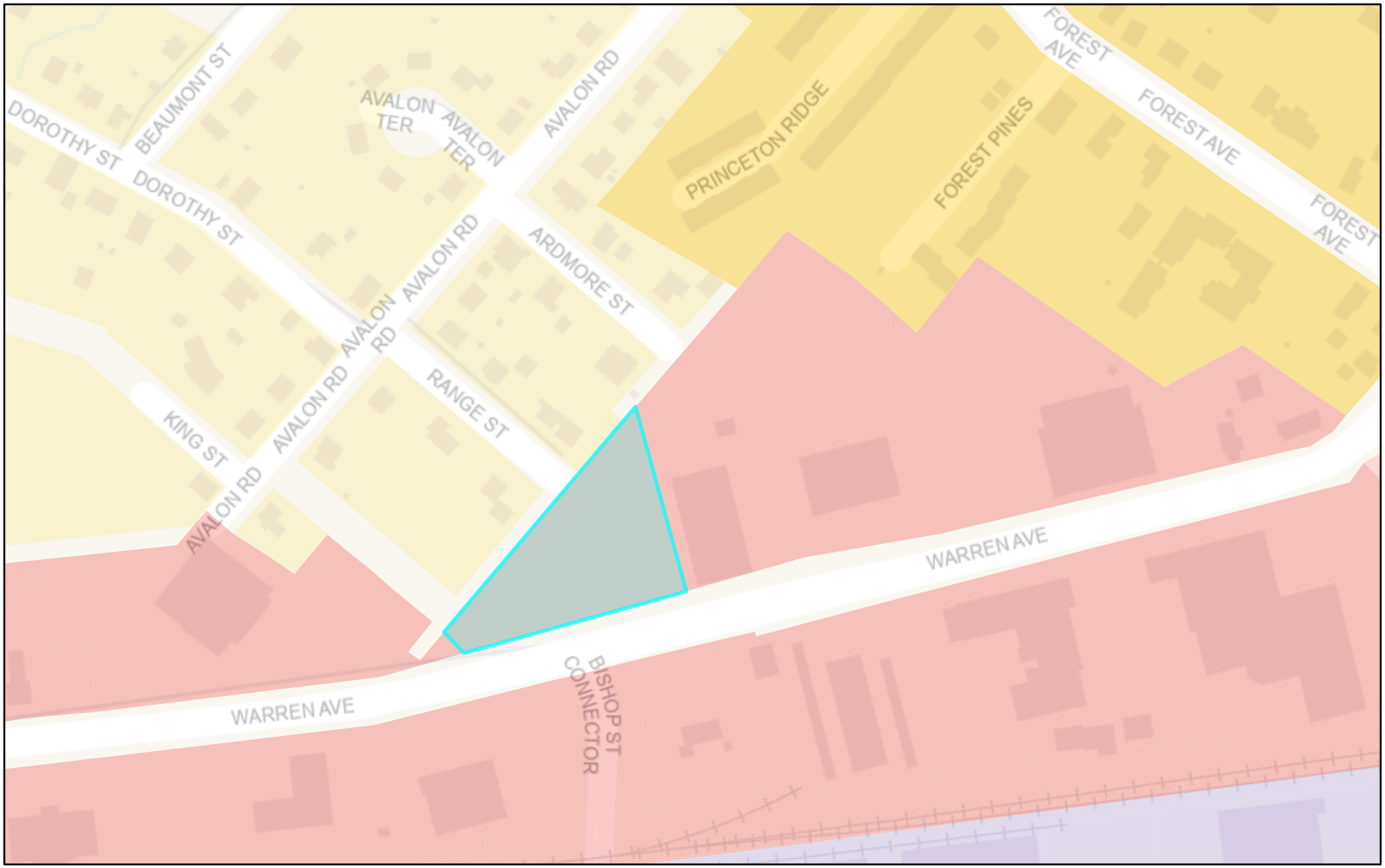
City of Portland, DPS

ArcGIS Web AppBuilder
City of Portland, DPS |

ArcGIS Web Map

Att. E



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Base Zoning

- RN-1 (Neighborhood Residential)
- RN-3 (Neighborhood Residential)
- B-2 (Community Business)
- B-4 (Commercial Corridor)
- I-M (Medium-Impact Industrial)
- ROW

0 0.02 0.04 0.08 mi

0 0.03 0.06 0.12 km

City of Portland, DPS

ArcGIS Web AppBuilder

City of Portland, DPS |

DACOTAH BANK®

Corporate Banking
60 South Sixth Street Suite 1275
Minneapolis, MN 55402

November 14, 2025

Re: Peachtree Holdings, LLC
7119 31st Ave N
Minneapolis, MN 55427

To Whom It May Concern:

Peachtree Holdings, LLC has been a valued customer since December 2024 in good standing and maintaining their company deposit and loan accounts at Dacotah Bank. Peachtree Holdings, LLC currently maintains cash balances with Dacotah Bank with line and letter of credit availability up to $15,000,000.

Our relationship has been entirely satisfactory, and we value the business relationship with Peachtree Holdings, LLC as a reputable and trustworthy customer.

Should you have any questions or are in need of additional information, please contact me at kirk.pauley@dacotahbank.com or at 612-280-0529.

Sincerely,

Dacotah Bank

Kirk Pauley
Director

Docusign Envelope ID: F696CAC2-F13D-470F-83EA-1DA4F6728FEF

REAL ESTATE PURCHASE AGREEMENT

THIS REAL ESTATE PURCHASE AGREEMENT (this "**Agreement**") is entered into effective as of the 28 day of August 2025 (the "**Effective Date**"), by and between Ameena Shir (the "**Seller**"), and Peachtree Acquisitions, LLC, a Minnesota limited liability company, and its successors and assigns (the "**Buyer**").

RECITALS

A. Seller is the owner of real property located at 97 Warren Ave, Portland, ME 04103, which is legally described on attached ***Exhibit A*** (actual legal to govern) (the "**Real Property**").

B. The term "**Property**" includes the fee simple interest in and to the Real Property, plus (i) all easements and rights-of-way belonging to or in any way held by Seller; (ii) all agreements, contracts, permits and licenses relating to same owned by Seller which Buyer identifies and agrees to assume during the Due Diligence Period, if any ("**Contracts**"); (iii) all records of Seller regarding the management, leasing, real estate taxes and assessments, insurance, maintenance of the Real Property ("**Records**"); (iv) all warranties and guarantees, if any, given to, assigned to or benefiting Seller or the Property regarding the acquisition, construction, design, use, operation, management or maintenance of the Real Property, only the extent such warranties can be assigned and transferred to Buyer ("**Warranties**"); and (v) all mineral rights and water rights in, under, on or above the Real Property, to the extent they are owned by Seller.

C. Seller currently leases the Property as landlord under the lease attached as Exhibit B (the "**Lease**").

D. The Seller desires to sell and Buyer desires to purchase the Property subject to the terms and conditions contained in this Agreement.

E. The parties wish to memorialize their understanding in writing.

AGREEMENT

In consideration of the foregoing and the mutual covenants hereinafter set forth and other good and valuable consideration, the parties agree as follows:

1. **Purchase and Sale**. Seller hereby agrees to sell and Buyer hereby agrees to purchase the Property, together with all rights, privileges and appurtenances that benefit the Property, including, but not limited to, all rights owned by Seller, subject to and in accordance with the terms and conditions set forth in this Agreement.

2. **Purchase Price.** Buyer will pay [redacted] for the Property (the "**Purchase Price**"). At Closing (as defined below), Buyer will pay the Purchase Price for the Property, subject to the credits and adjustments to the Purchase Price provided for in this Agreement, in cash, via wire transfer.

3. **Earnest Money**. Within five (5) days from the Effective Date, Buyer shall deposit [redacted] (the "Earnest Money") with First American Title Insurance Company, 121 South 8th Street Suite 1250 Minneapolis, MN 55402 ~~Attn~~: Amanda Angstman aangstman@firstam.com (the "Title Company") to be held in escrow pursuant to the terms of Section 4, below. The Earnest Money shall be fully refundable to Buyer in the event Buyer terminates this Agreement

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within one hundred five (105) days of the Effective Date of this Agreement. If Buyer has not terminated this Agreement within one hundred five (105) days of the Effective Date, the Earnest Money shall become nonrefundable (except as otherwise expressly provided herein) and shall be applied to the Purchase Price at Closing.4.

4. **Escrow**. Seller shall promptly deliver a fully executed copy of this Agreement to the Title Company as the escrow holder. The provisions of this Agreement shall constitute joint instructions to the Title Company. Concurrently with the delivery of the Earnest Money to the Title Company, Buyer shall open an escrow account with Title Company. The parties shall also execute an Earnest Money Escrow Agreement in a form provided for by the Title Company, if required.

5. **Title and Review**.

a. **Title Commitment**. Within ten (10) days from the Effective Date, Buyer shall direct the Title Company to prepare and deliver to Buyer, (i) a commitment for title insurance (the "**Title Commitment**") that sets forth the state of the title of the Property, and (ii) copies of all exceptions to title disclosed in the Title Commitment. The Title Commitment should be dated to be effective no earlier than the Effective Date, issued in favor of Buyer and set forth the state of title to the Property and all exceptions to coverage that are customary for a commercial property.

b. **Survey**. Seller shall deliver a copy of any survey in its possession to Buyer on the Effective Date of this Agreement. Buyer, at its costs and expense, may obtain an updated ALTA survey of the Property (the "**Survey**").

c. **Title Review Process**. Within ten (10) days after receipt by Buyer of the Title Commitment or Survey, whichever is later, Buyer will provide written notice to Seller of any exception to title or other matter shown on the Title Commitment or Survey to which Buyer objects
(the "**Objections**"). The exceptions to title shown or other matters on the Title Commitment that are not Objections, together with general real estate taxes due and payable the second half of the year of Closing and subsequent years that are not yet due and payable, are referred to as
"**Permitted Encumbrances**." If Buyer fails to notify Seller in writing of the Objections within the applicable review period, title will be deemed accepted subject to the conditions set forth in the Title Commitment and Survey but not subject to any Objections previously made.

d. **Seller's Obligation to Cure Objections**. Not later than five (5) business days after receipt of Buyer's Objections, Seller shall notify Buyer which of the Objections Seller shall cure prior to or at Closing, including when and in what manner said items are to be cured. If Buyer is dissatisfied with Seller's response or lack of response prior to the termination of the Due Diligence Period (later defined), Buyer may either terminate this Agreement by delivering written notice to Seller within ten (10) days thereafter and receive back its Earnest Money (notwithstanding Section 3), or waive its Objections and proceed to Closing under this Agreement, subject to fulfillment of the remaining conditions to Closing. Seller covenants and agrees that prior to or at Closing it will discharge all liens, mortgages, contracts for deed and other encumbrances against the Property that secure any obligation of Seller, and if any mechanic's lien claims have been filed by contractors, suppliers or workers for work performed by such claimants at the request of or through Seller (it being understood that Buyer is not required to make an Objection with respect to any of these matters), Seller will either discharge

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the liens or escrow sufficient sums with Title Company to allow Title Company to issue the Title Policy without listing such liens as exceptions to coverage.

e. **Title Policy**. At Closing, Title Company will cause an owner's policy of title insurance and a lender's policy in a form and with such coverages as are customary in the industry (collectively, the "**Title Policy**") to be issued to Buyer in the amount of the Purchase Price and Buyer's lender in the amount of the financing, if any.

f. **Allocation of Cost**. Buyer will be responsible for the cost of providing the Title Commitment and the premium for the Title Policy. The Buyer shall be responsible for the cost of the Survey and any endorsements to the Title Policy.

6. **Inspections; Lease**

a. **Inspections Generally; Due Diligence Period**. During the term of this Agreement, Buyer and Buyer's agents, representatives, consultants and contractors may enter upon the Property to perform such inspections, testing and examinations of the Property as are reasonably deemed necessary by Buyer, including soil, water and environmental tests (including without limitation geotechnical borings and test pits). Buyer will restore or repair, in a reasonable manner, any disturbance or damage to the Property caused by the acts of Buyer and Buyer's agents, representatives, consultants and contractors. Buyer will hold Seller harmless, defend and indemnify Seller from and against any and all damages, expense and liability occasioned by any claim that may be asserted against Seller or the Property as a result of such inspections, except that Buyer shall not be responsible for the discovery or disturbance of any pre-existing condition. Upon execution of this Agreement, Seller shall provide Buyer with any documentation or report relating in any way to the items set forth below, together with copies of any Contracts, Warranties, or Records in Seller's possession (all together, the "**Seller's Diligence Documents**"). Buyer shall have one hundred five (105) days from the Effective Date to review the same to ensure that such items are acceptable in its sole and exclusive discretion (the "**Due Diligence Period**"). Notwithstanding the foregoing, the Buyer shall have the right to extend the Due Diligence Period for three (3) – sixty (60) day periods (each, a "**Due Diligence Extension Period**"), provided that Buyer shall, no later than five (5) days prior to the expiration of the Due Diligence Period or Due
Diligence Extension Period (as applicable), pay [redacted]
Dollars
[redacted] to the Title Company (each payment a "**Extension Payment**"). Each Extension Payment shall become immediately non-refundable to the Buyer, except as otherwise provided in this Agreement, shall be included in the definition of "Earnest Money," and shall otherwise be applied to the Purchase Price at Closing. For the avoidance of doubt, this Agreement shall remain terminable by Buyer during each Due Diligence Extension Period as otherwise provided in this Section 6. Seller shall provide Buyer any known material defects or information that could affect the Property's value or suitability for use ("Disclosure Statement"), no later than five (5) business days after the Effective Date of this Agreement. Without limiting any of the foregoing, included within the Seller's Diligence Documents, shall be any document in the possession or control of Seller relating in any way to:

i. Existing title insurance policies of the Seller related to the Property; ii. The

most recent survey of the Property and related title commitments; iii. Any

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existing architectural and engineering reports relating to the Property; iv.

Copies of use permits, zoning letters or approvals relating to the Property;

v. Copies of any soil and hydrology report relating to the Property; Copies of any existing environmental report including any Phase I or Phase II environmental reports or assessments relating to the Property; Results of any geotechnical borings and/or test pits;

vi. Copies of any feasibility studies relating to the Property;

vii. a report of material maintenance and capital improvements conducted by Seller at the Property for the three (3) calendars preceding the Effective Date and during the current year; viii. any other reports related to the Property;

ix. a description of any capital improvements or material maintenance scheduled to occur within the next 2 years and any bids or estimates Seller has received or obtained for same; and

x. Utility account information, including copies of the most recent billing statements.

Buyer shall hold Seller's Diligence Documents in confidence and shall not share any of the Seller's Diligence Documents except with its accountants, attorneys, engineers, surveyors, architects, lenders and persons within the Buyer's business that have a need to know the contents of such Seller's Diligence Documents in order to provide Buyer with adequate diligence and planning for its use of the Property following Closing. At any point prior to the expiration of the Due Diligence Period, Buyer may terminate this Agreement in its sole and absolute discretion for any reason or no reason and receive back the Earnest Money. Buyer's right to terminate this Agreement during the Due Diligence Period or any Due Diligence Extension Period shall remain unaffected, provided that any such termination after Conditional Approval shall not entitle Buyer to a refund of the Earnest Money unless termination is due in whole or in part to another provision of this Agreement. In the event Buyer shall terminate this Agreement, it shall promptly return the Seller's Diligence Documents to Seller.

b. **Termination of Lease**. Seller shall, at Seller's sole cost and expense, terminate the Lease prior to Closing and deliver to Buyer, no later than five (5) business days prior to the Closing Date, evidence reasonably satisfactory to Buyer that the Lease has been terminated, the Tenant has vacated the Property, and all obligations under the Lease have been fully satisfied or discharged, including any required payments to the Tenant. The Property shall be delivered at Closing free of the Lease and any claims or rights of the Tenant.

c. **Effect of Lease Termination**. As a condition of Closing, (1) Seller shall ensure that the Property is delivered at Closing free of the Lease and any claims or rights of the Tenant, (2) Buyer shall have no obligation to assume or accept assignment of the Lease.

d. **Failure to Terminate Lease**. If Seller fails to deliver evidence of the Lease termination as required by Section 6.b. by the date specified therein, such failure shall constitute a default by Seller under this Agreement, entitling Buyer to exercise its remedies under Section 11, including termination of this Agreement with a return of the Earnest Money or specific performance or, at Buyer's option, extension of the Closing Date until the Lease is terminated and Seller provides evidence reasonably satisfactory to Buyer of such termination.

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7. **Closing**.

a. **Closing**. The act of settlement of the purchase and sale of the Property where Seller conveys title to the Property to Buyer and Buyer pays to Seller the Purchase Price, subject to the terms and conditions set forth in this Agreement, is referred to as the "**Closing**". The Closing of the Property and the transactions to be taken under this Agreement will occur on or before that date which is thirty (30) days following the expiration of the Due Diligence Period and any Due Diligence Extension Period (the "**Closing Date**"), although the scheduled Closing Date may be accelerated or extended upon mutual written agreement of the parties.

b. **Closing Documents**. The Closing will be held remotely through and escrow-styled closing through the Title Company. At Closing, Seller will deliver to Buyer the following items, at Seller's expense (the "**Closing Documents**"):

i. A duly executed and acknowledged Statutory Quitclaim Deed With Covenant conveying all of Seller's right, title and interest to the Property, free of all liens and encumbrances, except the Permitted Encumbrances (the "**Deed**").

ii. An owner's affidavit as to possession, no judgments, no bankruptcies and no liens and that there have been no skill, labor or material furnished to the Property for which payment has not been made or which mechanic's liens could be filed and that there are no other unrecorded interests in the Property; iii. A FIRPTA or "non-foreign" affidavit;

iv. An assignment of the Contracts, Records and Warranties and any permits affecting the Property to the extent assignable, and delivery of the originals of the Contracts, Records, Warranties and permits to the extent in Seller's possession or control;

v. Such documents as may be necessary to evidence that no other person has
any right or interest, including any leasehold interest, in and to the Property;

vi. A Settlement Statement from the Title Company and agreed upon by the Buyer regarding payment of the Purchase Price and prorations and adjustments provided herein;

vii. A duly executed termination of the Lease or evidence satisfactory to the Buyer of the termination of the Lease as provided in Section 6.b;

viii. Such transfer tax forms as may be required as a condition to the recordation of the Deed or as may be required in connection with the transfer of the Property, including a Real Estate Excise Tax Affidavit with respect to the real estate excise taxes applicable to the purchase and sale transaction and a Sales/Use Tax Return with respect to the sales/use tax due on the tangible personal property, if any; and

ix. Any other documents that may be required by Title Company to vest in Buyer fee simple title to the Property or to complete the Closing via wire transfer.

c. **Payment**. At Closing, the Earnest Money shall be applied to the Purchase Price and the balance of the Purchase Price will be paid by Buyer to Seller at Closing.

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i. **Real Estate Taxes and Special Assessments**. Seller must pay all real estate taxes and any other municipal assessments due and payable for all years prior to the year of Closing for the Property. Real estate taxes due and payable in the year of Closing for the Property will be pro-rated between Seller and Buyer on a per diem basis as of the Closing Date. All prorations will be final. Seller must pay all special and municipal assessments, interest and penalties levied against the Property at or prior to Closing.

ii. **Operating Expenses**. All operating expenses for the year of Closing for the Property, if any, will be pro-rated as of the Closing Date.

d. **Possession**. Seller will deliver possession of the Property to Buyer on the Closing Date subject only to the Permitted Encumbrances.

e. **Closing Costs**. Seller will pay for Deed preparation, title curative instruments (if any), and other fees imposed in connection with recording the Deed. The parties will each pay one half (1/2) of state deed taxes (including but not limited to all Real Estate Transfer Tax (RETT) due to the State of Maine and any local jurisdictions.) Buyer shall pay all mortgage registry tax, if any. Seller shall pay the recording costs of all documents necessary to place record title if any in the condition warranted by Seller. Each party will be responsible for the payment of their own attorneys' fees incurred in connection with the transaction that is the subject of this Agreement. Seller and Buyer will share closing fees charged by the Title Company equally.

8. **Representations and Warranties of Seller**. Seller hereby represents and warrants to Buyer as of the Effective Date and again remakes such representations and warranties as of Closing, all of which shall expressly survive the Closing and the delivery of the Deed as follows:

a. **Authority**. The execution and delivery of this Agreement by Seller and the consummation by Seller of the transaction contemplated by this Agreement are within Seller's capacity, and all requisite action has been taken to make this Agreement valid and binding on Seller in accordance with its terms. No consent approval, or notice to, any third party is required by or with respect to Seller in connection with the execution and delivery of this Agreement and the consummation of the transactions contemplated hereby. Upon execution, this Agreement will be fully binding upon Seller.

b. **No Legal Bar**. Seller is not in default in payments due under any indenture, mortgage, deed of trust, loan agreement or other agreement to which Seller is a party and that affects any portion of the Property. The transaction hereby contemplated does not and on the Closing Date will not (i) result in a breach of or default under any indenture, agreement, instrument or obligation to which Seller is a party and that affects all or any portion of the Property, or (ii) violate any laws, ordinances, rules, requirements or regulations of any governmental authority that are applicable to or otherwise affect the Property.

c. **Title**. Seller is, or will be at the time of Closing, the owner of the Property in fee simple title, free and clear of all liens and encumbrances, subject to the Permitted Encumbrances, the Lease, and those other encumbrances that must be discharged at or before Closing.

d. **Rights of Other**s. There are no other rights of first refusal or options granted or belonging to any other person to purchase the Property.

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e. **Leases**. Except for the Permitted Encumbrances and, as of the Effective Date but not the Closing Dage, the Lease, there are no leases, licenses, easements or other right, whether written or oral, that provides any person with the right to lease or otherwise use or occupy the Property. Seller covenants that, as of the Closing Date, the Lease will be terminated, the Tenant will have vacated the Property, and no claims or rights of the Tenant remain outstanding.

f. **Contracts**. The Contracts will be to Seller's actual knowledge, the only unexpired service or other contracts affecting the Property, and Seller has made true, complete and correct copies of all such Contracts available to Buyer.

g. **Litigation**. There are no actions, suits, litigation, proceedings, or investigations pending or, to Seller's knowledge, threatened against Seller, the Tenant, or the Property, including, without limitation, (i) condemnation or eminent domain claims, actions, or proceedings, or (ii) actions to seize any portion of the Property under any civil or criminal law authorizing seizure or forfeiture as a penalty for violation.

h. **Taxation**. There is no ordinance or hearing now before any governmental body which either contemplates or authorizes any public improvements or special tax levies, the cost of which may be assessed against the Property.

i. **No Violations of Law**. Neither the Property, Seller, nor, to Seller's knowledge, the Tenant, is currently subject to (i) any existing, pending or threatened investigation or inquiry by any governmental authority or (ii) any remedial obligations under any applicable law, statute, ordinance, rule, regulation, order or determination of any governmental authority or any board of fire underwriters (or other body exercising similar functions), or any restrictive covenant or deed restriction or zoning ordinance or classification affecting the Property, including, without limitation, all applicable building codes, fire codes, health codes, water codes, flood disaster laws and health and applicable environmental laws and regulations (hereinafter sometimes collectively called the "**Applicable Laws**"). Seller has received no notice from any municipal, state, federal or other governmental authority of any violation of any Applicable Laws issued with respect to the Property that has not been previously corrected and no such violation exists.

j. **Treatment Systems**. Seller represents that there are no sewage treatment systems,
or the like, on or serving the Property.

k. **Well Disclosure**. Seller knows of no wells on the Property.

l. **Storage Tanks**. Seller knows of no underground or above ground storage tank currently upon the Property and knows of no underground or above ground storage tank formerly on the Property that had a release for which no corrective action was taken.

m. **Hazardous Material**. To the best knowledge of Seller, the Property is free from any Hazardous Materials and is not in violation of any Hazardous Waste Laws. For purposes of this Agreement, "**Hazardous Waste Laws**" means, without limitation, the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, the Superfund Amendments and Reauthorization Act of 1986, the Resource Conservation and Recovery Act, the Toxic Substances Control Act, the environmental acts of the state in which the Property is located, and such other federal and state acts having similar import and as may be amended from time to time, or any other federal or state statutory or regulatory cause of action arising from or related to Hazardous Materials at, in or under the Property. For purposes of this Agreement, the term

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"**Hazardous Material**" shall mean any substance, chemical, waste or material that is or becomes regulated by any federal, state or local governmental authority because of its toxicity, infectiousness, radioactivity, explosiveness, ignitability, corrosiveness or reactivity, including, without limitation, those substances regulated by the Hazardous Waste Laws.

n. **OFAC**. Seller represents and warrants that (A) Seller and each person or entity owning an interest in Seller is (1) to Seller's actual knowledge not currently identified on the Specially Designated Nationals and Blocked Persons List maintained by the Office of Foreign Assets Control, Department of the Treasury ("**OFAC**") and/or on any other similar list maintained by OFAC pursuant to any authorizing statute, executive order or regulation (collectively, the "**List**"), and (2) not a person or entity with whom a citizen of the United States is prohibited to engage in transactions by any trade embargo, economic sanction, or other prohibition of United States law, regulation, or Executive Order of the President of the United States, (B) none of the funds or other assets of Seller constitute property of, or are beneficially owned, directly or indirectly, by any Seller "**Embargoed Person**" (as hereinafter defined) and (C) no Seller Embargoed Person has any interest of any nature whatsoever in Seller (whether directly or indirectly). The term "**Embargoed Person**" means any person, entity or government subject to trade restrictions under U.S. law, including but not limited to, the International Emergency Economic Powers Act, 50 U.S.C. §1701 et seq., The Trading with the Enemy Act, 50 U.S.C. App. 1 et seq., and any Executive Orders or regulations promulgated thereunder, with the result that the investment in Seller is prohibited by law or Seller is in violation of law. Seller also shall require, and shall take reasonable measures to ensure compliance with the requirement, that no person who owns any other direct interest in Seller is or shall be listed on any of the Lists or is or shall be a Seller Embargoed Person. This Section shall not apply to any person to the extent that such person's interest in the Seller is through a U.S. Publicly-Traded Entity. As used in this Contract,
"**U.S. Publicly-Traded Entity**" means a person (other than an individual) whose securities are listed on a national securities exchange, or quoted on an automated quotation system, in the United States, or a wholly-owned subsidiary of such a person.

9. **Covenants of Seller**. Seller covenants and agrees that from and after the Effective Date, Seller:

a. Shall not perform any grading or excavation, construction or make any other change or improvement upon or about the Property, except as agreed to by the parties in writing;

b. Shall not create or incur any mortgage, lien, pledge or other encumbrance affecting the Property;

c. Shall not commit any waste or nuisance upon the Property;

d. Shall maintain and keep the Property in a neat condition and observe all laws, ordinances, regulations and restrictions affecting the Property;

e. From the Effective Date and continuing until Closing, Seller shall not (i) negotiate or execute any lease or any modifications or amendments to any lease (including the Lease) except as necessary to terminate the Lease as required by Section

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6.b., or (ii) enter into any other contracts or agreements with respect to the Property that would be binding upon Buyer or the Property following Closing;

f. From and after the Effective Date until Closing or earlier termination of this Agreement in accordance with its terms, Seller shall not market the Property for sale or otherwise enter into any purchase agreements, options, letters of intent or term sheets regarding the sale of the Property;

g. From the Effective Date and continuing until Closing, Seller shall continue to operate, insure, and maintain the Property in a manner consistent with its present practice (as evidenced by Seller's records over the twelve (12) months preceding the Effective Date of this Agreement). During this period, Seller shall continue to make necessary repairs to the Property in the ordinary course of business. The Property shall be in substantially the same condition on the date of conveyance to Purchaser as existed on the Effective Date of this Agreement, reasonable wear and tear, or damage caused by the Buyer, excepted.

10. **Buyer's Conditions to Closing.** Unless waived by Buyer in writing, Buyer's obligation to purchase the Property shall be subject to and contingent upon each of the following (each a "**Condition to Closing**"):

a. **Representations and Warranties**. The representations, warranties and covenants of the Seller contained in this Agreement must be true as of the Effective Date and on the Closing Date as if made on the Closing Date.

b. **Title**. Title shall be acceptable in accordance with the requirements and terms of this Agreement.

c. **Contingency Removal**. Buyer shall have removed its inspection and diligence contingency prior to the expiration of the Due Diligence Period.

In the event a Buyer's Condition to Closing above is not satisfied (or waived by Buyer in its sole discretion), then Buyer may terminate this Agreement by written notice to Seller, and in such event that a Condition to Closing is not satisfied, Buyer shall receive a return of the Earnest Money (notwithstanding Section 3).

11. **Breach by Seller**. If Seller fails to fully and timely perform any of its obligations hereunder, and such failure continues for thirty (30) days after receipt of written notice from Buyer, then Buyer may, at its option: (a) terminate this Agreement by written notice delivered to Seller and recover its Earnest Money (notwithstanding Section 3), plus Seller shall reimburse Buyer for Buyer's out-of-pocket expenses incurred in connection with the potential acquisition, development, leasing and management of the Property, including all due diligence costs, attorneys' fees and loan fees, architectural and civil engineering drawings and plans, application fees, leasing fees, and other similar costs and expenses or (b) enforce specific performance of this Agreement; provided, however, that any action for specific performance must be commenced within twelve (12) months from the Effective Date, and if no such action has been brought by this date, the right to bring such an action shall be deemed to have been waived by Buyer.

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12. **Breach by Buyer**. If Buyer fails to fully perform any of its obligations hereunder, and such failure continues for thirty (30) days after receipt of written notice from Seller, then Seller may, as its sole and exclusive remedy for such default, terminate this Agreement by written notice delivered to Buyer and recover the Earnest Money from the Title Company as liquidated damages.

13. **Real Estate Commissions**. Seller is represented by Portside Real Estate Group ("**Seller's Broker**"). Seller shall be responsible for the payment of commission to Seller's Broker, pursuant to a separate written agreement. Seller shall be responsible for the payment of any brokerage fee or commission to any other person claiming to represent the Seller and the sale of the Property. Buyer has not engaged with the broker. Each party agrees to indemnify and hold the other harmless against all claims, damages, costs or expenses of or for any other such fees or commissions resulting from their actions or agreements regarding the execution or performance of this Agreement, and will pay all costs of defending any action or lawsuit brought to recover any such fees or commissions incurred by the other party, including reasonable attorneys' fees.

14. **Risk of Loss; Possession**. Risk of loss to the Property shall be borne by Seller until the Closing Date. In the event that any part of the Property is destroyed or damaged between the Effective Date and the Closing Date, Buyer may, at Buyer's option to be exercised by Buyer within five (5) days of Buyer's receipt of written notice from Seller of such damage or destruction (a) terminate this Agreement, in which event both Buyer and Seller shall be released from all obligations hereunder and Buyer shall receive back its Earnest Money (notwithstanding Section 3), or (b) proceed with the purchase of the Property, with a reduction in the Purchase Price commensurate with the damage to the Property, as agreed to by the parties hereto. If Buyer fails to exercise either option within said five (5) business day period, then Buyer shall be deemed to have elected to terminate this Agreement and have the Earnest Money returned. If Buyer chooses to proceed with reduction of the Purchase Price, but the parties are unable to agree upon a modified Purchase Price within fifteen (15) days of the date on which Buyer provides notice to Seller of Buyer's intent to proceed with the transaction, then this Agreement shall be deemed terminated, and the parties shall have no further obligation under this Agreement and the Buyer shall receive back the Earnest Money. Possession of the Property shall be delivered to Buyer on the Closing Date.

15. **Condemnation**. If before Closing all or any portion of the Property or any rights or easements benefiting the Property are taken by condemnation or rights of eminent domain or like process or are threatened therewith, Seller must, within two (2) days after Seller's receipt of notification of such happening, provide written notice to Buyer. Buyer will, within thirty (30) days after having received Seller's written notice, elect in writing to either:

a. Continue this Agreement in full force and effect, notwithstanding such taking or threatened taking, in which case Buyer will continue the purchase of the Property and any and all condemnation award with respect to the Property which will be payable to Buyer; or

b. Terminate this Agreement, receive back its Earnest Money (notwithstanding Section 3) and neither party will have any further obligation under this Agreement.

16. **Notice**. Any notice to be given or served upon any party hereto in connection with this Agreement must be in writing, and delivered to the other party (a) in person; (b) by email; (c) by a nationally-recognized overnight delivery service; or (d) by certified mail, return receipt requested. If notice is given in person or via email, notice is deemed to have been given when personal delivery was received by the party or when the email was transmitted (unless such email was delivered after 6:00 p.m.

DS Ameena Shir

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central time, in which case notice shall be deemed given on the following business day). If notice is given by a nationally-recognized overnight delivery service, notice is deemed to have been given the business day following delivery to the delivery service of such notice. If notice is given by certified mail, notice is deemed to have been given three (3) days after a certified letter containing such notice, properly addressed with postage prepaid, is deposited in the United States mail. If notice is given by electronic mail notice is deemed given at the time when such electronic communication is sent. Notices should be sent to the parties at the following addresses:

If to the Buyer:

Peachtree Acquisitions,
LLC Attn: Jack Martinson
7119 31st Ave N.
Minneapolis, MN 55427
Email: jackm@ecimn.com

With a copy to (which shall not constitute notice):

DeWitt LLP
901 S Marquette Ave.
Suite 2100
Minneapolis, MN 55402
Attention: Mitchell Sullivan
Email: msullivan@dewittllp.com

If to the Seller:

Ameena Shir
41 Ocean House Road
Cape Elizabeth, ME. 04107
Email: mnshir@gmail.com

With a copy to (which shall not constitute notice):

The Whiting Law Firm
75 Pearl Street
Suite 207
Portland, ME. 04101
Attention: Stephen C. Whiting, Esq.
Email: steve@whitinglawfirm.com

17. **Survival**. The representations, warranties, covenants, agreements and indemnities set forth in this Agreement will remain operative and will survive Closing and delivery of the Deed and will not be merged therein.

18. **Assignment**. The terms and conditions hereof are hereby made binding on the successors and assigns of both parties hereto. Buyer may freely its rights under this Agreement.

DS Ameena Shir

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19. **Entire Agreement**. This Agreement embodies the entire agreement between the parties and cannot be varied, except by the written agreement of the parties. This Agreement supersedes all prior and contemporaneous negotiations, understandings and agreements, written or oral, between the parties.

20. **Attorneys' Fees; Costs; Venue**. If any legal action is commenced by any party to enforce any provision of this Agreement, the losing party will pay to the prevailing party all actual expenses, including reasonable costs and attorney's fees, incurred by the prevailing party. The prevailing party is the party who receives substantially the relief sought, whether by judgment, summary judgment, dismissal, settlement or otherwise. Venue is proper in the county in which the Property is located and each party submits to the jurisdiction of such court located within the county in which the Property is located.

21. **Counterparts**. This Agreement may be executed either manually or electronically in several original counterparts, each of which and all together will constitute this Agreement in its entirety. A counterpart of this Agreement or any amendment thereto executed by a party and delivered to the other party via email will be construed as a legally binding signature. Without delay, the sending party should deliver an original, signed counterpart to the other party.

22. **Headings**. The headings contained in this Agreement are for reference purposes only and do not in any way affect the meaning or interpretation hereof.

23. **Dates**. Time is of the essence with respect to this Agreement. If the final day of a period or date of performance under this Agreement falls on a Saturday, Sunday or legal holiday, then the final day of the period or the date of performance will be deemed to fall on the next day which is not a Saturday, Sunday or legal holiday.

24. **Enforceability**. If any provision of this Agreement is adjudged to be invalid or unenforceable by a court of competent jurisdiction, this Agreement should be construed as if such invalid or unenforceable provision had not been inserted herein and should not affect the validity or enforceability of the remainder of this Agreement.

25. **No Third Party Beneficiaries**. Nothing in this Agreement, expressed or implied, is intended to confer any rights or remedies under or by reason of this Agreement on any person other than the parties to it and their respective permitted successors and assigns. Furthermore, nothing in this Agreement is intended to relieve or discharge any obligation of any third person to any party hereto or give any third person any right of subrogation or action over or against any party to this Agreement.

26. **Construction**. All of the parties to this Agreement have participated freely in the negotiations and preparation hereof. Accordingly, this Agreement should not be construed more strictly against any one of the parties.

27. **Choice of Law**. This Agreement is governed by and construed in accordance with the laws of the State of Maine.

28. **Cooperation Regarding Legal Description**. The legal description for the Property to be sold and acquired under this Agreement shall be established by the Title Commitment, or the Survey if obtained by Buyer. If so requested by either party, this Agreement shall be amended to reflect the correct and complete updated legal description of the Property.

29. **Electronic Execution**. The words "execution," "signed," "signature," and words of similar import in this Agreement shall be deemed to include electronic and digital signatures and the

DS Ameena Shir

Docusign Envelope ID: F696CAC2-F13D-470F-83EA-1DA4F6728FEF

keeping of records in electronic form, each of which shall be of the same effect, validity, and enforceability as manually executed signatures and paper-based recordkeeping systems, to the extent and as provided for under applicable law, including the Electronic Signatures in Global and National Commerce Act of 2000 (15 U.S.C. § 7001 et seq.), and any other similar state laws based on the Uniform Electronic Transactions Act or the U.S. federal ESIGN Act of 2000 (e.g., www.docusign.com).

30. **Recitals**. The above Recitals are incorporated herein by reference and made a part of this Agreement.

[*Signature Page to Follow*]

DS Ameena Shir

Docusign Envelope ID: F696CAC2-F13D-470F-83EA-1DA4F6728FEF

IN WITNESS WHEREOF, the parties have executed this Agreement as of the Effective Date.

Peachtree Acquisitions, LLC

Signed by:
Jack Martinson
DD5716EE4C4843B...

By: Jack Martinson
Its: Manager

Ameena Shir

DocuSigned by:
Ameena Shir
55A5BD3FDB854E2...

8/27/2025

By: Ameena Shir
Individually

[Signature Page to Real Estate Purchase Agreement]

Docusign Envelope ID: F696CAC2-F13D-470F-83EA-1DA4F6728FEF

EXHIBIT A

Legal Description

To be provided via Title Commitment

Docusign Envelope ID: F696CAC2-F13D-470F-83EA-1DA4F6728FEF

EXHIBIT B

Lease

(see insert)

Docusign Envelope ID: F696CAC2-F13D-470F-83EA-1DA4F6728FEF

The following includes Experience of Peachtree Holdings, LLC's self-storage developments, along with Engelsma Construction, which two of the three partners in Peachtree own in Minneapolis, MN.

Self-Storage

Pittsfield, MA – 60,000 square feet conversion

State College, PA – 75,000 square feet, 3-story building

Westminster, MD – 69,000 square feet, single-story building

Engelsma Construction Experience - Experience — Engelsma

Project experience ranges from commercial, residential, industrial, etc. The company is currently constructing multiple Target stores, BioLife Plasma buildings, flex buildings, and residential units. Please click the link to view specific projects delivered and under construction!

Jon H. Whitten, Jr., PE

Senior Project Manager

jwhitten@haleyward.com | 207.989.4824

Jon H. Whitten, Jr. has over 25 years of civil engineering experience related to site development design, permitting, and project management. Design experience includes site layout, roadways, public and private utility infrastructure, stormwater management systems, and erosion control features for municipal, commercial, and residential projects. Jon continues to further expand his professional engineering, project management, and business management skills by working on a wide range of projects, both in type and size, for a variety of clients throughout Maine. He is well versed in guiding these projects through design and the Local, State and Federal zoning, natural resources, and regulatory permitting processes. Additionally, Jon has worked on; Gravel and Rock Extractions, Solid Waste Facilities, Recreation Trails, Construction Administration/Observation, Post Construction Stormwater Inspections, etc.

PROFESSIONAL HISTORY

2019 – Present
Haley Ward, Inc.
Senior Project Manager

2015 – 2019
Plymouth Engineering Inc.
Senior Project Manager

2006 – 2015
Terradyn Consultants, LLC
Principal / Project Manager

1996 – 2006
Sebago Technics, Inc.
Project Manager / Project Engineer

CORE EXPERTISE:
Site Design and Permitting
Utilities and Roads
Construction Administration/Oversight
Environmental Permitting

EDUCATION:
B.S. Civil Engineering, University of Maine, Orono

REGISTRATIONS:
Professional Engineer, State of Maine (#10414)

AFFILIATIONS:
American Society of Civil Engineers
National Society of Professional Engineers

Self Storage Projects

We are a team of experienced architects, engineers, and designers collaborating to build inspiring and elevated spaces.

ABOUT

Onyx Creative is an award-winning national **architecture, engineering,** and **interior design** firm.

TEAM

Our team of architects, engineers, interior designers, and graphic designers is uniquely positioned to meet the challenges of a changing retail, commercial, and residential landscape with creativity, passion, and principle.

VALUES

We define success by the capacity of our designs to create a feeling of specialness. We seek to excel our work into a realm of design where people experience places beyond their every day life. Great design generates demand from creating places where people desire to be.

HISTORY

Built on decades of architectural and engineering experience, Onyx Creative was established with a vision to transform spaces through innovative architecture and design solutions. With a fifty-year history, our firm has grown from a small team of designers to a nationally recognized leader in the industry.

RECENT ACHIEVEMENTS

Top Retail Design Firms
VMSD

Top Architecture Engineering Firms
Building Design + Construction

Top 300 Architecture Firms
Architectural Record

Best Employers in Ohio
Crain's Cleveland Business

SERVICES

Professional Services

Architecture / Urban Design
For an elevated sense of place.

We provide award-winning architectural design services that include programming, site design, building planning, construction documents, construction administration, and architectural visualization.

Engineering
For durable, sustainable systems.

Our engineering department includes mechanical, electrical, plumbing and structural disciplines. Combined with architects, this creates an integrated design team assembled at the beginning of a project. The advantages are efficient communication and increased project coordination.

Creative Services

Interior Design
For a healthy, strategic environment.

Interior design services are integrated into the architectural design services and can create a healthy and functional environment for its users through the development of space planning and product selection.

Architectural Visualization
For advanced rendering visuals.

Cutting-edge software is used to manage the process during the initial design phases, as well as rendering capabilities to provide a constant realistic view of the design as it evolves from initial concept to developed building.

SERVICES

Site Planning / Site Analysis

The Onyx Creative staff has extensive experience in evaluating and preparing site layouts that optimize operational flow and meet jurisdictional requirements. By utilizing the following steps, our team can efficiently and methodically prepare innovative site layouts that are practical and functional:

- Investigate local site zoning regulations and specific overlays.
- Meet with jurisdictional staff to coordinate planning and identify potential issues.
- Review client design criteria and important site components and features.
- Coordinate client approval.
- Coordinate with civil consultants to address jurisdictional and client requirements.

Code Analysis

The Onyx Creative team will review and coordinate all local, state, and federal codes as they pertain to the project. The following is the standard procedure that Onyx Creative employs to ensure completeness and efficiency:

- Research applicable codes for both the site and the building.
- Implement and coordinate code aspects in both the site layout and building design.
- Coordinate and attend meetings as required prior to submittal with the jurisdictional staff to facilitate approvals.
- Identify and coordinate with client on the potential code issues at the beginning of the project.

Land Use Entitlement

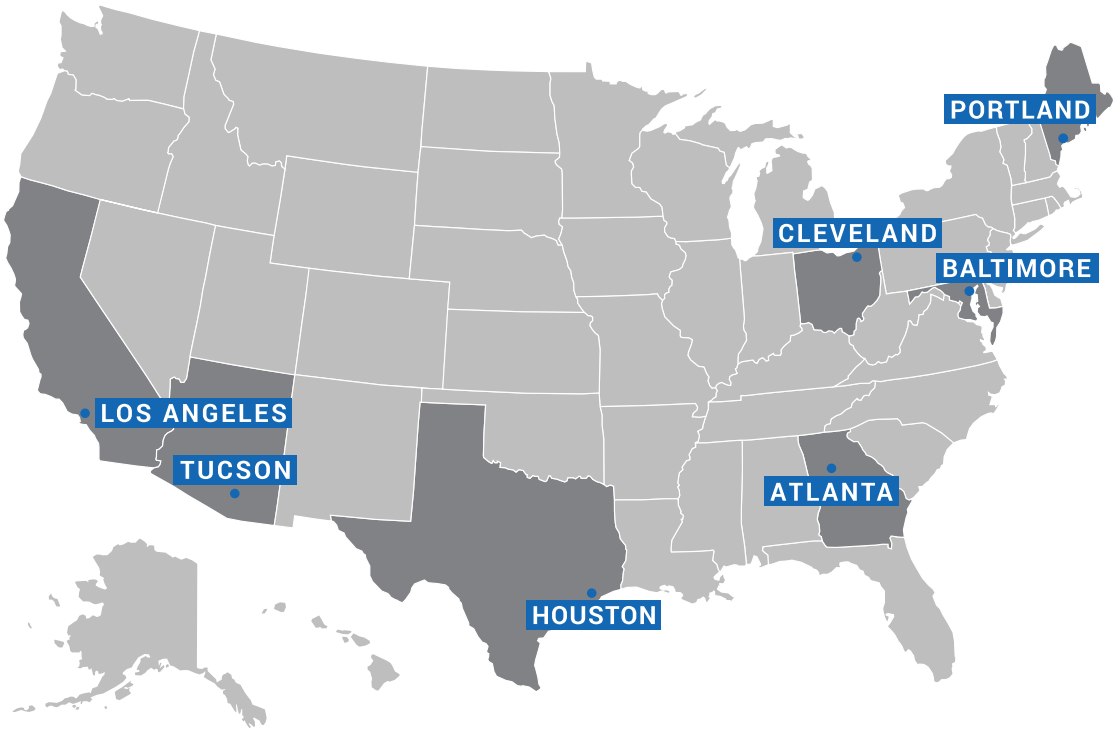
The Onyx Creative team will participate and collaborate with the client, the civil engineer, and the local and state officials as required for the full entitlement approval. Based on previous experience and similar projects OC will:

- Review and comment on submittal materials.
- Prepare and provide graphic support materials including preliminary site plans, floor plans, building elevations, material boards, renderings, etc. as required during the entitlement process.

LOCATIONS

National reach, local touch.

We maintain architectural and engineering licenses nationwide and provide professional services throughout the country.



25001 Emery Road
Suite 400
Cleveland, OH 44128
(216) 223-3200

22 E Ventura Street
Tucson, AZ 85705
(520) 545-7161

5553 Peachtree Road
Suite 135
Atlanta, GA 30341
(470) 460-6699

90 Bridge Street
Suite 420
Westbrook, ME 04092
(207) 591-0100

811 Cromwell Park Drive
Suite 113
Glen Burnie, MD 21061
(410) 863-1302

12304 Santa Monica Blvd.
Suite 100
Los Angeles, CA 90025
(424) 293-2290

20445 State Hwy. 249
Suite 200
Houston, TX 77070
(832) 678-9232

Project Portfolio

Our diverse project portfolio encompasses a wide range of sectors with a focus on innovation and creativity. We are dedicated to delivering high-quality design solutions tailored to meet the unique needs and vision of our clients.

Onyx Creative has a deep-rooted history in retail projects ranging from small boutique shops to million-square-foot mall repositioning. During our fifty years of providing professional services to clients on a national level, our project type mix has expanded to include stores, shopping centers, restaurants, industrial/warehouse, corporate and medical offices, religious facilities, and multifamily residences.

Aspirational design that inspires and elevates.

www.onyxcreative.com

Merrill Road Storage Facility

Portal entrance for re-imagined self storage.

Pittsfield, MA
67,000 sf.
Self Storage, Industrial

Onyx Creative re-imagined this solid cast concrete building, originally built to serve government purpose, into a secure self-storage facility. The focus of our project was to craft a distinctive entrance portal that not only welcomes visitors but also establishes two key thresholds within the space. These thresholds create a dedicated area for a front desk and a vestibule, enhancing both the functionality and the user experience of the facility.

Mini Storage Kriders Church Road

New group-up self storage solutions.

Westminster, MD
18,000 sf.
Self storage, Industrial

This ground-up self-storage facility design focuses on creating a visually striking and functional facade that clearly defines entrance points. By introducing height variations in the building's facade, we emphasized key access points, with the highest elevations marking the entryways. The most prominent section of this elevated design highlights the main office, establishing its importance and visibility. Smaller towers serve as distinct markers for additional access points to the storage facility.

State College Storage

More self storage solutions.

State College, PA
75,000 sf.
Self Storage, Industrial

Ultra Self Storage

Updates to existing self storage.

Ventura, CA
70,000 sf.
Self Storage, Industrial

This existing self storage property benefited from additional storage space and updates to the office area. The refresh focused on the use of brand colors and a clean minimal aesthetic.

West Covina Industrial Park

Two building, multi-tenant industrial complex.

West Covina, CA
101,000 sf.
Industrial

This West Covina Development is located in a medium density area and is one of the last sites available for development on a challenging steep lot. The project will provide light manufacturing space for craft industries in the region.

Industrial Development

Redeveloping light industrial property.

Atlanta, GA
80,000 sf.
Industrial

Onyx Creative worked on the redevelopment of an industrial property in Atlanta, GA. The site includes eight one-story buildings with office space, parking, and a truck court for receiving tractor-trailer shipments. The scope of work included preliminary site planning and renderings for the lot.

Hamrick Packaging Systems

New HQ for a growing industry.

Kent, OH
65,000 sf.
Industrial, Office

Hamrick is a leading manufacturer in end-of-line packaging equipment. Since 1975 it has been their mission to provide quality machinery at an affordable price. Recently the company has seen strong growth and needed a bigger building designed and planned to accommodate their needs. This 65,000 sf facility houses corporate offices and a 50,000 sf manufacturing space.

Greenbridge

Industrial facility upgrades and office renovation.

Cleveland, OH
100,000 sf.
Industrial

Greenbridge is an industry leader in the manufacturing of the broadest line of polyester and cord strapping along with complementary tools, equipment and accessories. Onyx Creative worked with the Greenbridge team to help convert the existing building and office space into a contemporary and modern facility.

Sandvik

Industrial facility and office updates.

Cleveland, OH
113,000 sf.
Industrial

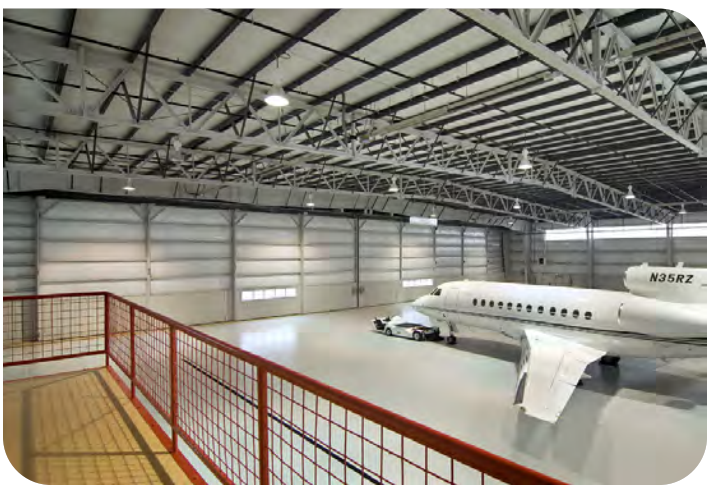
Sandvik is a global, high-tech engineering group providing solutions that enhance productivity, profitability and sustainability for the manufacturing, mining and infrastructure industries. Onyx Creative helped Sandvik bring their office and manufacturing facility of hydraulic attachments to Cleveland, Ohio.

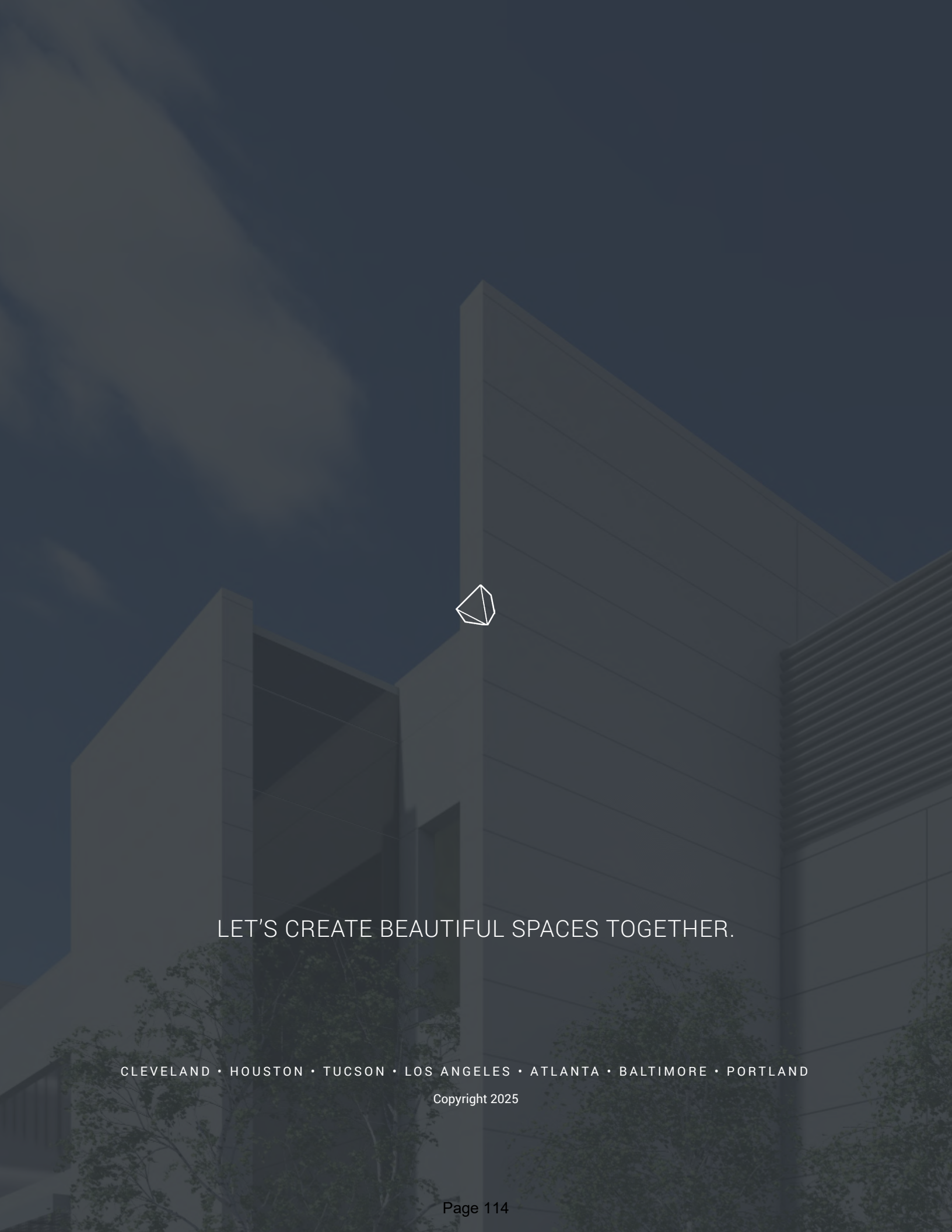
RZF Aviation Hangar

Designing hangar facilities for corporate aircraft.

Leesburg, VA
22,000 sf.
Industrial, Commercial

This project consisted of designing a hangar and support facilities for corporate aircraft, RZF Aviation. A fuel farm and service facility, to support the fixed base operation at the Leesburg, Virginia airport, were also included.





LET’S CREATE BEAUTIFUL SPACES TOGETHER.

CLEVELAND • HOUSTON • TUCSON • LOS ANGELES • ATLANTA • BALTIMORE • PORTLAND

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STORMWATER MANAGEMENT REPORT
MARCH 2026

INTRODUCTION

Haley Ward, Inc. has been retained by Peachtree Acquisitions, LLC to provide civil engineering services for the proposed work located at 97 Warren Avenue, Portland, ME, 04103 (Parcel 295/F001001). The site is currently forested and undeveloped and is approximately 1.32 acres in size and is located within the Capisic Brook watershed, which is classified as an urban impaired stream. This stormwater analysis and report have been prepared to demonstrate how the proposed stormwater management plan for this project will meet the requirements set forth by Maine DEP Chapter 500 Basic, General, and Flooding Standards and the following requirements from the City of Portland (City)

- City of Portland Land Use Ordinance Article 13.6.2.C.
- City of Portland Technical Manual – Section 5 – Portland Stormwater Management Standards and Maine DEP Chapter 500 Stormwater Management.
- DPW Specific Standard: Provide a minimum detention volume of 1" of rain times the project's total impervious area with a maximum outflow rate of 0.1 CFS until the minimum storage volume is achieved.

This report considers the impacts associated with the intended development with the purpose of:

1. Maintaining existing drainage patterns as much as possible while continuing the conveyance of upland watershed runoff; and
2. Mitigating potential stormwater quality impacts and preventing soil erosion and sedimentation resulting from stormwater runoff generated both during and after construction.

TABLE 1: PROJECT AREAS

LAND COVER TYPE	EXISTING AREA (S.F)	PROPOSED AREA (S.F)
Impervious	0	31,407
Landscaped	0	5,391
Developed	0	36,798
Disturbed	0	43,240

EXISTING CONDITIONS

The site is currently forested and undeveloped with slopes of 3 to 6 percent with higher elevations along the northern property limits and a relative low point in the southeastern corner of the site, near Warren Ave. Based on a natural resources study of the site by Haley Ward, Inc. in October 2025, there is no indication of protected natural resources, such as wetlands, on the site.

An existing detention pond is located along the eastern property line of the site, which collects stormwater runoff from the existing building site to the east. This pond is within an existing easement that was granted from the project site to the abutting property, and both properties have rights to utilize the pond. Runoff from the high side (north side) of the site flows southeasterly to the relative low point of the site. Additionally, runoff from the abutting property, along with a portion of the site, flows to the existing detention pond, which outlets to the relative low point on the site. Runoff then either flows through an existing 8-inch culvert, or an existing sidewalk area to an existing catchbasin (described as Pond 2 or CB-2 in our HydroCAD model) in Warren Ave.

PROPOSED CONDITIONS

Much of the site will be cleared and re-graded to allow for the construction of the building, parking lot, and building access walkway. A retaining wall is proposed at the rear of the parking lot to best establish site grades to achieve the project goals, match surrounding buildings, and match Warran Ave.

Runoff from the new impervious area on the site will be directed to a new series

of 48-inch pipes forming an underground detention system under the new parking lot. Runoff will then be directed to a Jellyfish Filter (registered trademark) to be treated prior to entering the existing stormdrain pipe system within Warren Ave. The existing detention pond will not be significantly impacted by the proposed project, and the pond will continue to operate within the existing parameters defined within the pre-development condition. An updated field inlet is also proposed to ensure runoff from the pond is directed to existing City pipes.

UNDERGROUND DETENTION SYSTEM

The first 1.5 inches of runoff (approx. 4,150 c.f.) from the site roof, parking lot and building access walkway areas will be temporarily stored in a series of 48-inch pipes and slowly released at a maximum peak rate of runoff 0.1 cfs to meet City of Portland stormwater standards for tying into an existing drainage system. The maximum storage of the underground detention system is 7,012 c.f. The extra storage volume, along with a series of orifices allow for the controlled release of runoff through the full range of design storm events (2-, 10-, and 25-year, 24-hour storm events).

Flow from the detention system will then be directed to a Jellyfish Filter feature that will remove sediment and pollutants from the runoff prior to releasing it to the existing drainage pipes within Warren Ave. The 48-inch pipe storage system and Jellyfish Filter have been designed and will be provided by Contech Engineering Solutions, LLC.

LOW IMPACT DEVELOPMENT (LID) SCORING

LID credits being claimed for this project are included on the attached Low Impact Development (LID) Scoring Tool as provided on the City's website. Some of the credits being claimed are a direct result of the proposed stormwater management plan, which allows for the detention and treatment of 1.5 times the required minimum volumes and the controlled release of runoff at required peak rates of runoff. Additionally, the applicant is proposing to construct the minimum amount of parking spaces needed to support the use of the development and will utilize landscaping and soil preparation specifications to minimize impacts from development.

WATER QUANTITY

Two existing catch basins along the curbline of Warren Avenue were chosen as the two study points for the HydroCAD model. They are described as Pond 1P (CB-1) and Pond 2P (CB-2) in both the pre- and post-development conditions. The peak inflow rate to each of these study points is the basis of comparison between the pre- and post-development conditions. Pre- and post-development watershed boundaries, times of concentration (Tc's), and soil conditions are included on the Hydrology Maps included in the attached Civil Plan Set. HydroCAD calculation reports are attached for review as well.

Table 2 provides a summary of the pre- and post-development peak inflow rates to Pond 1P and Pond 2P for the 2, 10, and 25- year storm events, where corresponding rainfall amounts for these storms are 3.10", 4.60", and 5.80". The post-development condition rates are less than or equal to the pre-development rates in all three storm events.

TABLE 2: PRE-AND POST- DEVELOPMENT RUNOFF RATE

	PRE-DEVELOPMENT		POST-DEVELOPMENT	
STORM EVENT	POND 1P	POND 2P	POND 1P	POND 2P
2-Year	1.24 cfs	2.99 cfs	1.24 cfs	2.65 cfs
10-Year	2.14 cfs	5.66 cfs	2.14 cfs	5.56 cfs
25-Year	2.87 cfs	7.91 cfs	2.87 cfs	7.90 cfs

WATER QUALITY

The City of Portland and Maine Department of Environmental Protection's (MDEP) Chapter 500 General Standard requires that stormwater management systems provide treatment of no less than 95% of impervious area and no less than 80% of developed area in an approved BMP prior to discharge from the site.

TABLE 3: WATER QUALITY TREATMENT PERCENTAGES

LAND COVER TYPE	AREA (S.F)	TREATED AREA (S.F)	% TREATED
Impervious	31,407	31,407	100%
Landscaped	5,591	4,424	79%
Developed	36,798	35,831	97%

DETENTION/TREATMENT VOLUMES

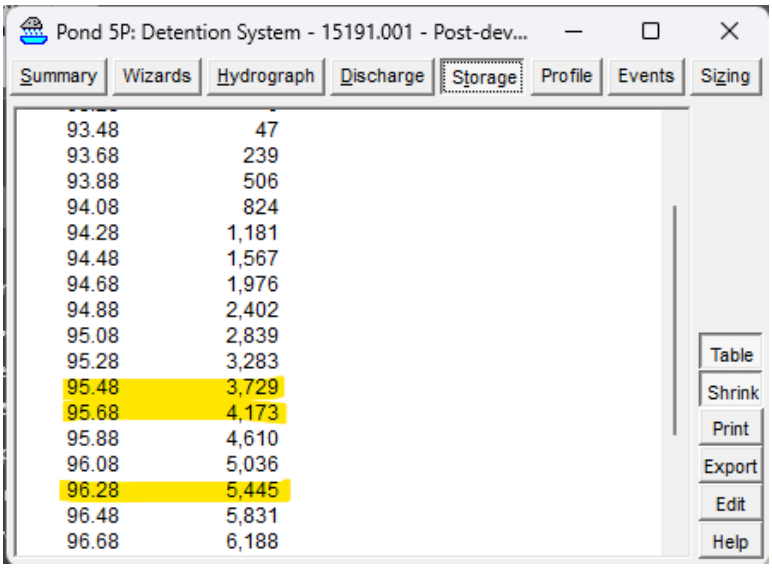
The stormwater management system for this project is required to detain:

1. 1-inch of runoff over the total impervious area for slow release (2,617 C.F.), and
2. 1-inch of runoff over the total impervious area, plus 0.4 inches of runoff over the landscaped area for treatment (2,765 C.F.).

Additionally, LID credits are given for detaining 1.5 times these required volumes:

1. 2,617 X 1.5 = 3,926 C.F.
2. 2,765 X 1.5 = 4,147 C.F.

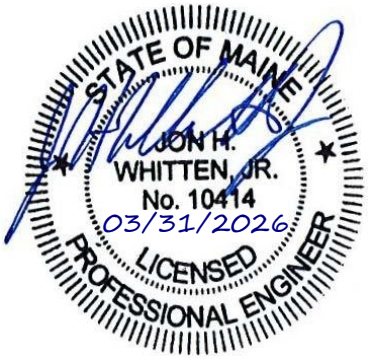
As displayed in the following snapshot image, the storage of the underground detention system (Pond 5P) stores 3,926 C.F. of runoff at elevation 95.57. A 1.5-inch diameter orifice is proposed at the base of the system to slow the release rate of that storage volume to a maximum of 0.10 cfs (See the HydroCAD calculation report for the 1" Storm). A second orifice is placed at elevation 95.57 to allow slightly higher release rates for the larger storm events, while ensuring that the full 3,926 C.F. is released slowly.

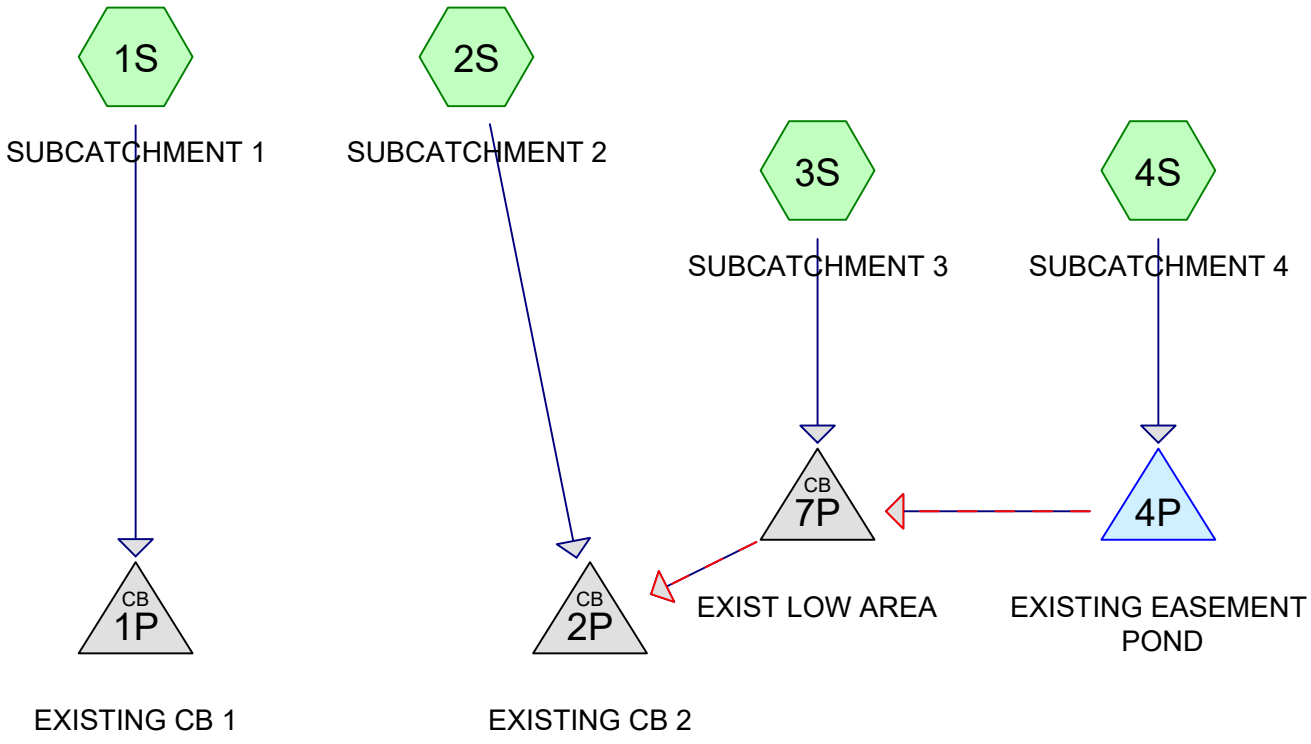


Additionally, Contech reports that the specified Jellyfish Filter (Pond 6P), as modeled in HydroCAD, can treat runoff up to a 0.33 cfs rate. Since the release rate of the 2-year storm is only 0.22 cfs (at a peak elevation of 95.75) and the next orifice does not release runoff at a higher rate until elevation 96.20, the model shows us that over 5,036 C.F. of runoff will be treated by the Jellyfish Filter.

CONCLUSION

The use of the Contech designed system, along with maintaining use of the existing detention pond along the eastern property border, results in the project's stormwater management system to meet the City and MDEP stormwater requirements and supports our claim of City LID credits. Based on the results of the HydroCAD model and the Contech system, we conclude that the project is unlikely to have a significant negative impact on downstream areas or systems.





Subcat Reach Pond Link

Routing Diagram for 15191.001 - Pre-development 20260331
Prepared by Haley Ward, Printed 3/31/2026
HydroCAD® 10.20-8a s/n 00641 © 2025 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.086	74	>75% Grass cover, Good, HSG C (1S, 2S, 3S, 4S)
0.480	80	>75% Grass cover, Good, HSG D (1S, 3S, 4S)
1.059	98	Unconnected pavement, HSG D (1S, 2S, 4S)
0.338	70	Woods, Good, HSG C (2S, 3S, 4S)
1.532	77	Woods, Good, HSG D (1S, 2S, 3S, 4S)
3.495	**83**	**TOTAL AREA**

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: SUBCATCHMENT1 Runoff Area=31,459 sf 45.40% Impervious Runoff Depth=1.83"
Flow Length=415' Tc=12.6 min CN=87 Runoff=1.24 cfs 0.110 af

Subcatchment2S: SUBCATCHMENT2 Runoff Area=19,604 sf 28.83% Impervious Runoff Depth=1.26"
Flow Length=330' Tc=9.8 min UI Adjusted CN=79 Runoff=0.57 cfs 0.047 af

Subcatchment3S: SUBCATCHMENT3 Runoff Area=42,541 sf 0.00% Impervious Runoff Depth=1.03"
Flow Length=245' Slope=0.0500 '/' Tc=11.6 min CN=75 Runoff=0.92 cfs 0.084 af

Subcatchment4S: SUBCATCHMENT4 Runoff Area=58,631 sf 44.69% Impervious Runoff Depth=1.83"
Flow Length=290' Tc=18.6 min CN=87 Runoff=2.00 cfs 0.205 af

Pond 1P: EXISTING CB 1 Peak Elev=98.08' Inflow=1.24 cfs 0.110 af
15.0" Round Culvert n=0.011 L=36.0' S=0.0083 '/' Outflow=1.24 cfs 0.110 af

Pond 2P: EXISTING CB 2 Peak Elev=97.32' Inflow=2.99 cfs 0.336 af
Primary=2.41 cfs 0.325 af Secondary=0.58 cfs 0.011 af Outflow=2.99 cfs 0.336 af

Pond 4P: EXISTING EASEMENT POND Peak Elev=96.29' Storage=520 cf Inflow=2.00 cfs 0.205 af
Primary=1.89 cfs 0.205 af Secondary=0.00 cfs 0.000 af Outflow=1.89 cfs 0.205 af

Pond 7P: EXIST LOW AREA Peak Elev=99.14' Inflow=2.59 cfs 0.288 af
8.0" Round Culvert n=0.012 L=22.0' S=0.0182 '/' Outflow=2.59 cfs 0.288 af

Total Runoff Area = 3.495 ac Runoff Volume = 0.446 af Average Runoff Depth = 1.53"
69.69% Pervious = 2.436 ac 30.31% Impervious = 1.059 ac

Summary for Subcatchment 1S: SUBCATCHMENT 1

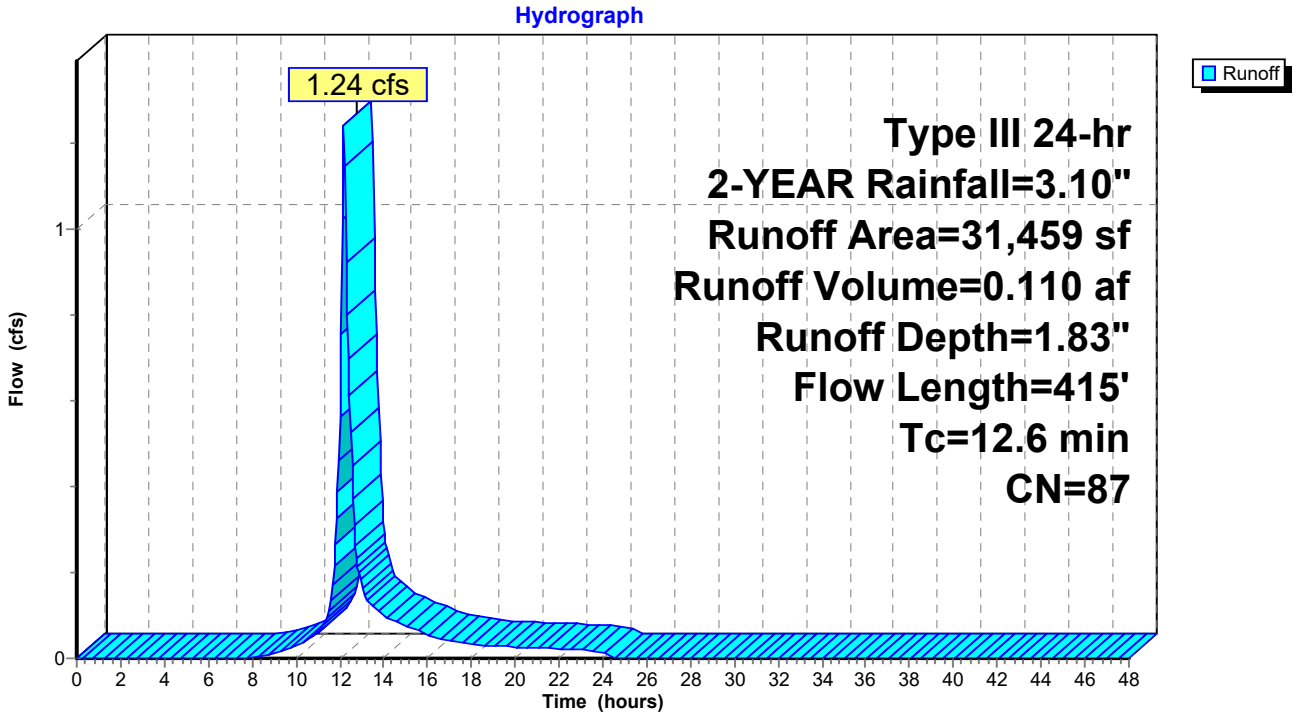
Runoff = 1.24 cfs @ 12.17 hrs, Volume= 0.110 af, Depth= 1.83"
Routed to Pond 1P : EXISTING CB 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YEAR Rainfall=3.10"

Area (sf)	CN	Description
14,281	98	Unconnected pavement, HSG D
3,901	80	>75% Grass cover, Good, HSG D
391	74	>75% Grass cover, Good, HSG C
12,886	77	Woods, Good, HSG D
31,459	87	Weighted Average
17,178		54.60% Pervious Area
14,281		45.40% Impervious Area
14,281		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	50	0.0540	0.10		**Sheet Flow, A TO B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.1	45	0.0200	0.71		**Shallow Concentrated Flow, B TO C** Woodland Kv= 5.0 fps
1.9	100	0.0150	0.86		**Shallow Concentrated Flow, C TO D** Short Grass Pasture Kv= 7.0 fps
0.7	50	0.0560	1.18		**Shallow Concentrated Flow, D TO E** Woodland Kv= 5.0 fps
0.5	170	0.0150	6.23	25.00	**Trap/Vee/Rect Channel Flow, E to F** Bot.W=3.00' D=0.50' Z= 0.1 & 20.0 '/' Top.W=13.05' n= 0.013 Asphalt, smooth
12.6	415	Total			

Subcatchment 1S: SUBCATCHMENT 1



Summary for Subcatchment 2S: SUBCATCHMENT 2

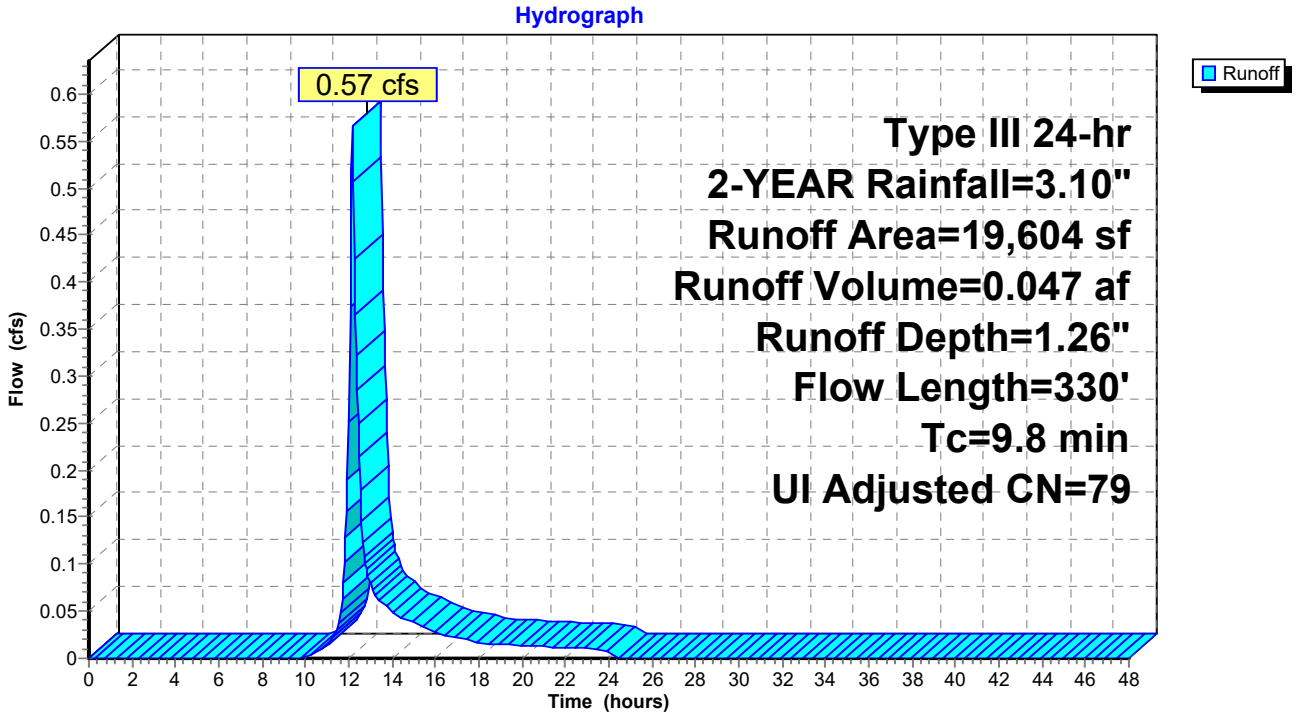
Runoff = 0.57 cfs @ 12.15 hrs, Volume= 0.047 af, Depth= 1.26"
Routed to Pond 2P : EXISTING CB 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YEAR Rainfall=3.10"

Area (sf)	CN	Adj	Description
5,652	98		Unconnected pavement, HSG D
1,100	74		>75% Grass cover, Good, HSG C
10,152	77		Woods, Good, HSG D
2,700	70		Woods, Good, HSG C
19,604	82	79	Weighted Average, UI Adjusted
13,952			71.17% Pervious Area
5,652			28.83% Impervious Area
5,652			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	50	0.0600	0.10		**Sheet Flow, A TO B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.1	70	0.0440	1.05		**Shallow Concentrated Flow, B TO C** Woodland Kv= 5.0 fps
0.6	210	0.0130	5.80	23.27	**Trap/Vee/Rect Channel Flow, C to D** Bot.W=3.00' D=0.50' Z= 0.1 & 20.0 '/' Top.W=13.05' n= 0.013
9.8	330	Total			

Subcatchment 2S: SUBCATCHMENT 2



Summary for Subcatchment 3S: SUBCATCHMENT 3

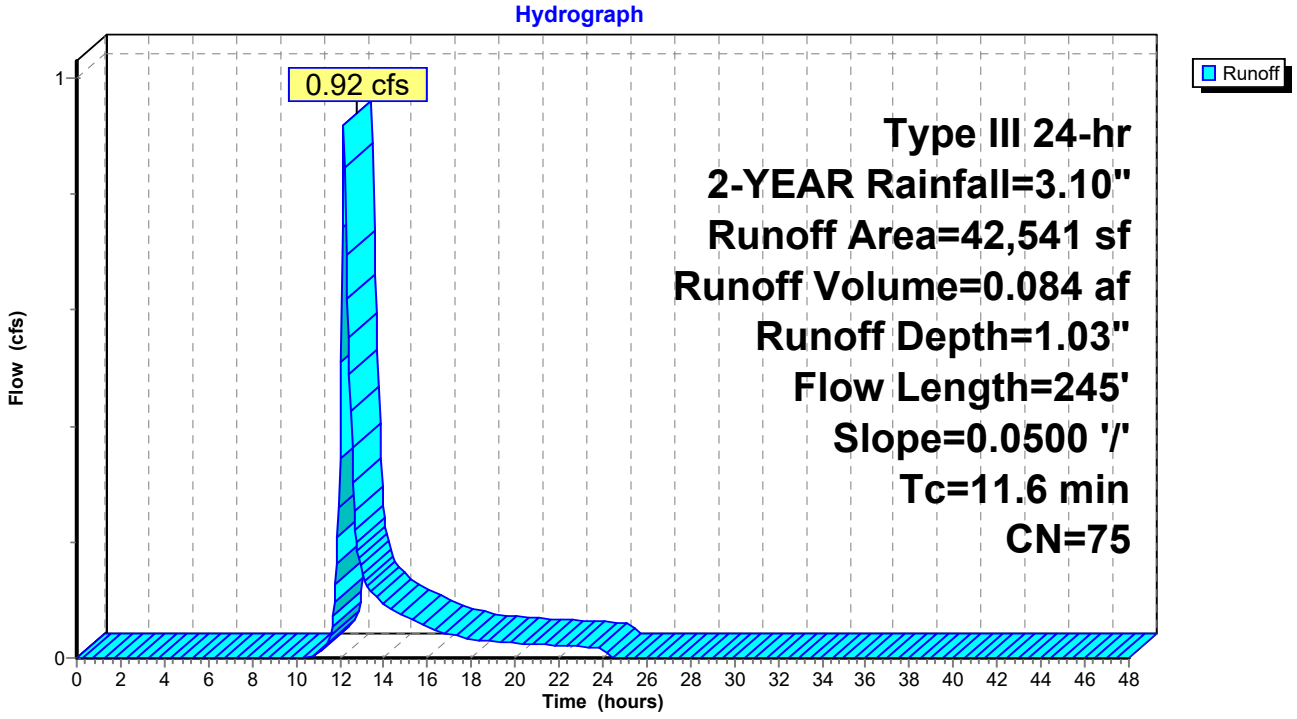
Runoff = 0.92 cfs @ 12.17 hrs, Volume= 0.084 af, Depth= 1.03"
Routed to Pond 7P : EXIST LOW AREA

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YEAR Rainfall=3.10"

Area (sf)	CN	Description
0	98	Unconnected pavement, HSG D
6,772	80	>75% Grass cover, Good, HSG D
1,262	74	>75% Grass cover, Good, HSG C
22,577	77	Woods, Good, HSG D
11,930	70	Woods, Good, HSG C
42,541	75	Weighted Average
42,541		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	50	0.0500	0.10		**Sheet Flow, A TO B** Woods: Light underbrush n= 0.400 P2= 3.10"
2.9	195	0.0500	1.12		**Shallow Concentrated Flow, B TO C** Woodland Kv= 5.0 fps
11.6	245	Total			

Subcatchment 3S: SUBCATCHMENT 3



Summary for Subcatchment 4S: SUBCATCHMENT 4

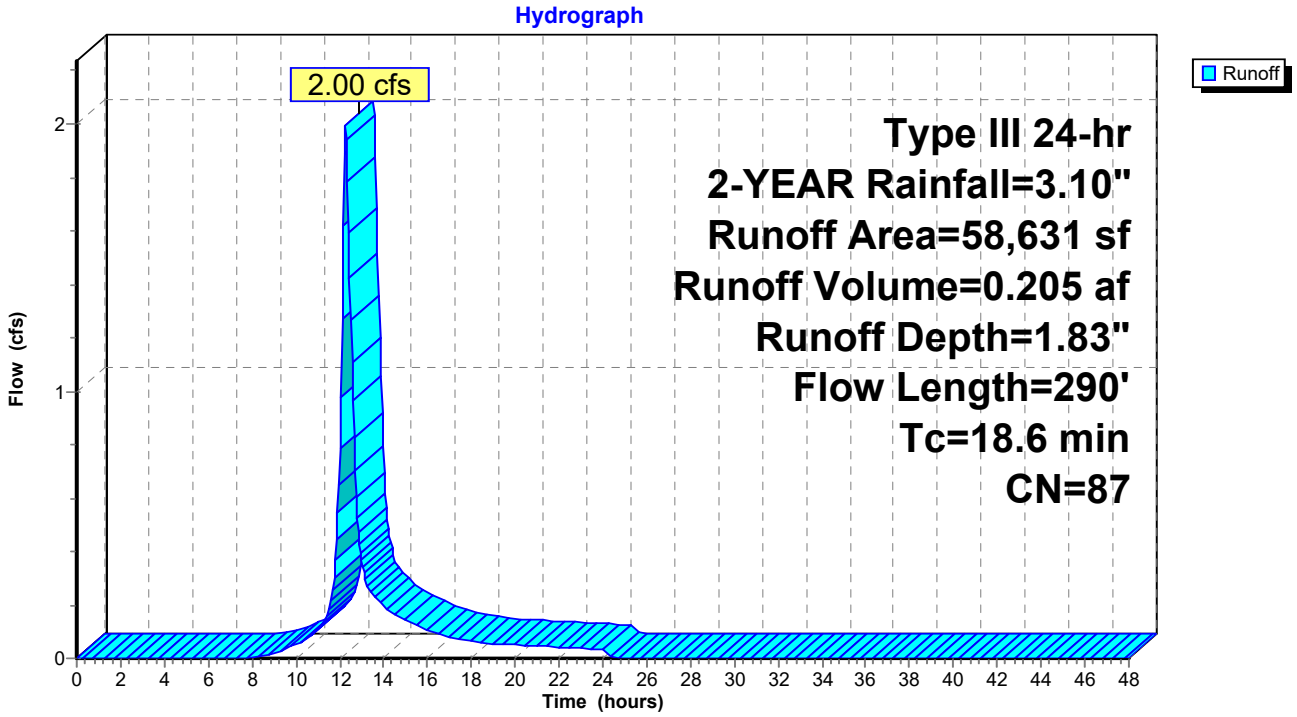
Runoff = 2.00 cfs @ 12.26 hrs, Volume= 0.205 af, Depth= 1.83"
Routed to Pond 4P : EXISTING EASEMENT POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YEAR Rainfall=3.10"

Area (sf)	CN	Description
26,204	98	Unconnected pavement, HSG D
10,228	80	>75% Grass cover, Good, HSG D
985	74	>75% Grass cover, Good, HSG C
21,130	77	Woods, Good, HSG D
84	70	Woods, Good, HSG C
58,631	87	Weighted Average
32,427		55.31% Pervious Area
26,204		44.69% Impervious Area
26,204		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.6	100	0.0340	0.09		**Sheet Flow, A TO B** Woods: Light underbrush n= 0.400 P2= 3.10"
0.1	30	0.0300	3.52		**Shallow Concentrated Flow, B TO C** Paved Kv= 20.3 fps
0.9	160	0.0040	2.85	0.99	**Pipe Channel, C TO D** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.010 PVC, smooth interior
18.6	290	Total			

Subcatchment 4S: SUBCATCHMENT 4



Summary for Pond 1P: EXISTING CB 1

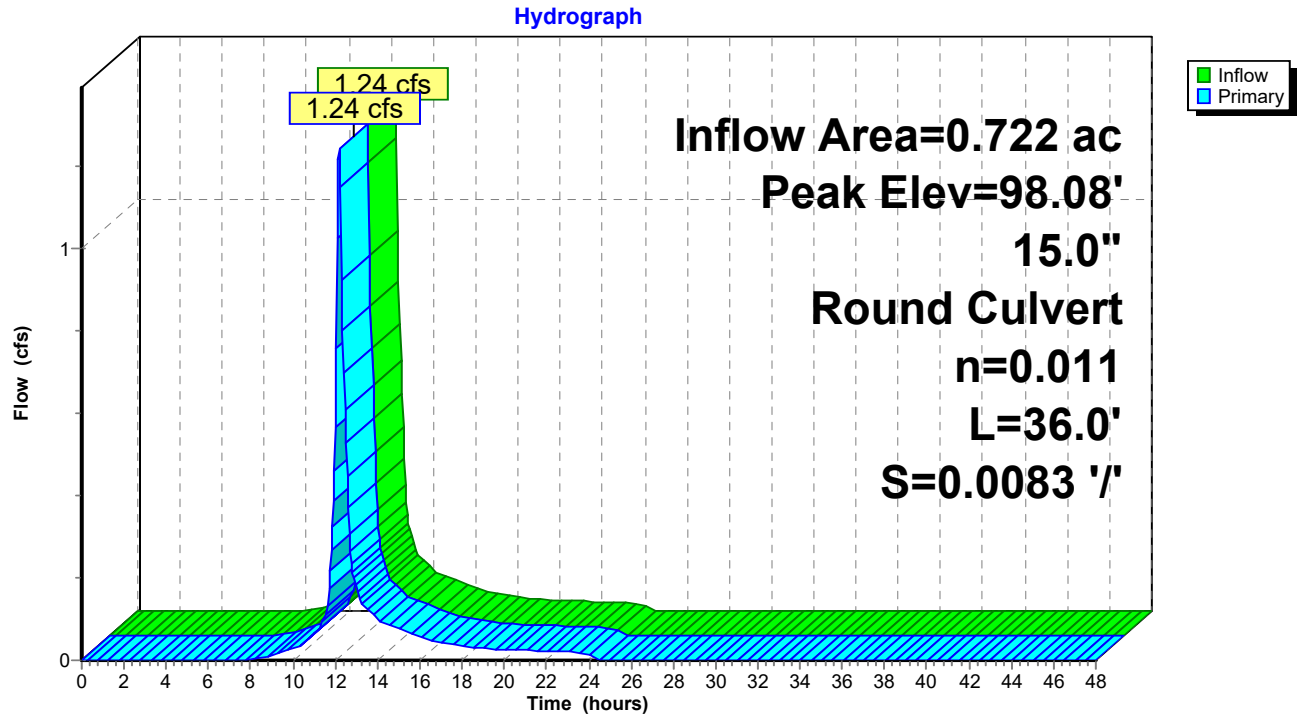
Inflow Area = 0.722 ac, 45.40% Impervious, Inflow Depth = 1.83" for 2-YEAR event
Inflow = 1.24 cfs @ 12.17 hrs, Volume= 0.110 af
Outflow = 1.24 cfs @ 12.17 hrs, Volume= 0.110 af, Atten= 0%, Lag= 0.0 min
Primary = 1.24 cfs @ 12.17 hrs, Volume= 0.110 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 98.08' @ 12.17 hrs
Flood Elev= 100.69'

Device	Routing	Invert	Outlet Devices
#1	Primary	97.52'	**15.0" Round Culvert** L= 36.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 97.52' / 97.22' S= 0.0083 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf

Primary OutFlow Max=1.22 cfs @ 12.17 hrs HW=98.07' (Free Discharge)
1=Culvert (Barrel Controls 1.22 cfs @ 3.43 fps)

Pond 1P: EXISTING CB 1



Summary for Pond 2P: EXISTING CB 2

Inflow Area = 2.773 ac, 26.38% Impervious, Inflow Depth = 1.45" for 2-YEAR event
Inflow = 2.99 cfs @ 12.25 hrs, Volume= 0.336 af
Outflow = 2.99 cfs @ 12.25 hrs, Volume= 0.336 af, Atten= 0%, Lag= 0.0 min
Primary = 2.41 cfs @ 12.25 hrs, Volume= 0.325 af
Secondary = 0.58 cfs @ 12.25 hrs, Volume= 0.011 af

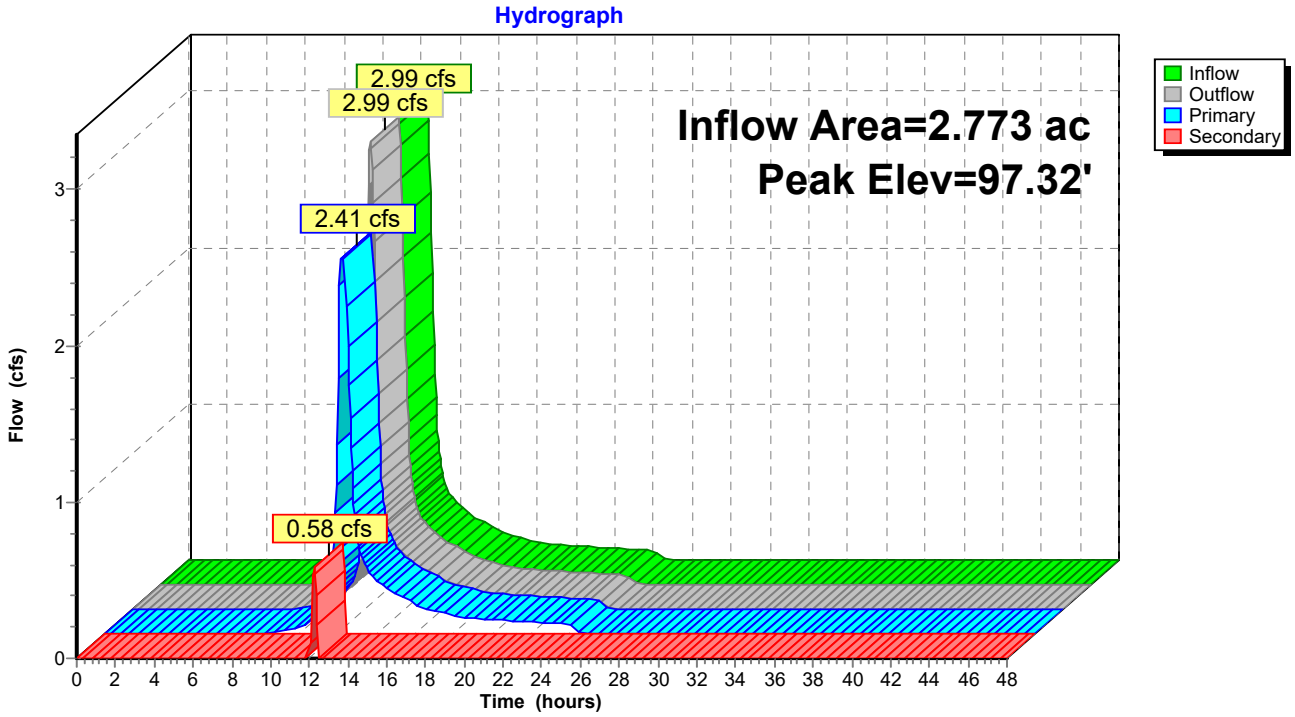
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 97.32' @ 12.25 hrs
Flood Elev= 97.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	95.00'	**8.0" Round Culvert** L= 36.8' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 95.00' / 93.78' S= 0.0332 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.35 sf
#2	Primary	94.15'	**1.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	97.24'	**3.0" x 3.0" Horiz. Orifice/Grate X 6.00 columns** X 6 rows C= 0.600 in 24.0" x 24.0" Grate (56% open area) Limited to weir flow at low heads

Primary OutFlow Max=2.41 cfs @ 12.25 hrs HW=97.32' (Free Discharge)
└─**1=Culvert** (Inlet Controls 2.37 cfs @ 6.78 fps)
└─**2=Orifice/Grate** (Orifice Controls 0.05 cfs @ 8.51 fps)

Secondary OutFlow Max=0.57 cfs @ 12.25 hrs HW=97.32' (Free Discharge)
└─**3=Orifice/Grate** (Weir Controls 0.57 cfs @ 0.92 fps)

Pond 2P: EXISTING CB 2



Summary for Pond 4P: EXISTING EASEMENT POND

Inflow Area = 1.346 ac, 44.69% Impervious, Inflow Depth = 1.83" for 2-YEAR event
Inflow = 2.00 cfs @ 12.26 hrs, Volume= 0.205 af
Outflow = 1.89 cfs @ 12.32 hrs, Volume= 0.205 af, Atten= 5%, Lag= 3.7 min
Primary = 1.89 cfs @ 12.32 hrs, Volume= 0.205 af
Routed to Pond 7P : EXIST LOW AREA
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 7P : EXIST LOW AREA

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 96.29' @ 12.32 hrs Surf.Area= 813 sf Storage= 520 cf

Plug-Flow detention time= 9.8 min calculated for 0.205 af (100% of inflow)
Center-of-Mass det. time= 9.3 min (841.2 - 831.9)

Volume	Invert	Avail.Storage	Storage Description
#1	95.00'	13,259 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

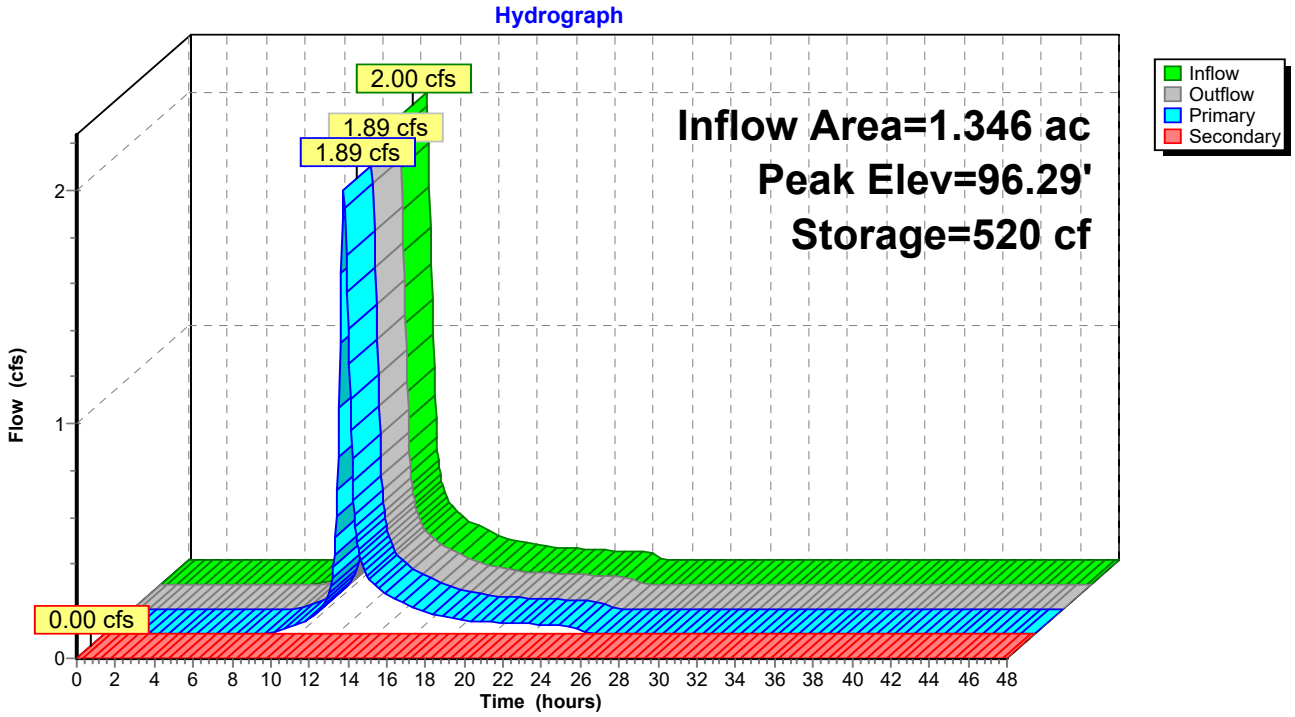
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
95.00	100	0	0
96.00	550	325	325
97.00	1,469	1,010	1,335
98.00	2,580	2,025	3,359
99.00	4,400	3,490	6,849
100.00	8,420	6,410	13,259

Device	Routing	Invert	Outlet Devices
#1	Primary	95.00'	**43.0 deg Sharp-Crested Vee/Trap Weir** Cv= 2.56 (C= 3.20)
#2	Secondary	97.40'	**12.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=1.88 cfs @ 12.32 hrs HW=96.28' (Free Discharge)
1=Sharp-Crested Vee/Trap Weir (Weir Controls 1.88 cfs @ 2.90 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=95.00' (Free Discharge)
2=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 4P: EXISTING EASEMENT POND



Summary for Pond 7P: EXIST LOW AREA

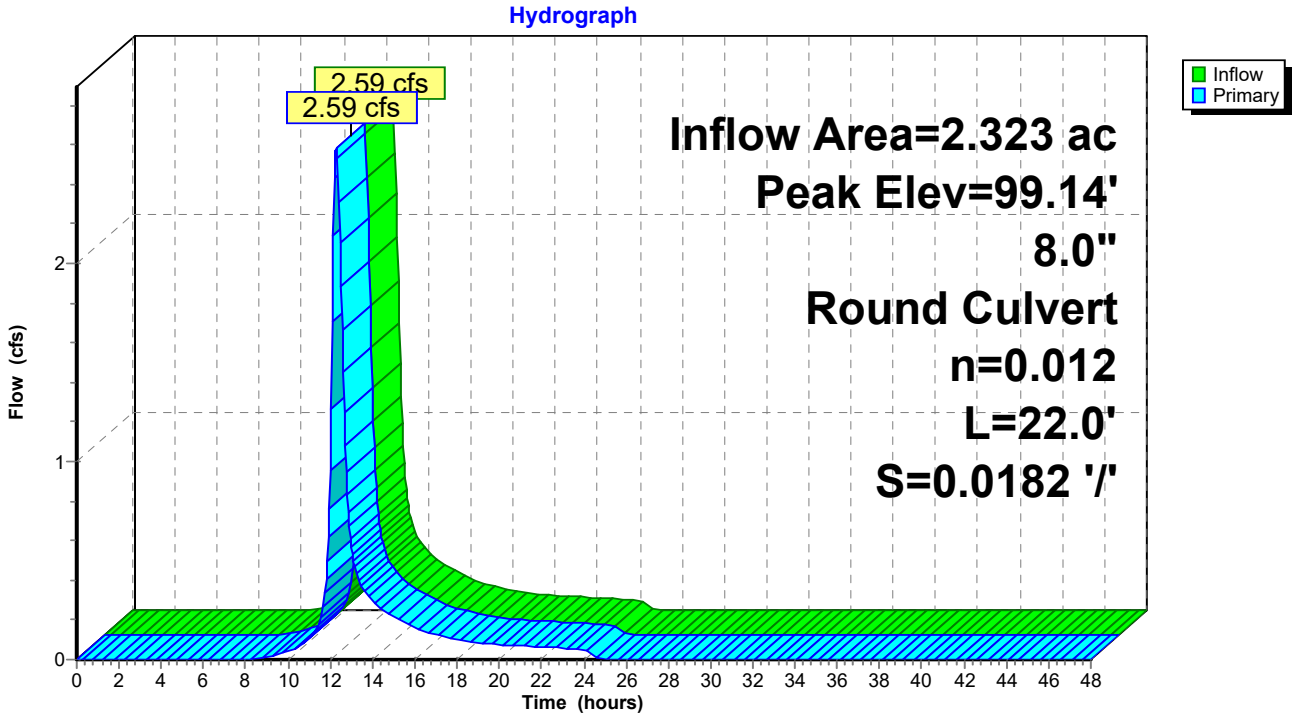
Inflow Area = 2.323 ac, 25.90% Impervious, Inflow Depth = 1.49" for 2-YEAR event
Inflow = 2.59 cfs @ 12.28 hrs, Volume= 0.288 af
Outflow = 2.59 cfs @ 12.28 hrs, Volume= 0.288 af, Atten= 0%, Lag= 0.0 min
Primary = 2.59 cfs @ 12.28 hrs, Volume= 0.288 af
Routed to Pond 2P : EXISTING CB 2

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 99.14' @ 12.28 hrs
Flood Elev= 97.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	95.00'	**8.0" Round Culvert** L= 22.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 95.00' / 94.60' S= 0.0182 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=2.58 cfs @ 12.28 hrs HW=99.10' (Free Discharge)
1=Culvert (Inlet Controls 2.58 cfs @ 7.38 fps)

Pond 7P: EXIST LOW AREA



Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: SUBCATCHMENT1 Runoff Area=31,459 sf 45.40% Impervious Runoff Depth=3.19"
Flow Length=415' Tc=12.6 min CN=87 Runoff=2.14 cfs 0.192 af

Subcatchment2S: SUBCATCHMENT2 Runoff Area=19,604 sf 28.83% Impervious Runoff Depth=2.46"
Flow Length=330' Tc=9.8 min UI Adjusted CN=79 Runoff=1.13 cfs 0.092 af

Subcatchment3S: SUBCATCHMENT3 Runoff Area=42,541 sf 0.00% Impervious Runoff Depth=2.13"
Flow Length=245' Slope=0.0500 '/' Tc=11.6 min CN=75 Runoff=2.00 cfs 0.173 af

Subcatchment4S: SUBCATCHMENT4 Runoff Area=58,631 sf 44.69% Impervious Runoff Depth=3.19"
Flow Length=290' Tc=18.6 min CN=87 Runoff=3.45 cfs 0.358 af

Pond 1P: EXISTING CB 1 Peak Elev=98.29' Inflow=2.14 cfs 0.192 af
15.0" Round Culvert n=0.011 L=36.0' S=0.0083 '/' Outflow=2.14 cfs 0.192 af

Pond 2P: EXISTING CB 2 Peak Elev=97.48' Inflow=5.66 cfs 0.624 af
Primary=2.51 cfs 0.524 af Secondary=3.15 cfs 0.099 af Outflow=5.66 cfs 0.624 af

Pond 4P: EXISTING EASEMENT POND Peak Elev=96.60' Storage=824 cf Inflow=3.45 cfs 0.358 af
Primary=3.28 cfs 0.358 af Secondary=0.00 cfs 0.000 af Outflow=3.28 cfs 0.358 af

Pond 7P: EXIST LOW AREA Peak Elev=108.31' Inflow=4.78 cfs 0.531 af
8.0" Round Culvert n=0.012 L=22.0' S=0.0182 '/' Outflow=4.78 cfs 0.531 af

Total Runoff Area = 3.495 ac Runoff Volume = 0.816 af Average Runoff Depth = 2.80"
69.69% Pervious = 2.436 ac 30.31% Impervious = 1.059 ac

Summary for Subcatchment 1S: SUBCATCHMENT 1

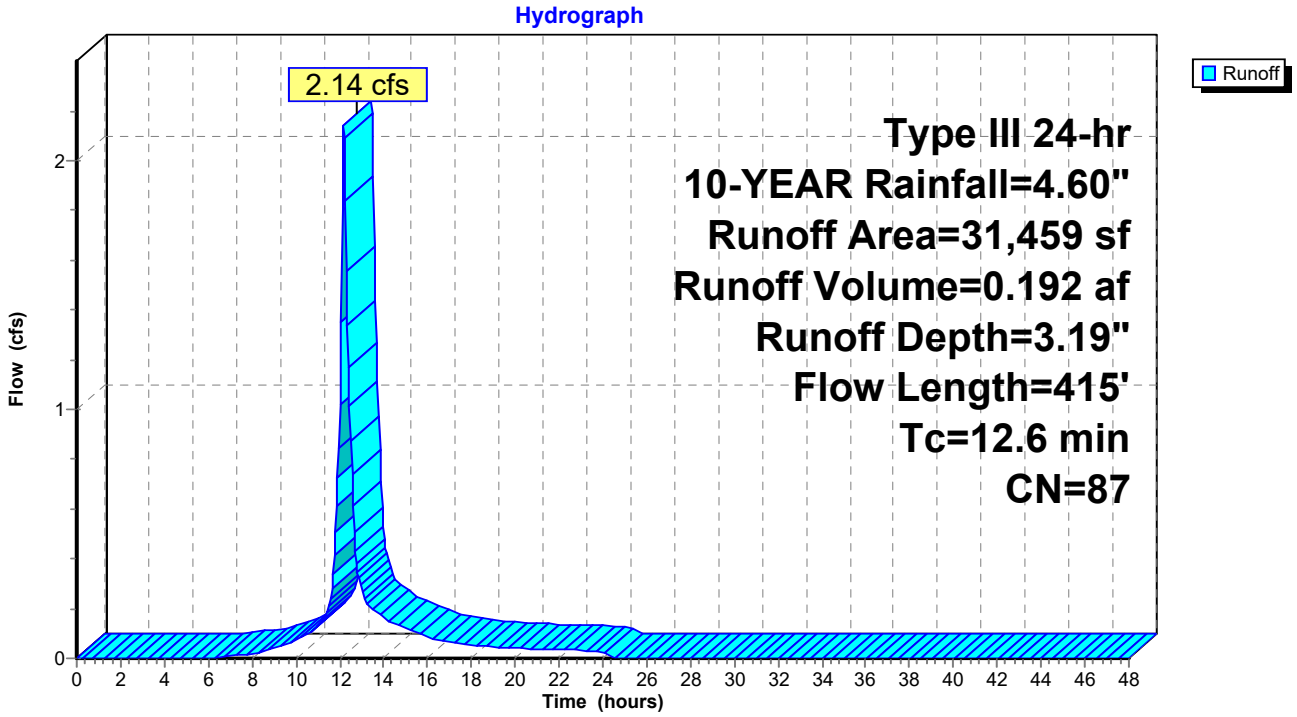
Runoff = 2.14 cfs @ 12.17 hrs, Volume= 0.192 af, Depth= 3.19"
Routed to Pond 1P : EXISTING CB 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YEAR Rainfall=4.60"

Area (sf)	CN	Description
14,281	98	Unconnected pavement, HSG D
3,901	80	>75% Grass cover, Good, HSG D
391	74	>75% Grass cover, Good, HSG C
12,886	77	Woods, Good, HSG D
31,459	87	Weighted Average
17,178		54.60% Pervious Area
14,281		45.40% Impervious Area
14,281		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	50	0.0540	0.10		**Sheet Flow, A TO B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.1	45	0.0200	0.71		**Shallow Concentrated Flow, B TO C** Woodland Kv= 5.0 fps
1.9	100	0.0150	0.86		**Shallow Concentrated Flow, C TO D** Short Grass Pasture Kv= 7.0 fps
0.7	50	0.0560	1.18		**Shallow Concentrated Flow, D TO E** Woodland Kv= 5.0 fps
0.5	170	0.0150	6.23	25.00	**Trap/Vee/Rect Channel Flow, E to F** Bot.W=3.00' D=0.50' Z= 0.1 & 20.0 '/' Top.W=13.05' n= 0.013 Asphalt, smooth
12.6	415	Total			

Subcatchment 1S: SUBCATCHMENT 1



Summary for Subcatchment 2S: SUBCATCHMENT 2

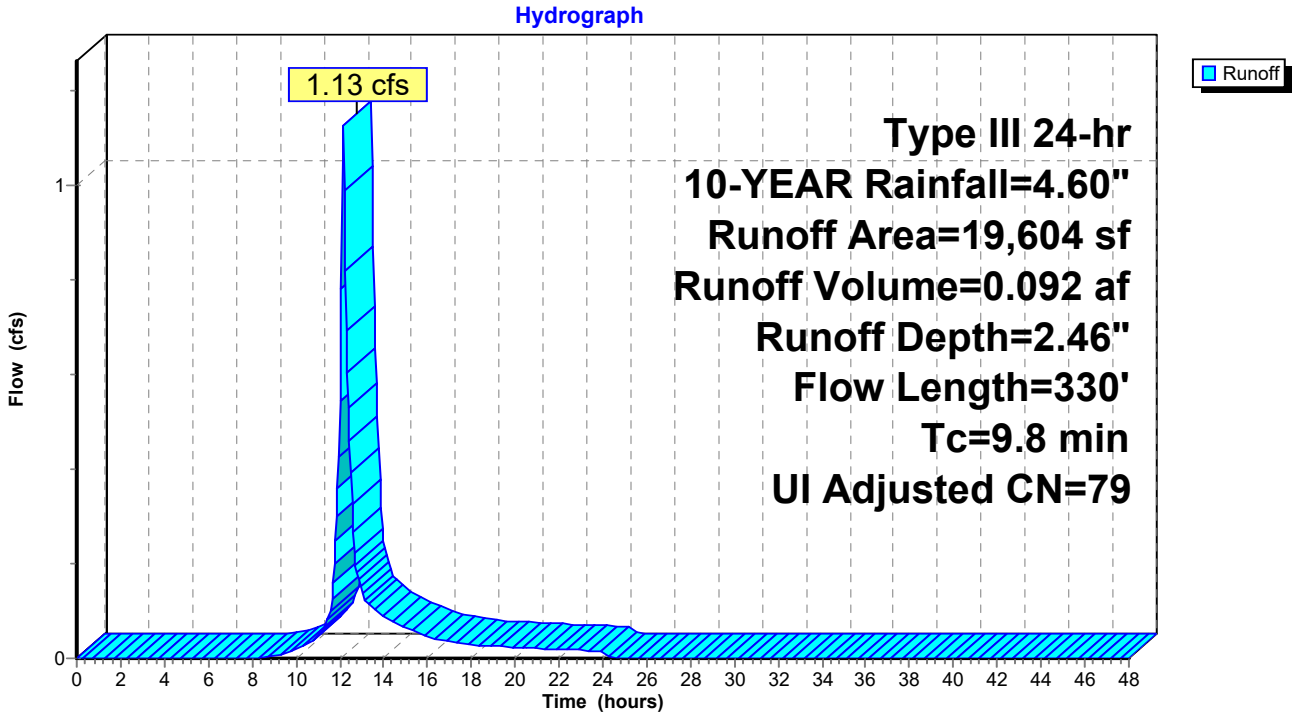
Runoff = 1.13 cfs @ 12.14 hrs, Volume= 0.092 af, Depth= 2.46"
Routed to Pond 2P : EXISTING CB 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YEAR Rainfall=4.60"

Area (sf)	CN	Adj	Description
5,652	98		Unconnected pavement, HSG D
1,100	74		>75% Grass cover, Good, HSG C
10,152	77		Woods, Good, HSG D
2,700	70		Woods, Good, HSG C
19,604	82	79	Weighted Average, UI Adjusted
13,952			71.17% Pervious Area
5,652			28.83% Impervious Area
5,652			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	50	0.0600	0.10		**Sheet Flow, A TO B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.1	70	0.0440	1.05		**Shallow Concentrated Flow, B TO C** Woodland Kv= 5.0 fps
0.6	210	0.0130	5.80	23.27	**Trap/Vee/Rect Channel Flow, C to D** Bot.W=3.00' D=0.50' Z= 0.1 & 20.0 '/' Top.W=13.05' n= 0.013
9.8	330	Total			

Subcatchment 2S: SUBCATCHMENT 2



Summary for Subcatchment 3S: SUBCATCHMENT 3

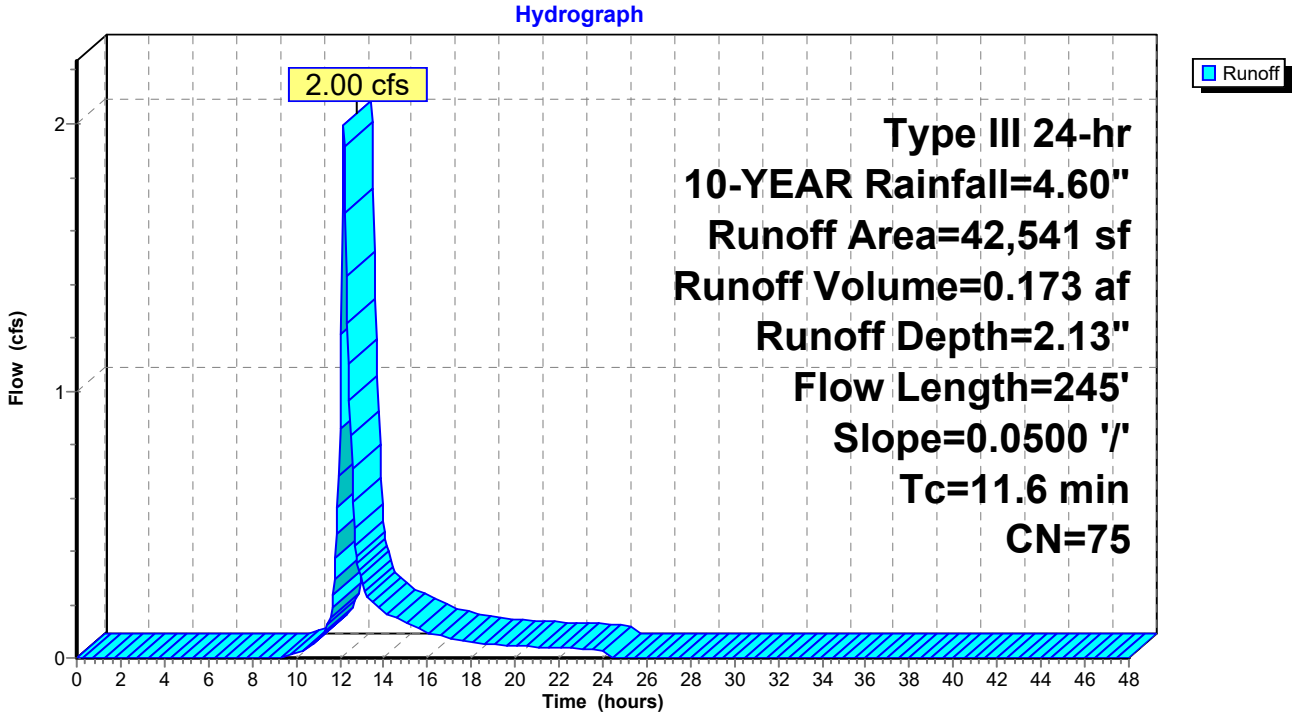
Runoff = 2.00 cfs @ 12.17 hrs, Volume= 0.173 af, Depth= 2.13"
Routed to Pond 7P : EXIST LOW AREA

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YEAR Rainfall=4.60"

Area (sf)	CN	Description
0	98	Unconnected pavement, HSG D
6,772	80	>75% Grass cover, Good, HSG D
1,262	74	>75% Grass cover, Good, HSG C
22,577	77	Woods, Good, HSG D
11,930	70	Woods, Good, HSG C
42,541	75	Weighted Average
42,541		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	50	0.0500	0.10		**Sheet Flow, A TO B** Woods: Light underbrush n= 0.400 P2= 3.10"
2.9	195	0.0500	1.12		**Shallow Concentrated Flow, B TO C** Woodland Kv= 5.0 fps
11.6	245	Total			

Subcatchment 3S: SUBCATCHMENT 3



Summary for Subcatchment 4S: SUBCATCHMENT 4

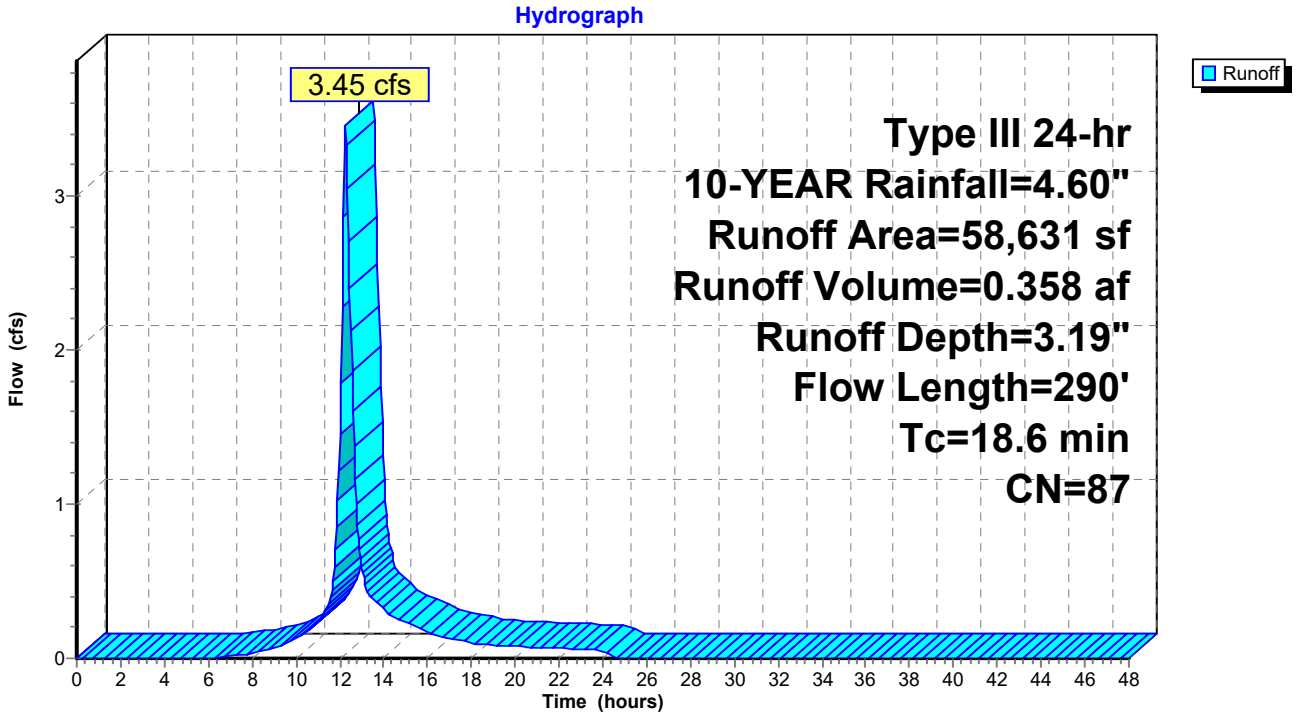
Runoff = 3.45 cfs @ 12.25 hrs, Volume= 0.358 af, Depth= 3.19"
Routed to Pond 4P : EXISTING EASEMENT POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YEAR Rainfall=4.60"

Area (sf)	CN	Description
26,204	98	Unconnected pavement, HSG D
10,228	80	>75% Grass cover, Good, HSG D
985	74	>75% Grass cover, Good, HSG C
21,130	77	Woods, Good, HSG D
84	70	Woods, Good, HSG C
58,631	87	Weighted Average
32,427		55.31% Pervious Area
26,204		44.69% Impervious Area
26,204		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.6	100	0.0340	0.09		**Sheet Flow, A TO B** Woods: Light underbrush n= 0.400 P2= 3.10"
0.1	30	0.0300	3.52		**Shallow Concentrated Flow, B TO C** Paved Kv= 20.3 fps
0.9	160	0.0040	2.85	0.99	**Pipe Channel, C TO D** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.010 PVC, smooth interior
18.6	290	Total			

Subcatchment 4S: SUBCATCHMENT 4



Summary for Pond 1P: EXISTING CB 1

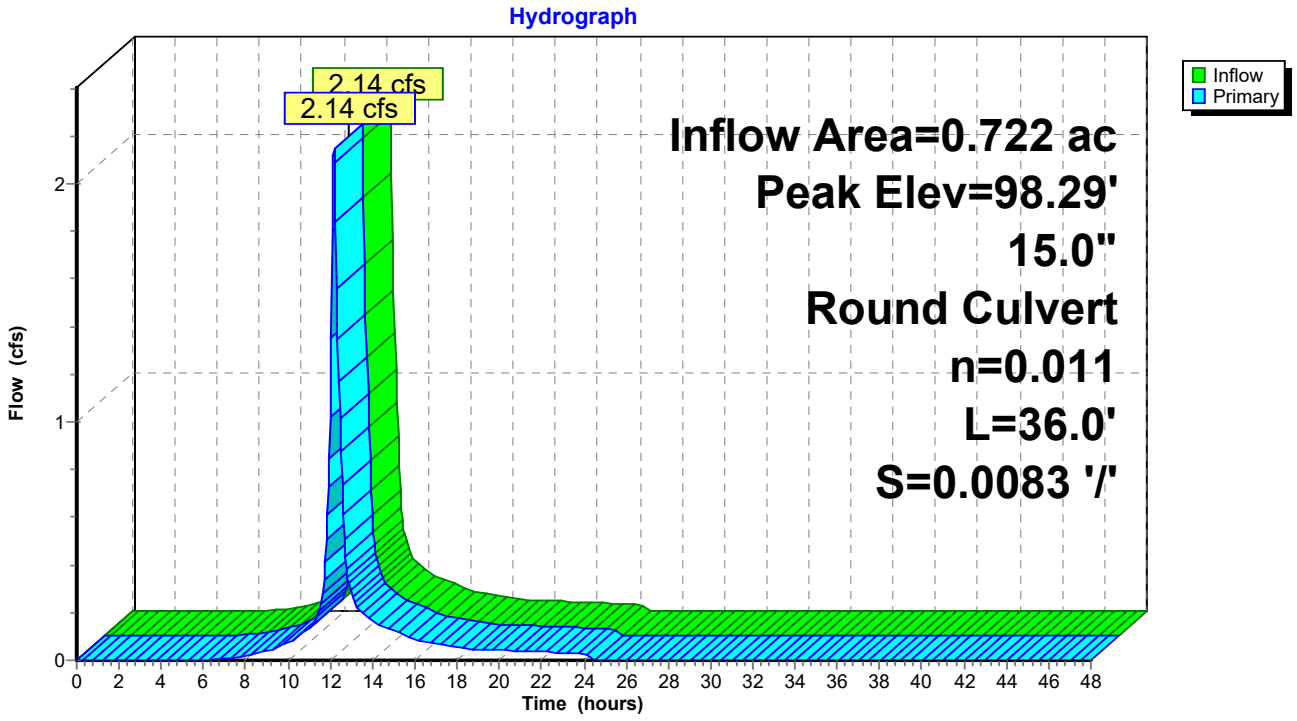
Inflow Area = 0.722 ac, 45.40% Impervious, Inflow Depth = 3.19" for 10-YEAR event
Inflow = 2.14 cfs @ 12.17 hrs, Volume= 0.192 af
Outflow = 2.14 cfs @ 12.17 hrs, Volume= 0.192 af, Atten= 0%, Lag= 0.0 min
Primary = 2.14 cfs @ 12.17 hrs, Volume= 0.192 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 98.29' @ 12.17 hrs
Flood Elev= 100.69'

Device	Routing	Invert	Outlet Devices
#1	Primary	97.52'	**15.0" Round Culvert** L= 36.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 97.52' / 97.22' S= 0.0083 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf

Primary OutFlow Max=2.10 cfs @ 12.17 hrs HW=98.28' (Free Discharge)
1=Culvert (Barrel Controls 2.10 cfs @ 3.84 fps)

Pond 1P: EXISTING CB 1



Summary for Pond 2P: EXISTING CB 2

Inflow Area = 2.773 ac, 26.38% Impervious, Inflow Depth = 2.70" for 10-YEAR event
Inflow = 5.66 cfs @ 12.22 hrs, Volume= 0.624 af
Outflow = 5.66 cfs @ 12.22 hrs, Volume= 0.624 af, Atten= 0%, Lag= 0.0 min
Primary = 2.51 cfs @ 12.22 hrs, Volume= 0.524 af
Secondary = 3.15 cfs @ 12.22 hrs, Volume= 0.099 af

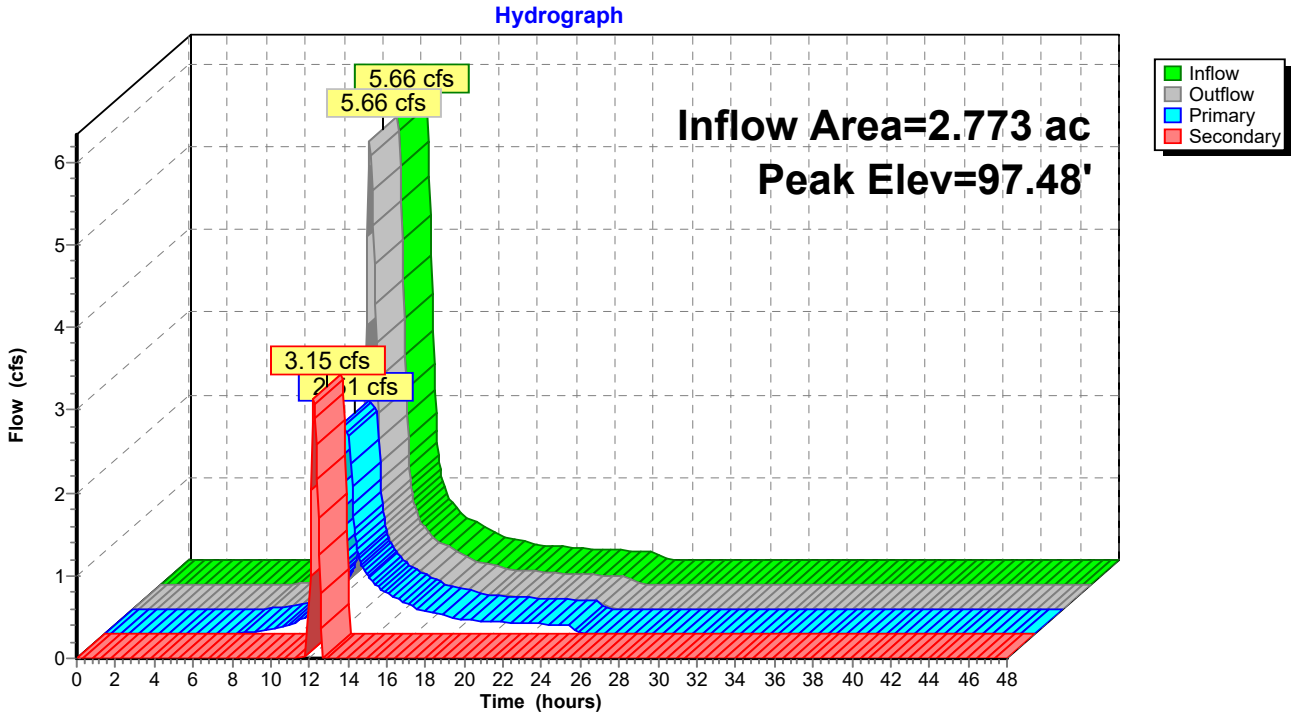
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 97.48' @ 12.22 hrs
Flood Elev= 97.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	95.00'	**8.0" Round Culvert** L= 36.8' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 95.00' / 93.78' S= 0.0332 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.35 sf
#2	Primary	94.15'	**1.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	97.24'	**3.0" x 3.0" Horiz. Orifice/Grate X 6.00 columns** X 6 rows C= 0.600 in 24.0" x 24.0" Grate (56% open area) Limited to weir flow at low heads

Primary OutFlow Max=2.51 cfs @ 12.22 hrs HW=97.48' (Free Discharge)
└─**1=Culvert** (Inlet Controls 2.46 cfs @ 7.06 fps)
└─**2=Orifice/Grate** (Orifice Controls 0.05 cfs @ 8.73 fps)

Secondary OutFlow Max=3.10 cfs @ 12.22 hrs HW=97.48' (Free Discharge)
└─**3=Orifice/Grate** (Weir Controls 3.10 cfs @ 1.61 fps)

Pond 2P: EXISTING CB 2



Summary for Pond 4P: EXISTING EASEMENT POND

Inflow Area = 1.346 ac, 44.69% Impervious, Inflow Depth = 3.19" for 10-YEAR event
Inflow = 3.45 cfs @ 12.25 hrs, Volume= 0.358 af
Outflow = 3.28 cfs @ 12.31 hrs, Volume= 0.358 af, Atten= 5%, Lag= 3.6 min
Primary = 3.28 cfs @ 12.31 hrs, Volume= 0.358 af
Routed to Pond 7P : EXIST LOW AREA
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 7P : EXIST LOW AREA

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 96.60' @ 12.31 hrs Surf.Area= 1,104 sf Storage= 824 cf

Plug-Flow detention time= 8.3 min calculated for 0.358 af (100% of inflow)
Center-of-Mass det. time= 7.7 min (823.8 - 816.0)

Volume	Invert	Avail.Storage	Storage Description
#1	95.00'	13,259 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

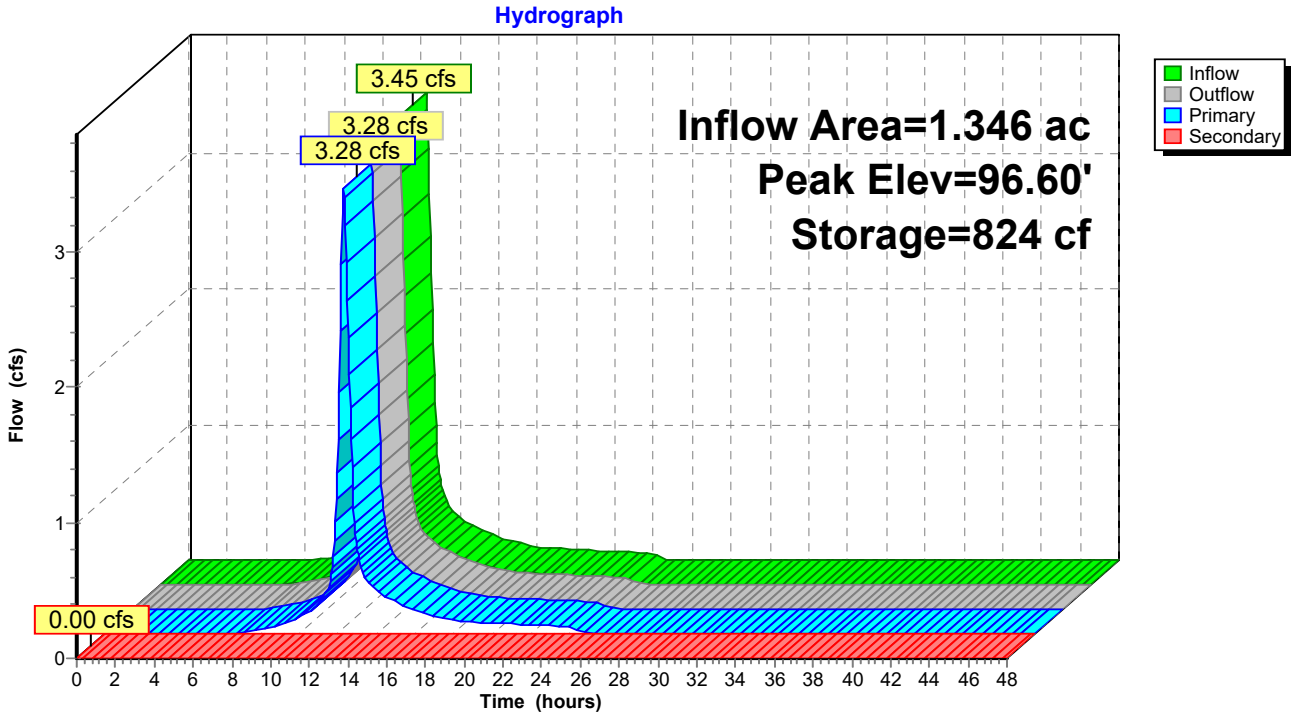
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
95.00	100	0	0
96.00	550	325	325
97.00	1,469	1,010	1,335
98.00	2,580	2,025	3,359
99.00	4,400	3,490	6,849
100.00	8,420	6,410	13,259

Device	Routing	Invert	Outlet Devices
#1	Primary	95.00'	**43.0 deg Sharp-Crested Vee/Trap Weir** Cv= 2.56 (C= 3.20)
#2	Secondary	97.40'	**12.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=3.26 cfs @ 12.31 hrs HW=96.60' (Free Discharge)
1=Sharp-Crested Vee/Trap Weir (Weir Controls 3.26 cfs @ 3.24 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=95.00' (Free Discharge)
2=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 4P: EXISTING EASEMENT POND



Summary for Pond 7P: EXIST LOW AREA

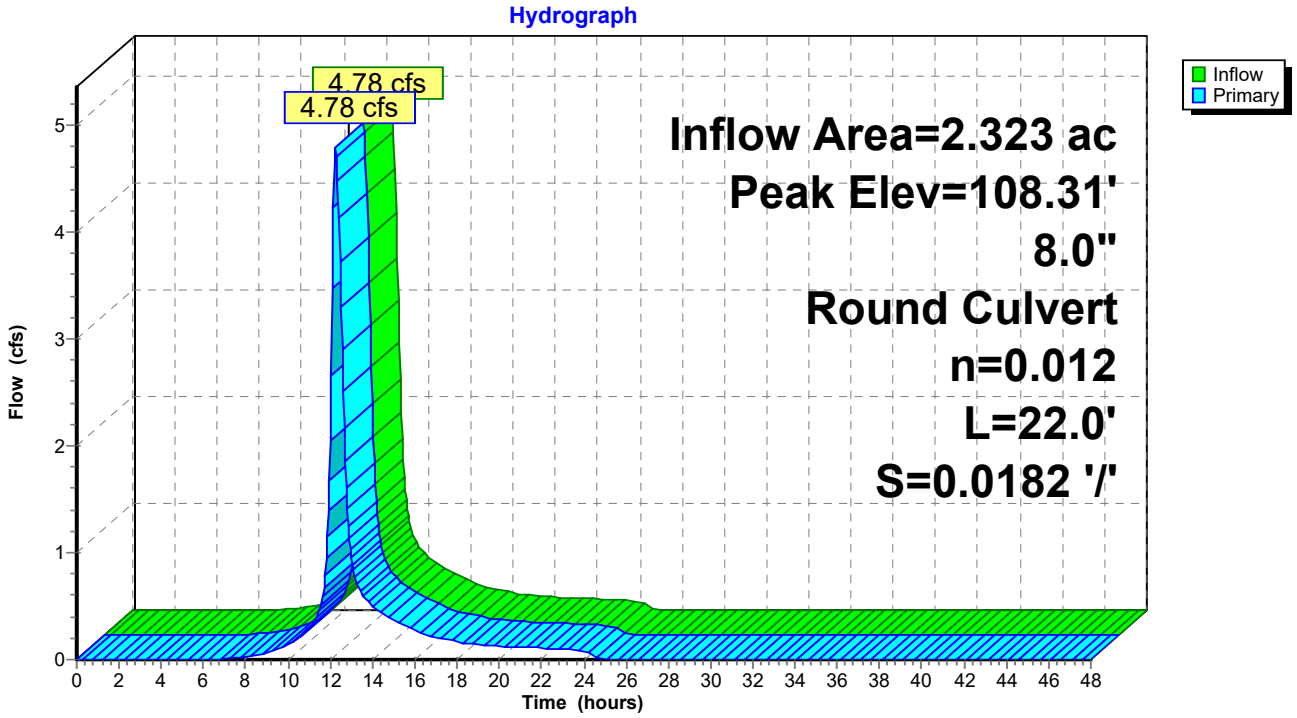
Inflow Area = 2.323 ac, 25.90% Impervious, Inflow Depth = 2.75" for 10-YEAR event
Inflow = 4.78 cfs @ 12.26 hrs, Volume= 0.531 af
Outflow = 4.78 cfs @ 12.26 hrs, Volume= 0.531 af, Atten= 0%, Lag= 0.0 min
Primary = 4.78 cfs @ 12.26 hrs, Volume= 0.531 af
Routed to Pond 2P : EXISTING CB 2

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 108.31' @ 12.26 hrs
Flood Elev= 97.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	95.00'	**8.0" Round Culvert** L= 22.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 95.00' / 94.60' S= 0.0182 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=4.77 cfs @ 12.26 hrs HW=108.24' (Free Discharge)
1=Culvert (Inlet Controls 4.77 cfs @ 13.66 fps)

Pond 7P: EXIST LOW AREA



Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: SUBCATCHMENT1 Runoff Area=31,459 sf 45.40% Impervious Runoff Depth=4.33"
Flow Length=415' Tc=12.6 min CN=87 Runoff=2.87 cfs 0.260 af

Subcatchment2S: SUBCATCHMENT2 Runoff Area=19,604 sf 28.83% Impervious Runoff Depth=3.50"
Flow Length=330' Tc=9.8 min UI Adjusted CN=79 Runoff=1.60 cfs 0.131 af

Subcatchment3S: SUBCATCHMENT3 Runoff Area=42,541 sf 0.00% Impervious Runoff Depth=3.11"
Flow Length=245' Slope=0.0500 '/' Tc=11.6 min CN=75 Runoff=2.94 cfs 0.253 af

Subcatchment4S: SUBCATCHMENT4 Runoff Area=58,631 sf 44.69% Impervious Runoff Depth=4.33"
Flow Length=290' Tc=18.6 min CN=87 Runoff=4.63 cfs 0.485 af

Pond 1P: EXISTING CB 1 Peak Elev=98.45' Inflow=2.87 cfs 0.260 af
15.0" Round Culvert n=0.011 L=36.0' S=0.0083 '/' Outflow=2.87 cfs 0.260 af

Pond 2P: EXISTING CB 2 Peak Elev=97.59' Inflow=7.91 cfs 0.870 af
Primary=2.57 cfs 0.675 af Secondary=5.34 cfs 0.194 af Outflow=7.91 cfs 0.870 af

Pond 4P: EXISTING EASEMENT POND Peak Elev=96.80' Storage=1,064 cf Inflow=4.63 cfs 0.485 af
Primary=4.41 cfs 0.485 af Secondary=0.00 cfs 0.000 af Outflow=4.41 cfs 0.485 af

Pond 7P: EXIST LOW AREA Peak Elev=120.23' Inflow=6.62 cfs 0.739 af
8.0" Round Culvert n=0.012 L=22.0' S=0.0182 '/' Outflow=6.62 cfs 0.739 af

Total Runoff Area = 3.495 ac Runoff Volume = 1.130 af Average Runoff Depth = 3.88"
69.69% Pervious = 2.436 ac 30.31% Impervious = 1.059 ac

Summary for Subcatchment 1S: SUBCATCHMENT 1

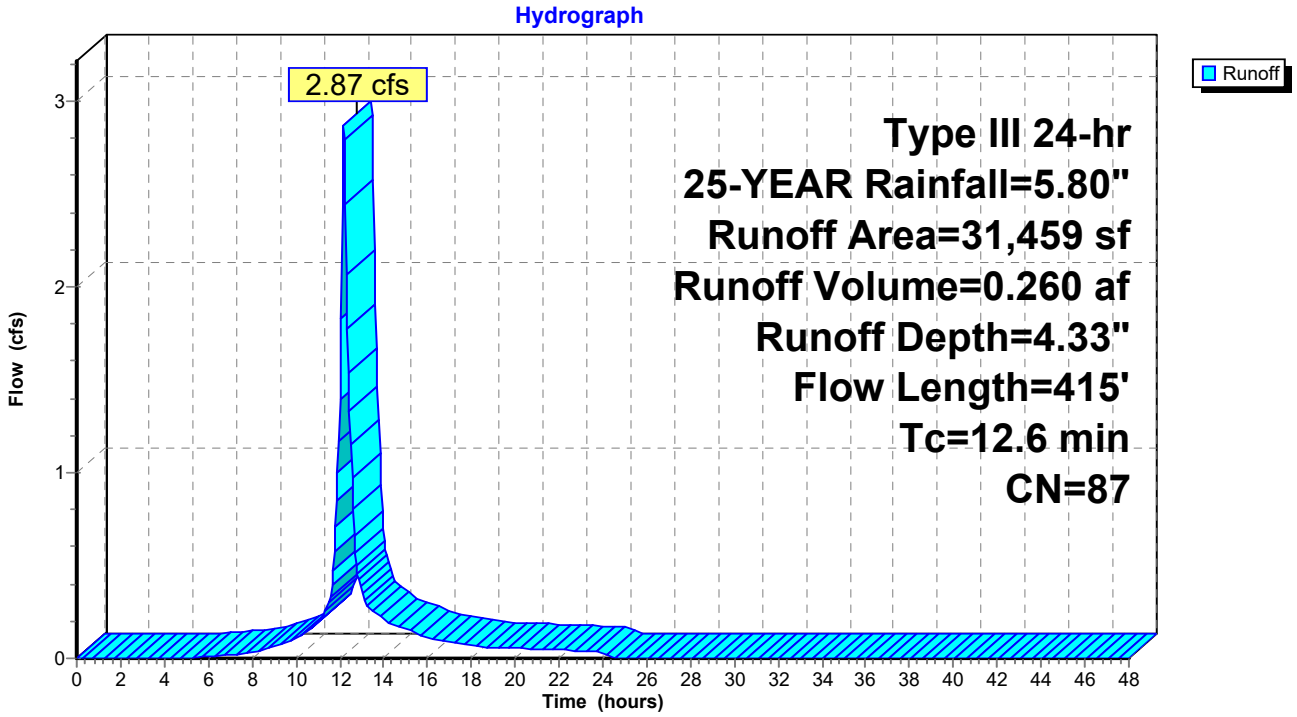
Runoff = 2.87 cfs @ 12.17 hrs, Volume= 0.260 af, Depth= 4.33"
Routed to Pond 1P : EXISTING CB 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YEAR Rainfall=5.80"

Area (sf)	CN	Description
14,281	98	Unconnected pavement, HSG D
3,901	80	>75% Grass cover, Good, HSG D
391	74	>75% Grass cover, Good, HSG C
12,886	77	Woods, Good, HSG D
31,459	87	Weighted Average
17,178		54.60% Pervious Area
14,281		45.40% Impervious Area
14,281		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	50	0.0540	0.10		**Sheet Flow, A TO B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.1	45	0.0200	0.71		**Shallow Concentrated Flow, B TO C** Woodland Kv= 5.0 fps
1.9	100	0.0150	0.86		**Shallow Concentrated Flow, C TO D** Short Grass Pasture Kv= 7.0 fps
0.7	50	0.0560	1.18		**Shallow Concentrated Flow, D TO E** Woodland Kv= 5.0 fps
0.5	170	0.0150	6.23	25.00	**Trap/Vee/Rect Channel Flow, E to F** Bot.W=3.00' D=0.50' Z= 0.1 & 20.0 '/' Top.W=13.05' n= 0.013 Asphalt, smooth
12.6	415	Total			

Subcatchment 1S: SUBCATCHMENT 1



Summary for Subcatchment 2S: SUBCATCHMENT 2

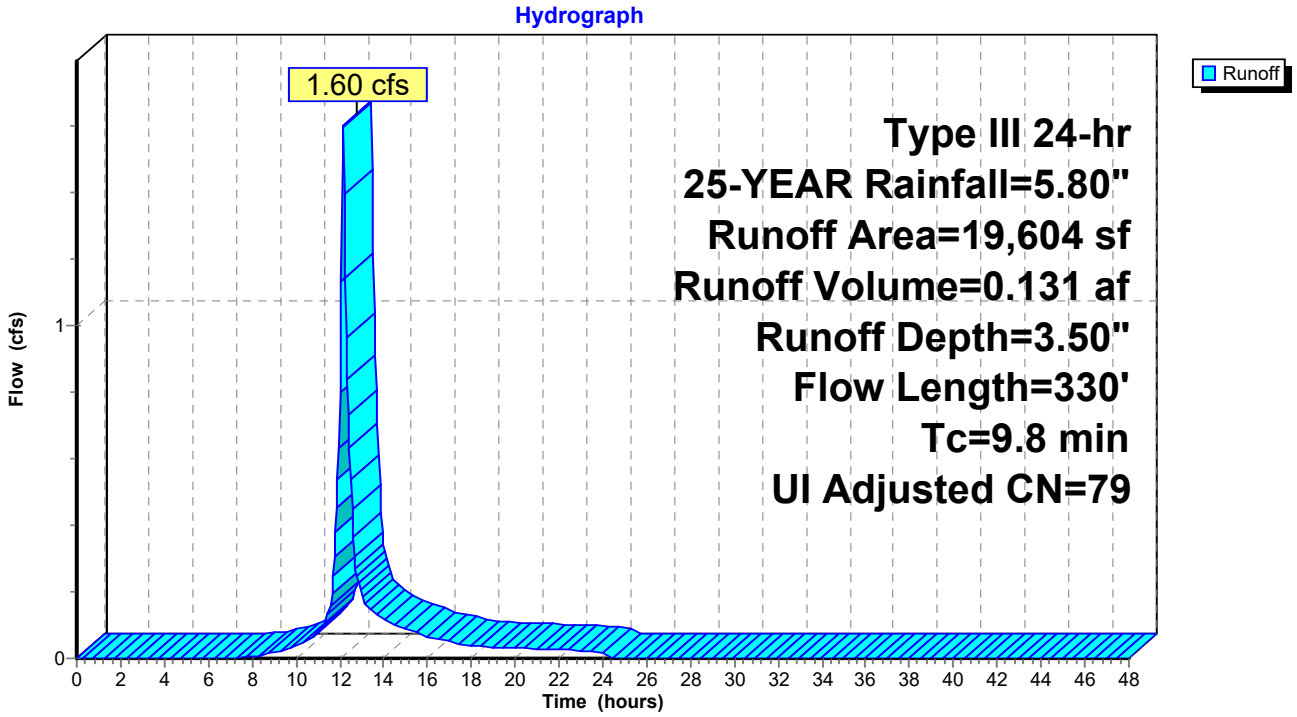
Runoff = 1.60 cfs @ 12.14 hrs, Volume= 0.131 af, Depth= 3.50"
Routed to Pond 2P : EXISTING CB 2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YEAR Rainfall=5.80"

Area (sf)	CN	Adj	Description
5,652	98		Unconnected pavement, HSG D
1,100	74		>75% Grass cover, Good, HSG C
10,152	77		Woods, Good, HSG D
2,700	70		Woods, Good, HSG C
19,604	82	79	Weighted Average, UI Adjusted
13,952			71.17% Pervious Area
5,652			28.83% Impervious Area
5,652			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	50	0.0600	0.10		**Sheet Flow, A TO B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.1	70	0.0440	1.05		**Shallow Concentrated Flow, B TO C** Woodland Kv= 5.0 fps
0.6	210	0.0130	5.80	23.27	**Trap/Vee/Rect Channel Flow, C to D** Bot.W=3.00' D=0.50' Z= 0.1 & 20.0 '/' Top.W=13.05' n= 0.013
9.8	330	Total			

Subcatchment 2S: SUBCATCHMENT 2



Summary for Subcatchment 3S: SUBCATCHMENT 3

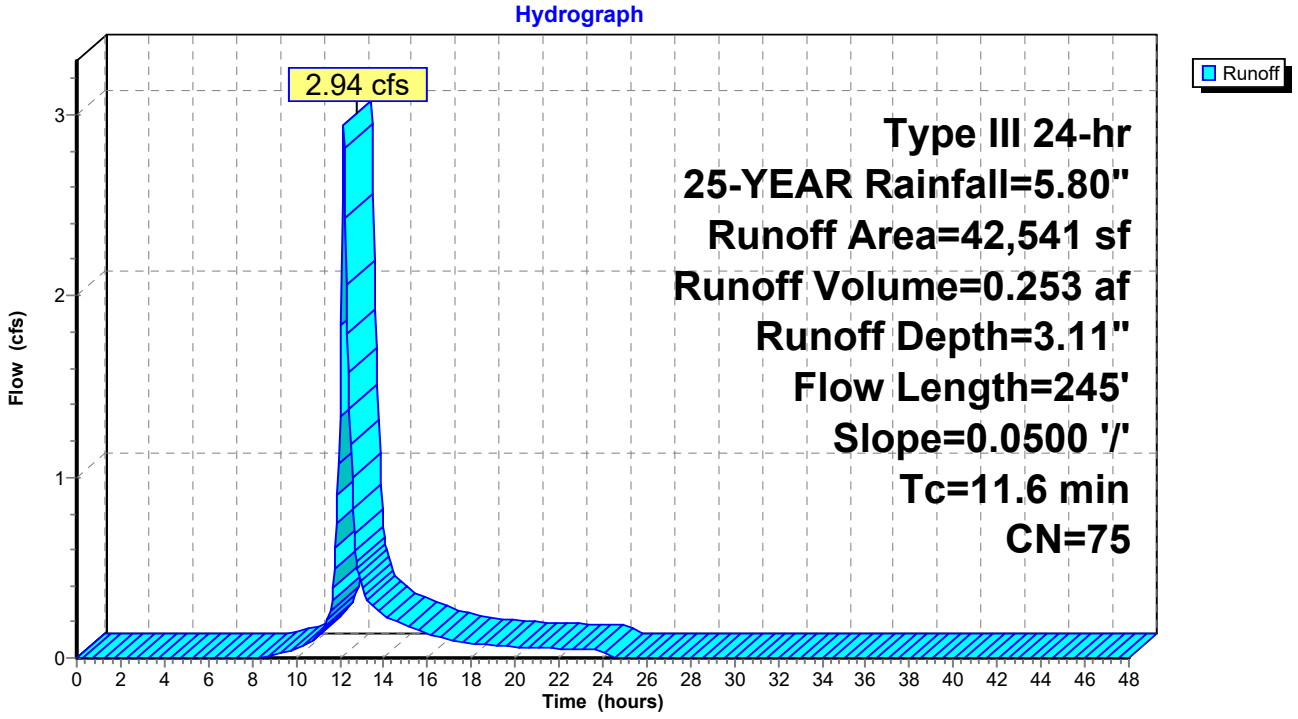
Runoff = 2.94 cfs @ 12.16 hrs, Volume= 0.253 af, Depth= 3.11"
Routed to Pond 7P : EXIST LOW AREA

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YEAR Rainfall=5.80"

Area (sf)	CN	Description
0	98	Unconnected pavement, HSG D
6,772	80	>75% Grass cover, Good, HSG D
1,262	74	>75% Grass cover, Good, HSG C
22,577	77	Woods, Good, HSG D
11,930	70	Woods, Good, HSG C
42,541	75	Weighted Average
42,541		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	50	0.0500	0.10		**Sheet Flow, A TO B** Woods: Light underbrush n= 0.400 P2= 3.10"
2.9	195	0.0500	1.12		**Shallow Concentrated Flow, B TO C** Woodland Kv= 5.0 fps
11.6	245	Total			

Subcatchment 3S: SUBCATCHMENT 3



Summary for Subcatchment 4S: SUBCATCHMENT 4

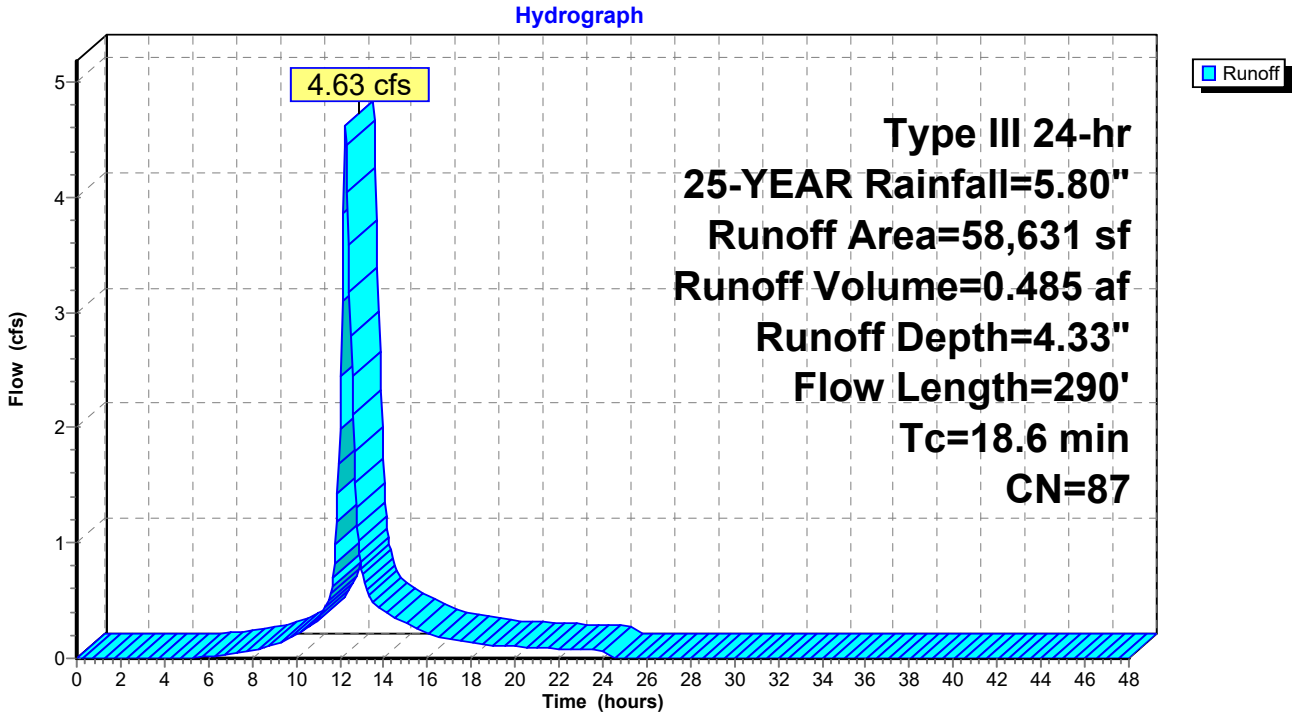
Runoff = 4.63 cfs @ 12.25 hrs, Volume= 0.485 af, Depth= 4.33"
Routed to Pond 4P : EXISTING EASEMENT POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YEAR Rainfall=5.80"

Area (sf)	CN	Description
26,204	98	Unconnected pavement, HSG D
10,228	80	>75% Grass cover, Good, HSG D
985	74	>75% Grass cover, Good, HSG C
21,130	77	Woods, Good, HSG D
84	70	Woods, Good, HSG C
58,631	87	Weighted Average
32,427		55.31% Pervious Area
26,204		44.69% Impervious Area
26,204		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.6	100	0.0340	0.09		**Sheet Flow, A TO B** Woods: Light underbrush n= 0.400 P2= 3.10"
0.1	30	0.0300	3.52		**Shallow Concentrated Flow, B TO C** Paved Kv= 20.3 fps
0.9	160	0.0040	2.85	0.99	**Pipe Channel, C TO D** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.010 PVC, smooth interior
18.6	290	Total			

Subcatchment 4S: SUBCATCHMENT 4



Summary for Pond 1P: EXISTING CB 1

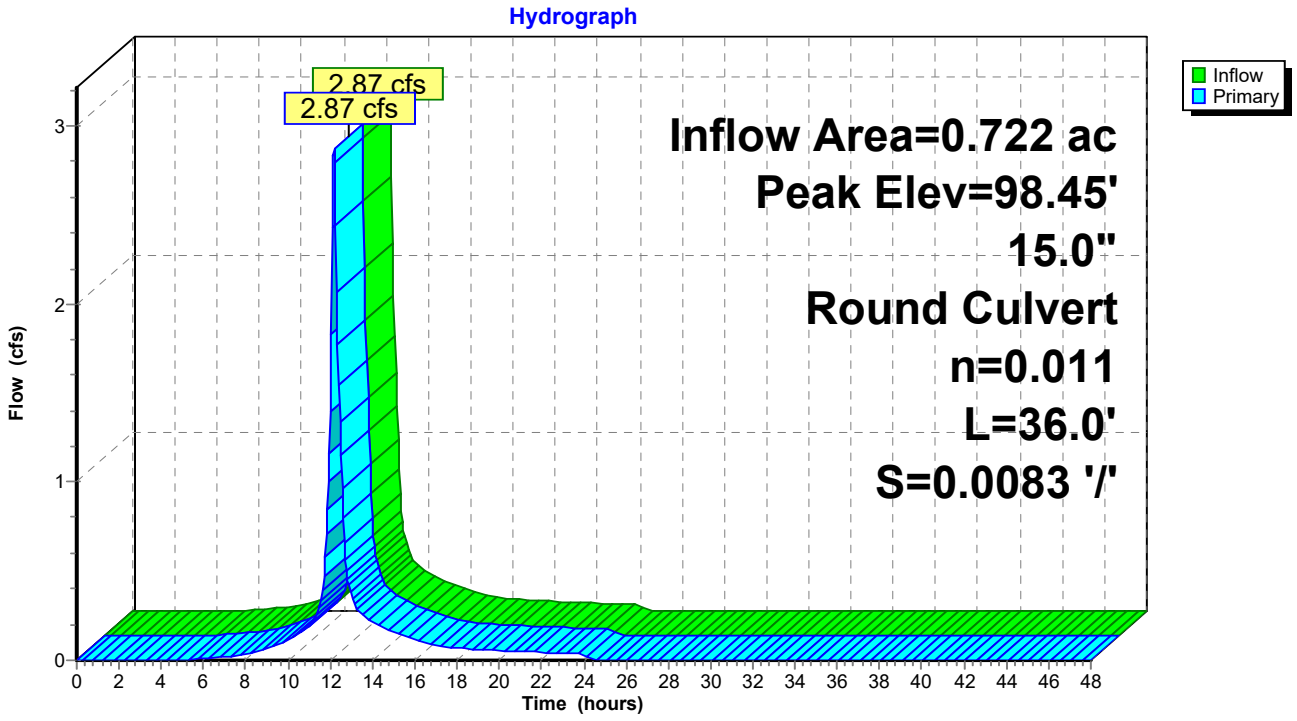
Inflow Area = 0.722 ac, 45.40% Impervious, Inflow Depth = 4.33" for 25-YEAR event
Inflow = 2.87 cfs @ 12.17 hrs, Volume= 0.260 af
Outflow = 2.87 cfs @ 12.17 hrs, Volume= 0.260 af, Atten= 0%, Lag= 0.0 min
Primary = 2.87 cfs @ 12.17 hrs, Volume= 0.260 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 98.45' @ 12.17 hrs
Flood Elev= 100.69'

Device	Routing	Invert	Outlet Devices
#1	Primary	97.52'	**15.0" Round Culvert** L= 36.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 97.52' / 97.22' S= 0.0083 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf

Primary OutFlow Max=2.82 cfs @ 12.17 hrs HW=98.44' (Free Discharge)
1=Culvert (Barrel Controls 2.82 cfs @ 4.07 fps)

Pond 1P: EXISTING CB 1



Summary for Pond 2P: EXISTING CB 2

Inflow Area = 2.773 ac, 26.38% Impervious, Inflow Depth = 3.76" for 25-YEAR event
Inflow = 7.91 cfs @ 12.21 hrs, Volume= 0.870 af
Outflow = 7.91 cfs @ 12.21 hrs, Volume= 0.870 af, Atten= 0%, Lag= 0.0 min
Primary = 2.57 cfs @ 12.21 hrs, Volume= 0.675 af
Secondary = 5.34 cfs @ 12.21 hrs, Volume= 0.194 af

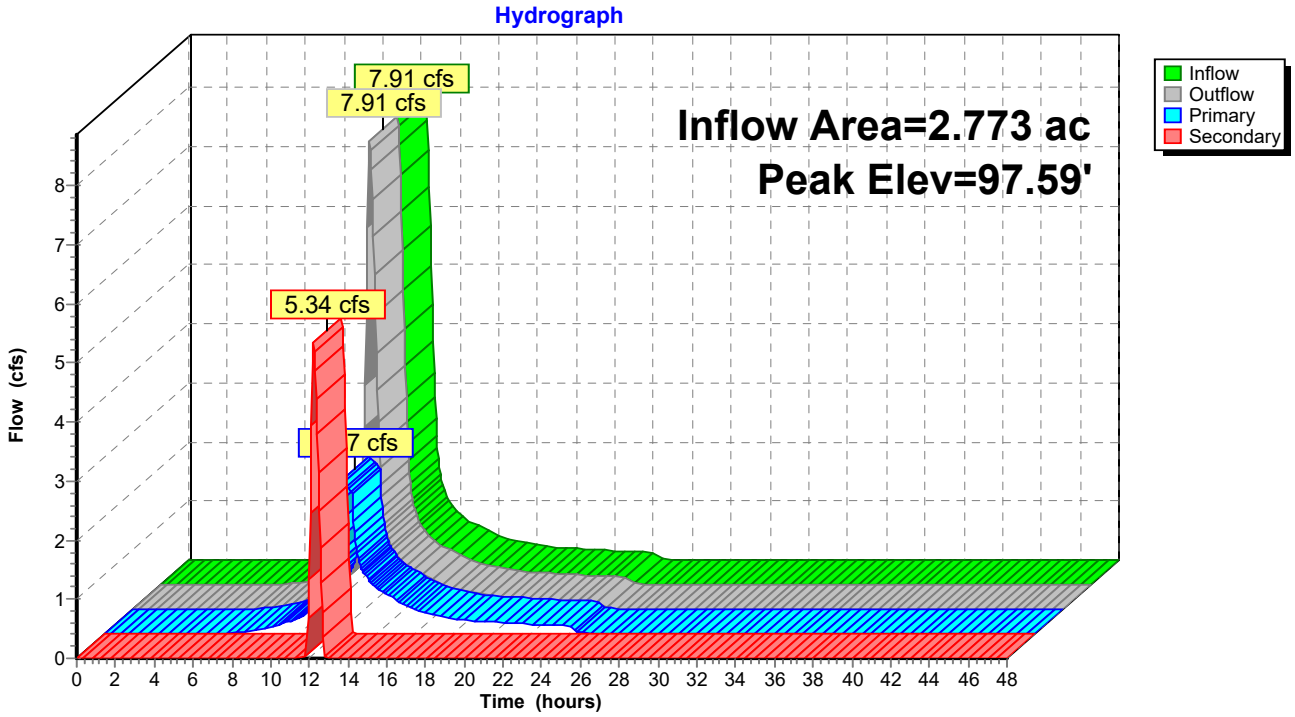
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 97.59' @ 12.21 hrs
Flood Elev= 97.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	95.00'	**8.0" Round Culvert** L= 36.8' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 95.00' / 93.78' S= 0.0332 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.35 sf
#2	Primary	94.15'	**1.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	97.24'	**3.0" x 3.0" Horiz. Orifice/Grate X 6.00 columns** X 6 rows C= 0.600 in 24.0" x 24.0" Grate (56% open area) Limited to weir flow at low heads

Primary OutFlow Max=2.57 cfs @ 12.21 hrs HW=97.58' (Free Discharge)
└**1=Culvert** (Inlet Controls 2.52 cfs @ 7.22 fps)
└**2=Orifice/Grate** (Orifice Controls 0.05 cfs @ 8.87 fps)

Secondary OutFlow Max=5.30 cfs @ 12.21 hrs HW=97.58' (Free Discharge)
└**3=Orifice/Grate** (Weir Controls 5.30 cfs @ 1.92 fps)

Pond 2P: EXISTING CB 2



Summary for Pond 4P: EXISTING EASEMENT POND

Inflow Area = 1.346 ac, 44.69% Impervious, Inflow Depth = 4.33" for 25-YEAR event
Inflow = 4.63 cfs @ 12.25 hrs, Volume= 0.485 af
Outflow = 4.41 cfs @ 12.31 hrs, Volume= 0.485 af, Atten= 5%, Lag= 3.6 min
Primary = 4.41 cfs @ 12.31 hrs, Volume= 0.485 af
Routed to Pond 7P : EXIST LOW AREA
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 7P : EXIST LOW AREA

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 96.80' @ 12.31 hrs Surf.Area= 1,288 sf Storage= 1,064 cf

Plug-Flow detention time= 7.0 min calculated for 0.485 af (100% of inflow)
Center-of-Mass det. time= 7.1 min (814.6 - 807.5)

Volume	Invert	Avail.Storage	Storage Description
#1	95.00'	13,259 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

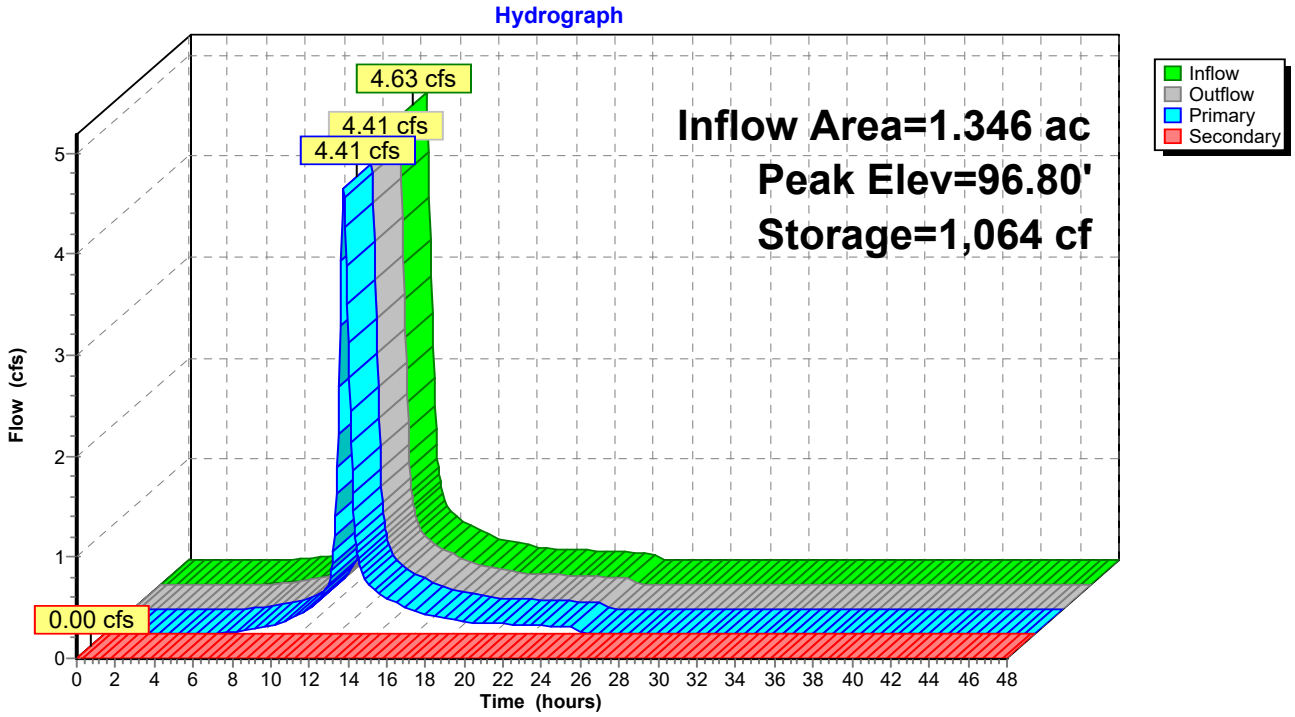
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
95.00	100	0	0
96.00	550	325	325
97.00	1,469	1,010	1,335
98.00	2,580	2,025	3,359
99.00	4,400	3,490	6,849
100.00	8,420	6,410	13,259

Device	Routing	Invert	Outlet Devices
#1	Primary	95.00'	**43.0 deg Sharp-Crested Vee/Trap Weir** Cv= 2.56 (C= 3.20)
#2	Secondary	97.40'	**12.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=4.38 cfs @ 12.31 hrs HW=96.80' (Free Discharge)
1=Sharp-Crested Vee/Trap Weir (Weir Controls 4.38 cfs @ 3.43 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=95.00' (Free Discharge)
2=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

Pond 4P: EXISTING EASEMENT POND



Summary for Pond 7P: EXIST LOW AREA

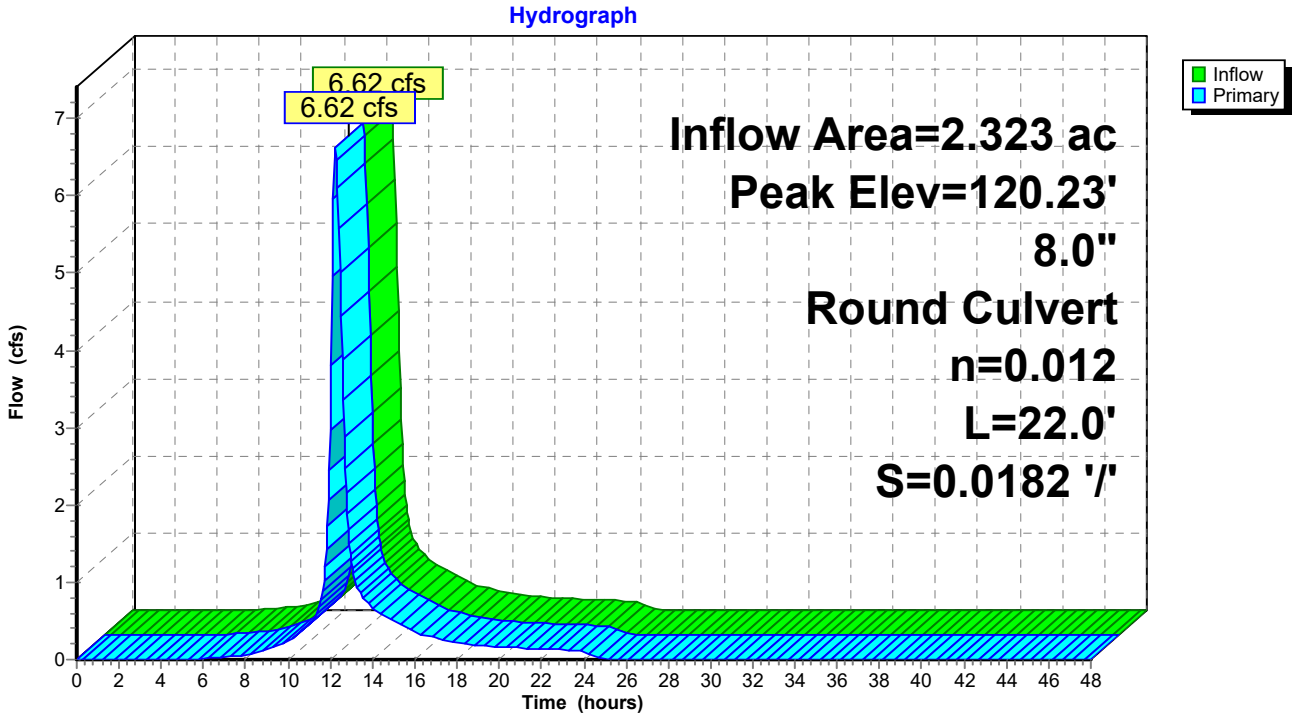
Inflow Area = 2.323 ac, 25.90% Impervious, Inflow Depth = 3.82" for 25-YEAR event
Inflow = 6.62 cfs @ 12.25 hrs, Volume= 0.739 af
Outflow = 6.62 cfs @ 12.25 hrs, Volume= 0.739 af, Atten= 0%, Lag= 0.0 min
Primary = 6.62 cfs @ 12.25 hrs, Volume= 0.739 af
Routed to Pond 2P : EXISTING CB 2

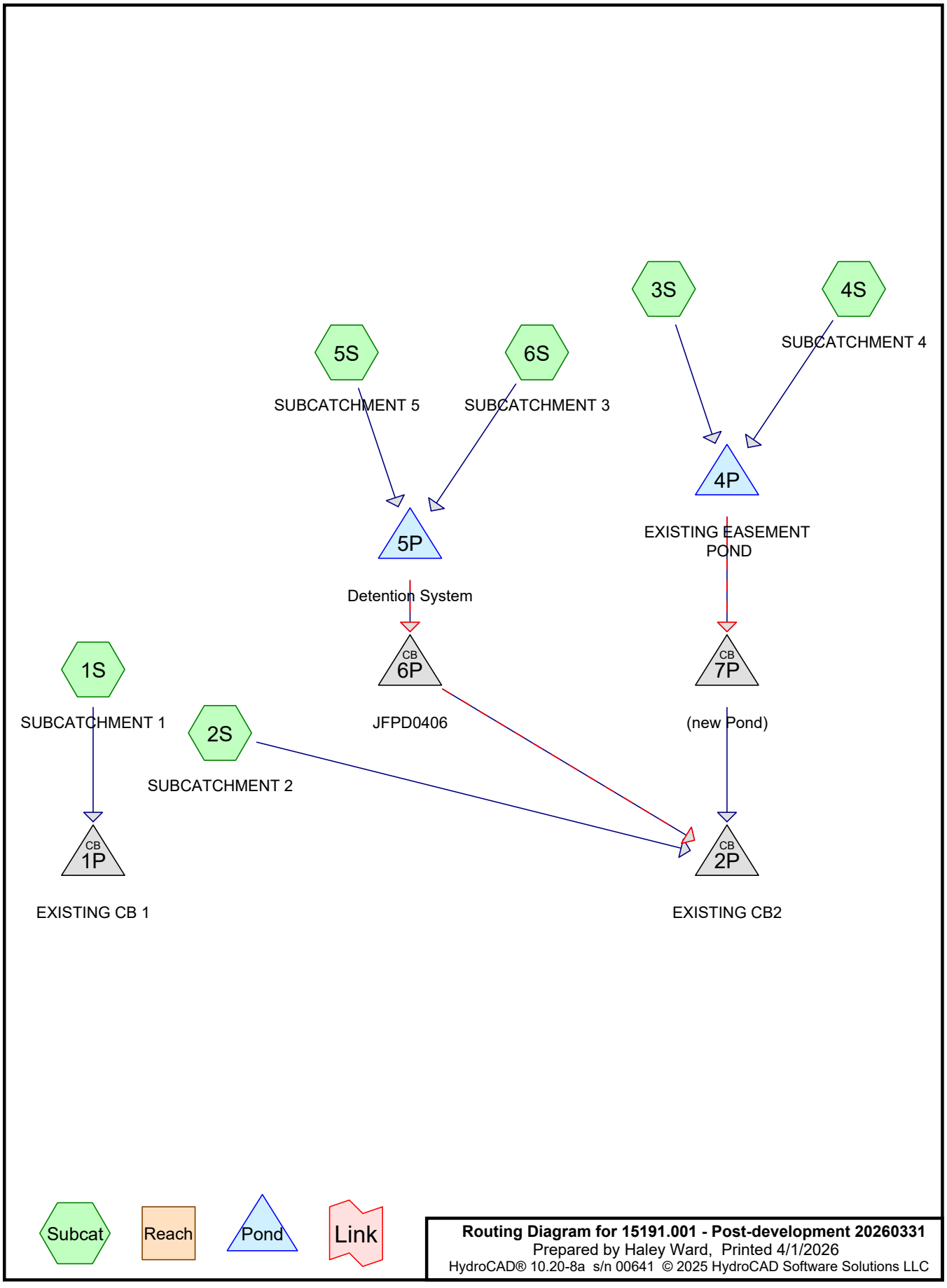
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 120.23' @ 12.25 hrs
Flood Elev= 97.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	95.00'	**8.0" Round Culvert** L= 22.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 95.00' / 94.60' S= 0.0182 '/' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=6.61 cfs @ 12.25 hrs HW=120.15' (Free Discharge)
1=Culvert (Inlet Controls 6.61 cfs @ 18.94 fps)

Pond 7P: EXIST LOW AREA




3S
4S
SUBCATCHMENT 4
5S
6S
SUBCATCHMENT 5
SUBCATCHMENT 3
4P
EXISTING EASEMENT POND
5P
Detention System
1S
SUBCATCHMENT 1
CB 6P
JFPD0406
CB 7P
(new Pond)
2S
SUBCATCHMENT 2
CB 1P
EXISTING CB 1
CB 2P
EXISTING CB2
Subcat
Reach
Pond
Link
Routing Diagram for 15191.001 - Post-development 20260331
Prepared by Haley Ward, Printed 4/1/2026
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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.120	74	>75% Grass cover, Good, HSG C (1S, 2S, 4S, 5S)
0.519	80	>75% Grass cover, Good, HSG D (1S, 2S, 3S, 4S, 5S)
0.035	98	New City Sidewalk (1S, 2S)
0.512	98	Roofs, HSG D (6S)
1.267	98	Unconnected pavement, HSG D (1S, 2S, 4S, 5S)
0.006	70	Woods, Good, HSG C (2S)
1.035	77	Woods, Good, HSG D (1S, 2S, 3S, 4S)
3.495	**88**	**TOTAL AREA**

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: SUBCATCHMENT1 Runoff Area=31,459 sf 46.35% Impervious Runoff Depth=0.22"
Flow Length=415' Tc=12.6 min CN=87 Runoff=0.13 cfs 0.013 af

Subcatchment2S: SUBCATCHMENT2 Runoff Area=13,781 sf 48.99% Impervious Runoff Depth=0.22"
Flow Length=625' Tc=17.5 min CN=87 Runoff=0.05 cfs 0.006 af

Subcatchment3S: Runoff Area=8,745 sf 0.00% Impervious Runoff Depth=0.06"
Flow Length=310' Tc=12.3 min CN=78 Runoff=0.00 cfs 0.001 af

Subcatchment4S: SUBCATCHMENT4 Runoff Area=59,729 sf 44.12% Impervious Runoff Depth=0.22"
Flow Length=290' Tc=18.6 min CN=87 Runoff=0.21 cfs 0.026 af

Subcatchment5S: SUBCATCHMENT5 Runoff Area=16,200 sf 55.69% Impervious Runoff Depth=0.28"
Tc=6.0 min CN=89 Runoff=0.11 cfs 0.009 af

Subcatchment6S: SUBCATCHMENT3 Runoff Area=22,321 sf 100.00% Impervious Runoff Depth=0.79"
Flow Length=30' Tc=6.0 min CN=98 Runoff=0.45 cfs 0.034 af

Pond 1P: EXISTING CB 1 Peak Elev=97.68' Inflow=0.13 cfs 0.013 af
15.0" Round Culvert n=0.011 L=36.0' S=0.0083 '/' Outflow=0.13 cfs 0.013 af

Pond 2P: EXISTING CB2 Peak Elev=95.28' Inflow=0.27 cfs 0.075 af
Primary=0.27 cfs 0.075 af Secondary=0.00 cfs 0.000 af Outflow=0.27 cfs 0.075 af

Pond 4P: EXISTING EASEMENT POND Peak Elev=95.51' Storage=109 cf Inflow=0.21 cfs 0.027 af
Primary=0.19 cfs 0.027 af Secondary=0.00 cfs 0.000 af Outflow=0.19 cfs 0.027 af

Pond 5P: Detention System Peak Elev=94.10' Storage=855 cf Inflow=0.56 cfs 0.043 af
Primary=0.05 cfs 0.043 af Secondary=0.00 cfs 0.000 af Outflow=0.05 cfs 0.043 af

Pond 6P: JFPD0406 Peak Elev=95.44' Inflow=0.05 cfs 0.043 af
Primary=0.05 cfs 0.043 af Secondary=0.00 cfs 0.000 af Outflow=0.05 cfs 0.043 af

Pond 7P: (new Pond) Peak Elev=94.86' Inflow=0.19 cfs 0.027 af
8.0" Round Culvert n=0.013 L=20.0' S=0.0000 '/' Outflow=0.19 cfs 0.027 af

Total Runoff Area = 3.495 ac Runoff Volume = 0.089 af Average Runoff Depth = 0.30"
48.09% Pervious = 1.681 ac 51.91% Impervious = 1.814 ac

Summary for Subcatchment 1S: SUBCATCHMENT 1

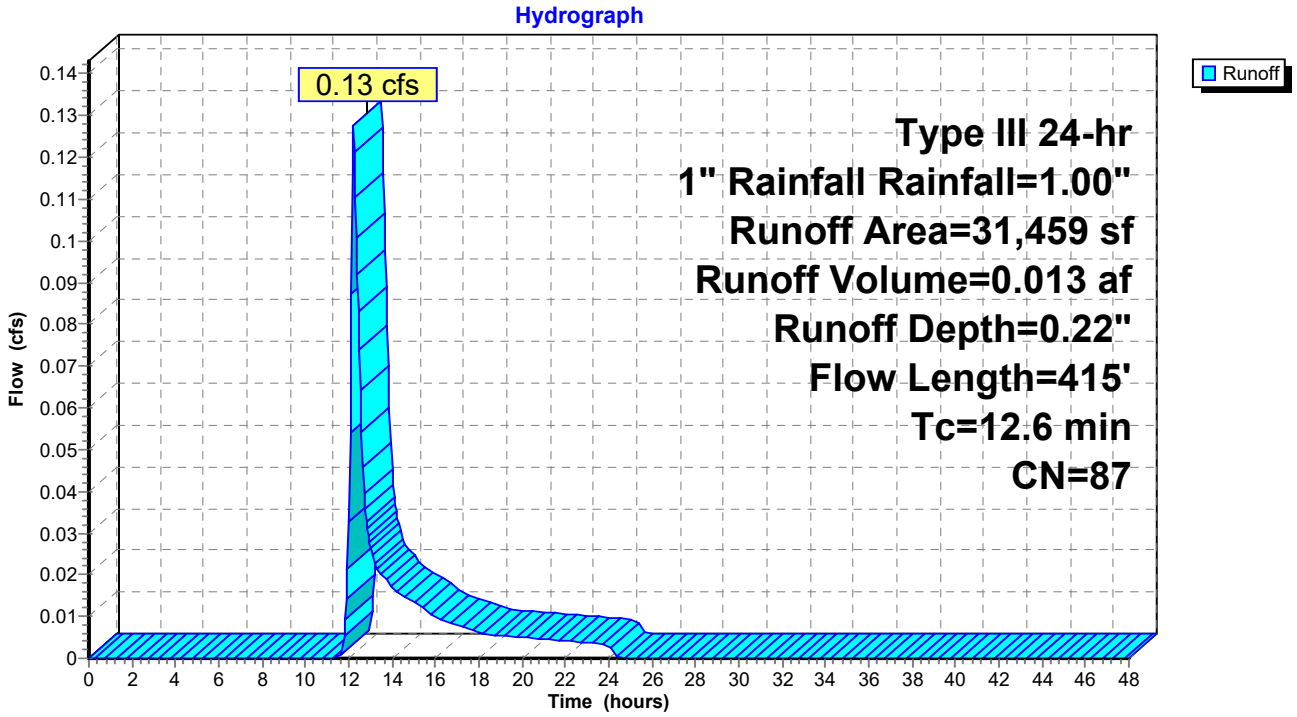
Runoff = 0.13 cfs @ 12.21 hrs, Volume= 0.013 af, Depth= 0.22"
Routed to Pond 1P : EXISTING CB 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1" Rainfall Rainfall=1.00"

	Area (sf)	CN	Description
	14,281	98	Unconnected pavement, HSG D
	3,746	80	>75% Grass cover, Good, HSG D
	246	74	>75% Grass cover, Good, HSG C
	12,886	77	Woods, Good, HSG D
*	300	98	New City Sidewalk
	31,459	87	Weighted Average
	16,878		53.65% Pervious Area
	14,581		46.35% Impervious Area
	14,281		97.94% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	50	0.0540	0.10		**Sheet Flow, A TO B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.1	45	0.0200	0.71		**Shallow Concentrated Flow, B TO C** Woodland Kv= 5.0 fps
1.9	100	0.0150	0.86		**Shallow Concentrated Flow, C TO D** Short Grass Pasture Kv= 7.0 fps
0.7	50	0.0560	1.18		**Shallow Concentrated Flow, D TO E** Woodland Kv= 5.0 fps
0.5	170	0.0150	6.23	25.00	**Trap/Vee/Rect Channel Flow, E to F** Bot.W=3.00' D=0.50' Z= 0.1 & 20.0 '/' Top.W=13.05' n= 0.013 Asphalt, smooth
12.6	415	Total			

Subcatchment 1S: SUBCATCHMENT 1



Summary for Subcatchment 2S: SUBCATCHMENT 2

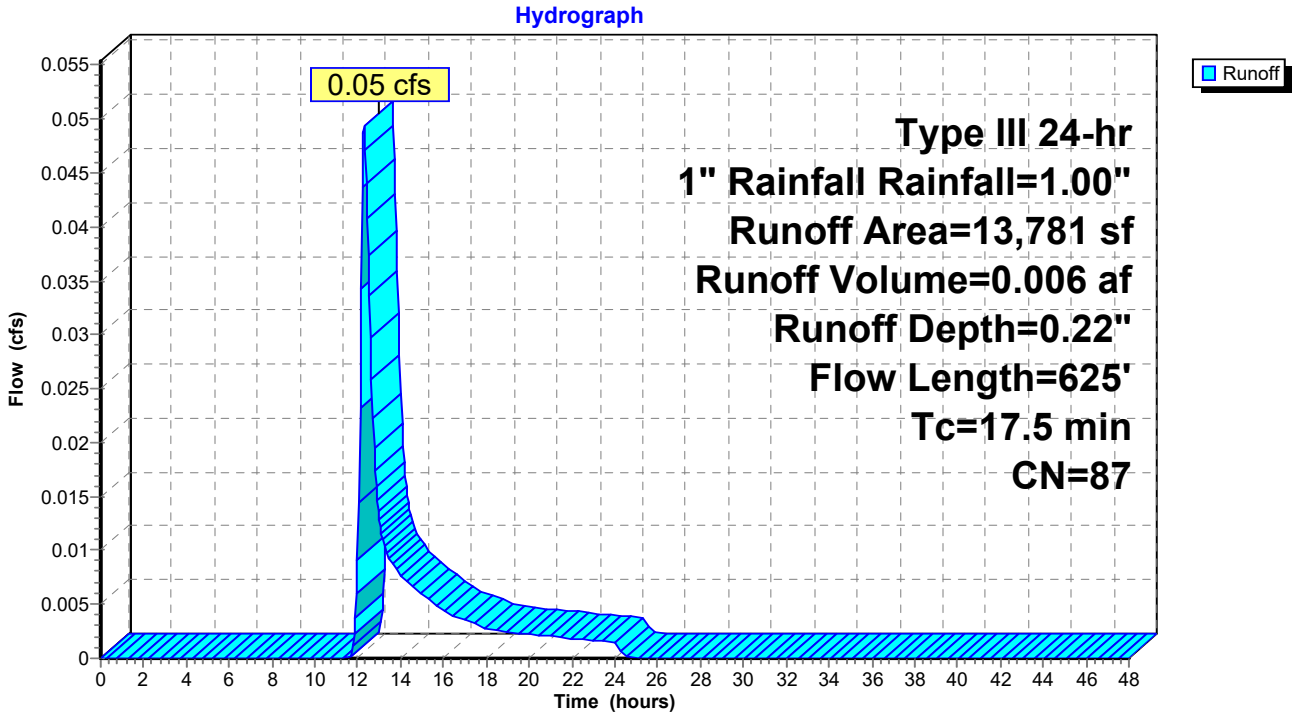
Runoff = 0.05 cfs @ 12.29 hrs, Volume= 0.006 af, Depth= 0.22"
Routed to Pond 2P : EXISTING CB2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1" Rainfall Rainfall=1.00"

	Area (sf)	CN	Description
	5,521	98	Unconnected pavement, HSG D
	850	80	>75% Grass cover, Good, HSG D
	1,602	74	>75% Grass cover, Good, HSG C
	4,303	77	Woods, Good, HSG D
	275	70	Woods, Good, HSG C
*	1,230	98	New City Sidewalk
	13,781	87	Weighted Average
	7,030		51.01% Pervious Area
	6,751		48.99% Impervious Area
	5,521		81.78% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.0440	0.20		**Sheet Flow, A TO B** Grass: Short n= 0.150 P2= 3.10"
1.2	75	0.0440	1.05		**Shallow Concentrated Flow, B TO C** Woodland Kv= 5.0 fps
9.0	190	0.0050	0.35		**Shallow Concentrated Flow, C TO D** Woodland Kv= 5.0 fps
1.1	80	0.0630	1.25		**Shallow Concentrated Flow, D TO E** Woodland Kv= 5.0 fps
0.1	20	0.0500	4.54		**Shallow Concentrated Flow, E TO F** Paved Kv= 20.3 fps
1.9	210	0.0130	1.84		**Shallow Concentrated Flow, F TO G** Unpaved Kv= 16.1 fps
17.5	625	Total			

Subcatchment 2S: SUBCATCHMENT 2



Summary for Subcatchment 3S:

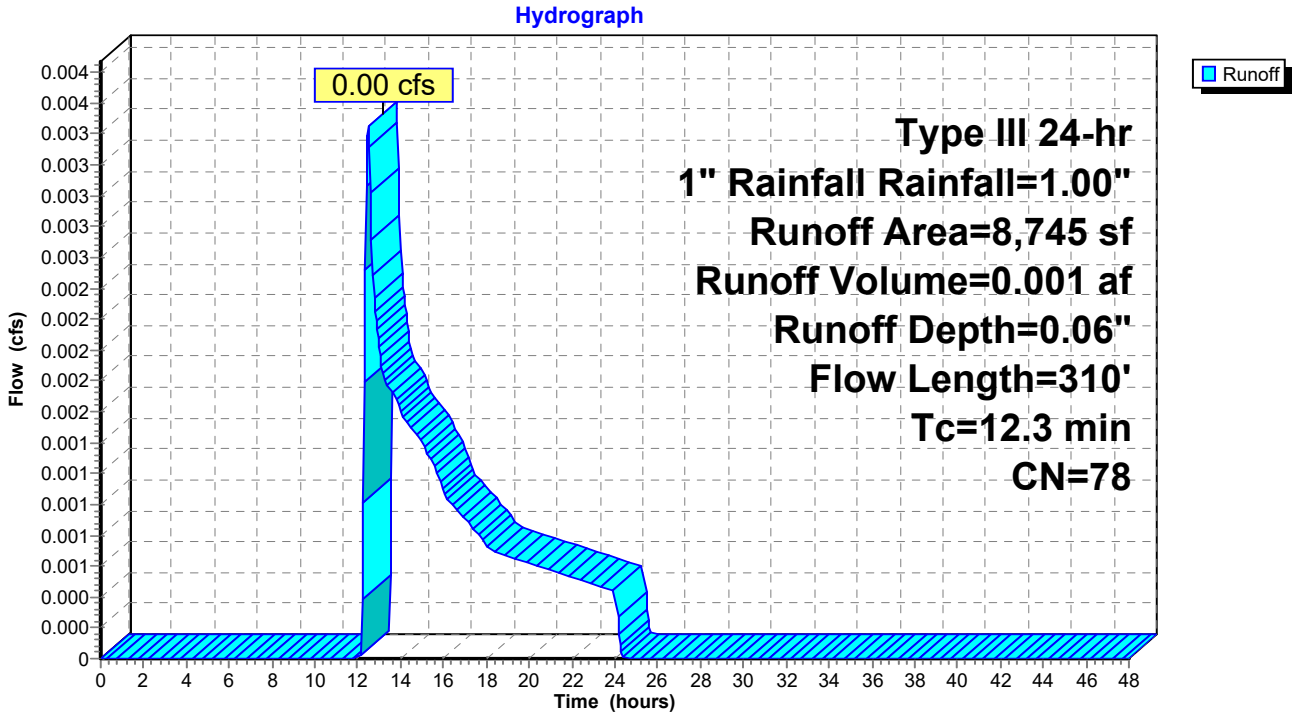
Runoff = 0.00 cfs @ 12.49 hrs, Volume= 0.001 af, Depth= 0.06"
Routed to Pond 4P : EXISTING EASEMENT POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1" Rainfall Rainfall=1.00"

Area (sf)	CN	Description
1,985	80	>75% Grass cover, Good, HSG D
6,760	77	Woods, Good, HSG D
8,745	78	Weighted Average
8,745		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	100	0.0400	0.15		**Sheet Flow, A TO B** Grass: Dense n= 0.240 P2= 3.10"
1.3	210	0.0300	2.60		**Shallow Concentrated Flow, B TO C** Grassed Waterway Kv= 15.0 fps
12.3	310	Total			

Subcatchment 3S:



Summary for Subcatchment 4S: SUBCATCHMENT 4

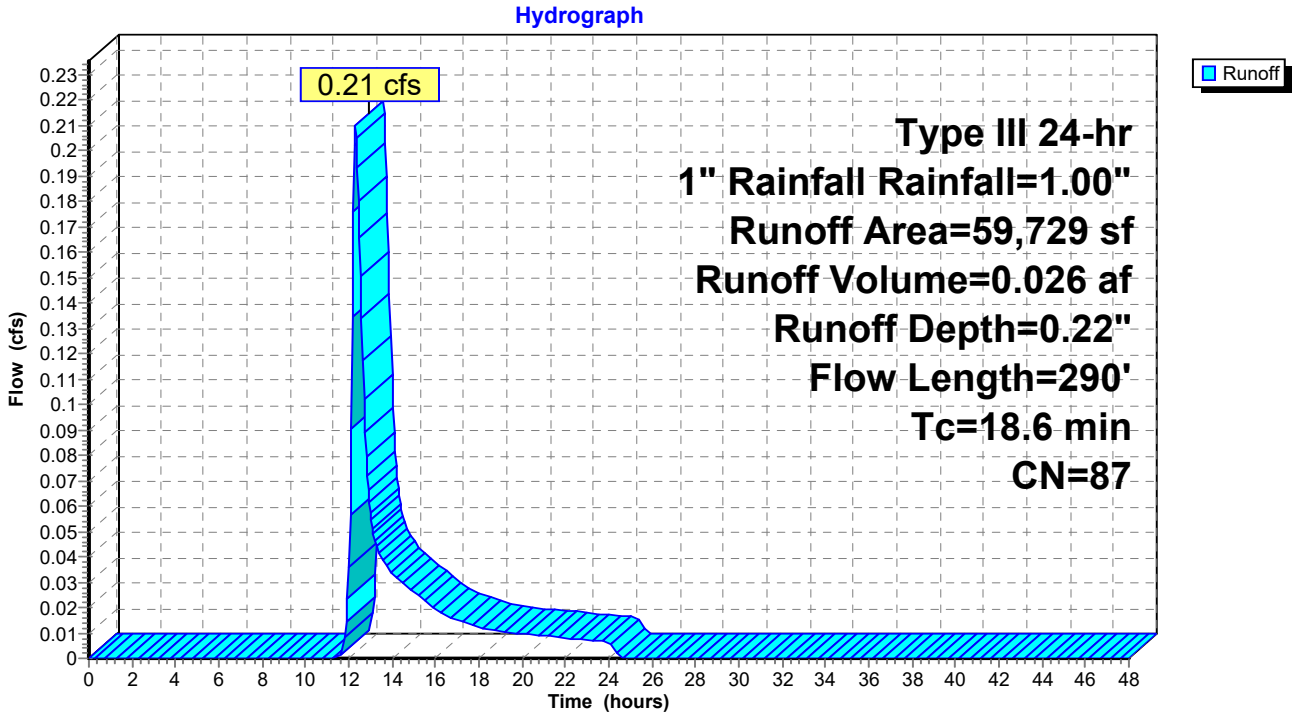
Runoff = 0.21 cfs @ 12.31 hrs, Volume= 0.026 af, Depth= 0.22"
Routed to Pond 4P : EXISTING EASEMENT POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1" Rainfall Rainfall=1.00"

Area (sf)	CN	Description
26,354	98	Unconnected pavement, HSG D
3,052	80	>75% Grass cover, Good, HSG D
1,794	74	>75% Grass cover, Good, HSG C
7,399	80	>75% Grass cover, Good, HSG D
21,130	77	Woods, Good, HSG D
59,729	87	Weighted Average
33,375		55.88% Pervious Area
26,354		44.12% Impervious Area
26,354		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.6	100	0.0340	0.09		**Sheet Flow, A TO B** Woods: Light underbrush n= 0.400 P2= 3.10"
0.1	30	0.0300	3.52		**Shallow Concentrated Flow, B TO C** Paved Kv= 20.3 fps
0.9	160	0.0040	2.85	0.99	**Pipe Channel, C TO D** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.010 PVC, smooth interior
18.6	290	Total			

Subcatchment 4S: SUBCATCHMENT 4



Summary for Subcatchment 5S: SUBCATCHMENT 5

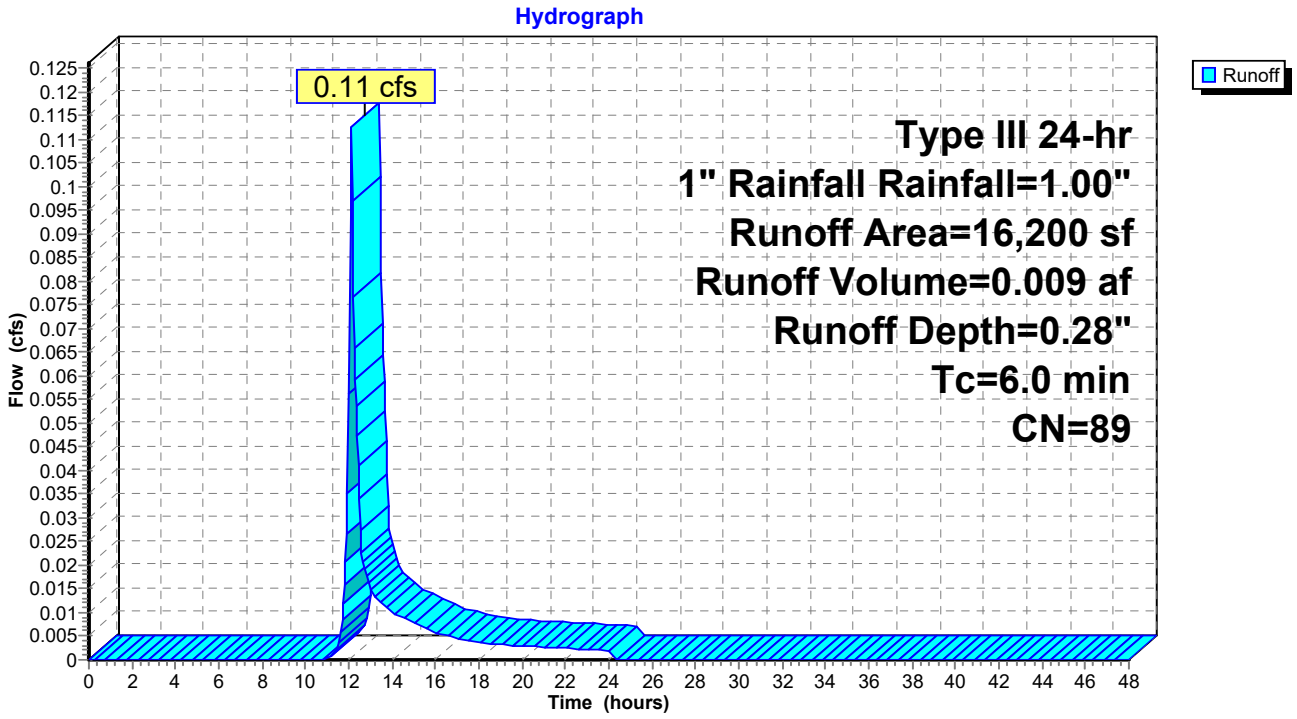
Runoff = 0.11 cfs @ 12.10 hrs, Volume= 0.009 af, Depth= 0.28"
Routed to Pond 5P : Detention System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1" Rainfall Rainfall=1.00"

Area (sf)	CN	Description
9,021	98	Unconnected pavement, HSG D
5,589	80	>75% Grass cover, Good, HSG D
1,590	74	>75% Grass cover, Good, HSG C
16,200	89	Weighted Average
7,179		44.31% Pervious Area
9,021		55.69% Impervious Area
9,021		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, ALL FLOW**

Subcatchment 5S: SUBCATCHMENT 5



Summary for Subcatchment 6S: SUBCATCHMENT 3

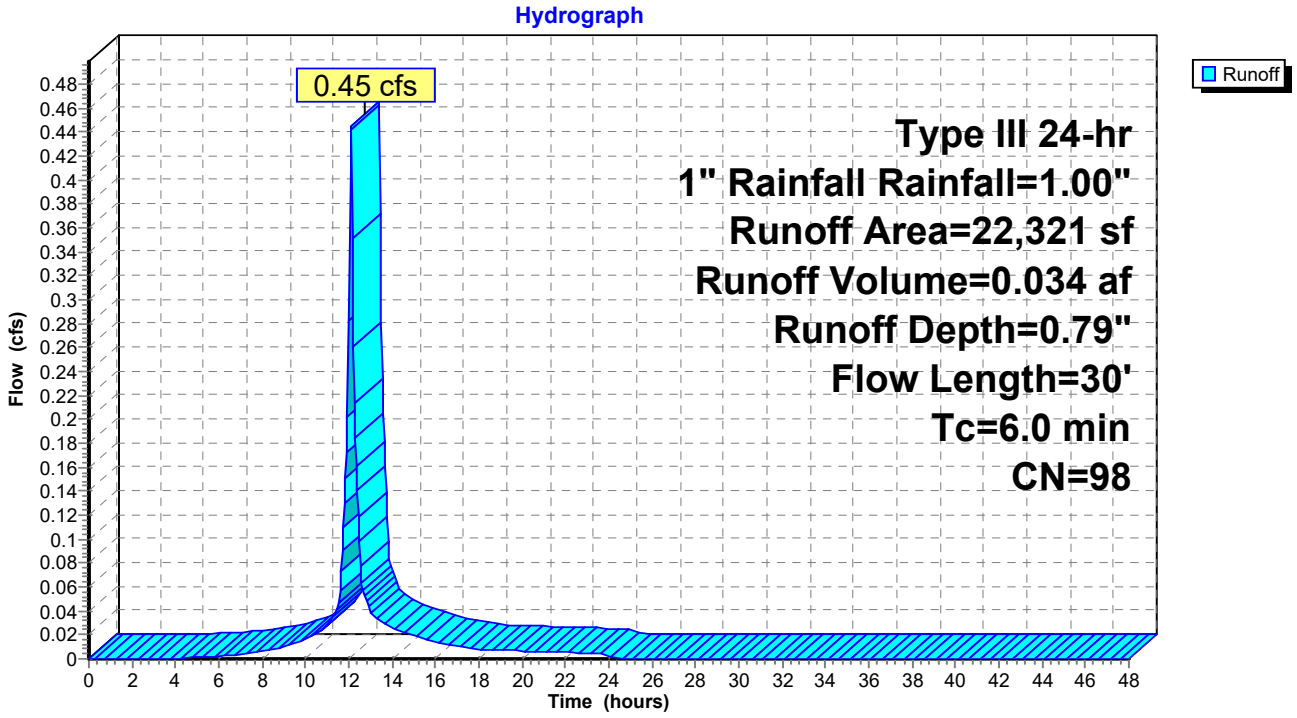
Runoff = 0.45 cfs @ 12.09 hrs, Volume= 0.034 af, Depth= 0.79"
Routed to Pond 5P : Detention System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1" Rainfall Rainfall=1.00"

Area (sf)	CN	Description
22,321	98	Roofs, HSG D
22,321		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	30		0.08		**Direct Entry, ALL FLOW**

Subcatchment 6S: SUBCATCHMENT 3



Summary for Pond 1P: EXISTING CB 1

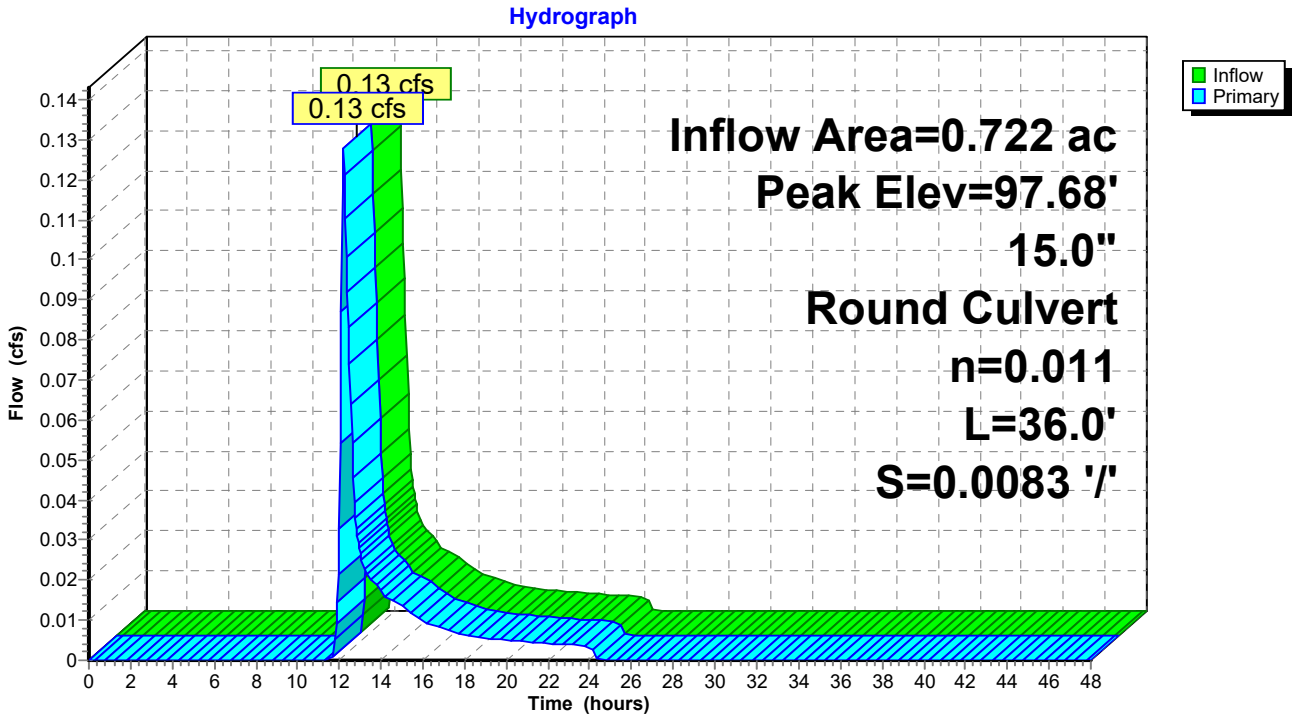
Inflow Area = 0.722 ac, 46.35% Impervious, Inflow Depth = 0.22" for 1" Rainfall event
Inflow = 0.13 cfs @ 12.21 hrs, Volume= 0.013 af
Outflow = 0.13 cfs @ 12.21 hrs, Volume= 0.013 af, Atten= 0%, Lag= 0.0 min
Primary = 0.13 cfs @ 12.21 hrs, Volume= 0.013 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 97.68' @ 12.21 hrs
Flood Elev= 100.69'

Device	Routing	Invert	Outlet Devices
#1	Primary	97.52'	**15.0" Round Culvert** L= 36.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 97.52' / 97.22' S= 0.0083 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf

Primary OutFlow Max=0.13 cfs @ 12.21 hrs HW=97.68' (Free Discharge)
1=Culvert (Barrel Controls 0.13 cfs @ 2.03 fps)

Pond 1P: EXISTING CB 1



Summary for Pond 2P: EXISTING CB2

Inflow Area = 2.773 ac, 53.36% Impervious, Inflow Depth = 0.32" for 1" Rainfall event
Inflow = 0.27 cfs @ 12.43 hrs, Volume= 0.075 af
Outflow = 0.27 cfs @ 12.43 hrs, Volume= 0.075 af, Atten= 0%, Lag= 0.0 min
Primary = 0.27 cfs @ 12.43 hrs, Volume= 0.075 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

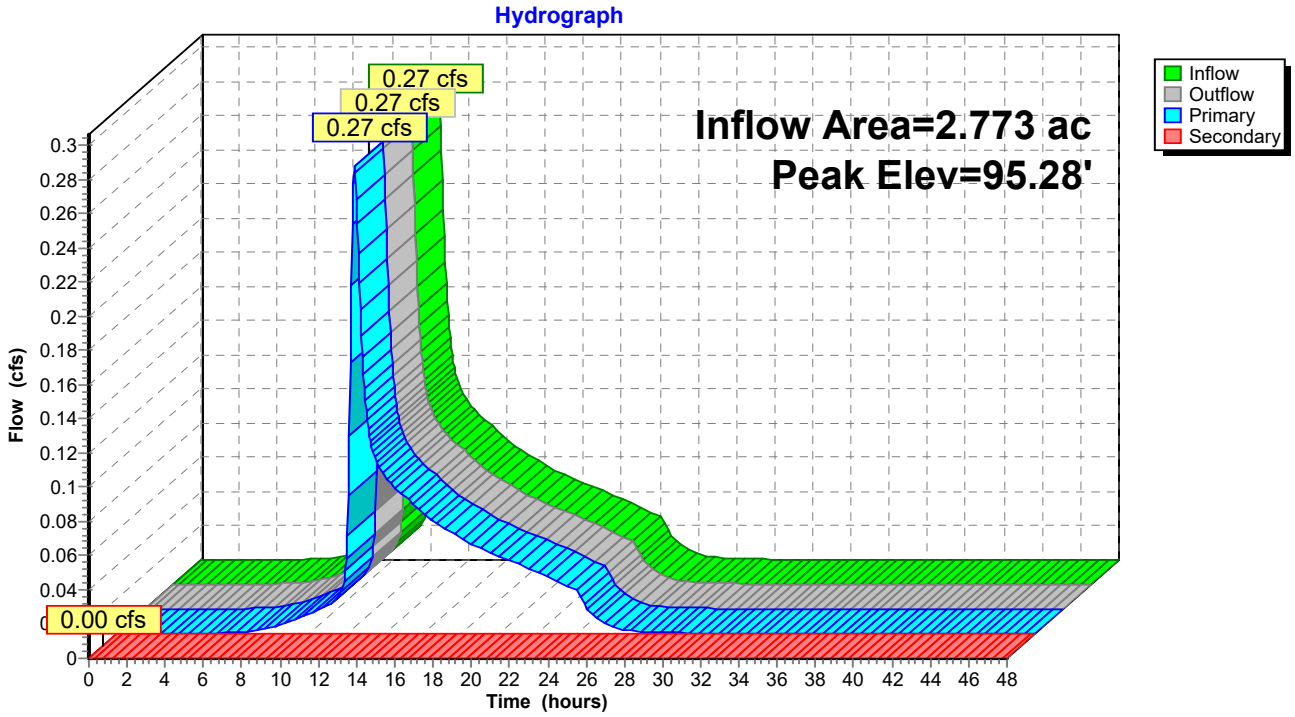
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 95.28' @ 12.43 hrs
Flood Elev= 97.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	95.00'	**8.0" Round Culvert** L= 36.8' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 95.00' / 93.78' S= 0.0332 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.35 sf
#2	Primary	94.15'	**1.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	97.24'	**3.0" x 3.0" Horiz. Orifice/Grate X 6.00 columns** X 6 rows C= 0.600 in 24.0" x 24.0" Grate (56% open area) Limited to weir flow at low heads

Primary OutFlow Max=0.27 cfs @ 12.43 hrs HW=95.28' (Free Discharge)
└─**1=Culvert** (Inlet Controls 0.24 cfs @ 1.79 fps)
└─**2=Orifice/Grate** (Orifice Controls 0.03 cfs @ 5.01 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=94.15' (Free Discharge)
└─**3=Orifice/Grate** (Controls 0.00 cfs)

Pond 2P: EXISTING CB2



Summary for Pond 4P: EXISTING EASEMENT POND

Inflow Area = 1.572 ac, 38.49% Impervious, Inflow Depth = 0.20" for 1" Rainfall event
Inflow = 0.21 cfs @ 12.31 hrs, Volume= 0.027 af
Outflow = 0.19 cfs @ 12.45 hrs, Volume= 0.027 af, Atten= 12%, Lag= 8.3 min
Primary = 0.19 cfs @ 12.45 hrs, Volume= 0.027 af
Routed to Pond 7P : (new Pond)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 7P : (new Pond)

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 95.51' @ 12.45 hrs Surf.Area= 328 sf Storage= 109 cf

Plug-Flow detention time= 22.1 min calculated for 0.027 af (100% of inflow)
Center-of-Mass det. time= 21.7 min (921.1 - 899.4)

Volume	Invert	Avail.Storage	Storage Description
#1	95.00'	13,259 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

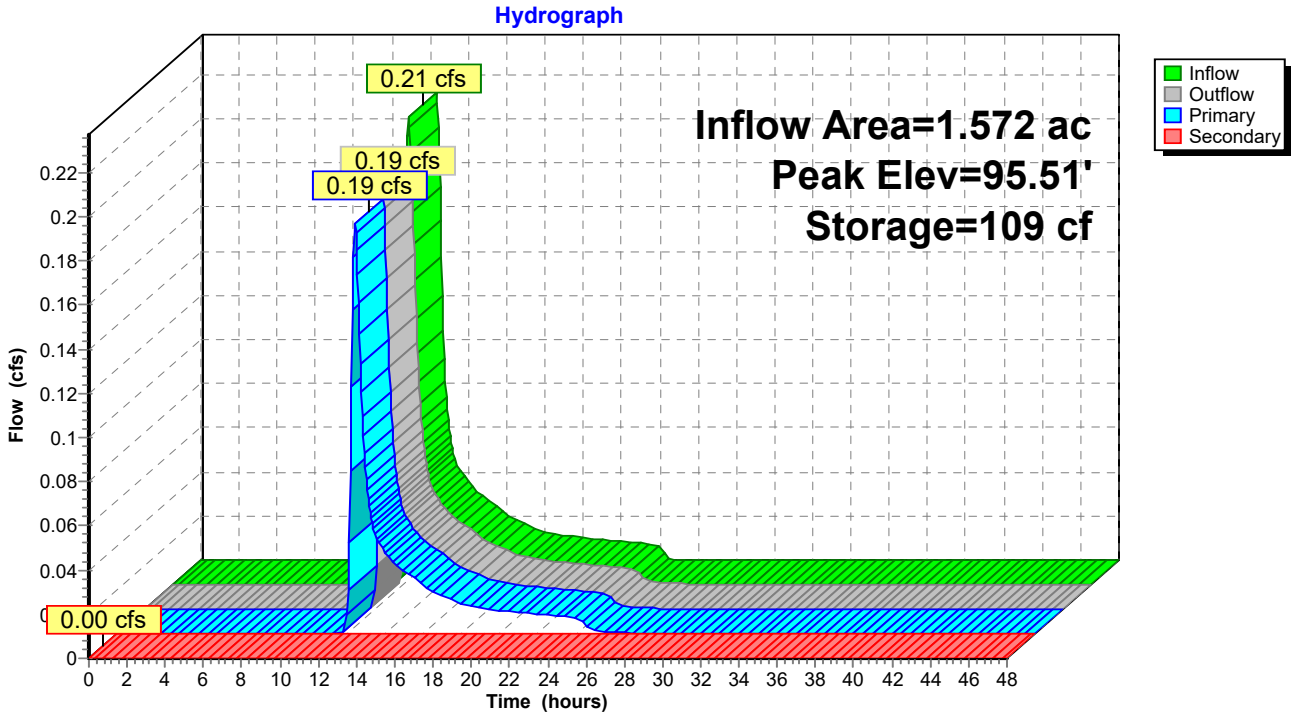
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
95.00	100	0	0
96.00	550	325	325
97.00	1,469	1,010	1,335
98.00	2,580	2,025	3,359
99.00	4,400	3,490	6,849
100.00	8,420	6,410	13,259

Device	Routing	Invert	Outlet Devices
#1	Primary	95.00'	**43.0 deg Sharp-Crested Vee/Trap Weir** Cv= 2.56 (C= 3.20)
#2	Primary	97.40'	**144.0" W x 19.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	97.66'	**10.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=0.18 cfs @ 12.45 hrs HW=95.51' (Free Discharge)
└**1=Sharp-Crested Vee/Trap Weir** (Weir Controls 0.18 cfs @ 1.82 fps)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=95.00' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 4P: EXISTING EASEMENT POND



Summary for Pond 5P: Detention System

Inflow Area = 0.884 ac, 81.36% Impervious, Inflow Depth = 0.58" for 1" Rainfall event
Inflow = 0.56 cfs @ 12.09 hrs, Volume= 0.043 af
Outflow = 0.05 cfs @ 13.20 hrs, Volume= 0.043 af, Atten= 91%, Lag= 66.6 min
Primary = 0.05 cfs @ 13.20 hrs, Volume= 0.043 af
Routed to Pond 6P : JFPD0406
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 6P : JFPD0406

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 94.10' @ 13.20 hrs Surf.Area= 3,360 sf Storage= 855 cf

Plug-Flow detention time= 204.3 min calculated for 0.043 af (100% of inflow)
Center-of-Mass det. time= 203.9 min (1,008.8 - 804.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	92.88'	0 cf	**48.00'W x 70.00'L x 5.00'H Field A** 16,800 cf Overall - 7,012 cf Embedded = 9,788 cf x 0.0% Voids
#2A	93.38'	7,012 cf	**CMP Round 48** x 24 Inside #1 Effective Size= 48.0"W x 48.0"H => 12.57 sf x 20.00'L = 251.3 cf Overall Size= 48.0"W x 48.0"H x 20.00'L Row Length Adjustment= +4.00' x 12.57 sf x 8 rows 46.00' Header x 12.57 sf x 1 = 578.1 cf Inside
		7,012 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Device 5	93.38'	**1.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Device 5	96.20'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 5	95.57'	**6.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	97.17'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 3.00 3.04 3.08 3.12 3.16 3.20 3.24 3.28 3.32 3.36 3.40 3.44 3.48 3.52 3.56 3.60 3.64 3.68 3.72 3.76 3.80 3.84 3.88 3.92 3.96 4.00 Width (feet) 3.46 3.42 3.37 3.31 3.26 3.20 3.14 3.07 3.01 2.93 2.86 2.78 2.69 2.60 2.50 2.40 2.29 2.17 2.04 1.90 1.74 1.57 1.36 1.12 0.80 0.00
#5	Primary	93.38'	**15.0" Round Culvert** L= 19.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 93.38' / 93.38' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.05 cfs @ 13.20 hrs HW=94.10' (Free Discharge)
└─**5=Culvert** (Passes 0.05 cfs of 1.11 cfs potential flow)
  ├─**1=Orifice/Grate** (Orifice Controls 0.05 cfs @ 3.90 fps)
  ├─**2=Orifice/Grate** (Controls 0.00 cfs)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=92.88' (Free Discharge)
└─**4=Custom Weir/Orifice** (Controls 0.00 cfs)

Pond 5P: Detention System - Chamber Wizard Field A

Chamber Model = CMP Round 48 (Round Corrugated Metal Pipe)
Effective Size= 48.0"W x 48.0"H => 12.57 sf x 20.00'L = 251.3 cf
Overall Size= 48.0"W x 48.0"H x 20.00'L
Row Length Adjustment= +4.00' x 12.57 sf x 8 rows

48.0" Wide + 24.0" Spacing = 72.0" C-C Row Spacing

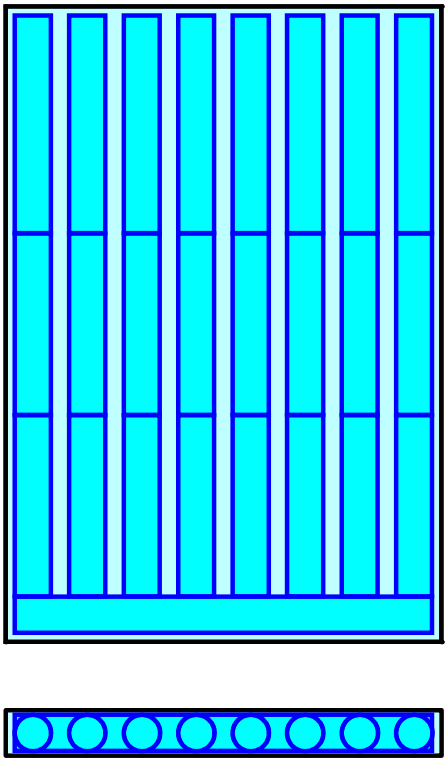
3 Chambers/Row x 20.00' Long +4.00' Row Adjustment +4.00' Header x 1 = 68.00' Row Length +12.0" End Stone x 2 = 70.00' Base Length
8 Rows x 48.0" Wide + 24.0" Spacing x 7 + 12.0" Side Stone x 2 = 48.00' Base Width
6.0" Stone Base + 48.0" Chamber Height + 6.0" Stone Cover = 5.00' Field Height

24 Chambers x 251.3 cf +4.00' Row Adjustment x 12.57 sf x 8 Rows + 46.00' Header x 12.57 sf = 7,012.0 cf Chamber Storage

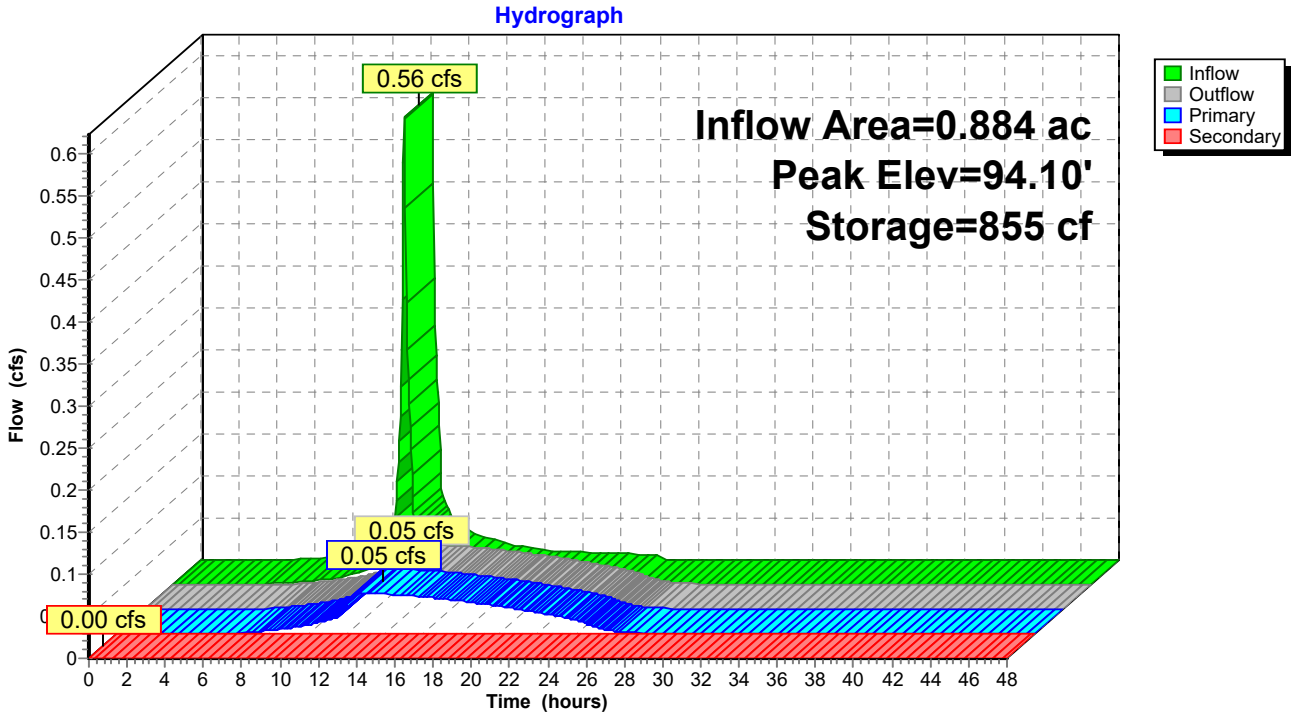
16,800.0 cf Field - 7,012.0 cf Chambers = 9,788.0 cf Stone x 0.0% Voids = 0.0 cf Stone Storage

Chamber Storage = 7,012.0 cf = 0.161 af
Overall Storage Efficiency = 41.7%
Overall System Size = 70.00' x 48.00' x 5.00'

24 Chambers
622.2 cy Field
362.5 cy Stone



Pond 5P: Detention System



Summary for Pond 6P: JFPD0406

Inflow Area = 0.884 ac, 81.36% Impervious, Inflow Depth = 0.58" for 1" Rainfall event
Inflow = 0.05 cfs @ 13.20 hrs, Volume= 0.043 af
Outflow = 0.05 cfs @ 13.20 hrs, Volume= 0.043 af, Atten= 0%, Lag= 0.0 min
Primary = 0.05 cfs @ 13.20 hrs, Volume= 0.043 af
Routed to Pond 2P : EXISTING CB2
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 2P : EXISTING CB2

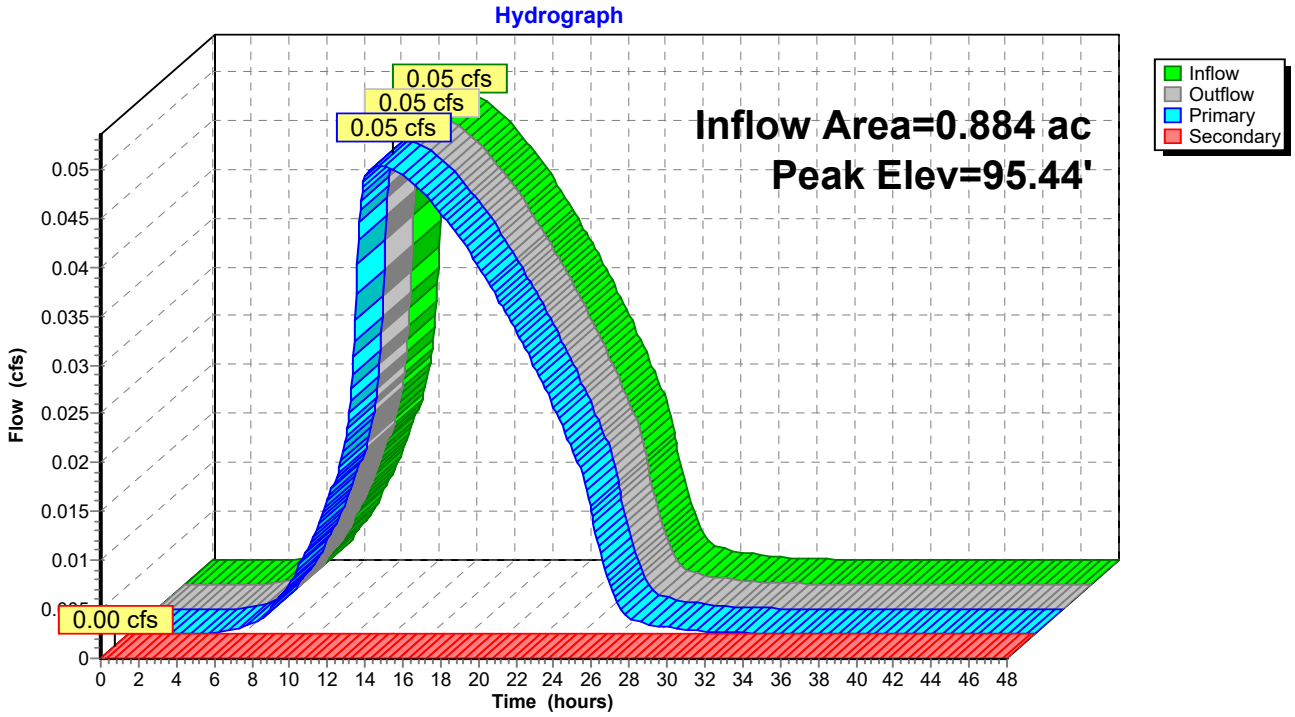
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 95.44' @ 13.20 hrs

Device	Routing	Invert	Outlet Devices
#1	Device 3	94.90'	**JF CSV File** Head (feet) 0.00 0.08 0.17 0.25 0.33 0.42 0.50 0.58 0.67 0.75 0.83 0.92 1.00 1.08 1.17 1.25 1.33 1.42 1.50 Disch. (cfs) 0.000 0.005 0.010 0.015 0.020 0.025 0.030 0.064 0.099 0.134 0.168 0.203 0.238 0.272 0.307 0.342 0.376 0.411 0.446
#2	Secondary	96.40'	**2.8' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#3	Primary	94.90'	**15.0" Round Culvert** L= 145.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 94.90' / 94.15' S= 0.0052 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.05 cfs @ 13.20 hrs HW=95.44' (Free Discharge)
└**3=Culvert** (Passes 0.05 cfs of 1.01 cfs potential flow)
└**1=JF CSV File** (Custom Controls 0.05 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=94.90' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 6P: JFPD0406



Summary for Pond 7P: (new Pond)

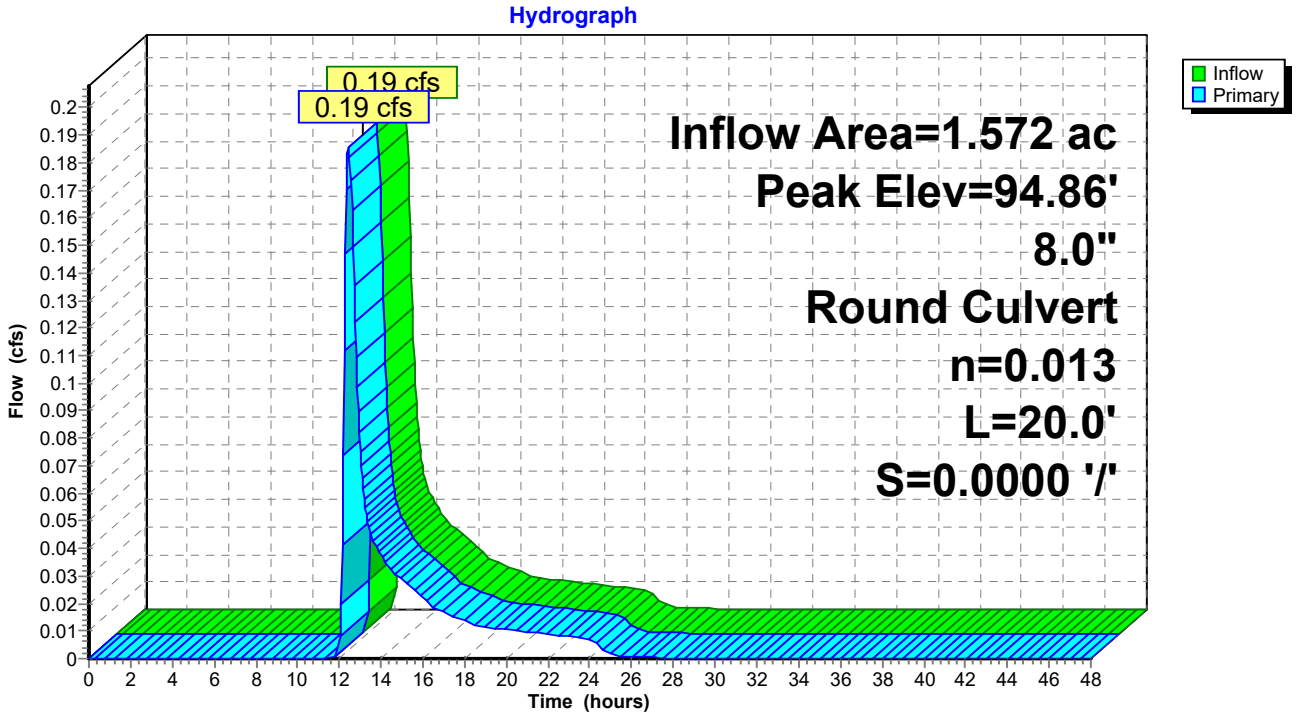
Inflow Area = 1.572 ac, 38.49% Impervious, Inflow Depth = 0.20" for 1" Rainfall event
Inflow = 0.19 cfs @ 12.45 hrs, Volume= 0.027 af
Outflow = 0.19 cfs @ 12.45 hrs, Volume= 0.027 af, Atten= 0%, Lag= 0.0 min
Primary = 0.19 cfs @ 12.45 hrs, Volume= 0.027 af
Routed to Pond 2P : EXISTING CB2

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 94.86' @ 12.45 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	94.50'	**8.0" Round Culvert** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 94.50' / 94.50' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 0.35 sf

Primary OutFlow Max=0.19 cfs @ 12.45 hrs HW=94.86' (Free Discharge)
1=Culvert (Barrel Controls 0.19 cfs @ 1.42 fps)

Pond 7P: (new Pond)



Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: SUBCATCHMENT1 Runoff Area=31,459 sf 46.35% Impervious Runoff Depth=1.40"
Flow Length=415' Tc=12.6 min CN=87 Runoff=0.94 cfs 0.084 af

Subcatchment2S: SUBCATCHMENT2 Runoff Area=13,781 sf 48.99% Impervious Runoff Depth=1.40"
Flow Length=625' Tc=17.5 min CN=87 Runoff=0.37 cfs 0.037 af

Subcatchment3S: Runoff Area=8,745 sf 0.00% Impervious Runoff Depth=0.85"
Flow Length=310' Tc=12.3 min CN=78 Runoff=0.15 cfs 0.014 af

Subcatchment4S: SUBCATCHMENT4 Runoff Area=59,729 sf 44.12% Impervious Runoff Depth=1.40"
Flow Length=290' Tc=18.6 min CN=87 Runoff=1.55 cfs 0.159 af

Subcatchment5S: SUBCATCHMENT5 Runoff Area=16,200 sf 55.69% Impervious Runoff Depth=1.54"
Tc=6.0 min CN=89 Runoff=0.66 cfs 0.048 af

Subcatchment6S: SUBCATCHMENT3 Runoff Area=22,321 sf 100.00% Impervious Runoff Depth=2.37"
Flow Length=30' Tc=6.0 min CN=98 Runoff=1.26 cfs 0.101 af

Pond 1P: EXISTING CB 1 Peak Elev=98.00' Inflow=0.94 cfs 0.084 af
15.0" Round Culvert n=0.011 L=36.0' S=0.0083 '/' Outflow=0.94 cfs 0.084 af

Pond 2P: EXISTING CB2 Peak Elev=96.72' Inflow=2.02 cfs 0.359 af
Primary=2.02 cfs 0.359 af Secondary=0.00 cfs 0.000 af Outflow=2.02 cfs 0.359 af

Pond 4P: EXISTING EASEMENT POND Peak Elev=96.20' Storage=456 cf Inflow=1.69 cfs 0.174 af
Primary=1.60 cfs 0.174 af Secondary=0.00 cfs 0.000 af Outflow=1.60 cfs 0.174 af

Pond 5P: Detention System Peak Elev=95.52' Storage=3,809 cf Inflow=1.91 cfs 0.149 af
Primary=0.09 cfs 0.149 af Secondary=0.00 cfs 0.000 af Outflow=0.09 cfs 0.149 af

Pond 6P: JFPD0406 Peak Elev=95.53' Inflow=0.09 cfs 0.149 af
Primary=0.09 cfs 0.149 af Secondary=0.00 cfs 0.000 af Outflow=0.09 cfs 0.149 af

Pond 7P: (new Pond) Peak Elev=96.01' Inflow=1.60 cfs 0.174 af
8.0" Round Culvert n=0.013 L=20.0' S=0.0000 '/' Outflow=1.60 cfs 0.174 af

Total Runoff Area = 3.495 ac Runoff Volume = 0.443 af Average Runoff Depth = 1.52"
48.09% Pervious = 1.681 ac 51.91% Impervious = 1.814 ac

Summary for Subcatchment 1S: SUBCATCHMENT 1

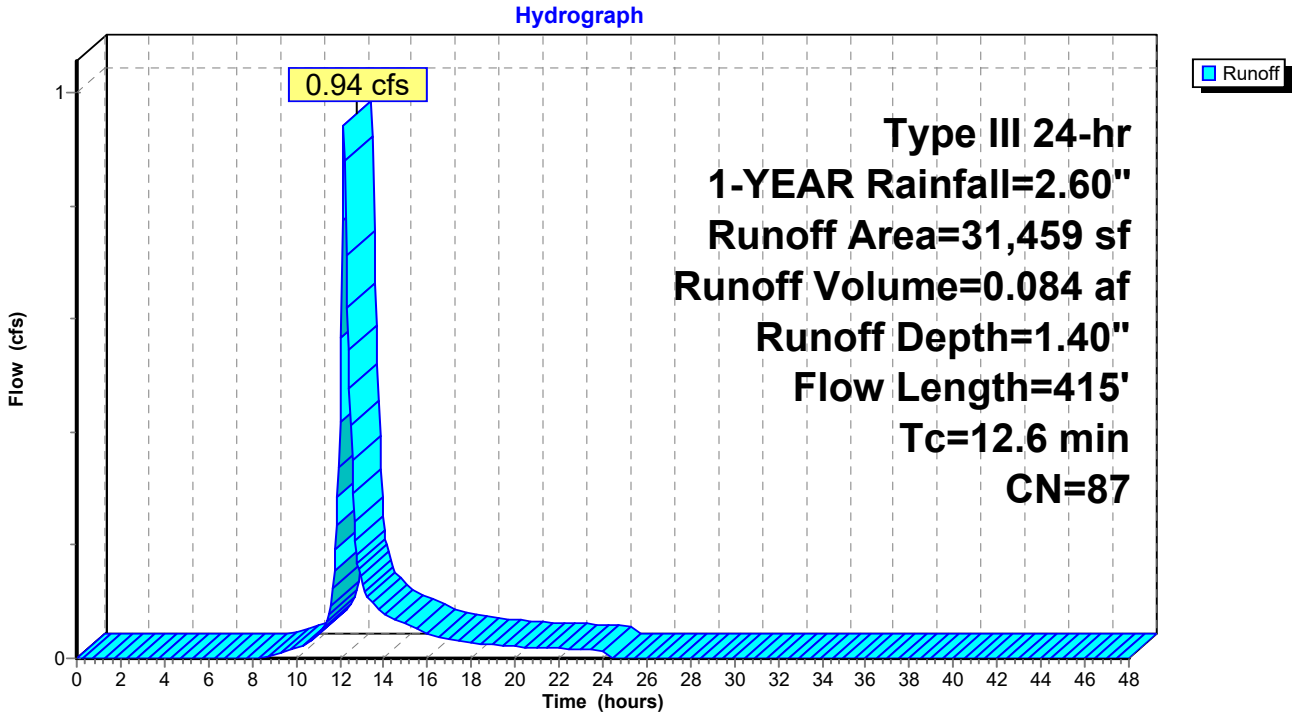
Runoff = 0.94 cfs @ 12.18 hrs, Volume= 0.084 af, Depth= 1.40"
Routed to Pond 1P : EXISTING CB 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-YEAR Rainfall=2.60"

	Area (sf)	CN	Description
	14,281	98	Unconnected pavement, HSG D
	3,746	80	>75% Grass cover, Good, HSG D
	246	74	>75% Grass cover, Good, HSG C
	12,886	77	Woods, Good, HSG D
*	300	98	New City Sidewalk
	31,459	87	Weighted Average
	16,878		53.65% Pervious Area
	14,581		46.35% Impervious Area
	14,281		97.94% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	50	0.0540	0.10		**Sheet Flow, A TO B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.1	45	0.0200	0.71		**Shallow Concentrated Flow, B TO C** Woodland Kv= 5.0 fps
1.9	100	0.0150	0.86		**Shallow Concentrated Flow, C TO D** Short Grass Pasture Kv= 7.0 fps
0.7	50	0.0560	1.18		**Shallow Concentrated Flow, D TO E** Woodland Kv= 5.0 fps
0.5	170	0.0150	6.23	25.00	**Trap/Vee/Rect Channel Flow, E to F** Bot.W=3.00' D=0.50' Z= 0.1 & 20.0 '/' Top.W=13.05' n= 0.013 Asphalt, smooth
12.6	415	Total			

Subcatchment 1S: SUBCATCHMENT 1



Summary for Subcatchment 2S: SUBCATCHMENT 2

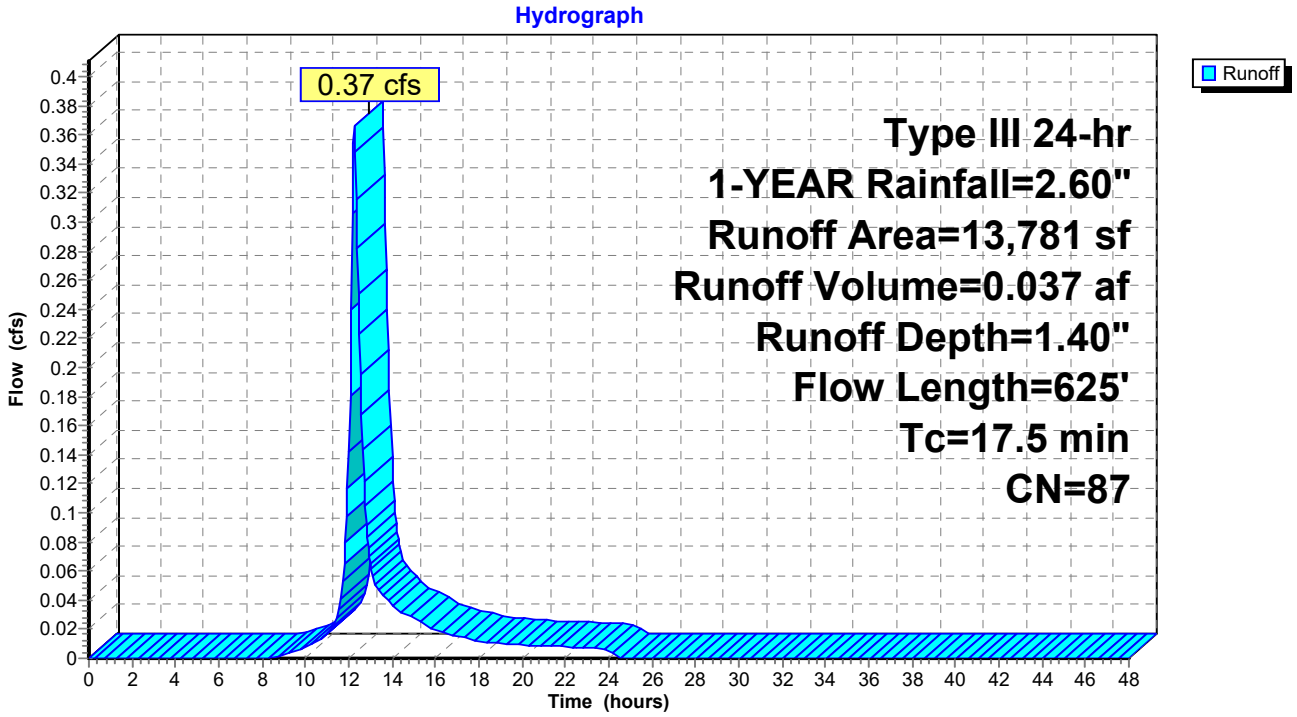
Runoff = 0.37 cfs @ 12.25 hrs, Volume= 0.037 af, Depth= 1.40"
Routed to Pond 2P : EXISTING CB2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-YEAR Rainfall=2.60"

	Area (sf)	CN	Description
	5,521	98	Unconnected pavement, HSG D
	850	80	>75% Grass cover, Good, HSG D
	1,602	74	>75% Grass cover, Good, HSG C
	4,303	77	Woods, Good, HSG D
	275	70	Woods, Good, HSG C
*	1,230	98	New City Sidewalk
	13,781	87	Weighted Average
	7,030		51.01% Pervious Area
	6,751		48.99% Impervious Area
	5,521		81.78% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.0440	0.20		**Sheet Flow, A TO B** Grass: Short n= 0.150 P2= 3.10"
1.2	75	0.0440	1.05		**Shallow Concentrated Flow, B TO C** Woodland Kv= 5.0 fps
9.0	190	0.0050	0.35		**Shallow Concentrated Flow, C TO D** Woodland Kv= 5.0 fps
1.1	80	0.0630	1.25		**Shallow Concentrated Flow, D TO E** Woodland Kv= 5.0 fps
0.1	20	0.0500	4.54		**Shallow Concentrated Flow, E TO F** Paved Kv= 20.3 fps
1.9	210	0.0130	1.84		**Shallow Concentrated Flow, F TO G** Unpaved Kv= 16.1 fps
17.5	625	Total			

Subcatchment 2S: SUBCATCHMENT 2



Summary for Subcatchment 3S:

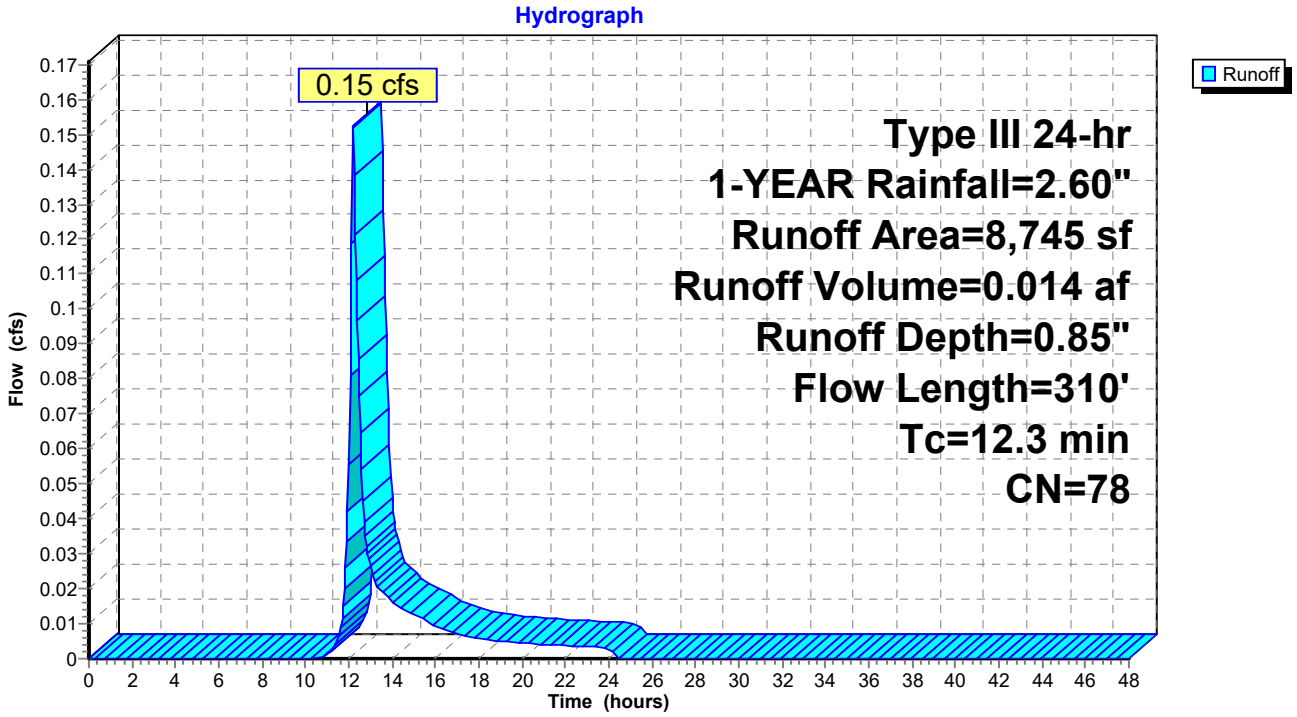
Runoff = 0.15 cfs @ 12.19 hrs, Volume= 0.014 af, Depth= 0.85"
Routed to Pond 4P : EXISTING EASEMENT POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-YEAR Rainfall=2.60"

Area (sf)	CN	Description
1,985	80	>75% Grass cover, Good, HSG D
6,760	77	Woods, Good, HSG D
8,745	78	Weighted Average
8,745		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	100	0.0400	0.15		**Sheet Flow, A TO B** Grass: Dense n= 0.240 P2= 3.10"
1.3	210	0.0300	2.60		**Shallow Concentrated Flow, B TO C** Grassed Waterway Kv= 15.0 fps
12.3	310	Total			

Subcatchment 3S:



Summary for Subcatchment 4S: SUBCATCHMENT 4

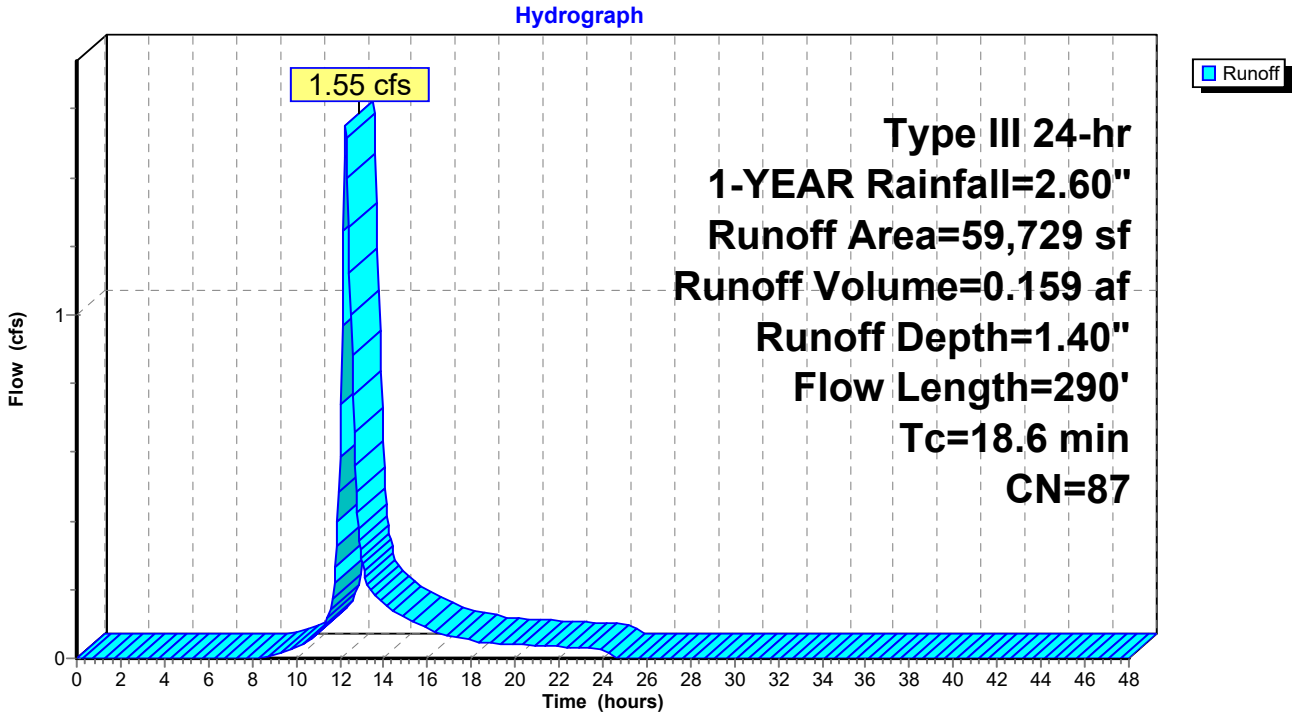
Runoff = 1.55 cfs @ 12.26 hrs, Volume= 0.159 af, Depth= 1.40"
Routed to Pond 4P : EXISTING EASEMENT POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-YEAR Rainfall=2.60"

Area (sf)	CN	Description
26,354	98	Unconnected pavement, HSG D
3,052	80	>75% Grass cover, Good, HSG D
1,794	74	>75% Grass cover, Good, HSG C
7,399	80	>75% Grass cover, Good, HSG D
21,130	77	Woods, Good, HSG D
59,729	87	Weighted Average
33,375		55.88% Pervious Area
26,354		44.12% Impervious Area
26,354		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.6	100	0.0340	0.09		**Sheet Flow, A TO B** Woods: Light underbrush n= 0.400 P2= 3.10"
0.1	30	0.0300	3.52		**Shallow Concentrated Flow, B TO C** Paved Kv= 20.3 fps
0.9	160	0.0040	2.85	0.99	**Pipe Channel, C TO D** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.010 PVC, smooth interior
18.6	290	Total			

Subcatchment 4S: SUBCATCHMENT 4



Summary for Subcatchment 5S: SUBCATCHMENT 5

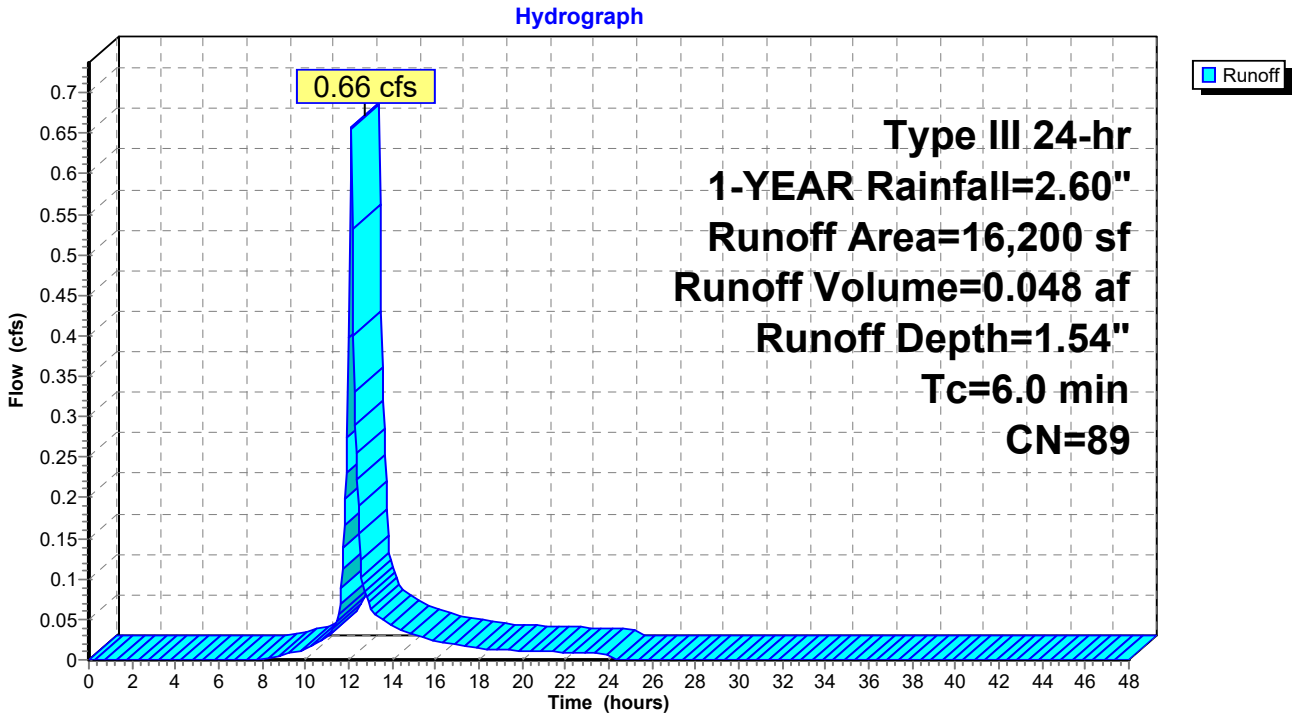
Runoff = 0.66 cfs @ 12.09 hrs, Volume= 0.048 af, Depth= 1.54"
Routed to Pond 5P : Detention System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-YEAR Rainfall=2.60"

Area (sf)	CN	Description
9,021	98	Unconnected pavement, HSG D
5,589	80	>75% Grass cover, Good, HSG D
1,590	74	>75% Grass cover, Good, HSG C
16,200	89	Weighted Average
7,179		44.31% Pervious Area
9,021		55.69% Impervious Area
9,021		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, ALL FLOW**

Subcatchment 5S: SUBCATCHMENT 5



Summary for Subcatchment 6S: SUBCATCHMENT 3

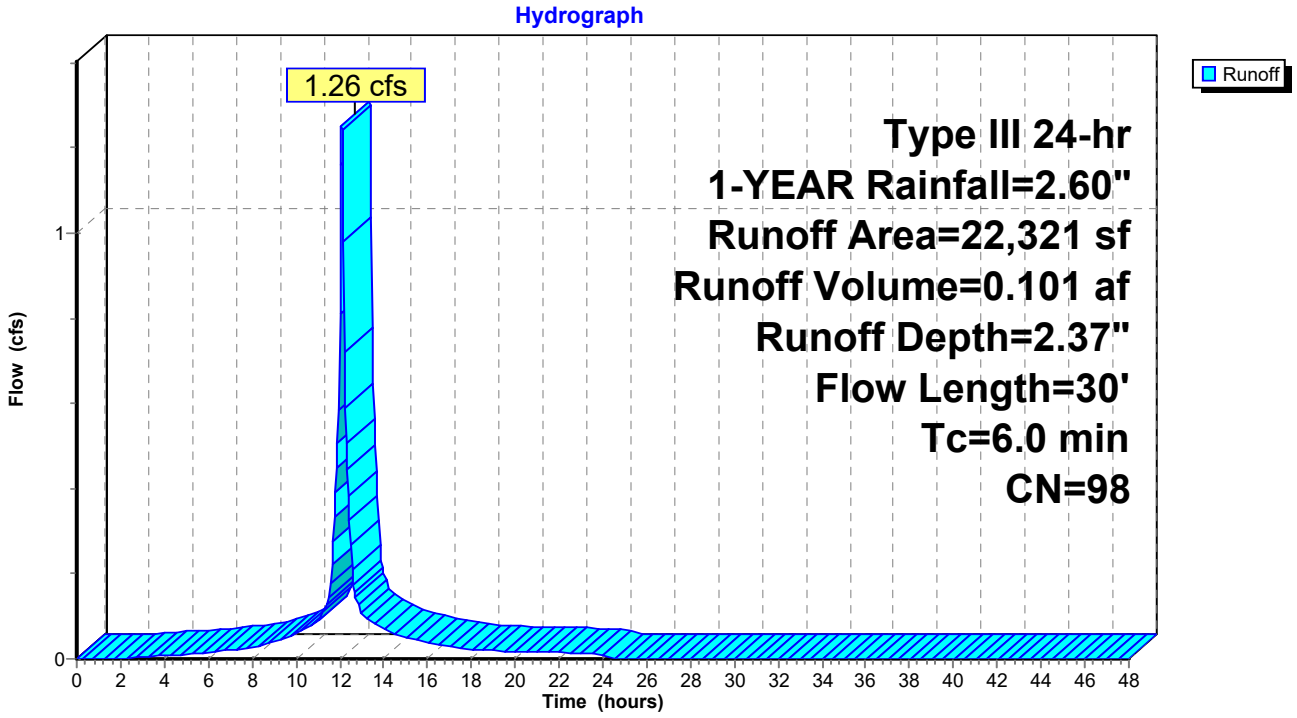
Runoff = 1.26 cfs @ 12.09 hrs, Volume= 0.101 af, Depth= 2.37"
Routed to Pond 5P : Detention System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 1-YEAR Rainfall=2.60"

Area (sf)	CN	Description
22,321	98	Roofs, HSG D
22,321		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	30		0.08		**Direct Entry, ALL FLOW**

Subcatchment 6S: SUBCATCHMENT 3



Summary for Pond 1P: EXISTING CB 1

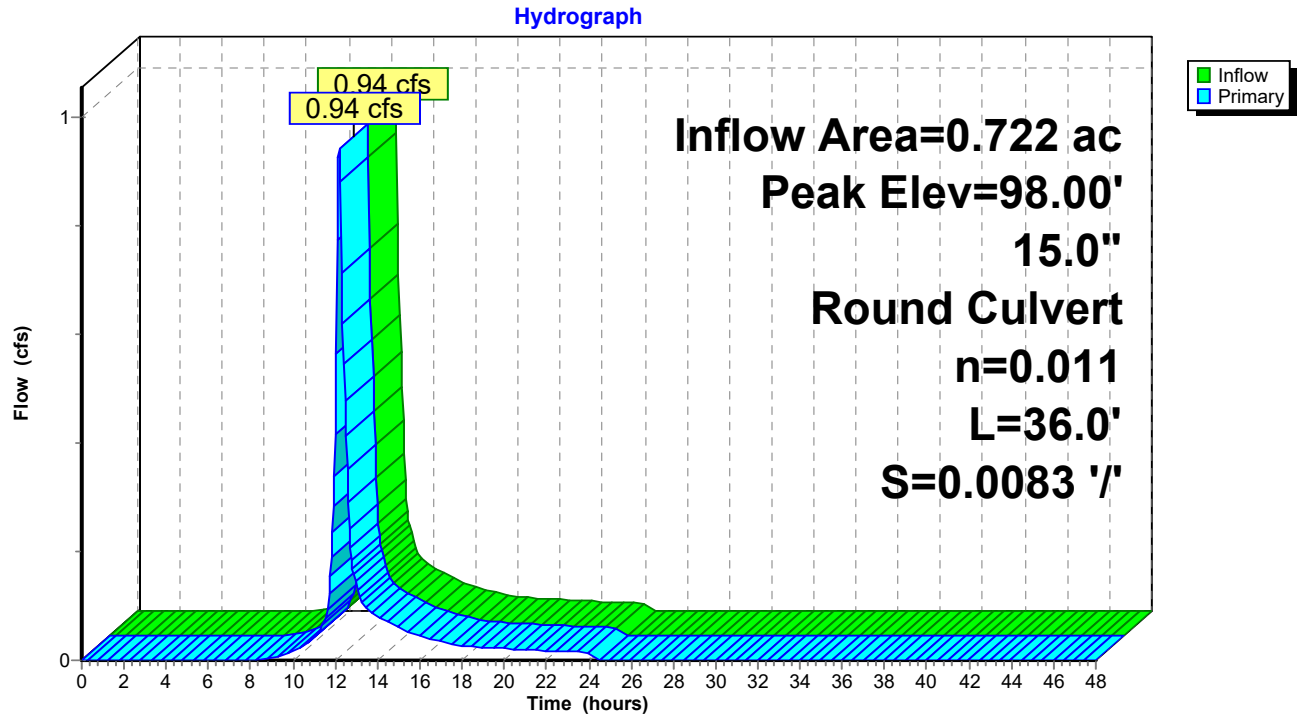
Inflow Area = 0.722 ac, 46.35% Impervious, Inflow Depth = 1.40" for 1-YEAR event
Inflow = 0.94 cfs @ 12.18 hrs, Volume= 0.084 af
Outflow = 0.94 cfs @ 12.18 hrs, Volume= 0.084 af, Atten= 0%, Lag= 0.0 min
Primary = 0.94 cfs @ 12.18 hrs, Volume= 0.084 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 98.00' @ 12.18 hrs
Flood Elev= 100.69'

Device	Routing	Invert	Outlet Devices
#1	Primary	97.52'	**15.0" Round Culvert** L= 36.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 97.52' / 97.22' S= 0.0083 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf

Primary OutFlow Max=0.93 cfs @ 12.18 hrs HW=97.99' (Free Discharge)
1=Culvert (Barrel Controls 0.93 cfs @ 3.24 fps)

Pond 1P: EXISTING CB 1



Summary for Pond 2P: EXISTING CB2

Inflow Area = 2.773 ac, 53.36% Impervious, Inflow Depth = 1.56" for 1-YEAR event
Inflow = 2.02 cfs @ 12.31 hrs, Volume= 0.359 af
Outflow = 2.02 cfs @ 12.31 hrs, Volume= 0.359 af, Atten= 0%, Lag= 0.0 min
Primary = 2.02 cfs @ 12.31 hrs, Volume= 0.359 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

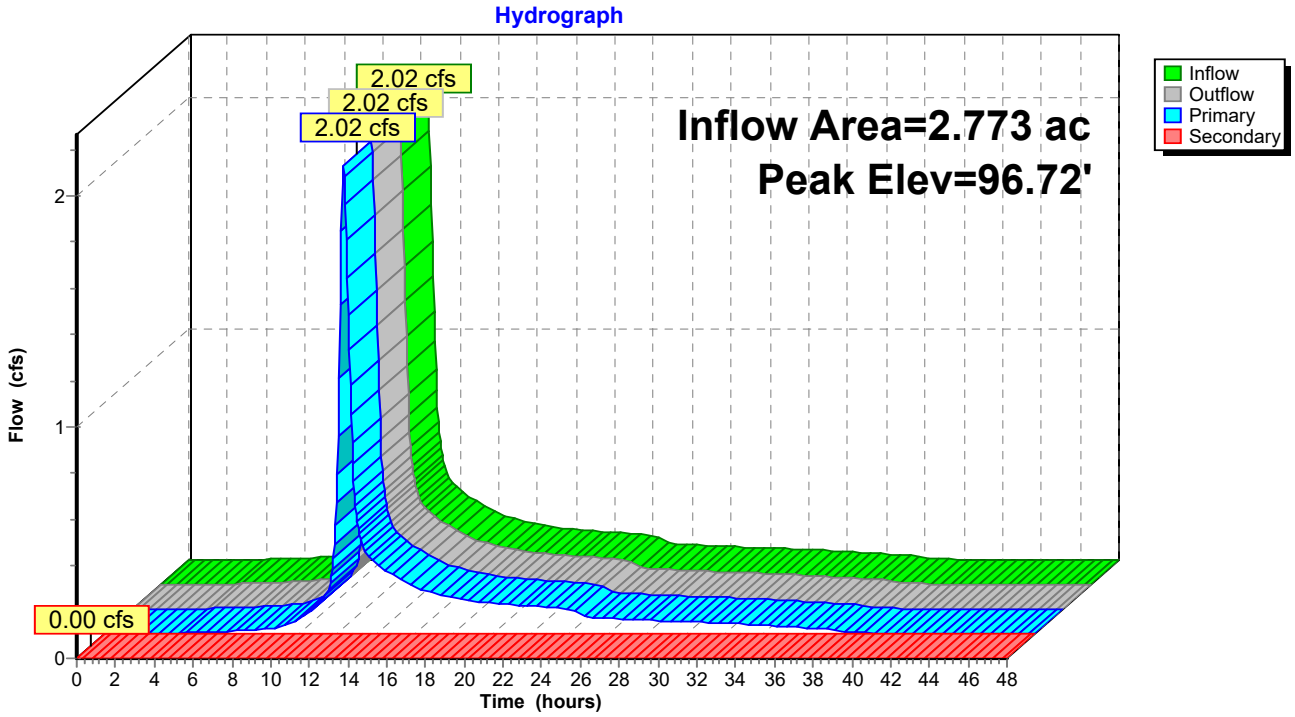
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 96.72' @ 12.31 hrs
Flood Elev= 97.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	95.00'	**8.0" Round Culvert** L= 36.8' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 95.00' / 93.78' S= 0.0332 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.35 sf
#2	Primary	94.15'	**1.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	97.24'	**3.0" x 3.0" Horiz. Orifice/Grate X 6.00 columns** X 6 rows C= 0.600 in 24.0" x 24.0" Grate (56% open area) Limited to weir flow at low heads

Primary OutFlow Max=2.02 cfs @ 12.31 hrs HW=96.71' (Free Discharge)
└─**1=Culvert** (Inlet Controls 1.98 cfs @ 5.66 fps)
└─**2=Orifice/Grate** (Orifice Controls 0.04 cfs @ 7.65 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=94.15' (Free Discharge)
└─**3=Orifice/Grate** (Controls 0.00 cfs)

Pond 2P: EXISTING CB2



Summary for Pond 4P: EXISTING EASEMENT POND

Inflow Area = 1.572 ac, 38.49% Impervious, Inflow Depth = 1.33" for 1-YEAR event
Inflow = 1.69 cfs @ 12.25 hrs, Volume= 0.174 af
Outflow = 1.60 cfs @ 12.32 hrs, Volume= 0.174 af, Atten= 5%, Lag= 3.8 min
Primary = 1.60 cfs @ 12.32 hrs, Volume= 0.174 af
Routed to Pond 7P : (new Pond)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 7P : (new Pond)

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 96.20' @ 12.32 hrs Surf.Area= 737 sf Storage= 456 cf

Plug-Flow detention time= 9.5 min calculated for 0.174 af (100% of inflow)
Center-of-Mass det. time= 9.8 min (851.7 - 841.9)

Volume	Invert	Avail.Storage	Storage Description
#1	95.00'	13,259 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

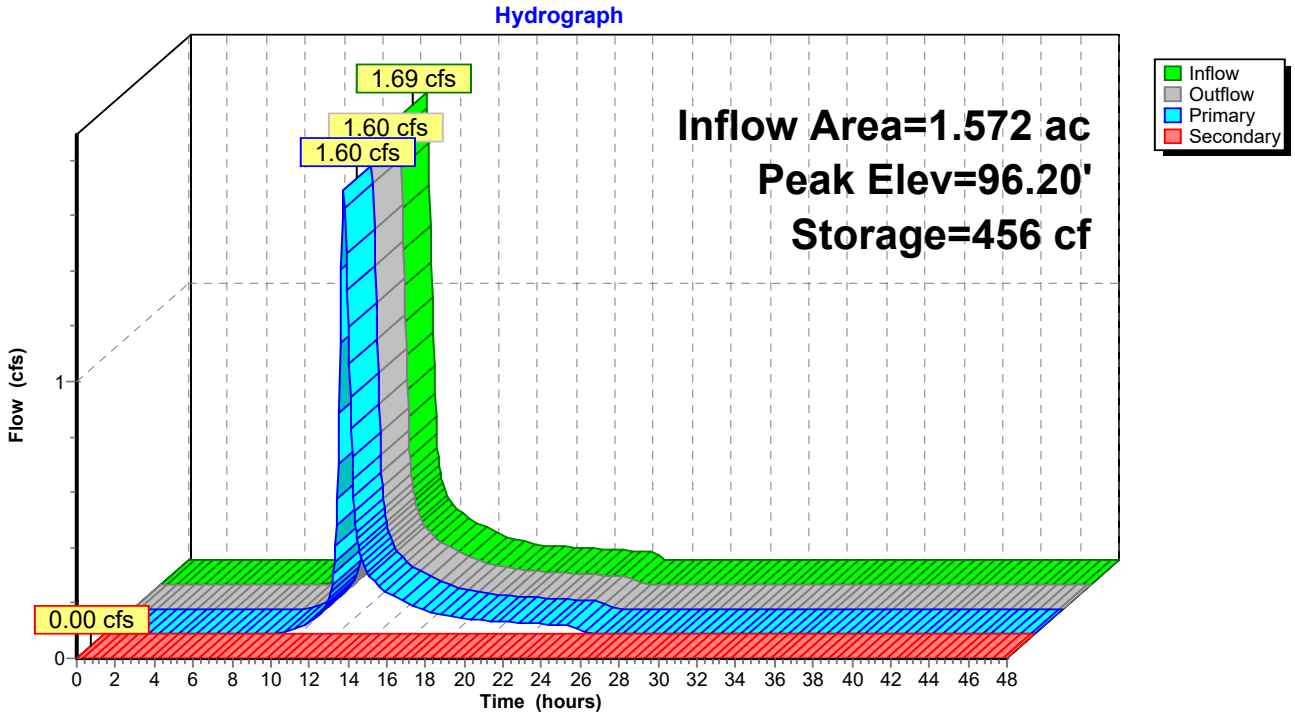
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
95.00	100	0	0
96.00	550	325	325
97.00	1,469	1,010	1,335
98.00	2,580	2,025	3,359
99.00	4,400	3,490	6,849
100.00	8,420	6,410	13,259

Device	Routing	Invert	Outlet Devices
#1	Primary	95.00'	**43.0 deg Sharp-Crested Vee/Trap Weir** Cv= 2.56 (C= 3.20)
#2	Primary	97.40'	**144.0" W x 19.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	97.66'	**10.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=1.59 cfs @ 12.32 hrs HW=96.20' (Free Discharge)
└**1=Sharp-Crested Vee/Trap Weir** (Weir Controls 1.59 cfs @ 2.80 fps)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=95.00' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 4P: EXISTING EASEMENT POND



Summary for Pond 5P: Detention System

Inflow Area = 0.884 ac, 81.36% Impervious, Inflow Depth = 2.02" for 1-YEAR event
Inflow = 1.91 cfs @ 12.09 hrs, Volume= 0.149 af
Outflow = 0.09 cfs @ 14.93 hrs, Volume= 0.149 af, Atten= 96%, Lag= 170.6 min
Primary = 0.09 cfs @ 14.93 hrs, Volume= 0.149 af
Routed to Pond 6P : JFPD0406
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 6P : JFPD0406

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 95.52' @ 14.93 hrs Surf.Area= 3,360 sf Storage= 3,809 cf

Plug-Flow detention time= 509.6 min calculated for 0.149 af (100% of inflow)
Center-of-Mass det. time= 510.3 min (1,290.1 - 779.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	92.88'	0 cf	**48.00'W x 70.00'L x 5.00'H Field A** 16,800 cf Overall - 7,012 cf Embedded = 9,788 cf x 0.0% Voids
#2A	93.38'	7,012 cf	**CMP Round 48** x 24 Inside #1 Effective Size= 48.0"W x 48.0"H => 12.57 sf x 20.00'L = 251.3 cf Overall Size= 48.0"W x 48.0"H x 20.00'L Row Length Adjustment= +4.00' x 12.57 sf x 8 rows 46.00' Header x 12.57 sf x 1 = 578.1 cf Inside
		7,012 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Device 5	93.38'	**1.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Device 5	96.20'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 5	95.57'	**6.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	97.17'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 3.00 3.04 3.08 3.12 3.16 3.20 3.24 3.28 3.32 3.36 3.40 3.44 3.48 3.52 3.56 3.60 3.64 3.68 3.72 3.76 3.80 3.84 3.88 3.92 3.96 4.00 Width (feet) 3.46 3.42 3.37 3.31 3.26 3.20 3.14 3.07 3.01 2.93 2.86 2.78 2.69 2.60 2.50 2.40 2.29 2.17 2.04 1.90 1.74 1.57 1.36 1.12 0.80 0.00
#5	Primary	93.38'	**15.0" Round Culvert** L= 19.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 93.38' / 93.38' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.09 cfs @ 14.93 hrs HW=95.52' (Free Discharge)
└**5=Culvert** (Passes 0.09 cfs of 5.73 cfs potential flow)
  ├**1=Orifice/Grate** (Orifice Controls 0.09 cfs @ 6.93 fps)
  ├**2=Orifice/Grate** (Controls 0.00 cfs)
  └**3=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=92.88' (Free Discharge)
└**4=Custom Weir/Orifice** (Controls 0.00 cfs)

Pond 5P: Detention System - Chamber Wizard Field A

Chamber Model = CMP Round 48 (Round Corrugated Metal Pipe)
Effective Size= 48.0"W x 48.0"H => 12.57 sf x 20.00'L = 251.3 cf
Overall Size= 48.0"W x 48.0"H x 20.00'L
Row Length Adjustment= +4.00' x 12.57 sf x 8 rows

48.0" Wide + 24.0" Spacing = 72.0" C-C Row Spacing

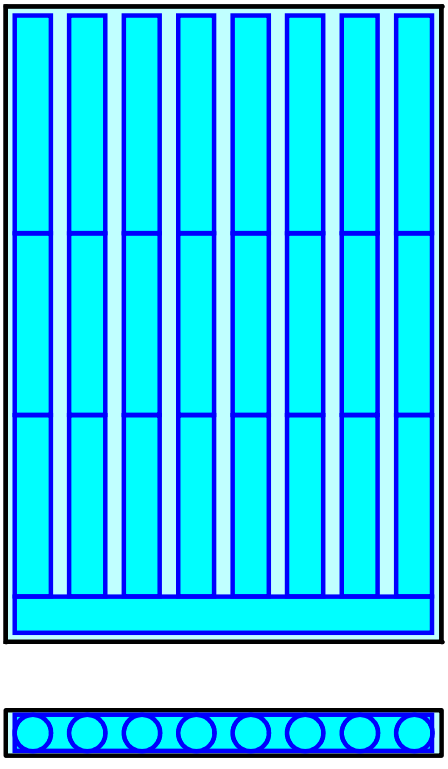
3 Chambers/Row x 20.00' Long +4.00' Row Adjustment +4.00' Header x 1 = 68.00' Row Length +12.0" End Stone x 2 = 70.00' Base Length
8 Rows x 48.0" Wide + 24.0" Spacing x 7 + 12.0" Side Stone x 2 = 48.00' Base Width
6.0" Stone Base + 48.0" Chamber Height + 6.0" Stone Cover = 5.00' Field Height

24 Chambers x 251.3 cf +4.00' Row Adjustment x 12.57 sf x 8 Rows + 46.00' Header x 12.57 sf = 7,012.0 cf Chamber Storage

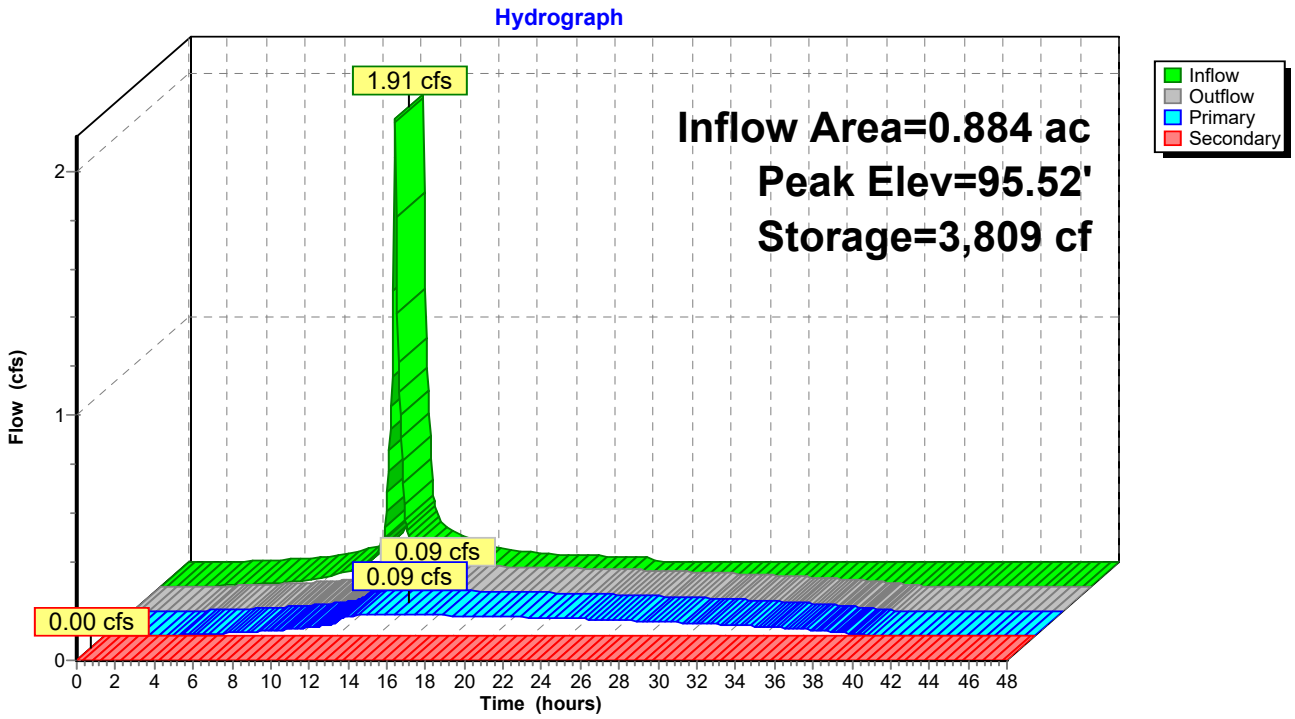
16,800.0 cf Field - 7,012.0 cf Chambers = 9,788.0 cf Stone x 0.0% Voids = 0.0 cf Stone Storage

Chamber Storage = 7,012.0 cf = 0.161 af
Overall Storage Efficiency = 41.7%
Overall System Size = 70.00' x 48.00' x 5.00'

24 Chambers
622.2 cy Field
362.5 cy Stone



Pond 5P: Detention System



Summary for Pond 6P: JFPD0406

Inflow Area = 0.884 ac, 81.36% Impervious, Inflow Depth > 2.02" for 1-YEAR event
Inflow = 0.09 cfs @ 14.93 hrs, Volume= 0.149 af
Outflow = 0.09 cfs @ 14.93 hrs, Volume= 0.149 af, Atten= 0%, Lag= 0.0 min
Primary = 0.09 cfs @ 14.93 hrs, Volume= 0.149 af
Routed to Pond 2P : EXISTING CB2
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 2P : EXISTING CB2

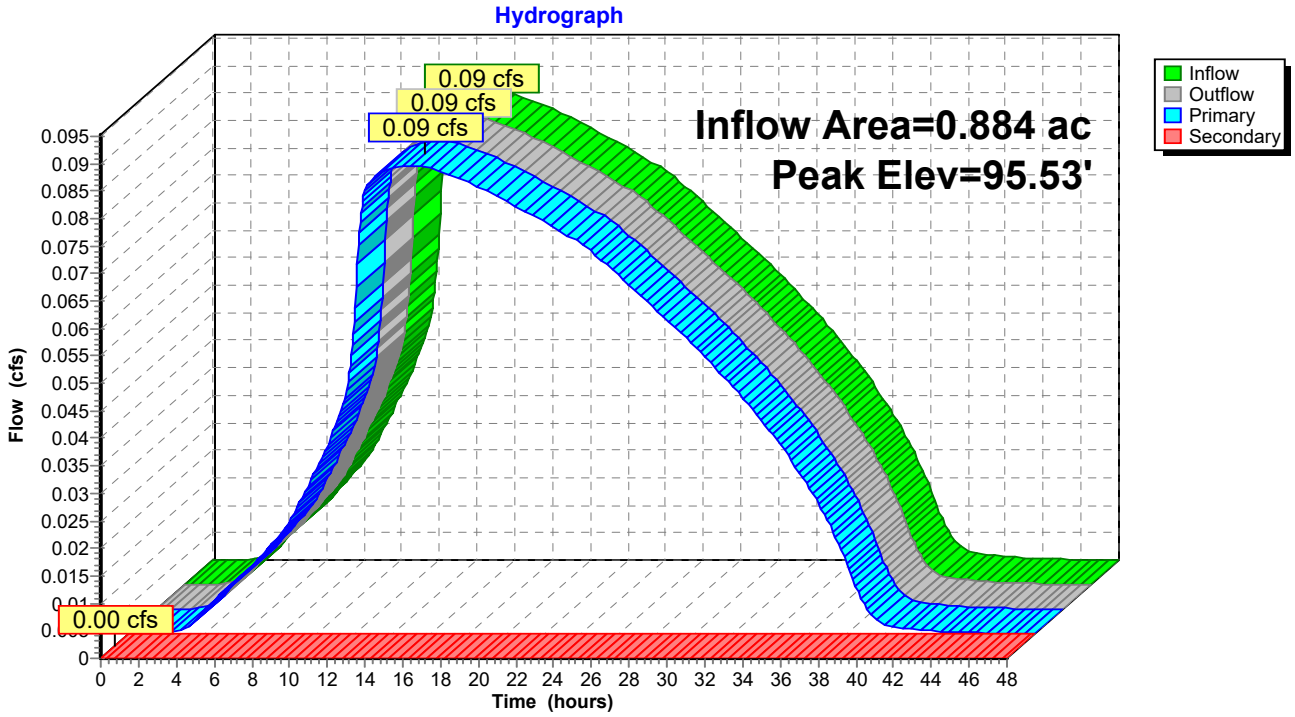
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 95.53' @ 14.93 hrs

Device	Routing	Invert	Outlet Devices
#1	Device 3	94.90'	**JF CSV File** Head (feet) 0.00 0.08 0.17 0.25 0.33 0.42 0.50 0.58 0.67 0.75 0.83 0.92 1.00 1.08 1.17 1.25 1.33 1.42 1.50 Disch. (cfs) 0.000 0.005 0.010 0.015 0.020 0.025 0.030 0.064 0.099 0.134 0.168 0.203 0.238 0.272 0.307 0.342 0.376 0.411 0.446
#2	Secondary	96.40'	**2.8' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#3	Primary	94.90'	**15.0" Round Culvert** L= 145.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 94.90' / 94.15' S= 0.0052 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.09 cfs @ 14.93 hrs HW=95.53' (Free Discharge)
└**3=Culvert** (Passes 0.09 cfs of 1.35 cfs potential flow)
└**1=JF CSV File** (Custom Controls 0.09 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=94.90' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 6P: JFPD0406



Summary for Pond 7P: (new Pond)

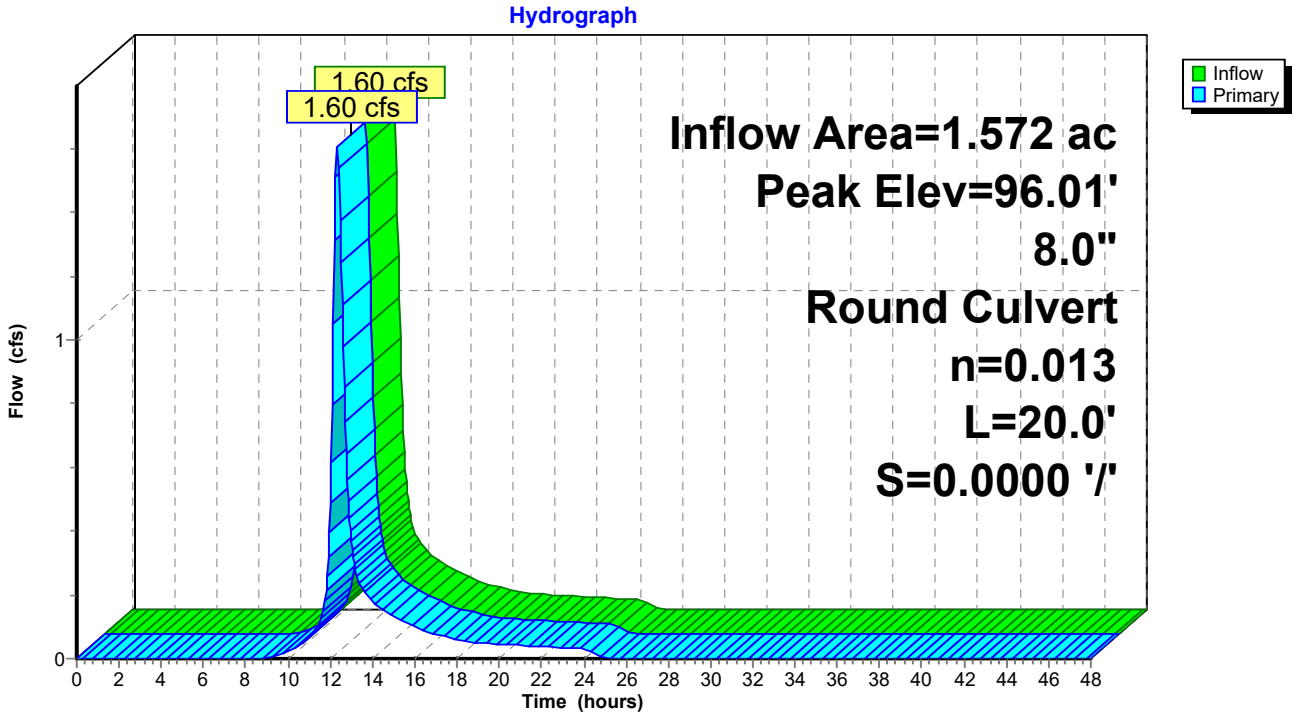
Inflow Area = 1.572 ac, 38.49% Impervious, Inflow Depth = 1.33" for 1-YEAR event
Inflow = 1.60 cfs @ 12.32 hrs, Volume= 0.174 af
Outflow = 1.60 cfs @ 12.32 hrs, Volume= 0.174 af, Atten= 0%, Lag= 0.0 min
Primary = 1.60 cfs @ 12.32 hrs, Volume= 0.174 af
Routed to Pond 2P : EXISTING CB2

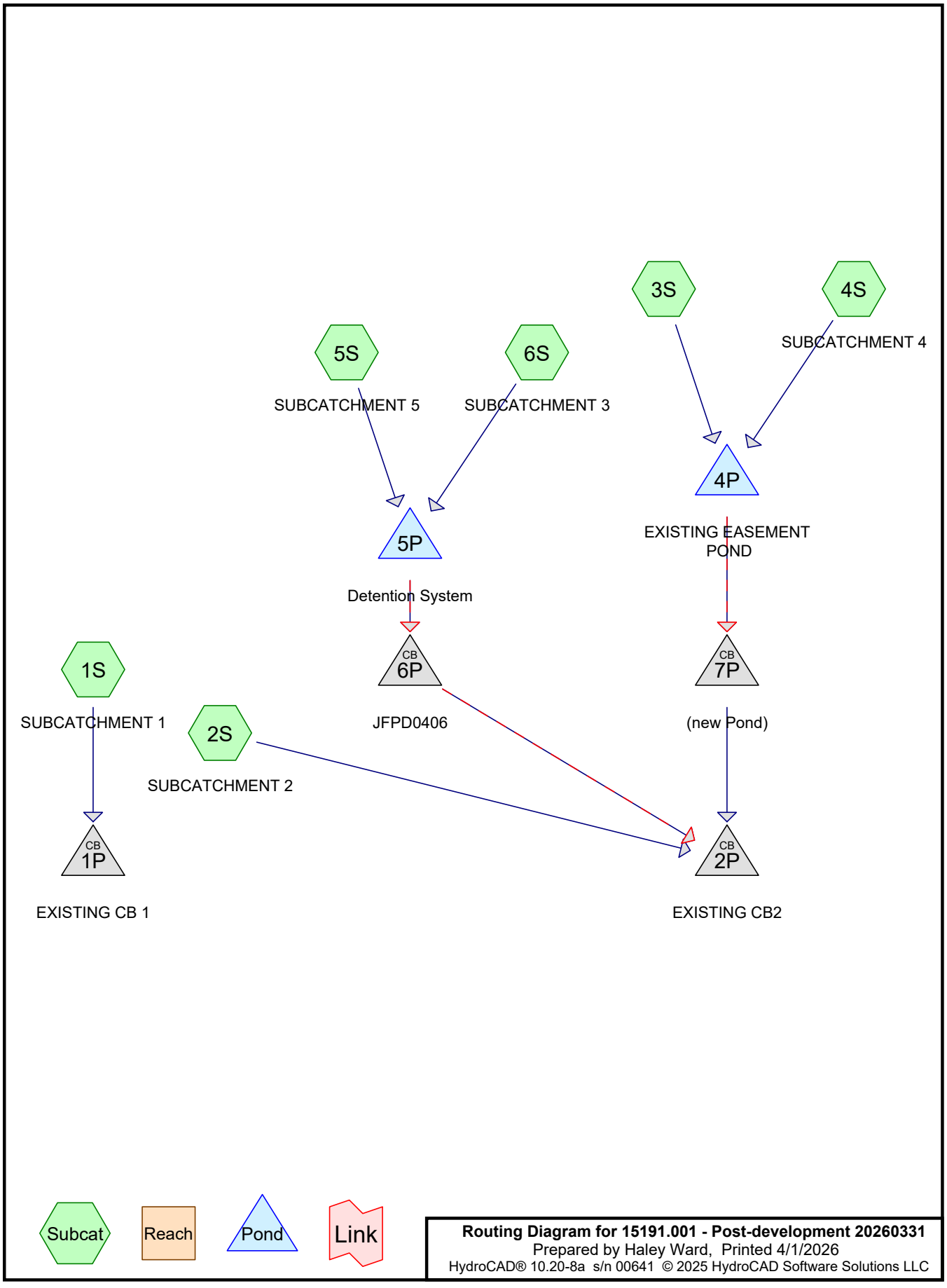
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 96.01' @ 12.32 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	94.50'	**8.0" Round Culvert** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 94.50' / 94.50' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 0.35 sf

Primary OutFlow Max=1.59 cfs @ 12.32 hrs HW=96.00' (Free Discharge)
1=Culvert (Barrel Controls 1.59 cfs @ 4.56 fps)

Pond 7P: (new Pond)




3S
4S
SUBCATCHMENT 4
5S
6S
SUBCATCHMENT 5
SUBCATCHMENT 3
4P
EXISTING EASEMENT POND
5P
Detention System
1S
SUBCATCHMENT 1
CB 6P
JFPD0406
CB 7P
(new Pond)
2S
SUBCATCHMENT 2
CB 1P
EXISTING CB 1
CB 2P
EXISTING CB2
Subcat
Reach
Pond
Link
Routing Diagram for 15191.001 - Post-development 20260331
Prepared by Haley Ward, Printed 4/1/2026
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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.120	74	>75% Grass cover, Good, HSG C (1S, 2S, 4S, 5S)
0.519	80	>75% Grass cover, Good, HSG D (1S, 2S, 3S, 4S, 5S)
0.035	98	New City Sidewalk (1S, 2S)
0.512	98	Roofs, HSG D (6S)
1.267	98	Unconnected pavement, HSG D (1S, 2S, 4S, 5S)
0.006	70	Woods, Good, HSG C (2S)
1.035	77	Woods, Good, HSG D (1S, 2S, 3S, 4S)
3.495	**88**	**TOTAL AREA**

Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: SUBCATCHMENT1 Runoff Area=31,459 sf 46.35% Impervious Runoff Depth=1.83"
Flow Length=415' Tc=12.6 min CN=87 Runoff=1.24 cfs 0.110 af

Subcatchment2S: SUBCATCHMENT2 Runoff Area=13,781 sf 48.99% Impervious Runoff Depth=1.83"
Flow Length=625' Tc=17.5 min CN=87 Runoff=0.48 cfs 0.048 af

Subcatchment3S: Runoff Area=8,745 sf 0.00% Impervious Runoff Depth=1.20"
Flow Length=310' Tc=12.3 min CN=78 Runoff=0.22 cfs 0.020 af

Subcatchment4S: SUBCATCHMENT4 Runoff Area=59,729 sf 44.12% Impervious Runoff Depth=1.83"
Flow Length=290' Tc=18.6 min CN=87 Runoff=2.03 cfs 0.209 af

Subcatchment5S: SUBCATCHMENT5 Runoff Area=16,200 sf 55.69% Impervious Runoff Depth=1.99"
Tc=6.0 min CN=89 Runoff=0.84 cfs 0.062 af

Subcatchment6S: SUBCATCHMENT3 Runoff Area=22,321 sf 100.00% Impervious Runoff Depth=2.87"
Flow Length=30' Tc=6.0 min CN=98 Runoff=1.50 cfs 0.122 af

Pond 1P: EXISTING CB 1 Peak Elev=98.08' Inflow=1.24 cfs 0.110 af
15.0" Round Culvert n=0.011 L=36.0' S=0.0083 '/' Outflow=1.24 cfs 0.110 af

Pond 2P: EXISTING CB2 Peak Elev=97.29' Inflow=2.65 cfs 0.461 af
Primary=2.39 cfs 0.458 af Secondary=0.26 cfs 0.003 af Outflow=2.65 cfs 0.461 af

Pond 4P: EXISTING EASEMENT POND Peak Elev=96.35' Storage=570 cf Inflow=2.23 cfs 0.229 af
Primary=2.12 cfs 0.229 af Secondary=0.00 cfs 0.000 af Outflow=2.12 cfs 0.229 af

Pond 5P: Detention System Peak Elev=95.75' Storage=4,335 cf Inflow=2.35 cfs 0.184 af
Primary=0.22 cfs 0.184 af Secondary=0.00 cfs 0.000 af Outflow=0.22 cfs 0.184 af

Pond 6P: JFPD0406 Peak Elev=95.85' Inflow=0.22 cfs 0.184 af
Primary=0.22 cfs 0.184 af Secondary=0.00 cfs 0.000 af Outflow=0.22 cfs 0.184 af

Pond 7P: (new Pond) Peak Elev=96.64' Inflow=2.12 cfs 0.229 af
8.0" Round Culvert n=0.013 L=20.0' S=0.0000 '/' Outflow=2.12 cfs 0.229 af

Total Runoff Area = 3.495 ac Runoff Volume = 0.571 af Average Runoff Depth = 1.96"
48.09% Pervious = 1.681 ac 51.91% Impervious = 1.814 ac

Summary for Subcatchment 1S: SUBCATCHMENT 1

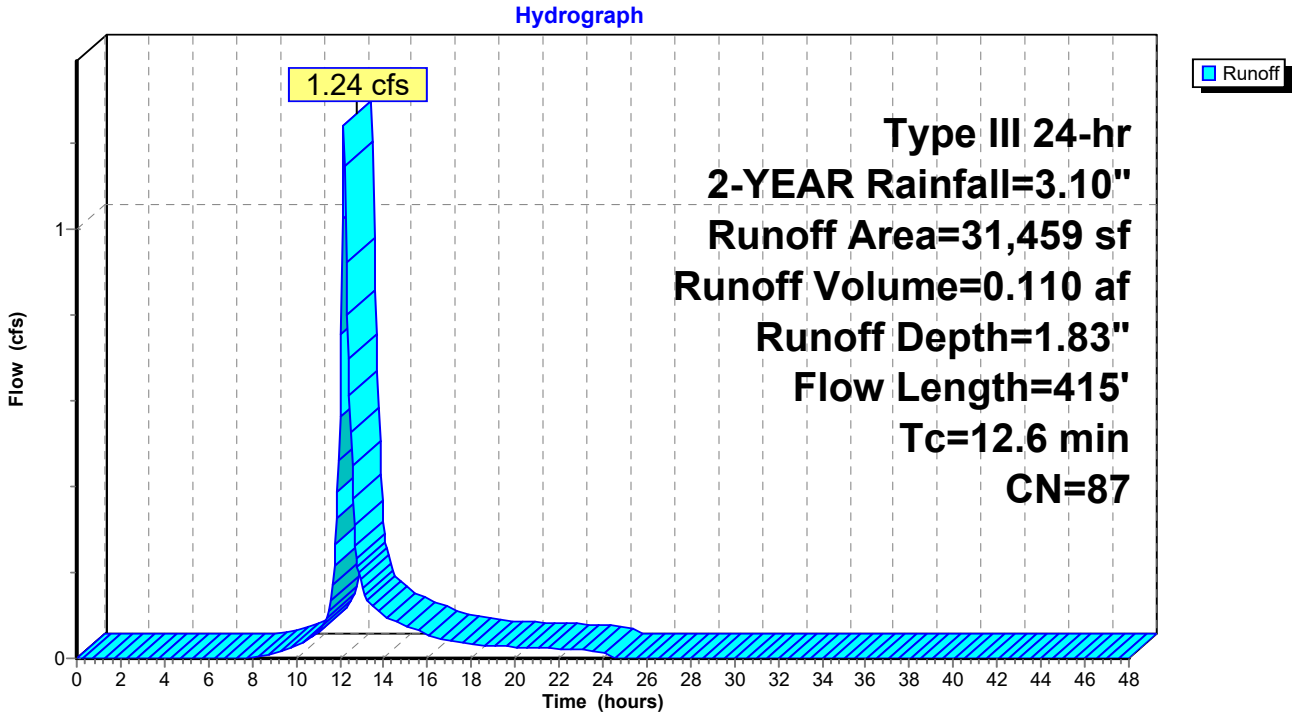
Runoff = 1.24 cfs @ 12.17 hrs, Volume= 0.110 af, Depth= 1.83"
Routed to Pond 1P : EXISTING CB 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YEAR Rainfall=3.10"

	Area (sf)	CN	Description
	14,281	98	Unconnected pavement, HSG D
	3,746	80	>75% Grass cover, Good, HSG D
	246	74	>75% Grass cover, Good, HSG C
	12,886	77	Woods, Good, HSG D
*	300	98	New City Sidewalk
	31,459	87	Weighted Average
	16,878		53.65% Pervious Area
	14,581		46.35% Impervious Area
	14,281		97.94% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	50	0.0540	0.10		**Sheet Flow, A TO B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.1	45	0.0200	0.71		**Shallow Concentrated Flow, B TO C** Woodland Kv= 5.0 fps
1.9	100	0.0150	0.86		**Shallow Concentrated Flow, C TO D** Short Grass Pasture Kv= 7.0 fps
0.7	50	0.0560	1.18		**Shallow Concentrated Flow, D TO E** Woodland Kv= 5.0 fps
0.5	170	0.0150	6.23	25.00	**Trap/Vee/Rect Channel Flow, E to F** Bot.W=3.00' D=0.50' Z= 0.1 & 20.0 '/' Top.W=13.05' n= 0.013 Asphalt, smooth
12.6	415	Total			

Subcatchment 1S: SUBCATCHMENT 1



Summary for Subcatchment 2S: SUBCATCHMENT 2

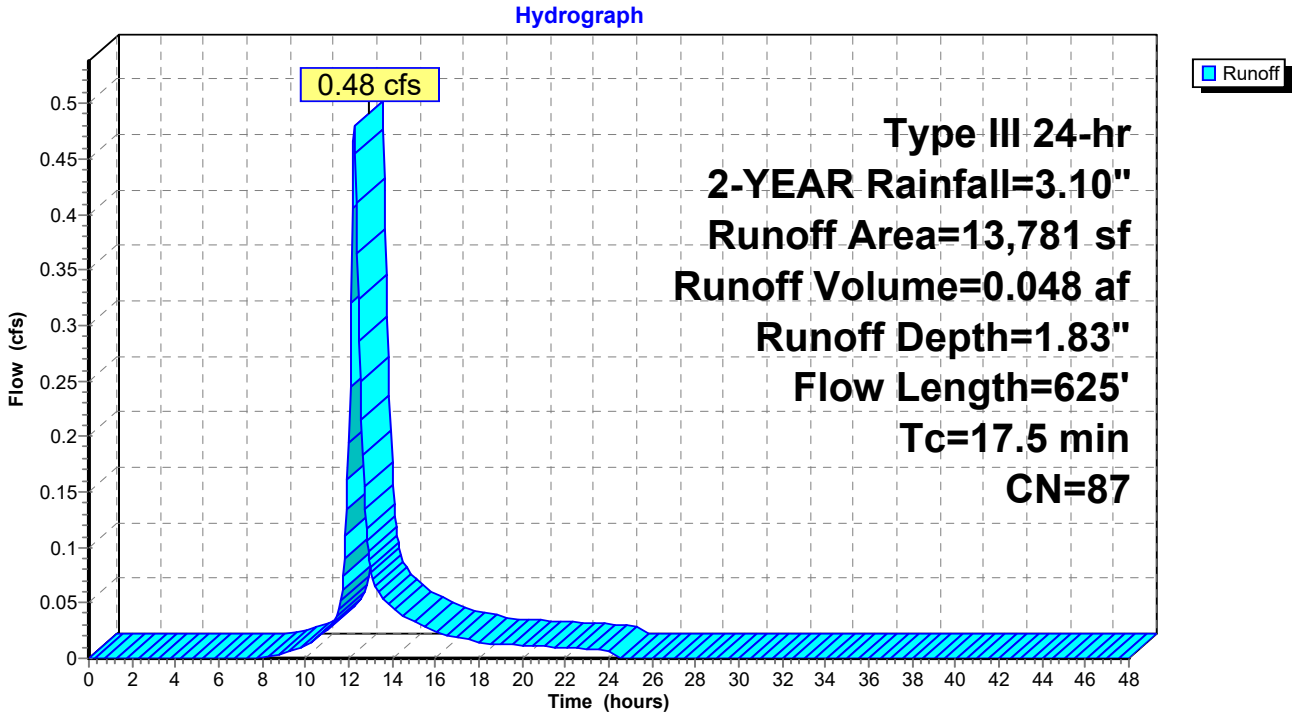
Runoff = 0.48 cfs @ 12.24 hrs, Volume= 0.048 af, Depth= 1.83"
Routed to Pond 2P : EXISTING CB2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YEAR Rainfall=3.10"

	Area (sf)	CN	Description
	5,521	98	Unconnected pavement, HSG D
	850	80	>75% Grass cover, Good, HSG D
	1,602	74	>75% Grass cover, Good, HSG C
	4,303	77	Woods, Good, HSG D
	275	70	Woods, Good, HSG C
*	1,230	98	New City Sidewalk
	13,781	87	Weighted Average
	7,030		51.01% Pervious Area
	6,751		48.99% Impervious Area
	5,521		81.78% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.0440	0.20		**Sheet Flow, A TO B** Grass: Short n= 0.150 P2= 3.10"
1.2	75	0.0440	1.05		**Shallow Concentrated Flow, B TO C** Woodland Kv= 5.0 fps
9.0	190	0.0050	0.35		**Shallow Concentrated Flow, C TO D** Woodland Kv= 5.0 fps
1.1	80	0.0630	1.25		**Shallow Concentrated Flow, D TO E** Woodland Kv= 5.0 fps
0.1	20	0.0500	4.54		**Shallow Concentrated Flow, E TO F** Paved Kv= 20.3 fps
1.9	210	0.0130	1.84		**Shallow Concentrated Flow, F TO G** Unpaved Kv= 16.1 fps
17.5	625	Total			

Subcatchment 2S: SUBCATCHMENT 2



Summary for Subcatchment 3S:

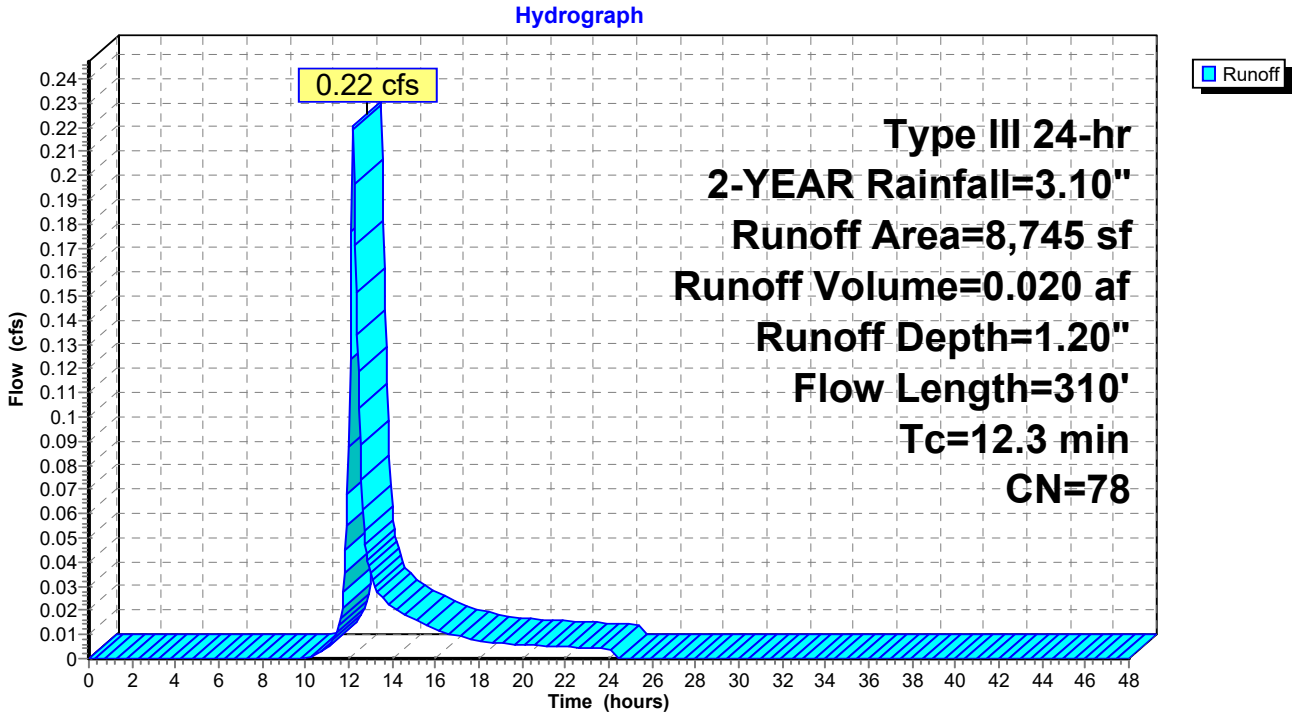
Runoff = 0.22 cfs @ 12.18 hrs, Volume= 0.020 af, Depth= 1.20"
Routed to Pond 4P : EXISTING EASEMENT POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YEAR Rainfall=3.10"

Area (sf)	CN	Description
1,985	80	>75% Grass cover, Good, HSG D
6,760	77	Woods, Good, HSG D
8,745	78	Weighted Average
8,745		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	100	0.0400	0.15		**Sheet Flow, A TO B** Grass: Dense n= 0.240 P2= 3.10"
1.3	210	0.0300	2.60		**Shallow Concentrated Flow, B TO C** Grassed Waterway Kv= 15.0 fps
12.3	310	Total			

Subcatchment 3S:



Summary for Subcatchment 4S: SUBCATCHMENT 4

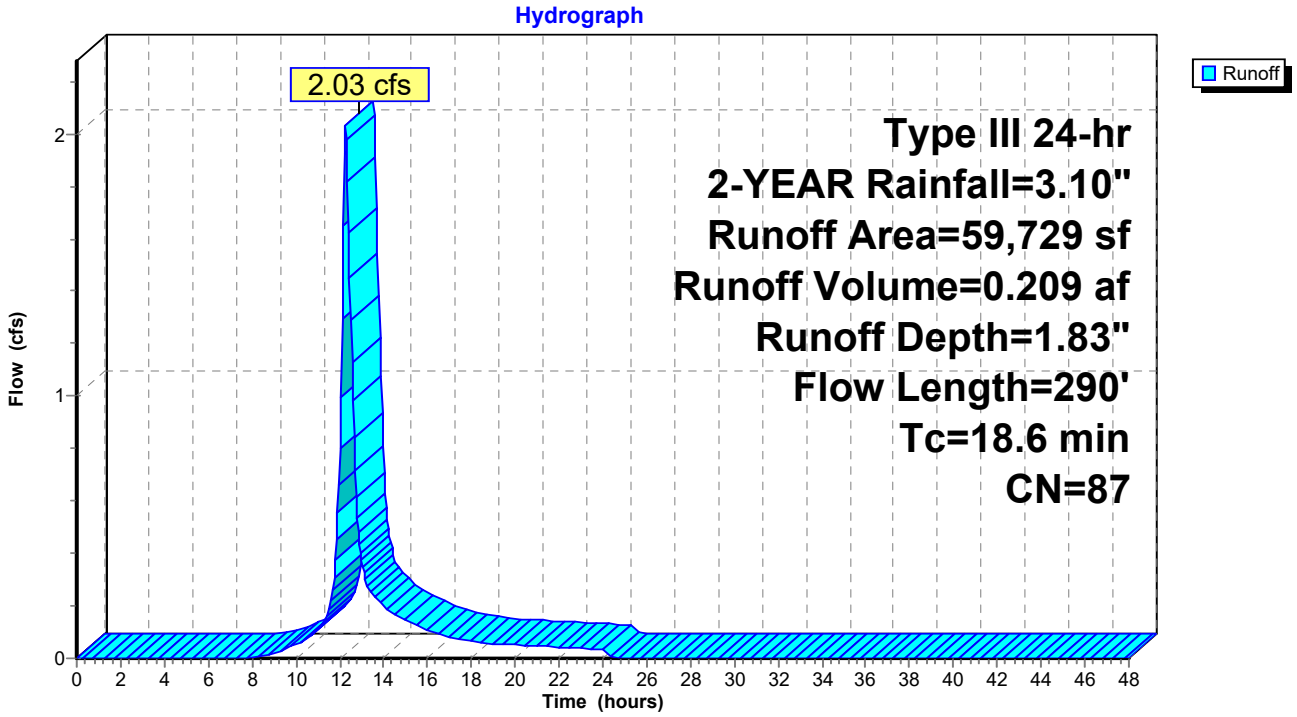
Runoff = 2.03 cfs @ 12.26 hrs, Volume= 0.209 af, Depth= 1.83"
Routed to Pond 4P : EXISTING EASEMENT POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YEAR Rainfall=3.10"

Area (sf)	CN	Description
26,354	98	Unconnected pavement, HSG D
3,052	80	>75% Grass cover, Good, HSG D
1,794	74	>75% Grass cover, Good, HSG C
7,399	80	>75% Grass cover, Good, HSG D
21,130	77	Woods, Good, HSG D
59,729	87	Weighted Average
33,375		55.88% Pervious Area
26,354		44.12% Impervious Area
26,354		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.6	100	0.0340	0.09		**Sheet Flow, A TO B** Woods: Light underbrush n= 0.400 P2= 3.10"
0.1	30	0.0300	3.52		**Shallow Concentrated Flow, B TO C** Paved Kv= 20.3 fps
0.9	160	0.0040	2.85	0.99	**Pipe Channel, C TO D** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.010 PVC, smooth interior
18.6	290	Total			

Subcatchment 4S: SUBCATCHMENT 4



Summary for Subcatchment 5S: SUBCATCHMENT 5

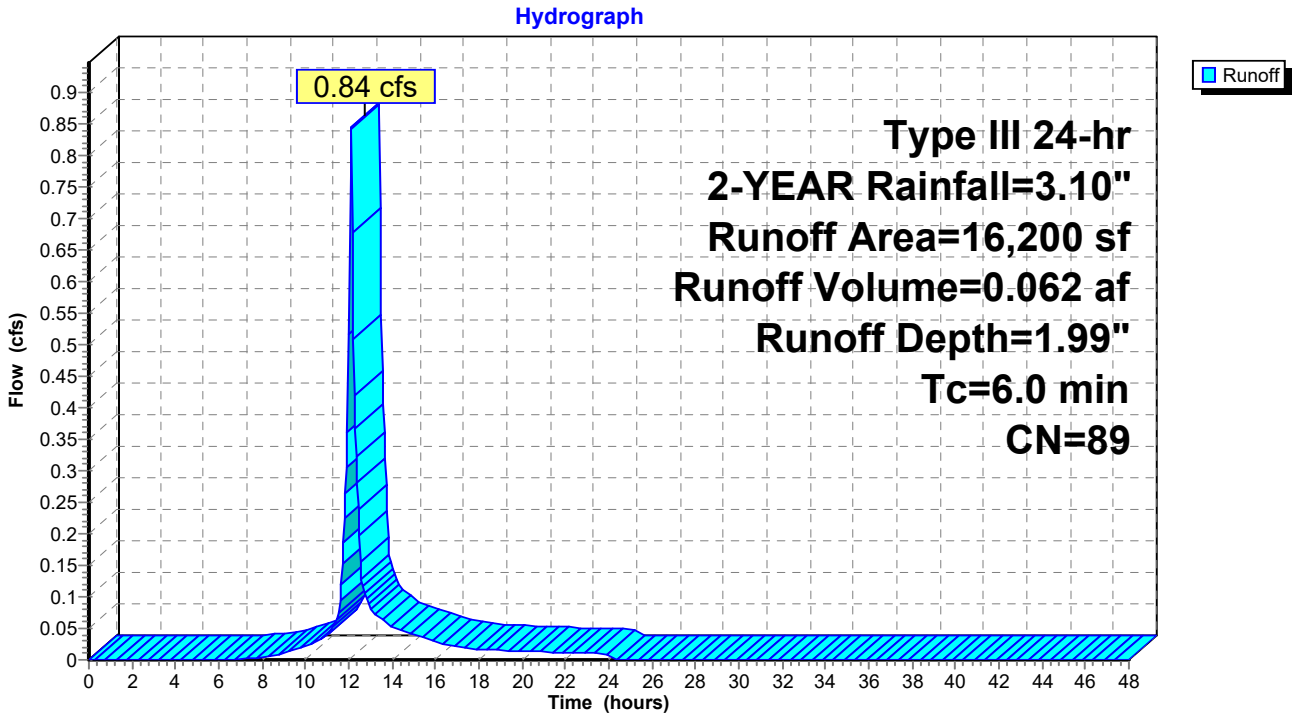
Runoff = 0.84 cfs @ 12.09 hrs, Volume= 0.062 af, Depth= 1.99"
Routed to Pond 5P : Detention System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YEAR Rainfall=3.10"

Area (sf)	CN	Description
9,021	98	Unconnected pavement, HSG D
5,589	80	>75% Grass cover, Good, HSG D
1,590	74	>75% Grass cover, Good, HSG C
16,200	89	Weighted Average
7,179		44.31% Pervious Area
9,021		55.69% Impervious Area
9,021		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, ALL FLOW**

Subcatchment 5S: SUBCATCHMENT 5



Summary for Subcatchment 6S: SUBCATCHMENT 3

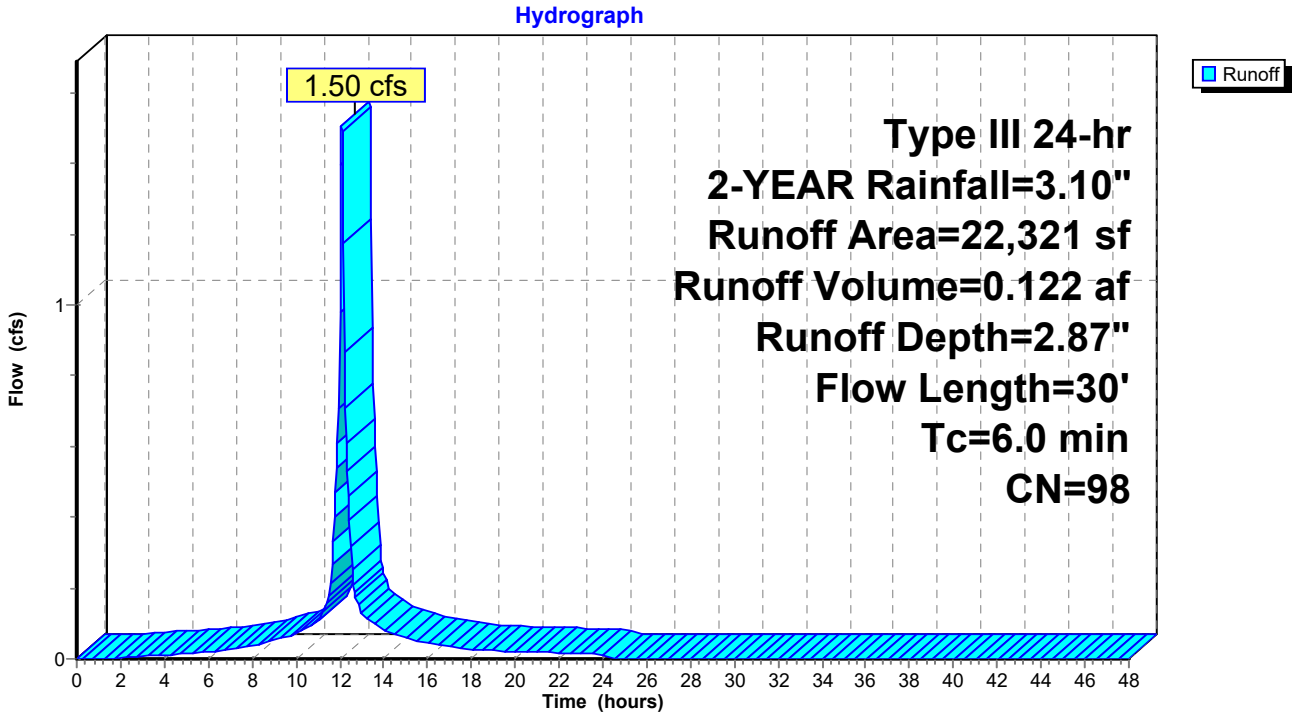
Runoff = 1.50 cfs @ 12.09 hrs, Volume= 0.122 af, Depth= 2.87"
Routed to Pond 5P : Detention System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YEAR Rainfall=3.10"

Area (sf)	CN	Description
22,321	98	Roofs, HSG D
22,321		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	30		0.08		**Direct Entry, ALL FLOW**

Subcatchment 6S: SUBCATCHMENT 3



Summary for Pond 1P: EXISTING CB 1

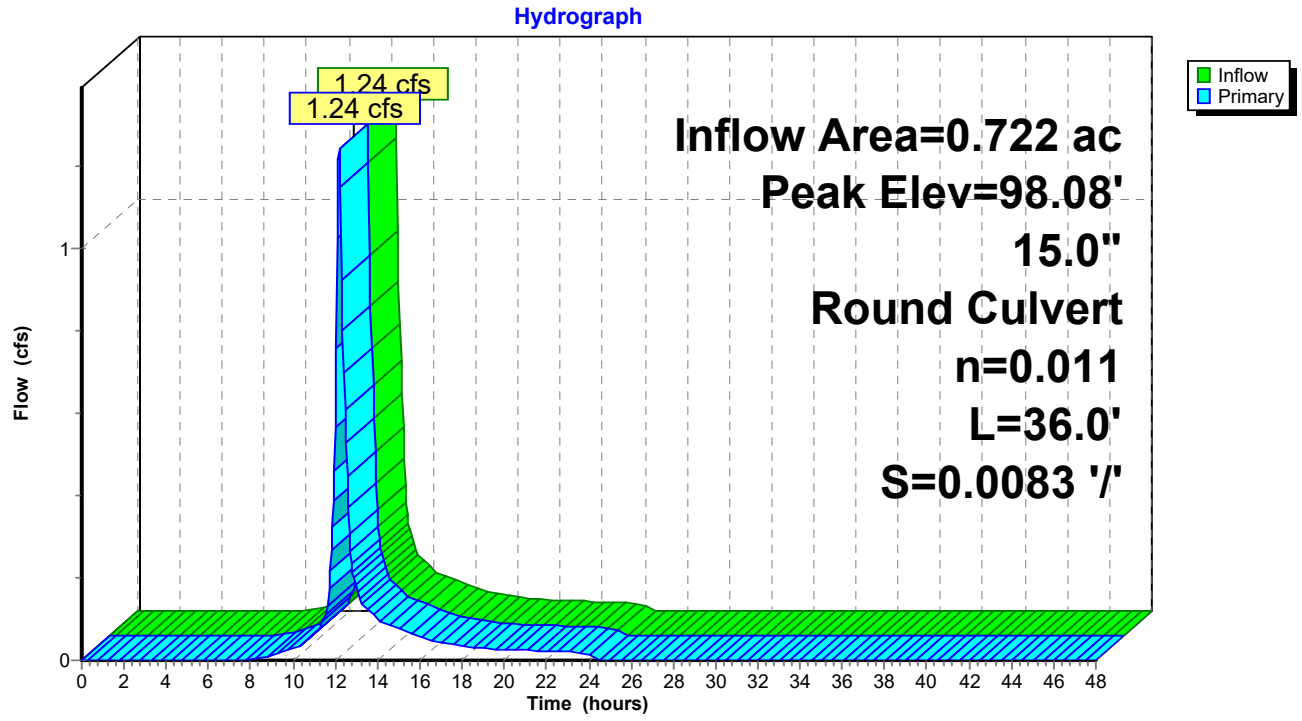
Inflow Area = 0.722 ac, 46.35% Impervious, Inflow Depth = 1.83" for 2-YEAR event
Inflow = 1.24 cfs @ 12.17 hrs, Volume= 0.110 af
Outflow = 1.24 cfs @ 12.17 hrs, Volume= 0.110 af, Atten= 0%, Lag= 0.0 min
Primary = 1.24 cfs @ 12.17 hrs, Volume= 0.110 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 98.08' @ 12.17 hrs
Flood Elev= 100.69'

Device	Routing	Invert	Outlet Devices
#1	Primary	97.52'	**15.0" Round Culvert** L= 36.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 97.52' / 97.22' S= 0.0083 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf

Primary OutFlow Max=1.22 cfs @ 12.17 hrs HW=98.07' (Free Discharge)
1=Culvert (Barrel Controls 1.22 cfs @ 3.43 fps)

Pond 1P: EXISTING CB 1



Summary for Pond 2P: EXISTING CB2

Inflow Area = 2.773 ac, 53.36% Impervious, Inflow Depth = 2.00" for 2-YEAR event
Inflow = 2.65 cfs @ 12.30 hrs, Volume= 0.461 af
Outflow = 2.65 cfs @ 12.30 hrs, Volume= 0.461 af, Atten= 0%, Lag= 0.0 min
Primary = 2.39 cfs @ 12.30 hrs, Volume= 0.458 af
Secondary = 0.26 cfs @ 12.30 hrs, Volume= 0.003 af

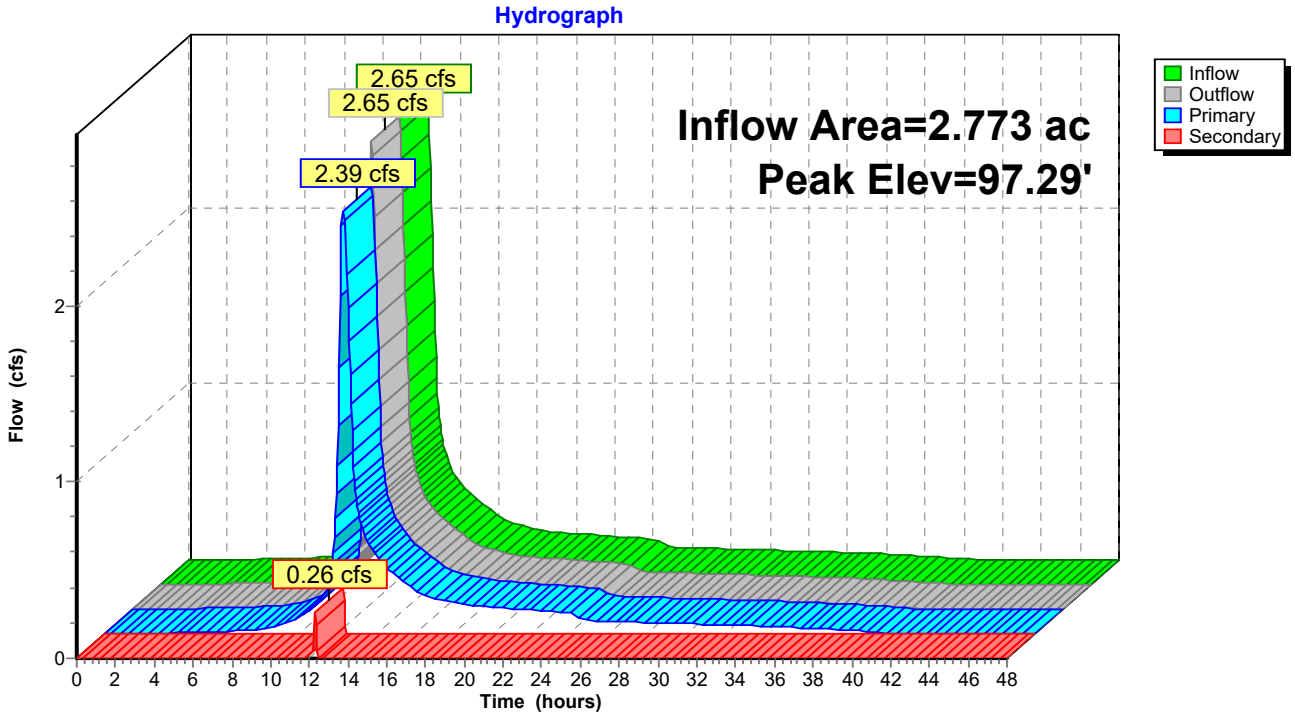
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 97.29' @ 12.30 hrs
Flood Elev= 97.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	95.00'	**8.0" Round Culvert** L= 36.8' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 95.00' / 93.78' S= 0.0332 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.35 sf
#2	Primary	94.15'	**1.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	97.24'	**3.0" x 3.0" Horiz. Orifice/Grate X 6.00 columns** X 6 rows C= 0.600 in 24.0" x 24.0" Grate (56% open area) Limited to weir flow at low heads

Primary OutFlow Max=2.39 cfs @ 12.30 hrs HW=97.29' (Free Discharge)
└─**1=Culvert** (Inlet Controls 2.35 cfs @ 6.73 fps)
└─**2=Orifice/Grate** (Orifice Controls 0.05 cfs @ 8.47 fps)

Secondary OutFlow Max=0.25 cfs @ 12.30 hrs HW=97.29' (Free Discharge)
└─**3=Orifice/Grate** (Weir Controls 0.25 cfs @ 0.69 fps)

Pond 2P: EXISTING CB2



Summary for Pond 4P: EXISTING EASEMENT POND

Inflow Area = 1.572 ac, 38.49% Impervious, Inflow Depth = 1.75" for 2-YEAR event
Inflow = 2.23 cfs @ 12.25 hrs, Volume= 0.229 af
Outflow = 2.12 cfs @ 12.31 hrs, Volume= 0.229 af, Atten= 5%, Lag= 3.8 min
Primary = 2.12 cfs @ 12.31 hrs, Volume= 0.229 af
Routed to Pond 7P : (new Pond)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 7P : (new Pond)

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 96.35' @ 12.31 hrs Surf.Area= 867 sf Storage= 570 cf

Plug-Flow detention time= 8.7 min calculated for 0.229 af (100% of inflow)
Center-of-Mass det. time= 8.9 min (843.0 - 834.1)

Volume	Invert	Avail.Storage	Storage Description
#1	95.00'	13,259 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

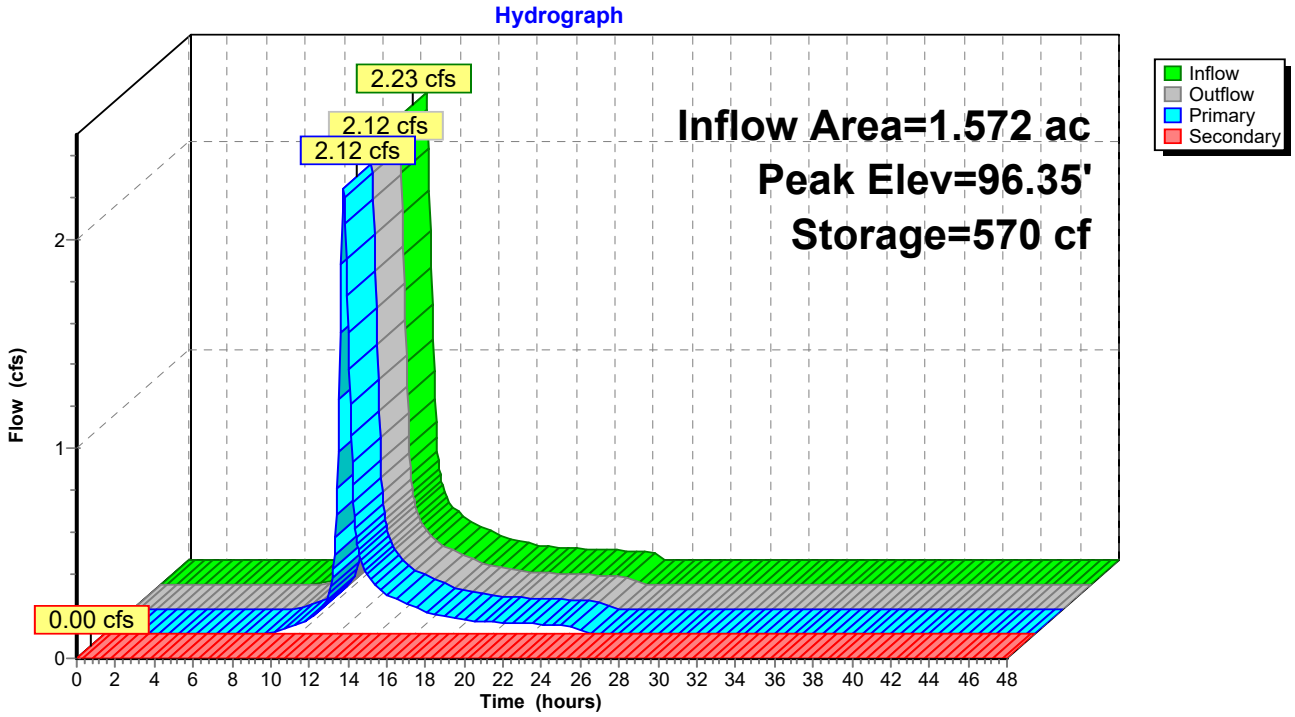
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
95.00	100	0	0
96.00	550	325	325
97.00	1,469	1,010	1,335
98.00	2,580	2,025	3,359
99.00	4,400	3,490	6,849
100.00	8,420	6,410	13,259

Device	Routing	Invert	Outlet Devices
#1	Primary	95.00'	**43.0 deg Sharp-Crested Vee/Trap Weir** Cv= 2.56 (C= 3.20)
#2	Primary	97.40'	**144.0" W x 19.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	97.66'	**10.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=2.10 cfs @ 12.31 hrs HW=96.34' (Free Discharge)
└**1=Sharp-Crested Vee/Trap Weir** (Weir Controls 2.10 cfs @ 2.97 fps)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=95.00' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 4P: EXISTING EASEMENT POND



Summary for Pond 5P: Detention System

Inflow Area = 0.884 ac, 81.36% Impervious, Inflow Depth = 2.50" for 2-YEAR event
Inflow = 2.35 cfs @ 12.09 hrs, Volume= 0.184 af
Outflow = 0.22 cfs @ 12.98 hrs, Volume= 0.184 af, Atten= 91%, Lag= 53.4 min
Primary = 0.22 cfs @ 12.98 hrs, Volume= 0.184 af
Routed to Pond 6P : JFPD0406
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 6P : JFPD0406

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 95.75' @ 12.98 hrs Surf.Area= 3,360 sf Storage= 4,335 cf

Plug-Flow detention time= 477.0 min calculated for 0.184 af (100% of inflow)
Center-of-Mass det. time= 476.8 min (1,252.4 - 775.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	92.88'	0 cf	**48.00'W x 70.00'L x 5.00'H Field A** 16,800 cf Overall - 7,012 cf Embedded = 9,788 cf x 0.0% Voids
#2A	93.38'	7,012 cf	**CMP Round 48** x 24 Inside #1 Effective Size= 48.0"W x 48.0"H => 12.57 sf x 20.00'L = 251.3 cf Overall Size= 48.0"W x 48.0"H x 20.00'L Row Length Adjustment= +4.00' x 12.57 sf x 8 rows 46.00' Header x 12.57 sf x 1 = 578.1 cf Inside
		7,012 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Device 5	93.38'	**1.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Device 5	96.20'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 5	95.57'	**6.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	97.17'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 3.00 3.04 3.08 3.12 3.16 3.20 3.24 3.28 3.32 3.36 3.40 3.44 3.48 3.52 3.56 3.60 3.64 3.68 3.72 3.76 3.80 3.84 3.88 3.92 3.96 4.00 Width (feet) 3.46 3.42 3.37 3.31 3.26 3.20 3.14 3.07 3.01 2.93 2.86 2.78 2.69 2.60 2.50 2.40 2.29 2.17 2.04 1.90 1.74 1.57 1.36 1.12 0.80 0.00
#5	Primary	93.38'	**15.0" Round Culvert** L= 19.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 93.38' / 93.38' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.22 cfs @ 12.98 hrs HW=95.75' (Free Discharge)
└─**5=Culvert** (Passes 0.22 cfs of 6.17 cfs potential flow)
  ├─**1=Orifice/Grate** (Orifice Controls 0.09 cfs @ 7.32 fps)
  ├─**2=Orifice/Grate** (Controls 0.00 cfs)
  └─**3=Orifice/Grate** (Orifice Controls 0.13 cfs @ 1.37 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=92.88' (Free Discharge)
└─**4=Custom Weir/Orifice** (Controls 0.00 cfs)

Pond 5P: Detention System - Chamber Wizard Field A

Chamber Model = CMP Round 48 (Round Corrugated Metal Pipe)
Effective Size= 48.0"W x 48.0"H => 12.57 sf x 20.00'L = 251.3 cf
Overall Size= 48.0"W x 48.0"H x 20.00'L
Row Length Adjustment= +4.00' x 12.57 sf x 8 rows

48.0" Wide + 24.0" Spacing = 72.0" C-C Row Spacing

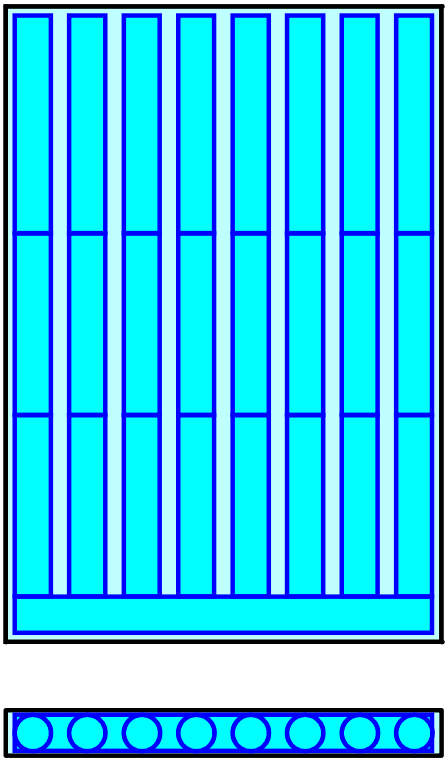
3 Chambers/Row x 20.00' Long +4.00' Row Adjustment +4.00' Header x 1 = 68.00' Row Length +12.0" End Stone x 2 = 70.00' Base Length
8 Rows x 48.0" Wide + 24.0" Spacing x 7 + 12.0" Side Stone x 2 = 48.00' Base Width
6.0" Stone Base + 48.0" Chamber Height + 6.0" Stone Cover = 5.00' Field Height

24 Chambers x 251.3 cf +4.00' Row Adjustment x 12.57 sf x 8 Rows + 46.00' Header x 12.57 sf = 7,012.0 cf Chamber Storage

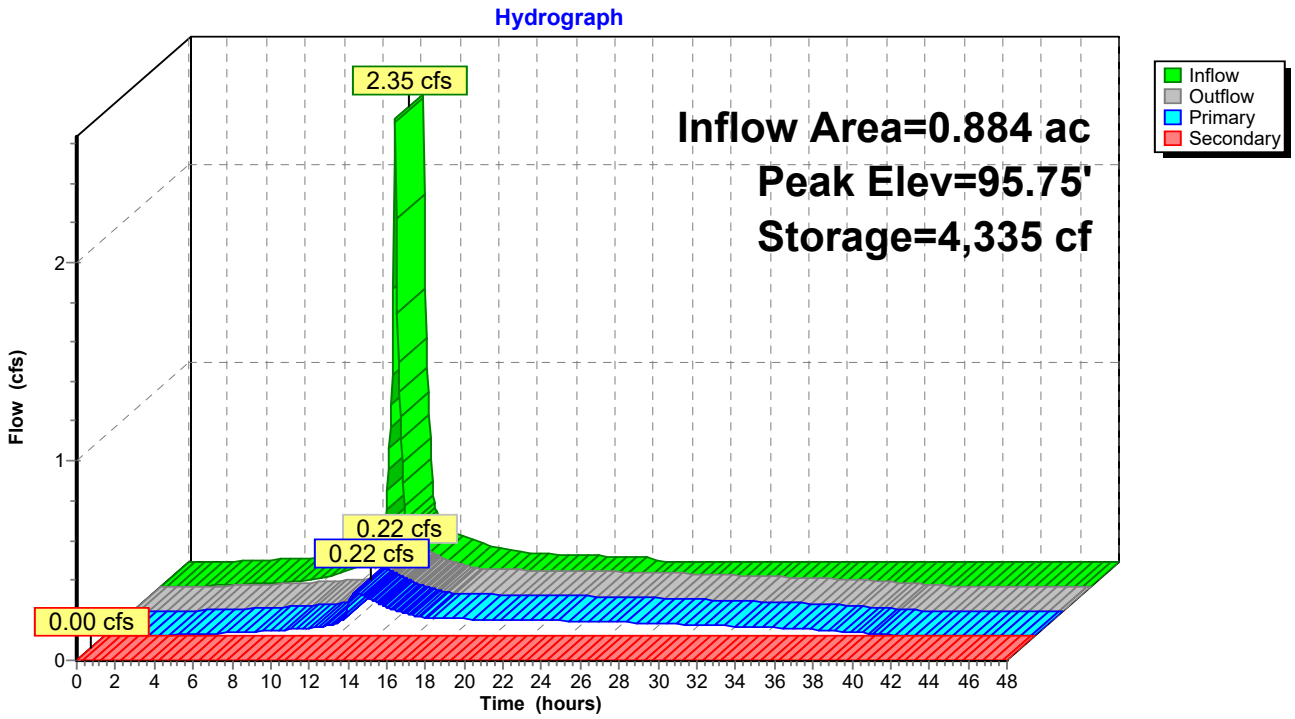
16,800.0 cf Field - 7,012.0 cf Chambers = 9,788.0 cf Stone x 0.0% Voids = 0.0 cf Stone Storage

Chamber Storage = 7,012.0 cf = 0.161 af
Overall Storage Efficiency = 41.7%
Overall System Size = 70.00' x 48.00' x 5.00'

24 Chambers
622.2 cy Field
362.5 cy Stone



Pond 5P: Detention System



Summary for Pond 6P: JFPD0406

Inflow Area = 0.884 ac, 81.36% Impervious, Inflow Depth > 2.50" for 2-YEAR event
Inflow = 0.22 cfs @ 12.98 hrs, Volume= 0.184 af
Outflow = 0.22 cfs @ 12.98 hrs, Volume= 0.184 af, Atten= 0%, Lag= 0.0 min
Primary = 0.22 cfs @ 12.98 hrs, Volume= 0.184 af
Routed to Pond 2P : EXISTING CB2
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 2P : EXISTING CB2

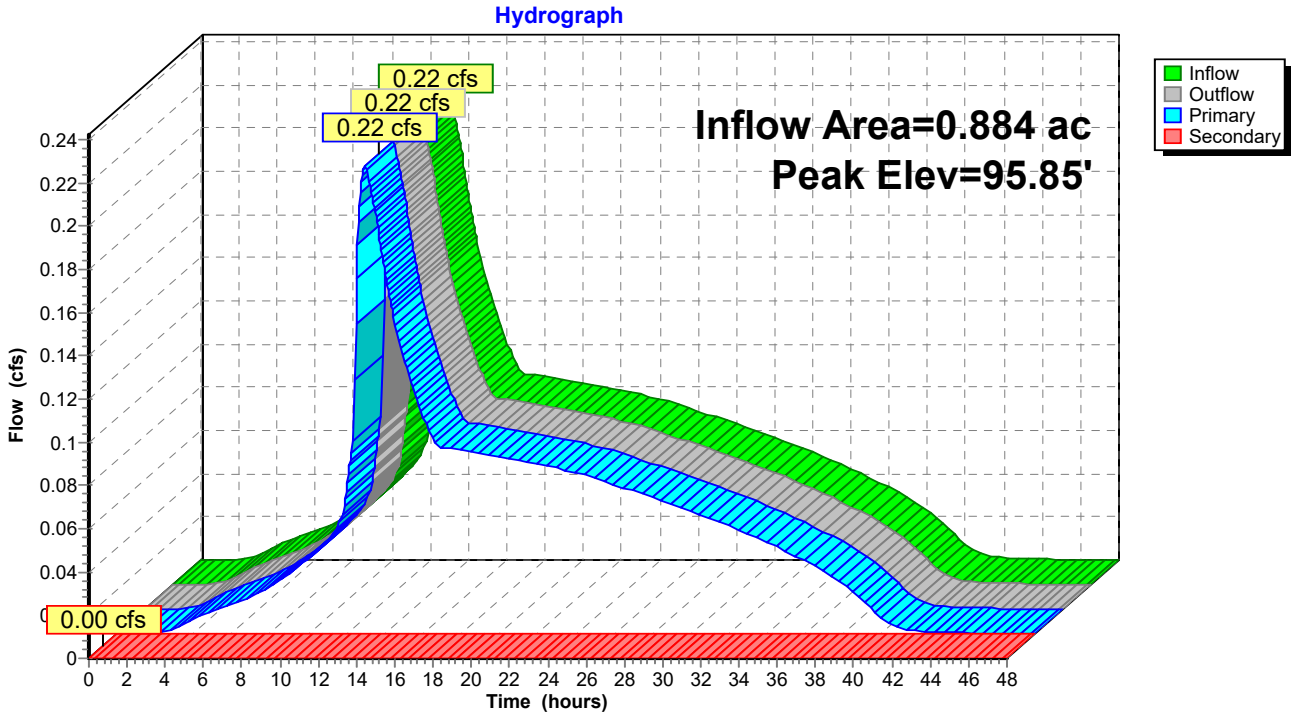
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 95.85' @ 12.98 hrs

Device	Routing	Invert	Outlet Devices
#1	Device 3	94.90'	**JF CSV File** Head (feet) 0.00 0.08 0.17 0.25 0.33 0.42 0.50 0.58 0.67 0.75 0.83 0.92 1.00 1.08 1.17 1.25 1.33 1.42 1.50 Disch. (cfs) 0.000 0.005 0.010 0.015 0.020 0.025 0.030 0.064 0.099 0.134 0.168 0.203 0.238 0.272 0.307 0.342 0.376 0.411 0.446
#2	Secondary	96.40'	**2.8' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#3	Primary	94.90'	**15.0" Round Culvert** L= 145.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 94.90' / 94.15' S= 0.0052 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.22 cfs @ 12.98 hrs HW=95.85' (Free Discharge)
└**3=Culvert** (Passes 0.22 cfs of 2.70 cfs potential flow)
└**1=JF CSV File** (Custom Controls 0.22 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=94.90' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 6P: JFPD0406



Summary for Pond 7P: (new Pond)

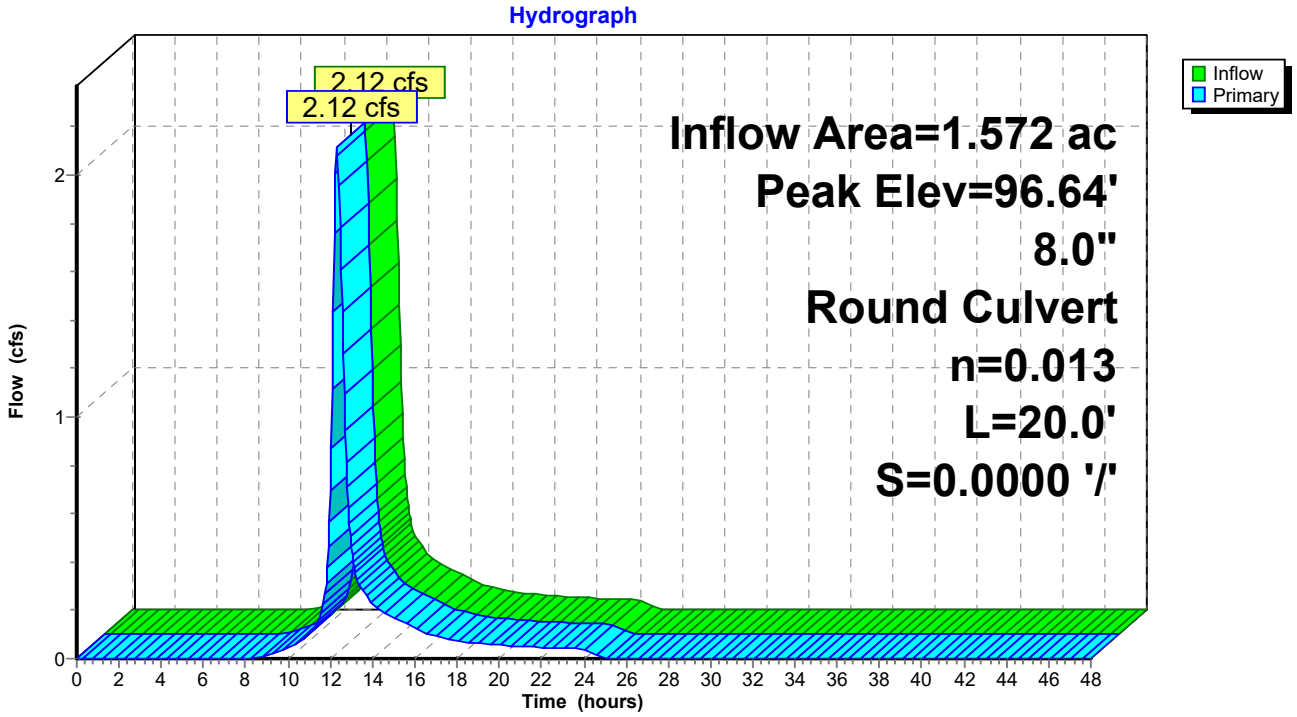
Inflow Area = 1.572 ac, 38.49% Impervious, Inflow Depth = 1.75" for 2-YEAR event
Inflow = 2.12 cfs @ 12.31 hrs, Volume= 0.229 af
Outflow = 2.12 cfs @ 12.31 hrs, Volume= 0.229 af, Atten= 0%, Lag= 0.0 min
Primary = 2.12 cfs @ 12.31 hrs, Volume= 0.229 af
Routed to Pond 2P : EXISTING CB2

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 96.64' @ 12.31 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	94.50'	**8.0" Round Culvert** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 94.50' / 94.50' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 0.35 sf

Primary OutFlow Max=2.10 cfs @ 12.31 hrs HW=96.62' (Free Discharge)
1=Culvert (Barrel Controls 2.10 cfs @ 6.03 fps)

Pond 7P: (new Pond)



Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: SUBCATCHMENT1 Runoff Area=31,459 sf 46.35% Impervious Runoff Depth=3.19"
Flow Length=415' Tc=12.6 min CN=87 Runoff=2.14 cfs 0.192 af

Subcatchment2S: SUBCATCHMENT2 Runoff Area=13,781 sf 48.99% Impervious Runoff Depth=3.19"
Flow Length=625' Tc=17.5 min CN=87 Runoff=0.83 cfs 0.084 af

Subcatchment3S: Runoff Area=8,745 sf 0.00% Impervious Runoff Depth=2.38"
Flow Length=310' Tc=12.3 min CN=78 Runoff=0.45 cfs 0.040 af

Subcatchment4S: SUBCATCHMENT4 Runoff Area=59,729 sf 44.12% Impervious Runoff Depth=3.19"
Flow Length=290' Tc=18.6 min CN=87 Runoff=3.52 cfs 0.365 af

Subcatchment5S: SUBCATCHMENT5 Runoff Area=16,200 sf 55.69% Impervious Runoff Depth=3.39"
Tc=6.0 min CN=89 Runoff=1.41 cfs 0.105 af

Subcatchment6S: SUBCATCHMENT3 Runoff Area=22,321 sf 100.00% Impervious Runoff Depth=4.36"
Flow Length=30' Tc=6.0 min CN=98 Runoff=2.25 cfs 0.186 af

Pond 1P: EXISTING CB 1 Peak Elev=98.29' Inflow=2.14 cfs 0.192 af
15.0" Round Culvert n=0.011 L=36.0' S=0.0083 '/' Outflow=2.14 cfs 0.192 af

Pond 2P: EXISTING CB2 Peak Elev=97.48' Inflow=5.56 cfs 0.780 af
Primary=2.51 cfs 0.683 af Secondary=3.05 cfs 0.097 af Outflow=5.56 cfs 0.780 af

Pond 4P: EXISTING EASEMENT POND Peak Elev=96.69' Storage=918 cf Inflow=3.91 cfs 0.404 af
Primary=3.72 cfs 0.404 af Secondary=0.00 cfs 0.000 af Outflow=3.72 cfs 0.404 af

Pond 5P: Detention System Peak Elev=96.43' Storage=5,737 cf Inflow=3.66 cfs 0.291 af
Primary=1.11 cfs 0.291 af Secondary=0.00 cfs 0.000 af Outflow=1.11 cfs 0.291 af

Pond 6P: JFPD0406 Peak Elev=96.59' Inflow=1.11 cfs 0.291 af
Primary=0.45 cfs 0.256 af Secondary=0.67 cfs 0.035 af Outflow=1.11 cfs 0.291 af

Pond 7P: (new Pond) Peak Elev=99.74' Inflow=3.72 cfs 0.404 af
8.0" Round Culvert n=0.013 L=20.0' S=0.0000 '/' Outflow=3.72 cfs 0.404 af

Total Runoff Area = 3.495 ac Runoff Volume = 0.972 af Average Runoff Depth = 3.34"
48.09% Pervious = 1.681 ac 51.91% Impervious = 1.814 ac

Summary for Subcatchment 1S: SUBCATCHMENT 1

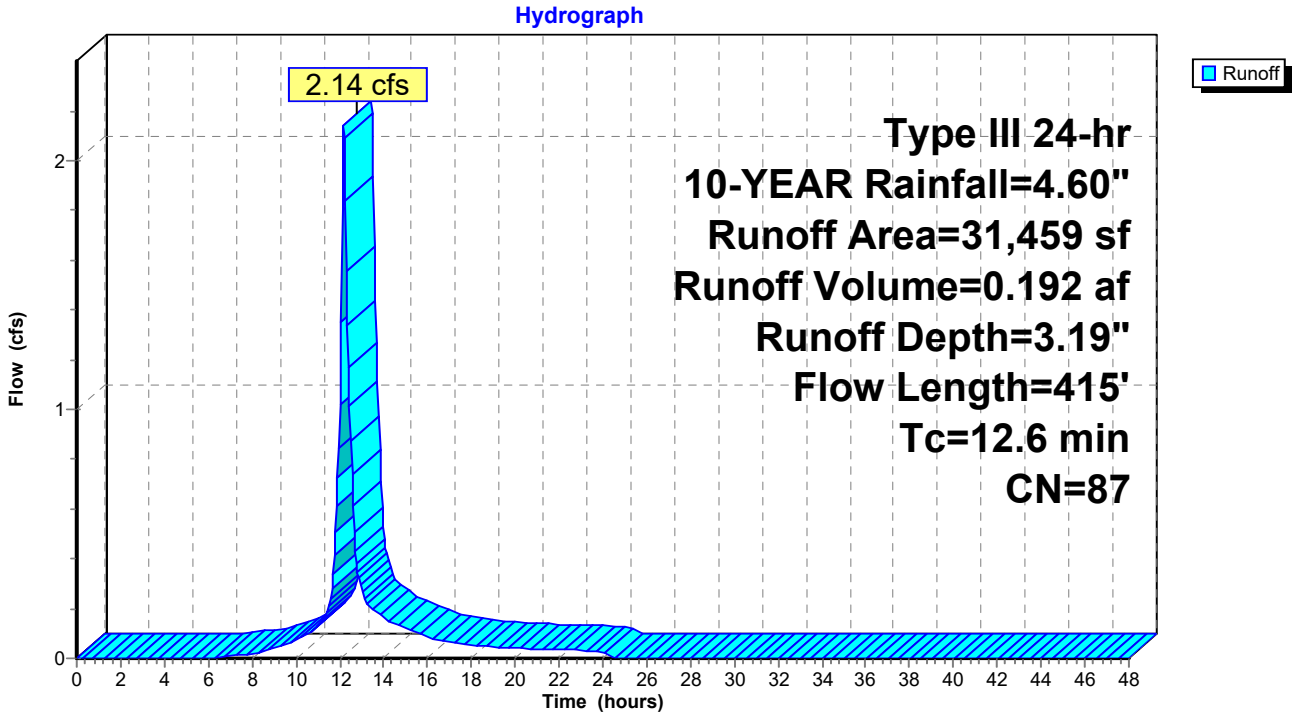
Runoff = 2.14 cfs @ 12.17 hrs, Volume= 0.192 af, Depth= 3.19"
Routed to Pond 1P : EXISTING CB 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YEAR Rainfall=4.60"

	Area (sf)	CN	Description
	14,281	98	Unconnected pavement, HSG D
	3,746	80	>75% Grass cover, Good, HSG D
	246	74	>75% Grass cover, Good, HSG C
	12,886	77	Woods, Good, HSG D
*	300	98	New City Sidewalk
	31,459	87	Weighted Average
	16,878		53.65% Pervious Area
	14,581		46.35% Impervious Area
	14,281		97.94% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	50	0.0540	0.10		**Sheet Flow, A TO B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.1	45	0.0200	0.71		**Shallow Concentrated Flow, B TO C** Woodland Kv= 5.0 fps
1.9	100	0.0150	0.86		**Shallow Concentrated Flow, C TO D** Short Grass Pasture Kv= 7.0 fps
0.7	50	0.0560	1.18		**Shallow Concentrated Flow, D TO E** Woodland Kv= 5.0 fps
0.5	170	0.0150	6.23	25.00	**Trap/Vee/Rect Channel Flow, E to F** Bot.W=3.00' D=0.50' Z= 0.1 & 20.0 '/' Top.W=13.05' n= 0.013 Asphalt, smooth
12.6	415	Total			

Subcatchment 1S: SUBCATCHMENT 1



Summary for Subcatchment 2S: SUBCATCHMENT 2

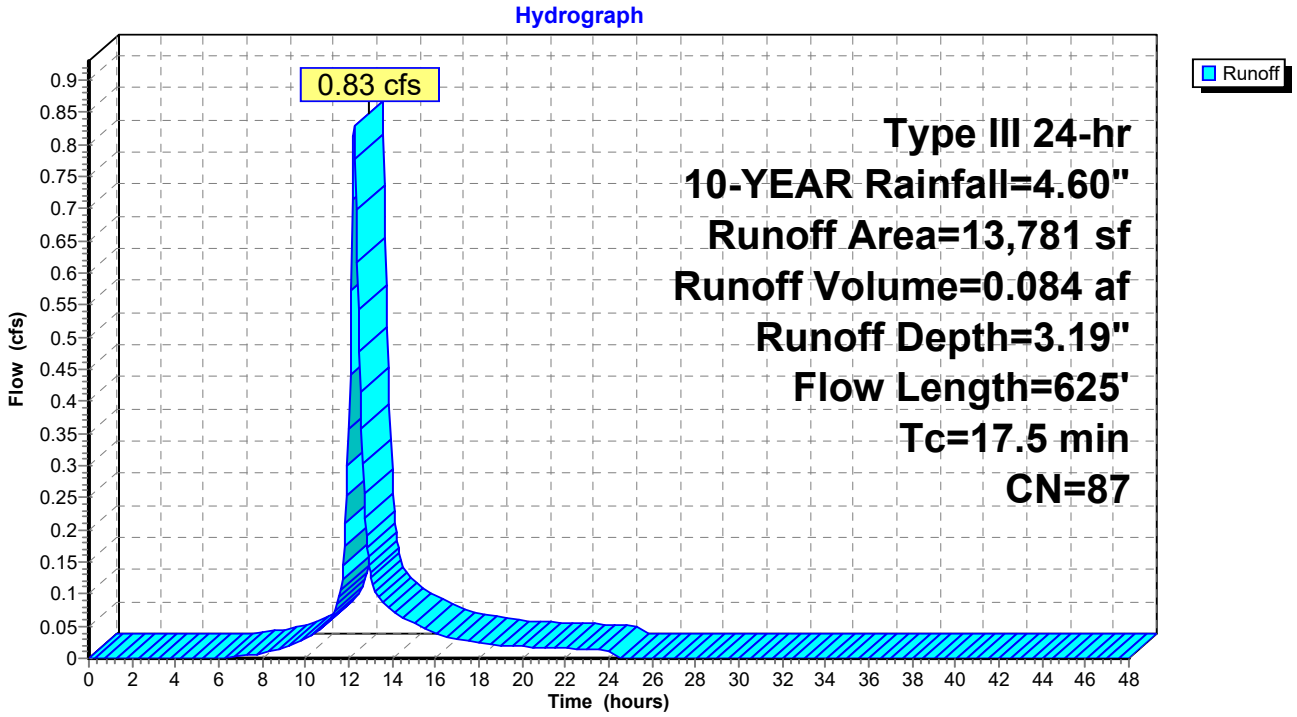
Runoff = 0.83 cfs @ 12.24 hrs, Volume= 0.084 af, Depth= 3.19"
Routed to Pond 2P : EXISTING CB2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YEAR Rainfall=4.60"

	Area (sf)	CN	Description
	5,521	98	Unconnected pavement, HSG D
	850	80	>75% Grass cover, Good, HSG D
	1,602	74	>75% Grass cover, Good, HSG C
	4,303	77	Woods, Good, HSG D
	275	70	Woods, Good, HSG C
*	1,230	98	New City Sidewalk
	13,781	87	Weighted Average
	7,030		51.01% Pervious Area
	6,751		48.99% Impervious Area
	5,521		81.78% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.0440	0.20		**Sheet Flow, A TO B** Grass: Short n= 0.150 P2= 3.10"
1.2	75	0.0440	1.05		**Shallow Concentrated Flow, B TO C** Woodland Kv= 5.0 fps
9.0	190	0.0050	0.35		**Shallow Concentrated Flow, C TO D** Woodland Kv= 5.0 fps
1.1	80	0.0630	1.25		**Shallow Concentrated Flow, D TO E** Woodland Kv= 5.0 fps
0.1	20	0.0500	4.54		**Shallow Concentrated Flow, E TO F** Paved Kv= 20.3 fps
1.9	210	0.0130	1.84		**Shallow Concentrated Flow, F TO G** Unpaved Kv= 16.1 fps
17.5	625	Total			

Subcatchment 2S: SUBCATCHMENT 2



Summary for Subcatchment 3S:

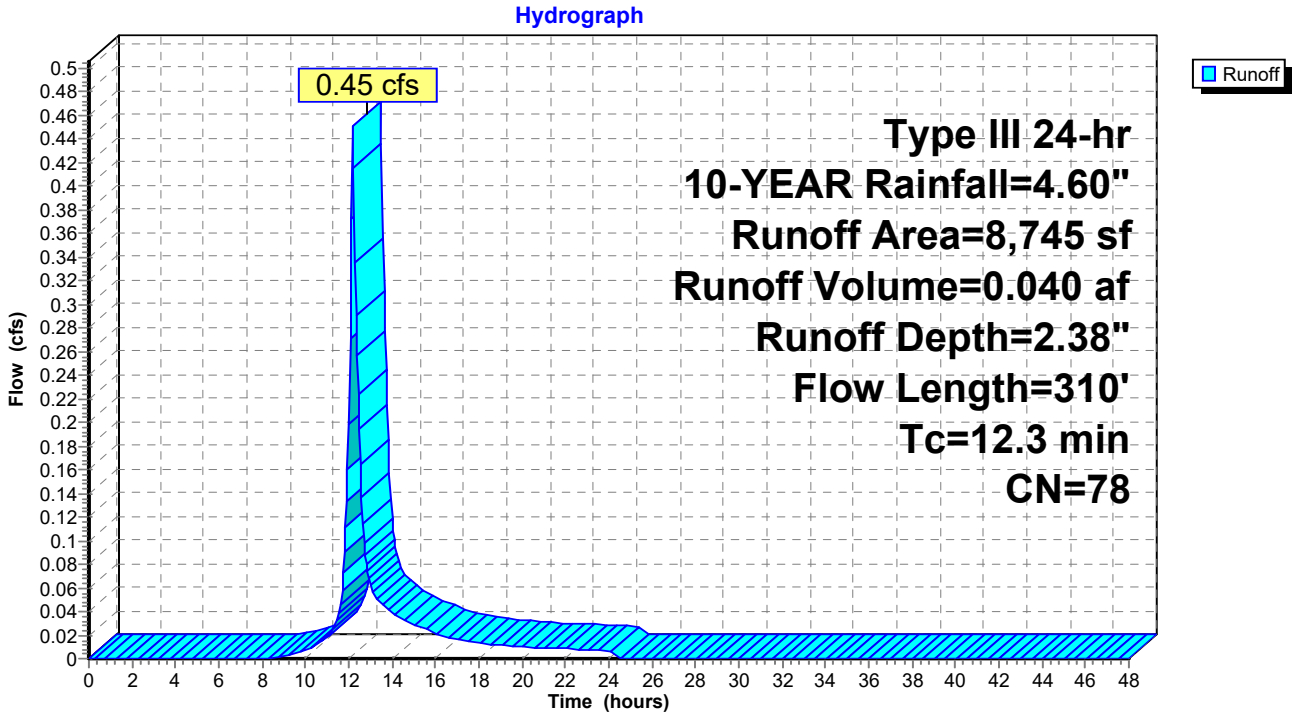
Runoff = 0.45 cfs @ 12.17 hrs, Volume= 0.040 af, Depth= 2.38"
Routed to Pond 4P : EXISTING EASEMENT POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YEAR Rainfall=4.60"

Area (sf)	CN	Description
1,985	80	>75% Grass cover, Good, HSG D
6,760	77	Woods, Good, HSG D
8,745	78	Weighted Average
8,745		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	100	0.0400	0.15		**Sheet Flow, A TO B** Grass: Dense n= 0.240 P2= 3.10"
1.3	210	0.0300	2.60		**Shallow Concentrated Flow, B TO C** Grassed Waterway Kv= 15.0 fps
12.3	310	Total			

Subcatchment 3S:



Summary for Subcatchment 4S: SUBCATCHMENT 4

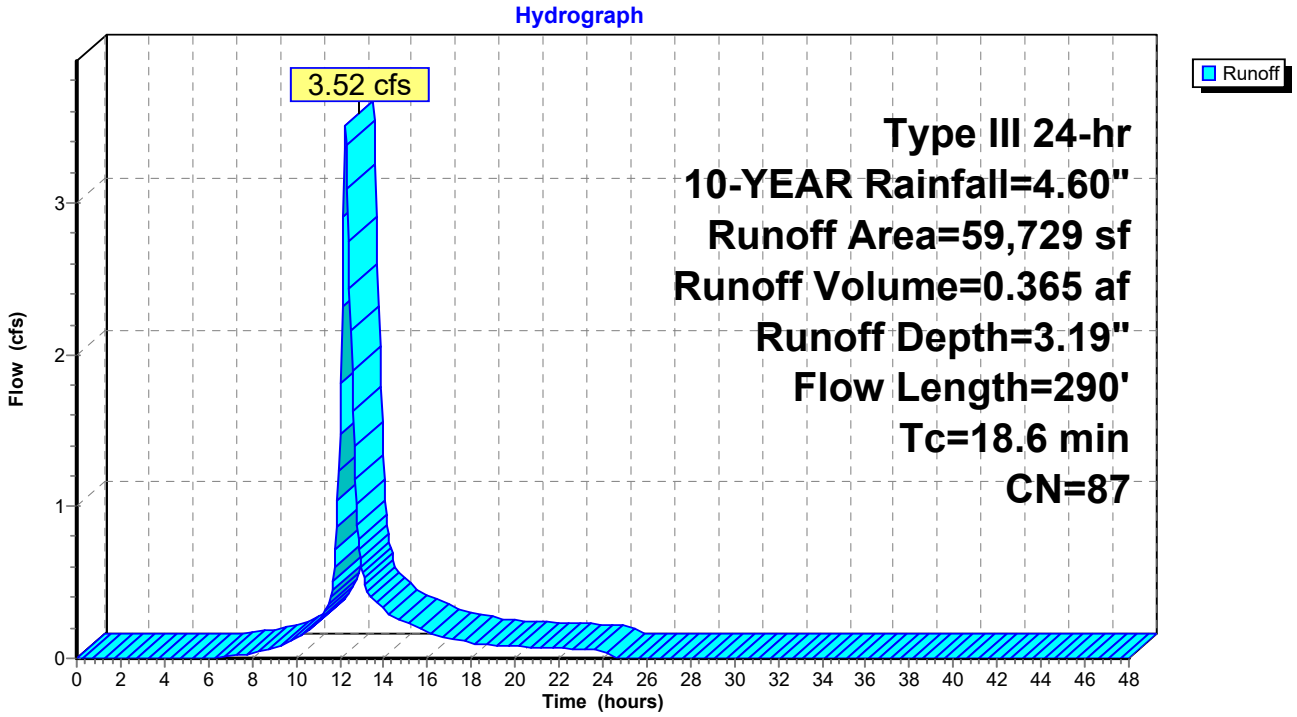
Runoff = 3.52 cfs @ 12.25 hrs, Volume= 0.365 af, Depth= 3.19"
Routed to Pond 4P : EXISTING EASEMENT POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YEAR Rainfall=4.60"

Area (sf)	CN	Description
26,354	98	Unconnected pavement, HSG D
3,052	80	>75% Grass cover, Good, HSG D
1,794	74	>75% Grass cover, Good, HSG C
7,399	80	>75% Grass cover, Good, HSG D
21,130	77	Woods, Good, HSG D
59,729	87	Weighted Average
33,375		55.88% Pervious Area
26,354		44.12% Impervious Area
26,354		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.6	100	0.0340	0.09		**Sheet Flow, A TO B** Woods: Light underbrush n= 0.400 P2= 3.10"
0.1	30	0.0300	3.52		**Shallow Concentrated Flow, B TO C** Paved Kv= 20.3 fps
0.9	160	0.0040	2.85	0.99	**Pipe Channel, C TO D** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.010 PVC, smooth interior
18.6	290	Total			

Subcatchment 4S: SUBCATCHMENT 4



Summary for Subcatchment 5S: SUBCATCHMENT 5

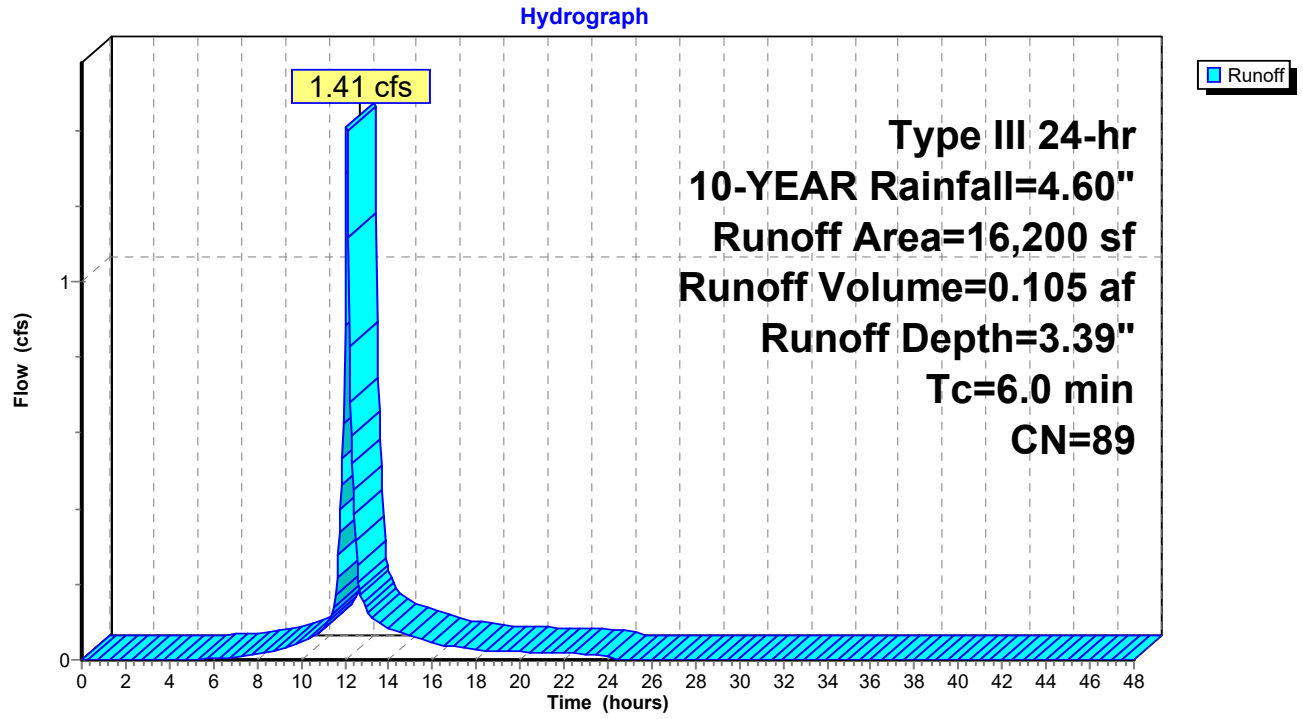
Runoff = 1.41 cfs @ 12.09 hrs, Volume= 0.105 af, Depth= 3.39"
Routed to Pond 5P : Detention System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YEAR Rainfall=4.60"

Area (sf)	CN	Description
9,021	98	Unconnected pavement, HSG D
5,589	80	>75% Grass cover, Good, HSG D
1,590	74	>75% Grass cover, Good, HSG C
16,200	89	Weighted Average
7,179		44.31% Pervious Area
9,021		55.69% Impervious Area
9,021		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, ALL FLOW**

Subcatchment 5S: SUBCATCHMENT 5



Summary for Subcatchment 6S: SUBCATCHMENT 3

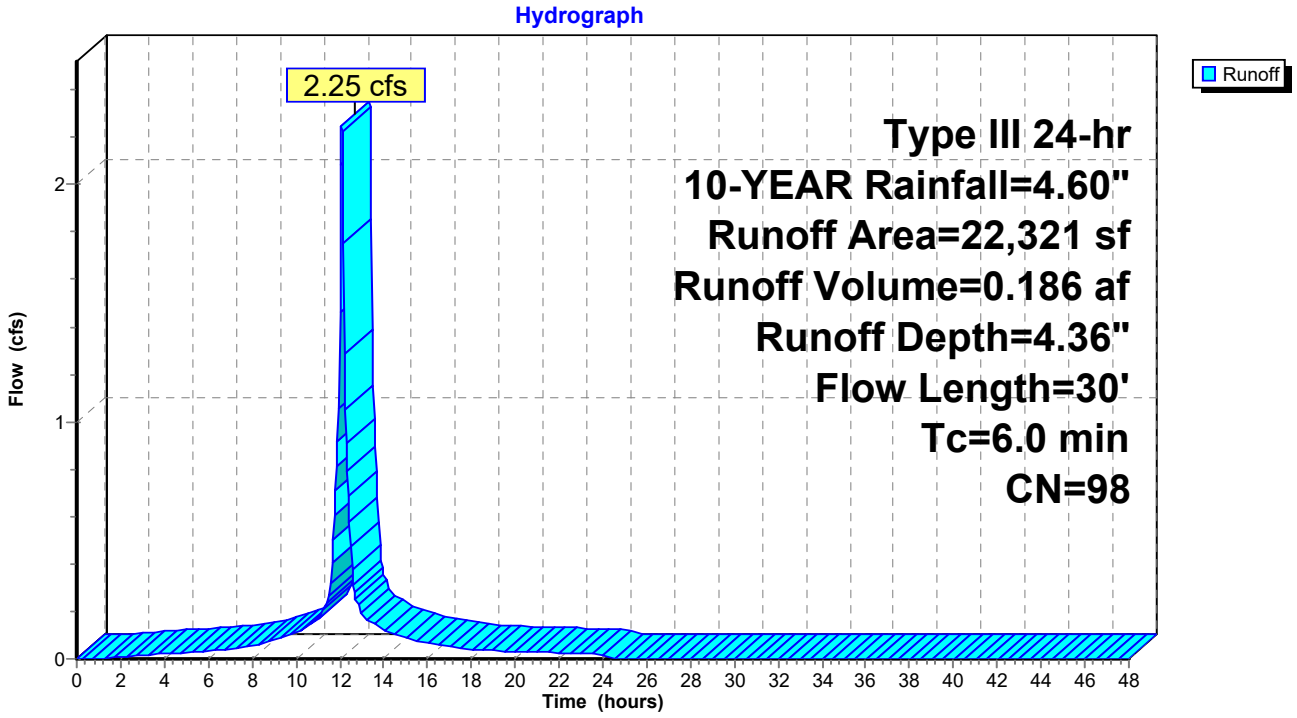
Runoff = 2.25 cfs @ 12.09 hrs, Volume= 0.186 af, Depth= 4.36"
Routed to Pond 5P : Detention System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 10-YEAR Rainfall=4.60"

Area (sf)	CN	Description
22,321	98	Roofs, HSG D
22,321		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	30		0.08		**Direct Entry, ALL FLOW**

Subcatchment 6S: SUBCATCHMENT 3



Summary for Pond 1P: EXISTING CB 1

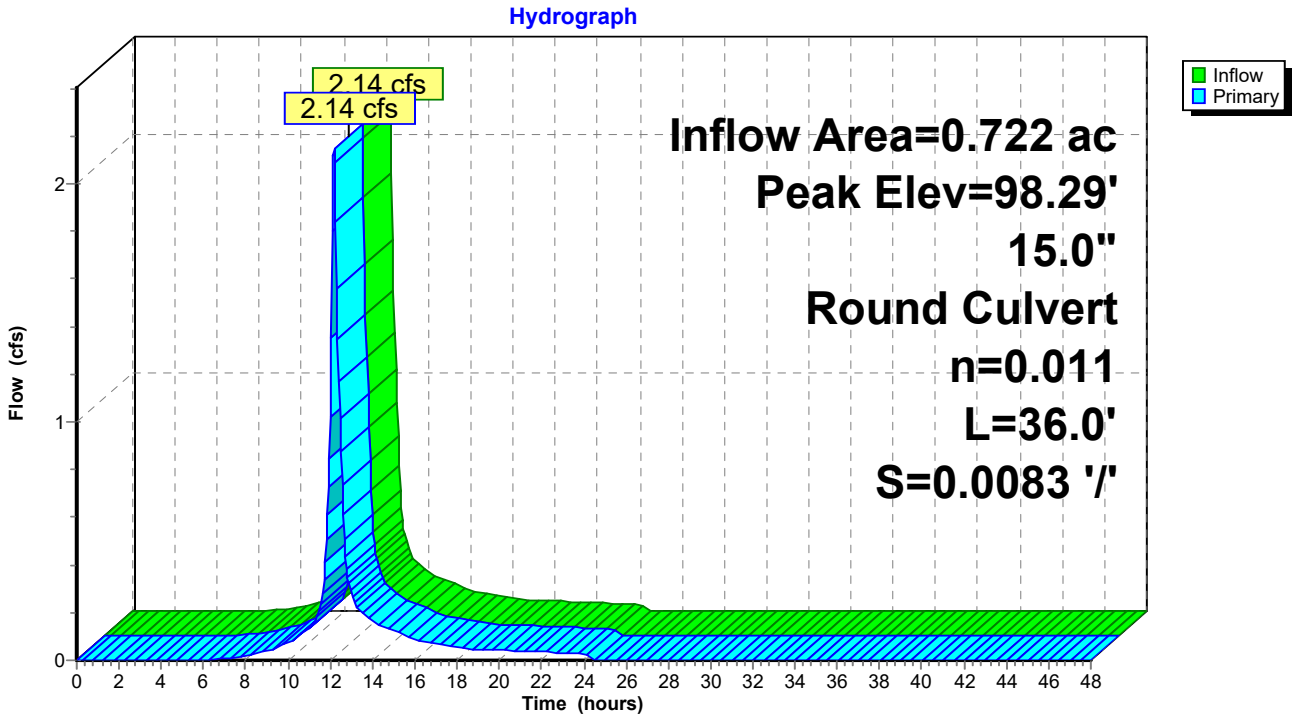
Inflow Area = 0.722 ac, 46.35% Impervious, Inflow Depth = 3.19" for 10-YEAR event
Inflow = 2.14 cfs @ 12.17 hrs, Volume= 0.192 af
Outflow = 2.14 cfs @ 12.17 hrs, Volume= 0.192 af, Atten= 0%, Lag= 0.0 min
Primary = 2.14 cfs @ 12.17 hrs, Volume= 0.192 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 98.29' @ 12.17 hrs
Flood Elev= 100.69'

Device	Routing	Invert	Outlet Devices
#1	Primary	97.52'	**15.0" Round Culvert** L= 36.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 97.52' / 97.22' S= 0.0083 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf

Primary OutFlow Max=2.10 cfs @ 12.17 hrs HW=98.28' (Free Discharge)
1=Culvert (Barrel Controls 2.10 cfs @ 3.84 fps)

Pond 1P: EXISTING CB 1



Summary for Pond 2P: EXISTING CB2

Inflow Area = 2.773 ac, 53.36% Impervious, Inflow Depth = 3.38" for 10-YEAR event
Inflow = 5.56 cfs @ 12.30 hrs, Volume= 0.780 af
Outflow = 5.56 cfs @ 12.30 hrs, Volume= 0.780 af, Atten= 0%, Lag= 0.0 min
Primary = 2.51 cfs @ 12.30 hrs, Volume= 0.683 af
Secondary = 3.05 cfs @ 12.30 hrs, Volume= 0.097 af

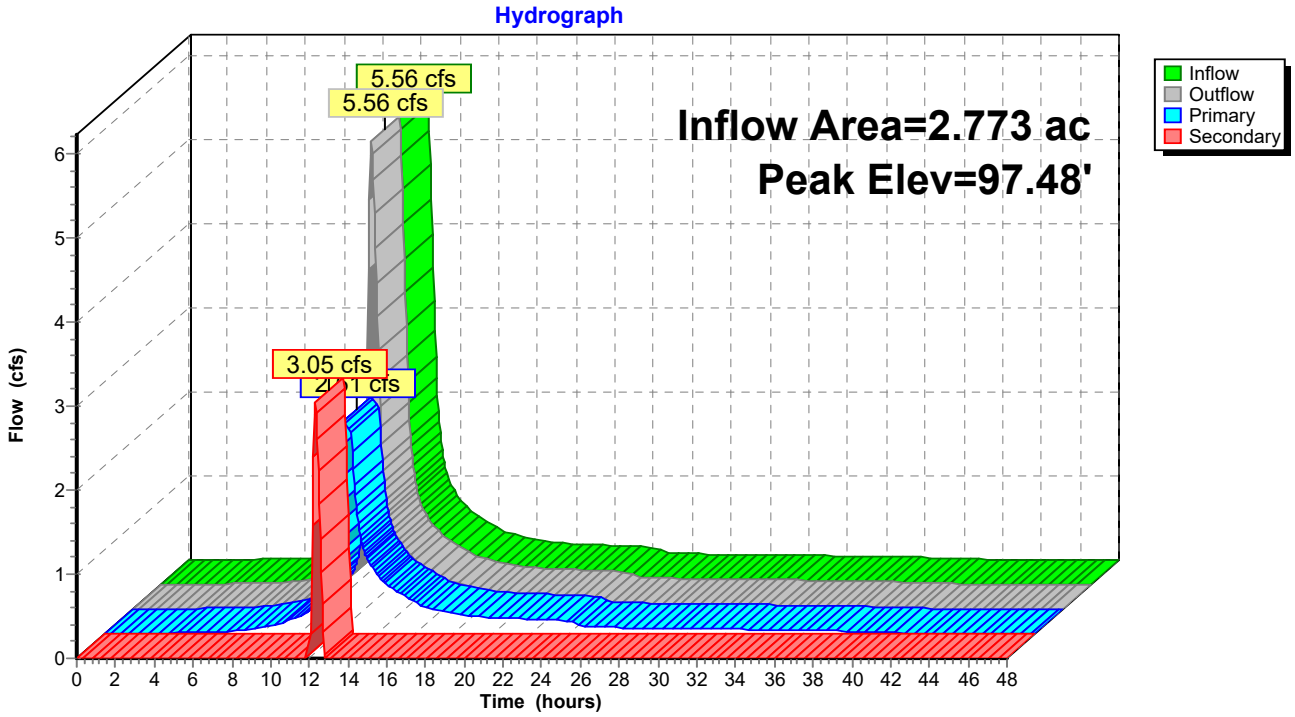
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 97.48' @ 12.30 hrs
Flood Elev= 97.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	95.00'	**8.0" Round Culvert** L= 36.8' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 95.00' / 93.78' S= 0.0332 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.35 sf
#2	Primary	94.15'	**1.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	97.24'	**3.0" x 3.0" Horiz. Orifice/Grate X 6.00 columns** X 6 rows C= 0.600 in 24.0" x 24.0" Grate (56% open area) Limited to weir flow at low heads

Primary OutFlow Max=2.51 cfs @ 12.30 hrs HW=97.48' (Free Discharge)
└─**1=Culvert** (Inlet Controls 2.46 cfs @ 7.05 fps)
└─**2=Orifice/Grate** (Orifice Controls 0.05 cfs @ 8.73 fps)

Secondary OutFlow Max=3.04 cfs @ 12.30 hrs HW=97.48' (Free Discharge)
└─**3=Orifice/Grate** (Weir Controls 3.04 cfs @ 1.60 fps)

Pond 2P: EXISTING CB2



Summary for Pond 4P: EXISTING EASEMENT POND

Inflow Area = 1.572 ac, 38.49% Impervious, Inflow Depth = 3.09" for 10-YEAR event
Inflow = 3.91 cfs @ 12.24 hrs, Volume= 0.404 af
Outflow = 3.72 cfs @ 12.30 hrs, Volume= 0.404 af, Atten= 5%, Lag= 3.7 min
Primary = 3.72 cfs @ 12.30 hrs, Volume= 0.404 af
Routed to Pond 7P : (new Pond)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 7P : (new Pond)

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 96.69' @ 12.30 hrs Surf.Area= 1,180 sf Storage= 918 cf

Plug-Flow detention time= 7.3 min calculated for 0.404 af (100% of inflow)
Center-of-Mass det. time= 7.4 min (825.5 - 818.1)

Volume	Invert	Avail.Storage	Storage Description
#1	95.00'	13,259 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

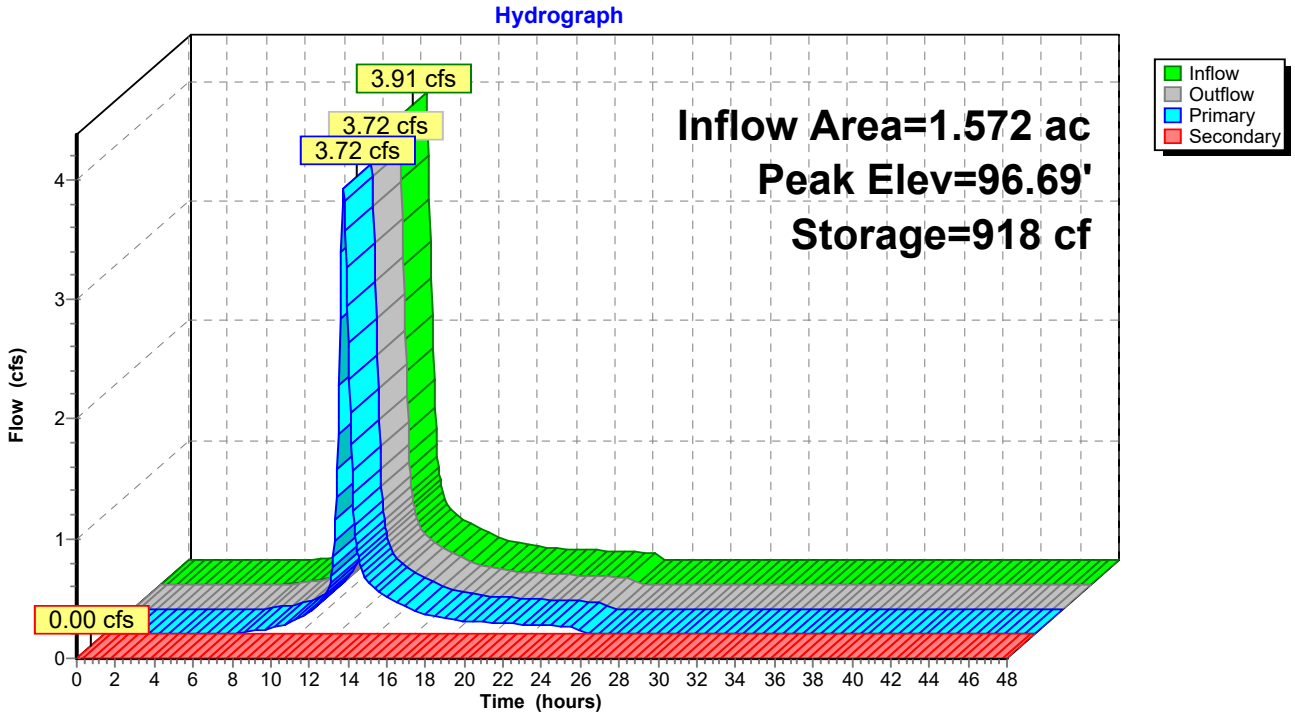
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
95.00	100	0	0
96.00	550	325	325
97.00	1,469	1,010	1,335
98.00	2,580	2,025	3,359
99.00	4,400	3,490	6,849
100.00	8,420	6,410	13,259

Device	Routing	Invert	Outlet Devices
#1	Primary	95.00'	**43.0 deg Sharp-Crested Vee/Trap Weir** Cv= 2.56 (C= 3.20)
#2	Primary	97.40'	**144.0" W x 19.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	97.66'	**10.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=3.71 cfs @ 12.30 hrs HW=96.68' (Free Discharge)
└**1=Sharp-Crested Vee/Trap Weir** (Weir Controls 3.71 cfs @ 3.32 fps)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=95.00' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 4P: EXISTING EASEMENT POND



Summary for Pond 5P: Detention System

Inflow Area = 0.884 ac, 81.36% Impervious, Inflow Depth = 3.95" for 10-YEAR event
Inflow = 3.66 cfs @ 12.09 hrs, Volume= 0.291 af
Outflow = 1.11 cfs @ 12.41 hrs, Volume= 0.291 af, Atten= 70%, Lag= 19.3 min
Primary = 1.11 cfs @ 12.41 hrs, Volume= 0.291 af
Routed to Pond 6P : JFPD0406
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 6P : JFPD0406

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 96.43' @ 12.41 hrs Surf.Area= 3,360 sf Storage= 5,737 cf

Plug-Flow detention time= 357.4 min calculated for 0.291 af (100% of inflow)
Center-of-Mass det. time= 357.3 min (1,124.0 - 766.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	92.88'	0 cf	**48.00'W x 70.00'L x 5.00'H Field A** 16,800 cf Overall - 7,012 cf Embedded = 9,788 cf x 0.0% Voids
#2A	93.38'	7,012 cf	**CMP Round 48** x 24 Inside #1 Effective Size= 48.0"W x 48.0"H => 12.57 sf x 20.00'L = 251.3 cf Overall Size= 48.0"W x 48.0"H x 20.00'L Row Length Adjustment= +4.00' x 12.57 sf x 8 rows 46.00' Header x 12.57 sf x 1 = 578.1 cf Inside
		7,012 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Device 5	93.38'	**1.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Device 5	96.20'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 5	95.57'	**6.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	97.17'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 3.00 3.04 3.08 3.12 3.16 3.20 3.24 3.28 3.32 3.36 3.40 3.44 3.48 3.52 3.56 3.60 3.64 3.68 3.72 3.76 3.80 3.84 3.88 3.92 3.96 4.00 Width (feet) 3.46 3.42 3.37 3.31 3.26 3.20 3.14 3.07 3.01 2.93 2.86 2.78 2.69 2.60 2.50 2.40 2.29 2.17 2.04 1.90 1.74 1.57 1.36 1.12 0.80 0.00
#5	Primary	93.38'	**15.0" Round Culvert** L= 19.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 93.38' / 93.38' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.11 cfs @ 12.41 hrs HW=96.43' (Free Discharge)
└─**5=Culvert** (Passes 1.11 cfs of 7.26 cfs potential flow)
  ├─**1=Orifice/Grate** (Orifice Controls 0.10 cfs @ 8.32 fps)
  ├─**2=Orifice/Grate** (Orifice Controls 0.08 cfs @ 1.63 fps)
  └─**3=Orifice/Grate** (Orifice Controls 0.93 cfs @ 3.73 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=92.88' (Free Discharge)
└─**4=Custom Weir/Orifice** (Controls 0.00 cfs)

Pond 5P: Detention System - Chamber Wizard Field A

Chamber Model = CMP Round 48 (Round Corrugated Metal Pipe)
Effective Size= 48.0"W x 48.0"H => 12.57 sf x 20.00'L = 251.3 cf
Overall Size= 48.0"W x 48.0"H x 20.00'L
Row Length Adjustment= +4.00' x 12.57 sf x 8 rows

48.0" Wide + 24.0" Spacing = 72.0" C-C Row Spacing

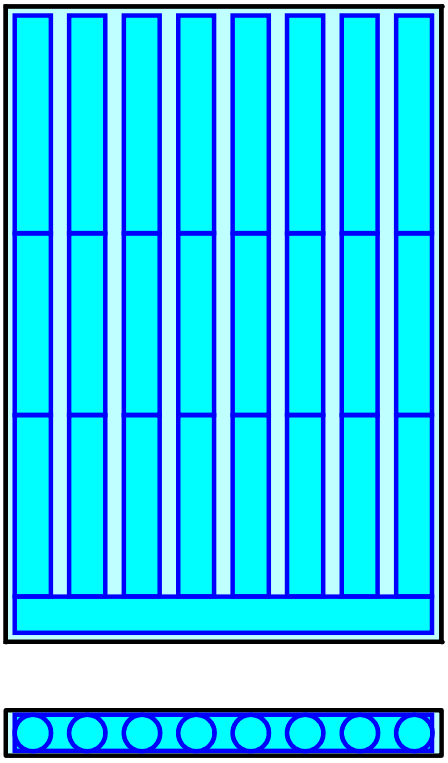
3 Chambers/Row x 20.00' Long +4.00' Row Adjustment +4.00' Header x 1 = 68.00' Row Length +12.0" End Stone x 2 = 70.00' Base Length
8 Rows x 48.0" Wide + 24.0" Spacing x 7 + 12.0" Side Stone x 2 = 48.00' Base Width
6.0" Stone Base + 48.0" Chamber Height + 6.0" Stone Cover = 5.00' Field Height

24 Chambers x 251.3 cf +4.00' Row Adjustment x 12.57 sf x 8 Rows + 46.00' Header x 12.57 sf = 7,012.0 cf Chamber Storage

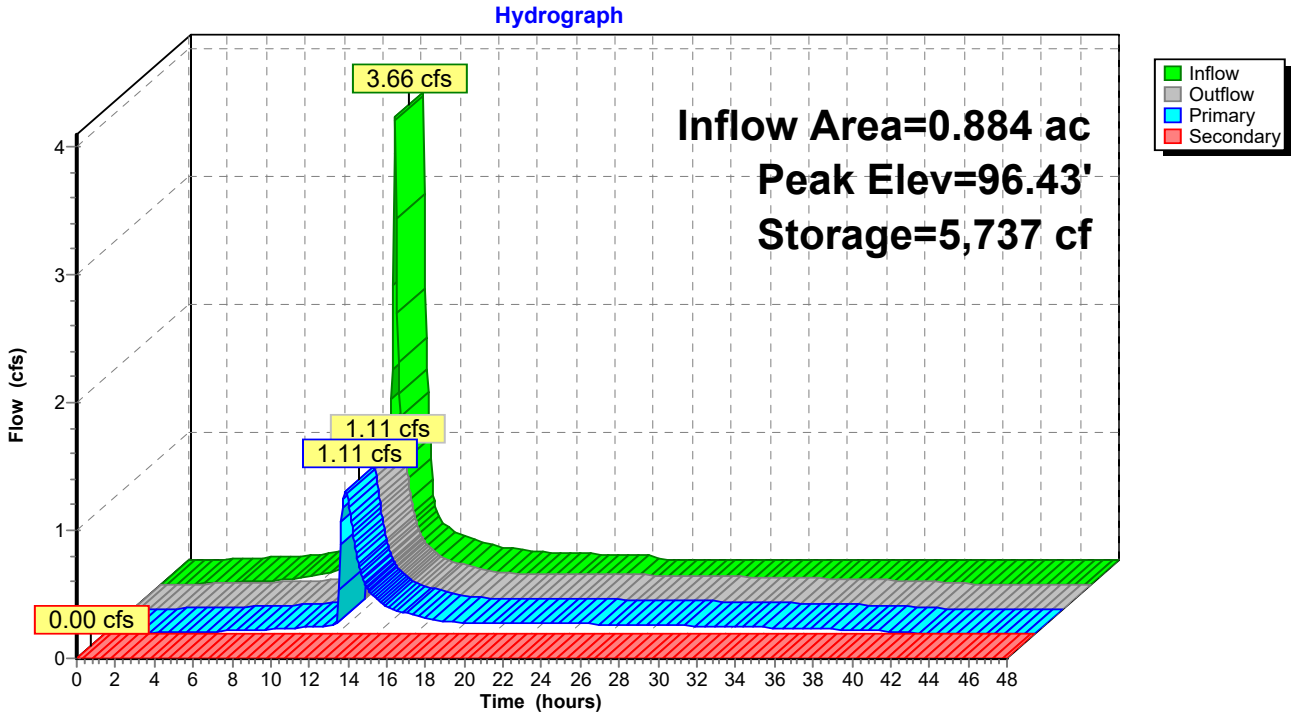
16,800.0 cf Field - 7,012.0 cf Chambers = 9,788.0 cf Stone x 0.0% Voids = 0.0 cf Stone Storage

Chamber Storage = 7,012.0 cf = 0.161 af
Overall Storage Efficiency = 41.7%
Overall System Size = 70.00' x 48.00' x 5.00'

24 Chambers
622.2 cy Field
362.5 cy Stone



Pond 5P: Detention System



Summary for Pond 6P: JFPD0406

Inflow Area = 0.884 ac, 81.36% Impervious, Inflow Depth > 3.95" for 10-YEAR event
Inflow = 1.11 cfs @ 12.41 hrs, Volume= 0.291 af
Outflow = 1.11 cfs @ 12.41 hrs, Volume= 0.291 af, Atten= 0%, Lag= 0.0 min
Primary = 0.45 cfs @ 12.15 hrs, Volume= 0.256 af
Routed to Pond 2P : EXISTING CB2
Secondary = 0.67 cfs @ 12.41 hrs, Volume= 0.035 af
Routed to Pond 2P : EXISTING CB2

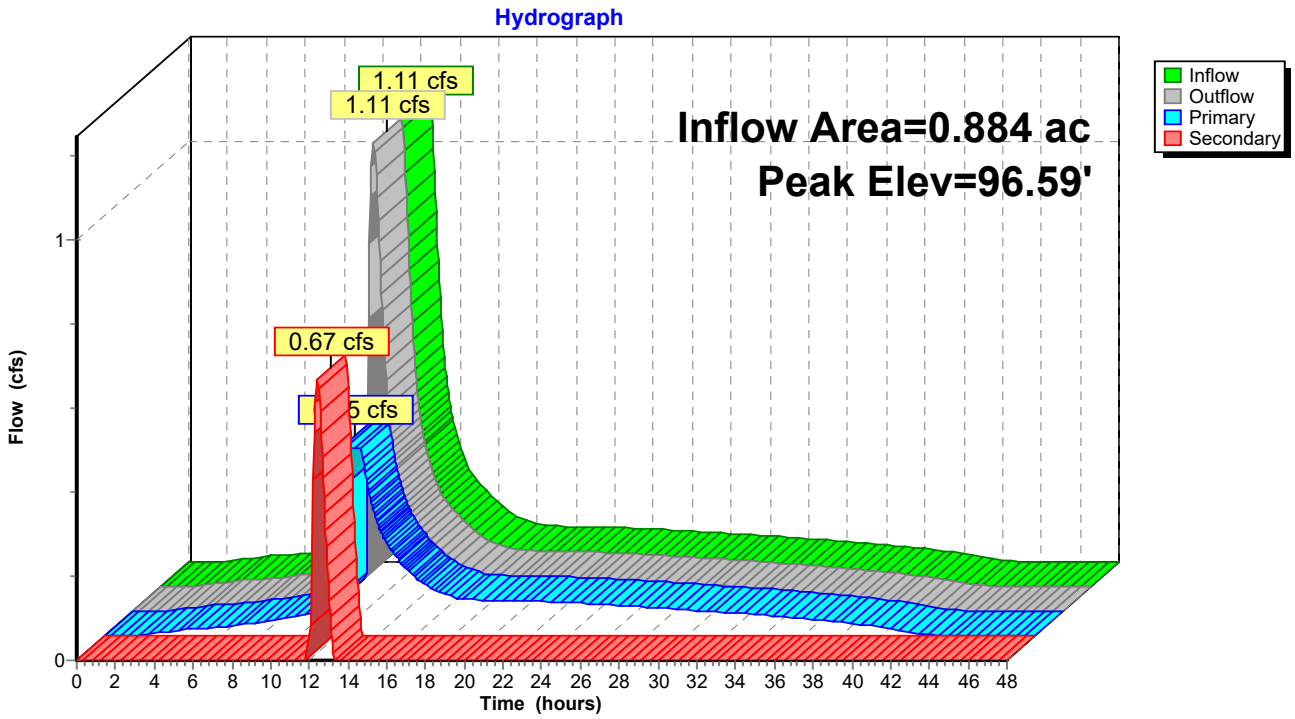
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 96.59' @ 12.41 hrs

Device	Routing	Invert	Outlet Devices
#1	Device 3	94.90'	**JF CSV File** Head (feet) 0.00 0.08 0.17 0.25 0.33 0.42 0.50 0.58 0.67 0.75 0.83 0.92 1.00 1.08 1.17 1.25 1.33 1.42 1.50 Disch. (cfs) 0.000 0.005 0.010 0.015 0.020 0.025 0.030 0.064 0.099 0.134 0.168 0.203 0.238 0.272 0.307 0.342 0.376 0.411 0.446
#2	Secondary	96.40'	**2.8' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#3	Primary	94.90'	**15.0" Round Culvert** L= 145.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 94.90' / 94.15' S= 0.0052 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.45 cfs @ 12.15 hrs HW=96.50' (Free Discharge)
└**3=Culvert** (Passes 0.45 cfs of 4.99 cfs potential flow)
└**1=JF CSV File** (Custom Controls 0.45 cfs)

Secondary OutFlow Max=0.66 cfs @ 12.41 hrs HW=96.59' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 0.66 cfs @ 1.23 fps)

Pond 6P: JFPD0406



Summary for Pond 7P: (new Pond)

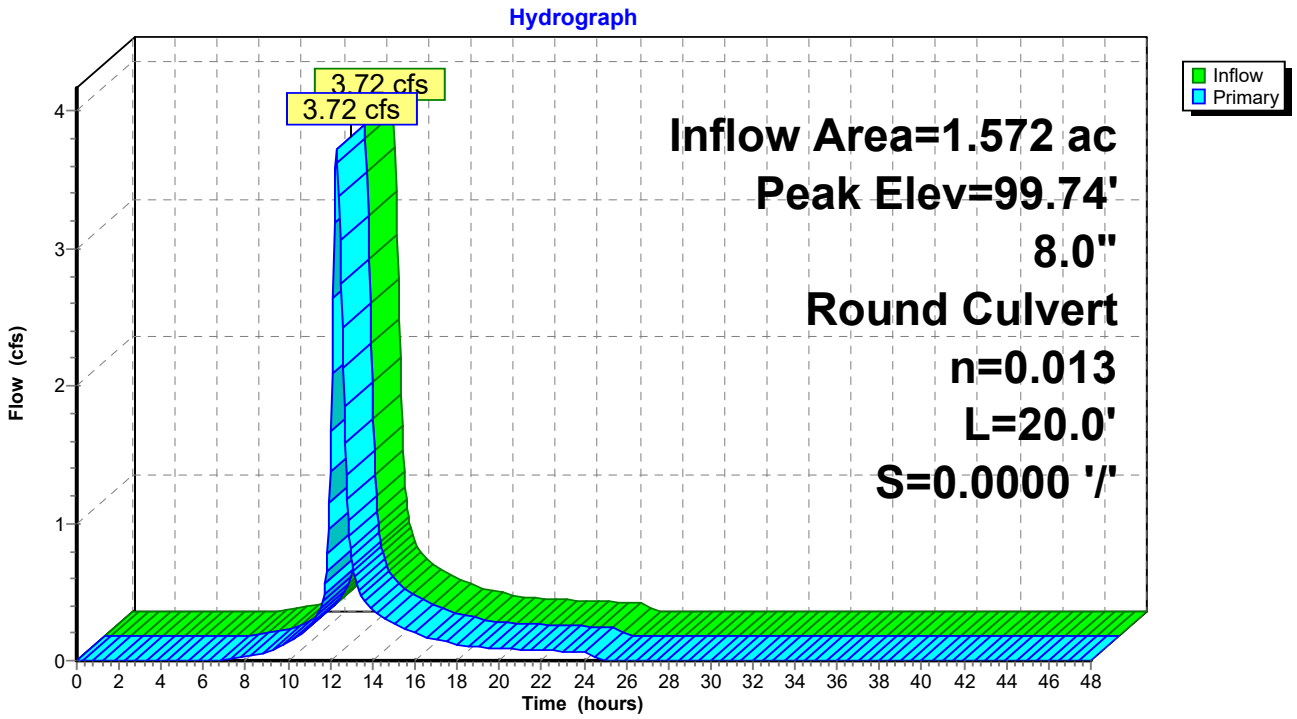
Inflow Area = 1.572 ac, 38.49% Impervious, Inflow Depth = 3.09" for 10-YEAR event
Inflow = 3.72 cfs @ 12.30 hrs, Volume= 0.404 af
Outflow = 3.72 cfs @ 12.30 hrs, Volume= 0.404 af, Atten= 0%, Lag= 0.0 min
Primary = 3.72 cfs @ 12.30 hrs, Volume= 0.404 af
Routed to Pond 2P : EXISTING CB2

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 99.74' @ 12.30 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	94.50'	**8.0" Round Culvert** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 94.50' / 94.50' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 0.35 sf

Primary OutFlow Max=3.71 cfs @ 12.30 hrs HW=99.71' (Free Discharge)
1=Culvert (Inlet Controls 3.71 cfs @ 10.63 fps)

Pond 7P: (new Pond)



Time span=0.00-48.00 hrs, dt=0.05 hrs, 961 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: SUBCATCHMENT1 Runoff Area=31,459 sf 46.35% Impervious Runoff Depth=4.33"
Flow Length=415' Tc=12.6 min CN=87 Runoff=2.87 cfs 0.260 af

Subcatchment2S: SUBCATCHMENT2 Runoff Area=13,781 sf 48.99% Impervious Runoff Depth=4.33"
Flow Length=625' Tc=17.5 min CN=87 Runoff=1.11 cfs 0.114 af

Subcatchment3S: Runoff Area=8,745 sf 0.00% Impervious Runoff Depth=3.40"
Flow Length=310' Tc=12.3 min CN=78 Runoff=0.65 cfs 0.057 af

Subcatchment4S: SUBCATCHMENT4 Runoff Area=59,729 sf 44.12% Impervious Runoff Depth=4.33"
Flow Length=290' Tc=18.6 min CN=87 Runoff=4.71 cfs 0.494 af

Subcatchment5S: SUBCATCHMENT5 Runoff Area=16,200 sf 55.69% Impervious Runoff Depth=4.54"
Tc=6.0 min CN=89 Runoff=1.86 cfs 0.141 af

Subcatchment6S: SUBCATCHMENT3 Runoff Area=22,321 sf 100.00% Impervious Runoff Depth=5.56"
Flow Length=30' Tc=6.0 min CN=98 Runoff=2.84 cfs 0.238 af

Pond 1P: EXISTING CB 1 Peak Elev=98.45' Inflow=2.87 cfs 0.260 af
15.0" Round Culvert n=0.011 L=36.0' S=0.0083 '/' Outflow=2.87 cfs 0.260 af

Pond 2P: EXISTING CB2 Peak Elev=97.59' Inflow=7.90 cfs 1.044 af
Primary=2.57 cfs 0.839 af Secondary=5.33 cfs 0.205 af Outflow=7.90 cfs 1.044 af

Pond 4P: EXISTING EASEMENT POND Peak Elev=96.90' Storage=1,195 cf Inflow=5.28 cfs 0.551 af
Primary=5.03 cfs 0.551 af Secondary=0.00 cfs 0.000 af Outflow=5.03 cfs 0.551 af

Pond 5P: Detention System Peak Elev=97.21' Storage=6,910 cf Inflow=4.71 cfs 0.378 af
Primary=1.75 cfs 0.378 af Secondary=0.08 cfs 0.001 af Outflow=1.84 cfs 0.378 af

Pond 6P: JFPD0406 Peak Elev=96.71' Inflow=1.84 cfs 0.378 af
Primary=0.45 cfs 0.290 af Secondary=1.39 cfs 0.088 af Outflow=1.84 cfs 0.378 af

Pond 7P: (new Pond) Peak Elev=103.79' Inflow=5.03 cfs 0.551 af
8.0" Round Culvert n=0.013 L=20.0' S=0.0000 '/' Outflow=5.03 cfs 0.551 af

Total Runoff Area = 3.495 ac Runoff Volume = 1.304 af Average Runoff Depth = 4.48"
48.09% Pervious = 1.681 ac 51.91% Impervious = 1.814 ac

Summary for Subcatchment 1S: SUBCATCHMENT 1

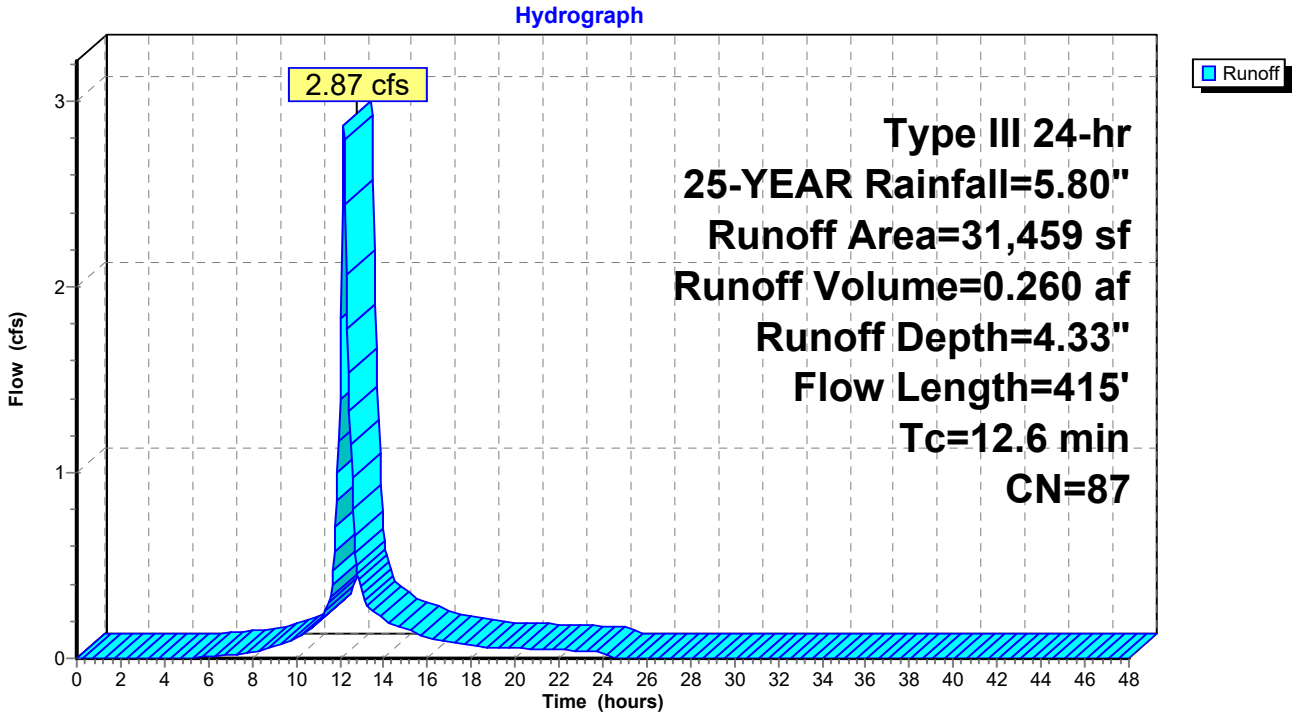
Runoff = 2.87 cfs @ 12.17 hrs, Volume= 0.260 af, Depth= 4.33"
Routed to Pond 1P : EXISTING CB 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YEAR Rainfall=5.80"

	Area (sf)	CN	Description
	14,281	98	Unconnected pavement, HSG D
	3,746	80	>75% Grass cover, Good, HSG D
	246	74	>75% Grass cover, Good, HSG C
	12,886	77	Woods, Good, HSG D
*	300	98	New City Sidewalk
	31,459	87	Weighted Average
	16,878		53.65% Pervious Area
	14,581		46.35% Impervious Area
	14,281		97.94% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.4	50	0.0540	0.10		**Sheet Flow, A TO B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.1	45	0.0200	0.71		**Shallow Concentrated Flow, B TO C** Woodland Kv= 5.0 fps
1.9	100	0.0150	0.86		**Shallow Concentrated Flow, C TO D** Short Grass Pasture Kv= 7.0 fps
0.7	50	0.0560	1.18		**Shallow Concentrated Flow, D TO E** Woodland Kv= 5.0 fps
0.5	170	0.0150	6.23	25.00	**Trap/Vee/Rect Channel Flow, E to F** Bot.W=3.00' D=0.50' Z= 0.1 & 20.0 '/' Top.W=13.05' n= 0.013 Asphalt, smooth
12.6	415	Total			

Subcatchment 1S: SUBCATCHMENT 1



Summary for Subcatchment 2S: SUBCATCHMENT 2

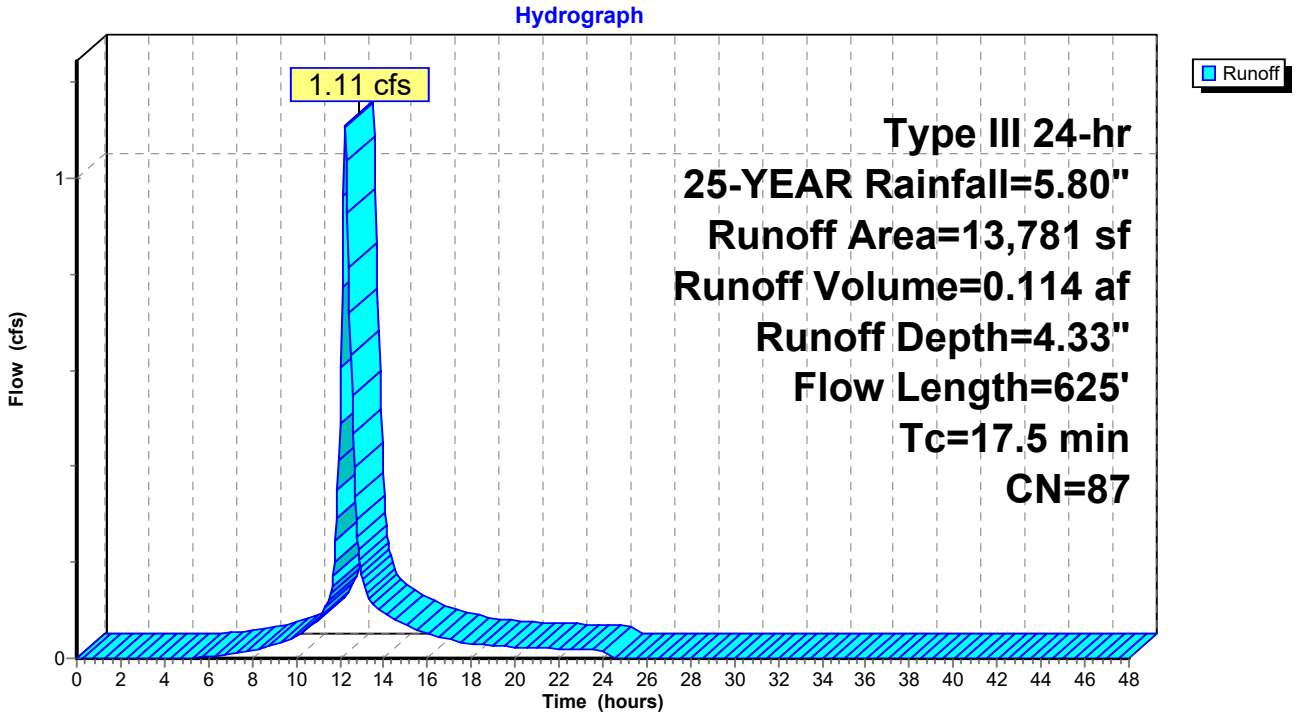
Runoff = 1.11 cfs @ 12.24 hrs, Volume= 0.114 af, Depth= 4.33"
Routed to Pond 2P : EXISTING CB2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YEAR Rainfall=5.80"

	Area (sf)	CN	Description
	5,521	98	Unconnected pavement, HSG D
	850	80	>75% Grass cover, Good, HSG D
	1,602	74	>75% Grass cover, Good, HSG C
	4,303	77	Woods, Good, HSG D
	275	70	Woods, Good, HSG C
*	1,230	98	New City Sidewalk
	13,781	87	Weighted Average
	7,030		51.01% Pervious Area
	6,751		48.99% Impervious Area
	5,521		81.78% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.2	50	0.0440	0.20		**Sheet Flow, A TO B** Grass: Short n= 0.150 P2= 3.10"
1.2	75	0.0440	1.05		**Shallow Concentrated Flow, B TO C** Woodland Kv= 5.0 fps
9.0	190	0.0050	0.35		**Shallow Concentrated Flow, C TO D** Woodland Kv= 5.0 fps
1.1	80	0.0630	1.25		**Shallow Concentrated Flow, D TO E** Woodland Kv= 5.0 fps
0.1	20	0.0500	4.54		**Shallow Concentrated Flow, E TO F** Paved Kv= 20.3 fps
1.9	210	0.0130	1.84		**Shallow Concentrated Flow, F TO G** Unpaved Kv= 16.1 fps
17.5	625	Total			

Subcatchment 2S: SUBCATCHMENT 2



Summary for Subcatchment 3S:

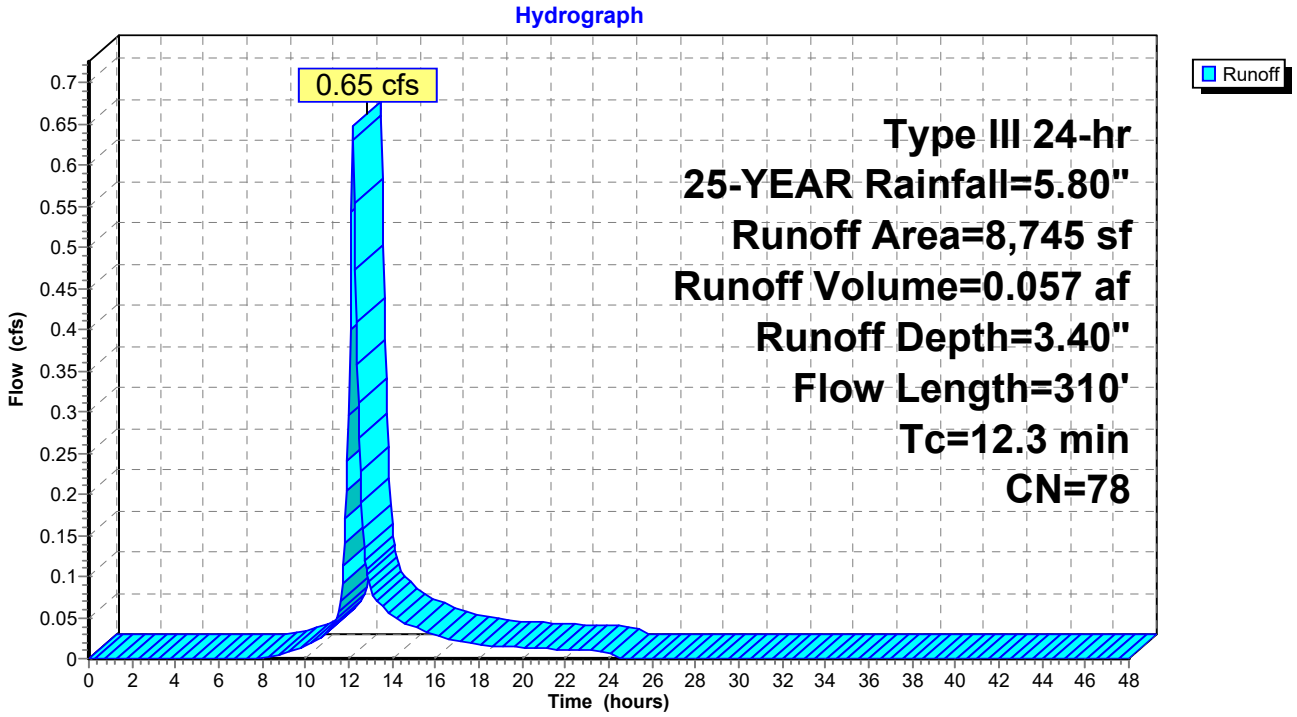
Runoff = 0.65 cfs @ 12.17 hrs, Volume= 0.057 af, Depth= 3.40"
Routed to Pond 4P : EXISTING EASEMENT POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YEAR Rainfall=5.80"

Area (sf)	CN	Description
1,985	80	>75% Grass cover, Good, HSG D
6,760	77	Woods, Good, HSG D
8,745	78	Weighted Average
8,745		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	100	0.0400	0.15		**Sheet Flow, A TO B** Grass: Dense n= 0.240 P2= 3.10"
1.3	210	0.0300	2.60		**Shallow Concentrated Flow, B TO C** Grassed Waterway Kv= 15.0 fps
12.3	310	Total			

Subcatchment 3S:



Summary for Subcatchment 4S: SUBCATCHMENT 4

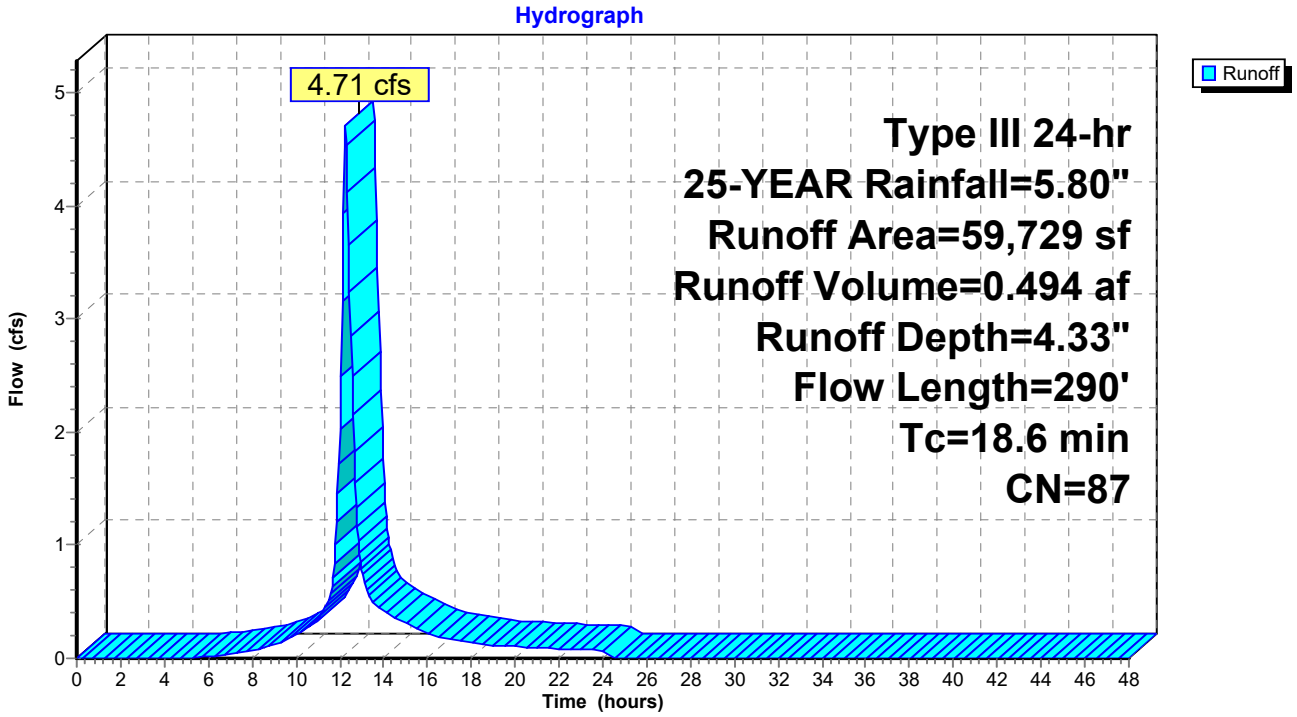
Runoff = 4.71 cfs @ 12.25 hrs, Volume= 0.494 af, Depth= 4.33"
Routed to Pond 4P : EXISTING EASEMENT POND

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YEAR Rainfall=5.80"

Area (sf)	CN	Description
26,354	98	Unconnected pavement, HSG D
3,052	80	>75% Grass cover, Good, HSG D
1,794	74	>75% Grass cover, Good, HSG C
7,399	80	>75% Grass cover, Good, HSG D
21,130	77	Woods, Good, HSG D
59,729	87	Weighted Average
33,375		55.88% Pervious Area
26,354		44.12% Impervious Area
26,354		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.6	100	0.0340	0.09		**Sheet Flow, A TO B** Woods: Light underbrush n= 0.400 P2= 3.10"
0.1	30	0.0300	3.52		**Shallow Concentrated Flow, B TO C** Paved Kv= 20.3 fps
0.9	160	0.0040	2.85	0.99	**Pipe Channel, C TO D** 8.0" Round Area= 0.3 sf Perim= 2.1' r= 0.17' n= 0.010 PVC, smooth interior
18.6	290	Total			

Subcatchment 4S: SUBCATCHMENT 4



Summary for Subcatchment 5S: SUBCATCHMENT 5

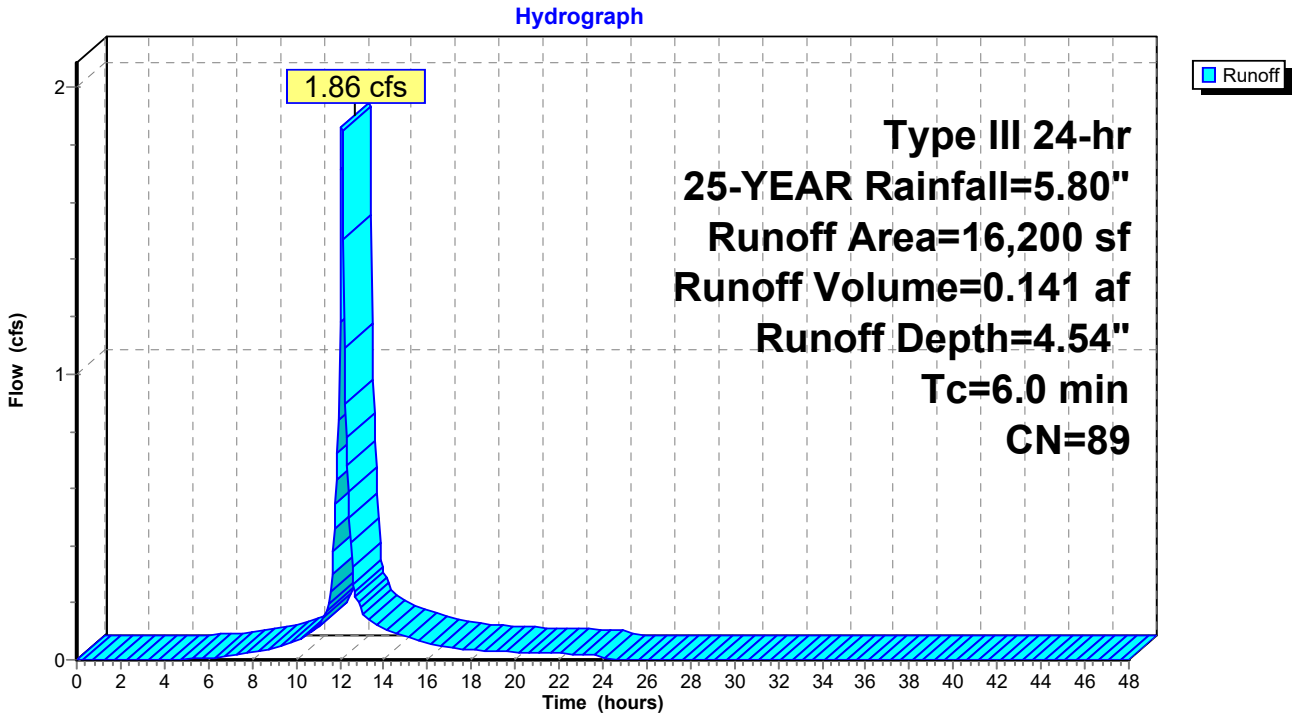
Runoff = 1.86 cfs @ 12.09 hrs, Volume= 0.141 af, Depth= 4.54"
Routed to Pond 5P : Detention System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YEAR Rainfall=5.80"

Area (sf)	CN	Description
9,021	98	Unconnected pavement, HSG D
5,589	80	>75% Grass cover, Good, HSG D
1,590	74	>75% Grass cover, Good, HSG C
16,200	89	Weighted Average
7,179		44.31% Pervious Area
9,021		55.69% Impervious Area
9,021		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, ALL FLOW**

Subcatchment 5S: SUBCATCHMENT 5



Summary for Subcatchment 6S: SUBCATCHMENT 3

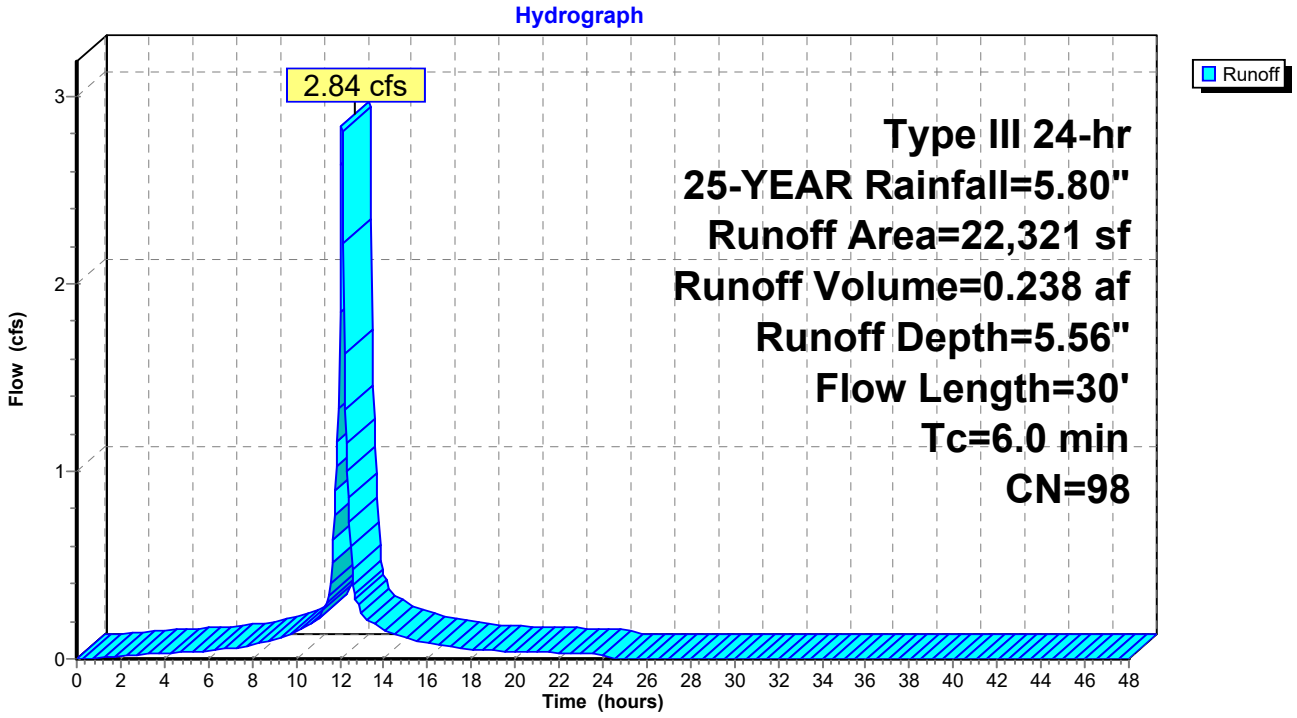
Runoff = 2.84 cfs @ 12.09 hrs, Volume= 0.238 af, Depth= 5.56"
Routed to Pond 5P : Detention System

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Type III 24-hr 25-YEAR Rainfall=5.80"

Area (sf)	CN	Description
22,321	98	Roofs, HSG D
22,321		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	30		0.08		**Direct Entry, ALL FLOW**

Subcatchment 6S: SUBCATCHMENT 3



Summary for Pond 1P: EXISTING CB 1

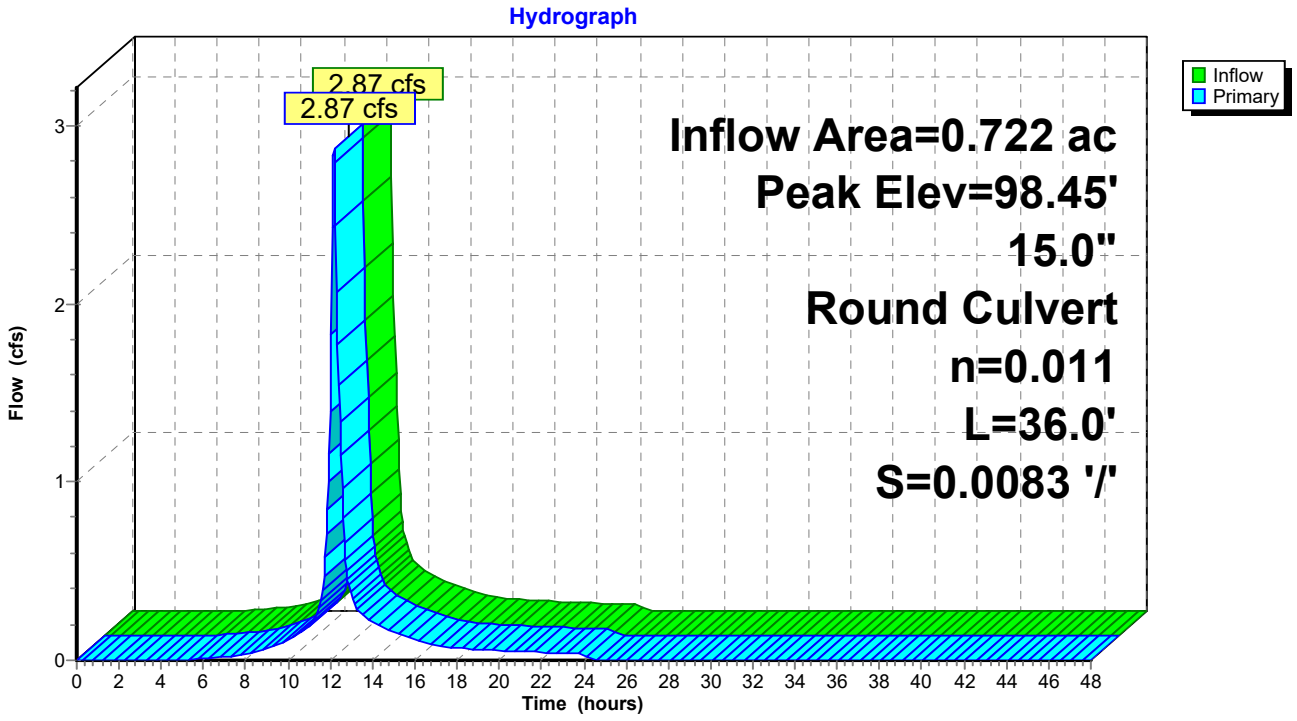
Inflow Area = 0.722 ac, 46.35% Impervious, Inflow Depth = 4.33" for 25-YEAR event
Inflow = 2.87 cfs @ 12.17 hrs, Volume= 0.260 af
Outflow = 2.87 cfs @ 12.17 hrs, Volume= 0.260 af, Atten= 0%, Lag= 0.0 min
Primary = 2.87 cfs @ 12.17 hrs, Volume= 0.260 af

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 98.45' @ 12.17 hrs
Flood Elev= 100.69'

Device	Routing	Invert	Outlet Devices
#1	Primary	97.52'	**15.0" Round Culvert** L= 36.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 97.52' / 97.22' S= 0.0083 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 1.23 sf

Primary OutFlow Max=2.82 cfs @ 12.17 hrs HW=98.44' (Free Discharge)
1=Culvert (Barrel Controls 2.82 cfs @ 4.07 fps)

Pond 1P: EXISTING CB 1



Summary for Pond 2P: EXISTING CB2

Inflow Area = 2.773 ac, 53.36% Impervious, Inflow Depth = 4.52" for 25-YEAR event
Inflow = 7.90 cfs @ 12.30 hrs, Volume= 1.044 af
Outflow = 7.90 cfs @ 12.30 hrs, Volume= 1.044 af, Atten= 0%, Lag= 0.0 min
Primary = 2.57 cfs @ 12.30 hrs, Volume= 0.839 af
Secondary = 5.33 cfs @ 12.30 hrs, Volume= 0.205 af

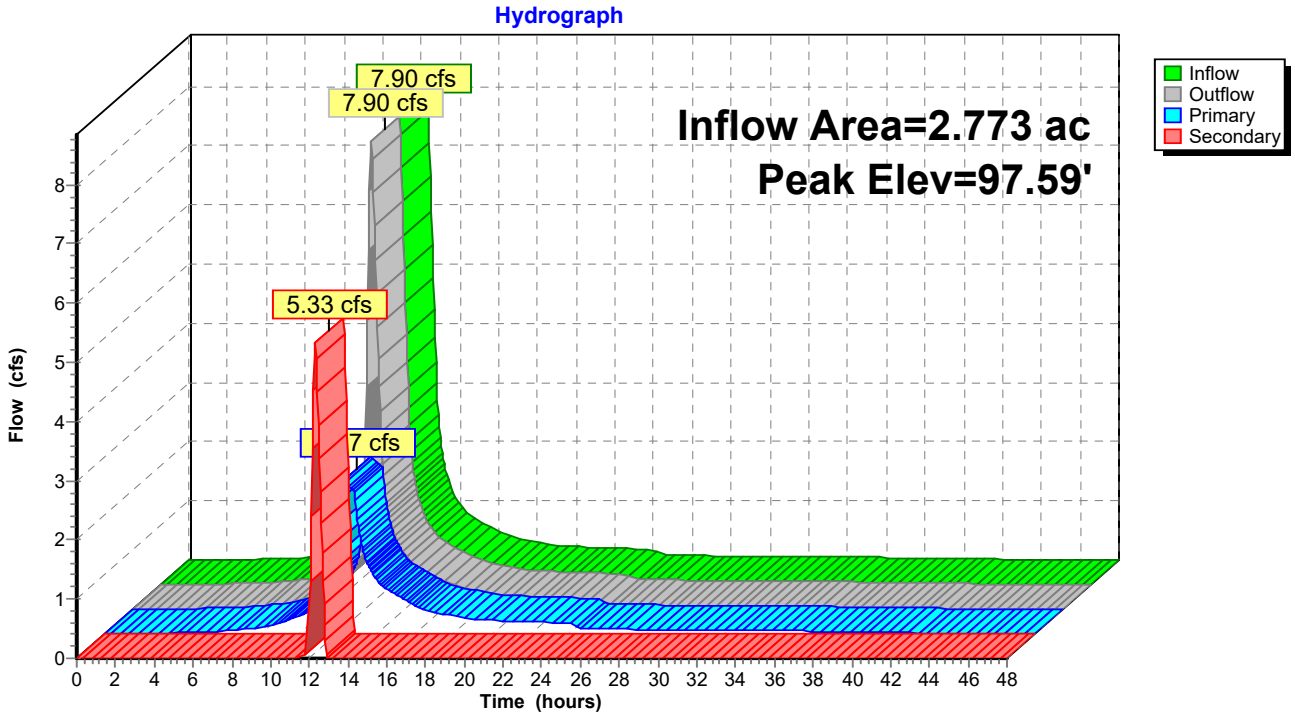
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 97.59' @ 12.30 hrs
Flood Elev= 97.25'

Device	Routing	Invert	Outlet Devices
#1	Primary	95.00'	**8.0" Round Culvert** L= 36.8' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 95.00' / 93.78' S= 0.0332 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 0.35 sf
#2	Primary	94.15'	**1.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	97.24'	**3.0" x 3.0" Horiz. Orifice/Grate X 6.00 columns** X 6 rows C= 0.600 in 24.0" x 24.0" Grate (56% open area) Limited to weir flow at low heads

Primary OutFlow Max=2.57 cfs @ 12.30 hrs HW=97.59' (Free Discharge)
└─**1=Culvert** (Inlet Controls 2.52 cfs @ 7.23 fps)
└─**2=Orifice/Grate** (Orifice Controls 0.05 cfs @ 8.87 fps)

Secondary OutFlow Max=5.31 cfs @ 12.30 hrs HW=97.59' (Free Discharge)
└─**3=Orifice/Grate** (Weir Controls 5.31 cfs @ 1.92 fps)

Pond 2P: EXISTING CB2



Summary for Pond 4P: EXISTING EASEMENT POND

Inflow Area = 1.572 ac, 38.49% Impervious, Inflow Depth = 4.21" for 25-YEAR event
Inflow = 5.28 cfs @ 12.24 hrs, Volume= 0.551 af
Outflow = 5.03 cfs @ 12.30 hrs, Volume= 0.551 af, Atten= 5%, Lag= 3.6 min
Primary = 5.03 cfs @ 12.30 hrs, Volume= 0.551 af
Routed to Pond 7P : (new Pond)
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Pond 7P : (new Pond)

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 96.90' @ 12.30 hrs Surf.Area= 1,379 sf Storage= 1,195 cf

Plug-Flow detention time= 7.4 min calculated for 0.551 af (100% of inflow)
Center-of-Mass det. time= 6.8 min (816.3 - 809.5)

Volume	Invert	Avail.Storage	Storage Description
#1	95.00'	13,259 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

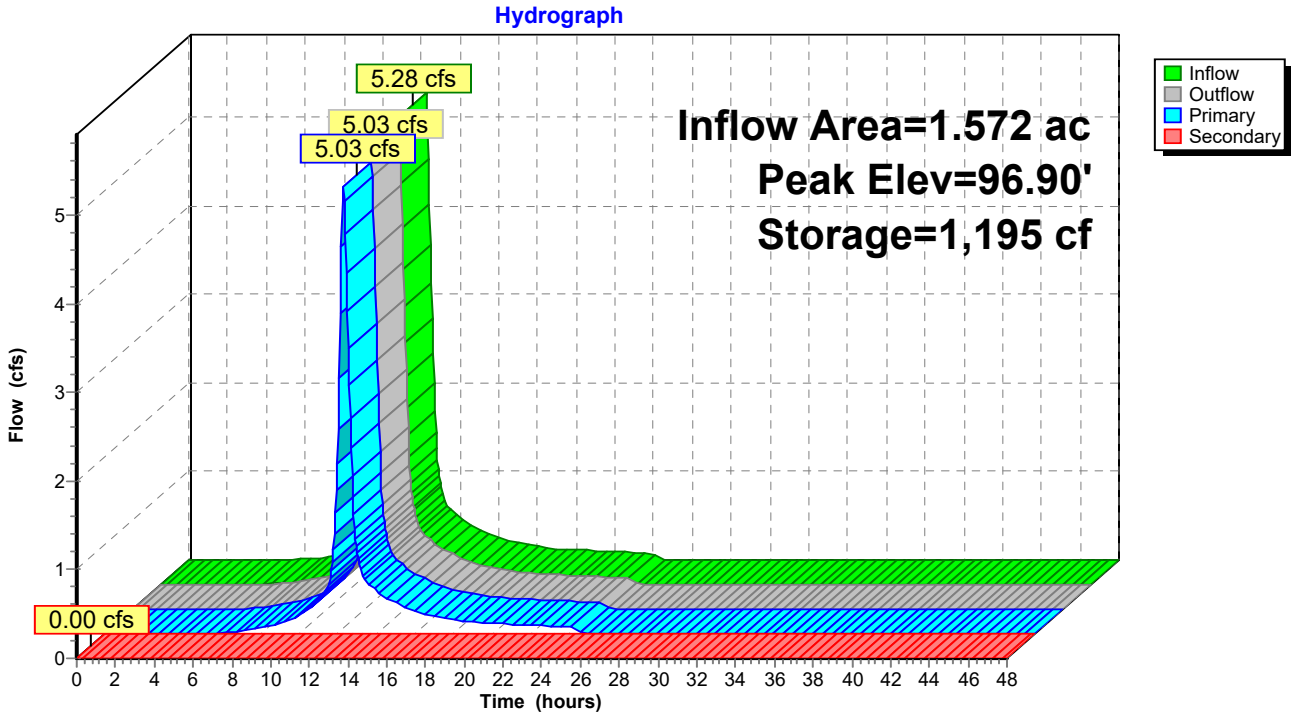
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
95.00	100	0	0
96.00	550	325	325
97.00	1,469	1,010	1,335
98.00	2,580	2,025	3,359
99.00	4,400	3,490	6,849
100.00	8,420	6,410	13,259

Device	Routing	Invert	Outlet Devices
#1	Primary	95.00'	**43.0 deg Sharp-Crested Vee/Trap Weir** Cv= 2.56 (C= 3.20)
#2	Primary	97.40'	**144.0" W x 19.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Secondary	97.66'	**10.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=5.03 cfs @ 12.30 hrs HW=96.90' (Free Discharge)
└**1=Sharp-Crested Vee/Trap Weir** (Weir Controls 5.03 cfs @ 3.53 fps)
└**2=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=95.00' (Free Discharge)
└**3=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 4P: EXISTING EASEMENT POND



Summary for Pond 5P: Detention System

Inflow Area = 0.884 ac, 81.36% Impervious, Inflow Depth = 5.13" for 25-YEAR event
Inflow = 4.71 cfs @ 12.09 hrs, Volume= 0.378 af
Outflow = 1.84 cfs @ 12.32 hrs, Volume= 0.378 af, Atten= 61%, Lag= 13.9 min
Primary = 1.75 cfs @ 12.32 hrs, Volume= 0.378 af
Routed to Pond 6P : JFPD0406
Secondary = 0.08 cfs @ 12.32 hrs, Volume= 0.001 af
Routed to Pond 6P : JFPD0406

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 97.21' @ 12.32 hrs Surf.Area= 3,360 sf Storage= 6,910 cf

Plug-Flow detention time= 305.2 min calculated for 0.378 af (100% of inflow)
Center-of-Mass det. time= 305.1 min (1,067.0 - 761.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	92.88'	0 cf	**48.00'W x 70.00'L x 5.00'H Field A** 16,800 cf Overall - 7,012 cf Embedded = 9,788 cf x 0.0% Voids
#2A	93.38'	7,012 cf	**CMP Round 48** x 24 Inside #1 Effective Size= 48.0"W x 48.0"H => 12.57 sf x 20.00'L = 251.3 cf Overall Size= 48.0"W x 48.0"H x 20.00'L Row Length Adjustment= +4.00' x 12.57 sf x 8 rows 46.00' Header x 12.57 sf x 1 = 578.1 cf Inside
		7,012 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Device 5	93.38'	**1.5" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#2	Device 5	96.20'	**3.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 5	95.57'	**6.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	97.17'	**Custom Weir/Orifice, Cv= 2.62 (C= 3.28)** Head (feet) 3.00 3.04 3.08 3.12 3.16 3.20 3.24 3.28 3.32 3.36 3.40 3.44 3.48 3.52 3.56 3.60 3.64 3.68 3.72 3.76 3.80 3.84 3.88 3.92 3.96 4.00 Width (feet) 3.46 3.42 3.37 3.31 3.26 3.20 3.14 3.07 3.01 2.93 2.86 2.78 2.69 2.60 2.50 2.40 2.29 2.17 2.04 1.90 1.74 1.57 1.36 1.12 0.80 0.00
#5	Primary	93.38'	**15.0" Round Culvert** L= 19.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 93.38' / 93.38' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.75 cfs @ 12.32 hrs HW=97.20' (Free Discharge)
└─**5=Culvert** (Passes 1.75 cfs of 8.34 cfs potential flow)
  ├─**1=Orifice/Grate** (Orifice Controls 0.11 cfs @ 9.34 fps)
  ├─**2=Orifice/Grate** (Orifice Controls 0.22 cfs @ 4.51 fps)
  └─**3=Orifice/Grate** (Orifice Controls 1.41 cfs @ 5.66 fps)

Secondary OutFlow Max=0.07 cfs @ 12.32 hrs HW=97.20' (Free Discharge)
└─**4=Custom Weir/Orifice** (Weir Controls 0.07 cfs @ 0.60 fps)

Pond 5P: Detention System - Chamber Wizard Field A

Chamber Model = CMP Round 48 (Round Corrugated Metal Pipe)
Effective Size= 48.0"W x 48.0"H => 12.57 sf x 20.00'L = 251.3 cf
Overall Size= 48.0"W x 48.0"H x 20.00'L
Row Length Adjustment= +4.00' x 12.57 sf x 8 rows

48.0" Wide + 24.0" Spacing = 72.0" C-C Row Spacing

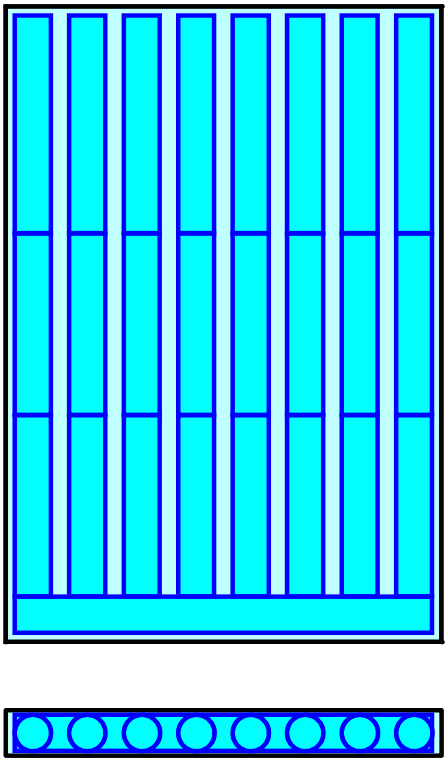
3 Chambers/Row x 20.00' Long +4.00' Row Adjustment +4.00' Header x 1 = 68.00' Row Length +12.0" End Stone x 2 = 70.00' Base Length
8 Rows x 48.0" Wide + 24.0" Spacing x 7 + 12.0" Side Stone x 2 = 48.00' Base Width
6.0" Stone Base + 48.0" Chamber Height + 6.0" Stone Cover = 5.00' Field Height

24 Chambers x 251.3 cf +4.00' Row Adjustment x 12.57 sf x 8 Rows + 46.00' Header x 12.57 sf = 7,012.0 cf Chamber Storage

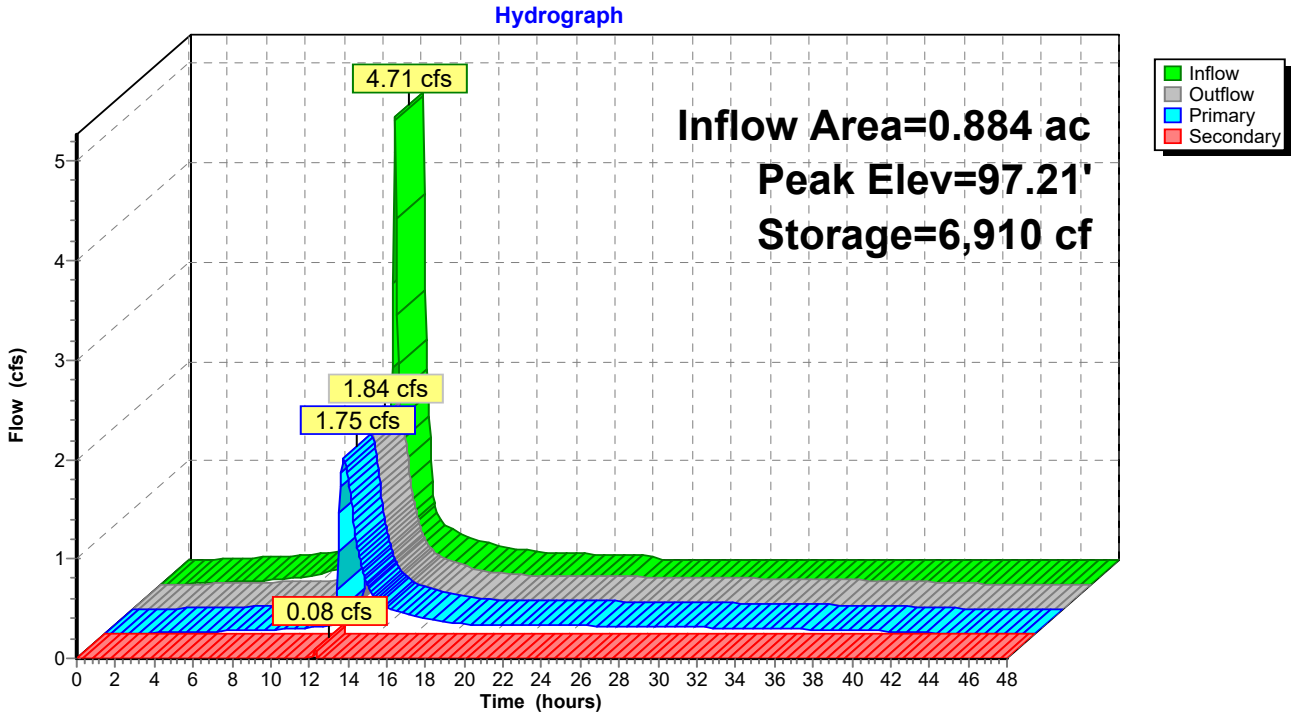
16,800.0 cf Field - 7,012.0 cf Chambers = 9,788.0 cf Stone x 0.0% Voids = 0.0 cf Stone Storage

Chamber Storage = 7,012.0 cf = 0.161 af
Overall Storage Efficiency = 41.7%
Overall System Size = 70.00' x 48.00' x 5.00'

24 Chambers
622.2 cy Field
362.5 cy Stone



Pond 5P: Detention System



Summary for Pond 6P: JFPD0406

Inflow Area = 0.884 ac, 81.36% Impervious, Inflow Depth > 5.13" for 25-YEAR event
Inflow = 1.84 cfs @ 12.32 hrs, Volume= 0.378 af
Outflow = 1.84 cfs @ 12.32 hrs, Volume= 0.378 af, Atten= 0%, Lag= 0.0 min
Primary = 0.45 cfs @ 12.05 hrs, Volume= 0.290 af
Routed to Pond 2P : EXISTING CB2
Secondary = 1.39 cfs @ 12.32 hrs, Volume= 0.088 af
Routed to Pond 2P : EXISTING CB2

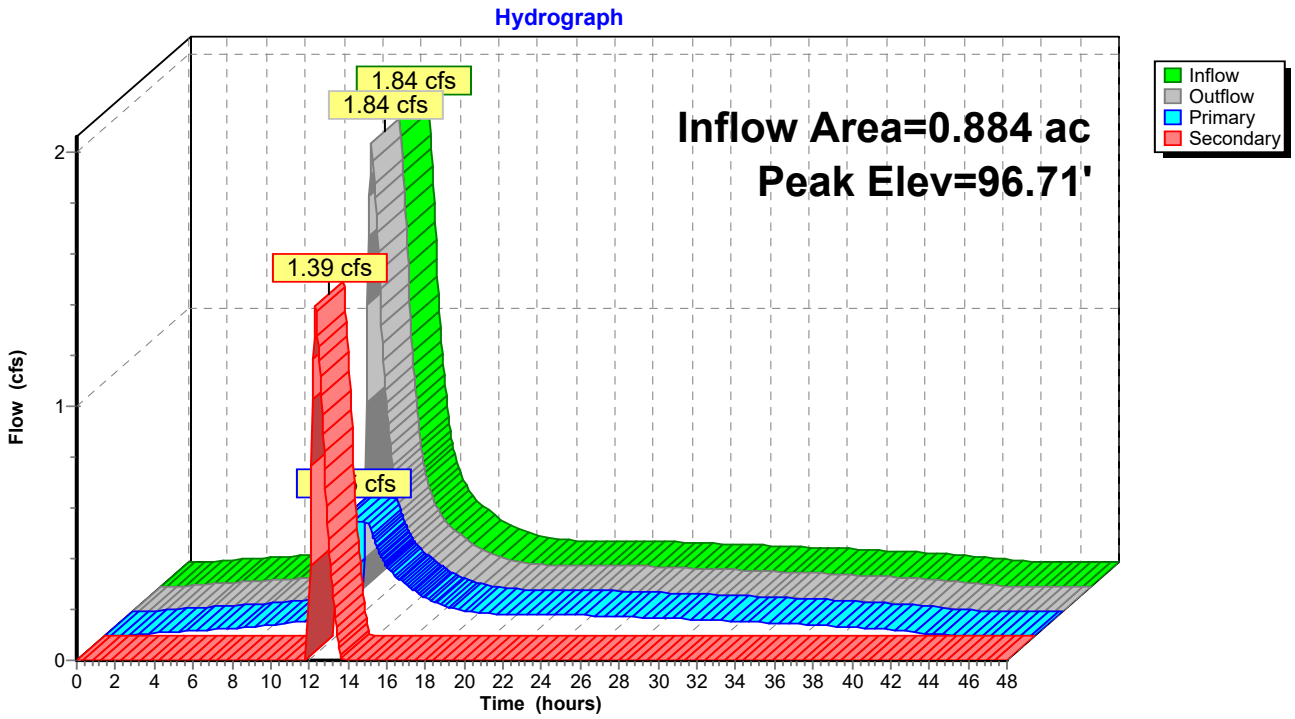
Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 96.71' @ 12.32 hrs

Device	Routing	Invert	Outlet Devices
#1	Device 3	94.90'	**JF CSV File** Head (feet) 0.00 0.08 0.17 0.25 0.33 0.42 0.50 0.58 0.67 0.75 0.83 0.92 1.00 1.08 1.17 1.25 1.33 1.42 1.50 Disch. (cfs) 0.000 0.005 0.010 0.015 0.020 0.025 0.030 0.064 0.099 0.134 0.168 0.203 0.238 0.272 0.307 0.342 0.376 0.411 0.446
#2	Secondary	96.40'	**2.8' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
#3	Primary	94.90'	**15.0" Round Culvert** L= 145.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 94.90' / 94.15' S= 0.0052 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.45 cfs @ 12.05 hrs HW=96.53' (Free Discharge)
└**3=Culvert** (Passes 0.45 cfs of 4.98 cfs potential flow)
└**1=JF CSV File** (Custom Controls 0.45 cfs)

Secondary OutFlow Max=1.38 cfs @ 12.32 hrs HW=96.71' (Free Discharge)
└**2=Broad-Crested Rectangular Weir** (Weir Controls 1.38 cfs @ 1.59 fps)

Pond 6P: JFPD0406



Summary for Pond 7P: (new Pond)

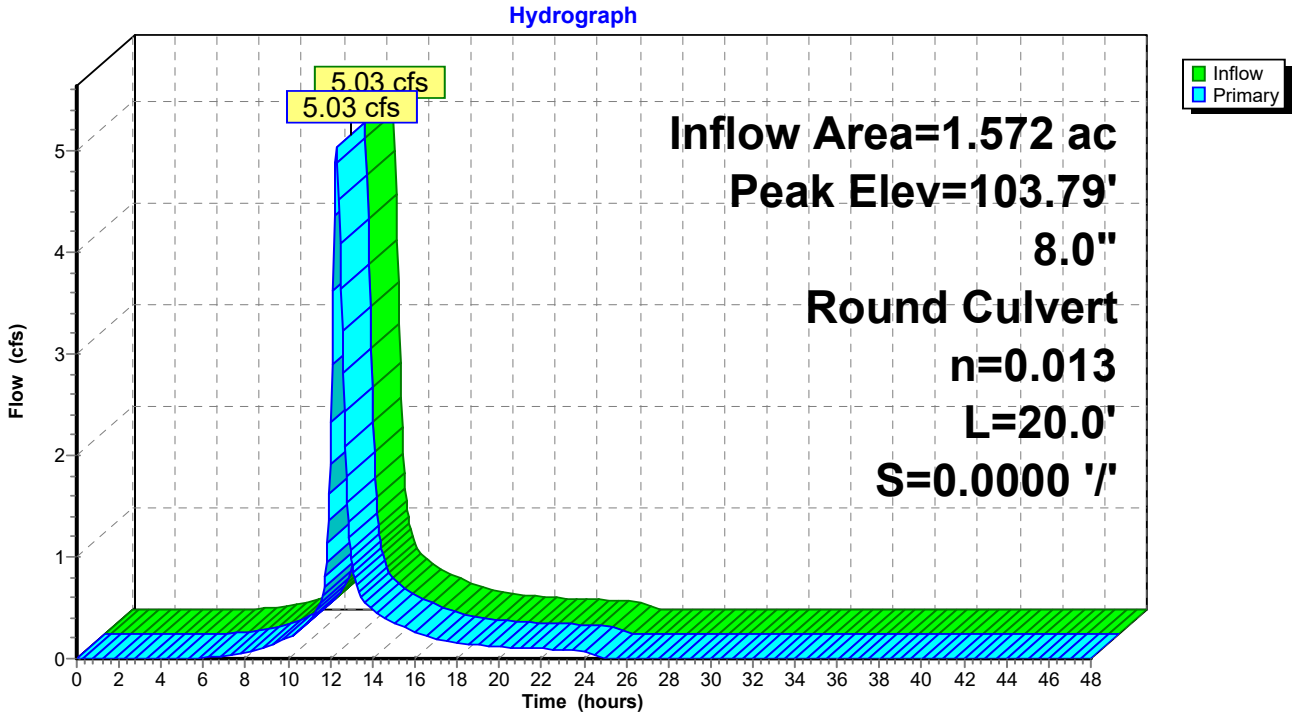
Inflow Area = 1.572 ac, 38.49% Impervious, Inflow Depth = 4.21" for 25-YEAR event
Inflow = 5.03 cfs @ 12.30 hrs, Volume= 0.551 af
Outflow = 5.03 cfs @ 12.30 hrs, Volume= 0.551 af, Atten= 0%, Lag= 0.0 min
Primary = 5.03 cfs @ 12.30 hrs, Volume= 0.551 af
Routed to Pond 2P : EXISTING CB2

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.05 hrs
Peak Elev= 103.79' @ 12.30 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	94.50'	**8.0" Round Culvert** L= 20.0' Ke= 0.500 Inlet / Outlet Invert= 94.50' / 94.50' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 0.35 sf

Primary OutFlow Max=5.03 cfs @ 12.30 hrs HW=103.79' (Free Discharge)
1=Culvert (Inlet Controls 5.03 cfs @ 14.41 fps)

Pond 7P: (new Pond)



EROSION AND SEDIMENTATION CONTROL PLAN

A. Narrative. The proposed construction will require the implementation of temporary and permanent erosion control measures. These measures will be implemented in accordance with the Maine Erosion and Sediment Control Best Management Practices (BMPs) Manual, prior to removal of any on-site vegetation or disturbance of any on-site soil. The general erosion and sediment control specifications and details, as provided within this section, are intended to describe measures to be used by contractors working on the site to maintain compliance with the standards established in the BMPs. These standards include information on temporary and permanent erosion control measures, rates of seeding and applied mulch, slope and soil stabilization, effect of construction schedule, and other details.

   The proposed location and use of erosion control measures on-site are shown on the Proposed Site Plan provided with this application. There are no known existing erosion control concerns with the site. Implementation of proper erosion control measures will be required by site conditions to confine sediment and debris within the limit of soil disturbance. Proper use and maintenance of erosion control measures will provide protection against off-site transport of sediment and discharge of sediment to undisturbed areas of the development.

B. Completion Date. Fall 2026

C. Site Features. For site features please refer to the enclosed Civil Plan Set.

D. Temporary and Permanent Erosion Control Measures. For temporary and permanent erosion control measures please refer to the enclosed Civil Plan Set.

E. Limits of Disturbed Areas. Areas of disturbance will be limited to the proposed work shown on the enclosed Civil Plan Set.

F. Design Drawings and Specifications. For design drawings please refer to the Civil Plan Set and Architectural Plan Set. The following specifications will be utilized by the site contractor during construction of the project.

EROSION CONTROL PLAN SPECIFICATIONS

A. General

1. All work and measures will be as per the Maine Erosion and Sediment Control BMPs manual.

2. The following specifications will be employed.

B. Prior to Construction

1. Prior to beginning construction, erosion and sedimentation controls shall be in place.

C. During Construction

1. Exposed soil surfaces will be treated immediately if they are to remain ungraded more than 30 days, or if they are at final grades.

2. Drainage ways, either designed or incidental, will have filter barriers installed.

3. All work and materials necessary to minimize sediment loss from the site will be provided.

4. All erosion control measures will be inspected and repaired after every rainfall greater than ½-inch and at least daily during rain events lasting longer than 24 hours.

D. Post Construction

1. Erosion control measures will be maintained until permanent soil stabilization has been achieved with a growth of vegetation greater than 90%.

PART 1 - GENERAL

1.01 Description of Work

A. Provide and maintain devices to control erosion, siltation, sedimentation, and dust that occur during construction operations. Undertake every reasonable precaution and do whatever is necessary to avoid erosion of soil.

B. Provide measures to control dust caused whether on or off the project site.

C. Deficiencies in erosion control measures indicated by failures or erosion will be corrected as soon as reasonably possible by providing additional measures or different techniques to correct the situation and prevent subsequent erosion when applicable.

D. Exposure of soils on embankments, excavations, and graded areas will be kept as short as possible. Initiate seeding and other erosion control practices as soon as reasonably possible.

1.02 Quality Assurance

A. Conform to all requirements of applicable Federal, State and local permits and conform to the recommendations of the Maine Erosion and Sediment Control BMPs (see Part B below) whether the measures are specifically noted herein, or not.

B. Standards: Maine Erosion and Sediment Control BMPs Manual, hereinafter called Erosion Control Handbook.

PART 2 - PRODUCTS

2.01 Materials: Use the following materials to implement and construct erosion control measures.

A. Mulch: Type and use as specified by the Erosion Control Handbook
   1. Long fibered hay or straw in dry condition and which are relatively free of weeds and foreign matter detrimental to plant life.

   2. Mulch netting: Plastic or nylon mesh netting with approximate openings of ¼-

inch to 1-inch.

B. Permanent Seeding: Cut and fill slopes and disturbed areas will be stabilized as follows:

1. Four inches of loam will be spread over disturbed areas and smoothed to a uniform surface.

2. In lieu of tests, agricultural limestone will be spread at the rate of three tons per acre. 10-20-20 fertilizer will follow at the rate of 800 lbs. per acre. These two soil additives will be incorporated into the soil prior to seeding.

3. Following seed bed preparation, back slopes will be seeded to a mixture of 83% creeping red fescue, and 17% rye grass. Seeding rate is 3 lbs. per 1,000 square feet. Lawn quality sod may be substituted for seed.

4. Hay mulch at the rate of 90 lbs. per 1,000 square feet of a hydro-application of asphalt, wood, or paper fiber will be applied following seeding. A suitable binder such as curason or terrtack will be used on hay mulch for wind control.

5. If final seeding of the disturbed areas is not completed by September 15th of the year of the construction, then on that date these areas will be graded and a cover crop of rye at the rate of 112 lbs/acre or 3 lbs/1,000 sq. ft. will be applied. The rye seeding will be preceded by an application of 3 tons of lime and 800 lbs. of 10-20-20 fertilizer or its equivalent and covered by a layer of jute mat to aide in stabilization.

PART 3 - EXECUTION

3.01 Construction

A. Mulch:

1. Undertake after each area has been properly prepared.

2. When seed for erosion control is sown prior to placing the mulch, place mulch on the seeded areas within 48 hours after seeding.

3. Blowing chopped mulch will be permitted.

4. Hay mulch should cover the ground enough to shade it, but the mulch should

not be so thick that a person standing cannot see the ground through the mulch.

5. Remove matted mulch or bunches.

B. Temporary Erosion Control Matting (where necessary):

1. Surface Preparation:
   a. Conform to grades for slopes and ditches shown of the drawings.
   b. Finish to a smooth and even condition with all debris, roots, stones, and lumps raked out and removed.
   c. Loosen soil surface to permit bedding of the matting.
   d. Unless otherwise directed, apply seed prior to placement.

2. Installation:
   a. Place strips lengthwise in the direction of the flow of water.
   b. Where strips are laid parallel or meet as in a tee, overlap at least four inches.
   c. Overlap ends at least six inches in a shingle fashion.
   d. The up-slope end of each strip of the matting will be turned down and buried to a depth of not less than six inches with the soil firmly tamped against it.
   e. Build check slots at right angles to the direction of the flow of water. Space so that one check slot or one end occurs within each 50 feet of slope length. Construct by placing a tight fold of the matting at least six inches vertically into the ground and tamp the same as up-slope ends.
   f. Bury edges of matting around the edges of the catch basins and other structures.
   g. Where determined by the Engineers, additional seed will be spread over matting, particularly at those locations disturbed by building the slots. Matting will then be pressed onto the ground with a light lawn roller or by other satisfactory means.
   h. Drive staples vertically into the ground flush with the surface.
   i. On slopes flatter than 4:1, space staples not more than three feet and one row, alternately spaced, down the center.
   j. On grades 4:1 or steeper, place in the same three rows, but spaced two feet apart.
   k. On all overlapping or butting edges, double the number of staples, with the spacing halved; all ends of the matting and all required check slots will likewise have staples spaced every foot.

C. Permanent Seeding:

1. Seed with appropriate seeds and application rates as noted in Section 2.01C.

2. Mulch areas where seeding has been applied. Do not mulch seeded areas where matting will be immediately installed.

D. Topsoil Storage:

1. Topsoil which is stockpiled on the site for use in loam applications will be placed out of natural drainages, in piles that have side slopes of 2:1 to 1.5:1.

2. A trench (depth as required) will be constructed around the base of the pile to prevent eroding soil from washing into drainages.

E. Dust Control: Utilize the application of sprinkled water to reduce the emission of airborne soil particulates from the Project site.

F. Temporary Berms: Construct temporary barriers along the toe of embankments using side drains, as necessary.

G. Temporary Basins: Construct temporary sedimentation basins adequate to avoid siltation of surface water bodies.

H. Other Temporary Measures:

1. Type and use will be as specified in the Erosion Control Handbook.

I. Winter Stabilization Notes

1. At this time, it is not expected that significant soil disturbance will occur during winter months or periods of heavy icing. If construction is performed during these times, the following construction practices will be followed.
   a. All disturbed areas not stabilized with stone or other measures will have approved erosion control matting installed and be dormant seeded.
   b. No frozen soil material or material containing significant snow or ice will be used for fill material.
   c. All material stockpiles will have silt fence and/or hay bales installed downgradient of piles.
   d. Follow general erosion control notes described previously wherever possible and as conditions permit.

3.02 Maintenance

A. Inspect erosion control practices immediately after each rainfall greater than ½-inch and at least daily during rainfall lasting longer than 24 hours or snowmelt for damage. Provide maintenance and make appropriate repairs or replacement.

B. Remove silt from around hay bales when it has reached one foot above grade or prior to expected heavy runoff or siltation.

C. Repair matting if any staples become loosened or raised, or if any matting becomes loose, torn, or undermined, make satisfactory repairs immediately.

3.03 Removal of Temporary Erosion Control

A. Remove temporary materials and devices when permanent soil stabilization has been substantially achieved. For vegetated areas, substantially complete means 95% vegetated cover has been established.

B. Level and grade to the extent required to present a sightly appearance and to prevent any obstruction of the flow of water or any other interference with the operation of or access to the permanent works.

C. Remove unsuitable materials from site and dispose of in a lawful manner.

INSPECTION AND MAINTENANCE

The following Maintenance Plan will be employed for this facility. The Applicant and/or their assigned agent will be responsible for all maintenance. Erosion control measures for this site were designed by:

Jon Whitten Jr., P.E.
Haley Ward, Inc.
12 Mountfort Street
Portland, ME 04101
(207) 989-4824
jwhitten@haleyward.com

A Pre- and Post-Construction Maintenance Plan for the stormwater management system and erosion control measures are included in the following section.

MAINTENANCE PLAN

The MDEP's Stormwater Management for Maine: Best Management Practices (2006), and the MDEP's Chapter 500: Stormwater Management were used as guidelines in the development of this Maintenance Plan. General maintenance requirements are listed below.

A. DURING CONSTRUCTION

The general contractor will be responsible for the inspection and maintenance of all stormwater management system components during construction.

Inspection: Inspection of disturbed and impervious areas, erosion control measures, materials' storage areas that are exposed to precipitation, and locations where vehicles enter or exit the site will be performed at least once a week as well as before and after a storm event, and prior to completing permanent stabilization measures. Inspections shall be conducted by a person with knowledge of erosion and stormwater control, including the standards and conditions in the permit.

Maintenance: All erosion control measures will be kept in effective operating condition until areas are permanently stabilized. If BMPs need to be maintained or modified, additional BMPs are necessary, or other corrective action is needed, implementation will be completed within 7 calendar days and prior to any rainfall event.

Documentation: A log shall be kept summarizing the inspections and any corrective action taken. A copy of the log is provided at the end of this section, and is titled, Construction Inspection Log.

B. POST-CONSTRUCTION

The Owner or their assigns will be responsible for the inspection and maintenance of all stormwater management system components.

Inspection and Corrective Action

1. Vegetated Areas: Inspections and maintenance of vegetated areas will be performed early in the growing season or after significant rainfall to identify any erosion problems. Areas where erosion is evident will be covered with an appropriate lining, or erosive flows will be diverted to an area able to handle the flows. Any bare areas or areas with sparse growth will be replanted.

2. Ditches, Swales, and Culverts: Inspections and maintenance of ditches, culverts, and swales will be performed in the Spring, late Fall, and after rain events greater than 1-inch in depth to remove any obstructions to flow, to remove any accumulated sediments within the structures, and to repair any erosion of channel linings, check inlet protection, or outlet protection. Vegetated ditches and swales must be mowed no more than twice per year and cut no less than 6-inch in height.

3. Inspection: shall be performed by an individual with experience and/or training on the maintenance and functions of these devices.

4. Stormwater Wet Ponds: Maintenance of the wet ponds built for the treatment of stormwater will at a minimum include the items listed below.
    a. Embankment Inspection and Maintenance: A description will be provided of the yearly inspections of the impoundment embankments to identify excessive settlement, slope erosion, internal piping, and downstream swamping. Actions to be taken will be identified if any problems are found. Semi-annual mowing will be done to prevent the growth of woody vegetation on the embankment.
    b. Outlet Inspection and Clean Out: A description will be provided of the semi-annual inspection of the impoundment's outlet control structure to identify broken seals, obstructed orifices, plugged trash racks, and piping along the outlet barrel. Actions to be taken will be identified if any problems are found. A means of removal and disposal of any sediments and debris within the control structure will be provided.
    c. Sediment Removal and Disposal: Occasional removal and disposal of accumulated sediments within the impoundment will be performed as necessary. The clean out frequency ranges from 5-20 years, depending on the sediment load to the pond or basin.

5. Stormwater Filters: Maintenance of the filters built for the treatment of stormwater will at a minimum include the items listed below.
    a. Embankment Inspection and Maintenance: A description will be provided of the yearly inspections of the impoundment embankments to identify excessive settlement, slope erosion, internal piping, and downstream swamping. Actions to be taken will be identified if any problems are found. Semi-annual mowing will be done to prevent the growth of woody vegetation on the embankment.
    b. Outlet Inspection and Clean Out: A description will be provided of the semi-annual inspection of the impoundment's outlet control structure to identify broken seals, obstructed orifices, plugged trash racks, and piping along the outlet barrel. Actions to be taken will be identified if any

problems are found. A means of removal and disposal of any sediments and debris within the control structure will be provided.

c. Soil Filter Replacement: The top several inches of the filter can be replaced with fresh material if water is ponding for more than 72 hours, or the basin can be rototilled, seeded and mulched. Once the filter is mature, adding new material (a 1-inch to 2-inch cover of mature compost) can compensate for subsidence.

6. Documentation: A log will be kept summarizing the inspections, maintenance, and any corrective action taken. A copy of the log is provided at the end of this section, and is titled, BMP Inspection Log.

7. Recertification requirement: Within three months of the expiration of each five-year interval from the date of issuance of the permit, the permittee shall certify the following to the department.

   A. All areas of the project site have been inspected for areas of erosion, and appropriate steps have been taken to permanently stabilize these areas.

   B. All aspects of the stormwater control system have been inspected for damage, wear, and malfunction, and appropriate steps have been taken to repair or replace the facilities.

   C. The erosion and stormwater maintenance plan for the site is being implemented as written, or modifications to the plan have been submitted to and approved by the department, and the maintenance log is being maintained.

HOUSEKEEPING

1. Spill Prevention - During construction, controls will be used to prevent pollutants from being discharged from materials on site, including storage practices to minimize exposure of the materials to stormwater, and appropriate spill prevention, containment, and response planning and implementation.

2. Groundwater Protection - During construction, liquid petroleum products and other hazardous materials with the potential to contaminate groundwater will not be stored or handled in areas of the site draining to an infiltration area. Dikes, berms, sumps, and other forms of secondary containment that prevent discharge to groundwater may be used to isolate portions of the site for the purposes of storage and handling of these materials.

3. Fugitive Sediment and Dust - Actions will be taken to ensure that activities do not result in noticeable erosion of soils or fugitive dust emissions during or after construction. Oil will not be used for dust control. Water will be used for dust control during construction.

   Operations during wet months that cause mud to be tracked off the site onto public roads will provide sweeping of the road areas at least once per week and prior to significant storm events.

4. Debris and Other Materials - Litter, construction debris, and chemicals exposed to stormwater will be prevented from becoming a pollutant source. The nature of this development will not cause problems related to debris and other materials.

5. Trench or Foundation De-Watering - If de-watering is necessary, the collected water will be removed from the ponded area and spread through natural wooded buffers or discharged into a construction sedimentation basin. The water will not be allowed to flow over disturbed areas to the site.

PEACHTREE ACQUISITIONS, LLC
CONSTRUCTION INSPECTION LOG

Inspection Date	Inspector (Name and Qualifications)	Major Observations	Work Performed

Notes

1) Major Observations include the operation and maintenance of erosion and sedimentation controls, materials storage areas, and vehicle access points to the parcel. Major Observations must include BMPs that need maintenance, BMPs that failed to operate as designed or proved inadequate for a particular location, and locations(s) where additional BMPs are needed. For each BMP requiring maintenance, BMP needing replacement, and location needing additional BMPs, note in the log the corrective action taken and when it was taken.
2) Work Performed will include a description of the corrective action taken, the date the corrective action was taken, and the name and qualifications of the person taking the corrective actions
3) The log must be made accessible to MDEP staff and a copy must be provided upon request.
4) The permittee shall retain a copy of the log for a period of at least three years from the completion of permanent stabilization.

PEACHTREE ACQUISITIONS, LLC
BMP INSPECTION LOG

Date	Inspector (Name and Qualifications)	ID Number	BMP Structure	Work Performed	Comments

Notes

1) If a maintenance task requires the clean-out of any sediments or debris, indicate where the sediment and debris was disposed after removal.
2) BMP structures shall be numbered sequentially and located on attached site map.
3) The log must be made accessible to MDEP staff and a copy must be provided upon request.
4) The permittee shall retain a copy of the log for a period of at least five years from the completion of permanent stabilization.

INSPECTION AND MAINTENANCE PLAN FOR STORMWATER MANAGEMENT STRUCTURES (BMPS)		
	INSPECTION SCHEDULE	**CORRECTIVE ACTIONS**
VEGETATED AREAS	Annually early spring and after heavy rains	Inspect all slopes and embankments and replant areas of bare soil or with sparse growth
		Armor rill erosion areas with riprap or divert the runoff to a stable area
		Inspect and repair down-slope of all spreaders and turn-outs for erosion
		Mow vegetation as specified for the area
DITCHES, SWALES AND OPEN STORMWATER CHANNELS	Annually spring and late fall and after heavy rains	Remove obstructions, sediments or debris from ditches, swales and other open channels
		Repair any erosion of the ditch lining
		Mow vegetated ditches
		Remove woody vegetation growing through riprap
		Repair any slumping side slopes
		Repair riprap where underlying filter fabric or gravel is showing or if stones have dislodged
CULVERTS	Spring and late fall and after heavy rains	Remove accumulated sediments and debris at the inlet, outlet, or within the conduit
		Remove any obstruction to flow
		Repair any erosion damage at the culvert's inlet and outlet
CATCHBASINS	Annually in the spring	Remove sediments and debris from the bottom of the basin and inlet grates
		Remove floating debris and oils (using oil absorptive pads) from any trap
ROADWAYS AND PARKING AREAS	Annually in the spring or as needed	Clear and remove accumulated winter sand in parking lots and along roadways
		Sweep pavement to remove sediment
		Grade road shoulders and remove accumulated winter sand
		Grade gravel roads and gravel shoulders
		Clean-out the sediment within water bars or open-top culverts
		Ensure that stormwater runoff is not impeded by false ditches of sediment in the shoulder
RESOURCE AND TREATEMENT BUFFERS	Annually in the spring	Inspect buffers for evidence of erosion, concentrated flow, or encroachment by development
		Manage the buffer's vegetation with the requirements in any deed restrictions
		Repair any sign of erosion within a buffer
		Inspect and repair down-slope of all spreaders and turn-outs for erosion
		Install more level spreaders, or ditch turn-outs if needed for a better distribution of flow
		Clean-out any accumulation of sediment within the spreader bays or turnout pools
		Mow non-wooded buffers no shorter than six inches and less than three times per year
WETPONDS AND DETENTION BASINS	Annually in fall and after heavy rains	Inspect the embankments for settlement, slope erosion, piping, and slumping
		Mow the embankment to control woody vegetation
		Inspect the outlet structure for broken seals, obstructed orifices, and plugged trash racks
		Remove and dispose of sediments and debris within the control structure
		Repair any damage to trash racks or debris guards
		Replace any dislodged stone in riprap spillways
		Remove and dispose of accumulated sediments within the impoundment and forebay
FILTRATION AND INFILTRATION BASINS	Annually in the spring and late fall	Clean the basin of debris, sediment and hydrocarbons
		Provide for the removal and disposal of accumulated sediments within the basin
		Renew the basin media if it fails to drain within 72 hours after a one inch rainfall event
		Till, seed and mulch the basin if vegetation is sparse
		Repair riprap where underlying filter fabric or gravel is showing or where stones have dislodged
PROPRIETARY DEVICES	As specified by manufacturer	Contract with a third-party for inspection and maintenance
		Follow the manufacturer's plan for cleaning of devices
OTHER PRACTICES	As specified for devices	Contact the department for appropriate inspection and maintenance requirements for other drainage control and runoff treatment measures.

CONSTRUCTION MANAGEMENT PLAN

4-STORY SELF-STORAGE UNIT BUILDING

Project Address: 97 Warren Avenue Portland, Maine, 04103	Applicant: Peachtree Acquisitions LLC Attn: Jack Martinson 7119 31st Avenue N. Minneapolis, MN 55247
Prepared by: Haley Ward, Inc 12 Mountfort Street Portland, Maine 04101	Construction Manager: TBD

Project Description

The project proposes the construction of a new commercial 4-story self-storage unit building which will include associated parking lot area as well as underground stormwater treatment and temporary detention features to support the use of the building.

The Applicant and General Contractor (GC), as well as any subcontractors, will work together with the City of Portland to minimize any project impact and will be accountable for public safety. The GC will continue to be responsible for enforcing compliance with 1) all contract plans and specifications within their scope of work, and 2) all site working conditions and safety regulations, the duration of their work as well as reviewing all permits. The GC will create a Construction Management Plan for actual methods and processes to be used during construction.

The following outline was created in compliance with the City of Portland's Construction Management Plan General Template and will be used by the GC during construction, unless further modified by the GC and approved by the City.

1. **Construction Management Principles**
   The following narrative summarizes the construction management principles identified by the Applicant and Contractor to reduce the impacts from the construction of 97 Warren Avenue, such as noise, vibrations, ground movement, truck traffic, and other construction related factors to the surrounding building and communities.

2. **Development Review of Construction Management Plan**
   Logistics and safety programs shall be submitted at or prior to the preconstruction meeting by the GC with all pertinent information required by the Maine Department of Transportation's Traffic Control Plan Standard Specification.

3. **Performance Guarantees, Inspection Fees, Preconstruction Meeting, and Permits**
   The Applicant and Contractor will comply with all the necessary City of Portland permits contained in Section 14-530 and 14-532 prior to scheduling a preconstruction meeting. Performance guarantees and inspection fees will be paid at the time of the application.

4. **Street Opening and Street Occupancy Permits:**
   All required permits shall be obtained through the Department of public works and requests shall conform with the approved construction management plan.

5. **Blasting:**
   Although not anticipated but if blasting is required, it will comply with all measures of Articles VIII. Regulations of Explosives in the Land Use Code and Section 3.7 in the City of Portland's Technical Manual.

6. **Building Code:**
   Best practice will be employed, as applicable, of Chapter 33 Safeguards During Construction, from the 2009 International Building Code.

7. **Construction Administration and Communication**
   The Contractor will work closely with adjacent abutters, businesses and all parties informed, as far in advance as possible, of scheduled work, particularly work anticipated to cause significant noise, vibrations, or dust. Contractor contact information and subcontractor information shall be posted on a sign on the construction fence along 97 Warren Avenue frontage. Additional signage necessary for communication shall be provided but will be temporary and removed at project completion. The contact information of the project contractor is:

CONTACT PERSON (TBD):

Name of person

Company name

(000).000.0000

8. Construction Schedule

1. The contractor shall submit a schedule for the construction project, including any Phasing, prior to construction.
2. Hours of Construction: Construction may occur during the daytime hours as defined in Section 17-18 of the City Code (Construction Activities) and Section 25-129 of the City Code (Noise, dust and debris).
3. Extended Hours or Night Work: Pursuant to Section 17-18, this section does not apply to emergency utility work or "Situations where the public works authority or the office of building inspections determines that the construction activity is of a unique character which cannot reasonably be completed or performed during the permitted hours and which is not of a recurring nature, provided that prior to engaging in such activity the contractor or his representatives give notice of the time and scope of such proposed activity, the notice to be given in a manner approved by the public works authority."
4. Material Deliveries: Delivery of materials shall take place during the Hours of Construction and shall be stored on the 97 Warren Avenue property as noted in the Construction plan.

9. Security & Public Safety

1. The contractor shall provide the temporary barriers and access gates (with Knox locking devices) with the intent of separating pedestrian and vehicle circulation from the construction site.
2. Structures undergoing construction, alteration, or demolition operations, including those in underground locations, shall comply with NFPA 1 Chapter16. Safeguarding Construction, Alteration, and Demolition Operations.
3. Fire Safety Program. An overall construction of demolition fire safety program shall be developed. Essential items to be emphasized include the following:
    - Good Housekeeping
    - On-site security
    - Installation of new fire protection systems as construction progresses

- Preservation of existing systems during demolition
- Organization and training of an on-site fire brigade
- Development of a pre-fire plan with the local fire department
- Rapid communication
- Consideration of special hazards resulting from previous occupancies
- Protection of existing structures and equipment from exposure fires resulting from construction, alteration, and demolition operations

4. Blasting, if required, shall comply with all measures of Article VIII. Regulation of Explosives in the Land Use Code and Section 3.7 Standards for Blasting and Regulation of Explosives in Portland's Technical Manual.
5. Any temporary security lighting fixtures shall feature full cutoff and shown on the construction management plan.

10. Construction Permitting and Traffic Control Plans

1. **Construction Activity in Public Streets:**
   Construction activity in the public right-of-way shall comply with Chapter 25 Article VII of the City Code of Ordinances. At no time will it be permissible for construction activities including delivery vehicles to close or block streets or affect public safety access without prior notice and approval of the Department of Public Works.
2. **Sewer and Stormwater:**
   Sewer and stormwater connections shall comply with Chapters 24 and 32 of the City Code of Ordinance. Required permits for new connections and/or abandonment of existing connections are available through the Street Opening Clerk at the Department of Public Works. Rules and Regulations for these utility systems are available through the City Engineer's office of the Department of Public Works and in Section II of the Technical Manual. This will apply to the new connections within 97 Warren Avenue.
3. **Traffic control plans:**
   Construction activity that impacts the existing public street system shall be controlled to protect the safety of the construction workers and all modes of traveling public. The contractor shall submit a satisfactory "Maintenance of Traffic" (MOT) plan prior to any site plan, subdivision or street opening approval. Traffic will be channelized utilizing drums and cones. Proper signage will be installed prior to the through work zone. Alternating traffic will be controlled with flaggers. Trenches will be patched with pavement daily.
   The MOT plan shall provide for the safe passage of the public through or along the construction work zone. On a case-to-case basis, It may be permissible to close a portion of Warren Avenue during utility connections and/or detour a mode of traffic

when necessary for safety. All requests shall be subject to City approval. MOT plans shall employ the appropriate techniques and devices as they are called for in the latest edition of the Manual on Uniform Traffic Control Devices (MUTCD). In addition:

- Construction speed signing may be used as needed to slow traffic.
- Traffic Control signs shall not be placed where they would create any obstructions to bicycles or pedestrians.
- Flaggers may be required in some situations.
- Police details may be required at the Warren Avenue intersection and may be requested by the City's transportation engineer or their designee.

All existing modes of travel in the work zone area shall be accommodated if impacted by the activity. The safe passage of pedestrians, bicyclists, transit providers, and motorists are of equal importance when planning and laying out the work zone; no pre-existing travel mode may be eliminated without the express approval of the Department of Public Works. The MOT should also address on-street parking impacts, including deliveries and parking for adjoining businesses and property owners, analysis of roadway capacity or diversion capacity if street closure or change to roadway capacity is required, and coordination with other on-going or future construction or utility projects in the vicinity.

- Traffic control bicycle and pedestrian facilities or routes through work zones shall be maintained until the bicycle and pedestrian facilities or routes are ready for safe operation. Traffic control will not be removed to allow auto travel at the expense of bicycles and pedestrians.
- Barrier systems utilized to separate the construction activity from the public street and /or sidewalk shall not inhibit sight distances, particularly for visibility of pedestrians and bicyclists.
- ADA compliance shall be maintained

Use of public parking spaces or the blockage of any portion of sidewalk for the purpose of construction activity shall require an occupancy permit and appropriate fee as assessed by the Department of Public Works.

11. Site Management and Controls

The final Construction Management Plan will address maintaining the site in a safe condition and will include the following:

1. An enclosed waste dumpster shall be located on site for the disposal of trash and debris.
2. Street cleaning and sweeping shall be followed

3. Dust controls- The construction shall comply with Portland's requirements under Section 25-129 on Noise, dust and debris.
4. Noise shall be controlled and comply with Portland's requirements under Section 17-18 of the City Code and Section 25-129 on Noise, dust and debris.
5. Rodent Control will be provided, if applicable, by a professional exterminator and consistent with Chapter 22 of the City Code.
6. Snow Removal: Pursuant to Section 25-173 Contractors to ensure a safe means of travel within the work zone.
    1) Snow/ice removal or commence automatically from 1" of snow and up or Ice
    2) Remove snow as needed within the work zone, including parking spaces and not block any driveways or site lines by the piles of snow.
    3) Clear all walks and ramps within the work zone
    4) Sand or Salt as needed
    5) Clear all basins or drainage to help snow melt
    6) This would include Monday-Friday Sat/Sunday/Holidays

12. Erosion Control and Preservation of Trees

1. The Contractor shall install all erosion and sedimentation controls as depicted on the approved erosion and sedimentation control plan prior to the pre-construction meeting for inspection by the City. The Contractor shall regularly inspect the control measures, no less than weekly and after significant storm events, and maintain any installed temporary or permanent stormwater in working order. The Contractor shall document all inspection activities and corrective actions and be prepared to provide these documents for inspection by the City, Maine Department of Environmental Protection (MDEP) or the U.S. Environmental Protection Agency (EPA) upon request.
2. The Contractor shall maintain all tree and landscaping preservation measures as depicted on the Landscape Plan within the area of construction.
3. The storage of materials shall be identified and avoid being located under/near trees.

13. Construction Staging and Deliveries

1. The Contractor shall submit a plan with locations depicted for the location of material staging areas, the location of on-site temporary construction trailers, the location of on-site truck delivery holding areas, the location of on-site truck washing stations, masonry mixing stations, the general location of the construction security fence and the general location of temporary construction dumpsters. This plan shall be submitted at or prior to the pre-construction meeting. Any open storage areas shall be shown on the plan.

2. Delivery Truck Holding Areas On-Site: The delivery holding area shall be shown on plans and not be blocked during construction. The majority of materials delivered to the site will be scheduled such that they are able to be off-loaded immediately. On days when the construction activities require multiple truck deliveries, these deliveries will be carefully scheduled so that there is always adequate on-site area for the holding of trucks until they can be unloaded. Once at the site all vehicles will be brought within the fence line and will make every attempt to avoid queuing on public streets
3. Delivery Truck Holding Areas Off-Site: If, for any reason, on-site holding of trucks is not feasible, an off-site location shall be designated and shown on the submitted plan

14. Parking During Construction

1. Adequate parking spaces for construction workers shall be provided on site or arrangements for off-street parking at an off-site location shall be provided.
2. There shall be no existing facilities in operation during construction since it is an empty land lot therefore no other additional parking shall be identified
3. Truck Routes and Volumes, the contractor's construction management plan shall provide the designated truck routes and expected truck volumes.

15. Dewatering Plans

1. A basic dewatering plan for any construction work is required and shall be submitted by the Contractor. The plan must cover construction sites where groundwater is not expected but the impact of rainwater may require dewatering. The plan must include operating procedures, equipment to be used, including filters, erosion and sediment control measures, or other methods of removing sediment from approved discharges.
2. For construction work that will require frequent dewatering of groundwater from site, a dewatering plan must be prepared by the Contractor and approved by the Department of Public Works. Groundwater and/or soil testing may be required to determine course of action if treatment is necessary. Approval for all discharges to City infrastructure is required. The proposed plan must address the following:
    - Project duration, discharge location, storage equipment on-site, dewatering schematic, and emergency contact.
    - General requirements include trained staff on-site for all approve discharges and required site log for documentation of all discharges.
    - Storage and/or treatment process should include proper settling time and maintain proper use of filtering medium as required.

- Contingency/maintenance plan for all dewatering equipment devices and filtration mediums.

Any water that is removed from an excavation must be pumped from a perforated device buried in crush stone prior discharge and/or prior to storage and treatment. There will be no discharge allowed during precipitation events.

16. Special Measures as Necessary

No special measures are necessary for the proposed construction.

City of Portland ME: Low-Impact Design Requirements				
Owner / applicant name:	Peachtree Acquisitions, LLC			
Representative name:	Haley Ward, Inc. - Jon Whitten, Jr., PE			
Project address:	97 Warren Ave.			
Project CBL:	295 F001001			
Application ID (if known):	PL-003487-2025			
	Maximum Points	**How to Apply**	**Points Awarded**	**LID Standard / Approach**
CORE METHODS: Wetlands, Streams, & Drainage				
Protect natural drainage paths	Required			
Shoreland Zoning	Required			
Meeting DEP and ACOE standards for stream crossings	Required			
Protect wetlands	**12**	Select one option	**12**	Select a site that does not have wetlands or vernal pools = 12pts
				Project maintains a 50' set-back / no-disturb buffer to all wetlands = 10pts
				Project maintains a 25' set-back / no-disturb buffer to all wetlands = 7pts
				Project does not place structures in wetlands and avoids wetlands impacts from construction and stormwater discharges = 5pts
				Project replicates impacted wetlands elsewhere on site or within watershed = 3pt
				Project pays wetlands impact fee = 0pts
Permanently protect stream (intermittent and perennial) and riparian buffers *(exclusive of approved stream crossings; must include a no-disturb zone with markers installed and deed restriction recorded at registry of deeds)*	**12**	Select one option	**12**	Select a site with no streams = 12pts
				Permanently protect all 100ft shoreline buffers = 10pts
				Permanently protect all 75ft shoreline buffers = 7pts
				Permanently protect all 50ft shoreline buffers (intermittent streams) = 6pts
				Permanently protect all 50ft shoreline buffers (required minimum for perennial streams) = 5pts
				Permanently protect all 25ft shoreline buffers (required minimum for intermittent streams) = 5pts
Stream crossings	**12**	Select one option	**12**	Select a site with no streams = 12pts
				Avoid any stream crossings = 10pts
				All stream crossings use a bridge or open bottom culvert structure sized at 1.2 times the bank full width of the stream = 10pts
				All stream crossings use Maine Stream Smart Principles to preserve natural pre-development drainage pathways = 6pts
CORE METHODS: Natural Areas & Habitat				
Preserve threatened or endangered species habitat	Required (Beginning with Habitat Maps at a minimum)			
Protect 30% of trees over 10" DBH	Required (Tree survey required)			
Protect intact, contiguous forests and native trees over 10" DBH	**8**	Select one option		All development and land disturbance outside of existing wooded/forested areas (no site clearing in prior 10 years) = 8pts
				Protect 50% of trees over 10" DBH = 6pts
				Protect 40% of trees over 10" DBH = 4pt

CORE METHODS: Soils & Slopes				
USDA Web Soil Survey	Required (provide details how soil limitations will be mitigated)			
Avoid steep slope disturbance	5	Select one option	5	Selecting a site without slopes 15% or greater = 5pts
				Maintain >20' undisturbed vegetated buffer to all slopes 15% or greater = 3pts
				Maintain 10-20' undisturbed vegetated buffer to all slopes 15% or greater = 2pts
				Maintain 1-10' undisturbed vegetated buffer to all slopes 15% or greater = 1pt
				Disturbance of any slope 15% or greater = 0pts
Protect soils	5	Select one option		Redevelopment sites = 5pts
				Detailed, site-specific soil survey; preparation of a Soil Management and Protection Plan; protect highly permeable soils = 5pts
Limit site disturbance and earthwork	8	Select one option		Redevelopment limits disturbance to existing footprint = 8pts
				New development disturbs less than 50% of existing undeveloped site area = 8pts
				New development disturbs less than 75% of existing undeveloped site area = 6pts
			0	New development disturbs greater than 75% of existing undeveloped site area = 0pts
Soil preparation & minimizing compaction	6	Select all options that apply	3	Till soils to a depth of at least 10" prior to revegetation = 3pts
			3	Organic matter amendments as needed based on soil tests = 3pts
CORE METHODS: Landscaping				
Low-Impact Landscaping	6	Select all options that apply		Redevelopment sites reduce lawn area by 50%, provided no increase in impervious area (lawn becomes landscaping) = 2pt
				New development results in >50% non-impervious developed area is landscaping = 2pt
			2	Use only native vegetation for landscaped areas = 2pts
			2	Using only locally-sourced landscape materials = 2pt
CORE METHODS: Impervious Area & SW Management				
Meeting City's stormwater management standards	Required			
Reduce impervious and increase permeable surfaces	10	Select all options that apply, up to a maximum of 10 points		50% or more of proposed hard surfaces are permeable (porous pavers, permeable concrete, porous asphalt) = 6pts
			4	Minimize parking impervious area by using only the minimum required number of parking spaces, the minimum required parking lot dimensions, maximizing compact spaces and utilizing low-turnover standard parking space width reductions = 4pt
				25% or more of proposed hard surfaces are permeable (porous pavers, permeable concrete, porous asphalt) = 3pts
				Minimize roadway impervious area by developing roadways and driveways at the minimum width and using minimum number of curb cuts = 2pt
				Reducing the number of driveways by using a shared driveway design = 2pt
				Providing transportation alternatives (such as bike share, car share, or similar) = 2pt
Use GI / natural stormwater treatment systems	12	Select all options that apply		Treatment requirements and conveyance achieved through vegetated systems = 6pts
			3	No more than 1-acre of drainage per treatment system = 3pts
				Increase time of concentration on site (1" 25 year storm event) = 3pts
Limit / eliminate salt use	4	Select one option		Detailed winter maintenance agreement, with annual reporting requirement, limiting chloride use (required in UIS watersheds) = 4pts

Bonus Points				
Bonus points are offered for strategies that may go above and beyond typical approaches; may offer particularly innovative site design or engineering ; or may help achieve the larger goal of low-impact development on a regional scale.	10			Utilizing structured parking = 10pts
	10			Utilizing a green roof for at least 50% of a newly developed or redeveloped building roof = 10pts
	10			Restoration of previously disturbed natural resources (minimum 500 square feet of restoration) = 10pts
	10		10	BMPs designed for known water quality impairment within watershed = 10pts
	10			Connecting to City sewer from a site >200 ft from existing City infrastructure = 10pts
	6		6	Detention of 1.5 times the required volume = 6pts
	6		6	Treatment for 1.5 times the required water quality volume = 6pts
	6			Innovative LID site design and/or stormwater improvement - 6pts
	10			Establishing a Traffic Demand Management plan for projects under 50,000ft = 10pts
	Total Possible Points **178**		**Total Points Awarded** **80**	**Minimum points required for approval of LID strategies and techniques** **80**

December 4, 2025

Portland Water District
225 Douglass St.
P.O. Box 3553
Portland, ME 04104-3553

Re: Ability to Serve Request | Water Service Flows for New 4-story self-storage-unit building at 97 Warren Avenue | Portland, ME

Dear MEANS Division/ Portland Water District,

Haley Ward, Inc., (Haley Ward) as part of a design team, has been retained to prepare plans and permit applications for a proposed self-storage development to be located at 97 Warren Avenue in Portland. The site is currently an undeveloped forested lot with access to Warren Avenue near U.S Route 302. Development in the site vicinity includes commercial properties such as businesses, as well as some residential properties in the rear property line. The project proposes the construction of a 4-story self-storage building containing 160 units on the 1st floor and 2nd, 3rd and 4th floors containing 473 units, along with associated parking and utility connections.

Based on the "Warren Avenue-Forest Avenue to Bishop Street Sewer Separation Project" as-built drawings approved in 2010 and provided to us by the City of Portland, there is a 20" watermain located on the south side of Warren Ave. The approximate location of existing utilities is shown on our Civil Plan Set. According to the project architect, Onyx Creative, the expected peak demand for the building will be 27 Gallons Per Minute (GPM) and therefore we are proposing a 1 ½ -inch domestic water service and a 4-inch fire service for the new building.

As seen in the enclosed proposed Utility Plan, the design proposes running the new services perpendicular to the building, across Warren Ave. and tying into the existing 20" water main. The proposed services cross existing and proposed stormwater, sewer, gas, and electrical/communications utility systems. It appears that the proposed crossings will be able to maintain minimum separations. We have provided a profile view of Warren Ave., based on the plans provided by the City.

Within the building, water demand is anticipated to be mostly generated by the employees of the storage unit building, with occasional use by clients attending to their leased unit(s). Preliminary architectural plans are attached for your reference.

12 MOUNTFORT STREET, PORTLAND, ME 04101 207.805.8786 | HALEYWARD.COM

We are hopeful that these materials convey the proposed water design for the development of this site in such a way that you are able to prepare an Ability to Serve letter for our submittal to the City, as this is a requirement of the Major Site Plan approval process.

If you have any questions or need additional information, please do not hesitate to contact me by email (jwhitten@haleyward.com) or by phone 207.989.4824.

Thank you in advance for your attention to this request.

Sincerely,
Haley Ward, Inc.

Jon H. Whitten, Jr., PE
Senior Project Manager

JHW/MK/leb
Enclosures

Peak Flow Based on Fixture Count

Adapted from 2009 Maine State Internal Plumbing Code

Customer only needs to complete the cells highlighted in blue

Customer	Peachtree Acquisitions, LLC
Street Address	97 Warren Avenue
City	Portland, ME, 04103

Fixture		Fixture Value 60 psi		No. of Fixtures		Fixture Value
Bathtub (with or without shower)		4	x		=	0
Bidet		1	x		=	0
Dental Unit		1	x		=	0
Drinking Fountain - Public		0.5	x	2	=	1
Kitchen Sink		1.5	x		=	0
Bathroom Sink		1	x	3	=	3
Showerhead (shower only)		2	x		=	0
Service Sink		3	x	1	=	3
Toilet -Flushometer(high pressure, tankless)		5	x		=	0
-Tank Type (usual in residential setting)		2.5	x	2	=	5
Urinal -Flushometer Valve		5	x		=	0
-Tank Type		2	x		=	0
Wash Sink (each set of faucets)		2	x		=	0
Dishwasher		1.5	x		=	0
Washing Machine		4	x		=	0
Hose (outdoor spigot)	<3/4 in.	2.5	x	2	=	5
Combined Fixture Value Total						17

Fire Sprinkler System(Yes/No)? Yes

If yes, please provide information / plans from the sprinkler system designer that indicate the required gpm for the system.

Irrigation(Yes/No)? No

If yes, gpm required by irrigation designer:

Fields below this line to be completed by PWD staff

Customer Peak Demand From Fig. 4-2 or 4-3

Pressure Factor From Table 4-1

Total Fixed Demand (Peak Flow) **0**

revised 20221219

December 4, 2025

Reed Allen, Water Resources Project Engineer
City of Portland Public Works
212 Canco Rd, Suite B
Portland, ME 04103-4221

Re: Ability to Serve Request | Sanitary Flows for New 4-story self-storage-unit building
97 Warren Avenue | Portland, ME

Dear Reed,

Haley Ward, Inc., (Haley Ward) as part of a design team, has been retained to prepare plans and permit applications for a proposed self-storage development to be located at 97 Warren Avenue in Portland. The site is currently an undeveloped forested lot with access to Warren Avenue near U.S Route 302. Development in the site vicinity includes commercial properties such as businesses, as well as some residential properties in the rear property line. The project proposes the construction of a 4-story self-storage building containing 160 units on the 1st floor and 2nd, 3rd and 4th floors containing 473 units, along with associated parking and utility connections.

As seen in the enclosed proposed Utility Plan, a 4" SDR 35 sewer service is proposed to be extended across Warren Avenue and provide a wye or tee connection to the existing 18" utility sewer main. At the current stage of design, approximately 33 total feet of new sewer pipe and no manholes are proposed. Wastewater generation in the building is anticipated to be primarily by employees at the self-storage; fixtures within the building include restrooms (toilets and sinks), therefore the anticipated DFU=27.5.

Based on the proposed buildings and site use, the following is a summary of the assumed contributing flows (taken from the Maine Subsurface Wastewater Disposal Rules):

Type of Facility	Number of employees anticipated	Total GPD
Warehouse	2	100

As shown on the enclosed proposed Utility Plan, the design proposes running the new service perpendicular to the building, across Warren Ave. and tying into the existing 18" sewer main.

12 MOUNTFORT STREET, PORTLAND, ME 04101 207.805.8786 | HALEYWARD.COM

We are hopeful that these materials convey the proposed sewer service design for the development of this site in such a way that you are able to prepare an Ability to Serve letter for our submittal to the City, as this is a requirement of the Major Site Plan approval process.

If you have any questions or need additional information, please do not hesitate to contact me by email (jwhitten@haleyward.com) or by phone 207.989.4824.

Thank you in advance for your attention to this request.

Sincerely,
Haley Ward, Inc.

Jon H. Whitten, Jr., PE
Senior Project Manager

JHW/MK/leb
Enclosure

Department of Public Works
Mike Murray
Director

Date: April 17, 2026
Re: Wastewater Capacity Authorization
Address: 97 Warren Avenue
Applicant: Peachtree Acquisitions, LLC
Planner: Neha Sunil Pol

Estimate of Anticipated Wastewater Flows				
Development	**Unit Size**	**Number of Units**	**Gallons per Day per Unit**	**Total Gallons per Day**
Existing Flow to Remain				
Vacant				
Proposed flow				
Warehouse	# Employees	2	Greater of 12 GPD/Employee or 100 GPD	100
Net Change				**+ 100**
*Values based on STATE OF MAINE: SUBSURFACE WASTEWATER DISPOSAL RULES, most recent edition				

Comments:
The Department of Public Works, which includes the Water Resource Division, have reviewed and determined that the downstream sewers from the project address have the capacity to convey the estimated dry weather wastewater flows which will be generated from this development.

You are also reminded that new connections into the combined sewer system shall be equipped with backflow prevention in accordance with Section 2.6.10 of the City's Technical Manual.

If the City can be of further assistance, please contact me at 207-874-8840 or brad@portlandmaine.gov
Sincerely,

Bradley A. Roland, P.E.,
Senior Project Engineer

4-Story Self-Storage Building
97 Warren Ave., Portland, Maine
Peachtree Acquisitions LLC
Solid Waste

Solid waste to be generated by this development will include construction debris and municipal solid waste.

Construction Waste

Solid waste generated by this development will include tree clearing waste and general construction debris from the construction of the proposed steel building.

This project will require approximately 0.72 acres of clearing of an undeveloped area. Using a conservative estimate of 87 tons of wood waste per acre, from a resourcewise article, this project will generate approximately 63 tons of woods waste. Wood waste will either be sold or mulched and used as erosion control on site.

The project will develop 88,756 square feet (22,189 s.f. X 4 stories) of commercial building floor area, and it is estimated that a new construction project yields 3.9 lbs. of construction waste per square foot of building area. Therefore, this project will generate approximately 346,148 lbs, or 173 tons of building construction waste. This waste will be disposed of by the contractor at the Riverside Recycling transfer station in Portland, Maine.

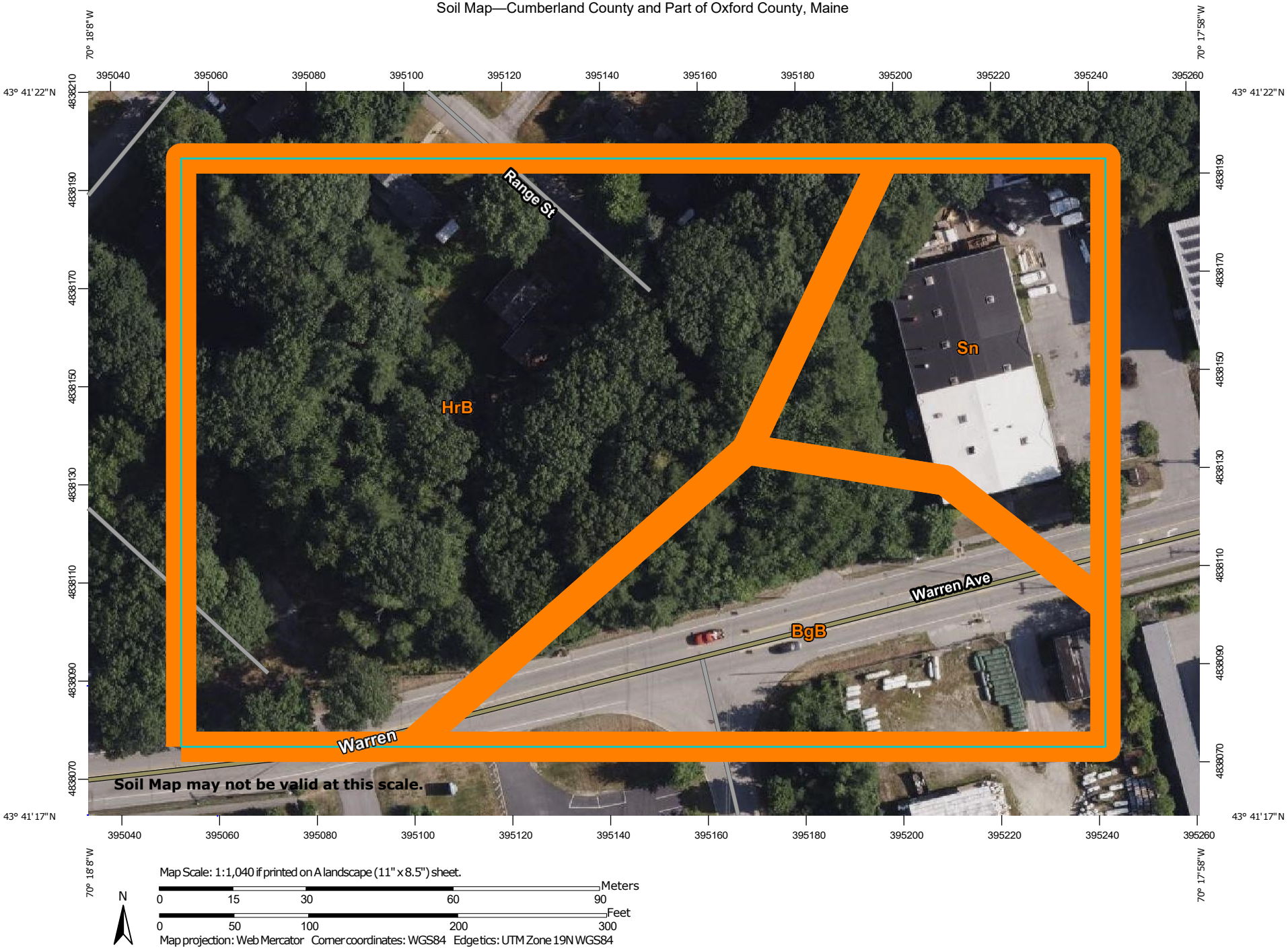
Municipal Solid Waste

Solid waste generation has been estimated using the Industrial Sector Generation Rates Table from the California Department of Resources Recycling and Recovery (CalRecycle). Cal Recycle indicates that a warehouse generates solid waste at a rate of 1.42 pounds per 100 square feet per day. Based on this rate, this 88,756 square feet commercial self-storage use will generate about 1,260 lbs. or 20 tons of waste, per day. To allow efficient waste disposal on a daily or weekly basis, the development will include a 10-by-20-foot dumpster pad with a fenced enclosure in a corner of the parking lot. The dumpster's location had been planned to offer easy access for dumpster hauler trucks while reducing visual impact and assuring safety. The hauler will follow all city requirements and collection schedules to ensure prompt and efficient service. To encourage appropriate sorting of recyclable materials, designated recycling containers will be placed next to the dumpster.

HVAC Verification

No significant noise or vibration impacts are anticipated. All condensing units will be installed on the roof with a bias towards the center to keep noise from bleeding onto adjacent properties. Specifications for HVAC equipment will be submitted as those items are finalized as part of the building design. This response is also included within the **Project Description** under Section 3, 14.6.4 A (3) G for HVAC.

Soil Map—Cumberland County and Part of Oxford County, Maine



Map Scale: 1:1,040 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 15 30 60 90

Feet
0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cumberland County and Part of Oxford County, Maine
Survey Area Data: Version 22, Aug 29, 2025

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 1, 2022—Jul 1, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BgB	Nicholville very fine sandy loam, 0 to 8 percent slopes	1.4	25.5%
HrB	Lyman-Tunbridge complex, 0 to 8 percent slopes, rocky	3.1	55.7%
Sn	Scantic silt loam, 0 to 3 percent slopes	1.1	18.8%
Totals for Area of Interest		**5.6**	**100.0%**

17 18 19 20

Time (hours)

REPORT

25-1648 S

October 31, 2025

Explorations and Geotechnical Engineering Services

Proposed Storage Facility
97 Warren Avenue
Portland, Maine

Prepared For:
Peach Tree Holdings, LLC
Attention: Brian Teeters
7119 31st Avenue N.
Minneapolis, MN 55427

Prepared By:
S. W. Cole Engineering, Inc.
286 Portland Road
Gray, ME 04039
T: 207-657-2866

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25-1648 S

October 31, 2025

Peach Tree Holdings, LLC
Attention: Brian Teeters
7119 31st Avenue N.
Minneapolis, MN 55427

Subject: Explorations and Geotechnical Engineering Services
Proposed Storage Facility
97 Warren Avenue
Portland, Maine

Dear Brian:

In accordance with our Proposal, dated September 9, 2025, and Contract Addendum, dated September 12, 2025, 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 Appendix A.

1.0 INTRODUCTION

1.1 Scope and Purpose

The purpose of our services was to review prior available subsurface data from the site and obtain additional subsurface information at the site in order to develop geotechnical recommendations relative to foundations and earthwork 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 a triangular shaped lot at 97 Warren Avenue in Portland, Maine, across from the intersection with Bishop Street Extension. The lot is currently undeveloped and wooded. Existing grades generally slope up to the northwest, ranging from about elevation 97 to 107 feet (project datum).

We understand development plans include a new, climate-controlled, four-story, on-grade storage building occupying a 22,189 SF footprint. We understand the building will have a finish floor elevation of 101.4 feet, requiring tapered grade-raise fills approaching 5.5 feet in the southeasterly corner, transitioning to a tapered cut approaching 3.5 feet in the northeasterly corner. We understand proposed paved areas and a site retaining wall are proposed along the westerly side of the building.

Proposed and existing site features are shown on the "Exploration Location Plan" attached in Appendix B.

2.0 EXPLORATION AND TESTING

2.1 Explorations

2.1.1 Current Explorations

Five test borings (B-101 through B-105) were made at the site on October 1, 2025 by Seaboard Drilling, LLC working under subcontract to S. W. Cole Engineering, Inc. (S.W.COLE). The exploration locations were selected and established in the field by S.W.COLE using measurements from existing site features. The approximate exploration locations are shown on the "Exploration Location Plan" attached in Appendix B. Logs of the explorations and a key to the notes and symbols used on the logs are attached in Appendix C. The elevations shown on the logs were estimated based on topographic information shown on the "Exploration Location Plan".

2.1.2 Prior Explorations

Geotechnical Services, Inc. (GSI) of Weare, New Hampshire reportedly completed test boring explorations at the site in September 2019 for a previously proposed site development concept. The findings from the GSI test borings are included in their report, under separate cover.

2.2 Field Testing

The current test borings were drilled using a combination of hollow stem auger, cased wash-boring, and rock coring techniques. The soils were sampled at 2 to 5 foot intervals using a split spoon sampler and Standard Penetration Testing (SPT) methods. Pocket Penetrometer Tests (PPT) were performed where stiffer cohesive soils were encountered. SPT blow counts and PPT results are shown on the logs.

2.3 Laboratory Testing

Soil samples obtained from the current explorations were returned to our laboratory for further classification and testing. Atterberg Limits and moisture content test results are noted on the logs.

3.0 SUBSURFACE CONDITIONS

3.1 Soil and Bedrock

Underlying a surficial layer of topsoil and organics, the current test borings (B-101 through B-105) encountered a subsurface profile generally consisting of fill overlying native glaciomarine sands, silts, and clays, overlying refusal surfaces (probable bedrock). The principal soils encountered at the explorations are summarized below. Not all the strata were encountered at each exploration; refer to the attached logs for more detailed subsurface information.

Fill: Underlying a surficial layer of topsoil and organics, the current test borings encountered a layer of fill extending to depths ranging from about 1 to 2.5 feet below existing ground surface (bgs). The fill consisted of very loose to medium dense sand with varying portions of silt and organics, and silty clay with sand seams and roots.

Glaciomarine Deposits: Underlying the fill, the current borings encountered glaciomarine deposits extending to depths ranging from about 4 to 10 feet bgs. These glaciomarine deposits generally consisted of layered silty sand, clayey silt, and silty clay. In boring B-104, the glaciomarine deposits included a layer of soft gray silty clay from a depth of about 9 to 12 feet bgs.

Glacial Outwash Deposits: Underlying the glaciomarine silty clay, boring B-104 encountered a layer of glacial outwash consisting of loose to medium dense silty sand and gravel extending to a depth of about 14.1 feet bgs.

Refusal Surfaces: Underlying the glaciomarine and glacial outwash deposits, where encountered, the borings encountered refusal surfaces (probable bedrock) at depths ranging from about 4.3 to 14.5 feet bgs. Up to about 2 feet of probable weathered bedrock was penetrated by the drill tooling prior to encountering refusal. Bedrock was cored in

boring B-102 at a depth interval of 6 to 11 feet bgs. The recovered bedrock core was classified as Gneiss with a Rock Quality Designation (RQD) of 62 percent.

3.2 Groundwater

Saturated soils were encountered in boring B-104 below a depth of about 9 feet bgs. Groundwater likely becomes perched on the relatively impervious silts, clays, and refusal surfaces (bedrock) encountered in the borings. Long term groundwater information is not available. It should be anticipated that groundwater levels will fluctuate, particularly in response to periods of snowmelt and precipitation, as well as changes in site use.

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 include:

- Based on the findings at the test borings, the site appears to be underlain by relatively shallow bedrock on the northerly side, transitioning to thicker layers of glaciomarine and glacial outwash soils on the southerly side, including a layer of compressible, soft gray silty clay in boring B-104. The variable subsurface conditions present risk of differential, post-construction building settlement which can adversely impact building performance. Considering the subsurface conditions, we recommend improving the soils beneath the proposed building footprint with rigid inclusion ground improvement to support conventional spread footing foundations and on-grade floor slabs.

- We recommend additional probes or test borings be completed across the building pad to further explore the depth to bedrock and estimate the extents of rigid inclusion ground improvement.

- Based on the subsurface findings, we anticipate bedrock removal will be required in portions of the site to achieve finish grades and install foundations and utilities. Blasting, if used, must be carefully planned and controlled considering the site proximity to existing infrastructure. We recommend consideration be given to

hydraulic hoe-ramming in lieu of blasting to reduce adverse vibrations and disturbance to surrounding infrastructure.

- Existing organics, topsoil, fill, debris, and disturbed soils should be removed from beneath the proposed building and replaced with compacted Granular Borrow.

- Subgrades across the site will consist of sensitive silts, clays, and silty sand, transitioning to relatively shallow bedrock. Earthwork and grading activities should occur during drier, non-freezing weather of Spring, Summer and Fall. Rubber tired construction equipment should not operate directly on the native soils when wet. Excavation of soil bearing surfaces should be completed with a smooth-edged bucket to lessen subgrade disturbance.

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. Surficial organics, roots and topsoil should be completely removed from areas of proposed fill and construction. As much vegetation as possible should remain outside the construction areas to lessen the potential for erosion and site disturbance.

We recommend existing fill, debris, and loose and disturbed soils be removed from beneath the proposed building (including foundations, floor slabs, and entrance slabs) and replaced with compacted Granular Borrow. The extent of removal should extend 1 foot laterally outward from outside edge of perimeter footings for every 1-foot of excavation depth (1H:1V bearing splay). The overexcavated area should be backfilled, and site grades raised as needed, with compacted Granular Borrow.

As discussed, the subsurface conditions appear to consist of relatively shallow bedrock in the northerly portion of the building pad, transitioning to thicker layers of softer soil in the southerly portion of the building pad, including layers of soft compressible silty clay. To reduce post-construction differential settlement due to the variable bearing conditions, we recommend improving the soils beneath the building footprint with rigid inclusion ground improvement to support spread footing foundations and on-grade floor slabs.

Where foundations bear on bedrock, all loose, weathered, fractured, and overblasted bedrock must be removed beneath foundations until sound intact bedrock is encountered, and replaced with compacted structural fill.

We recommend footings be underlain by at least 6 inches of compacted Crushed Stone overlying ground improved with rigid inclusions or intact bedrock. Where overlying bedrock, the Crushed Stone should be thoroughly compacted and worked into the bedrock surface to choke off voids and fractures in the bedrock surface. We recommend on-grade floor slabs be underlain by 2 feet of compacted Structural Fill overlying ground improved with Rigid Inclusions or 12 inches of compacted Structural Fill overlying sound, intact bedrock free of open voids or cracks.

Beneath pipes and utility structures with soft trench bottoms, we recommend overexcavating with a smooth-edged bucket and installing at least 1 foot of Underdrain Sand below customary bedding materials wrapped in geotextile fabric. The depth of customary bedding materials for soft trench bottoms should be at least 12 inches for pipes and 24 inches for structures.

4.3 Excavation and Dewatering

Excavation work will generally encounter fill overlying glaciomarine sands, silts, and clays, and areas of shallow bedrock. Care must be exercised during construction to limit disturbance of the bearing soils. Earthwork and grading activities should occur during drier, non-freezing weather of Spring, Summer and Fall. Rubber tired construction equipment should not operate directly on the native silt and clays, when wet. Final cuts to soil subgrades should be performed with a smooth-edged bucket to help reduce strength loss from soil disturbance.

Based on the subsurface findings, we anticipate bedrock removal will be required. Blasting, if used, must be carefully planned and controlled considering the site proximity to existing infrastructure. If blasting is planned for bedrock removal, we recommend a licensed blasting contractor be engaged. Pre-blast surveys should be completed on surrounding structures, water supply wells and infrastructure prior to commencing blasting activities. We recommend consideration be given to hydraulic hoe-ramming in lieu of blasting to reduce adverse vibrations and disturbance to surrounding infrastructure.

Vibrations from construction should be controlled below threshold limits of 0.5 in/sec for structures, water supply wells and infrastructure within 500 feet of the project site. More restrictive vibration limits may be warranted in specific cases with sensitive equipment, historic structures or artifacts on-site or within close proximity.

Sumping and pumping dewatering techniques should be adequate to control groundwater in shallow excavations. Controlling the water levels to at least one foot below planned excavation depths will help stabilize subgrades during construction. Excavations must be properly shored or sloped in accordance with OSHA 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

As presented herein, we anticipate the building bearing conditions will transition from relatively shallow bedrock in the northerly portion, to overburden soils overlying layers of softer soil in the southerly portion. To reduce post-construction differential settlement due to the variable bearing conditions, we recommend improving the soils beneath the building footprint with rigid inclusions to support spread footing foundations and on-grade floor slabs. Spread footing foundations should be underlain with at least 6-inches of compacted Crushed Stone overlying sound, intact bedrock, or ground improved with rigid inclusions.

For foundations bearing on properly prepared subgrades, we recommend the following geotechnical parameters for design consideration:

Geotechnical Parameters for Spread Footings on Improved Ground or Bedrock	
Design Frost Depth (100-year AFI)	4.5 feet
Net Allowable Soil Bearing Pressure (Improved Ground or Bedrock)	4.0 ksf
Base Friction Factor	0.4
Total Unit Weight of Backfill	125 pcf
At-Rest Lateral Earth Pressure Coefficient	0.5
Internal Friction Angle of Backfill	30°
Seismic Soil Site Class	D (IBC 2021)
Total Settlement (Improved Ground)	1-inch
Differential Settlement (Improved Ground)	½-inch

We recommend the contract documents require an engineered submittal for Rigid Inclusions to improve ground conditions to meet or exceed the geotechnical parameters for bearing capacity and settlement as recommended herein. Further, we recommend the contract documents require additional probes and/or test borings to inform the extents of ground improvements. The Rigid Inclusion submittal must include QC and modulus testing procedures. We recommend Rigid Inclusion load testing be completed prior to installing production elements. The Rigid Inclusion submittal must be prepared and sealed by a Professional Engineer licensed in the State of Maine and endorsed by the Rigid Inclusion Installer.

4.5 Foundation Drainage

We recommend an underdrain system be installed on the outside edge of the perimeter building footings. The underdrain pipe should consist of 4-inch diameter, perforated SDR-35 foundation drain pipe bedded in Crushed Stone and wrapped in non-woven geotextile fabric. 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 surface water drainage.

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 2 feet of compacted Structural Fill overlying ground improved with Rigid Inclusions, or 12 inches of compacted Structural Fill overlying sound, intact bedrock free of open voids and cracks. The structural engineer or concrete consultant must design steel reinforcing and joint spacing appropriate to slab thickness and function, as well as cracking and curling.

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 footprint of the entrance slab, thereafter transitioning up to the bottom of the adjacent sidewalk or pavement gravels at a 3H:1V or flatter slope.

4.8 Fill, Backfill and Compaction

We recommend the following fill and backfill materials: recycled products must also be tested in accordance with applicable environmental regulations and approved by a qualified environmental consultant.

Common Borrow: Fill to raise grades in landscape areas should be non-organic compactable earth meeting the requirements of 2020 MaineDOT Standard Specification 703.18 Common Borrow.

Granular Borrow: Fill to raise grades in building and paved areas, as well as to repair soft areas should be sand meeting the requirements of 2020 MaineDOT Standard Specification 703.19 Granular Borrow.

Structural Fill: Backfill for foundations, slab base material, and material below exterior entrances slabs should be 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
¼ inch	25 to 90
No. 40	0 to 30
No. 200	0 to 6

Crushed Stone: Crushed Stone, used beneath foundations and for underdrain aggregate should be washed ¾-inch crushed stone meeting the requirements of 2020 MaineDOT Standard Specification 703.13 Crushed Stone ¾-Inch.

Reuse of Site Soils: The non-organic on-site soils are unsuitable for reuse in building and paved areas, but may be suitable for reuse as Common Borrow landscape areas, provided they are at a compactable moisture content at the time of 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. Crushed Stone should be compacted with 3 to 5 passes of a vibratory plate compactor having a static weight of at least 500 pounds.

4.9 Weather Considerations

Construction activity should be limited during wet and freezing weather and the site soils may require drying or thawing 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 Design Review and Construction Testing

S.W.COLE should be retained to review the construction documents prior to bidding to determine that our foundation and earthwork recommendations have been properly interpreted and implemented.

S.W.COLE should be engaged to review the ground improvement design submittal prepared under delegated design to the Contractor.

A construction materials testing and quality assurance program should be implemented during construction to observe compliance with the design concepts, plans, and specifications. S.W.COLE is available to observe earthwork activities, the installation of ground improvements, the preparation of foundation bearing surfaces and pavement subgrades, as well as to provide testing and IBC Special Inspection services for soils, concrete, steel, spray-applied fireproofing, fire-stopping, structural masonry and asphalt construction materials.

4.11 Recommendations for Additional Study

We recommend additional probes or test borings be completed across the building pad to further explore the depth to bedrock and estimate the extents of rigid inclusion ground improvement.

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.

STATE OF MAINE
EVAN
MICHAEL
WALKER
No. 12847
LICENSED
PROFESSIONAL ENGINEER

Evan M. Walker, P.E.
Senior Geotechnical Engineer

EMW:tjb

APPENDIX A

Limitations

This report has been prepared for the exclusive use of Peach Tree Holdings, LLC for specific application to the proposed Storage Facility at 97 Warren Avenue in Portland, Maine. S. W. Cole Engineering, Inc. (S.W.COLE) has endeavored to conduct our services 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.

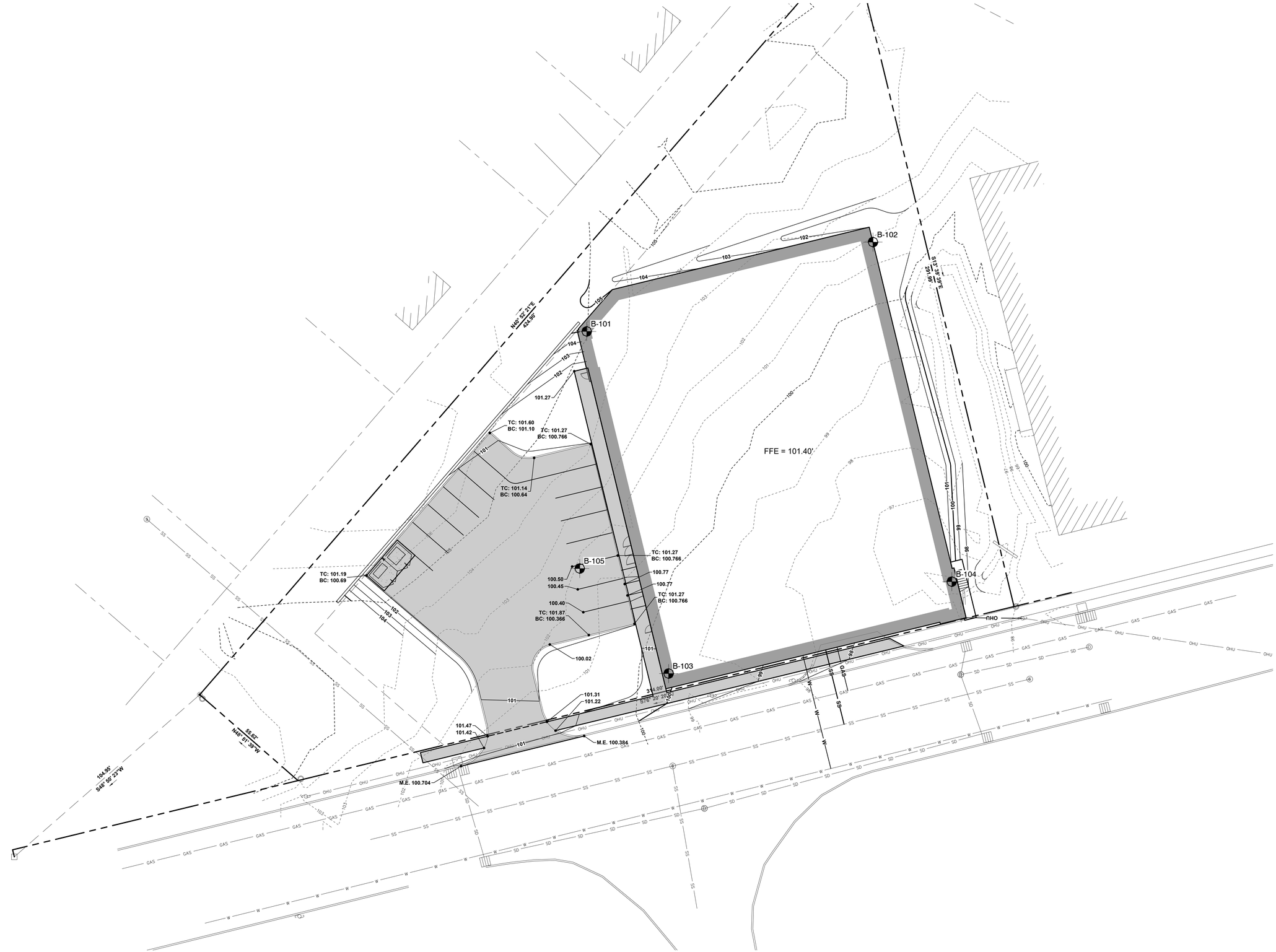
Observations have been made during exploration work to assess site groundwater levels. Fluctuations in water levels will occur due to variations in rainfall, temperature, and other factors.

S.W.COLE's scope of services 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.

APPENDIX B

Figures



LEGEND:

APPROXIMATE BORING LOCATION

NOTES:

1. EXPLORATION LOCATION PLAN WAS PREPARED FROM A SCALE PLAN OF THE SITE PREPARED BY HALEY WARD, INC., RECEIVED VIA E-MAIL 10/3/2025.
2. THE BORINGS WERE LOCATED IN THE FIELD BY MEASUREMENTS FROM EXISTING SITE FEATURES.
3. THIS PLAN SHOULD BE USED IN CONJUNCTION WITH THE ASSOCIATED S. W. COLE ENGINEERING, INC. GEOTECHNICAL REPORT.
4. THE PURPOSE OF THIS PLAN IS ONLY TO DEPICT THE LOCATION OF THE EXPLORATIONS IN RELATION TO THE EXISTING CONDITIONS AND PROPOSED CONSTRUCTION AND IS NOT TO BE USED FOR CONSTRUCTION.

S.W.COLE ENGINEERING, INC.

PEACH TREE HOLDINGS

EXPLORATION LOCATION PLAN

PROPOSED STORAGE FACILITY
97 WARREN AVENUE
PORTLAND, MAINE

Job No.:	25-1648	Scale:	1" = 20'
Date :	10/07/2025	Sheet:	1

APPENDIX C

Exploration Logs and Key

BORING LOG

CLIENT:	Peach Tree Holdings, LLC
PROJECT:	Proposed Storage Facility
LOCATION:	97 Warren Avenue, Portland, Maine

BORING NO.:	**B-101**
SHEET:	1 of 1
PROJECT NO.	25-1648
DATE START:	10/1/2025
DATE FINISH:	10/1/2025

Drilling Information

LOCATION:	See Exploration Location Plan	**ELEVATION (FT):**	104' +/-	**TOTAL DEPTH (FT):**	4.3
LOGGED BY:	Nshuti Gato	**DRILLING CO.:**	Seaboard Drilling	**DRILLER:**	Jeremy Adams
DRILLING METHOD:	Hollow Stem Auger	**RIG TYPE:**	Track Mounted Diedrich D-50	**AUGER ID/OD:**	N/A / N/A
SAMPLER:	Standard Split-Spoon	**HAMMER TYPE:**	Automatic	**HAMMER WEIGHT (lbs):**	140 / 140
CASING ID/OD:	N/A /N/A	**CORE BARREL:**		**HAMMER CORRECTION FACTOR:**	
HAMMER DROP (inch):	30 / 30				

WATER LEVEL DEPTHS (ft): No Free Water Observed

GENERAL NOTES:

KEY TO NOTES AND SYMBOLS:

Water Level
- ▽ At time of Drilling
- ▼ At Completion of Drilling
- ▼ After Drilling

D = Split Spoon Sample
U = Thin Walled Tube Sample
R = Rock Core Sample
V = Field Vane Shear

Pen. = Penetration Length
Rec. = Recovery Length
bpf = Blows per Foot
mpf = Minute per Foot

WOR = Weight of Rods
WOH = Weight of Hammer
RQD = Rock Quality Designation
PID = Photoionization Detector

S_v = Field Vane Shear Strength, kips/sq.ft.
q_u = Unconfined Compressive Strength, kips/sq.ft.
Ø = Friction Angle (Estimated)
N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_20 Depth	Remarks
			1D		0-2	24/12	1-1-2-5			0.3 Vegetation/Topsoil (FILL) Very loose to loose, brown, silty SAND, trace clay, with roots (FILL) 1.0 Dense to very dense, light brown, silty SAND		
			2D		2-3.8	22/12	11-20-34-50/4"					
100										3.8 Probable Weathered Bedrock		

Refusal at 4.3 feet
Probable Bedrock

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING NO.: **B-101**

BORING / WELL 10-12-2022 25-1648.GPJ SWCE TEMPLATE.GDT 10/30/25

BORING LOG

CLIENT:	Peach Tree Holdings, LLC
PROJECT:	Proposed Storage Facility
LOCATION:	97 Warren Avenue, Portland, Maine

BORING NO.:	**B-102**
SHEET:	1 of 1
PROJECT NO.	25-1648
DATE START:	10/1/2025
DATE FINISH:	10/1/2025

Drilling Information

LOCATION:	See Exploration Location Plan	**ELEVATION (FT):**	101' +/-	**TOTAL DEPTH (FT):**	11.0
LOGGED BY:	Nshuti Gato	**DRILLING CO.:**	Seaboard Drilling	**DRILLER:**	Jeremy Adams
DRILLING METHOD:	Cased Boring	**RIG TYPE:**	Track Mounted Diedrich D-50	**AUGER ID/OD:**	N/A / N/A
SAMPLER:	Standard Split-Spoon	**HAMMER TYPE:**	Automatic	**HAMMER WEIGHT (lbs):**	140 / 140
CASING ID/OD:	4 in / 4 1/2 in	**CORE BARREL:**	NQ2	**HAMMER CORRECTION FACTOR:**	
HAMMER DROP (inch):	30 / 30				

WATER LEVEL DEPTHS (ft): No Free Water Observed

GENERAL NOTES:

KEY TO NOTES AND SYMBOLS:

Water Level: ▽ At time of Drilling; ▼ At Completion of Drilling; ▼ After Drilling

D = Split Spoon Sample; U = Thin Walled Tube Sample; R = Rock Core Sample; V = Field Vane Shear

Pen. = Penetration Length; Rec. = Recovery Length; bpf = Blows per Foot; mpf = Minute per Foot

WOR = Weight of Rods; WOH = Weight of Hammer; RQD = Rock Quality Designation; PID = Photoionization Detector

S_v = Field Vane Shear Strength, kips/sq.ft.; q_u = Unconfined Compressive Strength, kips/sq.ft.; Ø = Friction Angle (Estimated); N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_20 Depth	Remarks
			1D		0-2	24/18	2-4-8-8			Vegetation/Topsoil (FILL)		
100										0.5 Medium dense, silty, fine to medium SAND, trace clay (FILL)		
			2D		2-4	24/24	12-14-19-50/3"			2.0 Very stiff, gray to brown, silty CLAY, with sand seams		
										3.8 Weathered Bedrock		
	5											
95			1R		6-11	60/57	62			6.0 Berwick Formation - Gneiss Fair Quality		
	10											
90										Bottom of Exploration at 11.0 feet		

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING NO.: B-102

BORING / WELL 10-12-2022 25-1648.GPJ SWCE TEMPLATE.GDT 10/30/25

BORING LOG

BORING NO.: B-103
SHEET: 1 of 1
PROJECT NO. 25-1648
DATE START: 10/1/2025
DATE FINISH: 10/1/2025

CLIENT: Peach Tree Holdings, LLC
PROJECT: Proposed Storage Facility
LOCATION: 97 Warren Avenue, Portland, Maine

Drilling Information

LOCATION: See Exploration Location Plan **ELEVATION (FT):** 100' +/- **TOTAL DEPTH (FT):** 10.4 **LOGGED BY:** Nshuti Gato
DRILLING CO.: Seaboard Drilling **DRILLER:** Jeremy Adams **DRILLING METHOD:** Hollow Stem Auger
RIG TYPE: Track Mounted Diedrich D-50 **AUGER ID/OD:** N/A / N/A **SAMPLER:** Standard Split-Spoon
HAMMER TYPE: Automatic **HAMMER WEIGHT (lbs):** 140 / 140 **CASING ID/OD:** N/A /N/A **CORE BARREL:**
HAMMER CORRECTION FACTOR: **HAMMER DROP (inch):** 30 / 30
WATER LEVEL DEPTHS (ft): No Free Water Observed
GENERAL NOTES:

KEY TO NOTES AND SYMBOLS:
Water Level: ▽ At time of Drilling; ▼ At Completion of Drilling; ▼ After Drilling
D = Split Spoon Sample; U = Thin Walled Tube Sample; R = Rock Core Sample; V = Field Vane Shear
Pen. = Penetration Length; Rec. = Recovery Length; bpf = Blows per Foot; mpf = Minute per Foot
WOR = Weight of Rods; WOH = Weight of Hammer; RQD = Rock Quality Designation; PID = Photoionization Detector
S_v = Field Vane Shear Strength, kips/sq.ft.; q_U = Unconfined Compressive Strength, kips/sq.ft.; Ø = Friction Angle (Estimated); N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_20 Depth	Remarks
			1D		0-2	24/8	2-2-4-6			Vegatation/Topsoil (FILL)		
										0.5 Loose, brown, silty, fine to medium SAND, with roots (FILL)		
			2D		2-4	24/24	8-11-16-20	q_P=9 ksf		2.0 Very stiff to stiff, gray-brown, varved, silty CLAY, and clayey SILT, and medium dense silty SAND		
95	5		3D		5-7	24/24	12-18-10-8	q_P=5 ksf				
90	10		4D		10-10.2	2/2	50/2"	q_P=1 ksf		10.2 Probable Weathered Bedrock		

Refusal at 10.2 feet
Probable Bedrock

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING NO.: B-103

BORING / WELL 10-12-2022 25-1648.GPJ SWCE TEMPLATE.GDT 10/30/25

BORING LOG

BORING NO.: B-104
SHEET: 1 of 1
PROJECT NO. 25-1648
DATE START: 10/1/2025
DATE FINISH: 10/1/2025

CLIENT: Peach Tree Holdings, LLC
PROJECT: Proposed Storage Facility
LOCATION: 97 Warren Avenue, Portland, Maine

Drilling Information

LOCATION: See Exploration Location Plan **ELEVATION (FT):** 96' +/- **TOTAL DEPTH (FT):** 14.5 **LOGGED BY:** Nshuti Gato
DRILLING CO.: Seaboard Drilling **DRILLER:** Jeremy Adams **DRILLING METHOD:** Hollow Stem Auger
RIG TYPE: Track Mounted Diedrich D-50 **AUGER ID/OD:** N/A / N/A **SAMPLER:** Standard Split-Spoon
HAMMER TYPE: Automatic **HAMMER WEIGHT (lbs):** 140 / 140 **CASING ID/OD:** N/A /N/A **CORE BARREL:**
HAMMER CORRECTION FACTOR: **HAMMER DROP (inch):** 30 / 30
WATER LEVEL DEPTHS (ft): ▽ 9 ft Soils saturated below 9'+/-
GENERAL NOTES:

KEY TO NOTES AND SYMBOLS:
Water Level
▽ At time of Drilling
▼ At Completion of Drilling
▼ After Drilling
D = Split Spoon Sample
U = Thin Walled Tube Sample
R = Rock Core Sample
V = Field Vane Shear
Pen. = Penetration Length
Rec. = Recovery Length
bpf = Blows per Foot
mpf = Minute per Foot
WOR = Weight of Rods
WOH = Weight of Hammer
RQD = Rock Quality Designation
PID = Photoionization Detector
S_v = Field Vane Shear Strength, kips/sq.ft.
q_U = Unconfined Compressive Strength, kips/sq.ft.
Ø = Friction Angle (Estimated)
N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_20 Depth	Remarks
			1D		0-2	24/14	2-4-8-8			0.3 Vegetation/Topsoil (FILL)		
95										Medium dense, light brown, silty CLAY, some sand seams, with roots (FILL)		
			2D		2-4	24/20	8-13-12-14	q_P=7.5-9 ksf		2.0 Very stiff to stiff, gray-brown, varved, silty CLAY, clayey SILT, and medium dense silty SAND		
	5		3D		5-7	24/24	6-5-6-6	q_P=1.5-2 ksf				
90												
										9.0 Soft, gray, silty CLAY, with frequent sand seams	▽	
	10		4D		10-12	24/24	WOH-12"-1/12"	w =31.5 % W_L=26 W_P=15				
85												
			5D		12-14	24/24	6-6-3-6			12.2 Loose to medium dense, gray to brown, silty SAND AND GRAVEL		
										14.1 Probable Weathered Bedrock		

Refusal at 14.5 feet
Probable Bedrock

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING NO.: B-104

BORING / WELL 10-12-2022 25-1648.GPJ SWCE TEMPLATE.GDT 10/30/25

BORING LOG

BORING NO.: B-105
SHEET: 1 of 1
PROJECT NO. 25-1648
DATE START: 10/1/2025
DATE FINISH: 10/1/2025

CLIENT: Peach Tree Holdings, LLC
PROJECT: Proposed Storage Facility
LOCATION: 97 Warren Avenue, Portland, Maine

Drilling Information

LOCATION: See Exploration Location Plan **ELEVATION (FT):** 103' +/- **TOTAL DEPTH (FT):** 9.5 **LOGGED BY:** Nshuti Gato
DRILLING CO.: Seaboard Drilling **DRILLER:** Jeremy Adams **DRILLING METHOD:** Hollow Stem Auger
RIG TYPE: Track Mounted Diedrich D-50 **AUGER ID/OD:** N/A / N/A **SAMPLER:** Standard Split-Spoon
HAMMER TYPE: Automatic **HAMMER WEIGHT (lbs):** 140 / 140 **CASING ID/OD:** N/A /N/A **CORE BARREL:**
HAMMER CORRECTION FACTOR: **HAMMER DROP (inch):** 30 / 30
WATER LEVEL DEPTHS (ft): No Free Water Observed
GENERAL NOTES:

KEY TO NOTES AND SYMBOLS:
Water Level: ▽ At time of Drilling; ▼ At Completion of Drilling; ▼ After Drilling
D = Split Spoon Sample; U = Thin Walled Tube Sample; R = Rock Core Sample; V = Field Vane Shear
Pen. = Penetration Length; Rec. = Recovery Length; bpf = Blows per Foot; mpf = Minute per Foot
WOR = Weight of Rods; WOH = Weight of Hammer; RQD = Rock Quality Designation; PID = Photoionization Detector
S_v = Field Vane Shear Strength, kips/sq.ft.; q_u = Unconfined Compressive Strength, kips/sq.ft.; Ø = Friction Angle (Estimated); N/A = Not Applicable

Elev. (ft)	Depth (ft)	Casing Pen. (bpf)	SAMPLE INFORMATION: Sample No.	Type	Depth (ft)	Pen./ Rec. (in)	Blow Count or RQD	Field / Lab Test Data	Graphic Log	Sample Description & Classification	H_20 Depth	Remarks
			1D		0-2	24/4	1-2-2-6			0.3 Vegetation/Topsoil (FILL) Medium dense, brown, silty SAND, with roots (FILL)		
			2D		2-4	24/16	11-9-11-12			2.5 Very stiff to stiff, gray-brown, varved, silty CLAY and clayey SILT, and medium dense silty SAND		
100												
	5		24		5-7	24/24	13-12-8-9					
95										9.0 Probable Weathered Bedrock		

Refusal at 9.5 feet
Probable Bedrock

Stratification lines represent approximate boundary between soil types, transitions may be gradual. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.

BORING NO.: B-105

BORING / WELL 10-12-2022 25-1648.GPJ SWCE TEMPLATE.GDT 10/30/25

KEY TO NOTES & SYMBOLS

Test Boring and Test Pit Explorations

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.

FORM 3

Non-Residential Stormwater Management Credits: Existing Stormwater Management System and/or Retrofit of Existing Development

Project Site Information

Address: 97 Warren Avenue., Portland, ME 04103
Street Address Zip Code

Parcel ID (Chart, Block, Lot # + 3-digit ID): 295/F001001

Contact Information

Applicant (must be owner, lessee or buyer)

Name: _____
Last First M.I.

Business Name (if applicable): Peachtree Acquisitions, LLC - Attn: Jack Martinson

Relation to Owner (lessee, buyer, etc, if applicable): Owner/ Manager

Mailing Address: 7119 31st Avenue N.,
Street Address Apartment/Unit #

Minneapolis MN 55247
City State Zip Code

Phone #: (612) 360-3397 E-mail Address: Jackm@ecimn.com

Owner (if different from Applicant)

Name: Same as Applicant
Last First M.I.

Mailing Address: _____
Street Address Apartment/Unit #

_____
City State Zip Code

Phone #: (___)____-_____ E-mail Address: _____

Agent/Representative

Name: Haley Ward, Inc. - Attn: Jon Whitten, Jr., PE
Last First M.I.

Mailing Address: 12 Mountfort St.
Street Address Apartment/Unit #

Portland ME 04101
City State Zip Code

Phone #: (207) 989-4824 E-mail Address: jwhitten@haleyward.com

Billing Information

Name: Same as Applicant information

Last First M.I.

Mailing Address: _____

Street Address Apartment/Unit #

_____

City State Zip Code

Phone #: (___)____-_____ E-mail Address: _____

Engineer

Name: Same as Agent/Representative information

Last First M.I.

Mailing Address: _____

Street Address Apartment/Unit #

_____

City State Zip Code

Phone #: (___)____-_____ E-mail Address: _____

Surveyor

Name: _____

Last First M.I.

Mailing Address: _____

Street Address Apartment/Unit #

_____

City State Zip Code

Phone #: (___)____-_____ E-mail Address: _____

Attorney

Name: _____

Last First M.I.

Mailing Address: _____

Street Address Apartment/Unit #

_____

City State Zip Code

Phone #: (___)____-_____ E-mail Address: _____

Credit Information

Applicant seeking credit for (check applicable): ☐ Existing Controls ☒ Proposed Controls

For "Existing Controls", on what date did your system become operational? _____

Total Impervious Area (after proposed work, if applicable): (31,178 SF of new IA) square feet

The credit options and their corresponding credit values are listed in columns A and B, respectively. Indicate in column C the amount of impervious area that is eligible for each credit option, and note the product of columns B and C in column D. *The billable impervious area is equal to the Total Impervious Area minus the sum of column D.*

A	B		C		D
Minimum Water Quality Credit:	0.25	x	_____ square feet	=	_____ square feet
Minimum Water Quantity Credit:	0.05	x	_____ square feet	=	_____ square feet
Basic Water Quality Credit:	0.50	x	31,178 square feet	=	15,589 square feet
Basic Water Quantity Credit:	0.10	x	31,178 square feet	=	3,118 square feet
Extra Water Quality Credit:	0.75	x	_____ square feet	=	_____ square feet
Extra Water Quantity Credit:	0.25	x	_____ square feet	=	_____ square feet
			Total	=	18,707 square feet

Billable Impervious Area (Total IA minus Sum of Column D): 12,471 square feet

Submissions Checklist

General Submission Requirements

- ☒ Narrative describing site layout, features and overview of proposed/existing stormwater management system. Narrative to summarize system design information and must also provide a breakdown of the credits the Applicant is seeking.
- ☒ Written assessment of project compliance with *applicable* zoning requirements (proposed structures only)
- ☒ Stamped boundary survey prepared by a registered land surveyor at a scale not less than one inch to fifty feet (proposed structures only; submit only if required)
- ☒ Erosion and sedimentation control plan (proposed structures only)
- ☒ Inspection, maintenance and housekeeping plan for structural controls, BMPs, sedimentation and erosion controls
- ☒ Drainage plans including all topographic features, watershed delineation (Pre and Post project), structures, impervious areas, hydrologic flow lines, etc. Plans must graphically show proposed/existing treatment area.

Water Quality Management Credits (Minimum, Basic, Extra) Submission Requirements

- ☒ Water Quality Volume (WQV) calculations for area tributary to proposed/existing structural controls.
- ☒ Design sizing computations for structural controls
- ☒ Details, designs, notes (vary by type of stormwater control facility or BMP) and any other applicable calculations needed to support the design (I.E, water drawdown computations).

Water Quantity Management Credits (Minimum, Basic, Extra) Submission Requirements

- [X] Peak run-off flow calculations utilizing the rational method, the SCS TR-20 method or other industry accepted flow computation methods. Peak flow calculations must include land cover calculations/assumptions and hydrological timing calculations/assumptions for each sub-catchment for both the pre and post development (or post project) conditions
- [X] Peak-flow comparison (pre versus post development) for the required design storms.
- [X] Detention storage computations
- [X] Details, designs and notes

Submission materials to be stamped and prepared by a professional engineer licensed in the State of Maine.

Applicant Signature

I hereby certify that I am the owner of record of the named property, or that the owner of record has authorized me to submit this application on his or her behalf. I agree to conform to all applicable laws of the City of Portland. I understand that the City of Portland Department of Public Works has the authority to enter and inspect all areas that pertain to this application at any reasonable hour to verify that the information contained in this form is accurate.

Signature: _____ Date: 11/17/2025

December 18, 2025

City of Portland, Planning & Urban Development
Attn: Neha Sunil Pol, Planner
389 Congress Street
Portland, Maine 04101
npol@portlandmaine.gov

Re: Neighborhood meeting for New 4-story self-storage-unit building, 97 Warren Avenue | Portland, ME

Dear Neha,

I, Jon Whitten Jr., hereby certify that a neighborhood meeting was held on December 17, 2025 at Gerald E. Talbot Community School at 1600 Forest Ave, Portland, ME 04103 at 5:45 PM. I also certify that on December 8, 2025, invitations were mailed to the following:

1. All addresses on the mailing list provided by the Planning Division, which includes property owners within 500 feet of the proposed development, and
2. Residents on the "interested parties" list, as provided by the Planning Division.

Sincerely,

Jon H. Whitten, Jr., PE
Senior Project Manager

JHW/MK/leb
Enclosures

Included with this certification are:

1. Copy of the invitation sent
2. Sign-in sheet
3. Meeting Minutes
4. Mailing list

December 8, 2025

Haley Ward, Inc.
12 Mountfort Street
Portland, ME 04101

Re: Neighborhood meeting for New 4-story self-storage-unit building, 97 Warren Avenue | Portland, ME

Dear Neighbor,

On behalf of Peachtree Acquisitions, LLC (Applicant), Haley Ward, Inc. (Haley Ward) is pleased to invite you to a neighborhood meeting on Wednesday, December 17, 2025, to discuss the proposed Major Site Plan Application (Project Number PL-003487-2025) for the proposed development of a 4-Story Self-Storage-Unit Building at 97 Warren Avenue. The project site is approximately 1.32 acres in size, is located within the City of Portland B-4 Zoning District and is currently vacant and forested. The self-storage project will include the construction of a new entrance off Warren Avenue that will provide access to a central building entrance for loading/unloading and eleven (11) parking spaces. There will be no outside storage of equipment or materials associated with the self-storage use of the site. The scope of work includes constructing the building, extending the public sidewalk along the project site's frontage, landscape improvements, stormwater management infrastructure, and connections to public water, sewer, power, etc. Please refer to the meeting information below:

Meeting Location: Gerald E. Talbot Community School at 1600 Forest Ave, Portland, ME 04103
Meeting Date/Time: Wednesday, December 17, 2025, at 5:30 p.m.

A sign-in sheet will be circulated, and a record of the meeting will be taken. Both the sign-in sheet and record will be submitted to the Planning Board. If you have any questions or need additional information, please do not hesitate to contact me by email (jwhitten@haleyward.com) or by phone 207.989.4824.

Sincerely,
Haley Ward, Inc.

Jon H. Whitten, Jr., PE
Senior Project Manager
JHW/MK/leb

Note: Under the City of Portland land use code, an applicant for a major site plan, subdivision of over five lots, or zoning map amendment is required to hold a neighborhood meeting within 30 days of an application being deemed complete and no less than seven calendar days before a public hearing. Should you wish to offer additional comments on this proposed development, you may forward them by e-mail to planning@portlandmaine.gov or by mail to the Planning and Urban Development Department, Planning Division, 4th Floor, 389 Congress Street Portland, ME 04101.

97 Warren Avenue Neighborhood Meeting
12/17/25 | 5:30 pm

Sign-in Sheet

Developer and Consultant Team in Attendance:

Name	Email
Jon whilten, Jr	Jwhitten@haleyward.com
Manuela Kayembe	mkayembe@haleyward.com
Jack Martinson	Jackm@ecimn.com

97 Warren Avenue Neighborhood Meeting
12/17/25 | 5:30 pm

Sign-in Sheet

Members of Public in Attendance:

Name	Email
Joyce MAGGI	joyce.kaplksl@gmail.com
Tim Bird	sixtythreetbird@mac.com
erin k flood	floodandbird@gmail.com

97 Warren Avenue Neighborhood Meeting
12/17/25 | 5:30 pm

Sign-in Sheet

Members of Public in Attendance:

Name	Email
Jeff Nevers	jnevers68@gmail.com
Chandler Green	greenchandler19@gmail.com
Olga Graves	olgraves@gmail.com

4-STORY SELF STORAGE UNIT BUILDING ON 97 WARREN AVENUE

Neighborhood Meeting Minutes

Project: Proposed Self-Storage Facility
Location: 97 Warren Avenue, Portland, ME, 04103
Date: 12/17/2025
Time: 5:45 PM – 6:30 PM

Notes compiled by Manuela Kayembe, Jon Whitten Jr. of Haley Ward and Jack Martinson of Peachtree Acquisitions, LLC and Engelsma Construction, Inc (Applicant).

Neighborhood Meeting

December 17, 2025 – Gerald E Talbot Community School, Portland, ME

Developer and Consultant Team in Attendance:

Jon Whitten, Jr. – Haley Ward, Inc ("JW")

Manuela Kayembe – Haley Ward ("MK")

Jack Martinson – Peachtree Acquisitions ("JM")

Members of Public in Attendance:

6 people attended, see sign-in sheet attached. Questions asked or comments made by the members of the public appear in the notes below.

1. Call to Order

The neighborhood meeting was called to order at **5:45 PM** by **JW**.

2. Project Introduction and Description

17:45 PM – Presentation by JW, begins meeting by providing project introduction and description.

- 4-story self-storage-unit building, with a 22,178 square foot footprint and site is approximately 1.3 acres in size
- Total of 633 storage will be rented
- building height of 50 feet
- 11 new parking spaces

- One central loading area and no outside storage
- A new retaining wall constructed at the back of the building that allows the building's finish-floor elevation to be in sync with surrounding buildings, preservation of mature trees along the northern line and also because the applicant would like to minimize the potential negative visual impacts of the project from nearby residential lots
- 82 percent (19 trees) of the existing trees with a 16-inch DBH are being preserved along the rear property boundary. This is expected to provide visual buffering of the project from existing residential structures located northerly of the project site
- There is at least 20 feet of existing forested land within a previously abandoned paper street between the project site and neighboring residential lots. This area provides additional visual buffering.
- Brief discussion on stormwater management system
- Discussion on Planning Board Schedule.

3. Public Questions and Discussion

6:00 PM - Public questions began

Joyce Maggie – Will there be a receptionist or manager on site?
JM - A facility manager will be on site from 9:30 AM to 6:00 PM, and there may be staff availability after hours.

Neighbor – Will tenants have 24-hour access to the storage units?
JM - Official access hours are 9:30 AM to 6:00 PM. After-hours access may be available through a secure access system, though this has not yet been finalized.

Erin K flood – Will an employee be present after hours to assist authorized users and maintain security?
JM - The facility will rely on secure access controls, surveillance cameras, lighting, controlled padlocked loading areas, access codes, and third-party monitoring services that can respond quickly if a break in occurs.

Erin K flood – Will tenants be vetted or required to pass a background check prior to receiving access codes?
JM - Background checks are not currently known to be required. I'll would like to confirm this with the operator and provide clarification at a later time.

Erin K flood – Are there specific requirements to rent a unit, apart from a minimum age?
JM – I am not currently aware of all rental requirements and will consult with the operator. Indoor self-storage facilities generally provide greater security than facilities with exterior storage access.

Erin K flood – What measures will be taken to prevent individuals from living in storage units, based on similar issues experienced elsewhere?
JM - acknowledged awareness of such issues and operators typically conduct routine monitoring. This concern would be discussed with Cube Smart Self Storage, a nationally recognized operator with facilities in Maine and I'm sure that they are aware and have solutions for this type of issues.

Jeff Nevers – Will there be truck, RV, or boat rentals on site?
JW - No truck, RV, or boat rentals are proposed, as the project does not include outside storage.

Erin K flood – Will there be restrictions on what items may be stored in the units?
JM – Yes, the rental agreement prohibits the storage of perishable items, drugs, and flammable materials.

Erin K flood – How many trees on site, including sugar maples, will be preserved?
JW - Trees with a minimum 16-inch diameter will be preserved along the rear property boundary and the western side of the site, totaling 19 trees.

Tim Bird – Are all preserved trees located along the rear of the property?
JW - confirmed that most preserved trees are along the rear, with several located on the western side, as shown on the site plans.

Olga Graves – Are trees required to be preserved along the sides of the property as well?
JW – There is no requirement for Tree preservation on the property sides , those requirements apply to the rear property boundary with residential zoning only.

Tim Bird – Did the applicant evaluate alternative sites to avoid tree removal or consider reuse of an existing building?
JM - Industrial-zoned land suitable for self-storage is limited in Portland. The building footprint was reduced from an initial 27,000 square feet to conserve as many trees as feasible. If the trees are a concern, Jon, the team and I will try our best to conserve as much as possible and more of them.

Tim Bird – Given the scale of the project, is it unlikely that the site will remain green space?
JM - The project reflects a balance between development needs and environmental preservation and that the footprint was reduced through coordination with the City.

Tim Bird – Will there be fencing around the site, and does the retaining wall mark the property boundary?
JW – Yes about the retaining wall. There will be no perimeter fencing. A wooded triangular area at the rear of the site will remain undisturbed.

Tim Bird – Will the informal footpath used to access the cemetery remain accessible?
JM -The team will review the issue and take it into consideration.

Erin K flood – How was the need for additional self-storage in Portland determined?
JM - We did not do a survey, The market analysis within a three-mile radius shows high population density, occupancy rates roughly between 65 -66,000 thousands residents, and the data we looked at, is square foot per capita per resident in the city, and that came up to about 8-8.5 and should mean that there is 480,000 square feet of rentable self-storage in the area, and the main thing that was pointed out that there is a need and it would work is the self-storage rental rate, And we hope, selfishly, that it is the last one in Portland because we feel this development will meet the last pocket of demand in the city of Portland region. In a word, it all comes down to the total saturation and rental rate that is now being charged on the market of self-storage, therefore adding another self-storage development will help make the self-storage rental more affordable.

Erin K flood – 33% of American use storage and it is due to transitions but there is also higher rate and people defaulting on payments because a lot of those transitions are related to downsizing, say this development doesn't fill up or work. If the project does not succeed, could the building be repurposed?
JM - The team is confident in demand but if it doesn't work, the building could be sold or adapted for another permitted use if necessary.

Erin K flood – Did the applicant analyze the rate of use at nearby storage facilities?

JM - confirmed that nearby facilities were reviewed and are operating at high occupancy levels, the average occupancy for those facilities ranges between 94-97% and we're hoping this development will help offer some affordable self-storage

Tim Bird – Is a traffic study required for this project?
JW - Traffic generation is minimal and does not warrant a full traffic study. Peak-hour traffic impacts are expected to be low.

Joyce Maggie – Will there be on-site security personnel?
JM - There will be no on-site security officers; however, multiple systems will be monitored 24/7, including fire and security alarms and make call in case of an issue, we do spend a good amount of money to make sure that there is good security on the facility.

Tim Bird – What is the anticipated construction timeline?
JM -The construction is expected to take approximately 11 to 12 months, with groundbreaking anticipated in summer 2026 and opening around summer 2027.

Erin K flood – Is the project certain to move forward?
JM - The development is in the permitted B-4 zoning district and we want to make sure that it is something well to have and be used in the city of Portland and are open to feedback and community input.

Tim Bird – Can additional trees or vegetation be preserved to provide sound buffering and wildlife habitat?
JM -The team will continue to explore opportunities to preserve as much vegetation as possible.

Olga Graves – Is an environmental survey required for the site?
JW - No additional environmental survey is required beyond existing GIS data.

Jeff Nevers – What lighting is proposed along the residential side of the building?
JM -No lighting is proposed at the rear of the building to minimize visual impacts. Lighting will be focused at the front entrance.

Erin K flood – and how will that impact security?

JM - We're trying to work with the neighbors and make it look like there isn't a building there so lighting at the back might cause a distraction and show the building and by conserving most of the trees in the back, it minimizes the visual

impacts of the project. But there will be lighting at the front of the building because of the central entrance there is no other way to get into the building

Jeff Nevers – How did the City determine that traffic impacts would be minimal?
JW -The application is currently under review and that any additional studies requested by the City will be completed. But from experience I am used to seeing traffic numbers for office building and subdivisions being low as far as trips per hours.

Olga Graves – Will preserved trees be clearly marked to prevent accidental removal?
JW stated that tree preservation will follow the City of Portland's tree protection guidelines.

Chandler Green – Apart from trees, what other site features will be preserved?
JW -The associated vegetation will be preserved and that site disturbance will be limited to areas necessary for development.

Jeff Nevers – Was a geological or soil study conducted?
JW – The geotechnical assessment is underway and will be available soon.

Tim Bird – Is this the only required neighborhood meeting?
JW - This is the only required neighborhood meeting. Future meetings will be held before the Planning Board and will be publicly noticed. If you would like to be notified, get on the city website and sign up to be a person of interest so that you're sure to be notified and that's all done online.

Tim Bird – Why has this property not been developed previously?
JW - The reason is unknown, but environmental and site assessments as part of the applicant financing process found no chemical spill contamination or anything.

Olga Graves – Where should additional questions be directed?
JM and JW - They will provide their contact information for follow-up questions.

4. Adjournment

The meeting was adjourned at **6:30 PM**.

1336 FOREST AVE ASSOCIATES
51-A BURNHAM ST
PORTLAND, ME 04102

EMMA AMBROSE
11 ARDMORE ST
PORTLAND, ME 04103

MATTHEW AMOROSO
14 DOROTHY ST
PORTLAND, ME 04103

MARIA WILLIS
14 DOROTHY ST
PORTLAND, ME 4103

AQUILA INVESTMENT GROUP LLC
33 ALLEN AVE
PORTLAND, ME 04103

HARRY AND APRIL BALLARD
11 DOROTHY ST
PORTLAND, ME 04103

ANDREW AND AUBREY BARRETT
1326 FOREST AVE # 16
PORTLAND, ME 04103

MARY BENNETT
1326 FOREST AVE # 6
PORTLAND, ME 04103

LAURIE BIRMINGHAM
71 AVALON RD
PORTLAND, ME 04103

BJG LLC
3 CONGRESSIONAL DR
FALMOUTH, ME 04105

JOSEPH BREUNIG
722 BLACKBURN BLVD
NORTH PORT, FL 34287

DWIGHT AND DIANE BRUNS
61 AVALON RD
PORTLAND, ME 04103

MINTRA BUNMAI
76 BURWELL AVE
SOUTH PORTLAND, ME 04106

DOUGLAS CARRIER
1326 FOREST AVE # 5
PORTLAND, ME 04103

JOSHUA AND KATHARINE CHASAN
20 ARDMORE ST
PORTLAND, ME 04103

SINUON CHAU
26 MAPLE AVE
SCARBOROUGH, ME 04074

EDEN CIANCIOLO
1326 FOREST AVE # 9
PORTLAND, ME 04103

BRIAN CARVILLE
1326 FOREST AVE # 9
PORTLAND, ME 04103

CITY OF PORTLAND
389 CONGRESS ST
PORTLAND, ME 04101

CAITLIN CORRIGAN
1326 FOREST AVE # 3
PORTLAND, ME 04103

JOEL AND STEPHANIE CROWLEY
11 TANGLEWOOD DR
BRUNSWICK, ME 04011

JOHN DAVIS
1326 FOREST AVE # 7
PORTLAND, ME 04103

KILEY DICKHAUT-HERRICK
1326 FOREST AVE # 15
PORTLAND, ME 04103

TODD STIGMAN
1326 FOREST AVE # 8
PORTLAND, ME 04103

JANINE DUTTON
1326 FOREST AVE # 8
PORTLAND, ME 04103

EVOLUTION PORTLAND PROPERTIES LLC
PO BOX 9785
PORTLAND, ME 04104

TIMOTHY BIRD
40 AVALON RD
PORTLAND, ME 04103

ERIN FLOOD
40 AVALON RD
PORTLAND, ME 04103

FOREST PINES CONDO
1326 FOREST AVE
PORTLAND, ME 04104

ANTHONY GALLANT
114 HARTLEY ST
PORTLAND, ME 04103

SCOTT AND COLEEN GARLAND
1326 FOREST AVE # 10
PORTLAND, ME 04103

ANNA GILBERTY
52 ROBIE ST
GORHAM, ME 04038

CHANDLER GREEN
9 RANGE ST
PORTLAND, ME 04103

OLGA GRAVES
9 RANGE ST
PORTLAND, ME 04103

MEAGAN GRIFFETH
174 RAYMOND HILL RD
RAYMOND, ME 04071

EMMANUEL HABARUREMA
68 AVALON RD
PORTLAND, ME 04103

ROBERTY HAINS
250 HOLM AVE
PORTLAND, ME 04102

JEAN HAKIZAMUNGU
3 BLACKSTRAP RD
FALMOUTH, ME 04105

CANDIDE MUJAWAYEZU
3 BLACKSTRAP RD
FALMOUTH, ME 04105

LISA HEIDEL
1326 FOREST AVE # 2
PORTLAND, ME 04103

ROBERT HUNDERTMARK
124 HICKS ST
PORTLAND, ME 04103

LAWRENCE JACK
145 WARREN AVE
PORTLAND, ME 04103

JIF MANAGEMENT OF MAINE LLC
145 WARREN AVE
PORTLAND, ME 04103

LINDSAY KELLER
92 AVALON RD
PORTLAND, ME 04103

TIMOTHY AND MEAGAN LEACH
1326 FOREST AVE # 4
PORTLAND, ME 04103

JOYCE MAGGI
19 RANGE ST
PORTLAND, ME 04103

MATHESON TRI-GAS INC
3 MOUNTAINVIEW RD
WARREN, NJ 07059

MCINMITCHELL LLC
769 CONGRESS ST
PORTLAND, ME 04101

GARRETT MERCIER
6 ARDMORE ST
PORTLAND, ME 04103

MARGARET MOSHOE
12 RANGE ST
PORTLAND, ME 04103

JEFFREY AND MICHELLE NEVERS
16 ARDMORE ST
PORTLAND, ME 04103

NEW MAINE PROPERTIES LIMITED
LIABILITY COMPANY
93 WARREN AVE
PORTLAND, ME 04103

SUSAN OLIVER
36 AVALON RD
PORTLAND, ME 04103

MATTHEW PALADINO
16 LONGSPUR WAY
FALMOUTH, ME 04105

PORTLAND TERMINAL CO
IRON HORSE PARK
NORTH BILLERICA, MA 01862

PVA LIMITED PARTNERSHIP
1115 WESTFORD ST
LOWELL, MA 01851

BARBARA RACHEL
9 AVALON TER
PORTLAND, ME 04103

RAIA BUSINESS COMPLEX LLC
54 WARREN AVE
PORTLAND, ME 04104

MARGARET RUSSELL
20 RANGE ST
PORTLAND, ME 04103

MATTHEW RYLE
15 KING ST
PORTLAND, ME 04103

SCHIFF'S LLC
134 WARREN AVE
PORTLAND, ME 04103

LYNN KUZMA
237 UNDERHILL RD
SOUTH ORANGE, NJ 07079

SOULFUL SPACES LLC
144 KELSEY RIDGE RD
FREEPORT, ME 04032

RAMINTA MOORE
4 KING ST
PORTLAND, ME 04103

SHEILA TOOLE
1326 FOREST AVE # 13
PORTLAND, ME 04103

BARBARA VESSEY
1326 FOREST AVE # 12
PORTLAND, ME 04103

RACHELLE LAMBERT
60 BELFORT ST
PORTLAND, ME 04101

ANTHONY WILBUR
85 AVALON RD
PORTLAND, ME 04103

AMEENA SHIR
PO BOX 8301
PORTLAND, ME 04104

KINSMAN AND SUZANNE SMITH
41 AVALON RD
PORTLAND, ME 04103

STAR GAS PROPANE LP
PO BOX 206
WHIPPANY, NJ 07981

DAVID THIBEAULT
1326 FOREST AVE #11
PORTLAND, ME 04103

UNIVERSITY OF NEW ENGLAND
11 HILLS BEACH RD
BIDDEFORD, ME 04005

DALE YOUNG
1326 FOREST AVE # 12
PORTLAND, ME 04103

GEOFFREY WAHOME
60 BELFORT ST
PORTLAND, ME 04101

WJG LLC
3 CONGRESSIONAL DR
FALMOUTH, ME 04105

LEE SLATER
237 UNDERHILL RD
SOUTH ORANGE, NJ 07079

THI AND NGOC HOA THI SON
54 AVALON RD
PORTLAND, ME 04103

SHANNON TALLMAN
4 KING ST
PORTLAND, ME 04103

TIFFANY TITHERINGTON
56 TYLER ST
PORTLAND, ME 04103

JOSHUA VAN BUSKIRK
1326 FOREST AVE # 14
PORTLAND, ME 04103

WACUBU WARREN LLC
348 WOODVILLE RD
FALMOUTH, ME 04105

DWIGHT AND DENISE
WATERHOUSE
12 AVALON TER
PORTLAND, ME 04103

Notice of Public Meeting Certification

I, Jon Whitten Jr., PE, hereby certify that a notice of neighborhood meeting sign was posted at the site on April 14, 2026 to notify others that the project PL-003487-2025 located at 97 Warren Avenue, Portland, ME will be included on the April 28, 2026 Planning Board Public Hearing agenda. We will remove the sign by April 31, 2026.

Photo documentation of the sign in situ:

Note that it is the applicant's responsibility to remove the notice of public meeting sign within three days following the date of the meeting.

Signed,

Jon H. Whitten, Jr., PE
Senior Project Manager

JHW/MK/leb
Enclosure

Photo No. 1 **Photo Date:** 04/14/2026 **Site Location:** 97 Warrant Ave., Portland, ME **Description:** Picture of Public Notice sign for April 28th Planning Board meeting. Sign is an 18"X24" two-sided yard sign. **Photo By:** PJM	

Photo No. 2 **Photo Date:** 04/14/2026 **Site Location:** 97 Warren Ave., Portland, ME **Description:** Closer-up picture of public notice sign. **Photo By:** PJM	

ADDRESS: 97 Warren Ave, Portland, ME 04103

MEETING DATE: April 28, 2026

APPLICATION ID: PL-003487-2025

NOTICE OF PUBLIC MEETING

CITY OF PORTLAND

PLANNING BOARD

Find agenda at: www.portlandmaine.gov/agendas

For more information, call (207) 874-8719

Department of Public Works
Mike Murray
Director

Date: April 17, 2026
Re: Wastewater Capacity Authorization
Address: 97 Warren Avenue
Applicant: Peachtree Acquisitions, LLC
Planner: Neha Sunil Pol

Estimate of Anticipated Wastewater Flows				
Development	**Unit Size**	**Number of Units**	**Gallons per Day per Unit**	**Total Gallons per Day**
Existing Flow to Remain				
Vacant				
Proposed flow				
Warehouse	# Employees	2	Greater of 12 GPD/Employee or 100 GPD	100
Net Change				**+ 100**
*Values based on STATE OF MAINE: SUBSURFACE WASTEWATER DISPOSAL RULES, most recent edition				

Comments:
The Department of Public Works, which includes the Water Resource Division, have reviewed and determined that the downstream sewers from the project address have the capacity to convey the estimated dry weather wastewater flows which will be generated from this development.

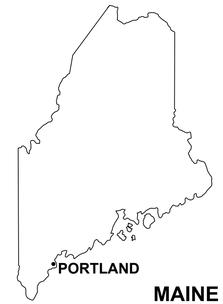
You are also reminded that new connections into the combined sewer system shall be equipped with backflow prevention in accordance with Section 2.6.10 of the City's Technical Manual.

If the City can be of further assistance, please contact me at 207-874-8840 or brad@portlandmaine.gov
Sincerely,

Bradley A. Roland, P.E.,
Senior Project Engineer

4-STORY SELF-STORAGE UNIT BUILDING

97 WARREN AVENUE, PORTLAND, MAINE 04103



PROJECT INFORMATION

CIVIL ENGINEER
HALEY WARD, INC.
ATTN: JON WHITTEN, JR. P.E.
12 MOUNTFORT STREET
PORTLAND, MAINE 04101
T: 207.805.8786

RECORD OWNER
AMEENA SHIR
PO BOX 8301
PORTLAND, MAINE 04104

SURVEYOR
HALEY WARD, INC.
ATTN: CHARLES ADAMS, PLS
200 GRIFFIN ROAD, UNIT 14
PORTSMOUTH, NH 03801
T: 603.430.9282

APPLICANT
PEACHTREE AQUISITIONS, LLC
7119 31ST AVENUE N.
MINNEAPOLIS, MINNESOTA 55247

ARCHITECT
ONYX CREATIVE
ATTN: DON ALEXANDER, VP, ARCHITECTURE
25001 EMERY ROAD, #400
CHEVELAND, OHIO 44128
T: 216.223.3200 X 3249

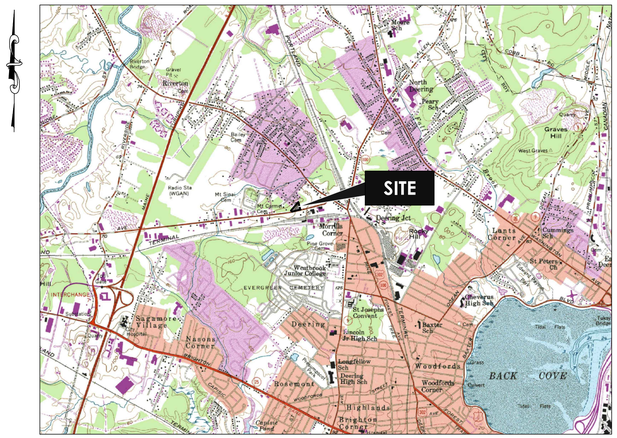
UTILITY PROVIDERS

WATER
PORTLAND WATER DISTRICT
225 DOUGLASS STREET
PO BOX 3553
PORTLAND, MAINE 04104
T: 207.761.8310

SEWER
CITY OF PORTLAND PUBLIC WORKS DEPARTMENT
212 CANCO ROAD
SUITE B
PORTLAND, MAINE 04103
T: 207.874.8801

ELECTRIC
CENTRAL MAINE POWER
162 CANCO ROAD
PORTLAND, MAINE 04103
T: 800.750.4000

NATURAL GAS
UNITIL
376 RIVERSIDE INDUSTRIAL PARKWAY
PORTLAND, MAINE 04103
T: 888.301.7700



LOCATION MAP

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C001 GENERAL NOTES & LEGEND
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C101 SITE PLAN
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C505 SITE DETAILS
C506 SITE DETAILS
C701 PRE-DEVELOPMENT HYDROLOGY PLAN
C702 POST-DEVELOPMENT HYDROLOGY PLAN

PLAN REFERENCE:

1. A PLAN ENTITLED 'SITE DEVELOPMENT - 97 WARREN AVENUE, PORTLAND, ME - EXISTING CONDITIONS PLAN' PREPARED BY HALEY WARD, INC. AND DATED FEBRUARY 2026.
2. A PLAN SET ENTITLED 'WARREN AVENUE - FOREST AVENUE TO BISHOP STREET SEWER SEPARATION PROJECT' PREPARED BY THE CITY OF PORTLAND PUBLIC SERVICES DEPARTMENT AND DATED JANUARY 11, 2012.
3. A PLAN ENTITLED 'ADDITIONS AND ALTERATIONS TO W.H. DEMMONS, INC., 93 WARREN AVENUE, PORTLAND, MAINE' PREPARED BY DAVID D. LEASURE - ARCHITECTUAL ASSOCIATES INC. AND DATED DECEMBER 30, 2002.
4. SUPPLEMENTAL LIDAR TOPOGRAPHY WAS OBTAINED FROM THE NOAA DIGITAL COAST DATA ACCESS VIEWER AND ADJUSTED VERTICALLY BY -.689' TO CONVERT TO NAVD 88.

NOT FOR CONSTRUCTION
MARCH 30, 2026

HALEY WARD
www.haleyward.com

15191.001

EROSION CONTROL NOTES

1. ALL SEDIMENTATION AND EROSION CONTROL MEASURES SHALL BE IN ACCORDANCE WITH THE MAINE EROSION AND SEDIMENTATION CONTROL BMPS, PUBLISHED BY THE BUREAU OF LAND AND WATER QUALITY, MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION, LATEST EDITION.

2. SILT FENCE WILL BE INSPECTED, REPLACED AND/OR REPAIRED IMMEDIATELY FOLLOWING ANY SIGNIFICANT RAINFALL OR SNOW MELT OR LOSS OF SERVICEABILITY DUE TO SEDIMENT ACCUMULATION. AT A MINIMUM, ALL EROSION CONTROL DEVICES WILL BE OBSERVED WEEKLY.

3. DURING THE CONSTRUCTION PHASE, INTERCEPTED SEDIMENT WILL BE RETURNED TO CONSTRUCTION SITE.

4. SEDIMENT CONTROL DEVICES SHALL REMAIN IN PLACE AND BE MAINTAINED BY THE CONTRACTOR UNTIL AREAS UPSLOPE ARE STABILIZED BY A SUITABLE GROWTH OF GRASS. ONCE A SUITABLE GROWTH OF GRASS HAS BEEN OBTAINED, ALL TEMPORARY EROSION CONTROL ITEMS SHALL BE REMOVED BY THE CONTRACTOR. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THEY ARE REMOVED SHALL BE DRESSED TO CONFORM WITH THE EXISTING GRADE, PREPARED, SEEDED, AND MULCHED IMMEDIATELY.

5. ALL DISTURBED AREAS WILL BE SEEDED WITH 2.5 LBS. RED FESCUE AND 0.5 LBS. RYE GRASS PER 1,000 SQUARE FEET AND MULCHED AT A RATE OF 90 LBS. PER 1,000 SQUARE FEET OR EQUIVALENT APPLICATION OF SEED AND MULCH.

6. A SUITABLE BINDER SUCH AS CURASOL OR TERRTACK WILL BE USED ON THE HAY MULCH FOR WIND CONTROL.

7. IF FINAL SEEDING OF DISTURBED AREAS IS NOT COMPLETED BY SEPTEMBER 15th OF THE YEAR OF CONSTRUCTION, THEN ON THAT DATE THESE AREAS WILL BE GRADED AND SEEDED WITH WINTER RYE AT THE RATE OF 112 POUNDS PER ACRE OR 3 POUNDS PER 1000 SQUARE FEET. THE RYE SEEDING WILL BE PRECEDED BY AN APPLICATION OF 3 TONS OF LIME AND 800 LBS. OF 10-20-20 FERTILIZER OR ITS EQUIVALENT. MULCH WILL BE APPLIED AT A RATE OF 90 POUNDS PER 1000 SQUARE FEET.

8. IF THE RYE SEEDING CANNOT BE COMPLETED BY OCTOBER 1st OR IF THE RYE DOES NOT MAKE ADEQUATE GROWTH BY DECEMBER 1st, THEN ON THOSE DATES, HAY MULCH WILL BE APPLIED AT 150 POUNDS PER 1000 SQUARE FEET.

9. ALL CATCH BASINS ARE TO BE PROTECTED BY STRAW BALE OR SILTFENCE IN ACCORDANCE WITH SECTION B-3 STORM DRAIN INLET PROTECTION OF THE MAINE BMP HANDBOOK. SURROUNDING AREAS CAN BE EXCAVATED OR LEFT LOW AS A SEDIMENT TRAP. CURB INLETS SHALL BE PROTECTED BY GUTTERGATORS, OR APPROVED EQUIVALENT.

10. INTERIOR SILT FENCES ALONG CONTOUR DIVIDING FLAT AND STEEP SLOPES, AREAS WITH DIFFERENT DISTURBANCE SCHEDULES, AROUND TEMPORARY STOCKPILES OR IN OTHER UNSPECIFIED POSSIBLE CIRCUMSTANCES SHOULD BE CONSIDERED BY THE CONTRACTOR. THE INTENT OF SUCH INTERIOR SILT FENCES IS TO LIMIT SEDIMENT TRANSPORT WITHIN THE SITE TOWARD THE PROTECTED CATCH BASIN INLETS TO MINIMIZE SEDIMENT REMOVAL REQUIRED BY THE EROSION CONTROL NOTE 9 PROTECTIONS AND EXTEND LIFE OF SUCH DEVICES.

11. THE CONTRACTOR SHALL PROVIDE A SEDIMENT BASIN FOR ALL WATER PUMPED FROM EXCAVATIONS. BASIN SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE "MAINE EROSION AND SEDIMENT HANDBOOK FOR CONSTRUCTION: BEST MANAGEMENT PRACTICES". THE CONTRACTOR SHALL SUBMIT FOR REVIEW/APPROVAL PRIOR TO BEGINNING ANY PROJECT WORK.

12. CONSTRUCTION OVERSIGHT:
    THE CONTRACTOR 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 POND'S CONSTRUCTION PLAN 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 POND HAS BEEN COMPLETED. ACCOMPANYING THE ENGINEER'S NOTIFICATION MUST BE A LOG OF THE ENGINEER'S INSPECTIONS GIVING THE DATE OF EACH INSPECTION, THE TIME OF EACH INSPECTION, AND THE ITEMS INSPECTED ON EACH VISIT, AND INCLUDE ANY TESTING DATA OR SIEVE ANALYSIS DATA OF EVERY MINERAL SOIL AND SOIL MEDIA SPECIFIED IN THE PLANS AND USED ON SITE.

13. CONTECH MANUFACTURED SYSTEMS
    INSPECTION BY A PROFESSIONAL ENGINEER APPROVED BY THE MANUFACTURER SHALL CONSIST OF AN APPROPRIATE NUMBER OF VISITS TO THE SITE TO INSPECT THE SUBGRADE PREPARATION, GENERAL CONSTRUCTION, FILTER SYSTEM INSTALLATION, CHAMBER PLACEMENT, FABRIC LAYMENT, AND STORMWATER OVERFLOW BYPASS CONSTRUCTION FROM INITIAL GROUND DISTURBANCE TO FINAL STABILIZATION OF THE MEASURE.

14. DEWATERING
    A DEWATERING PLAN IS NEEDED TO ADDRESS EXCAVATION DE-WATERING FOLLOWING HEAVY RAINFALL EVENTS OR WHERE THE EXCAVATION MAY INTERCEPT THE GROUNDWATER TABLE DURING CONSTRUCTION. THE COLLECTED WATER NEEDS TREATMENT AND A DISCHARGE POINT THAT WILL NOT CAUSE DOWNGRADIENT EROSION AND OFFSITE SEDIMENTATION OR WITHIN A RESOURCE. PLEASE FOLLOW THE DETAILS OF SUCH A PLAN.

15. BASIC STANDARDS - EROSION CONTROL MEASURES:
    MINIMUM EROSION CONTROL MEASURES WILL NEED TO BE IMPLEMENTED AND THE CONTRACTOR 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 SEDIMENTATION CONTROL INSPECTIONS AND MAINTENANCE

    CONTRACTOR WILL BE RESPONSIBLE FOR FOLLOWING PROCEDURES FOUND IN THE "MAINE EROSION AND SEDIMENT CONTROL PRACTICES FIELD GUIDE FOR CONTRACTORS" (PUBLISHED MARCH 2015). THE PUBLICATION CAN BE FOUND AT: HTTP://WWW.MAINE.GOV/DEP/LAND/EROSION/ESCBMPS/INDEX.HTML

GENERAL CONSTRUCTION NOTES

1. THIS PROJECT GENERALLY CONSISTS OF THE CONSTRUCTION OF A NEW 22,189 SF SELF STORAGE FACILITY. A NEW 11 SPACE PARKING LOT, UTILITIES TO SERVE THE PROPOSED STRUCTURE, AND AN UNDERGROUND STORMWATER DETENTION & TREATMENT SYSTEM TO SERVE THE DEVELOPMENT. PROVIDE ALL REQUIRED FITTINGS, MECHANICAL JOINT RETAINER GLANDS, AND OTHER APPURTENANCES AS OUTLINED IN THE PLANS AND SPECIFICATIONS. PROVIDE ALL SURFACE RESTORATION, TEMPORARY UTILITIES, EROSION CONTROL, TRAFFIC CONTROL AND OTHER WORK AS SPECIFIED OR APPURTENANT.

2. CONTRACTOR TO PROVIDE OWNER AND ENGINEER WITH A WORK PLAN OUTLINING THE WORK SCHEDULE, TRAFFIC CONTROL PLAN, AND WORK AREA BARRICADING PLAN TO BE APPROVED BY THE OWNER AND ENGINEER PRIOR TO CONSTRUCTION.

3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PERFORMING A PRE-CONSTRUCTION VIDEO OF THE PROJECT AREA. COST SHALL BE INCIDENTAL TO THE PROJECT. CONTRACTOR TO PROVIDE A COPY OF THE VIDEO TO THE OWNER AND ENGINEER.

4. THE CONTRACTOR SHALL COORDINATE ALL CONSTRUCTION WITH THE CITY OF PORTLAND, THE PORTLAND WATER DISTRICT, UTILITY COMPANIES, DIG SAFE, EMERGENCY SERVICES, AND MAINE DEPARTMENT OF TRANSPORTATION (MDOT) WHERE APPLICABLE. CONTRACTOR SHALL NOTIFY ALL UTILITIES PRIOR TO COMMENCING WORK TO ALLOW SUFFICIENT TIME TO LOCATE AND MARK THE LOCATION OF ALL BURIED UTILITIES. CONTRACTOR SHALL ALSO CONTACT "DIG SAFE", TELEPHONE NO 811 OR 888-DIG-SAFE. REPAIR OF ANY DAMAGED UTILITY WILL BE INCIDENTAL TO THIS PROJECT

5. THE CONTRACTOR SHALL NOTIFY THE OWNER AND ENGINEER IN WRITING OF ANY CONDITION OR OCCURRENCE THAT REPRESENTS A CHANGE IN PROJECT SCOPE. VERBAL NOTIFICATION IS REQUIRED PRIOR TO PROCEEDING WITH THE WORK OF THE PROJECT AND WRITTEN NOTIFICATION MUST BE PROVIDED. REQUESTS FOR FEE ADJUSTMENTS WILL NOT BE CONSIDERED UNLESS PROPER NOTICE IS GIVEN

6. THE CONTRACTOR SHALL PROVIDE ALL LABOR, EQUIPMENT, AND MATERIALS AS REQUIRED TO PERFORM THE WORK AS INDICATED ON THE DRAWINGS AND IN THE SPECIFICATIONS. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE APPLICABLE FEDERAL, STATE AND LOCAL CODES.

7. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL NECESSARY CONSTRUCTION PERMITS. PERMIT APPLICATIONS SHALL BE SUBMITTED WITH ADEQUATE TIME SO AS NOT TO DELAY CONSTRUCTION.

8. THE CONTRACTOR SHALL SUPERVISE AND INSPECT THE WORK OF THIS PROJECT IN AN EFFICIENT AND COMPETENT MANNER. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES USED TO COMPLETE THE WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THE WORK IS IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. A REPRESENTATIVE OF THE GENERAL CONTRACTOR SHALL BE PRESENT DURING ALL PHASES OF THE WORK.

9. SAFETY IS THE RESPONSIBILITY OF THE CONTRACTOR. PERFORM ALL WORK IN ACCORDANCE WITH SAFETY STANDARDS OF APPLICABLE LAWS, BUILDING AND CONSTRUCTION CODES, THE "MANUAL OF ACCIDENT PREVENTION IN CONSTRUCTION" PUBLISHED BY THE ASSOCIATED GENERAL CONTRACTORS OF AMERICA, THE REQUIREMENTS OF THE OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970, AND THE REQUIREMENTS OF TITLE 9 OF THE CODE OF FEDERAL REGULATIONS, PART 1926, "SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION".

10. THE LOCATIONS OF ALL PROPERTY LINES AND RIGHT OF WAYS ARE APPROXIMATE (SHOWN FOR REFERENCE ONLY), UNLESS NOTED OTHERWISE. PROPERTY LINES AND RIGHT OF WAYS SHOWN ARE NOT INTENDED TO REPRESENT LEGAL BOUNDARIES.

11. THE LOCATION, TYPE AND SIZE OF EXISTING PIPES, DUCTS, CONDUITS AND OTHER UNDERGROUND STRUCTURES SHOWN ON THE DRAWINGS ARE NOT WARRANTED TO BE EXACT NOR IS IT WARRANTED THAT ALL UNDERGROUND STRUCTURES ARE SHOWN. CONTRACTOR SHALL FIELD VERIFY ALL UTILITY LOCATIONS PRIOR TO COMMENCEMENT OF CONSTRUCTION. DEPTH OF SERVICES ARE UNKNOWN AND SHALL BE FIELD VERIFIED BY THE CONTRACTOR. EXCAVATING TEST PITS AS NECESSARY TO VERIFY UTILITY LOCATIONS AND DEPTHS SHALL BE INCIDENTAL TO THIS PROJECT.

12. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING TOPOGRAPHY AND EXISTING CONDITIONS PRIOR TO CONSTRUCTION.

13. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING PIPE SIZES, INVERTS, AND LOCATIONS, AND SHALL INCLUDE IN SUBMITTAL PRIOR TO ORDERING.

14. LAYOUT OF THE PROJECT IS THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE APPROVED BY THE ENGINEER. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL GRADE AND LAYOUT CONTROL. LAYOUT SHOULD BE PERFORMED WITH SURVEY EQUIPMENT AND OVERSEEN BY A LICENSED SURVEYOR. A CAD FILE WILL BE AVAILABLE TO THE CONTRACTOR.

15. THE WORK SHALL INCORPORATE EROSION CONTROL MEASURES WHICH ARE COMPLIANT WITH THE LATEST VERSION OF "MAINE EROSION AND SEDIMENT CONTROL HANDBOOK FOR CONSTRUCTION: BEST MANAGEMENT PRACTICES".

16. CONTRACTOR SHALL BE REQUIRED TO PROVIDE DUST CONTROL FOR PROJECT WHICH CAN INCLUDE, BUT IS NOT LIMITED TO, WATER AND CALCIUM CHLORIDE. COST IS INCIDENTAL TO THE PROJECT.

17. RESTRICT ACCESS TO SITE THROUGH THE USE OF APPROPRIATE SIGNAGE, GATES, BARRIERS, FENCES, ETC. SITE SHALL BE LEFT WITH APPROPRIATE SAFETY MEASURES IN PLACE DURING NON-WORKING HOURS. NO TRENCH SHALL BE LEFT OPEN DURING NON-WORKING HOURS. SITE SAFETY IS THE RESPONSIBILITY OF CONTRACTOR, DURING BOTH WORKING AND NON-WORKING HOURS.

18. HOURS FOR THE PROJECT WILL BE MONDAY THROUGH FRIDAY, FROM 7:00 AM TO 7:00 PM, UNLESS OTHERWISE AUTHORIZED BY THE OWNER.

19. CONTRACTOR SHALL PERFORM ALL CONSTRUCTION ACTIVITIES RELATED TO THE PROJECT WITHIN THE CONFINES OF THE RIGHT OF WAY OF THE STREETS AND UTILITY EASEMENTS. ANY ACTIVITY, MATERIAL STORAGE ETC., TAKING PLACE ON PRIVATE PROPERTY SHALL BE WITH THE EXPRESS WRITTEN PERMISSION OF THE OWNER AND PROPERTY OWNER AND COORDINATED WITH THE OWNER. WORK OUTSIDE OF THESE LIMITS MAY BE REQUIRED. THE OWNER WILL COORDINATE SECURING EASEMENTS FOR THIS WORK.

20. DO NOT PARK, IMPEDE ACCESS TO, OR STORE EQUIPMENT ON ADJACENT TOWN OR PRIVATELY OWNED LOTS, UNLESS PERMISSION HAS BEEN GRANTED IN WRITING BY TOWN AND/OR LAND OWNER.

21. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT EQUIPMENT FLUIDS FROM REACHING ANY WATER COURSE. ANY INADVERTENT FLUID DISCHARGES SHALL BE IMMEDIATELY CLEANED FROM THE WATERS USING WHATEVER MEANS NECESSARY, AS DETERMINED BY THE ENGINEER.

22. ALL WATER SERVICES WILL HAVE A MINIMUM 6.0 FEET OF COVER UNLESS NOTED OTHERWISE OR APPROVED BY THE ENGINEER.

23. CONTRACTOR SHALL BACKFILL TRENCH FOLLOWING EACH DAYS CONSTRUCTION. NO OPEN TRENCHES WILL BE ALLOWED OVERNIGHT UNLESS APPROVED BY ENGINEER AND PROPERLY BARRICADED (IE. SNOW FENCING, CHAIN LINK FENCING, JERSEY BARRIER OR APPROVED EQUAL. CAUTION RIBBON AND EQUIPMENT PLACEMENT WILL NOT BE APPROVED AS BARRICADING. CONTRACTOR IS RESPONSIBLE TO MAINTAIN TRENCH AS DIRECTED BY THE ENGINEER

24. ALL FINISH SURFACES SHALL BE INSTALLED TO PROMOTE POSITIVE DRAINAGE. IN NO WAY SHALL THE NEW FINISH SURFACES CREATE DRAINAGE PROBLEMS THAT DID NOT EXIST PRIOR TO CONSTRUCTION.

25. CONTRACTOR SHALL CONTACT UTILITY POLE OWNERS ADJACENT TO AREAS OF EXCAVATION TO ARRANGE POLE SUPPORT DURING EXCAVATION. BRACING OF UTILITY POLES WHERE REQUIRED SHALL BE INCIDENTAL TO THE PROJECT AND NO SEPARATE PAYMENT SHALL BE MADE UNLESS OTHERWISE NOTED.

26. ALL SIGNING, SIGNAL, AND STRIPING MATERIALS AND PLACEMENT SHALL CONFORM TO THE MDOT STANDARD SPECIFICATIONS, SUPPLEMENTAL SPECIFICATIONS AND STANDARD DETAILS AND WITH FEDERAL HIGHWAY ADMINISTRATION "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES".

27. RESTORE ALL AREAS DISTURBED BY CONTRACTORS OPERATION TO ORIGINAL CONDITIONS (GRAVEL, PAVEMENT, GRASS, CURB, ETC.) UNLESS NOTED OTHERWISE ON THE PLANS. RESTORATION OF ROADS, CURBS, PARKING SURFACES AND LAWNS DAMAGED BY THE CONTRACTOR SHALL BE INCIDENTAL TO THE PROJECT.

28. EXISTING FACILITIES, PLANTINGS AND IMPROVEMENTS (I.E. TREES, LIGHT POLES, SIGNS, CONCRETE SIDEWALK, ETC.) SHALL BE REMOVED AND REPLACED OR PROTECTED AS REQUIRED DURING CONSTRUCTION. THE ASSOCIATED COSTS ARE INCIDENTAL TO THE PROJECT.

29. ALL MATERIALS SCHEDULED FOR REMOVAL SHALL BE DISPOSED OF IN A LEGAL MANNER BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER. THE OWNER HAS THE FIRST RIGHT AND REFUSAL FOR ANY DEMOLITION MATERIALS.

30. DISPOSAL OF SURPLUS SOIL MATERIAL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, SURPLUS MATERIAL SHALL NOT BE DISPOSED OF ON THE PROJECT SITE. DISPOSAL SHALL BE MADE ONLY AT WASTE AREAS WHICH ARE LICENSED TO ACCEPT SUCH MATERIALS, UNLESS THE MATERIAL IS ACCEPTABLE FOR USE AS FILL IN OTHER AREAS OF THE PROJECT. THE OWNER HAS THE FIRST RIGHT AND REFUSAL FOR ANY SURPLUS SOIL MATERIALS.

31. ALL MATERIALS, COMPONENTS, PRODUCTS, SYSTEMS AND COATINGS THAT COME INTO CONTACT WITH DRINKING WATER MUST BE CERTIFIED TO MEET NSF/ANSI STANDARD 61.

32. WHERE THERE IS LESS THAN TEN FEET OF HORIZONTAL SEPARATION BETWEEN THE SANITARY SEWER MAIN AND THE WATER MAIN, PROVIDE 18" OF VERTICAL SEPARATION BETWEEN THE BOTTOM OF THE WATER MAIN AND THE TOP OF THE SEWER IN A SEPARATE TRENCH OR UNDISTURBED EARTH SHELF AND A MINIMUM OF 5 FEET EDGE TO EDGE HORIZONTALLY IS PROVIDED.

33. COORDINATE DISRUPTION OF PRIVATE UTILITY SERVICES WITH LANDOWNERS AT LEAST TWO DAYS (48 HOURS) PRIOR TO DISRUPTION. ALL UTILITY COORDINATION IS RESPONSIBILITY OF CONTRACTOR.

34. WATER SERVICES SHALL NOT BE DISCONTINUED AT ANY HOUSE PRIOR TO 10:00 AM WITHOUT WRITTEN NOTIFICATION TO THE PROPERTY OWNER.

35. ALL WASTEWATER FLOWS IN EXISTING SEWERS MUST BE MAINTAINED DURING CONSTRUCTION. COST IS INCIDENTAL TO THE PROJECT.

36. UNLESS OTHERWISE NOTED, RIM ELEVATIONS FOR PROPOSED MANHOLE AND CATCH BASIN STRUCTURES SHALL BE FIELD ADJUSTED TO FINISHED GRADES IN ACCORDANCE WITH DETAILS.

37. THE CONTRACTOR SHALL RAISE ALL EXISTING UTILITY COVERS, GRATES, FRAMES, AND BOXES TO MATCH NEW ELEVATIONS ON THE DRAWINGS, FIELD ADJUSTED TO FINISHED GRADES.

38. ALL TEST PITS NECESSARY TO LOCATE SERVICES SHALL BE INCIDENTAL TO THE PROJECT.

39. CONTRACTOR SHALL MAINTAIN TRAFFIC IN A SAFE MANNER AT ALL TIMES DURING CONSTRUCTION. MDOT TRAFFIC CONTROL AND SIGNAGE REQUIREMENTS SHALL APPLY ON THE TOWN OF MILFORD STREETS. THE CONTRACTOR SHALL MAKE EVERY EFFORT TO MAINTAIN CONTINUOUS TRAFFIC FLOW DURING CONSTRUCTION. THE ROADS SHALL NOT BE CLOSED TO TRAFFIC WITHOUT PERMISSION FROM THE TOWN OF MILFORD.

40. DRIVEWAY APRONS SHALL BE PAVED TO MATCH PROPOSED ROADWAY. APRON DIMENSIONS SHALL BE APPROVED BEFORE PAVING. APRON AREAS SHOWN ON THE PLANS ARE APPROXIMATE.

41. PROPERLY PROTECT AND DO NOT DISTURB PROPERTY IRONS AND MONUMENTS. IF DISTURBED, THE PROPERTY MONUMENT WILL BE RESET AT THE CONTRACTOR'S EXPENSE, BY A REGISTERED LAND SURVEYOR APPROVED BY THE ENGINEER.

42. THE OWNER REQUIRES THAT UPON COMPLETION OF CONSTRUCTION, A COMPLETE SET OF "AS-BUILT" DRAWINGS THAT REFLECT ANY AND ALL MODIFICATIONS WITHIN THE PUBLIC RIGHT OF WAY INCLUDING MODIFICATIONS TO THE WATER SYSTEM AND THE SANITARY AND STORM SEWER SYSTEMS WITHIN THE PROJECT LIMITS BE SUBMITTED TO THE TOWN OF MILFORD AND THE OLD TOWN WATER DISTRICT. THESE DRAWINGS SHALL BE SUBMITTED IN BOTH DIGITAL (CAD) DRAWING AND HARD COPY FORMAT. A CAD FILE WILL BE AVAILABLE TO THE CONTRACTOR.

ABBREVIATIONS

@	AT	MAX.	MAXIMUM
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE	MDOT	MAINE DEPT. OF TRANSPORTATION
APPROX.±	APPROXIMATELY	MH	MANHOLE
		MIN	MINIMUM
BLDG	BUILDING		
		N	NORTHING
		NE	NORTHEAST
CL	CENTERLINE	N.T.S.	NOT TO SCALE
CB	CATCH BASIN	NWT	NON WOVEN GEOTEXTILE
CLR	CLEAR	OD	OUTSIDE DIAMETER
CMP	CORRUGATED METAL PIPE	O.C.	ON CENTER
CO	CLEANOUT	OH	OVERHEAD
CPE	CORRUGATED POLYETHYLENE	OZ	OUNCES
		PERF	PERFORATED
DI	DUCTILE IRON		
DIA.	DIAMETER	PSF	POUNDS PER SQUARE FOOT
		PSI	POUNDS PER SQUARE INCH
E	EASTING	PVC	POLYVINYL CHLORIDE
EL	ELEVATION	PL	PROPERTY LINE
EFM	EXISTING FORCE MAIN	POH	PROPOSED OVERHEAD ELECTRIC
EPS	EXTRUDED POLYSTYRENE	PUGE	PROPOSED UNDERGROUND ELECTRIC
FM	FORCEMAIN	R	RADIUS
GAL	GALLON	S	SLOPE
GALV	GALVANIZED	SCL	STORMWATER COLLECTION LINE
		SCS	STORMWATER COLLECTION SYSTEM
GPH	GALLONS PER HOUR	SDR	STANDARD DIMENSION RATIO
GPM	GALLONS PER MINUTE	SE	SOUTHEAST
		SHT	SHEET
HDPE	HIGH DENSITY POLYETHYLENE	SQ	SQUARE
HP	HORSEPOWER	SS	STAINLESS STEEL
		SY	SQUARE YARD
ID	INSIDE DIAMETER		
IN.	INCHES	TBM	TEMPORARY BENCH MARK
INT.	INTERSECTION	TOC	TOP OF CONCRETE
INV.	INVERT	TYP	TYPICAL

LEGEND:

ITEMS SHOWN MAY NOT APPEAR ON PLANS

DESCRIPTION	EXISTING	PROPOSED
PROPERTY LINE		
BENCHMARK		
SURVEY STATION		
IRON PIN		
DRILL HOLE		
BOUND		
TEST PIT	TP	
SEWER MANHOLE	S	S
GAS VALVE	GV	GV
UTILITY POLE		
GUY ANCHOR		
ELECTRICAL MANHOLE	E	E
TRANSFORMER		TR
PULLBOX	P	P
WELL	W	W
WATER VALVE	WV	WV
WATER SHUTOFF		
HYDRANT		
AIR RELIEF VALVE		
DRAINAGE MANHOLE	D	D
CATCH BASIN		
CURB INLET		
PARKING LIGHT		
FLOOD LIGHT		
SITE LIGHT		
SIGN		
TRASH CAN		
FLAGPOLE		
MONITORING WELL	MW	MW
EDGE OF GRAVEL		
EDGE OF PAVEMENT		
CURBING		
MAJOR FOOT CONTOUR	100	100
MINOR FOOT CONTOUR	98	98
WATERLINE	W	W
STORM DRAIN	SD	SD
UNDER DRAIN		UD
SANITARY SEWER	SS	SS
FORCE MAIN		FM
OVERHEAD UTILITIES	OHU	OHU
UNDERGROUND UTILITIES	UGE	UGU
GAS LINE	GAS	GAS
CHAIN LINK FENCE	X	X
GUARDRAIL		
SILT FENCE		SF
TREE LINE		
GRAVEL SURFACE		
PAVED SURFACE		
CONCRETE SURFACE		
BUILDING FOOTPRINT		
WETLANDS		
RIPRAP		
FILTER SURFACE		

REV.	DATE	DESCRIPTION	BY	CHK.
2	2026.03.30	RESPONSE TO COMMENTS	PJM	JHW
1	2025.02.20	REVISED PER CITY COMMENTS. UPDATED SURVEY	PJM	JHW

DRAWING ISSUE STATUS

NOT FOR CONSTRUCTION

HALEY WARD
WWW.HALEYWARD.COM
One Merchants Plaza, Suite 701
Bangor, Maine 04401
207.989.4824

PROJECT

4-STORY SELF-STORAGE UNIT BUILDING
97 WARREN AVENUE, PORTLAND, MAINE
PEACHTREE AQUISITIONS, LLC

TITLE

GENERAL NOTES & LEGEND

STATE OF MAINE
JOHN H. WHITTEN, JR.
No. 10414
04/03/2026
LICENSED PROFESSIONAL ENGINEER

DATE	SCALE
2025.11.13	NTS

DRAWN BY	DESIGNED BY	CHECKED BY
PJM	PJM/MK	JHW

PROJECT No. 15191.001

DRAWING No. C001 REV. 2

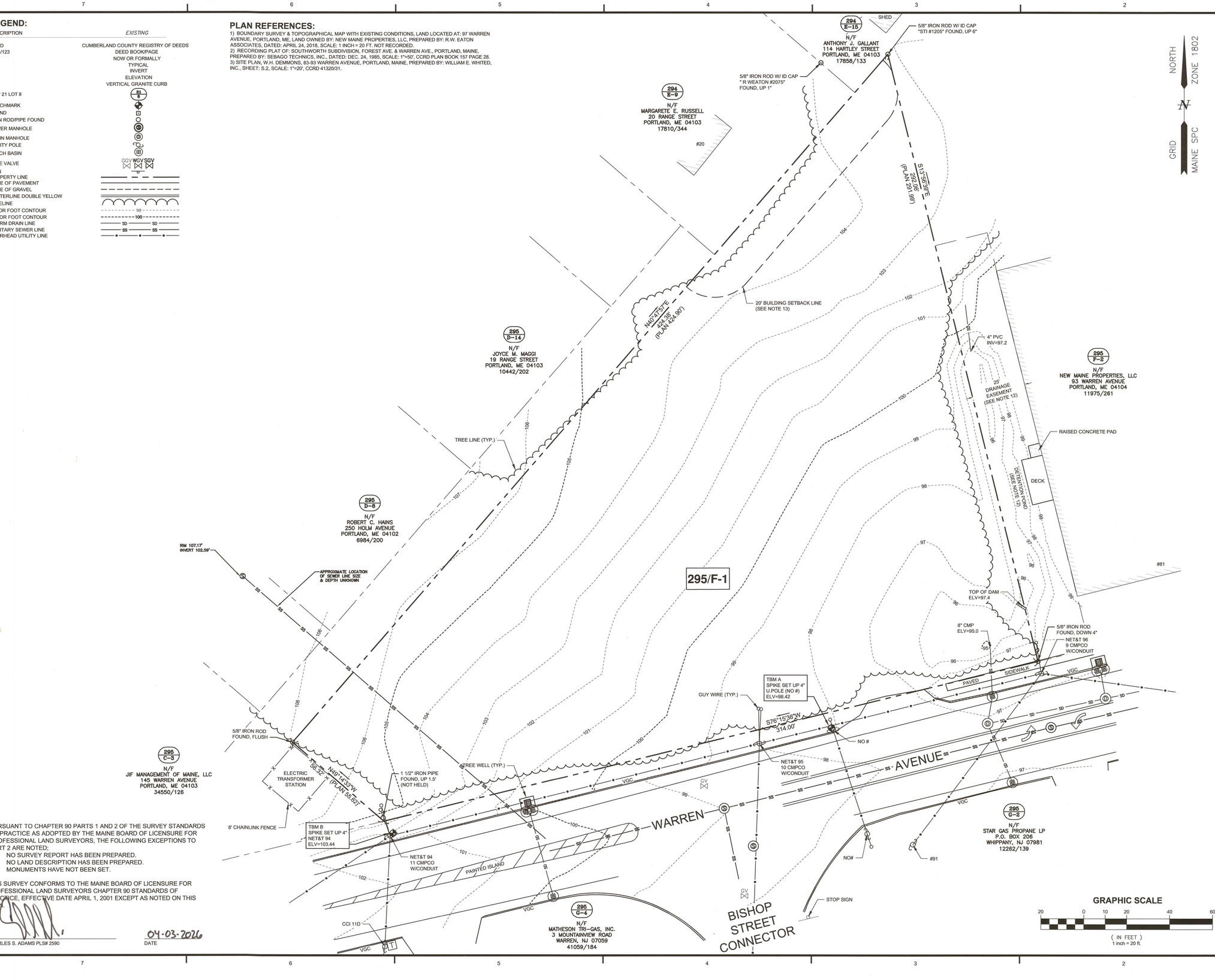
FILE LOCATION: P:\ME\15191-ENGB\LSMA_CONSTRUCTION\001-97 WARREN AVE-JHW\02-CAD_FILES\CIVIL\15191-001-CVR.DWG, 2026.04.03, 12:06 PM

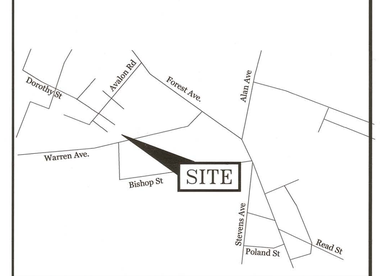
LEGEND:

DESCRIPTION	*EXISTING*
CCRD	CUMBERLAND COUNTY REGISTRY OF DEEDS
1234/123	DEED BOOK/PAGE
N/F	NOW OR FORMALLY
TYP.	TYPICAL
INV.	INVERT
ELV.	ELEVATION
VGC	VERTICAL GRANITE CURB
MAP 21 LOT 8	21 / 8
BENCHMARK	
BOUND	
IRON ROD/PIPE FOUND	
SEWER MANHOLE	
DRAIN MANHOLE	
UTILITY POLE	
CATCH BASIN	
GATE VALVE	GGV WGV SGV
SIGN	
PROPERTY LINE	
EDGE OF PAVEMENT	
EDGE OF GRAVEL	
CENTERLINE DOUBLE YELLOW	
TREELINE	
MINOR FOOT CONTOUR	98
MAJOR FOOT CONTOUR	100
STORM DRAIN LINE	SD SD
SANITARY SEWER LINE	SS SS
OVERHEAD UTILITY LINE	

PLAN REFERENCES:

1) BOUNDARY SURVEY & TOPOGRAPHICAL MAP WITH EXISTING CONDITIONS, LAND LOCATED AT: 97 WARREN AVENUE, PORTLAND, ME, LAND OWNED BY: NEW MAINE PROPERTIES, LLC, PREPARED BY: R.W. EATON ASSOCIATES, DATED: APRIL 24, 2018, SCALE: 1 INCH = 20 FT. NOT RECORDED.
2) RECORDING PLAT OF: SOUTHWORTH SUBDIVISION, FOREST AVE. & WARREN AVE., PORTLAND, MAINE, PREPARED BY: SEBAGO TECHNICS, INC., DATED: DEC. 24, 1985, SCALE: 1"=50', CCRD PLAN BOOK 157 PAGE 28.
3) SITE PLAN, W.H. DEMMONS, 83-93 WARREN AVENUE, PORTLAND, MAINE, PREPARED BY: WILLIAM E. WHITED, INC., SHEET: S.2, SCALE: 1"=20', CCRD 41320/31.





LOCATION MAP SCALE: N.T.S.

NOTES:

1) PARCEL IS SHOWN ON THE CITY OF PORTLAND ASSESSOR'S MAP 295 AS LOT F-1.

2) OWNER OF RECORD:
AMEENA SHIR
P.O. BOX 8301
PORTLAND, ME 04104
4132/28
CCRD PLAN BOOK 157 PAGE 28 (LOT 5)

3) PARCEL IS NOT IN A SPECIAL FLOOD HAZARD AREA AS SHOWN ON FIRM PANEL 23005C0683F. EFFECTIVE JUNE 20, 2024.

4) EXISTING LOT AREA:
57,803 S.F.
1.3270 ACRES

5) PARCEL IS LOCATED IN THE B-4 (COMMERCIAL CORRIDOR) ZONING DISTRICT.

6) DIMENSIONAL REQUIREMENTS:

MINIMUM LAND AREA:	10,000 S.F.
MINIMUM STREET FRONTAGE:	60 FEET
SETBACKS:	
FRONT (BUILD TO)	0-20FEET
REAR	0/20 FEET*
SIDE	0/10 FEET*
ABUTTING A RESIDENTIAL ZONE	
LANDSCAPED OPEN SPACE RATIO:	20%
MAXIMUM BUILDING/STRUCTURE HEIGHT:	65 FEET

*SEE CITY OF PORTLAND LAND USE CODE ARTICLE 7 DIMENSIONAL STANDARDS FOR COMPLETE ZONING INFORMATION.

7) THE PURPOSE OF THIS PLAN IS TO SHOW THE RESULTS OF AN EXISTING CONDITIONS SURVEY OF ASSESSOR'S MAP 295, LOT F-1 IN THE CITY OF PORTLAND.

8) VERTICAL DATUM IS NAVD88. BASIS OF VERTICAL DATUM IS REDUNDANT RTN GNSS OBSERVATIONS.

9) ABUTTER INFORMATION TAKEN FROM THE CITY OF PORTLAND ASSESSORS GIS WEBSITE.

10) THIS IS AN ABOVE THE GROUND SURVEY. THE UNDERGROUND UTILITIES, IF SHOWN, ARE BASED UPON BEST AVAILABLE EVIDENCE AND SURFACE FEATURES VISIBLE AT THE TIME OF THE SURVEY. THESE LOCATIONS SHOULD BE CONSIDERED APPROXIMATE. THERE MAY BE ADDITIONAL UNDERGROUND UTILITIES NOT SHOWN ON THIS PLAN. IT IS RECOMMENDED THAT THE FIELD VERIFICATION OF THE TRUE LOCATION OF ANY UNDERGROUND UTILITIES IS PREFORMED PRIOR TO ANY EXCAVATION..

11) THIS PLAN IS THE RESULT OF AN ON-THE-GROUND INSTRUMENT SURVEY PERFORMED BY HALEY WARD, INC., JANUARY 29, 2026.

12) PARCEL IS BENEFITED BY A DRAINAGE EASEMENT ON ASSESSOR'S MAP 295 LOT F-2, SEE CCRD 34752/163.

13) 20' REAR SETBACK FROM ASSESSORS MAP 294 LOT E-9 LOCATED IN THE RESIDENTIAL ZONE AS SHOWN ON THE CITY OF PORTLAND GIS ZONING MAP VIEWER.

14) BENCHMARK & DATUM NOTES: ALL ELEVATIONS SHOWN HEREON ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88). TO CONVERT THE ELEVATIONS SHOWN HEREON TO THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29), ADD 0.689 FEET. FORMULA: NAVD 88 + 0.689 = NGVD 29 , Example: Elev. 100.00 (NAVD 88) = Elev. 100.689 (NGVD 29).

PURSUANT TO CHAPTER 90 PARTS 1 AND 2 OF THE SURVEY STANDARDS OF PRACTICE AS ADOPTED BY THE MAINE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS, THE FOLLOWING EXCEPTIONS TO PART 2 ARE NOTED;
A) NO SURVEY REPORT HAS BEEN PREPARED.
B) NO LAND DESCRIPTION HAS BEEN PREPARED.
C) MONUMENTS HAVE NOT BEEN SET.

THIS SURVEY CONFORMS TO THE MAINE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS CHAPTER 90 STANDARDS OF PRACTICE, EFFECTIVE DATE APRIL 1, 2001 EXCEPT AS NOTED ON THIS PLAN.

CHARLES S. ADAMS PLS# 2590

04-03-2026
DATE

REV.	DATE	DESCRIPTION	BY	CHK.
2	4/3/26	ADD SEWER LINE	CSA	RJB
1	2/20/26	SETBACKS PER CITY COMMENTS, NOTES	RJB	CSA
0	2/5/26	ISSUED FOR COMMENT	RJB	CSA

DRAWING ISSUE STATUS
SITE SURVEY

HALEY WARD
ENGINEERING | ENVIRONMENTAL | SURVEYING
WWW.HALEYWARD.COM
200 GRIFFIN ROAD, UNIT 14
PORTSMOUTH, NH 03801
603.430.9282

PROJECT
SITE DEVELOPMENT
97 WARREN AVENUE, PORTLAND, ME

TITLE
EXISTING CONDITIONS PLAN

STATE OF MAINE
CHARLES S ADAMS
No. 2590
PROFESSIONAL LAND SURVEYOR

DATE	SCALE
FEBRUARY 2026	1"=20'
DRAWN BY: RJB	DESIGNED BY: ---	CHECKED BY: CSA
PROJECT No.: 15191.001	FIELD BOOK AND PAGE: FB 496 PG10
DRAWING No.: V101	REV.: 2

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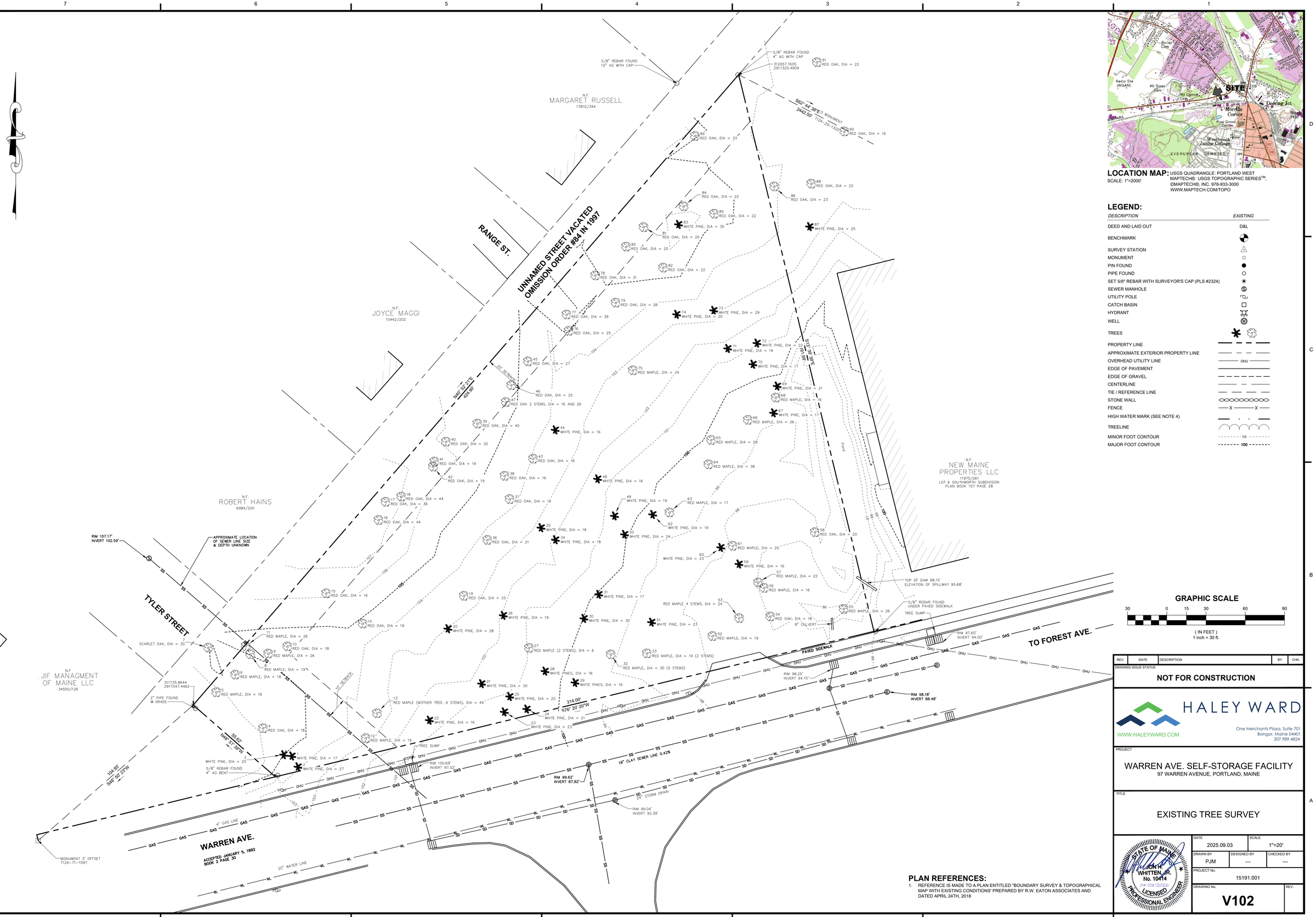

LOCATION MAP: USGS QUADRANGLE: PORTLAND WEST
SCALE: 1"=2000'
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WWW.MAPTECH.COM/TOPO

LEGEND:

DESCRIPTION	*EXISTING*
DEED AND LAID OUT	D&L
BENCHMARK	
SURVEY STATION	
MONUMENT	
PIN FOUND	
PIPE FOUND	
SET 5/8" REBAR WITH SURVEYOR'S CAP (PLS #2324)	
SEWER MANHOLE	
UTILITY POLE	
CATCH BASIN	
HYDRANT	
WELL	
TREES	
PROPERTY LINE	
APPROXIMATE EXTERIOR PROPERTY LINE	
OVERHEAD UTILITY LINE	OHU
EDGE OF PAVEMENT	
EDGE OF GRAVEL	
CENTERLINE	
TIE / REFERENCE LINE	
STONE WALL	
FENCE	X X
HIGH WATER MARK (SEE NOTE 4)	
TREELINE	
MINOR FOOT CONTOUR	98
MAJOR FOOT CONTOUR	100

GRAPHIC SCALE

30 0 15 30 60 90

(IN FEET)
1 inch = 30 ft.

PLAN REFERENCES:

1. REFERENCE IS MADE TO A PLAN ENTITLED "BOUNDARY SURVEY & TOPOGRAPHICAL MAP WITH EXISTING CONDITIONS" PREPARED BY R.W. EATON ASSOCIATES AND DATED APRIL 24TH, 2018

REV.	DATE	DESCRIPTION	BY	CHK

DRAWING ISSUE STATUS

NOT FOR CONSTRUCTION

HALEY WARD
WWW.HALEYWARD.COM
One Merchants Plaza, Suite 701
Bangor, Maine 04401
207.989.4824

PROJECT

WARREN AVE. SELF-STORAGE FACILITY
97 WARREN AVENUE, PORTLAND, MAINE

TITLE

EXISTING TREE SURVEY

STATE OF MAINE
JON H. WHITTEN, JR.
No. 10414
04.03.2026
LICENSED PROFESSIONAL ENGINEER

DATE	SCALE
2025.09.03	1"=20'

DRAWN BY	DESIGNED BY	CHECKED BY
PJM	---	---

PROJECT No. 15191.001

DRAWING No. **V102** REV.

FILE LOCATION: P:\ME\15191-ENGELSMA_CONSTRUCTION\00\197 WARREN AVE-JH\002-CAD_FILES\CIVIL\REF\15191.001-BASE.DWG, 2025.11.03, 9:55 AM

PARCEL INFORMATION

MAP / LOT:	MAP 295, LOT F-1
LOT AREA (ACRES):	1.32
ZONE OR DISTRICT:	B-4
EXISTING USE:	VACANT
FLOOD ZONE:	N/A
WATER:	PUBLIC
SEWER:	PUBLIC
RECORD OWNER:	AMEENA SHIR

SITE DEVELOPMENT DATA

	SF	AC
EXISTING IMPERVIOUS (TO BE REMOVED):	96	0.00
NEW BUILDINGS	22189	0.51
NEW PAVEMENT	8989	0.21
NEW IMPERVIOUS:	31178	0.72
TOTAL IMPERVIOUS:	31178	0.72
TOTAL LANDSCAPED/OPEN SPACE:	26481	0.61

DESIGN STANDARDS

	REQ'D	PROVIDED
MINIMUM LOT AREA (SF)	10000	57659
MINIMUM ROAD FRONTAGE (FT)	60	314
MINIMUM SETBACK, FRONT YARD (FT)	0	0
MINIMUM SETBACK, SIDE YARDS (FT)	0	16
MINIMUM SETBACK, REAR YARD (FT)	20 (RESIDENTIAL)	20
MINIMUM BUILD-TO PERCENTAGE	50%	100%
LANDSCAPED OPEN SPACE RATIO	20%	46%
MAXIMUM BUILDING HEIGHT (FT)	65	50

PROJECT INFORMATION

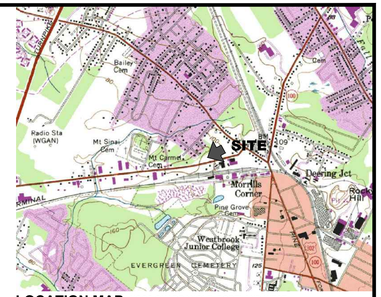
APPLICANT:	PEACHTREE ACQUISITIONS, LLC
	7119 31ST AVENUE N.
	MINNEAPOLIS, MINNESOTA 55427
ENGINEER:	HALEY WARD, INC.
	ATTN: JON WHITTEN, JR., P.E.
	12 MOUNTFORT STREET
	PORTLAND, MAINE 04101

THIS IS TO CERTIFY THAT AFTER REVIEWING THE SITE PLAN SUBMISSION INFORMATION FOR THE PROJECT SHOWN ON THIS PLAN AND CONSIDERING EACH OF THE CRITERIA SET FORTH IN THE CITY OF PORTLAND'S CODE OF ORDINANCES AND IN ACCORDANCE WITH THE APPLICATION REQUIREMENTS, THE UNDERSIGNED HAVE MADE FINDINGS OF FACT ESTABLISHING THAT THIS PLAN ALONG WITH ITS ADDITIONAL SUBMISSION INFORMATION (IF APPLICABLE) HAS MET ALL THE CRITERIA SET FORTH AND THEREFORE THE SITE PLAN IS APPROVED.

APPROVED BY THE CITY OF PORTLAND PLANNING BOARD ON:_____

CONDITIONS: _____

PLANNING BOARD SIGNED ON: _____



LOCATION MAP: USGS QUADRANGLE: PORTLAND WEST
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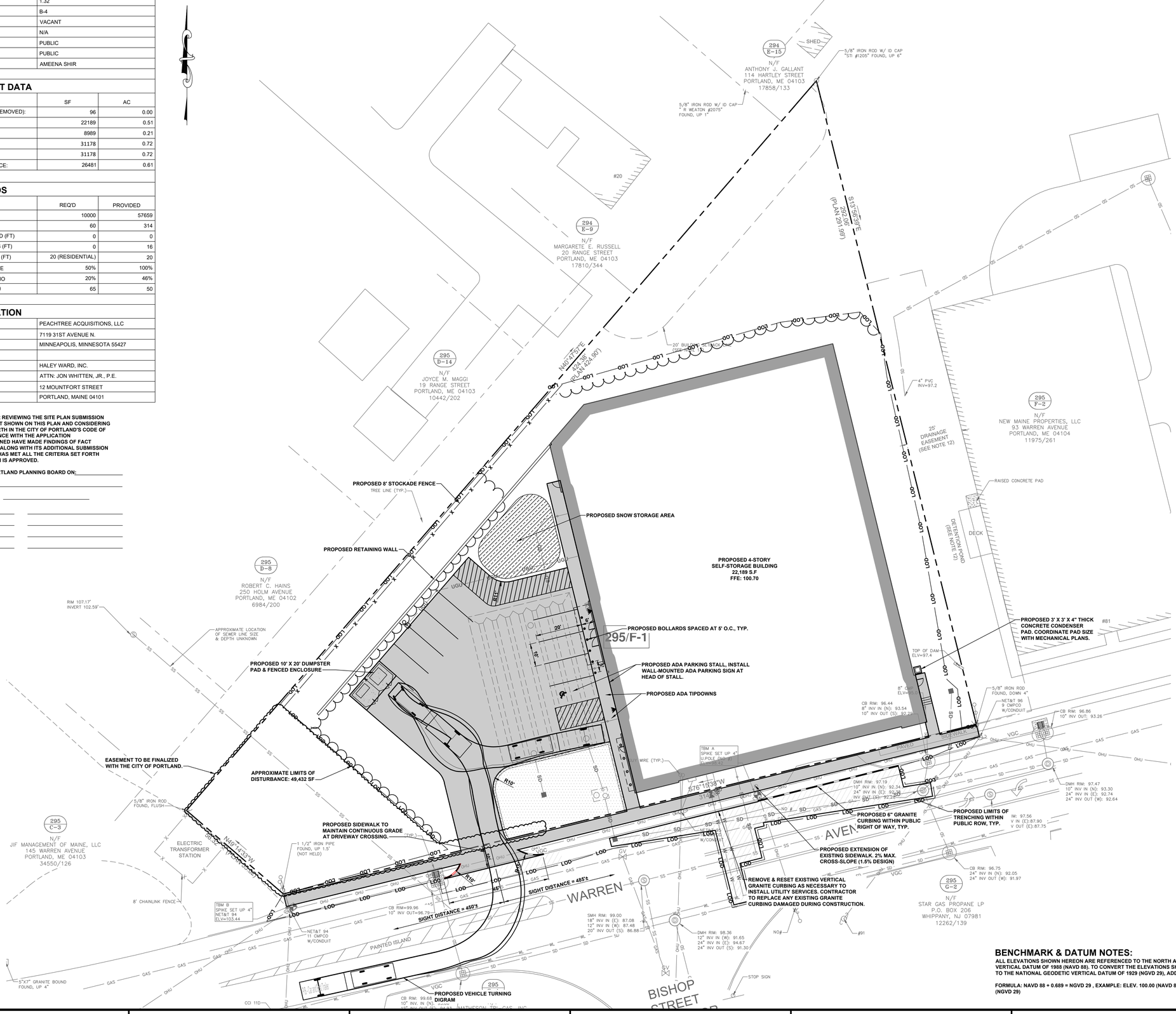
SCALE: 1"=2000'



BENCHMARK & DATUM NOTES:

ALL ELEVATIONS SHOWN HEREON ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88). TO CONVERT THE ELEVATIONS SHOWN HEREON TO THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29), ADD 0.689 FEET.

FORMULA: NAVD 88 + 0.689 = NGVD 29 , EXAMPLE: ELEV. 100.00 (NAVD 88) = ELEV. 100.689 (NGVD 29)

GRAPHIC SCALE

20 0 10 20 40 60

(IN FEET)
1 inch = 20 ft.

REV.	DATE	DESCRIPTION	BY	CHK.
2	2026.03.30	RESPONSE TO COMMENTS	PJM	JHW
1	2025.02.20	REVISED PER CITY COMMENTS, UPDATED SURVEY	PJM	JHW

DRAWING ISSUE STATUS

NOT FOR CONSTRUCTION

HALEY WARD
WWW.HALEYWARD.COM
One Merchants Plaza, Suite 701
Bangor, Maine 04401
207.989.4824

PROJECT

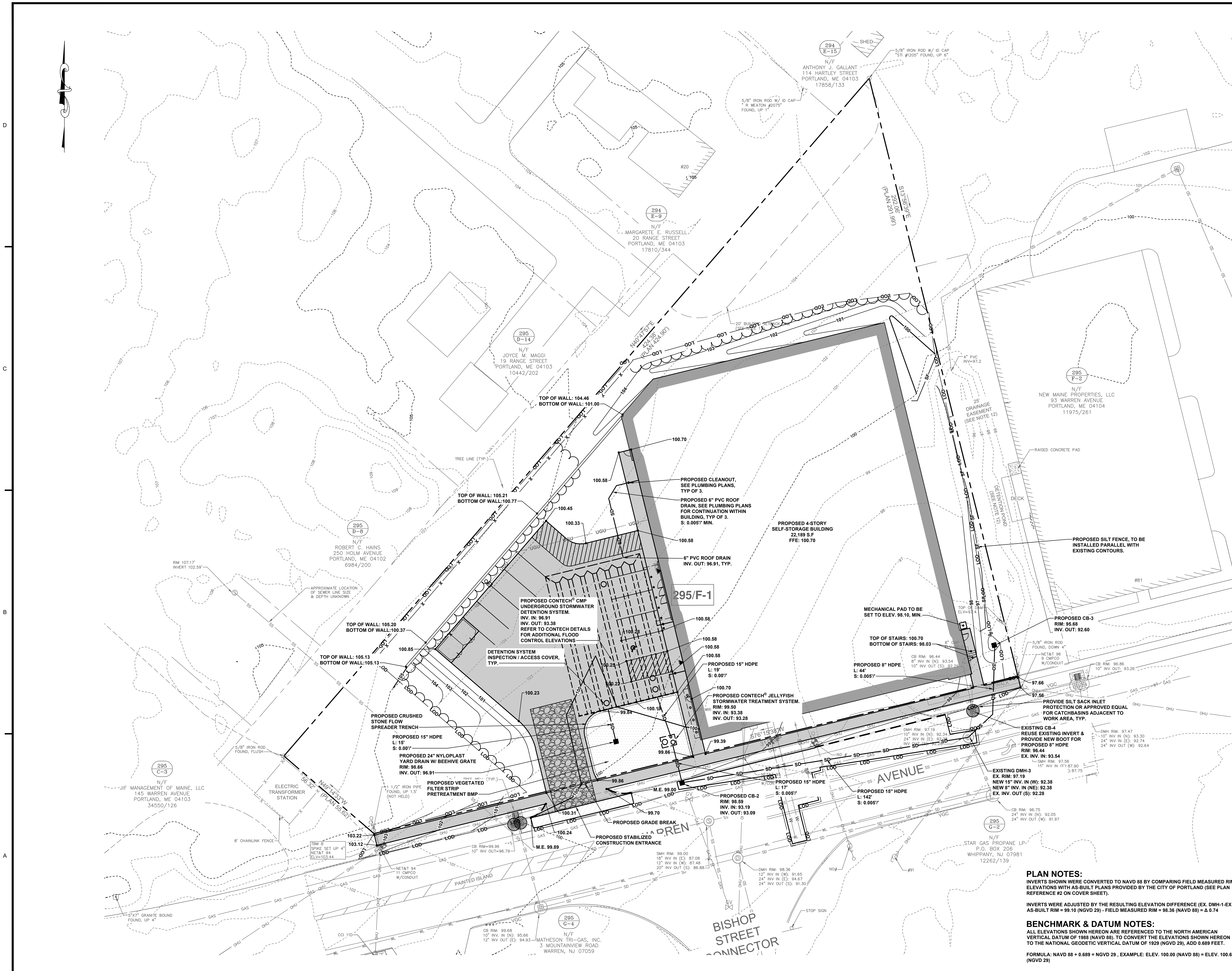
4-STORY SELF-STORAGE UNIT BUILDING
97 WARREN AVENUE, PORTLAND, MAINE
PEACHTREE AQUISITIONS, LLC

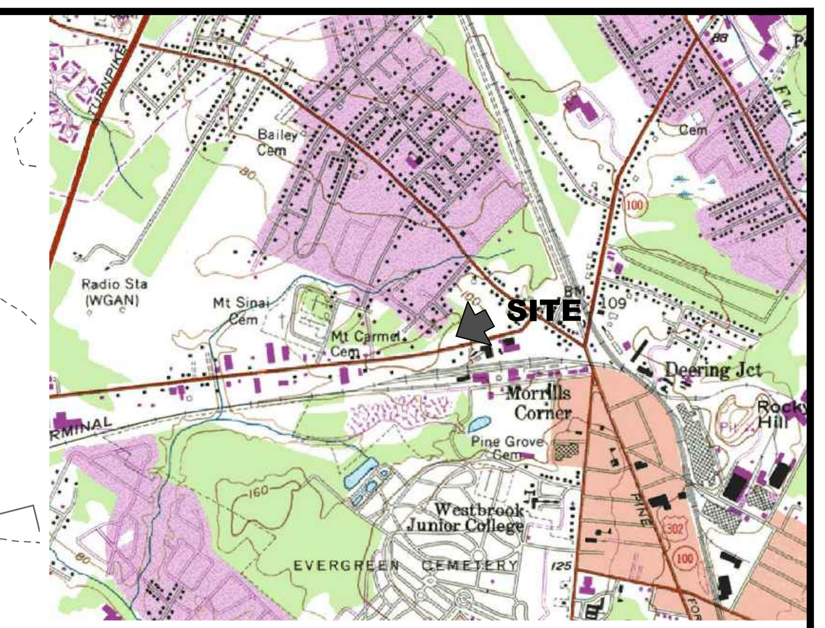
TITLE

PROPOSED SITE PLAN

DATE: 2025.11.14	SCALE: 1"=20'
DRAWN BY: PJM	DESIGNED BY: PJM/MK
CHECKED BY: JHW	
PROJECT No.: 15191.001	
DRAWING No.: C101	REV.: 2

FILE LOCATION: P:\ME\15191-ENGELSMA_CONSTRUCTION\00\197 WARREN AVE-JHW\02-CAD_FILES\CIVIL\15191.001-C-SP.DWG, 2026.04.20, 3:34 PM





LOCATION MAP: USGS QUADRANGLE: PORTLAND WEST
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WWW.MAPTECH.COM/TOPO

SCALE: 1"=2000'

GRAPHIC SCALE

20 0 10 20 40 60

(IN FEET)
1 inch = 20 ft.

PLAN NOTES:

INVERTS SHOWN WERE CONVERTED TO NAVD 88 BY COMPARING FIELD MEASURED RIM ELEVATIONS WITH AS-BUILT PLANS PROVIDED BY THE CITY OF PORTLAND (SEE PLAN REFERENCE #2 ON COVER SHEET).

INVERTS WERE ADJUSTED BY THE RESULTING ELEVATION DIFFERENCE (EX. DMH-1-EX AS-BUILT RIM = 99.10 (NGVD 29) - FIELD MEASURED RIM = 98.36 (NAVD 88) = Δ 0.74

BENCHMARK & DATUM NOTES:

ALL ELEVATIONS SHOWN HEREON ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88). TO CONVERT THE ELEVATIONS SHOWN HEREON TO THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29), ADD 0.689 FEET.

FORMULA: NAVD 88 + 0.689 = NGVD 29 , EXAMPLE: ELEV. 100.00 (NAVD 88) = ELEV. 100.689 (NGVD 29)

REV.	DATE	DESCRIPTION	BY	CHK.
2	2026.03.30	RESPONSE TO COMMENTS	PJM	JHW
1	2025.02.20	REVISED PER CITY COMMENTS, UPDATED SURVEY	PJM	JHW

DRAWING ISSUE STATUS

NOT FOR CONSTRUCTION

HALEY WARD
WWW.HALEYWARD.COM
One Merchants Plaza, Suite 701
Bangor, Maine 04401
207.989.4824

PROJECT

4-STORY SELF-STORAGE UNIT BUILDING
97 WARREN AVENUE, PORTLAND, MAINE
PEACHTREE AQUISITIONS, LLC

TITLE

PROPOSED GRADING & EROSION CONTROL PLAN

STATE OF MAINE
JON H. WHITTEN, JR.
No. 10414
04/03/2026
LICENSED PROFESSIONAL ENGINEER

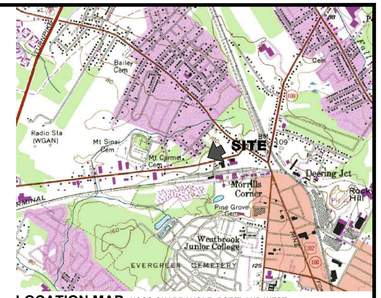
DATE	SCALE
2025.11.14	1"=20'

DRAWN BY	DESIGNED BY	CHECKED BY
PJM	PJM/MK	JHW

PROJECT No. 15191.001

DRAWING No. C102 REV. 2

FILE LOCATION: P:\ME\15191-ENGELSMA_CONSTRUCTION\001-97 WARREN AVE-JHW\02-CAD_FILES\CIVIL\15191.001-C-SP.DWG, 2026.04.03, 12:05 PM



LOCATION MAP: USGS QUADRANGLE: PORTLAND WEST
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SCALE: 1"=2000'

294 E-15
N/F
ANTHONY J. GALLANT
114 HARTLEY STREET
PORTLAND, ME 04103
17858/133

294 E-9
N/F
MARGARETE E. RUSSELL
20 RANGE STREET
PORTLAND, ME 04103
17810/344

295 D-14
N/F
JOYCE M. MAGGI
19 RANGE STREET
PORTLAND, ME 04103
10442/202

295 D-8
N/F
ROBERT C. HAINS
250 HOLM AVENUE
PORTLAND, ME 04102
6984/200

295 C-3
N/F
JIF MANAGEMENT OF MAINE, LLC
145 WARREN AVENUE
PORTLAND, ME 04103
34550/126

295 F-2
N/F
NEW MAINE PROPERTIES, LLC
93 WARREN AVENUE
PORTLAND, ME 04104
11975/261

295 G-2
N/F
STAR GAS PROPANE LP
P.O. BOX 206
WHIPPANY, NJ 07981
12262/139

295/F-1

#20 #81 #91

SHED

5/8" IRON ROD W/ ID CAP "STI #1205" FOUND, UP 6"

5/8" IRON ROD W/ ID CAP " R. WEATON #2075" FOUND, UP 1"

S13°56'39"E 200.00' (PLAN 291.98')

N40°24'57"E 424.38' (PLAN 424.90')

N49°14'33"W (PLAN 55.82')

20' BUILDING SETBACK (TYP.)

TREE LINE (TYP.)

TREE WELL (TYP.)

RIM 107.17'
INVERT 102.59'

APPROXIMATE LOCATION OF SEWER LINE SIZE & DEPTH UNKNOWN

5/8" IRON ROD FOUND, FLUSH

1 1/2" IRON PIPE FOUND, UP 1.5' (NOT HELD)

ELECTRIC TRANSFORMER STATION

8' CHAINLINK FENCE

5'X7" GRANITE BOUND

TBM B
SPIKE SET UP 4"
NET&T 94
ELV=103.44

TBM A
SPIKE SET UP 4"
U.POST END OF
GUARDRAIL
ELV=97.44

CB RIM=99.96
10" INV OUT=96.79

SMH RIM: 99.00
18" INV IN (E): 87.08
12" INV IN (W): 87.48
20" INV OUT (S): 86.88

DMH RIM: 98.36
12" INV IN (W): 91.65
24" INV IN (E): 94.67
24" INV OUT (S): 91.35

DMH RIM: 97.19
10" INV IN (N): 92.35
24" INV IN (E): 92.15
INV OUT (S): 92.25

CB RIM: 96.44
8" INV IN (N): 93.54
10" INV OUT (S): 92.29

4" PVC INV=97.2

25' DRAINAGE EASEMENT (SEE NOTE 12)

DETENTION POND (SEE NOTE 12)

RAISED CONCRETE PAD

DECK

TOP OF DAM ELV=97.4

8" CMP ELV=

5/8" IRON ROD FOUND, DOWN 4"

NET&T 96
9 CMPCO
W/CONDUIT

CB RIM: 96.86
10" INV OUT: 93.26

DMH RIM: 97.47
10" INV IN (N): 93.30
24" INV IN (E): 92.74
24" INV OUT (W): 92.64

SMH RIM: 97.56
15" INV IN (E):87.90
18" INV OUT (E):87.75

CB RIM: 96.75
24" INV IN (N): 92.05
24" INV OUT (W): 91.97

PROVIDE SUFFICIENT CONDUIT & ELECTRICAL SERVICE FOR THE FUTURE INSTALLATION OF AN ADDITIONAL LEVEL 2, 2-CAR EV CHARGER

PROPOSED WALL MOUNTED LEVEL 2 CHARGER SERVING (2) PARKING SPACES

PROPOSED 4-STORY SELF-STORAGE BUILDING 22,189 S.F FFE: 100.70

PROVIDE SUFFICIENT CONDUIT & ELECTRICAL SERVICE FOR THE FUTURE INSTALLATION OF AN ADDITIONAL LEVEL 2, 2-CAR EV CHARGER

PROPOSED C.T CABINET, METER & SERVICE DISCONNECT, SEE ELECTRICAL PLANS

PROPOSED UNDERGROUND ELECTRIC & COMMUNICATIONS SERVICE

SS INV. OUT: 87.55

PROPOSED CLEANOUT, SEE PLUMBING PLANS

PROPOSED 6" SDR 35 SS L: 39 S: 0.005'/'

PROVIDE WYE OR TEE CONNECTION TO TIE IN TO EXISTING 18" MAIN. EX. INVERT: 87.35

PROPOSED 1 ½" DOMESTIC WATER SERVICE

PROPOSED 6" FIRE PROTECTION SERVICE

CONTRACTOR TO FIELD VERIFY DEPTH OF EXISTING GAS MAIN. IF CONFLICT WITH PROPOSED SERVICES EXISTS, CONTRACTOR SHALL CONTACT ENGINEER IMMEDIATELY.

WARREN AVENUE

PAINTED ISLAND

STOP SIGN

PLAN NOTES:

INVERTS SHOWN WERE CONVERTED TO NAVD 88.BY COMPARING FIELD MEASURED RIM ELEVATIONS WITH AS-BUILT PLANS PROVIDED BY THE CITY OF PORTLAND (SEE PLAN REFERENCE #2 ON COVER SHEET).

INVERTS WERE ADJUSTED BY THE RESULTING ELEVATION DIFFERENCE (EX. DMH-1-EX AS-BUILT RIM = 99.10 (NGVD 29) - FIELD MEASURED RIM = 98.36 (NAVD 88) = Δ 0.74

BENCHMARK & DATUM NOTES:

ALL ELEVATIONS SHOWN HEREON ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88). TO CONVERT THE ELEVATIONS SHOWN HEREON TO THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29), ADD 0.689 FEET.

FORMULA: NAVD 88 + 0.689 = NGVD 29 , EXAMPLE: ELEV. 100.00 (NAVD 88) = ELEV. 100.689 (NGVD 29)

GRAPHIC SCALE

20 0 10 20 40 60

(IN FEET)
1 inch = 20 ft.

REV.	DATE	DESCRIPTION	BY	CHK.
2	2026.03.30	RESPONSE TO COMMENTS	PJM	JHW
1	2025.02.20	REVISED PER CITY COMMENTS, UPDATED SURVEY	PJM	JHW

DRAWING ISSUE STATUS

NOT FOR CONSTRUCTION

HALEY WARD
WWW.HALEYWARD.COM
One Merchants Plaza, Suite 701
Bangor, Maine 04401
207.989.4824

PROJECT

4-STORY SELF-STORAGE UNIT BUILDING
97 WARREN AVENUE, PORTLAND, MAINE
PEACHTREE AQUISITIONS, LLC

TITLE

PROPOSED UTILITY PLAN

STATE OF MAINE
JOHN H. WHITTEN, JR.
No. 10414
LICENSED PROFESSIONAL ENGINEER

DATE	SCALE
2025.11.14	1"=20'

DRAWN BY	DESIGNED BY	CHECKED BY
PJM	PJM/MK	JHW

PROJECT No. 15191.001

DRAWING No. **C103** REV. **2**

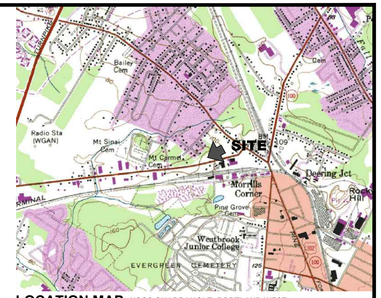
FILE LOCATION: P:\ME\15191-ENGELSMA_CONSTRUCTION\00\197 WARREN AVE-JHW\02-CAD_FILES\CIVIL\15191 001-C-SP.DWG, 2026.04.09, 12:06 PM

LANDSCAPING TABLE

QTY	SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE
3		ACER RUBRUM 'ARMSTRONG'	RED MAPLE	2.5-3" CAL.
9		CARPINUS CAROLINIANA	AMERICAN HORNBEAM	1.5-2" CAL.
9		PICEA GLAUCA	WHITE SPRUCE	1.5-2" CAL.
29		CORNUS SERICA 'FARROW'	RED TWIG DOGWOOD	3' TALL / #7 POT

LANDSCAPING NOTES:

1. ALL LANDSCAPING MATERIALS ARE TO BE SOURCED LOCALLY.
2. AREAS SCHEDULED FOR REVEGETATION SHALL BE TILLED PRIOR TO REVEGETATION.
3. LANDSCAPE CONTRACTOR TO USE ONLY NATIVE PLANT SPECIES FOR PROPOSED LANDSCAPING.
4. REQUIRED STREET TREES: ONE (1) STREET TREE PER 25-35 LF OF FRONTAGE ALONG A CITY RIGHT-OF-WAY.
   - 4.1. FRONTAGE: 160 FEET
   - 4.2. REQUIRED STREET TREES: 160 / 25 = 6.4 = 7 STREET TREES
     - 4.2.1. EXISTING MATURE STREET TREES >12" DBH: 5 TREES (COUNTS AS 15 TOWARDS REQUIREMENT PER SECTION 4.1.3(A) OF TECHNICAL MANUAL)
     - 4.2.2. PROPOSED STREET TREES: 3
     - 4.2.3. TOTAL STREET TREES PROVIDED: 8 TREES, 18 PER RETENTION OF EXISTING TREES
5. REQUIRING PARKING LOT SCREENING / SHADE TREES: ONE (1) TREE PER 750 SF OF UNCOVERED ASPHALT PARKING AREA, INCLUDING DRIVE AISLES.
   - 5.1. UNCOVERED ASPHALT PARKING AREA: 7,875 SF
   - 5.2. REQUIRED SCREEN / SHADE TREES: 7,875 / 750 = 10.5 = 11 SHADE TREES
     - 5.2.1. EXISTING SCREENING / SHADE TREES: 5
     - 5.2.2. PROVIDED SHADE TREES: 10
     - 5.2.3. TOTAL SCREENING / SHADE TREES PROVIDED: 15 TREES
6. PROPOSED LAWN AREA: 2,305 SF
7. PROPOSED DENSELY LANDSCAPED AREA: 1,460 SF (DOES NOT INCLUDE PRE-EXISTING DENSELY VEGETATED AREAS TO BE PRESERVED)



LOCATION MAP: USGS QUADRANGLE: PORTLAND WEST
SCALE: 1"=2000'
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GRAPHIC SCALE

20 0 10 20 40 60

(IN FEET)
1 inch = 20 ft.

BENCHMARK & DATUM NOTES:

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FORMULA: NAVD 88 + 0.689 = NGVD 29 , EXAMPLE: ELEV. 100.00 (NAVD 88) = ELEV. 100.689 (NGVD 29)

REV.	DATE	DESCRIPTION	BY	CHK.
2	2026.03.30	RESPONSE TO COMMENTS	PJM	JHW
1	2025.02.20	REVISED PER CITY COMMENTS, UPDATED SURVEY	PJM	JHW

DRAWING ISSUE STATUS

NOT FOR CONSTRUCTION

HALEY WARD
WWW.HALEYWARD.COM
One Merchants Plaza, Suite 701
Bangor, Maine 04401
207.989.4824

PROJECT

4-STORY SELF-STORAGE UNIT BUILDING
97 WARREN AVENUE, PORTLAND, MAINE
PEACHTREE AQUISITIONS, LLC

TITLE

PROPOSED LANDSCAPING PLAN

STATE OF MAINE
JOHN H. WHITTEN JR.
No. 10414
04.09.2026
LICENSED PROFESSIONAL ENGINEER

DATE	SCALE
2025.11.14	1"=20'

DRAWN BY	DESIGNED BY	CHECKED BY
PJM	PJM/MK	JHW

PROJECT No. 15191.001

DRAWING No. **C104** REV. **2**

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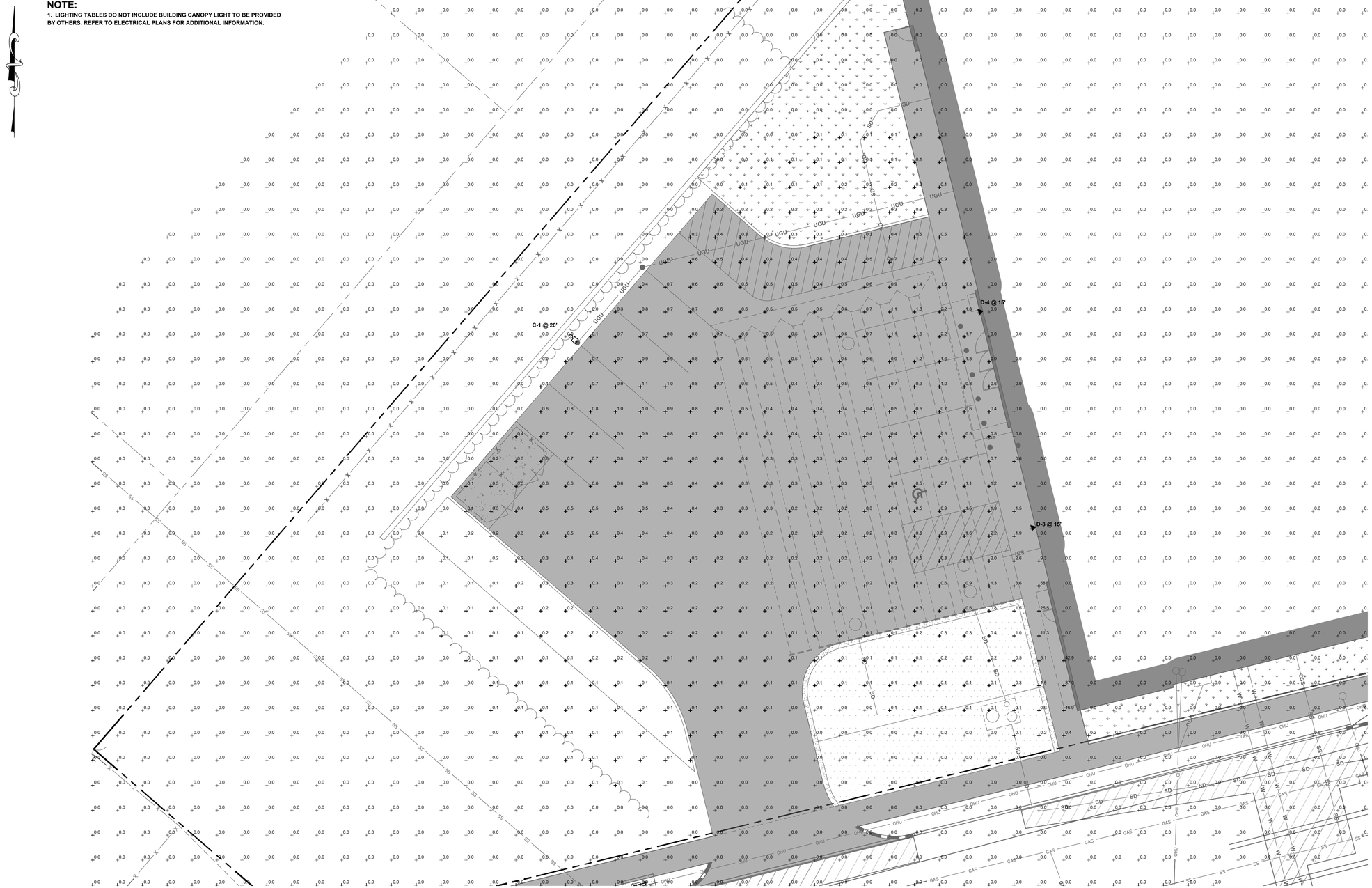
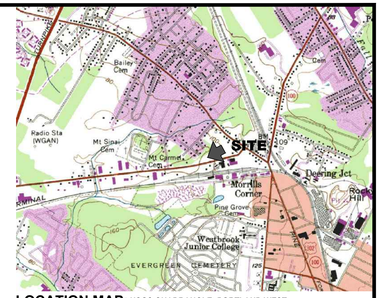
LABEL	QUANTITY	CATALOG NUMBER	DESCRIPTION	FILE	LAMP LUMENS	LUMEN MULTIPLIER	LLF	WATTS	MOUNTING HEIGHT, FT
C	1	DSX0 LED P1 27K 80CRI BLC4 EGS	D-SERIES SIZE 0 AREA LUMINAIRE P1 PERFORMANCE PACKAGE 2700K CCT 80 CRI TYPE 4 EXTREME BACKLIGHT CONTROL EXTERNAL GLARE SHIELD	DSX0_LED_P1_27K_80CRI_BLC4_EGS.IES	2810.792	1	1	33.21	20
D	2	ARC1 LED P1 30K	ARC1 LED WITH P1 - PERFORMANCE PACKAGE 3000K	ARC1_LED_P1_30K.IES	1376.154	1	1	10.8751	15

CITY OF PORTLAND EXTERIOR LIGHTING STANDARDS (TECHNICAL MANUAL, CHAPER 8)			
	MAXIMUM (NOT TO EXCEED)	AVERAGE (NOT TO EXCEED)	UNIFORMITY RATIO (AVERAGE TO MINIMUM)
SURFACE PARKING LOTS			
REQUIRED	4	0.5	3:1
PROPOSED	2.3	0.5	3:1
*ALL VALUES SHOWN ARE HORIZONTAL ILLUMINATION MEASURED IN FOOT-CANDLES AT GRADE			

NOTE:

1. LIGHTING TABLES DO NOT INCLUDE BUILDING CANOPY LIGHT TO BE PROVIDED BY OTHERS. REFER TO ELECTRICAL PLANS FOR ADDITIONAL INFORMATION.





LOCATION MAP: USGS QUADRANGLE: PORTLAND WEST
SCALE: 1"=2000'
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PLAN REFERENCES:

1. REFERENCE IS MADE TO A PLAN ENTITLED "BOUNDARY SURVEY & TOPOGRAPHICAL MAP WITH EXISTING CONDITIONS' PREPARED BY R.W. EATON ASSOCIATES AND DATED APRIL 24TH, 2018

LIGHTING NOTES:

1. EXACT MOUNTING DETAILS TO BE DETERMINED AT JOBSITE BY OTHERS.
2. CALCULATIONS MAY or MAY NOT SHOW THE EFFECT OF SHADOWING CAUSED BY BUILDINGS AND OBJECTS WITHIN THE CALCULATED SPACE OR IN THE SITE AREA.
3. READINGS SHOWN ARE INITIAL HORIZONTAL FOOT CANDLES ON A FLAT SITE WITHOUT REFLECTIONS OR OBSTRUCTIONS UNLESS OTHERWISE INDICATED.
4. CONFORMANCE TO CODES AND OTHER LOCAL REQUIREMENTS AS DETERMINED BY THE AHJ ARE THE RESPONSIBILITY OF THE OWNER AND/OR THE OWNERS REPRESENTATIVE.
5. THE LAYOUT DRAWING MUST BE COORDINATED WITH THE SITE LOCATION FOR CORRECT FIXTURE ORIENTATION.
6. DOCUMENTS PRINTED OR PLOTTED FROM ELECTRONIC FILES MAY APPEAR AT OTHER THAN THE DESIRED OR ASSUMED GRAPHIC SCALES. IT IS THE RESPONSIBILITY OF THE RECIPIENT TO VERIFY THAT THE PRINTED OR PLOTTED-TO-SCALE DRAWING IS PRINTED TO SCALE.

GRAPHIC SCALE

20 0 10 20 40 60

(IN FEET)
1 inch = 20 ft.

REV.	DATE	DESCRIPTION	BY	CHK
2	2026.03.30	RESPONSE TO COMMENTS	PJM	JHW
1	2025.02.20	REVISED PER CITY COMMENTS, UPDATED SURVEY	PJM	JHW

DRAWING ISSUE STATUS

NOT FOR CONSTRUCTION

HALEY WARD
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One Merchants Plaza, Suite 701
Bangor, Maine 04401
207.989.4824

PROJECT

4-STORY SELF-STORAGE UNIT BUILDING
97 WARREN AVENUE, PORTLAND, MAINE
PEACHTREE ACQUISITIONS, LLC

TITLE

PROPOSED LIGHTING PLAN

JOHN H. WHITTEN, JR. No. 10414 — 04/03/2026 — LICENSED PROFESSIONAL ENGINEER — STATE OF MAINE

DATE	SCALE
2025.11.14	1"=20'
DRAWN BY: PJM	DESIGNED BY: PJM/MK
CHECKED BY: JHW	
PROJECT No.: 15191.001	
DRAWING No.: C105	REV.: 2

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ARC1 LED

Architectural Wall Luminaire

Catalog Number: ARC1 LED P1 30K

Notes:

Type:

Hit the Tab key or mouse over the page to see all interactive elements.

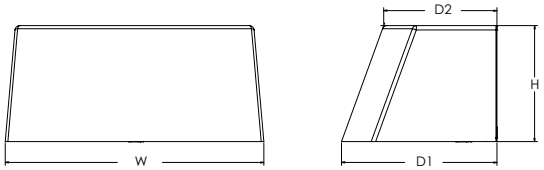
Introduction

The Lithonia Lighting ARC LED wall-mounted luminaires provide both architectural styling and visually comfortable illumination while providing the high energy savings and low initial costs for quick financial payback.

ARC1 delivers up to 3,000 lumens with a soft, non-pixelated light source, creating a visually comfortable environment. The compact size of ARC1, with its integrated emergency battery backup option, is ideal for over-the-door applications.

Specifications

Depth (D1): 6.5"
Depth (D2): 4.75"
Height: 5"
Width: 11"
Weight: (without options) 7 lbs



ARC LED Family Overview

Luminaire	Standard EM, 0°C	Cold EM, -20°C	Approximate Lumens (4000K)				
			P1	P2	P3	P4	P5
ARC1 LED	4W	--	1,500	2,000	3,000	--	--
ARC2 LED	4W	8W	1,500	2,000	3,000	4,000	6,500

Ordering Information

EXAMPLE: ARC1 LED P2 40K MVOLT PE DDBXD

Series	Package	Color Temperature	Voltage	Options	Finish
ARC1 LED	P1 1,500 Lumens P2 2,000 Lumens P3 3,000 Lumens	30K 3000K 40K 4000K 50K 5000K	MVOLT 347 [1]	E4WH Emergency battery backup, CEC compliant (4W, 0°C min) [1] PE Button type photocell for dusk-to-dawn operation DMG 0-10V dimming wires pulled outside fixture (for use with an external control, ordered separately) [2] SPD6KV 6kV surge protection FAO Field adjustable light output device. Allows for easy adjustment to the desired light levels, from 20% to 100% [2] LDS18 18" Fixture leads	DDBXD Dark bronze DBLXD Black DNAXD Natural aluminum DWHXD White DSSXD Sandstone DDBTXD Textured dark bronze DBLBXD Textured black DNATXD Textured natural aluminum DWHGXD Textured white DSSTXD Textured sandstone

Accessories

Ordered and shipped separately.

WSBBW DDBXD U — Surface - mounted back box (specify finish)

NOTES
1 347V not available with E4WH.
2 FAO not available with DMG.

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Performance Data

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

Performance Package	System Watts	30K (3000K, 80 CRI)					40K (4000K, 80 CRI)					50K (5000K, 80 CRI)				
		Lumens	LPW	B	U	G	Lumens	LPW	B	U	G	Lumens	LPW	B	U	G
P1	11W	1,376	127	0	0	0	1,454	134	0	0	0	1,464	135	0	0	0
P2	17W	2,035	121	1	0	1	2,151	128	1	0	1	2,165	129	1	0	1
P3	25W	2,859	117	1	0	1	3,021	123	1	0	1	3,041	124	1	0	1

Electrical Load

Performance Package	System Watts	Current (A)				
		120V	208V	240V	277V	347V
P1	11W	0.111	0.061	0.053	0.047	0.045
P2	17W	0.139	0.081	0.071	0.063	0.060
P3	25W	0.208	0.122	0.108	0.097	0.081

Lumen Output in Emergency Mode (4000K, 80 CRI)

Option	Lumens
E4WH	620

Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

Ambient		Lumen Multiplier
0°C	32°F	1.04
10°C	50°F	1.02
20°C	68°F	1.01
25°C	77°F	1.00
30°C	86°F	0.99
40°C	104°F	0.97

Projected LED Lumen Maintenance

Data references the extrapolated performance projections for the platforms noted in a 25°C ambient, based on 10,000 hours of LED testing (tested per IESNA LM-80-08 and projected per IESNA TM-21-11). To calculate LLF, use the lumen maintenance factor that corresponds to the desired number of operating hours below. For other lumen maintenance values, contact factory.

Operating Hours	0	25,000	50,000	100,000
Lumen Maintenance Factor	0.97	>0.96	>0.95	>0.91

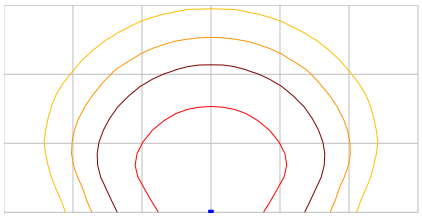
Photometric Diagrams

To see complete photometric reports or download .ies files for this product, visit the Lithonia Lighting ARC LED homepage. Tested in accordance with IESNA LM-79 and LM-80 standards.

LEGEND

0.25 fc
0.5 fc
1.0 fc
3.0 fc

MH = 10ft
Grid = 10ft x 10ft



ARC1 LED P3 40K

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Emergency Egress Options

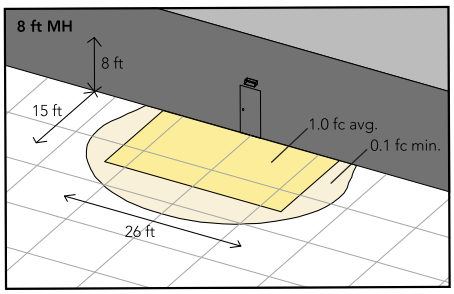
Emergency Battery Backup

The emergency battery backup is integral to the luminaire — no external housing required! This design provides reliable emergency operation while maintaining the aesthetics of the product. All emergency battery backup configurations include an independent secondary driver with an integral relay to immediately detect loss of normal power and automatically energize the luminaire. The emergency battery will power the luminaire for a minimum duration of 90 minutes (maximum duration of three hours) from the time normal power is lost and maintain a minimum of 60% of the light output at the end of 90minutes.

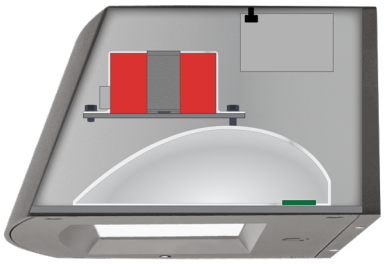
Applicable codes: NFPA 70/NEC – section 700.16, NFPA 101 Life Safety Code Section 7.9

The example below shows illuminance of 1 fc average and 0.1 fc minimum in emergency mode.

Grid = 10ft x 10ft



ARC1 LED 40K MVOLT E4WH



Self-contained solution for clean aesthetic

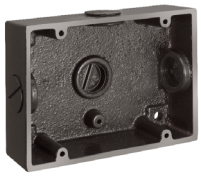
Mounting, Options & Accessories

E4WH – 4W Emergency Battery Backup

D = 6.5”

H = 5”

W = 11”



BBW – Standard Back Box

D = 1.5”

H = 4”

W = 5.5”

For surface conduit applications.
3/4" conduit entry holes.

FEATURES & SPECIFICATIONS

INTENDED USE
The clean architectural shape of the ARC LED was designed for applications such as hospitals, schools, malls, restaurants, and commercial buildings. The long-life LEDs and driver make this luminaire nearly maintenance-free.

CONSTRUCTION
The die-cast aluminum housing and door act as heat sinks to optimize thermal transfer from the light engine and driver to promote long-life. The die-cast door frame is fully gasketed with a one-piece solid silicone gasket to keep out moisture and dust, providing an IP65 rating for the luminaire.

FINISH
Exterior painted parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering. A tightly controlled multi-stage process ensures a 3 mils thickness for a finish that can withstand extreme climate changes without cracking or peeling. Standard Super Durable colors include dark bronze, black, natural aluminum, sandstone and white. Available in textured and non-textured finishes.

OPTICS
Recessed lens to cut off high angle light and reduce glare. Combination of diffused lens and reflector design has low surface brightness creating a visually comfortable environment with great distribution. LEDs are fully hidden from view to eliminate pixelization and harsh glare. The ARC LED has zero uplight and qualifies as a Nighttime Friendly™ product, meaning it is consistent with the LEED® and Green Globes™ criteria for eliminating wasteful uplight.

ELECTRICAL
Light engine consists of high-efficacy LEDs mounted to metal-core circuit boards to maximize heat dissipation and promote long-life (up to L91/100,000 hours at 25°C). The electronic driver has a power factor of >90%, THD <20%. Luminaire is 0-10V dimmable.

INSTALLATION
The universal wall plate, supplied with the luminaire, fits multiple size junction boxes and supports the luminaire during wiring for easy installation. Built-in wet location wiring compartment on the luminaire to accommodate wiring connections for where there is no junction box. Design can withstand up to a 1.5 G vibration load rating per ANSI C136.31.

LISTINGS
CSA certified to U.S. and Canadian standards. Luminaire is IP65 rated. DesignLights Consortium® (DLC) Premium qualified product and DLC qualified product. Not all versions of this product may be DLC Premium qualified or DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified. International DarkSky Association (IDA) Fixture Seal of Approval (FSA) is available for all products on this page utilizing 3000K color temperature only. Rated for -40°C minimum ambient.

WARRANTY
5-year limited warranty. This is the only warranty provided and no other statements in this specification sheet create any warranty of any kind. All other express and implied warranties are disclaimed. Complete warranty terms located at:
www.acuitybrands.com/support/warranty/terms-and-conditions

Note: Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.

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D-Series Size 0
LED Area Luminaire

Catalog Number: DSX0 LED P1 27K 80CRI BLC4 EGS

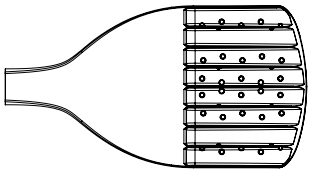
Notes

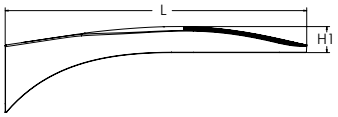
Type

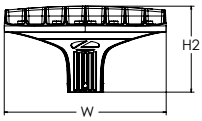
Hit the Tab key or mouse over the page to see all interactive elements.

Specifications

EPA:	0.44 ft² (0.04 m²)
Length:	26.18" (66.5 cm)
Width:	14.06" (35.7 cm)
Height H1:	2.26" (5.7 cm)
Height H2:	7.46" (18.9 cm)
Weight:	23 lbs (10.4 kg)







Design Select options indicated by this color background.

Introduction

The modern styling of the D-Series features a highly refined aesthetic that blends seamlessly with its environment. The D-Series offers the benefits of the latest in LED technology into a high performance, high efficacy, long-life luminaire.

The photometric performance results in sites with excellent uniformity, greater pole spacing and lower power density. D-Series outstanding photometry aids in reducing the number of poles required in area lighting applications, with typical energy savings of 70% and expected service life of over 100,000 hours.

design select

Items marked by a shaded background qualify for the Design Select program and ship in 15 days or less. To learn more about Design Select, visit www.acuitybrands.com/designselect.
*See ordering tree for details

Ordering Information

EXAMPLE: DSX0 LED P6 40K 70CRI T3M MVOLT SPA NLTAIR2 PIRHN DDBXD

DSX0 LED

Series
DSX0 LED

LEDs
Forward optics

P1	P5
P2	P6
P3	P7
P4	

Rotated optics

P10 [1]	P12 [1]
P11 [1]	P13 [1]

Color temperature [2]

(this section 70CRI only)	
30K	3000K
40K	4000K
50K	5000K
27K	2700K
30K	3000K
35K	3500K
40K	4000K
50K	5000K

Color Rendering Index [2]

70CRI
70CRI
70CRI
80CRI
80CRI
80CRI
80CRI
80CRI

Distribution

AFR	Automotive front row
T1S	Type I short
T2M	Type II medium
T3M	Type III medium
T3LG	Type III low glare [3]
T4M	Type IV medium
T4LG	Type IV low glare [3]
TFTM	Forward throw medium
T5M	Type V medium
T5LG	Type V low glare
T5W	Type V wide
BLC3	Type III backlight control [3]
BLC4	Type IV backlight control [3]
LCCO	Left corner cutoff [3]
RCCO	Right corner cutoff [3]

Voltage

MVOLT	(120V-277V) [4]
HVOLT	(347V-480V) [5,6]
XVOLT	(277V-480V) [7,8]
120	[16, 24]
208	[16, 24]
240	[16, 24]
277	[16, 24]
347	[16, 24]
480	[16, 24]

Mounting
Shipped included

SPA	Square pole mounting (#8 drilling, 3.5" min. SQ pole)
RPA	Round pole mounting (#8 drilling, 3" min. RND pole)
SPA5	Square pole mounting (#5 drilling. 3" min. SQ pole) [9]
RPA5	Round pole mounting (#5 drilling, 3" min. RND pole) [9]
SPA8N	Square narrow pole mounting (#8 drilling, 3" min. SQ pole)
WBA	Wall bracket [10]
MA	Mast arm adapter (mounts on 2 3/8" OD horizontal tenon)

Control options
Shipped installed

NLTAIR2 PIRHN	nLight AIR gen 2 enabled with bi-level motion / ambient sensor, 8-40' mounting height, ambient sensor enabled at 2fc. [11, 12, 18, 19]
PIR	High/low, motion/ambient sensor, 8-40' mounting height, ambient sensor enabled at 2fc [13, 18, 19]
PER	NEMA twist-lock receptacle only (controls ordered separate) [14]
PER5	Five-pin receptacle only (controls ordered separate) [14, 19]
PER7	Seven-pin receptacle only (controls ordered separate) [14, 19]
FAO	Field adjustable output [15, 19]
BL30	Bi-level switched dimming, 30% [16, 19]
BL50	Bi-level switched dimming, 50% [16, 19]
DMG	0-10v dimming wires pulled outside fixture (for use with an external control, ordered separately) [17]

Other options
Shipped installed

HS	Houseside shield (black finish standard) [20]
L90	Left rotated optics [1]
R90	Right rotated optics [1]
CCE	Coastal Construction [21]
HA	50°C ambient operation [22]
BAA	Buy America(n) Act and/or Build America Buy America Qualified
SF	Single fuse (120, 277, 347V) [24]
DF	Double fuse (208, 240, 480V) [24]

Shipped separately

EGSR	External Glare Shield (reversible, field install required, matches housing finish)
BSDB	Bird Spikes (field install required)

Finish *(required)*

DDBXD	Dark Bronze
DBLXD	Black
DNAXD	Natural Aluminum
DWHXD	White
DDBTXD	Textured dark bronze
DBLBXD	Textured black
DNATXD	Textured natural aluminum
DWHGXD	Textured white

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Ordering Information

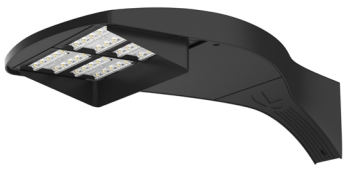
Accessories

Ordered and shipped separately.

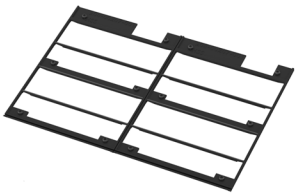
DLL127F 1.5 JU	Photocell - SSL twist-lock (120-277V) [23]
DLL347F 1.5 CUL JU	Photocell - SSL twist-lock (347V) [23]
DLL480F 1.5 CUL JU	Photocell - SSL twist-lock (480V) [23]
DSHORT SBK	Shorting cap [23]
DSX0HS P#	House-side shield (enter package number P1-7, P10-13 in place of #)
DSXRPA (FINISH)	Round pole adapter (#8 drilling, specify finish)
DSXRPA5 (FINISH)	Round pole adapter #5 drilling (specify finish)
DSXSPA5 (FINISH)	Square pole adapter #5 drilling (specify finish)
DSX0EGSR (FINISH)	External glare shield (specify finish)
DSX0BSDB (FINISH)	Bird spike deterrent bracket (specify finish)

NOTES
1 Rotated optics available with packages P10, P11, P12 and P13. Must be combined with option L90 or R90.
2 30K, 40K, and 50K available in 70CRI and 80CRI. 27K and 35K only available with 80CRI. Contact Technical Support for other possible combinations.
3 T3LG, T4LG, BLC3, BLC4, LCCO, RCCO not available with option HS.
4 MVOLT driver operates on any line voltage from 120-277V (50/60 Hz).
5 HVOLT driver operates on any line voltage from 347-480V (50/60 Hz).
6 HVOLT not available with package P1, P2 and P10 when combined with option NLTAIR2 PIRHN or option PIR.
7 XVOLT operates with any voltage between 277V and 480V (50/60 Hz).
8 XVOLT not available in packages P1, P2, or P10. XVOLT not available with fusing (SF or DF). XVOLT also not available in packages P3, P4, P5, P7, P11, P13 when combined with NLTAIR2 PIRHN or PIR.
9 SPA5 and RPA5 for use with #5 drilling only (Not for use with #8 drilling).
10 WBA cannot be combined with Type 5 distributions plus photocell (PER).
11 NLTAIR2 and PIRHN must be ordered together. For more information on nLight Air 2.
12 NLTAIR2 PIRHN not available with other controls including PIR, PER, PER5, PER7, FAO, BL30, BL50 and DMG. NLTAIR2 PIRHN not available with P1, P2 and P10 using HVOLT. NLTAIR2 PIRHN not available with P1 using MVOLT.
13 PIR not available with NLTAIR2, PER, PER5, PER7, FAO BL30, BL50 and DMG. PIR not available with P1, P2 and P10 using HVOLT.PIR not available with P1 using MVOLT.
14 PER/PER5/PER7 not available with NLTAIR2, PIR, BL30, BL50. Photocell ordered and shipped as a separate line item from Acuity Brands Controls. See accessories. Shorting Cap included.
15 FAO not available with other dimming control options NLTAIR2 PIRHN, PIR, PER5, PER7, BL30, BL50, or DMG.
16 BL30 and BL50 are not available with NLTAIR2 PIRHN, PIR, PER, PER5, PER7, FAO and DMG. BL30 or BL50 must specify 120 or 277V.
17 DMG not available with NLTAIR2 PIRHN, PIR, PER, PER5, PER7, BL30, BL50 and FAO.
18 Reference Motion Sensor Default Settings table on page 4 to see functionality.
19 Reference Controls Options table on page 4.
20 Option HS not available with T3LG, T4LG, BLC3, BLC4, LCCO and RCCO distribution. Also available as a separate accessory; see Accessories information.
21 CCE option not available with option BS and EGSR. Contact Technical Support for availability.
22 Option HA not available with performance packages P6, P7, P12 and P13.
23 Requires luminaire to be specified with PER, PER5 or PER7 option. See Controls Table on page 4.
24 Single fuse (SF) requires 120V, 277V, or 347V. Double fuse (DF) requires 208V, 240V or 480V. XVOLT not available with fusing (SF or DF).

Shield Accessories



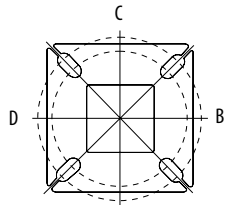
External Glare Shield (EGSR)

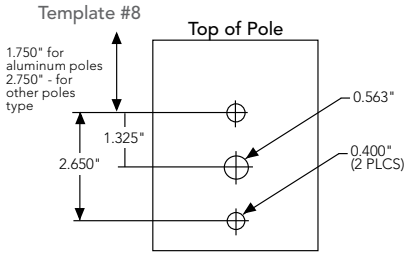


House Side Shield (HS)

Drilling

HANDHOLE ORIENTATION
(from top of pole)





Tenon Mounting Slipfitter

Tenon O.D.	Mounting	Single Unit	2 @ 180	2 @ 90	3 @ 90	3 @120	4 @ 90
2-3/8"	RPA	AS3-5 190	AS3-5 280	AS3-5 290	AS3-5 390	AS3-5 320	AS3-5 490
2-7/8"	RPA	AST25-190	AST25-280	AST25-290	AST25-390	AST25-320	AST25-490
4"	RPA	AST35-190	AST35-280	AST35-290	AST35-390	AST35-320	AST35-490

Mounting Option	Drilling Template	Single	2 @ 180	2 @ 90	3 @ 90	3 @ 120	4 @ 90
Head Location		Side B	Side B & D	Side B & C	Side B, C & D	Round Pole Only	Side A, B, C & D
Drill Nomenclature	#8	DM19AS	DM28AS	DM29AS	DM39AS	DM32AS	DM49AS
		Minimum Acceptable Outside Pole Dimension					
SPA	#8	3.5"	3.5"	3.5"	3.5"		3.5"
RPA	#8	3"	3"	3"	3"	3"	3"
SPA5	#5	3"	3"	3"	3"		3"
RPA5	#5	3"	3"	3"	3"	3"	3"
SPA8N	#8	3"	3"	3"	3"		3"

DSX0 Area Luminaire - EPA

*Includes luminaire and integral mounting arm. Other tenons, arms, brackets or other accessories are not included in this EPA data.

Fixture Quantity & Mounting Configuration	Single DM19	2 @ 180 DM28	2 @ 90 DM29	3 @ 90 DM39	3 @ 120 DM32	4 @ 90 DM49
Mounting Type						
DSX0 with SPA	0.44	0.88	0.96	1.18	---	1.16
DSX0 with SPA5, SPA8N	0.51	1.02	1.06	1.26	---	1.29
DSX0 with RPA, RPA5	0.51	1.02	1.06	1.26	1.24	1.29
DSX0 with MA	0.64	1.28	1.24	1.67	1.70	1.93

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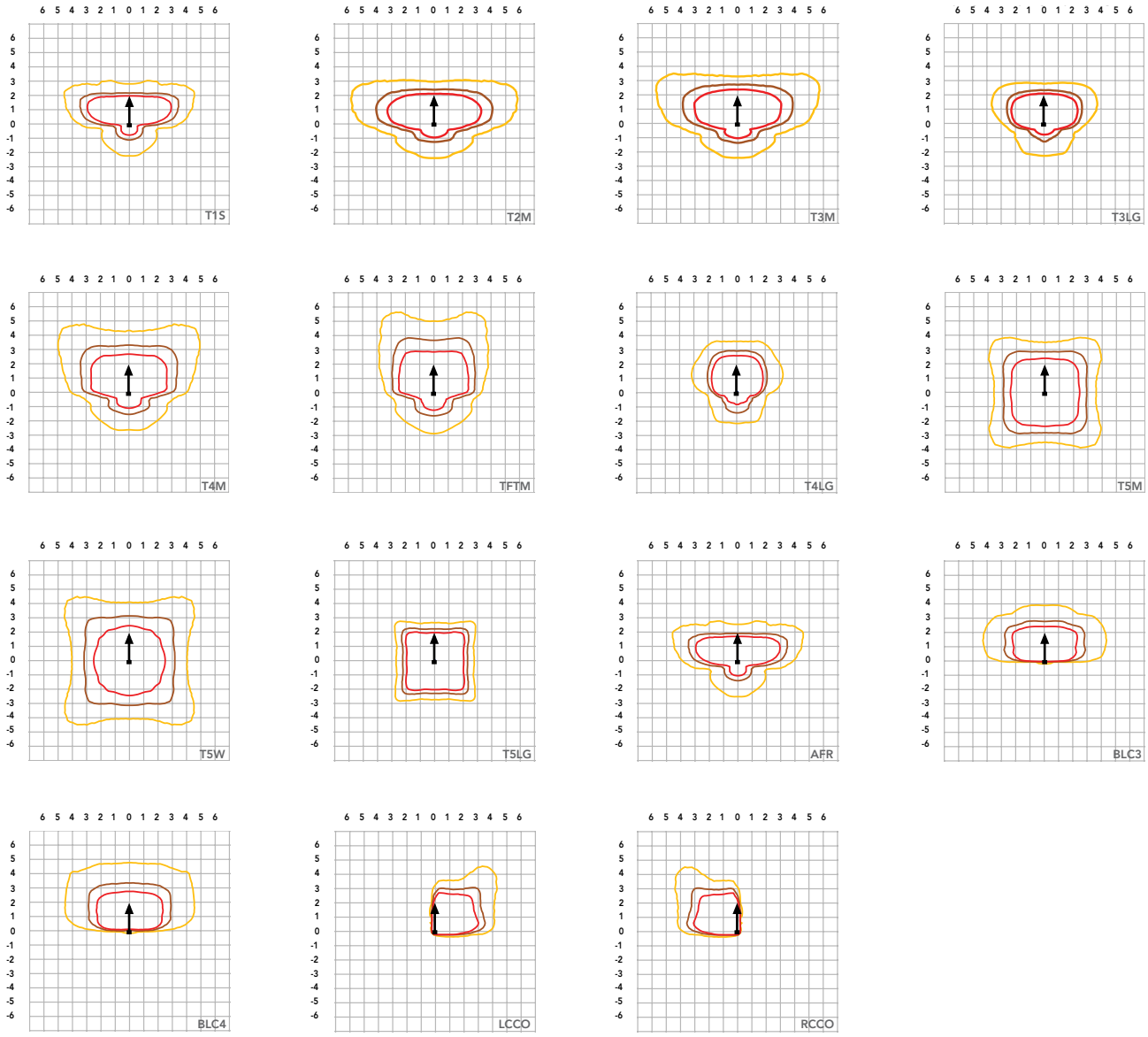
Photometric Diagrams

To see complete photometric reports or download .ies files for this product, visit Lithonia Lighting's homepage.

Isofootcandle plots for the DSX0 LED P7 40K 70CRI. Distances are in units of mounting height (20').

LEGEND

- 0.1 fc
- 0.5 fc
- 1.0 fc



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Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

Ambient		Lumen Multiplier
0°C	32°F	1.04
5°C	41°F	1.04
10°C	50°F	1.03
15°C	50°F	1.02
20°C	68°F	1.01
25°C	**77°C**	**1.00**
30°C	86°F	0.99
35°C	95°F	0.98
40°C	104°F	0.97

Projected LED Lumen Maintenance

Data references the extrapolated performance projections for the platforms noted in a **25°C ambient**, based on 10,000 hours of LED testing (tested per IESNA LM-80-08 and projected per IESNA TM-21-11).

To calculate LLF, use the lumen maintenance factor that corresponds to the desired number of operating hours below. For other lumen maintenance values, contact factory.

Operating Hours	Lumen Maintenance Factor
0	1.00
25,000	0.94
50,000	0.89
100,000	0.80

FAO Dimming Settings

FAO Position	% Wattage	% Lumen Output
8	100%	100%
7	93%	95%
6	80%	85%
5	66%	73%
4	54%	61%
3	41%	49%
2	29%	36%
1	15%	20%

*Note: Calculated values are based on original performance package data. When calculating new values for given FAO position, use published values for each package based on input watts and lumens by optic type.

Electrical Load

					Current (A)					
	Performance Package	LED Count	Drive Current (mA)	Wattage	120V	208V	240V	277V	347V	480V
Forward Optics (Non-Rotated)	P1	20	530	34	0.28	0.16	0.14	0.12	0.10	0.07
	P2	20	700	45	0.38	0.22	0.19	0.16	0.13	0.09
	P3	20	1050	69	0.57	0.33	0.29	0.25	0.20	0.14
	P4	20	1400	94	0.78	0.45	0.39	0.34	0.27	0.19
	P5	40	700	89	0.75	0.43	0.38	0.33	0.26	0.19
	P6	40	1050	136	1.14	0.66	0.57	0.49	0.39	0.29
	P7	40	1300	170	1.42	0.82	0.71	0.62	0.49	0.36
Rotated Optics (Requires L90 or R90)	P10	30	530	51	0.42	0.24	0.21	0.18	0.15	0.11
	P11	30	700	67	0.57	0.33	0.28	0.25	0.20	0.14
	P12	30	1050	103	0.86	0.50	0.43	0.37	0.30	0.22
	P13	30	1300	129	1.07	0.62	0.54	0.46	0.37	0.27

LED Color Temperature / Color Rendering Multipliers

	70 CRI		80CRI		90CRI	
	Lumen Multiplier	Availability	Lumen Multiplier	Availability	Lumen Multiplier	Availability
5000K	102%	Standard	92%	Extended lead-time	71%	(see note)
4000K	100%	Standard	92%	Extended lead-time	67%	(see note)
3500K	100%	(see note)	90%	Extended lead-time	63%	(see note)
3000K	96%	Standard	87%	Extended lead-time	61%	(see note)
2700K	94%	(see note)	85%	Extended lead-time	57%	(see note)

Note: Some LED types are available as per special request. Contact Technical Support for more information.

Motion Sensor Default Settings

Option	Unoccupied Dimmed Level	High Level (when occupied)	Phototcell Operation	Dwell Time	Ramp-up Time	Dimming Fade Rate
PIR	30%	100%	Enabled @ 2FC	7.5 min	3 sec	5 min
NLTAIR2 PIRHN	30%	100%	Enabled @ 2FC	7.5 min	3 sec	5 min

Controls Options

Nomenclature	Description	Functionality	Primary control device	Notes
FAO	Field adjustable output device installed inside the luminaire; wired to the driver dimming leads.	Allows the luminaire to be manually dimmed, effectively trimming the light output.	FAO device	Cannot be used with other controls options that need the 0-10V leads
DS (not available on DSX0)	Drivers wired independently for 50/50 luminaire operation	The luminaire is wired to two separate circuits, allowing for 50/50 operation.	Independently wired drivers	Requires two separately switched circuits. Consider nLight AIR as a more cost effective alternative.
PER5 or PER7	Twist-lock photocell receptacle	Compatible with standard twist-lock photocells for dusk to dawn operation, or advanced control nodes that provide 0-10V dimming signals.	Twist-lock photocells such as DLL Elite or advanced control nodes such as ROAM.	Pins 4 & 5 to dimming leads on driver, Pins 6 & 7 are capped inside luminaire. Cannot be used with other controls options that need the 0-10V leads.
PIR	Motion sensor with integral photocell. Sensor suitable for 8' to 40' mounting height.	Luminaires dim when no occupancy is detected.	Acuity Controls rSBG	Cannot be used with other controls options that need the 0-10V leads.
NLTAIR2 PIRHN	nLight AIR enabled luminaire for motion sensing, photocell and wireless communication.	Motion and ambient light sensing with group response. Scheduled dimming with motion sensor over-ride when wirelessly connected to the nLight Eclypse.	nLight Air rSBG	nLight AIR sensors can be programmed and commissioned from the ground using the CIAIRity Pro app. Cannot be used with other controls options that need the 0-10V leads.
BL30 or BL50	Integrated bi-level device that allows a second control circuit to switch all light engines to either 30% or 50% light output	BLC device provides input to 0-10V dimming leads on all drivers providing either 100% or dimmed (30% or 50%) control by a secondary circuit	BLC UVOLT1	BLC device is powered off the 0-10V dimming leads, thus can be used with any input voltage from 120 to 480V

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Performance Data

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of configurations shown within the tolerances described within LM-79.
Contact factory for performance data on any configurations not shown here.

Forward Optics

Performance Package	System Watts	LED Count	Drive Current (mA)	Distribution Type	30K (3000K, 70 CRI)					40K (4000K, 70 CRI)					50K (5000K, 70 CRI)				
					Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
P1	33W	20	530	T1S	4,906	1	0	1	148	5,113	1	0	1	154	5,213	1	0	1	157
				T2M	4,545	1	0	2	137	4,736	1	0	2	143	4,829	1	0	2	145
				T3M	4,597	1	0	2	138	4,791	1	0	2	144	4,885	1	0	2	147
				T3LG	4,107	1	0	1	124	4,280	1	0	1	129	4,363	1	0	1	131
				T4M	4,666	1	0	2	141	4,863	1	0	2	146	4,957	1	0	2	149
				T4LG	4,244	1	0	1	128	4,423	1	0	1	133	4,509	1	0	1	136
				TFTM	4,698	1	0	2	141	4,896	1	0	2	147	4,992	1	0	2	150
				T5M	4,801	3	0	1	145	5,003	3	0	1	151	5,101	3	0	1	154
				T5W	4,878	3	0	1	147	5,084	3	0	2	153	5,183	3	0	2	156
				T5LG	4,814	2	0	1	145	5,018	2	0	1	151	5,115	2	0	1	154
				BLC3	3,344	0	0	1	101	3,485	0	0	1	105	3,553	0	0	1	107
				BLC4	3,454	0	0	2	104	3,599	0	0	2	108	3,670	0	0	2	111
				RCCO	3,374	0	0	1	102	3,517	0	0	1	106	3,585	0	0	1	108
				LCCO	3,374	0	0	1	102	3,517	0	0	1	106	3,585	0	0	1	108
				AFR	4,906	1	0	1	148	5,113	1	0	1	154	5,213	1	0	1	157
P2	45W	20	700	T1S	6,328	1	0	1	140	6,595	1	0	1	146	6,724	1	0	1	149
				T2M	5,862	1	0	2	130	6,109	1	0	2	135	6,228	1	0	2	138
				T3M	5,930	1	0	3	131	6,180	1	0	3	137	6,301	1	0	3	140
				T3LG	5,297	1	0	1	117	5,521	1	0	1	122	5,628	1	0	1	125
				T4M	6,018	1	0	3	133	6,272	1	0	3	139	6,395	1	0	3	142
				T4LG	5,474	1	0	1	121	5,705	1	0	1	126	5,816	1	0	1	129
				TFTM	6,060	1	0	3	134	6,316	1	0	3	140	6,439	1	0	3	143
				T5M	6,192	3	0	1	137	6,453	3	0	2	143	6,579	3	0	2	146
				T5W	6,293	3	0	2	139	6,558	3	0	2	145	6,686	3	0	2	148
				T5LG	6,210	2	0	1	138	6,472	3	0	1	143	6,598	3	0	1	146
				BLC3	4,313	0	0	2	96	4,495	0	0	2	100	4,583	0	0	2	102
				BLC4	4,455	0	0	2	99	4,643	0	0	2	103	4,733	0	0	2	105
				RCCO	4,352	0	0	2	96	4,536	0	0	2	100	4,624	0	0	2	102
				LCCO	4,352	0	0	2	96	4,536	0	0	2	100	4,624	0	0	2	102
				AFR	6,328	1	0	1	140	6,595	1	0	1	146	6,724	1	0	1	149
P3	69W	20	1050	T1S	9,006	1	0	2	131	9,386	1	0	2	136	9,569	1	0	2	139
				T2M	8,343	2	0	3	121	8,694	2	0	3	126	8,864	2	0	3	129
				T3M	8,439	2	0	3	122	8,795	2	0	3	128	8,967	2	0	3	130
				T3LG	7,539	1	0	2	109	7,857	1	0	2	114	8,010	1	0	2	116
				T4M	8,565	2	0	3	124	8,926	2	0	3	129	9,100	2	0	3	132
				T4LG	7,790	1	0	2	113	8,119	1	0	2	118	8,277	1	0	2	120
				TFTM	8,624	1	0	3	125	8,988	1	0	3	130	9,163	2	0	3	133
				T5M	8,812	3	0	2	128	9,184	4	0	2	133	9,363	4	0	2	136
				T5W	8,955	4	0	2	130	9,333	4	0	2	135	9,515	4	0	2	138
				T5LG	8,838	3	0	1	128	9,211	3	0	1	134	9,390	3	0	1	136
				BLC3	6,139	0	0	2	89	6,398	0	0	2	93	6,522	0	0	2	95
				BLC4	6,340	0	0	3	92	6,607	0	0	3	96	6,736	0	0	3	98
				RCCO	6,194	1	0	2	90	6,455	1	0	2	94	6,581	1	0	2	95
				LCCO	6,194	1	0	2	90	6,455	1	0	2	94	6,581	1	0	2	95
				AFR	9,006	1	0	2	131	9,386	1	0	2	136	9,569	1	0	2	139
P4	93W	20	1400	T1S	11,396	1	0	2	122	11,877	1	0	2	128	12,109	2	0	2	130
				T2M	10,557	2	0	3	113	11,003	2	0	3	118	11,217	2	0	3	121
				T3M	10,680	2	0	3	115	11,130	2	0	3	120	11,347	2	0	3	122
				T3LG	9,540	1	0	2	103	9,942	1	0	2	107	10,136	1	0	2	109
				T4M	10,839	2	0	3	117	11,296	2	0	3	121	11,516	2	0	4	124
				T4LG	9,858	1	0	2	106	10,274	1	0	2	110	10,474	1	0	2	113
				TFTM	10,914	2	0	3	117	11,374	2	0	3	122	11,596	2	0	3	125
				T5M	11,152	4	0	2	120	11,622	4	0	2	125	11,849	4	0	2	127
				T5W	11,332	4	0	3	122	11,811	4	0	3	127	12,041	4	0	3	129
				T5LG	11,184	3	0	1	120	11,656	3	0	2	125	11,883	3	0	2	128
				BLC3	7,768	0	0	2	83	8,096	0	0	2	87	8,254	0	0	2	89
				BLC4	8,023	0	0	3	86	8,362	0	0	3	90	8,524	0	0	3	92
				RCCO	7,838	1	0	2	84	8,169	1	0	2	88	8,328	1	0	2	90
				LCCO	7,838	1	0	2	84	8,169	1	0	2	88	8,328	1	0	2	90
				AFR	11,396	1	0	2	122	11,877	1	0	2	128	12,109	2	0	2	130

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Performance Data

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of configurations shown within the tolerances described within LM-79.
Contact factory for performance data on any configurations not shown here.

Forward Optics

Performance Package	System Watts	LED Count	Drive Current (mA)	Distribution Type	30K (3000K, 70 CRI)					40K (4000K, 70 CRI)					50K (5000K, 70 CRI)				
					Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
P5	90W	40	700	T1S	12,380	2	0	2	137	12,902	2	0	2	143	13,154	2	0	2	146
				T2M	11,468	2	0	3	127	11,952	2	0	3	133	12,185	2	0	3	135
				T3M	11,601	2	0	3	129	12,091	2	0	3	134	12,326	2	0	4	137
				T3LG	10,363	2	0	2	115	10,800	2	0	2	120	11,011	2	0	2	122
				T4M	11,774	2	0	4	131	12,271	2	0	4	136	12,510	2	0	4	139
				T4LG	10,709	1	0	2	119	11,160	2	0	2	124	11,378	2	0	2	126
				TFTM	11,856	2	0	3	132	12,356	2	0	4	137	12,596	2	0	4	140
				T5M	12,114	4	0	2	134	12,625	4	0	2	140	12,871	4	0	2	143
				T5W	12,310	4	0	3	137	12,830	4	0	3	142	13,080	4	0	3	145
				T5LG	12,149	3	0	2	135	12,662	3	0	2	141	12,908	3	0	2	143
				BLC3	8,438	0	0	2	94	8,794	0	0	2	98	8,966	0	0	2	99
				BLC4	8,715	0	0	3	97	9,083	0	0	3	101	9,260	0	0	3	103
				RCCO	8,515	1	0	2	94	8,874	1	0	2	98	9,047	1	0	2	100
				LCCO	8,515	1	0	2	94	8,874	1	0	2	98	9,047	1	0	2	100
				AFR	12,380	2	0	2	137	12,902	2	0	2	143	13,154	2	0	2	146
P6	137W	40	1050	T1S	17,545	2	0	3	128	18,285	2	0	3	133	18,642	2	0	3	136
				T2M	16,253	3	0	4	119	16,939	3	0	4	124	17,269	3	0	4	126
				T3M	16,442	2	0	4	120	17,135	3	0	4	125	17,469	3	0	4	128
				T3LG	14,687	2	0	2	107	15,306	2	0	2	112	15,605	2	0	2	114
				T4M	16,687	2	0	4	122	17,391	3	0	5	127	17,730	3	0	5	129
				T4LG	15,177	2	0	2	111	15,817	2	0	2	115	16,125	2	0	2	118
				TFTM	16,802	2	0	4	123	17,511	2	0	4	128	17,852	2	0	5	130
				T5M	17,168	4	0	2	125	17,893	5	0	3	131	18,241	5	0	3	133
				T5W	17,447	5	0	3	127	18,183	5	0	3	133	18,537	5	0	3	135
				T5LG	17,218	4	0	2	126	17,944	4	0	2	131	18,294	4	0	2	134
				BLC3	11,959	0	0	3	87	12,464	0	0	3	91	12,707	0	0	3	93
				BLC4	12,352	0	0	4	90	12,873	0	0	4	94	13,124	0	0	4	96
				RCCO	12,067	1	0	3	88	12,576	1	0	3	92	12,821	1	0	3	94
				LCCO	12,067	1	0	3	88	12,576	1	0	3	92	12,821	1	0	3	94
				AFR	17,545	2	0	3	128	18,285	2	0	3	133	18,642	2	0	3	136
P7	171W	40	1300	T1S	20,806	2	0	3	122	21,683	2	0	3	127	22,106	2	0	3	129
				T2M	19,273	3	0	4	113	20,086	3	0	4	118	20,478	3	0	4	120
				T3M	19,497	3	0	5	114	20,319	3	0	5	119	20,715	3	0	5	121
				T3LG	17,416	2	0	2	102	18,151	2	0	2	106	18,504	2	0	2	108
				T4M	19,787	3	0	5	116	20,622	3	0	5	121	21,024	3	0	5	123
				T4LG	17,997	2	0	2	105	18,756	2	0	2	110	19,121	2	0	2	112
				TFTM	19,924	3	0	5	117	20,765	3	0	5	122	21,170	3	0	5	124
				T5M	20,359	5	0	3	119	21,217	5	0	3	124	21,631	5	0	3	127
				T5W	20,689	5	0	3	121	21,561	5	0	3	126	21,982	5	0	3	129
				T5LG	20,418	4	0	2	120	21,279	4	0	2	125	21,694	4	0	2	127
				BLC3	14,182	0	0	3	83	14,780	0	0	3	87	15,068	0	0	3	88
				BLC4	14,647	0	0	4	86	15,265	0	0	4	89	15,562	0	0	4	91
				RCCO	14,309	1	0	3	84	14,913	1	0	3	87	15,204	1	0	3	89
				LCCO	14,309	1	0	3	84	14,913	1	0	3	87	15,204	1	0	3	89
				AFR	20,806	2	0	3	122	21,683	2	0	3	127	22,106	2	0	3	129

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Performance Data

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of configurations shown within the tolerances described within LM-79. Contact factory for performance data on any configurations not shown here.

Rotated Optics

Performance Package	System Watts	LED Count	Drive Current (mA)	Distribution Type	30K (3000K, 70 CRI)					40K (4000K, 70 CRI)					50K (5000K, 70 CRI)				
					Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
P10	51W	30	530	T1S	7,399	3	0	3	145	7,711	3	0	3	151	7,862	3	0	3	154
				T2M	6,854	3	0	3	135	7,144	3	0	3	140	7,283	3	0	3	143
				T3M	6,933	3	0	3	136	7,225	3	0	3	142	7,366	3	0	3	145
				T3LG	6,194	2	0	2	122	6,455	2	0	2	127	6,581	2	0	2	129
				T4M	7,036	3	0	3	138	7,333	3	0	3	144	7,476	3	0	3	147
				T4LG	6,399	2	0	2	126	6,669	2	0	2	131	6,799	2	0	2	134
				TFTM	7,086	3	0	3	139	7,385	3	0	3	145	7,529	3	0	3	148
				T5M	7,239	3	0	2	142	7,545	3	0	2	148	7,692	3	0	2	151
				T5W	7,357	3	0	2	145	7,667	3	0	2	151	7,816	4	0	2	154
				T5LG	7,260	3	0	1	143	7,567	3	0	1	149	7,714	3	0	1	152
				BLC3	5,043	3	0	3	99	5,256	3	0	3	103	5,358	3	0	3	105
				BLC4	5,208	3	0	3	102	5,428	3	0	3	107	5,534	3	0	3	109
				RCCO	5,089	0	0	2	100	5,303	0	0	2	104	5,407	0	0	2	106
				LCCO	5,089	0	0	2	100	5,303	0	0	2	104	5,407	0	0	2	106
				AFR	7,399	3	0	3	145	7,711	3	0	3	151	7,862	3	0	3	154
P11	68W	30	700	T1S	9,358	3	0	3	138	9,753	3	0	3	143	9,943	3	0	3	146
				T2M	8,669	3	0	3	127	9,034	3	0	3	133	9,211	3	0	3	135
				T3M	8,768	3	0	3	129	9,138	3	0	3	134	9,316	3	0	3	137
				T3LG	7,833	3	0	3	115	8,164	3	0	3	120	8,323	3	0	3	122
				T4M	8,899	3	0	3	131	9,274	3	0	3	136	9,455	3	0	3	139
				T4LG	8,093	3	0	3	119	8,435	3	0	3	124	8,599	3	0	3	126
				TFTM	8,962	3	0	3	132	9,340	3	0	3	137	9,522	3	0	3	140
				T5M	9,156	4	0	2	135	9,542	4	0	2	140	9,728	4	0	2	143
				T5W	9,304	4	0	2	137	9,696	4	0	2	143	9,885	4	0	2	145
				T5LG	9,182	3	0	1	135	9,569	3	0	1	141	9,756	3	0	1	143
				BLC3	6,378	3	0	3	94	6,647	3	0	3	98	6,777	3	0	3	100
				BLC4	6,587	3	0	3	97	6,865	3	0	3	101	6,999	3	0	3	103
				RCCO	6,436	0	0	2	95	6,707	0	0	2	99	6,838	0	0	2	101
				LCCO	6,436	0	0	2	95	6,707	0	0	2	99	6,838	0	0	2	101
				AFR	9,358	3	0	3	138	9,753	3	0	3	143	9,943	3	0	3	146
P12	103W	30	1050	T1S	13,247	3	0	3	128	13,806	3	0	3	134	14,075	3	0	3	136
				T2M	12,271	4	0	4	119	12,789	4	0	4	124	13,038	4	0	4	126
				T3M	12,412	4	0	4	120	12,935	4	0	4	125	13,187	4	0	4	128
				T3LG	11,089	3	0	3	107	11,556	3	0	3	112	11,782	3	0	3	114
				T4M	12,597	4	0	4	122	13,128	4	0	4	127	13,384	4	0	4	129
				T4LG	11,457	3	0	3	111	11,940	3	0	3	116	12,173	3	0	3	118
				TFTM	12,686	4	0	4	123	13,221	4	0	4	128	13,479	4	0	4	130
				T5M	12,960	4	0	2	125	13,507	4	0	2	131	13,770	4	0	2	133
				T5W	13,170	4	0	3	127	13,726	4	0	3	133	13,994	4	0	3	135
				T5LG	12,998	3	0	2	126	13,546	3	0	2	131	13,810	3	0	2	134
				BLC3	9,029	3	0	3	87	9,409	3	0	3	91	9,593	3	0	3	93
				BLC4	9,324	4	0	4	90	9,718	4	0	4	94	9,907	4	0	4	96
				RCCO	9,110	1	0	2	88	9,495	1	0	2	92	9,680	1	0	2	94
				LCCO	9,110	1	0	2	88	9,494	1	0	2	92	9,680	1	0	2	94
				AFR	13,247	3	0	3	128	13,806	3	0	3	134	14,075	3	0	3	136
P13	129W	30	1300	T1S	15,704	3	0	3	122	16,366	3	0	3	127	16,685	4	0	4	130
				T2M	14,547	4	0	4	113	15,161	4	0	4	118	15,457	4	0	4	120
				T3M	14,714	4	0	4	114	15,335	4	0	4	119	15,634	4	0	4	121
				T3LG	13,145	3	0	3	102	13,700	3	0	3	106	13,967	3	0	3	108
				T4M	14,933	4	0	4	116	15,563	4	0	4	121	15,867	4	0	4	123
				T4LG	13,582	3	0	3	105	14,155	3	0	3	110	14,431	3	0	3	112
				TFTM	15,039	4	0	4	117	15,673	4	0	4	122	15,979	4	0	4	124
				T5M	15,364	4	0	2	119	16,013	4	0	2	124	16,325	4	0	2	127
				T5W	15,613	5	0	3	121	16,272	5	0	3	126	16,589	5	0	3	129
				T5LG	15,409	3	0	2	120	16,059	3	0	2	125	16,372	4	0	2	127
				BLC3	10,703	4	0	4	83	11,155	4	0	4	87	11,372	4	0	4	88
				BLC4	11,054	4	0	4	86	11,520	4	0	4	89	11,745	4	0	4	91
				RCCO	10,800	1	0	2	84	11,256	1	0	2	87	11,475	1	0	3	89
				LCCO	10,800	1	0	2	84	11,255	1	0	2	87	11,475	1	0	3	89
				AFR	15,704	3	0	3	122	16,366	3	0	3	127	16,685	4	0	4	130

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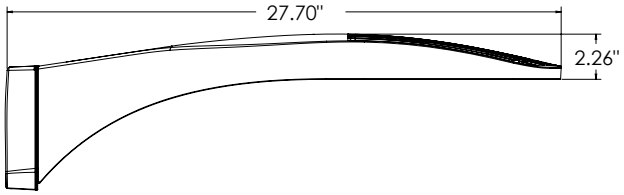
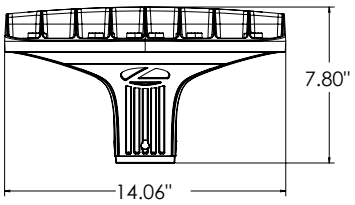
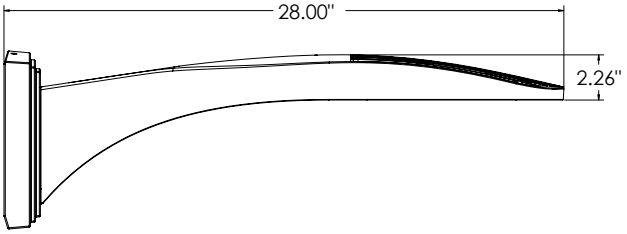
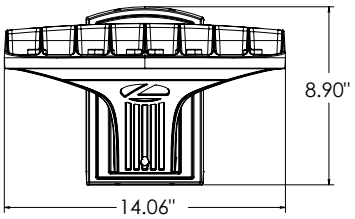
Dimensions



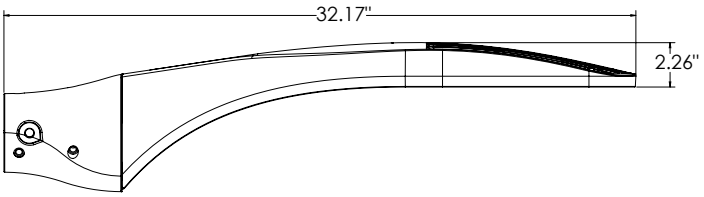


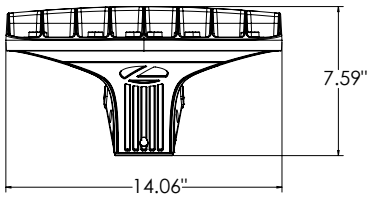
DSX0 with RPA, RPA5, SPA5, SPA8N mount
Weight: 25 lbs





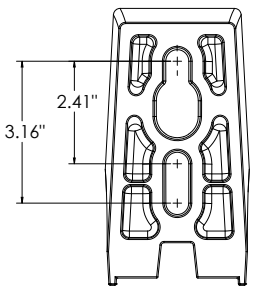
DSX0 with WBA mount
Weight: 27 lb



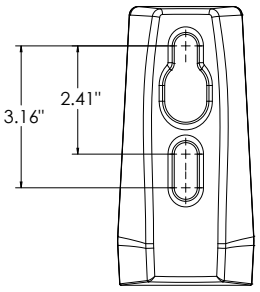


DSX0 with MA mount
Weight: 28 lbs

SPA (STANDARD ARM)



RPA



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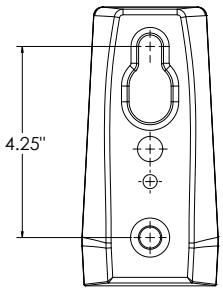

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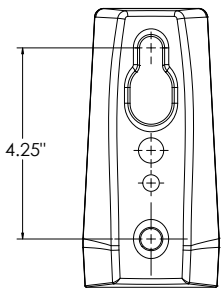
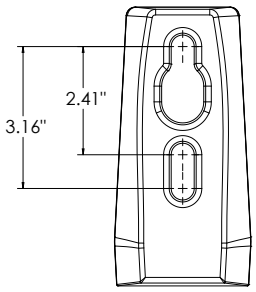


SPA8N



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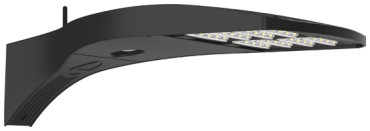
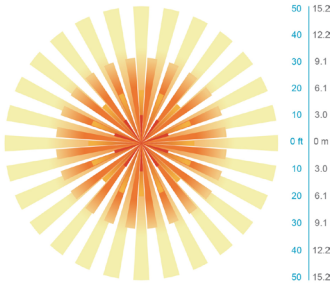
nLight Control - Sensor Coverage and Settings

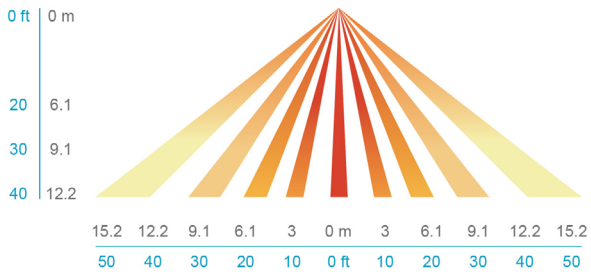
nLight Sensor Coverage Pattern

NLTAIR2 PIRHN





Top



Side

FEATURES & SPECIFICATIONS

INTENDED USE

The sleek design of the D-Series Size 0 reflects the embedded high performance LED technology. It is ideal for many commercial and municipal applications, such as parking lots, plazas, campuses, and pedestrian areas.

CONSTRUCTION

Single-piece die-cast aluminum housing has integral heat sink fins to optimize thermal management through conductive and convective cooling. Modular design allows for ease of maintenance and future light engine upgrades. The LED driver is mounted in direct contact with the casting to promote low operating temperature and long life. Housing driver compartment is completely sealed against moisture and environmental contaminants (IP66). Vibration rated per ANSI C136.31 for 3G. Low EPA (0.44 ft²) for optimized pole wind loading.

FINISH

Exterior parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering. A tightly controlled multi-stage process ensures a minimum 3 mils thickness for a finish that can withstand extreme climate changes without cracking or peeling. Available in both textured and non-textured finishes.

COASTAL CONSTRUCTION (CCE)

Optional corrosion resistant construction is engineered with added corrosion protection in materials and/or pre-treatment of base material under super durable paint. Provides additional corrosion protection for applications near coastal areas. Finish is salt spray tested to over 5,000 hours per ASTM B117 with scribe rating of 10. Additional lead-times may apply.

OPTICS

Precision-molded proprietary silicone lenses are engineered for superior area lighting distribution, uniformity, and pole spacing. Light engines are available in 3000 K, 4000 K or 5000 K (70 CRI) configurations. 80CRI configurations are also available. The D-Series Size 0 has zero uplight and qualifies as a Nighttime Friendly™ product, meaning it is consistent with the LEED® and Green Globes™ criteria for eliminating wasteful uplight.

ELECTRICAL

Light engine(s) configurations consist of high-efficacy LEDs mounted to metal-core circuit boards to maximize heat dissipation and promote long life (up to L80/100,000 hours at 25°C). Class 1 electronic drivers are designed to have a power factor >90%, THD <20%, and an expected life of 100,000 hours with <1% failure rate. Easily serviceable 10kV surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).

STANDARD CONTROLS

The DSX0 LED area luminaire has a number of control options. DSX Size 0, comes standard with 0-10V dimming driver. Dusk to dawn controls can be utilized via optional NEMA twist-lock photocell receptacles. PIR integrated motion sensor with on-board photocell feature field-adjustable programing and are suitable for mounting heights up to 40 feet. Control option BL features a bi-level device that allows a second control circuit to switch all light engines to either 30% or 50% light output.

nLIGHT AIR CONTROLS

The DSX0 LED area luminaire is also available with nLight® AIR for the ultimate in wireless control. This powerful controls platform provides out-of-the-box basic motion sensing and photocontrol functionality and is suitable for mounting heights up to 40 feet. Once commissioned using a smartphone and the easy-to-use CLAIRITY app, nLight AIR equipped luminaries can be grouped, resulting in motion sensor and photocell group response without the need for additional equipment. Scheduled dimming with motion sensor over-ride can be achieved when used with the nLight Eclypse. Additional information about nLight Air can be found here.

INSTALLATION

Integral mounting arm allows for fast mounting using Lithonia standard #8 drilling and accommodates pole drilling's from 2.41 to 3.12" on center. The standard "SPA" option for square poles and the "RPA" option for round poles use the #8 drilling. For #5 pole drillings, use SPA5 or RPA5. Additional mountings are available including a wall bracket (WBA) and mast arm (MA) option that allows luminaire attachment to a 2 3/8" horizontal mast arm.

LISTINGS

UL listed to meet U.S. and Canadian standards. UL Listed for wet locations. Light engines are IP66 rated; luminaire is IP66 rated. Rated for -40°C minimum ambient.

DesignLights Consortium® (DLC) Premium qualified product and DLC qualified product. Not all versions of this product may be DLC Premium qualified or DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.

International Dark-Sky Association (IDA) Fixture Seal of Approval (FSA) is available for all products on this page utilizing 3000K color temperature only.

GOVERNMENT PROCUREMENT

BAA – Buy America(n) Act: Product with the BAA option qualifies as a domestic end product under the Buy American Act as implemented in the FAR and DFARS. Product with the BAA option also qualifies as manufactured in the United States under DOT Buy America regulations.
BABA – Build America Buy America: Product with the BAA option also qualifies as produced in the United States under the definitions of the Build America, Buy America Act.
Please refer to www.acuitybrands.com/buy-american for additional information.

WARRANTY

5-year limited warranty. This is the only warranty provided and no other statements in this specification sheet create any warranty of any kind. All other express and implied warranties are disclaimed. Complete warranty terms located at: www.acuitybrands.com/support/warranty/terms-and-conditions

Note: Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.

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HH6-LED

6” Architectural High Lumen LED Downlight

6”

HH6-6501
Flanged Downlight

HH6-6507
Flanged Wall Wash

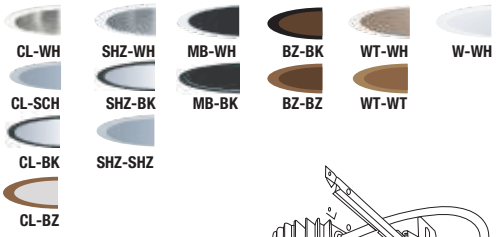
HH6-6577
Flanged Double Wall Wash

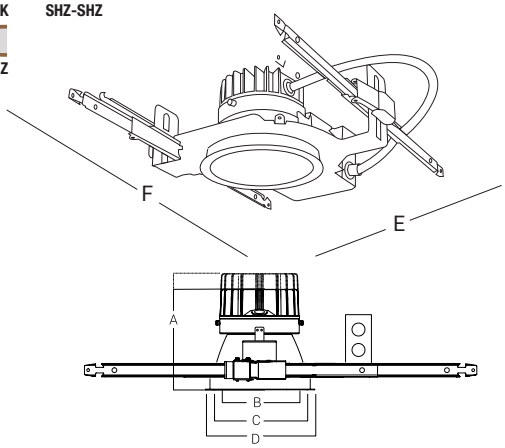
HH6-TL-6501
Trimless Downlight

HH6-TL-6507
Trimless Wall Wash

HH6-TL-6534
Polycarbonate “Dead Front” Trim with Polycarbonate ClearLens

REFLECTOR/ FLANGE COLORS





A 900L to 4000L: Height = 5-5/8”
A 6000L to 8000L: Height = 9”
B: Trim Aperture = 6-3/6”
C: Cut-Out = 6-13/16”
D: Trim Outside Dia = 7-3/8”
E: Width = 16”
F: Length = 20-33”

NOMINAL LUMENS	DELIVERED LUMENS	WATTAGE
6000	5979	61 W
4000	3979	38 W
3000	3512	32 W
2000	2252	20 W
1500	1785	15 W
1200	1398	12W
900	1065	9 W
NOMINAL LUMENS (HP)	DELIVERED LUMENS (HP)	WATTAGE (HP)
1200	1422	10 W
2000	2102	18W
3000	3259	28W

Based on 4000K, 90+CRI with semi-specular chrome reflector.
Actual wattage may vary +/-5%

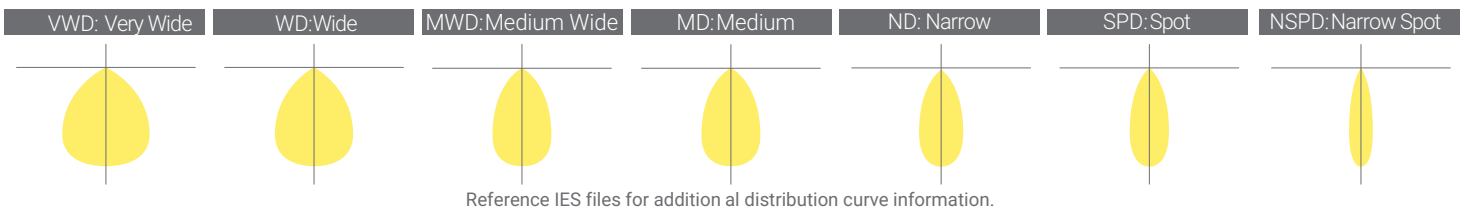
FEATURES

A highly sustainable and ultra-efficient architectural LED downlight that provides even, glare-free illumination. Available in a range of finishes, distributions, and lumen packages, it is ideally suited for use in corporate office space, hospitality, healthcare, commercial, academic, churches and retail.

OPTICS AND REFLECTOR

The reflector has a 45° visual cutoff, and is shipped standard with a Solite lens in a smooth frosted finish. Spun from 0.05” thick aluminum, with a 1-step anodized finish, and available in different colors or custom RAL finishes. Reflector flange options include self-flanged and white painted flange. Various distribution options are available, and all optics are field changeable.

LUMENS	900, 1200, 1500, 2000, 3000, 4000, 6000, (Custom lumen packages available), HL6-IP-VR, HL6-LED
CCT & DYNAMIC PLATFORMS	22K, 27K, 30K, 35K, 40K, 50K, Tunable White, Dims to Warm, RGB + White
CRI	90+ Standard, 98+ Optional
COLOR QUALITY	2 Step MacAdam Ellipse
DISTRIBUTIONS	VWD, WD, MWD, MD, ND, SPD, NSPD
TRIM OPTIONS	Downlight, Wall Wash, Double Wall Wash, Wet Location
REFLECTOR COLORS	CL (Semi-Specular Chrome), SHZ (Low Iridescent Satin Haze), WT (Wheat), W (White), MB (Black). BZ (Bronze) WAM(White Anti Macrobial), Custom RAL
FLANGE COLORS	Self-Flanged WH (White), SCH (Semi-Specular Chrome), SHZ (Low Iridescent Satin Haze), BK (Black), BZ (Bronze)
DIMMING	0-10V Flicker Free 1% Dimming Standard (DIM10), LUTH, LUTFTB, ELDO10.1-LIN, ELDODMX.1, ELDODALI.1, DIMTR, BLE,POE,ELDO10-LOG, XSR, DIM10-AUX, DIM10-0-Off
EMERGENCY	10W - Up to 1000L Output 20W - Up to 2000L Output EMG-LED-G2-10W-SDT - Self Diagnostic (Consult Factory) GTD-UL924
LIFETIME	L70>72,000-hour reported lifetime for Standard models L70>50,000-hour reported lifetime for HP models
PHOTOMETRIC TESTS	In Accordance with IES LM79-08, LM80 and TM-30,TM-21
UGR	UGR <19



Reference IES files for addition al distribution curve information.

Due to the changes of constant improvement in LED technology, all details are subject to change without notice. Consult factory for up to date information.
RS190627/NS190711/ BB190711//AS210316

THERMAL MANAGEMENT SYSTEM

Passive cooling Diecast Aluminum Heat Sink, LED light engine and driver are replaceable, upgradeable, and can be accessed from below the ceiling. The consistency in the quality of light is delivered with precision performance by the use of a unique locking mechanism that aligns the reflector with the light engine.

MOUNTING FRAME & BRACKETS

The downlight mounting frame is a fabricated assembly constructed of 16-gauge steel, with C-channel mounting brackets, included. The versatility of the mounting brackets allow for an adjustability of up to 28” horizontally, and 2-3/4” vertically, locking into place. With the added die-formed construction of the mounting frame, it provides maximum heat dissipation and rust protection.

DRIVER ELECTRICAL INFORMATION

The LED driver is rated for 50 to 60Hz at 120V/277V, also available in 347V input, produces less than 20%THD, has a power factor between 90% and 100%, and is thermally protected for additional safety. Junction box and Driver can be accessed from below the ceiling and above the ceiling. Junction Box is Listed for through branch circuit wiring.

DIMMING & DRIVER INFORMATION

DIM10 - 0-10V dimming on either MVOLT 120, 277 or 347V. Dimmable down to 1% of initial lumens, standard.
DIMTR - Triac & Electronic low voltage dimming. Available in 120V, and up to 6000 lumens only.
LUTH - Lutron LDE1 Hi-Lume 1% Eco System LED driver with Soft-on, Fade to Black dimming technology.
LUTFB - Lutron PEQ0E Hi-Lume Premier 1% Eco System LED Driver with Soft-on, Fade to Black dimming technology. Available on all luminaires up to 1500 lumens.
ELDO10.1-LIN - EldoLED SoloDrive 0-10V. Dimming down to 0.1%. Linear dimming curve.
DALI - DALI DT6, DT8 dimming down to 1%.
ELDODMX - EldoLED PowerDrive dimming down to 0.1%.
BLE - Luminaires may be controlled, grouped, scheduled or placed in scenes and or zones Via Cassambi Bluetooth 4.0 App.
DIM10-0-OFF - Program DIM10-to OFF with linear dimming curve 0.1%
ELDO10- LOG - ELDO10-LOG with logarithmic dimming curve.
POE - Power-over-Ethernet Depending on the PoE manufacturer selected, The Node will install the node in factory as either integral to the luminaire or as a remote module.
XSR - Xitanium SR Dimming
DIM10-AUX - 0-10V with Auxiliry power

LED DYNAMIC PLATFORM OPTIONS

Tunable White with Smart White Technology allows you to color tune the luminaire via various controls. Create the perfect environment for the desired use of the space, while maintaining a CRI of 90+ across the tunable range of 8000 to 1650K. (Click here for more details)

Dims to Warm with Smart Dimming Technology. At 100% full brightness the luminaire is at 3000K. When dimmed to 1%, the light transitions to 1800K, creating a warm ambiance within the space. (Click here for more details)

RGB+White with Smart Hue Technology provides full color mixing of RGB and white colors. Utilizing Platform allows you to choose from unlimited RGB color options, via various controls. Ideal for Circadian Rhythm applications or to create the perfect human centric environment. (Click here for more details)

OPTICAL

Modular Optics Available with 15°, 24°, 30°, 36°, 52°, 60° and 70° field interchangeable optics design with 45° cutoff to source. Top-down flash characteristic for superior glare control. The optics attached directly the light engine to the Trim for complete optical alignment and sufficient efficacy. A UGR (Unified Glare Rating) of less than 19 minimizes the effect of glare, enhancing well-being and reducing discomfort.

WARRANTY

Five-year warranty for parts and components. (Labor not included)

LISTINGS

c-UL-us - Listed for Wet Location if used with HH6-6501, HH6-6535, HH6534 Trims.
c-UL-us - Listed for Feed Through Wiring.
U.S Patent No. - D685,118S
CP-City of Chicago environmental air (CCEA) marking for plenum applications.
Energy Star and California Title 24 compliant
Optional Black color trim is not ENERGYSTAR certified and won’t meet the requirement. 22K and 27K are not Energy Star Listed and won't meet the requirement. Please consult with Elite lighting to confirm Energy Star listing.
BAA- Buy American Act Compliant government procurement requirements under FAR, DFARS and DOT regulations.

Example: **HH6-LED-2000L-DIM10-MVOLT-MD-40K-90-HH6-6501-CL-WH**

SERIES	LUMENS	DRIVER	VOLTAGE	CCT	EMERGENCY	TRIM TYPE	REFLECTOR COLORS
HH6-LED	❑ 900L ❑ 1200L ❑ 1500L ❑ 2000L ❑ 3000L ❑ 4000L ❑ 6000L ❑ 1200L-HP ❑ 2000L-HP ❑ 3000L-HP	❑ DIM10 ❑ DIMTR [3] [5] ❑ LUTH [3] ❑ LUTFTB [4] ❑ ELDO10-.1-LIN ❑ ELDODALI-.1 ❑ ELDODMX-.1 ❑ BLE ❑ POE ❑ DIM10-0-OFF ❑ ELDO10-LOG ❑ XSR ❑ DIM10-AUX	❑ 120 ❑ 277 ❑ MVOLT ❑ 347 (DIM10 only)	❑ 22K ❑ 27K ❑ 30K ❑ 35K ❑ 40K ❑ 50K	❑ EMG-LED-10W ❑ EMG-LED-20W ❑ INTG-EMG-LED-10W ❑ INTG-EMG-LED-20W ❑ EMG-LED-G2-10W-SDT* ❑ EMG-LED-G2-10W-SDT* ❑ GTD-UL924 Typical lumen output of the luminaire is up to 1000L with EMG-LED-10W option & 2000L with EMG-LED-20W option in emergency mode. Contact the factory for details. Remote mounted installation * Consult Factory for Self Diagnostic	❑ HH6-6501 (Wet Location) Flanged Downlight ❑ HH6-6507 (Wet Location) Flanged Wall Wash ❑ HH6-6577 (Wet Location) Flanged Double Wall Wash ❑ HH6-6535 (Wet Location) Polycarbonate non conductive with “Dead Front” construction ❑ HH6-6534 (Wet Location) Polycarbonate “Dead Front” Trim with Polycarbonate ClearLens	❑ CL-WH ❑ MB-WH* ❑ WT-WH ❑ CL-SCH ❑ MB-BK* ❑ WT-WT ❑ CL-BK ❑ BZ-BK ❑ RAL ❑ CL-BZ ❑ BZ-BZ ❑ WAM White Anti Macrobial ❑ SHZ-WH ❑ SHZ-SHZ ❑ WH-WH ❑ SHZ-BK * Black color trim is not ENERGYSTAR certified

OPTICS	CRI	OTHER OPTIONS	TRIMLESS	REFLECTOR FINISH
❑ VWD 70° ❑ WD 60° ❑ MWD 52° ❑ MD 36° ❑ ND 30° ❑ SPD 24° ❑ NSPD 15°	❑ 90+ ❑ 98+ [2] ❑ Xicato 95 [7]	❑ CP (Chicago Plenum) ❑ BAA ❑ Slopped Ceiling Adapter HP ❑ (High Performance) [6] Remote LED ❑ Driver Mounting	❑ HH6-TL-6501 Trimless Downlight ❑ HH6-TL-6507 Trimless Wall Wash **OPTIONS** ❑ INTG (Reflector shipped with pre-punched hole to accept INTG-EMG-LED)	❑ CL ❑ MB ❑ SHZ ❑ WH

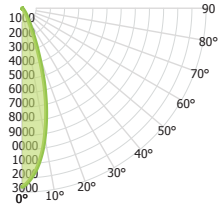
[1] **50K** series are available with 85+ CRI only [2] **98+** CRI is available in 27K, 30K and 40K only -**Reference last page for Control Options**
[3] **LUTH** and **DIMTR** Available for luminaires up to 6000L [4] **LUTFTB** Available for luminaires up to 1500L [5] **DIMTR** is available in 120V only [6] 3000K, 3500K and 4000K based on 90CRI [7] Available on 30K, 35K, 40K

Due to the changes of constant improvement in LED technology, all details are subject to change without notice. Consult factory for up to date information.

HH6-LED-4000L-DIM10-MVOLT-MD-40K-90-HH6-6501-CL-WH TEST NO.: **EL05112270**

INPUT WATTS: **38.7** LUMENS: **4576** EFFICACY: **118** BEAM ANGLE: **34** SPACING CRITERIA: **0.50**

CANDELA DISTRIBUTION



CANDELA TABLE

	0°	90°
0°	12618	12618
10°	9225	9999
20°	3340	4245
30°	738	925
40°	207	265
50°	72	93
60°	10	14
70°	0	0
80°	0	0
90°	0	0

LUMINANCE (cd/sq.m)

	0.00°	90.00°
0.00°	480355	480355
45.00°	6651	8234
55.00°	1872	2742
65.00°	211	223
75.00°	106	115
85.00°	35	39

LUMENS PER ZONE

ZONE	LUMENS
0° - 10°	1081
10° - 20°	1990
20° - 30°	1000
30° - 40°	334
40° - 50°	122
50° - 60°	41
60° - 70°	0
70° - 80°	0
80° - 90°	0

ZONAL LUMEN SUMMARY

ZONE	UMENS	% LUMINAIRE
0° - 20°	3070	67%
0° - 30°	4070	89%
0° - 40°	4404	96%
0° - 60°	4568	100%
0° - 80°	4573	100%
0° - 90°	4574	100%

CONE OF LIGHT

MOUNTING HEIGHT	FC AT BEAM CENTER	BEAM DIA. 0°-180°	BEAM DIA. 90°-270°
6.0 ft	350.5 fc	3.6 ft	3.6 ft
8.0 ft	197.2 fc	4.8 ft	4.8 ft
10.0 ft	126.2 fc	6.0 ft	6.0 ft
12.0 ft	87.6 fc	7.3 ft	7.2 ft
14.0 ft	64.4 fc	8.5 ft	8.4 ft
16.0 ft	49.3 fc	9.7 ft	9.6 ft
18.0 ft	38.9 fc	10.9 ft	10.8 ft
20.0 ft	31.5 fc	12.1 ft	12.0 ft

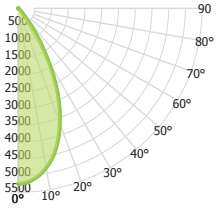
INDOOR COEFFICIENTS OF UTILIZATION

ρf																				
	20%																			0%
ρc	80%				70%				50%				30%				10%			0%
ρw	70%	50%	30%	10%	70%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0%
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	102	100		
1	114	112	110	108	112	110	108	106	106	104	103	102	101	100	99	98	97	95			
2	110	106	103	100	108	104	101	99	101	99	97	98	96	95	96	94	93	91			
3	106	101	96	93	104	99	95	92	97	94	91	94	92	90	92	90	88	87			
4	102	96	91	88	100	95	90	87	93	89	86	91	88	85	89	86	84	83			
5	98	91	87	83	97	90	86	83	89	85	82	87	84	81	86	83	81	79			
6	95	87	83	79	93	87	82	79	85	81	78	84	81	78	83	80	77	76			
7	91	84	79	76	90	83	79	75	82	78	75	81	77	75	80	77	74	73			
8	88	80	76	72	87	80	75	72	79	75	72	78	74	72	77	74	71	70			
9	85	77	73	70	84	77	72	69	76	72	69	75	72	69	75	71	69	68			
10	82	75	70	67	82	74	70	67	74	69	67	73	69	66	72	69	66	65			

HH6-LED-4000L-DIM10-MVOLT-MWD-40K-90-HH6-6501-CL-WH TEST NO.: **EL05112270**

INPUT WATTS: **38.8** LUMENS: **4110** EFFICACY: **106** BEAM ANGLE: **55** SPACING CRITERIA: **0.81**

CANDELA DISTRIBUTION



CANDELA TABLE

	0°	90°
0°	5246	5246
10°	4838	4975
20°	3649	3917
30°	1808	2107
40°	338	509
50°	75	83
60°	8	13
70°	0	0
80°	0	0
90°	0	0

LUMINANCE (cd/sq.m)

	0.00°	90.00°
0.00°	199717	199717
45.00°	7686	8369
55.00°	1766	2428
65.00°	250	289
75.00°	149	179
85.00°	52	83

LUMENS PER ZONE

ZONE	LUMENS
0° - 10°	488
10° - 20°	1258
20° - 30°	1393
30° - 40°	758
40° - 50°	166
50° - 60°	38
60° - 70°	0
70° - 80°	0
80° - 90°	0

ZONAL LUMEN SUMMARY

ZONE	UMENS	% LUMINAIRE
0° - 20°	1746	42%
0° - 30°	3139	76%
0° - 40°	3897	95%
0° - 60°	4101	100%
0° - 80°	4107	100%
0° - 90°	4108	100%

CONE OF LIGHT

MOUNTING HEIGHT	FC AT BEAM CENTER	BEAM DIA. 0°-180°	BEAM DIA. 90°-270°
6.0 ft	145.7 fc	6.3 ft	6.2 ft
8.0 ft	82.0 fc	8.4 ft	8.3 ft
10.0 ft	52.5 fc	10.5 ft	10.4 ft
12.0 ft	36.4 fc	12.6 ft	12.5 ft
14.0 ft	26.8 fc	14.6 ft	14.5 ft
16.0 ft	20.5 fc	16.7 ft	16.6 ft
18.0 ft	16.2 fc	18.8 ft	18.7 ft
20.0 ft	13.1 fc	20.9 ft	20.8 ft

INDOOR COEFFICIENTS OF UTILIZATION

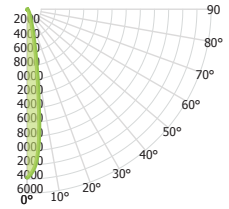
ρf																				
	20%																			0%
ρc	80%				70%				50%				30%				10%			0%
ρw	70%	50%	30%	10%	70%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0%
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	102	100		
1	114	111	109	107	111	109	107	105	105	103	102	101	100	99	98	97	96	94			
2	108	104	100	97	106	102	98	96	99	96	93	96	93	91	93	91	90	88			
3	103	97	92	89	101	96	91	88	93	89	86	91	88	85	88	86	84	82			
4	98	91	86	82	96	90	85	81	88	84	80	86	82	79	84	81	78	77			
5	94	86	80	76	92	85	79	76	83	78	75	81	77	74	80	76	74	72			
6	89	81	75	71	88	80	74	71	78	74	70	77	73	70	76	72	69	68			
7	85	76	70	66	84	75	70	66	74	69	66	73	69	65	72	68	65	64			
8	81	72	66	62	80	71	66	62	70	65	62	69	65	62	68	64	61	60			
9	77	68	62	59	76	68	62	58	67	62	58	66	61	58	65	61	58	57			
10	74	65	59	55	73	64	59	55	63	58	55	63	58	55	62	58	55	54			

Due to the changes of constant improvement in LED technology, all details are subject to change without notice. Consult factory for up to date information.

HH6-LED-4000L-DIM10-MVOLT-NSPD-40K-90-HH6-6501-CL-WH TEST NO.: **EL05112270**

INPUT WATTS: **38.6** LUMENS: **3986** EFFICACY: **103** BEAM ANGLE: **19** SPACING CRITERIA: **0.26**

CANDELA DISTRIBUTION



CANDELA TABLE

	0°	90°
0°	23792	23792
10°	7538	10215
20°	1485	1942
30°	596	690
40°	202	250
50°	62	73
60°	9	14
70°	0	0
80°	0	0
90°	0	0

LUMINANCE (cd/sq.m)

	0.00°	90.00°
0.00°	905757	905757
45.00°	5537	6698
55.00°	1777	2295
65.00°	187	208
75.00°	90	110
85.00°	31	35

LUMENS PER ZONE

ZONE	LUMENS
0° - 10°	1691
10° - 20°	1327
20° - 30°	535
30° - 40°	283
40° - 50°	108
50° - 60°	35
60° - 70°	0
70° - 80°	0
80° - 90°	0

ZONAL LUMEN SUMMARY

ZONE	UMENS	% LUMINAIRE
0° - 20°	3018	76%
0° - 30°	3553	89%
0° - 40°	3836	96%
0° - 60°	3979	100%
0° - 80°	3984	100%
0° - 90°	3984	100%

CONE OF LIGHT

MOUNTING HEIGHT	FC AT BEAM CENTER	BEAM DIA. 0°-180°	BEAM DIA. 90°-270°
6.0 ft	660.9 fc	2.0 ft	2.0 ft
8.0 ft	371.8 fc	2.7 ft	2.6 ft
10.0 ft	237.9 fc	3.4 ft	3.3 ft
12.0 ft	165.2 fc	4.1 ft	4.0 ft
14.0 ft	121.4 fc	4.7 ft	4.6 ft
16.0 ft	92.9 fc	5.4 ft	5.3 ft
18.0 ft	73.4 fc	6.1 ft	6.0 ft
20.0 ft	59.5 fc	6.8 ft	6.6 ft

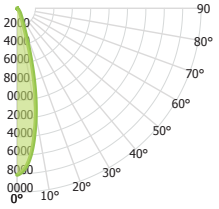
INDOOR COEFFICIENTS OF UTILIZATION

ρf																			
	20%																		0%
ρc	80%				70%				50%				30%				10%		0%
ρw	70%	50%	30%	10%	70%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0%	0%
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100	
1	115	113	111	109	112	111	109	107	107	105	104	103	102	101	100	99	98	96	
2	111	107	104	102	109	106	103	101	103	100	98	100	98	96	97	96	94	93	
3	107	103	99	96	106	101	98	95	99	96	94	97	94	92	94	93	91	90	
4	104	99	95	91	102	97	94	91	95	92	90	94	91	89	92	90	88	87	
5	101	95	91	88	99	94	90	87	92	89	87	91	88	86	89	87	85	84	
6	98	92	87	84	97	91	87	84	90	86	84	88	85	83	87	85	83	81	
7	95	89	84	82	94	88	84	81	87	83	81	86	83	81	85	82	80	79	
8	93	86	82	79	92	86	82	79	85	81	79	84	81	78	83	80	78	77	
9	90	84	80	77	89	83	79	77	82	79	76	82	78	76	81	78	76	75	
10	88	81	77	75	87	81	77	75	80	77	74	80	77	74	79	76	74	73	

HH6-LED-4000L-DIM10-MVOLT-ND-40K-90-HH6-6501-CL-WH TEST NO.: **EL05112270**

INPUT WATTS: **38.6** LUMENS: **4575** EFFICACY: **119** BEAM ANGLE: **32** SPACING CRITERIA: **0.42**

CANDELA DISTRIBUTION



CANDELA TABLE

	0°	90°
0°	18099	18099
10°	11695	13524
20°	2196	3060
30°	722	807
40°	254	284
50°	75	84
60°	11	14
70°	0	0
80°	0	0
90°	0	0

LUMINANCE (cd/sq.m)

	0.00°	90.00°
0.00°	689034	689034
45.00°	6994	7930
55.00°	2028	2470
65.00°	213	222
75.00°	112	121
85.00°	35	44

LUMENS PER ZONE

ZONE	LUMENS
0° - 10°	1475
10° - 20°	1937
20° - 30°	651
30° - 40°	330
40° - 50°	133
50° - 60°	42
60° - 70°	0
70° - 80°	0
80° - 90°	0

ZONAL LUMEN SUMMARY

ZONE	UMENS	% LUMINAIRE
0° - 20°	3411	75%
0° - 30°	4062	89%
0° - 40°	4392	96%
0° - 60°	4567	100%
0° - 80°	4573	100%
0° - 90°	4573	100%

CONE OF LIGHT

MOUNTING HEIGHT	FC AT BEAM CENTER	BEAM DIA. 0°-180°	BEAM DIA. 90°-270°
6.0 ft	502.8 fc	2.9 ft	2.8 ft
8.0 ft	282.8 fc	3.8 ft	3.8 ft
10.0 ft	181.0 fc	4.8 ft	4.7 ft
12.0 ft	125.7 fc	5.7 ft	5.7 ft
14.0 ft	92.3 fc	6.7 ft	6.6 ft
16.0 ft	70.7 fc	7.7 ft	7.6 ft
18.0 ft	55.9 fc	8.6 ft	8.5 ft
20.0 ft	45.2 fc	9.6 ft	9.4 ft

INDOOR COEFFICIENTS OF UTILIZATION

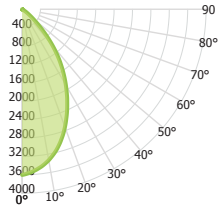
ρf																			
	20%																		0%
ρc	80%				70%				50%				30%				10%		0%
ρw	70%	50%	30%	10%	70%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0%	0%
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100	
1	115	112	110	109	112	110	109	107	106	105	104	103	102	101	99	98	98	96	
2	111	107	104	101	108	105	102	100	102	100	98	99	97	96	96	95	94	92	
3	107	102	98	95	105	100	97	94	98	95	93	96	93	91	93	91	90	88	
4	103	97	93	90	101	96	92	89	94	91	88	92	90	87	91	88	86	85	
5	100	93	89	86	98	92	88	85	91	87	85	89	86	84	88	85	83	82	
6	96	90	85	82	95	89	85	82	88	84	81	86	83	81	85	82	80	79	
7	93	86	82	79	92	86	82	79	85	81	78	84	80	78	83	80	78	76	
8	91	84	79	76	90	83	79	76	82	78	76	81	78	75	80	77	75	74	
9	88	81	76	73	87	80	76	73	80	76	73	79	75	73	78	75	73	72	
10	85	78	74	71	85	78	74	71	77	74	71	77	73	71	76	73	71	70	

Due to the changes of constant improvement in LED technology, all details are subject to change without notice. Consult factory for up to date information.

HH6-LED-4000L-DIM10-MVOLT-WD-40K-90-HH6-6501-CL-WH TEST NO.: **EL05112270**

INPUT WATTS: **38.5** LUMENS: **4082** EFFICACY: **106** BEAM ANGLE: **65** SPACING CRITERIA: **0.90**

CANDELA DISTRIBUTION



CANDELA TABLE

	0°	90°
0°	3601	3601
10°	3333	3448
20°	2724	2887
30°	1903	2051
40°	1032	1152
50°	281	335
60°	41	52
70°	0	0
80°	0	0
90°	0	0

LUMINANCE (cd/sq.m)

	0.00°	90.00°
0.00°	137096	137096
45.00°	31651	36489
55.00°	8079	9507
65.00°	986	993
75.00°	459	484
85.00°	144	135

LUMENS PER ZONE

ZONE	LUMENS
0° - 10°	337
10° - 20°	898
20° - 30°	1132
30° - 40°	996
40° - 50°	544
50° - 60°	14
60° - 70°	0
70° - 80°	0
80° - 90°	0

ZONAL LUMEN SUMMARY

ZONE	UMENS	% LUMINAIRE
0° - 20°	1235	30%
0° - 30°	2367	58%
0° - 40°	3363	95%
0° - 60°	4057	100%
0° - 80°	4080	100%
0° - 90°	4081	100%

CONE OF LIGHT

MOUNTING HEIGHT	FC AT BEAM CENTER	BEAM DIA. 0°-180°	BEAM DIA. 90°-270°
6.0 ft	100.0 fc	7.7 ft	7.7 ft
8.0 ft	56.3 fc	10.3 ft	10.2 ft
10.0 ft	36.0 fc	12.8 ft	12.8 ft
12.0 ft	25.0 fc	15.4 ft	15.3 ft
14.0 ft	18.4 fc	18.0 ft	17.9 ft
16.0 ft	14.1 fc	20.5 ft	20.5 ft
18.0 ft	11.1 fc	23.1 ft	23.0 ft
20.0 ft	9.0 fc	25.7 ft	25.6 ft

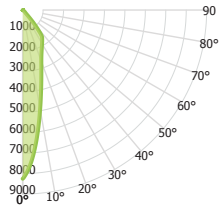
INDOOR COEFFICIENTS OF UTILIZATION

ρf								20%											0%
ρc		80%				70%				50%				30%			10%		0%
ρw	70%	50%	30%	10%	70%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0%	
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100	
1	113	110	107	105	110	108	105	103	104	102	100	100	98	97	96	95	94	92	
2	107	101	97	93	104	100	96	92	96	93	90	93	91	88	90	88	86	85	
3	101	93	88	84	98	92	87	83	89	85	82	87	83	80	85	82	79	77	
4	95	86	80	76	93	85	80	75	83	78	74	81	77	73	79	75	72	71	
5	89	80	74	69	87	79	73	68	77	72	68	75	71	67	74	70	67	65	
6	84	74	68	63	83	73	67	63	72	66	62	70	66	62	69	65	61	60	
7	79	69	63	58	78	68	62	58	67	62	57	66	61	57	65	60	57	55	
8	75	65	58	54	74	64	58	53	63	57	53	62	57	53	61	56	53	51	
9	71	60	54	50	70	60	54	50	59	53	49	58	53	49	57	52	49	48	
10	67	57	50	46	66	56	50	46	55	50	46	55	49	46	54	49	46	44	

HH6-LED-4000L-DIM10-MVOLT-SPD-40K-90-HH6-6501-CL-WH TEST NO.: **EL05112270**

INPUT WATTS: **38.5** LUMENS: **4390** EFFICACY: **114** BEAM ANGLE: **29** SPACING CRITERIA: **0.41**

CANDELA DISTRIBUTION



CANDELA TABLE

	0°	90°
0°	8250	8250
10°	4918	5790
20°	2668	2925
30°	1897	2004
40°	845	1167
50°	123	136
60°	39	46
70°	0	0
80°	0	0
90°	0	0

LUMINANCE (cd/sq.m)

	0.00°	90.00°
0.00°	314092	314092
45.00°	10848	13237
55.00°	4866	5380
65.00°	886	832
75.00°	437	424
85.00°	135	114

LUMENS PER ZONE

ZONE	LUMENS
0° - 10°	660
10° - 20°	1130
20° - 30°	1084
30° - 40°	1063
40° - 50°	348
50° - 60°	8
60° - 70°	0
70° - 80°	0
80° - 90°	0

ZONAL LUMEN SUMMARY

ZONE	UMENS	% LUMINAIRE
0° - 20°	1789	41%
0° - 30°	2873	65%
0° - 40°	3937	94%
0° - 60°	4365	100%
0° - 80°	4388	100%
0° - 90°	4388	100%

CONE OF LIGHT

MOUNTING HEIGHT	FC AT BEAM CENTER	BEAM DIA. 0°-180°	BEAM DIA. 90°-270°
6.0 ft	229.2 fc	3.1 ft	3.0 ft
8.0 ft	128.9 fc	4.1 ft	4.0 ft
10.0 ft	82.5 fc	5.1 ft	5.0 ft
12.0 ft	57.3 fc	6.2 ft	6.0 ft
14.0 ft	42.1 fc	7.2 ft	7.0 ft
16.0 ft	32.2 fc	8.2 ft	8.0 ft
18.0 ft	25.5 fc	9.2 ft	9.0 ft
20.0 ft	20.6 fc	10.3 ft	10.0 ft

INDOOR COEFFICIENTS OF UTILIZATION

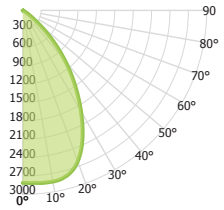
ρf								20%											0%
ρc		80%				70%				50%				30%			10%		0%
ρw	70%	50%	30%	10%	70%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0%	
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100	
1	113	111	108	106	111	109	106	104	104	103	101	101	99	98	97	96	95	93	
2	108	103	99	95	106	101	98	94	98	95	92	95	93	90	92	90	88	87	
3	102	96	91	87	100	95	90	86	92	88	85	89	86	84	87	85	82	81	
4	97	90	84	80	95	88	83	79	86	82	78	84	81	77	82	79	77	75	
5	92	84	78	74	91	83	77	73	81	76	73	79	75	72	78	74	71	70	
6	88	79	73	68	86	78	72	68	76	71	68	75	71	67	74	70	67	65	
7	83	74	68	64	82	73	68	64	72	67	63	71	66	63	70	66	63	61	
8	79	70	64	60	78	69	64	60	68	63	59	67	63	59	66	62	59	58	
9	76	66	60	56	75	66	60	56	65	60	56	64	59	56	63	59	56	54	
10	72	63	57	53	71	62	57	53	61	56	53	61	56	53	60	56	53	51	

Due to the changes of constant improvement in LED technology, all details are subject to change without notice. Consult factory for up to date information.

HH6-LED-4000L-DIM10-MVOLT-VWD-40K-90-HH6-6501-CL-WH TEST NO.: **EL05112270**

INPUT WATTS: **38.6** LUMENS: **3979** EFFICACY: **103** BEAM ANGLE: **74** SPACING CRITERIA: **1.06**

CANDELA DISTRIBUTION



CANDELA TABLE

	0°	90°
0°	2813	2813
10°	2833	2805
20°	2619	2639
30°	1899	2009
40°	1077	1199
50°	340	440
60°	39	57
70°	6	7
80°	0	0
90°	0	0

LUMINANCE (cd/sq.m)

	0.00°	90.00°
0.00°	107095	107095
45.00°	36820	43347
55.00°	8980	11859
65.00°	973	1122
75.00°	444	528
85.00°	122	157

LUMENS PER ZONE

ZONE	LUMENS
0° - 10°	270
10° - 20°	788
20° - 30°	1097
30° - 40°	997
40° - 50°	617
50° - 60°	184
60° - 70°	20
70° - 80°	1
80° - 90°	0

ZONAL LUMEN SUMMARY

ZONE	UMENS	% LUMINAIRE
0° - 20°	1058	27%
0° - 30°	2155	54%
0° - 40°	3152	89%
0° - 60°	3953	100%
0° - 80°	3977	100%
0° - 90°	3977	100%

CONE OF LIGHT

MOUNTING HEIGHT	FC AT BEAM CENTER	BEAM DIA. 0°-180°	BEAM DIA. 90°-270°
6.0 ft	78.1 fc	9.1 ft	9.1 ft
8.0 ft	44.0 fc	12.1 ft	12.1 ft
10.0 ft	28.1 fc	15.1 ft	15.1 ft
12.0 ft	19.5 fc	18.1 ft	18.2 ft
14.0 ft	14.4 fc	21.1 ft	21.2 ft
16.0 ft	11.0 fc	24.2 ft	24.2 ft
18.0 ft	8.7 fc	27.2 ft	27.2 ft
20.0 ft	7.0 fc	30.2 ft	30.3 ft

INDOOR COEFFICIENTS OF UTILIZATION

ρf																			
	20%																		0%
ρc	80%				70%				50%				30%				10%		0%
ρw	70%	50%	30%	10%	70%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	50%	30%	10%	0%
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	102	100
1	113	110	107	104	110	107	105	103	103	101	100	100	98	97	96	95	94	92	
2	106	101	96	92	104	99	95	91	96	92	89	93	90	87	90	87	85	84	
3	100	92	87	82	98	91	86	82	88	84	80	86	82	79	84	80	78	76	
4	94	85	79	74	92	84	78	74	82	77	73	80	75	72	78	74	71	69	
5	88	79	72	67	86	78	71	67	76	70	66	74	69	65	72	68	65	63	
6	83	73	66	61	81	72	65	61	70	64	60	69	64	60	67	63	59	58	
7	78	67	60	56	76	67	60	56	65	59	55	64	59	55	63	58	55	53	
8	73	63	56	51	72	62	56	51	61	55	51	60	54	51	59	54	50	49	
9	69	58	52	47	68	58	51	47	57	51	47	56	51	47	55	50	47	45	
10	65	55	48	44	64	54	48	44	53	47	44	52	47	43	52	47	43	42	

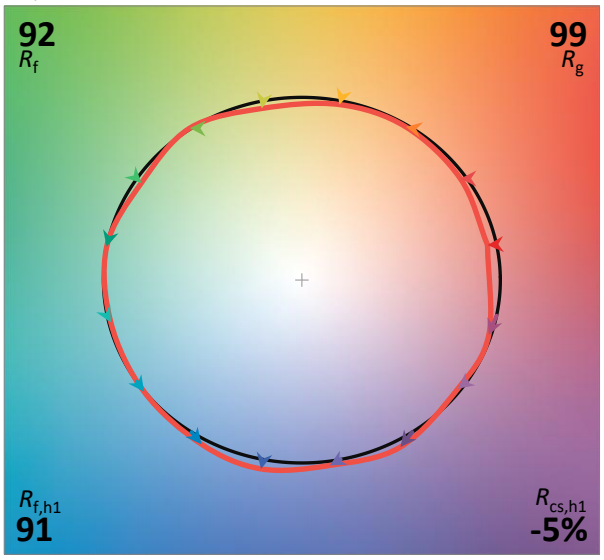
Due to the changes of constant improvement in LED technology, all details are subject to change without notice. Consult factory for up to date information.

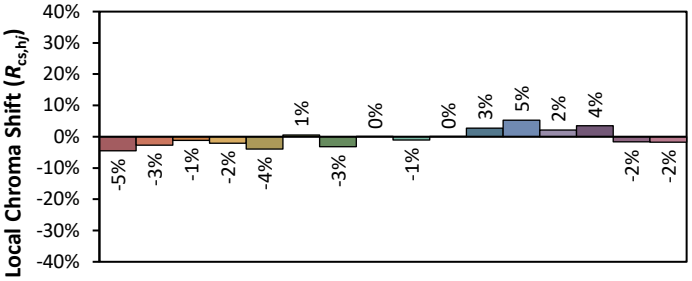
ANSI/IES TM-30-24 Color Rendition Report

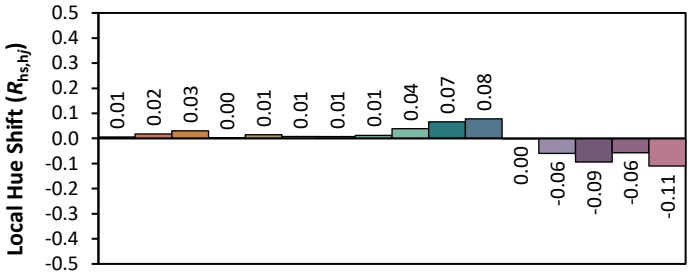
Source:	FIXTURE	**Make:**	ELITE LIGHTING
Date:	03/18/2026	**Model:**	HH-SCH-30K-90CRI
Notes:	03/18/2026	**Other**	Example

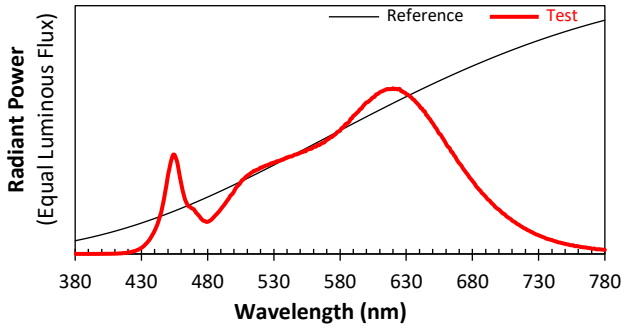
CCT: **3004 K**
D_{uv}: **0.0005**

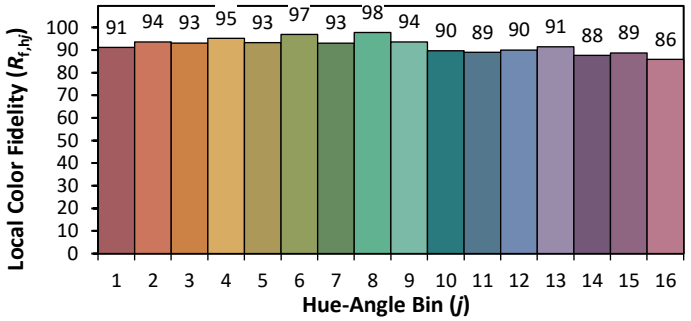
P2 V- F2

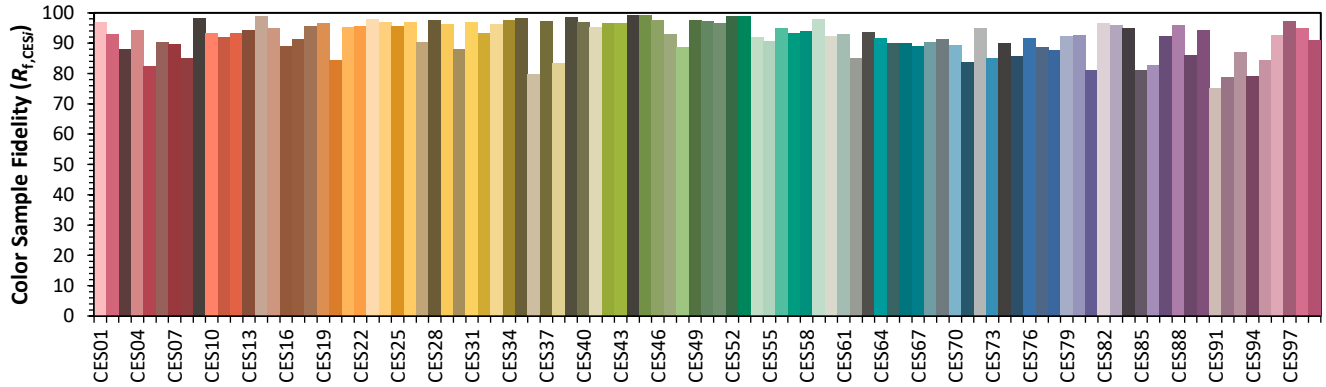












TM-30 Advanced Calculator Version 2.04 Created 3/18/2026

Due to the changes of constant improvement in LED technology, all details are subject to change without notice. Consult factory for up to date information.

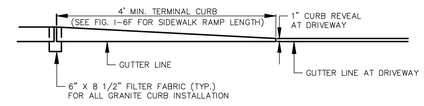
1 Powerpack Installed
The luminaire is shipped with power packs pre-installed and is ready to be integrated with designated control systems.

2 Integral Sensor Installed
The luminaire is shipped with sensors factory-installed on the luminaire, allowing for individual luminaire control.
The luminaire is ready to be integrated with designated control systems.

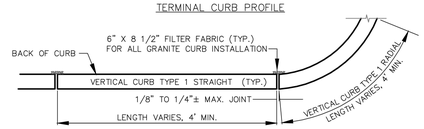
3 Remote Sensor
The luminaire is shipped with sensors intended for remote ceiling installation. The luminaire is ready to be integrated with designated control systems.

BRAND	NX LIGHTING CONTROLS	LUTRON	LEVITON	ENCELIUM	PHILIPS	legrand®	CASAMBI	IntelliCast
CONTROL UNIT	○ **NXFM-1R2D-0-UNV** NX Fixture Module, Offset, 1 Relay, 2 0-10V Dimming Channels, 120-347VAC,	○ **FCJS-010** LutronVive 0-10V Individual Pow Pak (Luminare is shipped Vive Enabled)[1,4] ○ **FCJS-ECO** Lutron Vive Eco-system Pow Pak (Luminare is shipped Enabled) ○ **A-WN-D01-RF-WH** Athena wireless node (RF only) (White) ○ **A-WN-D01-OCC-WH** Athena wireless node with sensor (White)	○ **ZL027** N0W Intellect Power Control Module[1,6] ○ **ZL027** N0W Intellect Power Control Module[16]	○ **EN-WCM2-ZB-DR** Wireless Control Module[1,7] ○ **EN- ALC-ZB-BK-DR** Wireless Area Lighting Control Module[1,7] ○ **ZBHA-CLM-DIM-ENC** Connected Lighting Module DIM[1,7]	○ **SBR-BS** Xitanium SR Bridge[1,8]	○ **LMFC-011** ON/OFF/0-10V dimming fixture controller[1,9]	○ **CBU-A2D** Bluetooth Controllable	○ **INT-BLE-C0-DIM10-102** 6A Fixture Controller power pack
INTEGRAT SENSOR	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
***WIRELESS OCCUPANCY SENSOR**	○ **NXSMP2-SMI** NX Slide Mount Indoor Sensor Module	N/A	N/A	N/A	N/A	○ **LMDC-100** Dual technology PIR Ceiling Mount Occupancy Sensor[3]	○ **SR-CS9030A-PIR-V** CASAMBI wireless PIR= daylight sensor	○ **INT-BLE-PIR-107E-WH** Wireless PIR ceiling mount occupancy and daylight sensor
***WIRELESS DAYLIGHT SENSOR**	○ **LUXSTATLS** Luxstat Light Sensor for Luxstat Control Modules, 3 to 6000 FC	N/A	N/A	N/A	N/A	○ **LMLS-400** Single zone switching and dimming digital photosensor[3]	○ **SR-CS9030A-PIR-V**	○ **INT-BLE-PIR-107E-WH** Wireless PIR ceiling mount occupancy and daylight sensor
***WIRELESS OCCUPANCY & DAYLIGHT SENSOR**	○ **NXSMDT** Indoor Ceiling Mount Sensor - OMNI	N/A	○ **ZL00J-T0W** Intellect Intelligent Fixture Control System[3] *(Must be specified with ZL027 –N0W Control Unit)*	○ **EN-CLM-PIR-DD-ZB** SensiLUM™ Wireless Integrated Sensor ○ **EN-SCPPH-1500-ZB** Wireless Passive Infrared Occupancy and Photo Sensors[3] *(Must be specified with EN-WCM2-ZB-DR or EN- ALC-ZB-BK-DR Control Unit)*	○ **NSN212** EasyAir Daylight and Occupancy sensor	N/A	○ **SR-CS9030A-PIR-V** CASAMBI wireless PIR= daylight sensor	○ **INT-BLE-PIR-107E-WH** Wireless PIR ceiling mount occupancy and daylight sensor
ACCESORIES	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NOTES	N/A	**4-** Luminaire will be compatible with Lutron LRF2-OCR2B-P-WH Ceiling mount360° occupancy/va-cancy sensor & LRF2-DCRB-WH Ceiling-mount daylight sensor. Sensors must be ordered through Lutron	**6-** Luminaire will be compatible with Leviton Intellect App & Keypad Room Controller	**7-** Luminaire will be compatible with EN-SCPPH-1500-ZB Wireless Passive Infrared Occupancy and Photo Sensors	**8- Luminaire** will be compatible with Philips field and wireless switch.	**9-** Luminaire will be compatiable with DLM Room control system LMPB-100. DLM control system must be orderd through Legrand	○ **10-** Luminaire will be compatible with CASAMBI app & keypad room controller	○ **11-** Luminaire will be compatible with intellicast app & keypad room controller

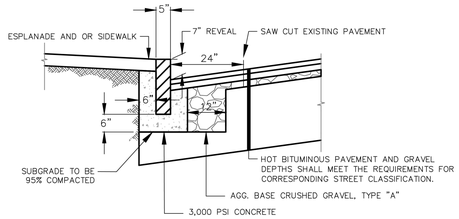
Due to the changes of constant improvement in LED technology, all details are subject to change without notice. Consult factory for up to date information.



TERMINAL CURB PROFILE



VERTICAL GRANITE CURB PLAN VIEW



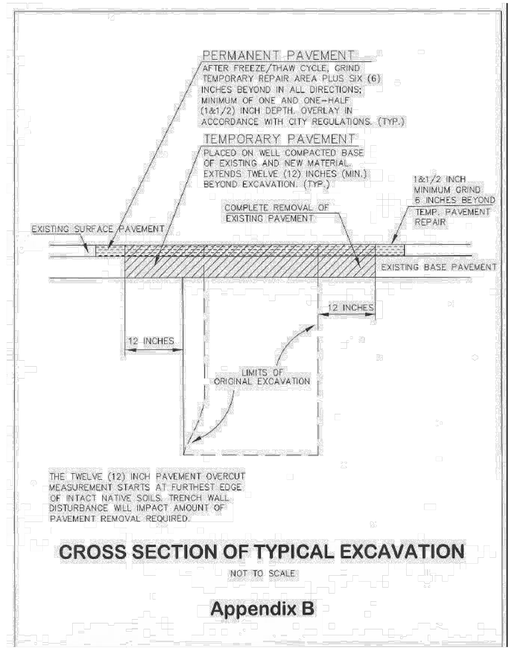
VERTICAL GRANITE CURB CROSS SECTION

NOTES:
1. INDIVIDUAL PIECES OF CURB SHORTER THAN 4 L.F. ARE NOT ALLOWED, WITH THE EXCEPTION OF RADIAL CURB.
2. THE MINIMUM HEIGHT OF THE CONCRETE BACKING SHALL BE 10-INCHES OR TO THE BOTTOM OF THE HOT MIX ASPHALT PAVEMENT, WHICHEVER IS GREATER, MEASURED FROM THE BOTTOM OF CURB.
3. CURBING SHALL BE SET IN A 6-INCH BED OF POURED IN PLACE 3,000 PSI CONCRETE MIX.
4. WOODEN SHIMS MAY BE USED TO SET CURB.

VERTICAL GRANITE CURB

NOT TO SCALE

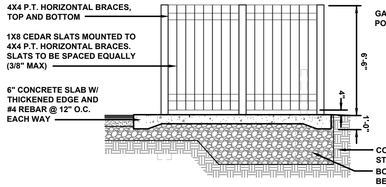
DATE: NOV. 2022	CITY OF PORTLAND, MAINE TECHNICAL STANDARDS MANUAL	TRANSPORTATION DESIGN STANDARDS SECTION I	FIGURE:
REVISED:	VERTICAL GRANITE CURB		I-12



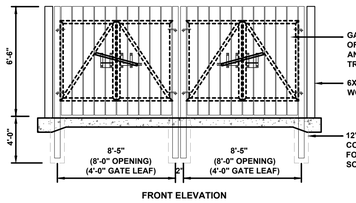
CROSS SECTION OF TYPICAL EXCAVATION

NOT TO SCALE

Appendix B



SIDE ELEVATION

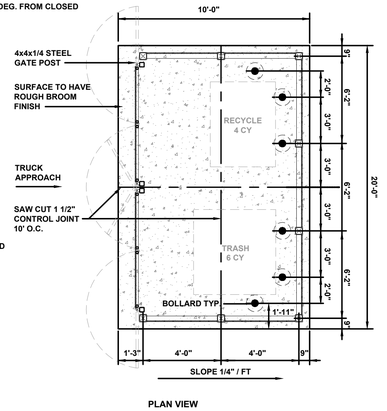


FRONT ELEVATION

NOTES

NAILS, BOLTS, SCREWS, ETC. SHALL BE GALVANIZED.

GATES SHALL SWING 180 DEG. FROM CLOSED POSITION



PLAN VIEW

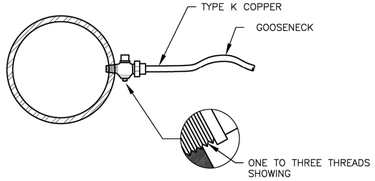
DUMPSTER PAD AND ENCLOSURE DETAIL

NTS

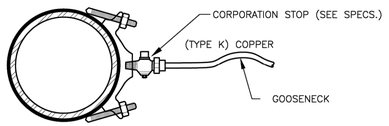
CONCRETE NOTES

1. ALL CONCRETE MATERIALS AND WORKMANSHIPS SHALL CONFIRM TO THE LATEST EDITIONS OF ACI 318 AND ACI 301.
2. CONCRETE EXPOSED TO FREEZING AND THAWING SHALL BE AS FOLLOWS UNLESS NOTED OTHERWISE:
   - A. MINIMUM COMPRESSIVE STRENGTH: 5000 PSI @ 28 DAYS
   - B. CEMENT: ASTM C150 TYPE II
   - C. AGGREGATE: ASTM C33 OR C330
   - D. MAXIMUM AGGREGATE SIZE: 1"
   - E. MAXIMUM WATER-CEMENT RATIO: 0.45
   - F. SLUMP: 2 TO 4 INCHES
   - G. AIR ENTRAINMENT: ASTM C260, 4 TO 6 PERCENT
   - H. WATER REDUCING ADMIXTURE: ASTM C494
     1. ADMIXTURES SHALL BE USED IN ACCORDANCE WITH ACI AND THE MANUFACTURERS RECOMMENDATIONS.
     2. USE OF CALCIUM CHLORIDE, CHLORIDE IONS OR OTHER SALTS IS NOT PERMITTED.
3. REINFORCING BARS SHALL CONFORM TO ASTM A615, GRADE 60, DEFORMED BARS. REINFORCING BARS TO BE WELDED SHALL BE ASTM A706, GRADE 60, DEFORMED BARS.
4. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A1064.
5. PROVIDE ALL NECESSARY CHAIRS, SHAIR BARS, SPACER, ETC WIRED SECURELY TO HOLD REINFORCMENT IN POSITION. THESE ACCESSORIES SHALL BE PLASTIC BOOTED WHERE CONCRETE IS TO BE EXPOSED TO WEATHER OR MOISTURE.
6. REINFORCING BARS SHALL BE PLACED IN ACCORDANCE WITH THE LATEST EDITION OF THE CRSI "RECOMMENDED PRACTICE FOR PLACING REINFORCING BARS".
7. CONCRETE COVER TO REINFORCING STEEL SHALL CONFORM TO ACI 318.
8. PROVIDE A 3/4" CHAMFER TO ALL EXPOSED CONCRETE EDGES.
9. WET CURE CONCRETE SLABS FOR A MINIMUM OF 3 DAYS.
10. SAW CUT CONTROL JOINTS SHALL BE 1/8" X 1/4 SLAB DEPTH CUT WITH AN EARLY ENTRY DRY-CUT SAW AS SOON AS THE CONCRETE IS SUFFICIENTLY HARD TO RESIST TEARING AND RAVELING (1 TO 4 HOURS AFTER FINISHING).

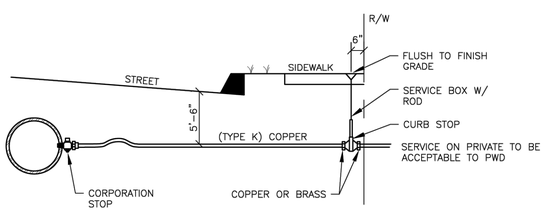
FROST DEPTH: 5 FEET



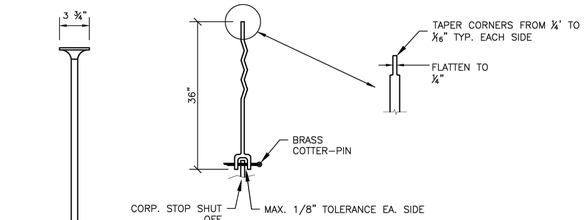
SERVICE TAP
(3/4" AND 1" C.C. THREAD)



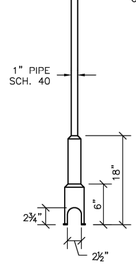
SERVICE SADDLE
(1-1/2" AND 2" C.C. THREAD)



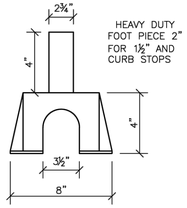
TYPICAL SERVICE CONNECTION



SERVICE ROD

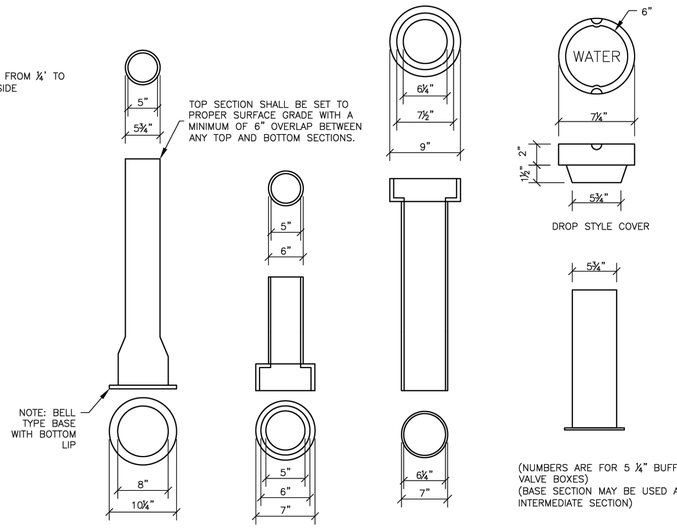


SERVICE BOX

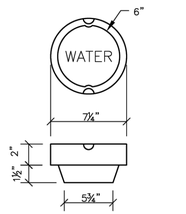


FOOT PIECE

NOTE: ANY EXTENSION OF SERVICE BOX REQUIRES:
1. 1" FEMALE IRON PIPE COUPLING
2. 1" THREADED PIPE (THIS IS TO BE A NON-WELDED, TWO PIECE ARRANGEMENT. SLIP ON ADAPTERS ARE NOT PERMISSIBLE.)



VALVE BOX & COVER



(NUMBERS ARE FOR 5 ¼" BUFFALO VALVE BOXES)
(BASE SECTION MAY BE USED AS INTERMEDIATE SECTION)

Portland Water District
225 DOUGLASS STREET, PORTLAND, MAINE 04104

STANDARD WATER DETAILS

REV.	DATE	DESCRIPTION	BY	CHK.
2	2026.03.30	RESPONSE TO COMMENTS	PJM	JHW
1	2025.02.20	REVISED PER CITY COMMENTS, UPDATED SURVEY	PJM	JHW

DRAWING ISSUE STATUS

NOT FOR CONSTRUCTION

HALEY WARD
WWW.HALEYWARD.COM
One Merchants Plaza, Suite 701
Bangor, Maine 04401
207.989.4824

PROJECT

4-STORY SELF-STORAGE UNIT BUILDING
97 WARREN AVENUE, PORTLAND, MAINE
PEACHTREE AQUISITIONS, LLC

TITLE

SITE DETAILS

STATE OF MAINE JON H. WHITTEN, JR. No. 10414 LICENSED PROFESSIONAL ENGINEER

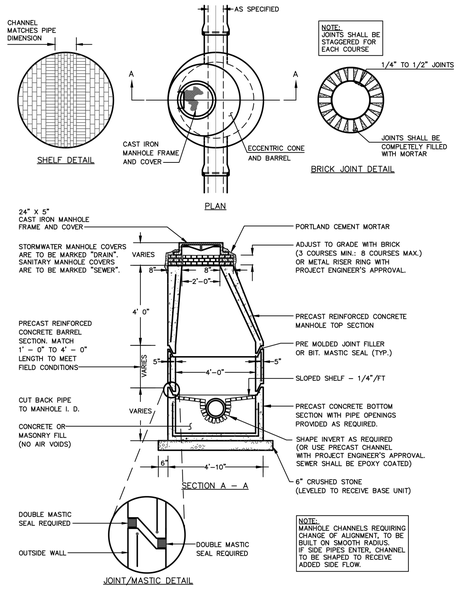
DATE	SCALE
2025.11.14	NTS

DRAWN BY	DESIGNED BY	CHECKED BY
PJM	PJM/MK	JHW

PROJECT No. 15191.001

DRAWING No. C502 REV. 2

FILE LOCATION: P:\ME\15191-ENGELSMA_CONSTRUCTION\00\97 WARREN AVE-JHW\02-CAD_FILES\CIVIL\15191-I01-C-DT.DWG, 2026.04.03, 12:05 PM



PRECAST CONCRETE MANHOLE

NOT TO SCALE

DATE: DEC. 2009	CITY OF PORTLAND, MAINE TECHNICAL STANDARDS MANUAL	SANITARY SEWER AND STORM DRAIN DESIGN STANDARDS SECTION VI	FIGURE: VI-2
REVISED: DEC. 2024	PRECAST CONCRETE MANHOLE		

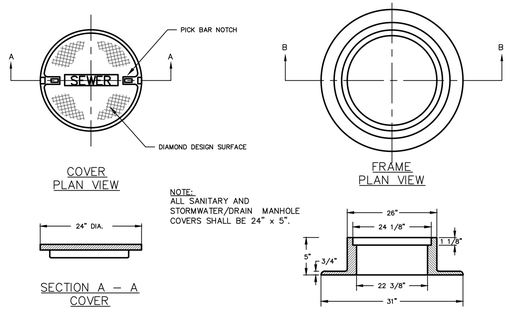
1. ALL CONCRETE SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 4000 lbs. PER SQ. INCH AT THE END OF 28 DAYS, UNLESS OTHERWISE NOTED.
2. MANHOLES MAY BE CONSTRUCTED OF PRECAST REINFORCED CONCRETE, OR CAST IN PLACE.
3. PRECAST REINFORCED CONE BARREL MANUFACTURED PER ASTM SPEC. C–478.
4. ALL PIPES ENTERING MANHOLES AND CATCH BASINS SHALL HAVE FLEXIBLE PIPE CONNECTIONS WITH STAINLESS STEEL BANDS. FILL ANY ANNUAL SPACE WITH NON SHRINK GROUT.
5. ALL STORM AND SEWER MANHOLE COVERS SHALL BE SOLID
6. ALL SANITARY MANHOLE COVERS SHALL HAVE "SEWER" CAST INTO THE COVER. ALL STORMWATER/DRAIN MANHOLE COVERS SHALL HAVE "DRAIN" CAST INTO THE COVER.
7. SEWER BRICK SHALL CONFORM TO ASTM SPEC. DESIGNATE ON C–32–63, GRADE MA AND SA.
8. INVERTS SHALL BE BUILT TO THE HEIGHT OF THE FOLLOWING AS DETERMINED BY THE LARGEST PIPE SIZE.

   8.1. FOR PIPE SIZES 4"–12" INVERTS SHALL GO TO THE TOP OF THE PIPE.
   8.2. FOR PIPE SIZES 15"–36" INVERTS SHALL GO TO THE SPRING LINE.
   8.3. FOR PIPE SIZES 42"–60" INVERTS SHALL GO TO THE 1/3 OF PIPE SIZE
9. ALL SANITARY MANHOLES SHALL HAVE A WATERPROOFING COATING APPLIED TO THE EXTERIOR SURFACE.
10. CASTINGS SHALL CONFORM TO ASTM DESIGNATION A48–CLASS 35.
11. EXISTING MANHOLES, CATCH BASINS, FRAMES, AND COVERS SHALL BE SALVAGED BY THE CONTRACTOR, AND SHALL REMAIN THE PROPERTY OF THE CITY OF PORTLAND.
12. ALL CATCH BASIN OUTLETS SHALL BE INSTALLED WITH A HOOD / CASCO TRAP. SEE FIGURE VI–09.
13. ALL MANHOLES AND CATCH BASINS REQUIRE BUOYANCY CALCULATIONS AND THE STRUCTURES SHALL BE MODIFIED AS NECESSARY BASED ON THOSE CALCULATIONS.

GENERAL NOTES FOR MANHOLES AND CATCH BASINS

DATE: MARCH 2019	CITY OF PORTLAND, MAINE TECHNICAL STANDARDS MANUAL	SANITARY SEWER AND STORM DRAIN DESIGN STANDARDS SECTION VI	FIGURE: VI-4
REVISED: DECEMBER 2024	GENERAL NOTES FOR MANHOLES AND CATCH BASINS		

NOTES:
1. ALL SANITARY MANHOLE COVERS SHALL HAVE "SEWER" CAST INTO THE COVER. ALL STORMWATER/DRAIN MANHOLE COVERS SHALL HAVE "DRAIN" CAST INTO THE COVER.
2. APPROVED MANHOLE FRAMES:
   2.1. EAST JORDAN = 1690Z
   2.2. NEENAH = R–1496
   2.3. OR APPROVED EQUAL
3. APPROVED MANHOLE COVERS
   3.1. EAST JORDAN = 2160A
   3.2. NEENAH = R–1496
   3.3. OR APPROVED EQUAL



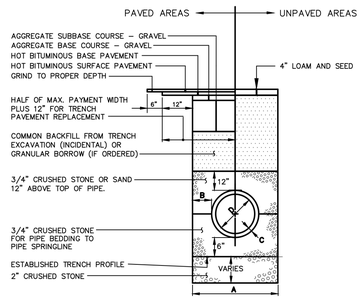
CAST IRON MANHOLE COVER AND FRAME

NOT TO SCALE

DATE: AUG 2009	CITY OF PORTLAND, MAINE TECHNICAL STANDARDS MANUAL	SANITARY SEWER AND STORM DRAIN DESIGN STANDARDS SECTION VI	FIGURE: VI-5
REVISED: DEC 2024	CAST IRON MANHOLE COVER AND FRAME		

NOTES:
DEPTH OF BITUMINOUS PAVEMENT AND AGGREGATE COURSES SHALL BE DETERMINED BY STREET CLASSIFICATION.

ANY ALTERNATE TRENCHING OR PAYMENT METHODS SHALL BE APPROVED IN ADVANCE BY THE CITY OF PORTLAND, DEPARTMENT OF PUBLIC SERVICES..



NOTES

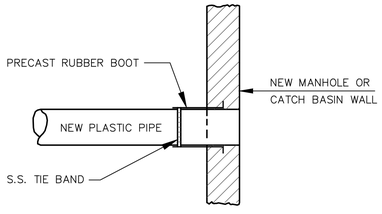
1. ALTERNATIVE CONSTRUCTION METHODS OR PAYMENT METHODS SHALL BE APPROVED IN ADVANCE BY THE CITY.
2. IN PAVED AREAS, DEPTHS OF GRAVEL AND HOT MIX ASPHALT PAVEMENT SHALL MATCH THE GREATER OF EXISTING CONDITIONS OR THE REQUIREMENTS FOR THE CORRESPONDING STREET CLASSIFICATION.
3. DIMENSION **B** SHALL BE SUFFICIENT TO ALLOW CRUSHED STONE BEDDING TO BE PLACED AND COMPACTED UNDER THE HAUNCHES OF THE PIPE; BUT IN ALL CASES DIMENSION **B** SHALL BE AT LEAST 9".
4. DIMENSION **A** IS THE MAXIMUM WIDTH ALLOWED FOR CALCULATING PAY QUANTITIES UNDER GRANULAR BORROW, CRUSHED STONE, STRUCTURAL EARTH EXCAVATION, AND STRUCTURAL ROCK EXCAVATION. DIMENSION **A** SHALL BE BASED ON PIPE DIAMETER **D**, AS SET FORTH IN THE FOLLOWING TABLE.

PIPE DIAMETER, **D** (INCHES)	MAX. TRENCH WIDTH, **A** (FEET)
4 – – – –	4.0
6	4.0
8	4.0
10	4.0
12	5.0
15	5.0
18 – – – –	5.0
21	5.0
24	6.0
27	6.0
30	6.0
36 – – – –	6.0
42	7.0
48	7.0

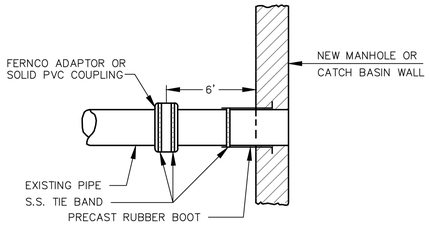
TYPICAL PIPE TRENCH INSTALLATION

NOT TO SCALE

DATE: AUGUST 2009	CITY OF PORTLAND, MAINE TECHNICAL STANDARDS MANUAL	SANITARY SEWER AND STORM DRAIN DESIGN STANDARDS SECTION VI	FIGURE: VI-12
REVISED: DECEMBER 2024	TYPICAL PIPE TRENCH INSTALLATION AND NOTES		



METHOD 2 – NEW CONSTRUCTION



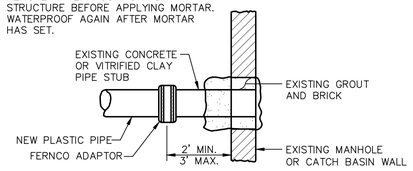
METHOD 1 – EXISTING PIPE INTO NEW STRUCTURE

PLASTIC PIPE CONNECTIONS

NOT TO SCALE

DATE: AUGUST 2009	CITY OF PORTLAND, MAINE TECHNICAL STANDARDS MANUAL	SANITARY SEWER AND STORM DRAIN DESIGN STANDARDS SECTION VI	FIGURE: VI-13
REVISED: DECEMBER 2024	PLASTIC PIPE CONNECTION METHODS 1 & 2		

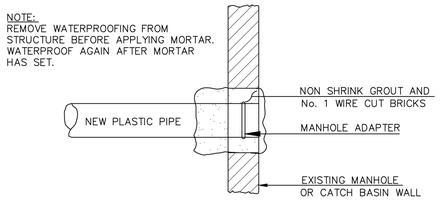
NOTE: REMOVE WATERPROOFING FROM STRUCTURE BEFORE APPLYING MORTAR. WATERPROOF AGAIN AFTER MORTAR HAS SET.



METHOD 4 – NEW PIPE TO EXISTING STRUCTURE STUB

NOTE: EXISTING MANHOLE OR CATCH BASIN SHALL BE CORE DRILLED FOR PIPE INSTALLATION. IF PIPE DIAMETER IS SO LARGE THAT CORE DRILLING IS PROHIBITED, THE CONTRACTOR MAY SAW CUT THE STRUCTURE TO CREATE PIPE OPENING. THE NEW OPENING MUST THEN BE SEALED AND WATERTIGHT BOTH INSIDE AND OUTSIDE THE STRUCTURE.

NOTE: REMOVE WATERPROOFING FROM STRUCTURE BEFORE APPLYING MORTAR. WATERPROOF AGAIN AFTER MORTAR HAS SET.



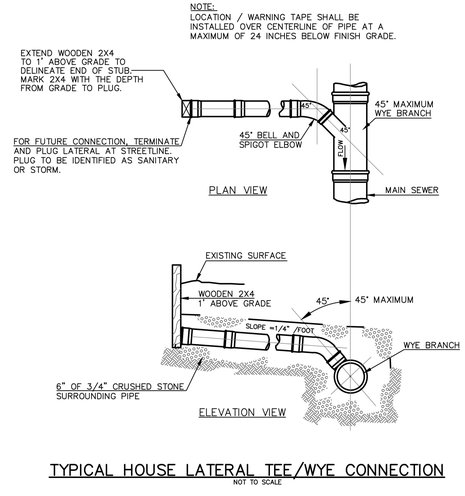
METHOD 3 – NEW PIPE INTO EXISTING STRUCTURE

PLASTIC PIPE CONNECTIONS

NOT TO SCALE

DATE: AUGUST 2009	CITY OF PORTLAND, MAINE TECHNICAL STANDARDS MANUAL	SANITARY SEWER AND STORM DRAIN DESIGN STANDARDS SECTION VI	FIGURE: VI-14
REVISED: DECEMBER 2024	PLASTIC PIPE CONNECTION METHODS 3 & 4		

NOTE: LOCATION / WARNING TAPE SHALL BE INSTALLED OVER CENTERLINE OF PIPE AT A MAXIMUM OF 24 INCHES BELOW FINISH GRADE.



TYPICAL HOUSE LATERAL TEE/WYE CONNECTION

NOT TO SCALE

DATE: AUGUST 2009	CITY OF PORTLAND, MAINE TECHNICAL STANDARDS MANUAL	SANITARY SEWER AND STORM DRAIN DESIGN STANDARDS SECTION VI	FIGURE: VI-17
REVISED: DECEMBER 2024	TYPICAL HOUSE LATERAL TEE/WYE CONNECTION		

REV.	DATE	DESCRIPTION	BY	CHK.
2	2026.03.30	RESPONSE TO COMMENTS	PJM	JHW
1	2025.02.20	REVISED PER CITY COMMENTS. UPDATED SURVEY	PJM	JHW

DRAWING ISSUE STATUS

NOT FOR CONSTRUCTION

HALEY WARD
WWW.HALEYWARD.COM
One Merchants Plaza, Suite 701
Bangor, Maine 04401
207.989.4824

PROJECT

4-STORY SELF-STORAGE UNIT BUILDING
97 WARREN AVENUE, PORTLAND, MAINE
PEACHTREE AQUISITIONS, LLC

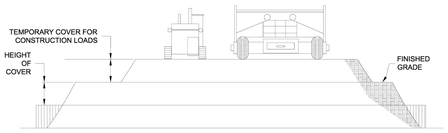
TITLE

SITE DETAILS

STATE OF MAINE JOHN H. WHITTEN, JR. No. 10414 04/08/2026 LICENSED PROFESSIONAL ENGINEER

DATE	SCALE
2025.11.14	NTS
DRAWN BY: PJM	DESIGNED BY: PJM/MK	CHECKED BY: JHW
PROJECT No.: 15191.001	
DRAWING No.: C503	REV.: 2

FILE LOCATION: P:\ME\15191-ENGLISMA_CONSTRUCTION\001-97 WARREN AVE-JHW\02-CAD_FILES\CIVIL\15191-001-C-07.DWG, 2026.04.03, 12:55 PM



CONSTRUCTION LOADS

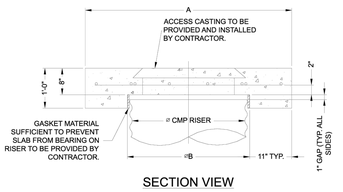
FOR TEMPORARY CONSTRUCTION VEHICLE LOADS, AN EXTRA AMOUNT OF COMPACTED COVER MAY BE REQUIRED OVER THE TOP OF THE PIPE. THE HEIGHT-OF-COVER SHALL MEET THE MINIMUM REQUIREMENTS SHOWN IN THE TABLE BELOW. THE USE OF HEAVY CONSTRUCTION EQUIPMENT NECESSITATES GREATER PROTECTION FOR THE PIPE THAN FINISHED GRADE COVER MINIMUMS FOR NORMAL HIGHWAY TRAFFIC.

PIPE SPAN, INCHES	AXLE LOADS (kips)			
	18-50	50-75	75-110	110-150
	MINIMUM COVER (FT)			
12-42	2.0	2.5	3.0	3.0
48-72	3.0	3.0	3.5	4.0
78-120	3.0	3.5	4.0	4.0
126-144	3.5	4.0	4.5	4.5

*MINIMUM COVER MAY VARY, DEPENDING ON LOCAL CONDITIONS. THE CONTRACTOR MUST PROVIDE THE ADDITIONAL COVER REQUIRED TO AVOID DAMAGE TO THE PIPE. MINIMUM COVER IS MEASURED FROM THE TOP OF THE PIPE TO THE TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE.

CONSTRUCTION LOADING DIAGRAM

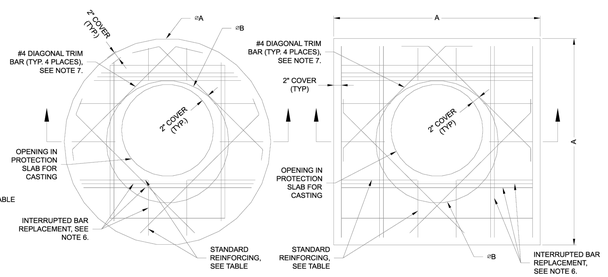
SCALE: N.T.S.



SECTION VIEW

REINFORCING TABLE				
⌀ CMP RISER	A	⌀ B	REINFORCING	**BEARING PRESSURE (PSF)
24"	⌀ 4' 4'X4'	26"	#5 @ 12" OCEW #5 @ 12" OCEW	2,410 1,780
30"	⌀ 4'-6" 4'-6" X 4'-6"	32"	#5 @ 12" OCEW #5 @ 12" OCEW	2,120 1,530
36"	⌀ 5' 5' X 5'	38"	#5 @ 10" OCEW #5 @ 10" OCEW	1,890 1,350
42"	⌀ 5'-6" 5'-6" X 5'-6"	44"	#5 @ 10" OCEW #5 @ 9" OCEW	1,720 1,210
48"	⌀ 6' 6' X 6'	50"	#5 @ 9" OCEW #5 @ 8" OCEW	1,600 1,100

** ASSUMED SOIL BEARING CAPACITY



ROUND OPTION PLAN VIEW

SQUARE OPTION PLAN VIEW

NOTES:

1. DESIGN IN ACCORDANCE WITH AASHTO, 17th EDITION.
2. DESIGN LOAD HS25.
3. EARTH COVER = 1' MAX.
4. CONCRETE STRENGTH = 3,500 psi
5. REINFORCING STEEL = ASTM A615, GRADE 60.
6. PROVIDE ADDITIONAL REINFORCING AROUND OPENINGS EQUAL TO THE BARS INTERRUPTED, HALF EACH SIDE. ADDITIONAL BARS TO BE IN THE SAME PLANE.
7. TRIM OPENING WITH DIAGONAL #4 BARS, EXTEND BARS A MINIMUM OF 12" BEYOND OPENING, BEND BARS AS REQUIRED TO MAINTAIN BAR COVER.
8. PROTECTION SLAB AND ALL MATERIALS TO BE PROVIDED AND INSTALLED BY CONTRACTOR.
9. DETAIL DESIGN BY DELTA ENGINEERING, BINGHAMTON, NY.

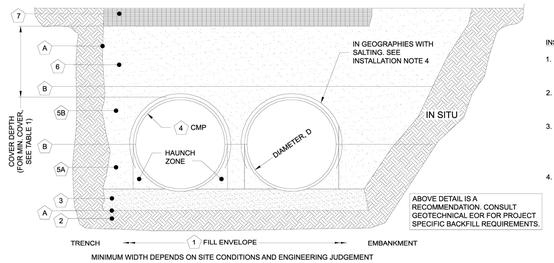
MANHOLE CAP DETAIL

SCALE: N.T.S.

TABLE 1:

DIAMETER, D	MIN. COVER	CORR. PROFILE
6"-10"	12"	1 1/2" x 1/4"
12"-48"	12"	2 2/3" x 1/2"
>48"-96"	12"	3" x 1", 5" x 1"
>96"	D/8	3" x 1", 5" x 1"

- STRUCTURAL BACKFILL MUST EXTEND TO LIMITS OF THE TABLE
- TOTAL HEIGHT OF COMPACTED COVER FOR CONVENTIONAL HIGHWAY LOADS IS MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TOP OF RIGID PAVEMENT
- ULTRAFLO ALSO AVAILABLE FOR SIZES 18" - 120" WITH 3/4"x 3/4"x 7 1/2" CORRUGATION



ABOVE DETAIL IS A RECOMMENDATION. CONSULT GEOTECHNICAL EOR FOR PROJECT SPECIFIC BACKFILL REQUIREMENTS.

MINIMUM WIDTH DEPENDS ON SITE CONDITIONS AND ENGINEERING JUDGEMENT

INSTALLATION NOTES

1. WHEN PLACING THE FIRST LIFTS OF BACKFILL IT IS IMPORTANT TO MAKE SURE THAT THE BACKFILL IS PROPERLY COMPACTED UNDER AND AROUND THE PIPE HAUNCHES.
2. OTHER ALTERNATE BACKFILL MATERIAL MAY BE ALLOWED DEPENDING ON SITE SPECIFIC CONDITIONS, AS APPROVED BY SITE ENGINEER.
3. BACKFILL USING CONTROLLED LOW-STRENGTH MATERIAL (CLSM, "FLASH FILL" OR "FLOWABLE FILL") MAY BE USED WHEN THE SPACING BETWEEN THE PIPES WILL NOT ALLOW FOR PLACEMENT AND ADEQUATE COMPACTION OF THE BACKFILL. CONTACT CONTECH FOR FURTHER EVALUATION.
4. IF SALTING AGENTS FOR SNOW AND ICE REMOVAL ARE USED ON OR NEAR THE PROJECT, A GEOMEMBRANE BARRIER IS RECOMMENDED OVER THE UPPER HALF OF THE PIPE. THE GEOMEMBRANE LINER IS INTENDED TO HELP PROTECT THE SYSTEM FROM THE POTENTIAL ADVERSE EFFECTS THAT MAY RESULT FROM A CHANGE IN THE SURROUNDING ENVIRONMENT OVER A PERIOD OF TIME. PLEASE REFER TO THE CORRUGATED METAL PIPE DETENTION DESIGN GUIDE FOR ADDITIONAL INFORMATION.

TABLE 2: SOLID STANDARD

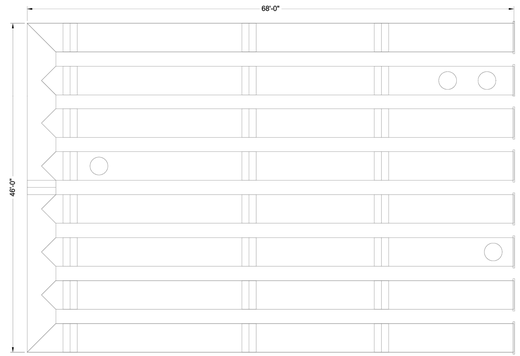
CMP DETENTION AND CMP DRAINAGE STANDARD BACKFILL SPECIFICATIONS

	MATERIAL LOCATION	MATERIAL SPECIFICATION	DESCRIPTION	
1	FILL ENVELOPE WIDTH	PER ENGINEER OF RECORD	MINIMUM TRENCH WIDTH MUST ALLOW ROOM FOR PROPER COMPACTION OF HAUNCH MATERIALS UNDER THE PIPE. THE SUGGESTED MINIMUM TRENCH WIDTH, OR EOR RECOMMENDATION: PIPE ≤ 12": D + 16" PIPE > 12": 1.50 × 12"	MINIMUM EMBANKMENT WIDTH (IN FEET) FOR INITIAL FILL ENVELOPE: PIPE < 24": 3.0D PIPE 24" - 144": D + 4'0" PIPE > 144": D + 10'0"
2	FOUNDATION	**AASHTO 26.5.2** OR PER ENGINEER OF RECORD	PRIOR TO PLACING THE BEDDING, THE FOUNDATION MUST BE CONSTRUCTED TO A UNIFORM AND STABLE GRADE. IN THE EVENT THAT UNSUITABLE FOUNDATION MATERIALS ARE ENCOUNTERED DURING EXCAVATION, THEY SHALL BE REMOVED AND FOUNDATION BROUGHT BACK TO GRADE WITH A FILL MATERIAL APPROVED BY THE ENGINEER OF RECORD.	
3	BEDDING	**AASHTO M 43: 3, 357, 4, 467, 5, 56, 57** (APPROVED REGIONAL EQUIVALENTS INCLUDE CA-7)	ENGINEER OF RECORD TO DETERMINE IF BEDDING IS REQUIRED. PIPE MAY BE PLACED ON THE TRENCH BOTTOM OF A RELATIVELY LOOSE, NATIVE SUITABLE WELL GRADED GRANULAR MATERIAL THAT IS ROUGHLY SHAPED TO FIT THE BOTTOM OF THE PIPE, 2" MIN DEPTH. THE BEDDING MATERIAL MAY BE SUITABLE FOUNDATION SOILS CONFORMING TO AASHTO SOIL CLASSIFICATIONS A1, A2, OR A3 WITH MAXIMUM PARTICLE SIZE OF 3" PER AASHTO 26.3.8.1	
4	CORRUGATED METAL PIPE			
5A	CRITICAL BACKFILL	**AASHTO M 145: A-1, A-2, A-3 ***	HAUNCH ZONE MATERIAL SHALL BE HAND SHOVELED OR SHOVEL SLICED INTO PLACE TO ALLOW FOR PROPER COMPACTION WITHOUT SOFT SPOTS. BACKFILL SHALL BE PLACED IN 8" +/- LOOSE LIFTS AND COMPACTED TO 90% STANDARD PROCTOR PER AASHTO T 99. BACKFILL SHALL BE PLACED SUCH THAT THERE IS NO MORE THAN A THREE LIFT (24") DIFFERENTIAL BETWEEN ANY OF THE PIPES AT ANY TIME DURING THE BACKFILL PROCESS. THE BACKFILL SHOULD BE ADVANCED ALONG THE LENGTH OF THE SYSTEM TO AVOID DIFFERENTIAL LOADING. WELL GRADED GRANULAR MATERIAL WHICH MAY CONTAIN SMALL AMOUNTS OF SILT OR CLAY AND MAXIMUM PARTICLE SIZE OF 3" (PER AASHTO 26.3.8.1 AND 12.4-1.3).	
5B	BACKFILL	**AASHTO M 145: A-1, A-2, A-3**		
6	COVER MATERIAL	UP TO MIN. COVER - SEE 5A AND 5B ABOVE ABOVE MIN. COVER - PER ENGINEER OF RECORD	COVER MATERIAL MAY INCLUDE NON-BITUMINOUS, GRANULAR ROAD BASE MATERIAL WITHIN MIN COVER LIMITS	
7	RIGID OR FLEXIBLE PAVEMENT (IF APPLICABLE)	PER ENGINEER OF RECORD	FLEXIBLE PAVEMENT SHOULD NOT BE COUNTED AS PART OF THE FILL HEIGHT OVER THE CMP. FINAL BACKFILL MATERIAL SELECTION AND COMPACTION REQUIREMENTS SHALL FOLLOW THE PROJECT PLANS AND SPECIFICATIONS PER THE ENGINEER OF RECORD.	
A	OPTIONAL SIDE GEOTEXTILE	NONE	GEOTEXTILE LAYER IS RECOMMENDED ON SIDES OF EXCAVATION TO PREVENT SOIL MIGRATION.	
B	OPTIONAL GEOTEXTILE BETWEEN LAYERS	NONE	IF SOIL TYPES DIFFER AT ANY POINT ABOVE PIPE INVERT, A GEOTEXTILE LAYER IS RECOMMENDED TO BE PLACED BETWEEN THE LAYERS TO PREVENT SOIL MIGRATION.	

NOTES:
- FOR MULTIPLE BARREL INSTALLATIONS, THE RECOMMENDED STANDARD SPACING BETWEEN PARALLEL PIPE RUNS SHALL BE THE PIPE DIAMETER /2 BUT NO LESS THAN 12" FOR DIAMETERS <72". FOR 72" AND LARGER DIAMETERS, THE MINIMUM SPACING IS 36". CONTACT YOUR CONTECH REPRESENTATIVE FOR NONSTANDARD SPACING.
- * APPROVED REGIONAL EQUIVALENTS FOR SECTION 5A INCLUDE CA-7, CODOT #67, MIDOT 2G, 34G, OR 21AA STONE OR GRAVEL; #8; #57; MIDOT 6A, 2G, 3G, 34G.

MANUFACTURER RECOMMENDED BACKFILL

NOT TO SCALE



ASSEMBLY
SCALE: 1" = 10'

NOTE:
THESE DRAWINGS ARE FOR CONCEPTUAL PURPOSES AND DO NOT REFLECT ANY LOCAL PREFERENCES OR REGULATIONS. PLEASE CONTACT YOUR LOCAL CONTECH REP FOR MODIFICATIONS.

SPECIFICATION FOR DESIGNED DETENTION SYSTEM:

SCOPE
THIS SPECIFICATION COVERS THE MANUFACTURE AND INSTALLATION OF THE DESIGNED DETENTION SYSTEM DETAILED IN THE PROJECT PLANS.

MATERIAL
THE MATERIAL SHALL CONFORM TO THE APPLICABLE REQUIREMENTS LISTED BELOW:

ALUMINIZED TYPE 2 STEEL COILS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-274 OR ASTM A-92.

THE GALVANIZED STEEL COILS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-218 OR ASTM A-929.

THE POLYMER COATED STEEL COILS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-246 OR ASTM A-742.

THE ALUMINUM COILS SHALL CONFORM TO THE APPLICABLE OF AASHTO M-197 OR ASTM B-744.

CONSTRUCTION LOADS
CONSTRUCTION LOADS MAY BE HIGHER THAN FINAL LOADS. FOLLOW THE MANUFACTURER'S OR NCSPA GUIDELINES.

PIPE
THE PIPE SHALL BE MANUFACTURED IN ACCORDANCE TO THE APPLICABLE REQUIREMENTS LISTED BELOW:

ALUMINIZED TYPE 2: AASHTO M-36 OR ASTM A-760

GALVANIZED: AASHTO M-36 OR ASTM A-760

POLYMER COATED: AASHTO M-245 OR ASTM A-762

ALUMINUM: AASHTO M-196 OR ASTM B-745

APPLICABLE HANDLING AND ASSEMBLY
SHALL BE IN ACCORDANCE WITH NCSPS (NATIONAL CORRUGATED STEEL PIPE ASSOCIATION) FOR ALUMINIZED TYPE 2, GALVANIZED OR POLYMER COATED STEEL. SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS FOR ALUMINUM PIPE.

REQUIREMENTS
INSTALLATION
SHALL BE IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SECTION 26, DIVISION II OR DIVISION II OR ASTM A-798 (FOR ALUMINIZED TYPE 2, GALVANIZED OR POLYMER COATED STEEL) OR ASTM B-788 (FOR ALUMINUM PIPE) AND IN CONFORMANCE WITH THE PROJECT PLANS AND SPECIFICATIONS. IF THERE ARE ANY INCONSISTENCIES OR CONFLICTS THE CONTRACTOR SHOULD DISCUSS AND RESOLVE WITH THE SITE ENGINEER.

IT IS ALWAYS THE RESPONSIBILITY OF THE CONTRACTOR TO FOLLOW OSHA GUIDELINES FOR SAFE PRACTICES.

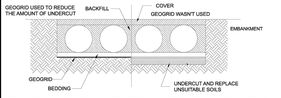
CMP DETENTION INSTALLATION GUIDE

PROPER INSTALLATION OF A FLEXIBLE UNDERGROUND DETENTION SYSTEM WILL ENSURE LONG-TERM PERFORMANCE. THE CONFIGURATION OF THESE SYSTEMS OFTEN REQUIRES SPECIAL CONSTRUCTION PRACTICES THAT DIFFER FROM CONVENTIONAL FLEXIBLE PIPE CONSTRUCTION. CONTECH ENGINEERED SOLUTIONS STRONGLY SUGGESTS SCHEDULING A PRE-CONSTRUCTION MEETING WITH YOUR LOCAL SALES ENGINEER TO DETERMINE IF ADDITIONAL MEASURES, NOT COVERED IN THIS GUIDE, ARE APPROPRIATE FOR YOUR SITE.

FOUNDATION

CONSTRUCT A FOUNDATION THAT CAN SUPPORT THE DESIGN LOADING APPLIED BY THE PIPE AND ADJACENT BACKFILL WEIGHT AS WELL AS MAINTAIN ITS INTEGRITY DURING CONSTRUCTION.

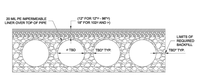
IF SOFT OR UNSUITABLE SOILS ARE ENCOUNTERED, REMOVE THE POOR SOILS DOWN TO A SUITABLE DEPTH AND THEN BUILD UP TO THE APPROPRIATE ELEVATION WITH A COMPETENT BACKFILL MATERIAL. THE STRUCTURAL FILL MATERIAL GRADATION SHOULD NOT ALLOW THE MIGRATION OF FINES, WHICH CAN CAUSE SETTLEMENT OF THE DETENTION SYSTEM OR PAVEMENT ABOVE. IF THE STRUCTURAL FILL MATERIAL IS NOT COMPATIBLE WITH THE UNDERLYING SOILS AN ENGINEERING FABRIC SHOULD BE USED AS A SEPARATOR. IN SOME CASES, USING A STIFF REINFORCING GEOGRID REDUCES OVER EXCAVATION AND REPLACEMENT FILL QUANTITIES.



GRADE THE FOUNDATION SUBGRADE TO A UNIFORM OR SLIGHTLY SLOPING GRADE. IF THE SUBGRADE IS CLAY OR RELATIVELY NON-POROUS AND THE CONSTRUCTION SEQUENCE WILL LAST FOR AN EXTENDED PERIOD OF TIME, IT IS BEST TO SLOPE THE GRADE TO ONE END OF THE SYSTEM. THIS WILL ALLOW EXCESS WATER TO DRAIN QUICKLY, PREVENTING SATURATION OF THE SUBGRADE.

GEOMEMBRANE BARRIER

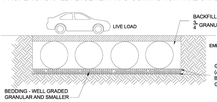
THE RESISTIVITY OF A PROJECT SITE MAY CHANGE OVER TIME DUE TO THE USE OF VARIOUS SALTING, DE-ICING, AND AGRICULTURAL AGENTS APPLIED ON OR NEAR THE AREA. TO MITIGATE THE POTENTIAL IMPACT OF THESE AGENTS, AN HDPE MEMBRANE LINER WILL BE INSTALLED ON THE CROWN OF EACH PIPE, CREATING AN IMPERMEABLE BARRIER. THIS MEASURE IS DESIGNED TO PROTECT THE SYSTEM FROM ENVIRONMENTAL CHANGES THAT COULD LEAD TO PREMATURE CORROSION AND REDUCE THE OVERALL SERVICE LIFE.



IN-SITU TRENCH WALL

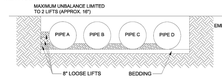
IF EXCAVATION IS REQUIRED, THE TRENCH WALL NEEDS TO BE CAPABLE OF SUPPORTING THE LOAD THAT THE PIPE SHEDS AS THE SYSTEM IS LOADED. IF SOILS ARE NOT CAPABLE OF SUPPORTING THESE LOADS, THE PIPE CAN DEFLECT. PERFORM A SIMPLE SOIL PRESSURE CHECK USING THE APPLIED LOADS TO DETERMINE THE LIMITS OF EXCAVATION BEYOND THE SPRING LINE OF THE OUTER MOST PIPES.

IN MOST CASES THE REQUIREMENTS FOR A SAFE WORK ENVIRONMENT AND PROPER BACKFILL PLACEMENT AND COMPACTION TAKE CARE OF THIS CONCERN.



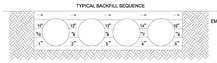
BACKFILL PLACEMENT

MATERIAL SHALL BE WORKED INTO THE PIPE HAUNCHES BY MEANS OF SHOVEL-SLICING, RODDING, AIR TAMPER, VIBRATORY ROD, OR OTHER EFFECTIVE METHODS.

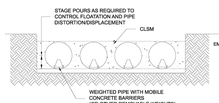


IF AASHTO T99 PROCEDURES ARE DETERMINED INFEASIBLE BY THE GEOTECHNICAL ENGINEER OF RECORD, COMPACTION IS CONSIDERED ADEQUATE WHEN NO FURTHER YIELDING OF THE MATERIAL IS OBSERVED UNDER THE COMPACTOR, OR UNDER FOOT, AND THE GEOTECHNICAL ENGINEER OF RECORD (OR REPRESENTATIVE THEREOF) IS SATISFIED WITH THE LEVEL OF COMPACTION.

FOR LARGE SYSTEMS, CONVEYOR SYSTEMS, BACKHOES WITH LONG REACHES OR DRAGLINES WITH STONE BUCKETS MAY BE USED TO PLACE BACKFILL. ONCE MINIMUM COVER FOR CONSTRUCTION LOADING ACROSS THE ENTIRE WIDTH OF THE SYSTEM IS REACHED, ADVANCE THE EQUIPMENT TO THE END OF THE RECENTLY PLACED FILL, AND BEGIN THE SEQUENCE AGAIN UNTIL THE SYSTEM IS COMPLETELY BACKFILLED. THIS TYPE OF CONSTRUCTION SEQUENCE PROVIDES ROOM FOR STOCKPILED BACKFILL DIRECTLY BEHIND THE BACKHOE, AS WELL AS THE MOVEMENT OF CONSTRUCTION TRAFFIC. MATERIAL STOCKPILES ON TOP OF THE BACKFILLED DETENTION SYSTEM SHOULD BE LIMITED TO 8- TO 10-FEET HIGH AND MUST PROVIDE BALANCED LOADING ACROSS ALL BARRELS. TO DETERMINE THE PROPER COVER OVER THE PIPES TO ALLOW THE MOVEMENT OF CONSTRUCTION EQUIPMENT SEE TABLE 1, OR CONTACT YOUR LOCAL CONTECH SALES ENGINEER.



WHEN FLOWABLE FILL IS USED, YOU MUST PREVENT PIPE FLOATATION. TYPICALLY, SMALL LIFTS ARE PLACED BETWEEN THE PIPES AND THEN ALLOWED TO SET-UP PRIOR TO THE PLACEMENT OF THE NEXT LIFT. THE ALLOWABLE THICKNESS OF THE CLSM LIFT IS A FUNCTION OF A PROPER BALANCE BETWEEN THE UPLIFT FORCE OF THE CLSM, THE OPPOSING WEIGHT OF THE PIPE, AND THE EFFECT OF OTHER RESTRAINING MEASURES. THE PIPE CAN CARRY LIMITED FLUID PRESSURE WITHOUT PIPE DISTORTION OR DISPLACEMENT, WHICH ALSO AFFECTS THE CLSM LIFT THICKNESS. YOUR LOCAL CONTECH SALES ENGINEER CAN HELP DETERMINE THE PROPER LIFT THICKNESS.

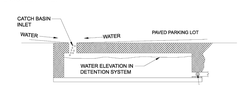


CONSTRUCTION LOADING

TYPICALLY, THE MINIMUM COVER SPECIFIED FOR A PROJECT ASSUMES H-20 LIVE LOAD. BECAUSE CONSTRUCTION LOADS OFTEN EXCEED DESIGN LIVE LOADS, INCREASED TEMPORARY MINIMUM COVER REQUIREMENTS ARE NECESSARY. SINCE CONSTRUCTION EQUIPMENT VARIES FROM JOB TO JOB, IT IS BEST TO ADDRESS EQUIPMENT SPECIFIC MINIMUM COVER REQUIREMENTS WITH YOUR LOCAL CONTECH SALES ENGINEER DURING YOUR PRE-CONSTRUCTION MEETING.

ADDITIONAL CONSIDERATIONS

BECAUSE MOST SYSTEMS ARE CONSTRUCTED BELOW-GRADE, RAINFALL CAN RAPIDLY FILL THE EXCAVATION; POTENTIALLY CAUSING FLOATATION AND MOVEMENT OF THE PREVIOUSLY PLACED PIPES. TO HELP MITIGATE POTENTIAL PROBLEMS, IT IS BEST TO START THE INSTALLATION AT THE DOWNSTREAM END WITH THE OUTLET ALREADY CONSTRUCTED TO ALLOW A ROUTE FOR THE WATER TO ESCAPE. TEMPORARY DIVERSION MEASURES MAY BE REQUIRED FOR HIGH FLOWS DUE TO THE RESTRICTED NATURE OF THE OUTLET PIPE.



CMP DETENTION SYSTEM INSPECTION AND MAINTENANCE

UNDERGROUND STORMWATER DETENTION AND INFILTRATION SYSTEMS MUST BE INSPECTED AND MAINTAINED AT REGULAR INTERVALS FOR PURPOSES OF PERFORMANCE AND LONGEVITY.

INSPECTION

INSPECTION IS THE KEY TO EFFECTIVE MAINTENANCE OF CMP DETENTION SYSTEMS AND IS EASILY PERFORMED. CONTECH RECOMMENDS ONGOING, ANNUAL INSPECTIONS. SITES WITH HIGH TRASH LOAD OR SMALL OUTLET CONTROL ORIFICES MAY NEED MORE FREQUENT INSPECTIONS. THE RATE AT WHICH THE SYSTEM COLLECTS POLLUTANTS WILL DEPEND MORE ON SITE SPECIFIC ACTIVITIES RATHER THAN THE SIZE OR CONFIGURATION OF THE SYSTEM.

INSPECTIONS SHOULD BE PERFORMED MORE OFTEN IN EQUIPMENT WASHDOWN AREAS, IN CLIMATES WHERE SANDING AND/OR SALTING OPERATIONS TAKE PLACE, AND IN OTHER VARIOUS INSTANCES IN WHICH ONE WOULD EXPECT HIGHER ACCUMULATIONS OF SEDIMENT OR ABRASIVE/CORROSIVE CONDITIONS. A RECORD OF EACH INSPECTION IS TO BE MAINTAINED FOR THE LIFE OF THE SYSTEM

MAINTENANCE

CMP DETENTION SYSTEMS SHOULD BE CLEANED WHEN AN INSPECTION REVEALS ACCUMULATED SEDIMENT OR TRASH IS CLOGGING THE DISCHARGE ORIFICE.

ACCUMULATED SEDIMENT AND TRASH CAN TYPICALLY BE EVACUATED THROUGH THE MANHOLE OVER THE OUTLET ORIFICE. IF MAINTENANCE IS NOT PERFORMED AS RECOMMENDED, SEDIMENT AND TRASH MAY ACCUMULATE IN FRONT OF THE OUTLET ORIFICE. MANHOLE COVERS SHOULD BE SECURELY SEATED FOLLOWING CLEANING ACTIVITIES. CONTECH SUGGESTS THAT ALL SYSTEMS BE DESIGNED WITH AN ACCESS/INSPECTION MANHOLE SITUATED AT OR NEAR THE INLET AND THE OUTLET ORIFICE. SHOULD IT BE NECESSARY TO GET INSIDE THE SYSTEM TO PERFORM MAINTENANCE ACTIVITIES, ALL APPROPRIATE PRECAUTIONS REGARDING CONFINED SPACE ENTRY AND OSHA REGULATIONS SHOULD BE FOLLOWED.

ANNUAL INSPECTIONS ARE BEST PRACTICE FOR ALL UNDERGROUND SYSTEMS. DURING THIS INSPECTION, IF EVIDENCE OF SALTING/DE-ICING AGENTS IS OBSERVED WITHIN THE SYSTEM, IT IS BEST PRACTICE FOR THE SYSTEM TO BE RINSED, INCLUDING ABOVE THE SPRING LINE SOON AFTER THE SPRING THAW AS PART OF THE MAINTENANCE PROGRAM FOR THE SYSTEM.

MAINTAINING AN UNDERGROUND DETENTION OR INFILTRATION SYSTEM IS EASIEST WHEN THERE IS NO FLOW ENTERING THE SYSTEM. FOR THIS REASON, IT IS A GOOD IDEA TO SCHEDULE THE CLEANOUT DURING DRY WEATHER.

THE FOREGOING INSPECTION AND MAINTENANCE EFFORTS HELP ENSURE UNDERGROUND PIPE SYSTEMS USED FOR STORMWATER STORAGE CONTINUE TO FUNCTION AS INTENDED BY IDENTIFYING RECOMMENDED REGULAR INSPECTION AND MAINTENANCE PRACTICES. INSPECTION AND MAINTENANCE RELATED TO THE STRUCTURAL INTEGRITY OF THE PIPE OR THE SOUNDNESS OF PIPE JOINT CONNECTIONS IS BEYOND THE SCOPE OF THIS GUIDE.

PROJECT SUMMARY

CALCULATION DETAILS
- LOADING = HS20/HS25
- APPROX. LINEAR FOOTAGE = 558 LF

STORAGE SUMMARY
- STORAGE VOLUME REQUIRED = 7,000 CF
- PIPE STORAGE VOLUME = 7,012 CF
- BACKFILL STORAGE VOLUME = 0 CF
- TOTAL STORAGE PROVIDED = 7,012 CF

PIPE DETAILS
- DIAMETER = 48"
- CORRUGATION = 2 2/3x1/2
- GAGE = 16
- COATING = ALT2
- WALL TYPE = SOLID
- BARREL SPACING = 24"

BACKFILL DETAILS
- WIDTH AT ENDS = 12"
- ABOVE PIPE = 0'
- WIDTH AT SIDES = 12"
- BELOW PIPE = 0"

NOTES
- ALL RISER AND STUB DIMENSIONS ARE TO CENTERLINE. ALL ELEVATIONS, DIMENSIONS, AND LOCATIONS OF RISERS AND INLETS, SHALL BE VERIFIED BY THE ENGINEER OF RECORD PRIOR TO RELEASING FOR FABRICATION.
- ALL FITTINGS AND REINFORCEMENT COMPLY WITH ASTM A998.
- ALL RISERS AND STUBS ARE 2⅔" x ½" CORRUGATION AND 16 GAGE UNLESS OTHERWISE NOTED.
- RISERS TO BE FIELD TRIMMED TO GRADE.
- QUANTITY OF PIPE SHOWN DOES NOT PROVIDE EXTRA PIPE FOR CONNECTING THE SYSTEM TO EXISTING PIPE OR DRAINAGE STRUCTURES. OUR SYSTEM AS DETAILED PROVIDES NOMINAL INLET AND/OR OUTLET PIPE STUB FOR CONNECTION TO EXISTING DRAINAGE FACILITIES. IF ADDITIONAL PIPE IS NEEDED IT IS THE RESPONSIBILITY OF THE CONTRACTOR.
- BAND TYPE TO BE DETERMINED UPON FINAL DESIGN.
- THE PROJECT SUMMARY IS REFLECTIVE OF THE DYODS DESIGN. QUANTITIES ARE APPROX. AND SHOULD BE VERIFIED UPON FINAL DESIGN AND APPROVAL. FOR EXAMPLE, TOTAL EXCAVATION DOES NOT CONSIDER ALL VARIABLES SUCH AS SHORING AND ONLY ACCOUNTS FOR MATERIAL WITHIN THE ESTIMATED EXCAVATION FOOTPRINT.
- THESE DRAWINGS ARE FOR CONCEPTUAL PURPOSES AND DO NOT REFLECT ANY LOCAL PREFERENCES OR REGULATIONS. PLEASE CONTACT YOUR LOCAL CONTECH REP FOR MODIFICATIONS.

REV.	DATE	DESCRIPTION	BY	CHK.
2	2026.03.30	RESPONSE TO COMMENTS	PJM	JHW
1	2025.02.20	REVISED PER CITY COMMENTS, UPDATED SURVEY	PJM	JHW

DRAWING ISSUE STATUS

NOT FOR CONSTRUCTION

HALEY WARD
WWW.HALEYWARD.COM
One Merchants Plaza, Suite 701
Bangor, Maine 04401
207.989.4824

PROJECT

4-STORY SELF-STORAGE UNIT BUILDING
97 WARREN AVENUE, PORTLAND, MAINE
PEACHTREE AQUISITIONS, LLC

TITLE

SITE DETAILS

STATE OF MAINE — JON H. WHITTEN, JR. — No. 10414 — 04/09/2026 — LICENSED PROFESSIONAL ENGINEER

DATE	SCALE
2025.11.14	NTS

DRAWN BY	DESIGNED BY	CHECKED BY
PJM	PJM/MK	JHW

PROJECT No.
15191.001

DRAWING No.
C504

REV.
2

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DATE	REVISION DESCRIPTION	BY

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800-338-1122 513-645-7000 513-645-7993 FAX

CONTECH CMP DETENTION SYSTEMS
CONTECH DYODS DRAWING

DYO90151 97 Warren Ave
DETENTION
Portland, ME
DETENTION SYSTEM

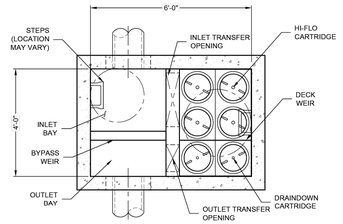
PROJECT No.:	SEQ. No.:	DATE:
65775	90151	3/30/2026

DESIGNED:	DRAWN:
DYO	DYO

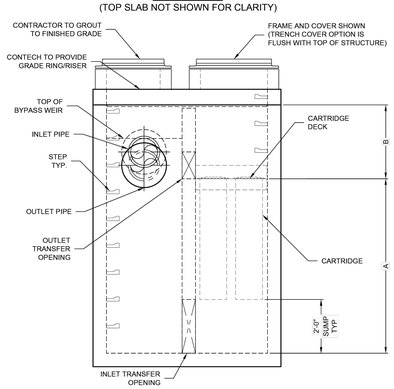
CHECKED:	APPROVED:
DYO	DYO

SHEET NO.: 1

FILE LOCATION: P:\ME\15191-ENGLISM_CONSTRUCTION\001-97 WARREN AVE-JHW\02-CAD_FILES\CIVIL\15191-001-C-DET.DWG, 2026.04.03, 12:09 PM



PLAN VIEW
(TOP SLAB NOT SHOWN FOR CLARITY)



ELEVATION VIEW

Jellyfish® Filter

THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING: U.S. PATENT NO. 8,287,726; 8,271,618; US 8,123,935; OTHER INTERNATIONAL PATENTS PENDING

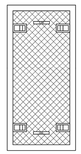
JELLYFISH DESIGN NOTES

JELLYFISH TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE LENGTH AND THE NUMBER OF CARTRIDGES. THE STANDARD PEAK DIVERSION STYLE WITH PRECAST TOP SLAB IS SHOWN. ALTERNATE OFFLINE VAULT, CURB INLET OR SHALLOW PIPE INLET OPTIONS ARE AVAILABLE. PEAK CONVEYANCE CAPACITY TO BE DETERMINED BY ENGINEER OF RECORD.

CARTRIDGE SELECTION

CARTRIDGE LENGTH	54"	40"	27"	15"
OUTLET INVERT TO STRUCTURE INVERT (A)	6'-6"	5'-4"	4'-3"	3'-3"
FLOW RATE HIGH-FLO / DRAINDOWN (CFS) (PER CART)	0.178 / 0.089	0.133 / 0.067	0.089 / 0.045	0.049 / 0.025
MAX. TREATMENT (CFS)	0.89	0.67	0.45	0.25
DECK TO INSIDE TOP (MIN) (B)	5'-0"	4'-0"	4'-0"	4'-0"

FRAME AND COVER
(DIAMETER VARIES)
N.T.S.



24" TRENCH COVER
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID	*
WATER QUALITY FLOW RATE (cfs)	*
PEAK FLOW RATE (cfs)	*
RETURN PERIOD OF PEAK FLOW (yrs)	*
# OF CARTRIDGES REQUIRED (HF / DD)	*
CARTRIDGE LENGTH	*

PIPE DATA:	I.E.	MAT'L	DIA	SLOPE %	HGL
INLET #1	*	*	*	*	*
INLET #2	*	*	*	*	*
OUTLET	*	*	*	*	*

SEE GENERAL NOTES 6-7 FOR INLET AND OUTLET HYDRAULIC AND SIZING REQUIREMENTS.

RIM ELEVATION	*

ANTI-FLOTATION BALLAST	WIDTH	HEIGHT
	*	*

NOTES/SPECIAL REQUIREMENTS:

* PER ENGINEER OF RECORD

GENERAL NOTES:
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR SITE SPECIFIC DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS REPRESENTATIVE. www.ContechES.com
3. JELLYFISH WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS-20 OR PER APPROVING JURISDICTION REQUIREMENTS, WHICHEVER IS MORE STRINGENT. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION AND SITE SPECIFIC EARTH COVER REQUIREMENT. TYPICAL CASTINGS SHALL MEET AASHTO M306 LOAD RATING AND BE CAST WITH THE CONTECH LOGO.
5. STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-857, ASTM C-918, AND AASHTO LOAD FACTOR DESIGN METHOD.
6. OUTLET PIPE INVERT IS EQUAL TO THE CARTRIDGE DECK ELEVATION.
7. THE OUTLET PIPE DIAMETER FOR NEW INSTALLATIONS IS RECOMMENDED TO BE ONE PIPE SIZE LARGER THAN THE INLET PIPE (WHERE APPLICABLE) AT EQUAL OR GREATER SLOPE.
8. NO PRODUCT SUBSTITUTIONS SHALL BE ACCEPTED UNLESS SUBMITTED 10 DAYS PRIOR TO PROJECT BID DATE, OR AS DIRECTED BY THE ENGINEER OF RECORD.

INSTALLATION NOTES:
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STRUCTURE.
C. CONTRACTOR WILL INSTALL AND LEVEL THE STRUCTURE, SEALING THE JOINTS, LINE ENTRY AND EXIT POINTS (NON-SHRINK GROUT WITH APPROVED WATERSTOP OR FLEXIBLE BOOT).
D. CARTRIDGE INSTALLATION, BY CONTECH, SHALL OCCUR ONLY AFTER SITE HAS BEEN STABILIZED AND THE JELLYFISH UNIT IS CLEAN AND FREE OF DEBRIS. CONTACT CONTECH TO COORDINATE CARTRIDGE INSTALLATION WITH SITE STABILIZATION.

CONTECH
ENGINEERED SOLUTIONS LLC
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9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
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JELLYFISH JFPD0406
STANDARD DETAIL
PEAK DIVERSION CONFIGURATION

Figure IV-1: City of Portland Recommended Tree List

Small Trees - (Mature Height < 25')

Common Name	Botanical Name	Cultivars	Uses	Native	Notes
Amelanchier or Shadbush	*Amelanchier*	"Autumn Brilliance", "Cumulus", "Robin Hill Pink"	Street tree/ Naturalize	x	Single stem tree forms
European Hornbeam	*Carpinus betulus*	Upright forms available	Street tree		
American Hornbeam	*Carpinus caroliniana*		Lawn/Landscape	x	
Hawthorn	*Crataegus crusgalli*	"Cusgall", "Winter King"	Street tree		Thornless
Flowering Crabapple	*Malus x*	"Adirondack", "Springsnow"	Street tree		
Sargent Cherry	*Prunus sargentii*	"Accolade","Pink Flair"	Street tree & Ornamental		
Striped Maple	*Acer pennsyvanicum*		Naturalize	x	Naturalizing in shaded areas
Magnolia	*Magnolia spp*	Many cultivars	Ornamental		
Hop-Hornbeam	*Ostrya virginiana*		Naturalize	x	Tolerates shade / understory
Sourwood	*Oxydendrum*		Ornamental	x	Interesting lat summer flower
"Arnold's Promise" Witchhaz	*Hamamelis*				

Medium Trees to Large trees 25' > 45'

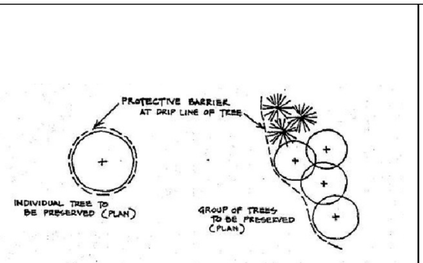
Common Name	Botanical Name	Cultivars	Uses	Native	Notes
Red Maple	*Acer rubrum*	"Armstrong", "Bowhall", "Karpick", "Red Pointe"	Street tree/ Landscape	x	Cultivars from upright to oval shape
Sugar Maple	*Acer saccharum*	"Green Mountain"	Naturalize Landscape use	x	
White Birch	*Betula papyrifera 'Renc*	"Renaissance Reflection"	Naturalize	x	
River Birch	*Betula nigra*	"Heritage"	Naturalize	x	
Yellow Birch	*Betula lenta*		Naturalize	x	
Hackberry	*Celtis laevigata*		Street tree		
Gingko	*Ginkgo biloba*	"Mygar", "Autumn Gold"	Street tree		
Thornless Honeylocust	*Gleditsia inermis*	"Streetkeeper" (Upright form)	Street tree		
Tuliptree	*Liriodendron*		Street tree		
Tupelo	*Nyssa sylvatica*		Naturalize		
Swamp White Oak	*Quercus bicolor*		Street tree/Naturalize		
Red Oak	*Quercus rubra*		Street tree/Naturalize		
Upright-Growing Oaks	*"Beacon" Oak*		Street tree/Naturalize		
	"Urban Pinnacle" Oak		Street tree/Naturalize		
	"Kindred Spirit" Oak		Street tree/Naturalize		
	"Regal Prince"		Street tree/Naturalize		
American Elm	*Ulmus americana*	"Accolade", "Princeton"	Street tree	x	
Lacebark Elm	*Ulmus parvifolia*		Street tree		Interesting bark
Zelkova	*Zelkova serrata*	Musashino Zelkova	Street tree		

Conifers

Common Name	Botanicanal Name	Cultivars	Uses	Native	Notes
Alaska Cedar	*Callitropsis nootkatens*	Alaska Weeping Cedar	Buffer planting		Fast growing
Red Cedar	*Juniperus virginiana*		Naturalize/ Ornamental	x	
Eastern Larch or Tamarack	*Larix larcina*		Naturalize/ Ornamental	x	Deciduous
Dawn Redwood	*Metasequoia*		Ornamental		Deciduous
White Spruce	*Picea glauca*		Naturalize	x	
Serbian Spruce	*Picea omorika*		Ornamental		Upright / good for narrow locations
Pitch Pine	*Pinus rigida*	Small sizes available	Naturalize	x	Full sun, sandy soils
White Cedar	*Tuja occidentalis*	"Dark American", "Techny"	Naturalize	x	Can be pruned into hedge

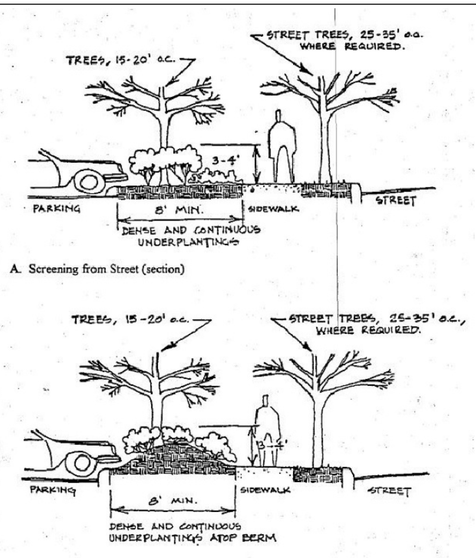
Notes:
In the case of street trees, small trees (<25') are preferred in locations with overhead utilities, and fruiting varieties should generally be avoided.

DATE:	CITY OF PORTLAND, MAINE TECHNICAL STANDARDS MANUAL	STANDARDS FOR LANDSCAPING AND PRESERVATION OF EXISTING VEGETATION SECTION IV	FIGURE:
NOV. 2022			IV-1
REVISED:	RECOMMENDED TREE LIST - PAGE 1		



NOT TO SCALE

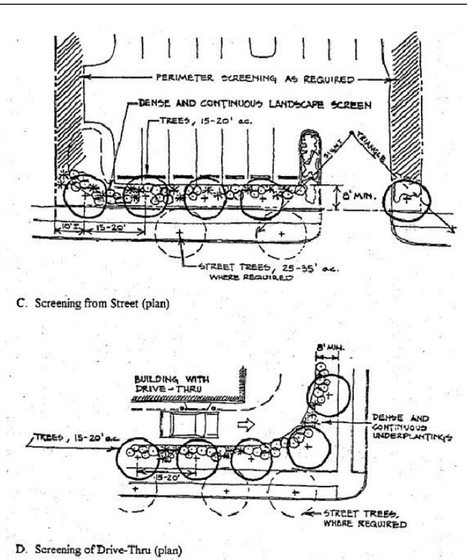
DATE:	CITY OF PORTLAND, MAINE TECHNICAL STANDARDS MANUAL	STDS FOR LANDSCAPING AND PRESERVATION OF EXISTING VEGETATION SECTION IV	FIGURE:
AUGUST 2009			IV-2
REVISED:	TREE PRESERVATION DETAIL		



A. Screening from Street (section)

NOT TO SCALE

DATE:	CITY OF PORTLAND, MAINE TECHNICAL STANDARDS MANUAL	STDS FOR LANDSCAPING AND PRESERVATION OF EXISTING VEGETATION SECTION IV	FIGURE:
AUGUST 2009			IV-6A
REVISED:	PARKING LOT SCREENING FROM PUBLIC VIEW		



C. Screening from Street (plan)

D. Screening of Drive-Thru (plan)

NOT TO SCALE

DATE:	CITY OF PORTLAND, MAINE TECHNICAL STANDARDS MANUAL	STDS FOR LANDSCAPING AND PRESERVATION OF EXISTING VEGETATION SECTION IV	FIGURE:
AUGUST 2009			IV-6B
REVISED:	PARKING LOT SCREENING FROM PUBLIC VIEW		

REV.	DATE	DESCRIPTION	BY	CHK.
2	2026.03.30	RESPONSE TO COMMENTS	PJM	JHW
1	2025.02.20	REVISED PER CITY COMMENTS. UPDATED SURVEY	PJM	JHW

DRAWING ISSUE STATUS
NOT FOR CONSTRUCTION

HALEY WARD
WWW.HALEYWARD.COM
One Merchants Plaza, Suite 701
Bangor, Maine 04401
207.989.4824

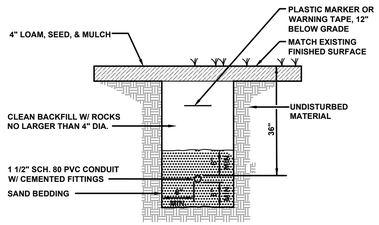
PROJECT
4-STORY SELF-STORAGE UNIT BUILDING
97 WARREN AVENUE, PORTLAND, MAINE
PEACHTREE AQUISITIONS, LLC

TITLE
SITE DETAILS

STATE OF MAINE
JOHN H. WHITTEN, JR.
No. 10414
04/08/2026
LICENSED PROFESSIONAL ENGINEER

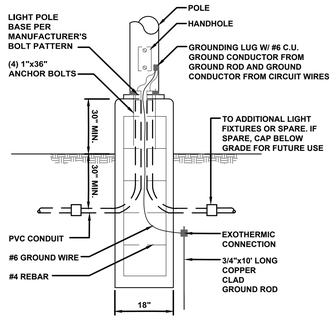
DATE	SCALE
2025.11.14	NTS
DRAWN BY: PJM	DESIGNED BY: PJM/MK
CHECKED BY: JHW	
PROJECT No. 15191.001	
DRAWING No. C505	REV. 2

FILE LOCATION: P:\ME\15191-ENGR\LSMA_CONSTRUCTION\001-97 WARREN AVE-JHW\02-CAD_FILES\CIVIL\15191-001-C-DTT.DWG, 2026.04.03, 12:55 PM



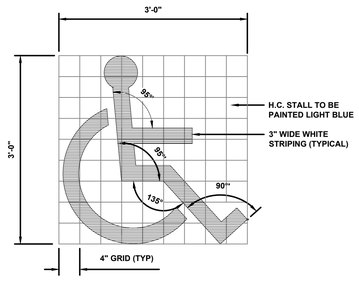
TYPICAL LIGHTING TRENCH DETAIL

NTS



TYPICAL LIGHT POLE BASE DETAIL

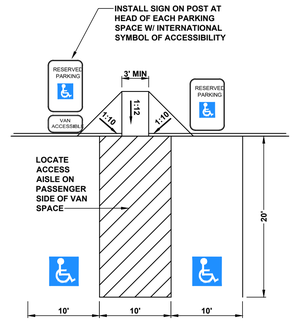
NTS



NOTE: CENTER SYMBOL WITHIN PARKING STALL

TYPICAL HANDICAP PARKING STALL SYMBOL

NTS



NOTES:

1. CAR PARKING SPACE: 8' WIDE MINIMUM W/ ACCESS AISLE 5' WIDE MINIMUM.
2. VAN PARKING SPACE 8' WIDE MINIMUM W/ ACCESS AISLE 8' WIDE MINIMUM.
3. SLOPES ACROSS PARKING SPACES IN EACH DIRECTION SHALL BE 2% MAX.

ACCESSBILE PARKING SPACE LAYOUT

NTS

NOTES:

1. SIGNS AND ASSOCIATED MOUNTING HARDWARE TO BE PROVIDED BY SITE CONTRACTOR.
2. VAN ACCESSIBLE SIGN ONLY REQUIRED WHERE INDICATED ON PLANS.
3. EQUIVALENT SIGNAGE OF DIFFERENT STYLES MAY BE SUBSTITUTED IF APPROVED BY ENGINEER.

TYPICAL HANDICAP PARKING SIGN DETAIL

NTS

TYPICAL RETAINING WALL SECTION

N.T.S.

NYLOPLAST DRAIN BASIN WITH DOME GRATE DETAIL

NTS

NOTES:

1 - 8" - 30" STANDARD GRATES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
2 - 12" - 30" FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05. 8" & 10" STANDARD GRATES FIT DIRECTLY ONTO DRAIN BASINS WITH THE USE OF A PVC BODY TOP. SEE DRAWING NO. 7001-110-045.
3 - DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTRICTIONS. SEE DRAWING NO. 7001-110-065.
4 - DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL), N-12 HP, & PVC SEWER (4" - 24").
5 - ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012.
6 - 12" - 30" STANDARD GRATES SHALL MEET H-20 LOAD RATING.
7 - 8" & 10" STANDARD GRATES ARE RATED FOR LIGHT DUTY APPLICATIONS ONLY; NO CONCRETE COLLAR NEEDED FOR LIGHT DUTY RATING.

NOTE:
1. PRETREATMENT BMP SHOULD BE INSPECTED BIANNUALLY OR WHEN SEDIMENT ACCUMULATES TO A HEIGHTS OF TWO INCHES OR GREATER, AND CLEANED OF ANY ACCUMULATED SEDIMENT.
2. FILTER STRIP SHALL BE REGULARLY MOWED AND MAINTAINED.

VEGETATED FILTER STRIP DETAIL

NTS

CONDENSOR CONCRETE PAD DETAIL

NTS

CONCRETE NOTES

1. ALL CONCRETE MATERIALS AND WORKMANSHIPS SHALL CONFIRM TO THE LATEST EDITIONS OF ACI 318 AND ACI 301.
2. CONCRETE EXPOSED TO FREEZING AND THAWING SHALL BE AS FOLLOWS UNLESS NOTED OTHERWISE:
   - A. MINIMUM COMPRESSIVE STRENGTH: 5000 PSI @ 28 DAYS
   - B. CEMENT: ASTM C150 TYPE II
   - C. AGGREGATE: ASTM C33 OR C330
   - D. MAXIMUM AGGREGATE SIZE: 1"
   - E. MAXIMUM WATER-CEMENT RATIO: 0.45
   - F. SLUMP: 2 TO 4 INCHES
   - G. AIR ENTRAINMENT: ASTM C260, 4 TO 6 PERCENT
   - H. WATER REDUCING ADMIXTURE: ASTM C494
     1. ADMIXTURES SHALL BE USED IN ACCORDANCE WITH ACI AND THE MANUFACTURERS RECOMMENDATIONS.
     2. USE OF CALCIUM CHLORIDE, CHLORIDE IONS OR OTHER SALTS IS NOT PERMITTED.
3. REINFORCING BARS SHALL CONFORM TO ASTM A615, GRADE 60, DEFORMED BARS. REINFORCING BARS TO BE WELDED SHALL BE ASTM A706, GRADE 60, DEFORMED BARS.
4. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A1064.
5. PROVIDE ALL NECESSARY CHAIRS, SHAIR BARS, SPACER, ETC WIRED SECURELY TO HOLD REINFORCMENT IN POSITION. THESE ACCESSORIES SHALL BE PLASTIC BOOTED WHERE CONCRETE IS TO BE EXPOSED TO WEATHER OR MOISTURE.
6. REINFORCING BARS SHALL BE PLACED IN ACCORDANCE WITH THE LATEST EDITION OF THE CRSI "RECOMMENDED PRACTICE FOR PLACING REINFORCING BARS".
7. CONCRETE COVER TO REINFORCING STEEL SHALL CONFORM TO ACI 318.
8. PROVIDE A 3/4" CHAMFER TO ALL EXPOSED CONCRETE EDGES.
9. WET CURE CONCRETE SLABS FOR A MINIMUM OF 3 DAYS.

FROST DEPTH: 5 FEET

REV.	DATE	DESCRIPTION	BY	CHK
2	2026.03.30	RESPONSE TO COMMENTS	PJM	JHW
1	2025.02.20	REVISED PER CITY COMMENTS, UPDATED SURVEY	PJM	JHW

DRAWING ISSUE STATUS

NOT FOR CONSTRUCTION

HALEY WARD
WWW.HALEYWARD.COM
One Merchants Plaza, Suite 701
Bangor, Maine 04401
207.989.4824

PROJECT

4-STORY SELF-STORAGE UNIT BUILDING
97 WARREN AVENUE, PORTLAND, MAINE
PEACHTREE AQUISITIONS, LLC

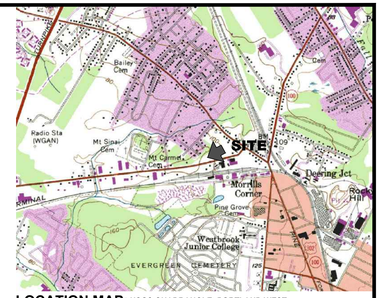
TITLE

SITE DETAILS

STATE OF MAINE
JON H. WHITTEN, JR.
No. 10414
04/03/2026
LICENSED PROFESSIONAL ENGINEER

DATE	SCALE
2025.11.14	NTS
DRAWN BY	DESIGNED BY / CHECKED BY
PJM	PJM/MK / JHW
PROJECT No.	
15191.001	
DRAWING No.	REV.
C506	2

FILE LOCATION: P:\ME\15191-ENGELSMA_CONSTRUCTION\001-97 WARREN AVE-JHW\02-CAD_FILES\CIVIL\15191-001-C-DET.DWG, 2026.04.03, 12:05 PM



LOCATION MAP: USGS QUADRANGLE: PORTLAND WEST
SCALE: 1"=2000'
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PRE LEGEND:

	PROPERTY LINE
	WATERSHED BOUNDARY LINE
1	WATERSHED DESIGNATION
	TIME OF CONCENTRATION FLOW PATH
50' SF	FLOW PATH DESCRIPTION
SF	SHEET FLOW
SC	SHALLOW CONCENTRATED FLOW
CF	CHANNEL FLOW
PF	PIPE FLOW

HSG-D
HSG-C
1
2
3
4
1P
2P
4P
7P
50' SF S: 0.054
45' SC S: 0.02
100' SC S: 0.015
50' SC S: 0.056
50' SF S: 0.06
70' SC S: 0.05
170' SC S: 0.015
50' SF S: 0.05
195' SC S: 0.05
100' SF S: 0.034
30' SC S: 0.03
160' PF S: 0.004
210' SC S: 0.013
22' PF S: 0.0182
N40°31'53"E 314.00' (PLAN 314.00')
S76°19'38"W 314.00'
S13°27'10"E 314.00' (PLAN 291.99')
N76°19'38"E 314.00' (PLAN 314.00')
S40°31'53"W 314.00' (PLAN 314.00')
WARREN AVENUE
BISHOP STREET CONNECTOR

PLAN REFERENCES:
1. REFERENCE IS MADE TO A PLAN ENTITLED "BOUNDARY SURVEY & TOPOGRAPHICAL MAP WITH EXISTING CONDITIONS' PREPARED BY R.W. EATON ASSOCIATES AND DATED APRIL 24TH, 2018

GRAPHIC SCALE
30 0 15 30 60 90
(IN FEET)
1 inch = 30 ft.

REV.	DATE	DESCRIPTION	BY	CHK
2	2026.03.30	RESPONSE TO COMMENTS	PJM	JHW
1	2025.02.20	REVISED PER CITY COMMENTS, UPDATED SURVEY	PJM	JHW

DRAWING ISSUE STATUS
NOT FOR CONSTRUCTION

HALEY WARD
WWW.HALEYWARD.COM
One Merchants Plaza, Suite 701
Bangor, Maine 04401
207.989.4824

PROJECT
4-STORY SELF-STORAGE UNIT BUILDING
97 WARREN AVENUE, PORTLAND, MAINE
PEACHTREE AQUISITIONS, LLC

TITLE
PRE DEVELOPMENT HYDROLOGY PLAN

STATE OF MAINE
JOHN H. WHITTEN, JR.
No. 10414
04/03/2026
LICENSED PROFESSIONAL ENGINEER

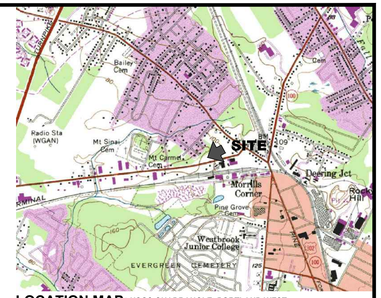
DATE	SCALE
2025.11.14	1"=30'

DRAWN BY	DESIGNED BY	CHECKED BY
PJM	PJM/MK	JHW

PROJECT No. 15191.001

DRAWING No. **C701** REV: **2**

FILE LOCATION: P:\ME\15191-ENGR\LSMA_CONSTRUCTION\001-97 WARREN AVE-JHW\02-CAD_FILES\CIVIL\15191.001-C-HY.DWG, 2026-04-03, 12:55 PM



LOCATION MAP: USGS QUADRANGLE: PORTLAND WEST
SCALE: 1"=2000'
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POST LEGEND:

	PROPERTY LINE
	WATERSHED BOUNDARY LINE
1	WATERSHED DESIGNATION
	TIME OF CONCENTRATION FLOW PATH
50' SF	FLOW PATH DESCRIPTION
SF	SHEET FLOW
SC	SHALLOW CONCENTRATED FLOW
CF	CHANNEL FLOW
PF	PIPE FLOW

HSG-D

HSG-C

WARREN AVENUE

BISHOP STREET CONNECTOR

PROPOSED 4-STORY SELF-STORAGE BUILDING 22,189 S.F FFE: 100.70

1P 2P 4P 5P 6P

1: 100' SC, S: 0.015; 50' SC, S: 0.056
2: 50' SF, S: 0.06; 70' SC, S: 0.05; 170' SC, S: 0.015
3: 210' SF, S: 0.03
4: 100' SF, S: 0.034; 30' SC, S: 0.03; 160' PF, S: 0.004
5: 45' SF, S: 0.04
6: 210' SC, S: 0.013
1: 50' SF, S: 0.054; 45' SC, S: 0.02

S13°55'20"E 55.70' (PLAN 55.70')

N01°43'17"E (PLAN N01°43'17"E)

S13°55'20"E 55.70' (PLAN 55.70')

PLAN REFERENCES:

1. REFERENCE IS MADE TO A PLAN ENTITLED "BOUNDARY SURVEY & TOPOGRAPHICAL MAP WITH EXISTING CONDITIONS' PREPARED BY R.W. EATON ASSOCIATES AND DATED APRIL 24TH, 2018

GRAPHIC SCALE

30 0 15 30 60 90

(IN FEET)
1 inch = 30 ft.

REV.	DATE	DESCRIPTION	BY	CHK
2	2026.03.30	RESPONSE TO COMMENTS	PJM	JHW
1	2025.02.20	REVISED PER CITY COMMENTS, UPDATED SURVEY	PJM	JHW

DRAWING ISSUE STATUS

NOT FOR CONSTRUCTION

HALEY WARD
WWW.HALEYWARD.COM
One Merchants Plaza, Suite 701
Bangor, Maine 04401
207.989.4824

PROJECT

4-STORY SELF-STORAGE UNIT BUILDING
97 WARREN AVENUE, PORTLAND, MAINE
PEACHTREE AQUISITIONS, LLC

TITLE

POST DEVELOPMENT HYDROLOGY PLAN

STATE OF MAINE
JOHN H. WHITTEN, JR.
No. 10414
04/03/2026
LICENSED PROFESSIONAL ENGINEER

DATE	SCALE
2025.11.14	1"=30'

DRAWN BY	DESIGNED BY	CHECKED BY
PJM	PJM/MK	JHW

PROJECT No. 15191.001

DRAWING No. C702 REV. 2

FILE LOCATION: P:\ME\15191-ENGL\SMA_CONSTRUCTION\001-97 WARREN AVE-JHW\00-CAD_FILES\CIVIL\15191-001-C-HYT-DWG, 2026.04.03, 12:56 PM

STORAGE FACILITY

97 WARREN AVE
PORTLAND, ME 04103

ABBREVIATION LIST

ABOVE FINISHED FLOOR	AFF	LAMINATED PLASTIC	LAM
ADJUSTABLE	ADJ	LANDLORD	LL
ALUMINUM	ALUM	LEFT-HAND	LH
ANCHOR BOLT	AB	LONG LEG HORIZONTAL	LLH
APPROXIMATELY	APPROX	LONG LEG VERTICAL	LLV
ARCHITECTURAL	ARCH	LONG	LG
AT	@	MANHOLE	MH
BEAM	BM	MANUFACTURER	MFR
BEARING	BRG	MASONRY OPENING	MO
BLOCKING	BLKG	MATERIAL	MATL
BOARD	BD	MAXIMUM	MAX
BOTTOM	BTM or B/	MECHANICAL	MECH
BUILDING	BLDG	METAL	MTL
CATCH BASIN	CB	MINIMUM	MIN
CEILING	CLNG	MISCELLANEOUS	MISC
CENTER TO CENTER	C/C	MOUNTED	MTD
CENTERLINE	CL	NOT APPLICABLE	NA
CLEAN OUT	CO	NOT IN CONTRACT	NIC
COLUMN	COL	NOT TO SCALE	NTS
CONCRETE MASONRY UNIT	CMU	ON CENTER	OC or o.c.
CONCRETE	CONC	OPENING	OPNG
CONSTRUCTION	CONST	OPPOSITE	OPP
CONTINUOUS	CONT	OUTSIDE DIAMETER	OD
CONTROL JOINT	CJ	OVERFLOW ROOF DRAIN	ORD
COURSE	CRS	PAINT	PT
DIAMETER	DIA	PAIR	PR
DIMENSION	DIM	PLASTIC LAMINATE	PLAM
DOWN	DN	PLATE	PL
DOWNSPOUT	DS	PLUS OR MINUS	+/-
DRAWING	DWG	PLYWOOD	PLWD
EACH FACE	EF	POINT OF SALE	POS
EACH WAY	EW	PRESERVATIVE TREATED	PPT
EACH	EA	PROPERTY LINE	P/L
ELECTRIC	ELEC	QUARRY TILE	QT
ELECTRIC WATER COOLER	EWC	RADIUS	RAD or R
ELEVATION	ELEV	RAIN WATER CONDUCTOR	RWC
EQUAL	EQ	REINFORCED	REINF
EXISTING	EXIST	REQUIRED	REQ'D
EXPANSION JOINT	EJ	REVISION	REV
EXTERIOR	EXT	RIGHT HAND	RH
EXTERIOR INSULATION & FINISH SYSTEM	EIFS	RIGHT OF WAY	ROW
FIBER REINFORCED PLASTIC	FRP	ROOF DRAIN	RD
FINISH	FIN	SECTION	SECT
FINISHED FLOOR	FF	SHEET	SHT
FIRE EXTINGUISHER CABINET	FEC	SIMILAR	SIM
FIRE RETARDANT TREATED	FRT	SPECIFICATION	SPEC
FIXTURE	FIXT	SQUARE FEET	SF
FLOOR	FLR	STAINLESS STEEL	SS
FLOOR DRAIN	FD	STANDARD	STD
GALVANIZED	GALV	STEEL	STL
GAUGE	GA	STRUCTURAL	STRUCT
GENERAL CONTRACTOR	GC	SUSPENDED	SUSP
GLASS	GL	TELEPHONE	TEL
GLASS FIBER REINFORCED CONCRETE	GFRC	TONGUE AND GROOVE	T&G
GLASS FIBER REINFORCED GYPSUM	GFRG	TOP OF	T/
GYPSUM BOARD	GYP BD	TOP OF JOIST	TOJ
HANDICAPPED	HCPD	TOP OF MASONRY	TOM
HARDWOOD	HDWD	TOP OF STEEL	TOS
HEATING/VENTILATING/AIR CONDITIONING	HVAC	TYPICAL	TYP
HEAVY DUTY	HD	UNLESS NOTED OTHERWISE	UNO
HOLLOW CORE	HC	VERTICAL	VERT
HOLLOW METAL	HM	VINYL COMPOSITION TILE	VCT
HORIZONTAL	HORIZ	VINYL TILE	VT
HOSE BIBB	HB	VINYL WALL COVERING	VWC
HOT WATER HEATER	WH	WALL COVERING	WC
HOUR	HR	WELDED WIRE FABRIC	WWF
INSIDE DIAMETER	ID	WITH	W/
INSULATION	INSUL	WITHOUT	W/O
INTERIOR	INT	WOOD	WD
JOIST BEARING	JB	WORK POINT	WP

GENERAL NOTES

1. THE GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION, AIA A-201, 2017 IS APPLICABLE TO THE PROJECT AND INCLUDED HERE-IN BY REFERENCE.
2. DO NOT SCALE DRAWINGS. REQUEST CLARIFICATION FROM THE ARCHITECT TO RESOLVE DISCREPANCIES OR TO SUPPLY ADDITIONAL INFORMATION.
3. INTERIOR DIMENSIONS ARE TO FACE OF STUD - U.N.O.
4. FINISH FLOOR ELEVATIONS SHALL BE FROM TOP OF CONCRETE FLOOR SLAB OR TOP OF FLOOR SHEATHING WHERE APPLICABLE - U.N.O.
5. WORK IS TO BE PERFORMED IN ACCORDANCE WITH APPLICABLE CODES, CONDITIONS STATED ON THE PERMIT DOCUMENTS, LOCAL ORDINANCES, THE U.S. DEPARTMENT OF JUSTICE 2010 ADA STANDARDS, AND THE REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION (AHJ).
6. WOOD NOT CLASSIFIED AS INTERIOR FINISH MATERIAL SHALL BE FIRE RETARDANT TREATED. USE AN EXTERIOR GRADE FRT PRODUCT IN EXTERIOR WALL CONSTRUCTION, ROOF RELATED CONSTRUCTION AND FLASHING CONDITIONS.
7. WOOD IN CONTACT WITH CONCRETE SHALL BE PRESSURE PRESERVATIVE TREATED.
8. AT PENETRATIONS THROUGH FIRE RATED ASSEMBLIES, PROVIDE PROTECTION MEETING THE REQUIREMENTS OF ASTM E-814 AND BEARING THE APPROPRIATE U.L. LABEL FOR THE CONDITION.
9. DESIGN & SELECTION OF SUPPORTS, BRACES, ANCHORS, ATTACHMENTS AND RELATED FASTENERS, UNLESS SHOWN ON THE DRAWINGS OR IN THE SPECIFICATIONS, IS THE RESPONSIBILITY OF THE INSTALLING CONTRACTOR, UTILIZING INDUSTRY STANDARD MATERIALS AND METHODS SUITABLE TO THE CONDITION.
10. WALL AND CEILING MOUNTED ITEMS, INCLUDING BUT NOT LIMITED TO REGISTERS, DIFFUSERS, GRILLES, SPEAKERS, CLEAN-OUTS AND COVER PLATES, WHETHER FACTORY PRE-FINISHED OR NOT, WHICH DO NOT MATCH THE ADJACENT WALL OR CEILING COLOR SHALL BE FIELD PAINTED TO MATCH, UNLESS OTHERWISE NOTED. COLOR AND FINISH TO BE APPROVED BY THE ARCHITECT.
11. COMPLY WITH SPECIAL WORKING CONDITIONS RELATING TO THE PROJECT, INCLUDING BUT NOT LIMITED TO REQUIREMENTS FOR TEMPORARY PROTECTION, TRASH MANAGEMENT, NOISE, LIGHT, DUST AND POLLUTION CONTROL, AND LIMITATIONS ON WORKING HOURS.

CONTACTS

PROJECT MANAGER
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MEP ENGINEERING

ELECTRICAL
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MECHANICAL
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PLUMBING
CONTACT: DOUGLAS MARXEN
E: DMARXEN@BLUESTREAK-CONSULTING.COM

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CIVIL ENGINEER
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POWDER SPRINGS, GA 30127
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E: CHRIS@COMPASSBUILDING.COM

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ENGINEER (MECH & PLUMB)
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ENGINEER (STRUC)
HECKMAN ENGINEERING
THOMAS HECKMAN
2020 BROOKE FOREST CT
CONTACT: ALPHARETTA, GA 30022
PH: (404) 919-7169
E: THOMAS@COMPASSBUILDING.COM

PROJECT SUMMARY

THE PROJECT CONSISTS OF A NEW, 4-STORY, 88,756 SQ. FT. STORAGE FACILITY BUILDING IN PORTLAND, MAINE. WORK INCLUDES CIVIL WORK TO THE SITE UNDER SEPARATE COVER, THE SHELL BUILDING, INTERIOR SELF STORATE UNITS, AND OFFICE SPACE, ADA RESTROOMS, AND SUPPORTING UTILITY SPACES.

DEFERRED SUBMITTALS

SHOP DRAWINGS THAT CONTAIN CALCULATIONS SHALL BE SEALED/SIGNED BY AN ENGINEER REGISTERED IN MAINE. SHOP DRAWINGS SHALL BE SUBMITTED TO THE ENGINEER OF RECORD FOR APPROVAL. UPON APPROVAL, DOCUMENTS SHALL BE SUBMITTED TO THE BUILDING JURISDICTION FOR REVIEW. PLAN CHECK AND PERMIT FEES ARE THE SUBCONTRACTOR'S RESPONSIBILITY

1. FIRE SPRINKLER AND ALARM SYSTEM SHOP DRAWINGS
2. ELEVATOR SHOP DRAWINGS
3. STEEL STAIR SHOP DRAWINGS

SPECIAL INSPECTIONS

SPECIAL INSPECTIONS SHALL BE PROVIDED FOR THE ITEMS LISTED BELOW IN ADDITION TO INSPECTIONS CONDUCTED BY THE BUILDING JURISDICTION. REFERENCE STRUCTURAL.

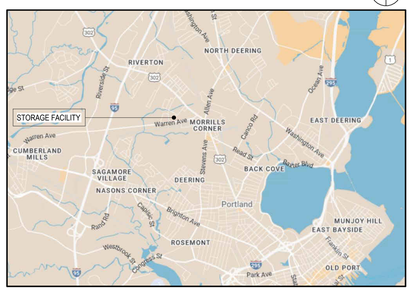
1. SOIL CONDITIONS
2. CONCRETE CONSTRUCTION
3. MASONRY CONSTRUCTION
4. INSPECTION OF FABRICATORS
5. SPECIAL CASES
6. STEEL CONSTRUCTION
7. STEEL CONSTRUCTION OTHER THAN STRUCTURAL STEEL
8. WIND-RESISTING COMPONENTS
9. STRUCTURAL STEEL FOR SEISMIC RESISTANCE
10. STRUCTURAL WOOD FOR SEISMIC RESISTANCE
11. COLD-FORMED STEEL LIGHT-FRAME CONSTRUCTION FOR SEISMIC RESISTNACE
12. DESIGNATED SEISMIC SYSTEMS VERIFICATION

PERMITS BY OTHERS

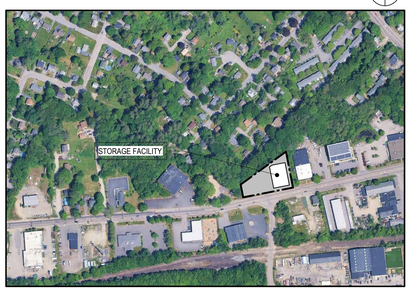
THE FOLLOWING ITEMS ARE INCLUDED IN THIS PROJECT FOR REFERENCE AND COORDINATION, BUT SHALL BE PERMITTED VIA SEPARATE SUBMITTAL:

1. BUILDING SIGNAGE

VICINITY MAP



KEY PLAN



APPLICABLE CODES

THE CITY OF PORTLAND HAS ADOPTED THE FOLLOWIGN CODES AND STANDARDS:

2025	MAINE UNIFORM BUILDNG AND ENERGY CODE (MUBEC):
2021	INTERNATIONAL BUILDING CODE (IBC)
2021	INTERNATIONAL MECHANICAL CODE (IMC)
2021	INTERNATIONAL ENERGY CONSERVATION CODE (IECC)
2021	UNIFORM PLUMBING CODE (UPC)
2023	NATIONAL ELECTRIC CODE (NEC)
2018	NFPA 1 NATIONAL FIRE CODE
2018	NFPA 101 LIFE SAFETY CODE
2010	FEDERAL ADA STANDARDS FOR ACCESSIBLE DESIGN

ALL LOCAL AMENDMENTS TO THESE CODES

APPLICABLE ZONING ORDINANCES

SPACE AND BULK STANDARDS:

	REQUIRED:	PROPOSED:
ZONE: B-4		
LOT SIZE:	10,000 S.F. MIN.	APPROX. 57,658 S.F.
FRONTAGE:	60' MIN.	160'
YARD DIMENSIONS:		
FRONT YARD:	N/A	0
REAR YARD:	MIN. 20' (ABUTTING RES. ZONE)	20'
SIDE YARD:	N/A	20'
IMPERVIOUS RATIO:	80% MAX.	53.7% (31,008 S.F. IMPERVIOUS AREA)
BUILDING HEIGHT:	65' MAX.	APPROX. 50'
BUILD-TO ZONE:	20' MIN.	APPROX. 4'
BUILD-TO PERCENTAGE:	50% MIN.	100%
SIGNAGE AREA MAX.:	1,200 S.F.	388 S.F. (FINAL SIGNAGE DESIGNED AND PERMITTED BY OTHERS)

BUILDING DETAILS:

NO. STORIES:	4
NO. ELEVATORS:	2
NO. STAIRS:	2
STORAGE UNIT COUNT:	
1ST FLOOR:	APPROX. 160 UNITS
2ND, 3RD, 4TH FLOOR:	APPROX. 473 UNITS
TOTAL:	APPROX. 633 UNITS

CODE SUMMARY

AUTHORITY HAVING JURISDICTION: CITY OF PORTLAND
GOVERNING FIRE DISTRICT: PORTLAND FIRE DEPARTMENT

BUILDING OCCUPANCY CLASSIFICATION (Section 302):
MIXED (Section 508.3): **S-1 / B - NON-SEPARATED**

CONSTRUCTION TYPE (Section 602): **IIB, SPRINKLERED**
ALLOWABLE BUILDING HEIGHT AND AREA (Ch. 5)
Allowable Height: 75'-0"
Proposed Height: **50'-0"**
Allowable Stories Above Grade: 4
Proposed Stories Above Grade: **4**
Tabular Area Per Story (Fully Sprinklered SI): 52,500 SF
Allowable Building Area: $A_a = A_t + (NS \times I_f) \times S_a$
$A_a = 52,500+(17,500 \times 0.50)x3$
A_a = **78,750 SF**
I_f = 0.50 (Table 506.3.3)

Proposed Building Area:
Level 1 22,189 SF
Level 2 22,189 SF
Level 3 22,189 SF
Level 4 22,189 SF
88,756 SF cululative for all four stories

FIRE RESISTANCE RATING REQUIREMENTS (Table 601):
STRUCTURAL FRAMING: **0** HRS
BEARING WALLS (Exterior & Interior): **0** HRS
NONBEARING WALLS (Exterior & Interior): **0** HRS
FLOOR CONSTRUCTION: **0** HRS
ROOF CONSTRUCTION **0** HRS
PARTY WALL (TABLE 706.3.9): **N/A**

FIRE ALARM AND SPRINKLER SYSTEMS (CHAPTER 9):
An automatic sprinkler system shall be provided that complies with section 903.3.1.1.
A fire alarm system shall be provided that complies with NFPA 72 and section 907.2.10.

OCCUPANT LOAD CALCULATIONS (Table 1004.5):
(Square Footage / Occupant Load Factor = Number of Occupants)
B: **885** SF / 150 SF Per Occupant = **6** OCC.
S-1: 500 GSF Per Occupant = **178** OCC.
Level 1 - 21,304 SF Gross = 43 OCC.
Level 2 - 22,189 SF Gross = 45 OCC.
Level 3 - 22,189 SF Gross = 45 OCC.
Level 4 - 22,189 SF Gross = 45 OCC.
184 OCC. Total

NUMBER OF EXITS (Section 1006):
Egress Width Required
184 OCC. x 0.20" Per Occupant = **36.8"** Required
Egress Width Provided
1 Door x 36" = 34" Clear
1 Door x 140" = 138" Clear
2 Door x 36" = 34" Clear
Total Egress Width Provided: **206"** Provided (COMPLY)

Minimum Number of Exits: 2 Exits
Number of Exits Provided: **4 Exits**
Maximum Exit Access Travel Distance: 250'-0"
Exit Access Travel Distance Provided: REFER TO LIFE SAFETY PLAN (COMPLY)
Maximum Exit Common Path of Egress Travel Distance: 100'-0"
Exit Common Path of Egress Travel Distance Provided: REFER TO LIFE SAFETY PLAN (COMPLY)

PLUMBING FIXTURES (Ch. 29):
UNISEX: = **184** Occupants
S-1: Toilets (1 per 100) / Lavatories (1 per 100) **2** Toilet / **2** Lav (Required)
Actual Fixtures Provided: **2** Toilets / **0** Urinal / **2** Lavs

Drinking Fountains Required = 1 Per 1000 Occupants **2** Provided (1 Hi-Low with Bottle Filler)
Service Sink Required = 1 **1** Provided

UNIT COUNTS AND ACCESSIBILITY

THE PROJECT CONTAINS A TOTAL OF 612 STORAGE UNITS. PER THE 2010 ADA STANDARDS FOR ACCESSIBLE DESIGN, SECTION 225.3, THE REQUIRED NUMBER OF ACCESSIBLE UNITS SHALL BE 10 PLUS 2% OF THE TOTAL NUMBER OF UNITS OVER 200.

10 + ⌈.02 (612 - 200)⌉
10 + ⌈.02 (412)⌉
10 + ⌈8.24⌉
19 ACCESSIBLE UNITS REQUIRED

THE ACCESSIBLE UNITS HAVE BEEN PROPORTIONALLY DISTRIBUTED ACROSS THE UNIT TYPES AS SHOWN BELOW:

UNIT SIZE	COUNT	No. ACCESSIBLE
5'x5'	49	1
5'x10'	93	4
7.5'x10'	63	2
10'x5'	34	See 5'x10' No.
10'x10'	171	5
10'x15'	103	3
10'x20'	69	2
10'x25'	12	1
10'x30'	18	1
TOTAL No.of UNITS: 612		19

ACCESSIBLE UNITS ARE INDICATED ON THE PLANS WITH THIS SYMBOL:

ACCESSIBLE UNITS SHALL BE PROVIDED WITH THE UNIT MANUFACTURER'S STANDARD INDOOR ACCESSIBILITY COMPLIANCE KIT FOR OVERHEAD DOOR UNITS, INCLUDING:
- ACCESSIBLE UNIT IDENTIFICATION PLACARD WITH BRAILLE
- BOLT LATCH WITH DOOR LOOP
- INTERIOR HANDLE PULL STRAP
- EXTERIOR PULL STRAP LOOP WITH 'S' HOOK

UNIT CRITERIA

BASIS OF DESIGN: TRACHTE NEW CONSTRUCTION SYSTEM
- 8'-0" HIGH WALLS
- OVERHEAD DOORS FOR ALL UNIT SIZES
- BRIGHT WHITE RIGID-RIB PANEL AT CORRIDORS
- GALVALUME PARTITIONS BETWEEN UNITS AND WHERE INDICATED ON PLANS AT EXTERIOR WALLS
- 16" JAMBS AT OVERHEAD DOORS
- BURGLER BARS FROM 8'-0" TO UNDERSIDE OF DECK AT 8" O.C. ON FIRST, SECOND, AND THIRD FLOOR.
- BRIDGING ANGLES AND BRACING WITH WIRE MESH HORIZONTAL OVER UINTS ON FOURTH FLOOR.
- 4' HIGH DIAMOND PLATE CORNER GUARDS AT OUTSIDE CORNERS
- 12" HIGH DIAMOND PLATE KICK PLATES AT CORRIDOR WALLS
- 12" HIGH DIAMOND PLATE JAMB GUARDS AT DOOR JAMBS
- PROVIDE FIRE EXTINGUISHER PANELS AT LOCATIONS IDENTIFIED ON PLANS
- PROVIDE ASSESSIBLE COMPLIANCE KITS AT UNITS INDICATED ON PLANS TO BE ACCESSIBLE

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DONALD W. ALEXANDER | ARCHITECT

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STORAGE FACILITY
97 WARREN AVE
PORTLAND, ME 04103

Project No.: 25.0991
Drawn By: CB

Date	Issue
03-30-26	Bid & Permit

G0.0

COVER SHEET

1 LIFE SAFETY PLAN - LEVEL 1

1/8" = 1'-0"

GENERAL NOTES

A. REFR TO CODE SUMMARY ON SHEET G0.0 FOR ADDITIONAL INFORMATION.

B. REFER TO DOOR SCHEDULE ON SHEET A9.0 FOR HARDWARE.

C. ALL PENETRATIONS OF PIPING, CONDUIT, OR OTHER MATERIALS THROUGH FIRE RESISTANCE RATED CONSTRUCTION SHALL BE SEALED WITH AN APPROVED FIRESTOPPING SYSTEM APPROPRIATE TO THE RATING OF THE ASSEMBLY BEING PENETRATED.

LEGEND

EXIT TAG

DOOR # — DOOR NUMBER
DOL — DESIGN OCC. LOAD
XX" MOL — MAX. OCC. LOAD
ADDITIONAL NOTES
CLEAR WIDTH (INCHES)

USE/ OCCUPANCY TAG

USE GROUP
USE OCC — OCCUPANCY

FE — FIRE EXTINGUISHER

FEC — FIRE EXTINGUISHER W/ CABINET

1 HR. WALL

2 HR. WALL

TRAVEL DISTANCE = XXX'

COMMON PATH OF TRAVEL = XX'

DIAGONAL DISTANCE = XX'
1/3 (SPRINKLED) = XX' MIN.

EXIT SEPARATION DISTANCE = XX'
COMPLIES

FIRE EXTINGUISHERS

CLASS A HAZARD (ORDINARY)
- MAXIMUM FLOOR AREA PER UNIT OF A = 1,500 SQ. FT. (EXAMPLE: 2A SHALL PROTECT 3,000 SQ. FT.)
- MAXIMUM TRAVEL DISTANCE TO EXTINGUISHER = 75'

CLASS B HAZARD (ORDINARY)
- MAXIMUM TRAVEL DISTANCE TO 10B RATED EXTINGUISHER = 30'
- MAXIMUM TRAVEL DISTANCE TO 20B RATED EXTINGUISHER = 50'

CLASS C HAZARD
- REQUIRED WHERE ENERGIZED ELECTRICAL EQUIPMENT CAN BE ENCOUNTERED
- SHALL BE SIZED AND LOCATED ON THE BASIS OF CLASS A OR CLASS B HAZARD

CLASS K HAZARD
- REQUIRED WHERE THERE IS A POTENTIAL FOR FIRES INVOLVING COMBUSTIBLE COOKING MEDIA.
- MAXIMUM TRAVEL DISTANCE TO EXTINGUISHER = 30'

GENERAL NOTES
- A. DESIGN CRITERIA PER APPLICABLE BUILDING/FIRE CODES AND NFPA 10.
- B. PROVIDE MINIMUM 2A-10B:C EXTINGUISHERS AS INDICATED ON PLAN OR AS DIRECTED BY AHJ.
- C. COORDINATE FINAL QUANTITIES, LOCATIONS AND INSTALLATION w/ AHJ.
- D. EXTINGUISHERS SHALL HAVE A GROSS WEIGHT NOT TO EXCEED 40 LBS.
- E. EXTINGUISHERS SHALL BE INSTALLED w/ BOTTOM @ 4"AFF MIN.
- F. EXTINGUISHERS SHALL BE INSTALLED w/ TOP @ 3'-6"AFF MAX - U.N.O.
- G. EXTINGUISHER CABINETS (WHERE OCCUR) SHALL BE INSTALLED w/ TOP OF CABINET @ 4'-0"AFF MAX - U.N.O.

ACCESSIBILITY SIGNAGE TYPES

TYPE	DESCRIPTION	VISUAL LETTERING	RAISED LETTERING	BRAILLE	PICTOGRAM	NOTES
AU	ACCESSIBLE UNIT IDENTIFICAION	X	X	X	X	1, 2
EX	EXIT SIGN	X	X	X		1
RI	ROOM INDENTIFICATION SIGN	X	X	X		1, 3
RR	UNISEX SINGLE-USER RESTROOM SIGN	X	X	X	X	1
TW	TWO-WAY COMMUNICATION SYSTEM INSTRUCTIONS	X				4

NOTES:
1. REFER TO SHEET G2.0 FOR REQUIREMENTS OF RAISED LETTERING, BRAILLE, AND MOUNTING.
2. PROVIDED AS A PART OF UNIT MANUFACTURER'S COMPLIANCE KITS. REFER TO "UNIT COUNTS AND ACCESSIBILITY" ON G0.0 AND 15/A9.6.
3. ROOM NAME SHALL BE AS DETERMINED BY OWNER. INCLUDE IDENTIFED ROOM NAMES IN SIGNANGE SUBMITTAL FOR REVIEW AND APPROVAL.
4. CONTENT OF THE TWO-WAY COMMUNICAION INSTRUCTIONS SHALL BE PER THE MANUFACTURER. EACH SIGN SHALL IDENTIFY THE LOCATION AS REQUIRED BY IBC 2021 1009.8.2.

DONALD W. ALEXANDER | ARCHITECT

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STORAGE FACILITY

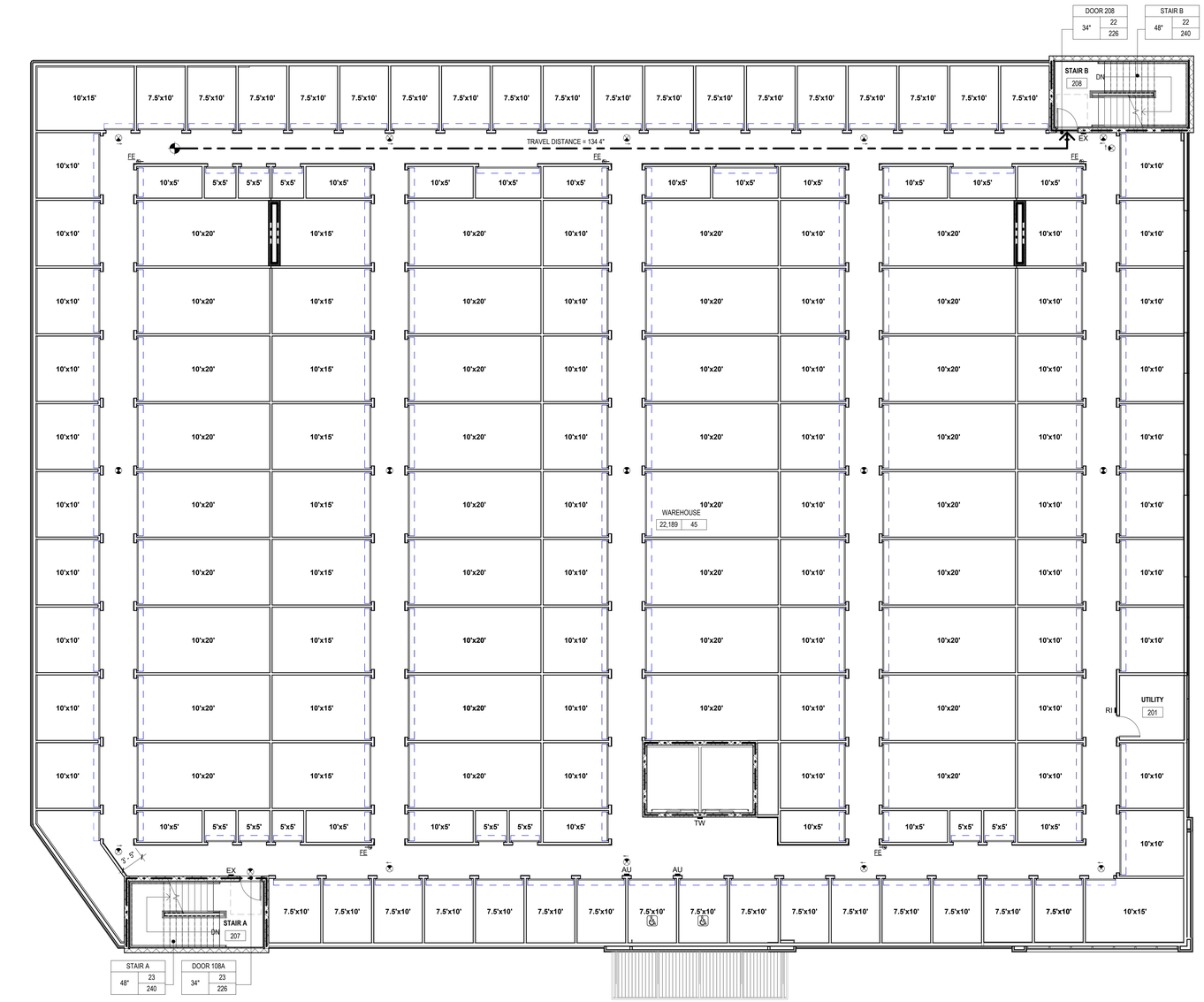
97 WARREN AVE
PORTLAND, ME 04103

Project No.:	25.0991
Drawn By:	CB

Date	Issue
03-30-26	Bid & Permit

G1.1

LIFE SAFETY PLAN - LEVEL 1



1 LIFE SAFETY PLAN - LEVEL 2
1/8" = 1'-0"

GENERAL NOTES

A. REFR TO CODE SUMMARY ON SHEET G0.0 FOR ADDITIONAL INFORMATION.

B. REFER TO DOOR SCHEDULE ON SHEET A9.0 FOR HARDWARE.

C. ALL PENETRATIONS OF PIPING, CONDUIT, OR OTHER MATERIALS THROUGH FIRE RESISTANCE RATED CONSTRUCTION SHALL BE SEALED WITH AN APPROVED FIRESTOPPING SYSTEM APPROPRIATE TO THE RATING OF THE ASSEMBLY BEING PENETRATED.

LEGEND

EXIT TAG
- DOOR # — DOOR NUMBER
- DOL — DESIGN OCC. LOAD
- MOL — MAX. OCC. LOAD
- XX" — ADDITIONAL NOTES
- CLEAR WIDTH (INCHES)

USE/ OCCUPANCY TAG
- USE GROUP
- USE / OCC — OCCUPANCY

FE — FIRE EXTINGUISHER

FEC — FIRE EXTINGUISHER W/ CABINET

1 HR. WALL

2 HR. WALL

TRAVEL DISTANCE = XXX'

COMMON PATH OF TRAVEL = XX'

DIAGONAL DISTANCE = XX'
T/3 (SPRINKLED) = XX' MIN.

EXIT SEPARATION DISTANCE = XX'
COMPLIES

FIRE EXTINGUISHERS

CLASS A HAZARD (ORDINARY)
- MAXIMUM FLOOR AREA PER UNIT OF A = 1,500 SQ. FT. (EXAMPLE: 2A SHALL PROTECT 3,000 SQ. FT.)
- MAXIMUM TRAVEL DISTANCE TO EXTINGUISHER = 75'

CLASS B HAZARD (ORDINARY)
- MAXIMUM TRAVEL DISTANCE TO 10B RATED EXTINGUISHER = 30'
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- REQUIRED WHERE ENERGIZED ELECTRICAL EQUIPMENT CAN BE ENCOUNTERED
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- REQUIRED WHERE THERE IS A POTENTIAL FOR FIRES INVOLVING COMBUSTIBLE COOKING MEDIA.
- MAXIMUM TRAVEL DISTANCE TO EXTINGUISHER = 30'

GENERAL NOTES
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- G. EXTINGUISHER CABINETS (WHERE OCCUR) SHALL BE INSTALLED w/ TOP OF CABINET @ 4'-0"AFF MAX - U.N.O.

ACCESSIBILITY SIGNAGE TYPES

TYPE	DESCRIPTION	VISUAL LETTERING	RAISED LETTERING	BRAILLE	PICTOGRAM	NOTES
AU	ACCESSIBLE UNIT IDENTIFICAION	X	X	X	X	1, 2
EX	EXIT SIGN	X	X	X		1
RI	ROOM INDENTIFICATION SIGN	X	X	X		1, 3
RR	UNISEX SINGLE-USER RESTROOM SIGN	X	X	X	X	1
TW	TWO-WAY COMMUNICATION SYSTEM INSTRUCTIONS	X				4

NOTES:
1. REFER TO SHEET G2.0 FOR REQUIREMENTS OF RAISED LETTERING, BRAILLE, AND MOUNTING.
2. PROVIDED AS A PART OF UNIT MANUFACTURER'S COMPLIANCE KITS. REFER TO "UNIT COUNTS AND ACCESSIBILITY" ON G0.0 AND 15/A9.6.
3. ROOM NAME SHALL BE AS DETERMINED BY OWNER. INCLUDE IDENTIFED ROOM NAMES IN SIGNANGE SUBMITTAL FOR REVIEW AND APPROVAL.
4. CONTENT OF THE TWO-WAY COMMUNICAION INSTRUCTIONS SHALL BE PER THE MANUFACTURER. EACH SIGN SHALL IDENTIFY THE LOCATION AS REQUIRED BY IBC 2021 1009.8.2.

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STORAGE FACILITY

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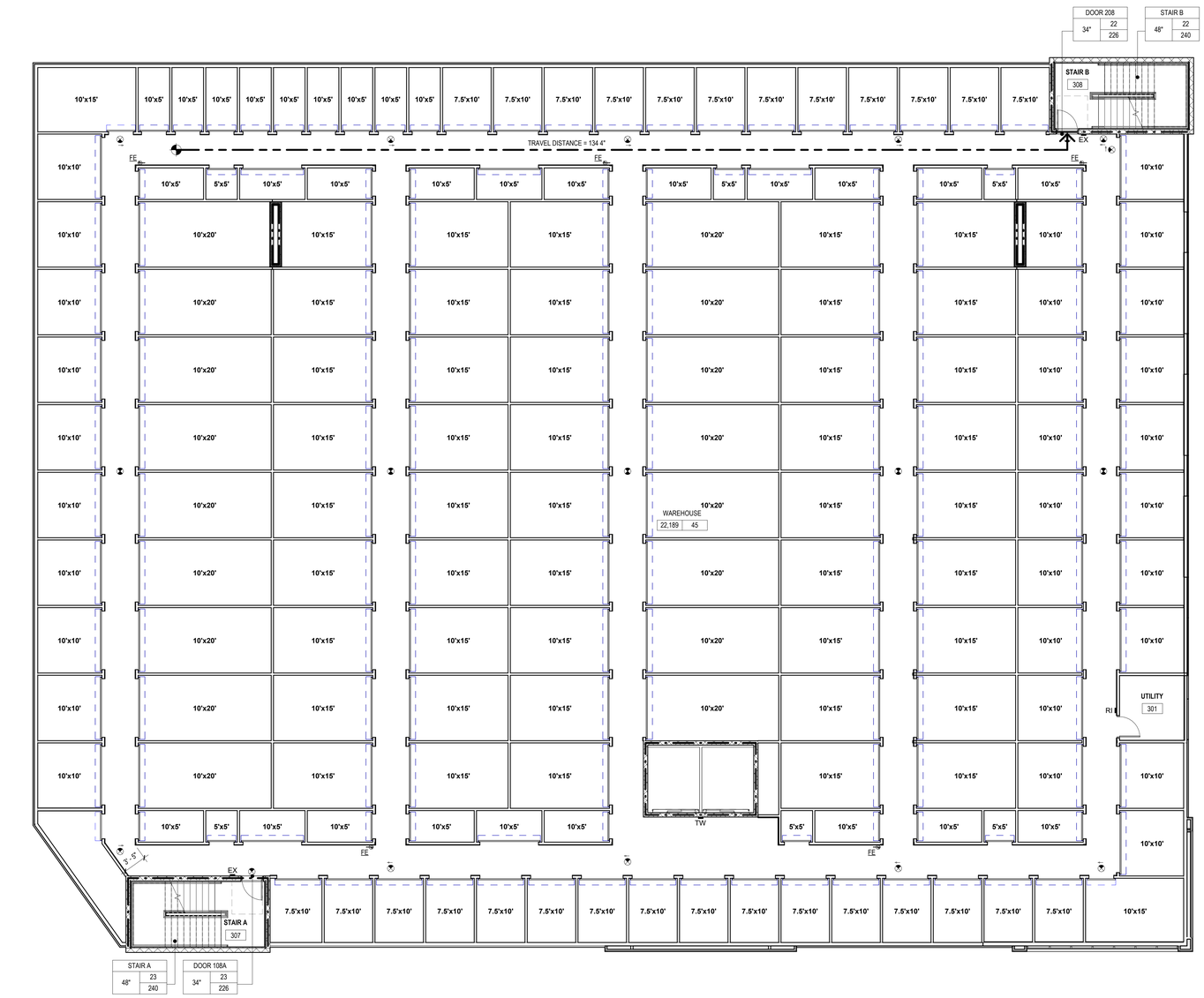
Project No.:	25.0991
Drawn By:	CB
Date	Issue
03-30-26	Bid & Permit

G1.2

LIFE SAFETY PLAN - LEVEL 2



1 LIFE SAFETY PLAN - LEVEL 3
1/8" = 1'-0"

GENERAL NOTES

A. REFR TO CODE SUMMARY ON SHEET G0.0 FOR ADDITIONAL INFORMATION.

B. REFER TO DOOR SCHEDULE ON SHEET A9.0 FOR HARDWARE.

C. ALL PENETRATIONS OF PIPING, CONDUIT, OR OTHER MATERIALS THROUGH FIRE RESISTANCE RATED CONSTRUCTION SHALL BE SEALED WITH AN APPROVED FIRESTOPPING SYSTEM APPROPRIATE TO THE RATING OF THE ASSEMBLY BEING PENETRATED.

LEGEND

EXIT TAG
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- XX": DOL: DESIGN OCC. LOAD
- MOL: MAX. OCC. LOAD
- ADDITIONAL NOTES
- CLEAR WIDTH (INCHES)

USE/ OCCUPANCY TAG
- USE GROUP
- USE / OCC: OCCUPANCY

FE: FIRE EXTINGUISHER

FEC: FIRE EXTINGUISHER W/ CABINET

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2 HR. WALL

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DIAGONAL DISTANCE = XX'
1/3 (SPRINKLED) = XX' MIN.

EXIT SEPARATION DISTANCE = YX'
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- E. EXTINGUISHERS SHALL BE INSTALLED w/ BOTTOM @ 4"AFF MIN.
- F. EXTINGUISHERS SHALL BE INSTALLED w/ TOP @ 3'-6"AFF MAX - U.N.O.
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EX	EXIT SIGN	X	X	X		1
RI	ROOM INDENTIFICATION SIGN	X	X	X		1, 3
RR	UNISEX SINGLE-USER RESTROOM SIGN	X	X	X	X	1
TW	TWO-WAY COMMUNICATION SYSTEM INSTRUCTIONS	X				4

NOTES:
1. REFER TO SHEET G2.0 FOR REQUIREMENTS OF RAISED LETTERING, BRAILLE, AND MOUNTING.
2. PROVIDED AS A PART OF UNIT MANUFACTURER'S COMPLIANCE KITS. REFER TO "UNIT COUNTS AND ACCESSIBILITY" ON G0.0 AND 15/A9.6.
3. ROOM NAME SHALL BE AS DETERMINED BY OWNER. INCLUDE IDENTIFED ROOM NAMES IN SIGNANGE SUBMITTAL FOR REVIEW AND APPROVAL.
4. CONTENT OF THE TWO-WAY COMMUNICAION INSTRUCTIONS SHALL BE PER THE MANUFACTURER. EACH SIGN SHALL IDENTIFY THE LOCATION AS REQUIRED BY IBC 2021 1009.8.2.

DONALD W. ALEXANDER | ARCHITECT

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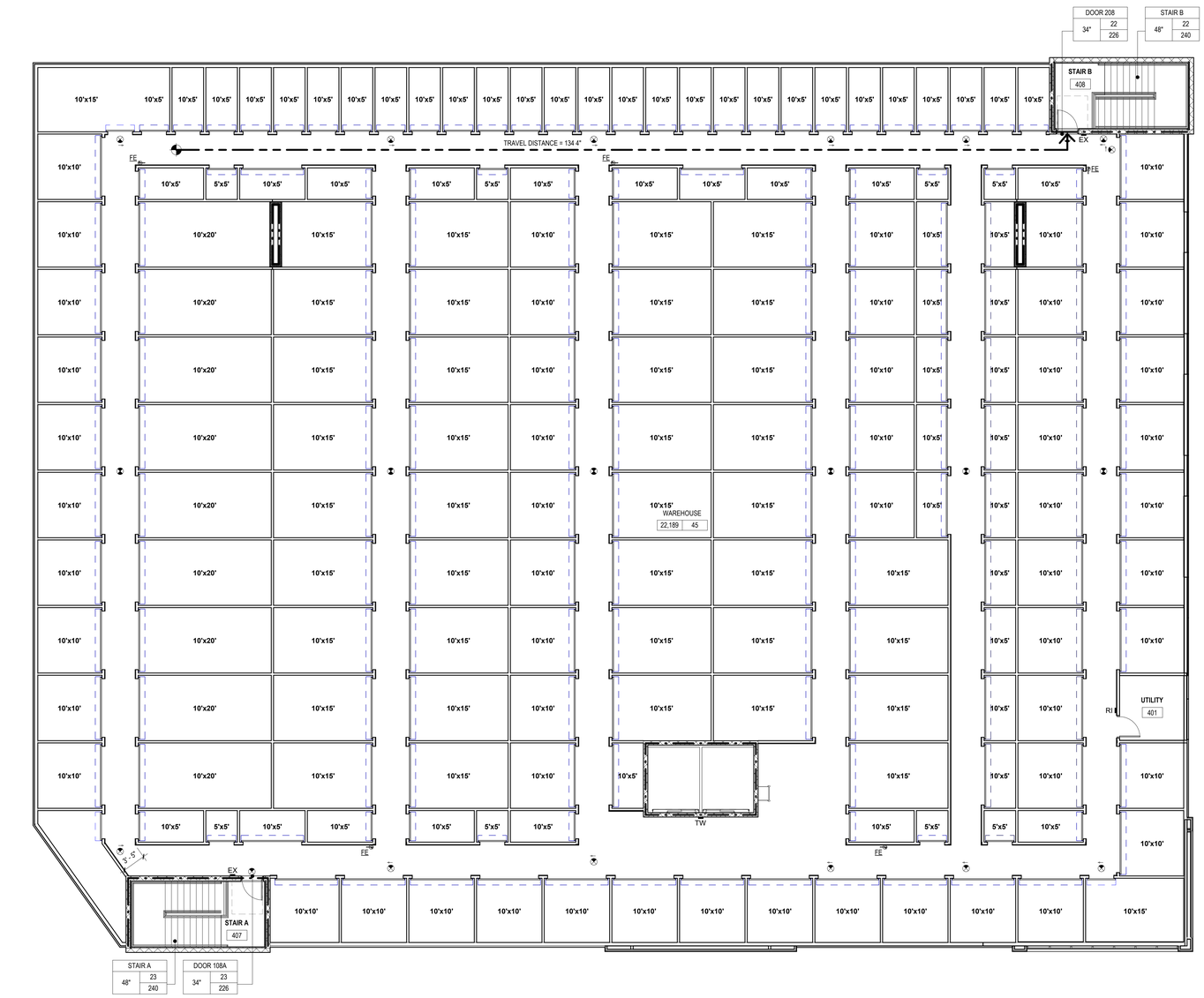
STORAGE FACILITY

97 WARREN AVE
PORTLAND, ME 04103

Project No.:	25.0991
Drawn By:	CB
Date	Issue
03-30-26	Bid & Permit

G1.3

LIFE SAFETY PLAN - LEVEL 3



1 LIFE SAFETY PLAN - LEVEL 4
1/8" = 1'-0"

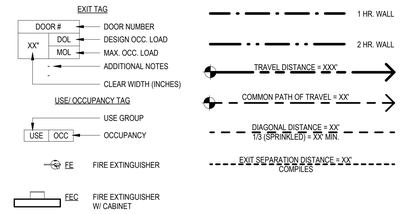
GENERAL NOTES

A. REFR TO CODE SUMMARY ON SHEET G0.0 FOR ADDITIONAL INFORMATION.

B. REFER TO DOOR SCHEDULE ON SHEET A9.0 FOR HARDWARE.

C. ALL PENETRATIONS OF PIPING, CONDUIT, OR OTHER MATERIALS THROUGH FIRE RESISTANCE RATED CONSTRUCTION SHALL BE SEALED WITH AN APPROVED FIRESTOPPING SYSTEM APPROPRIATE TO THE RATING OF THE ASSEMBLY BEING PENETRATED.

LEGEND



FIRE EXTINGUISHERS

CLASS A HAZARD (ORDINARY)
- MAXIMUM FLOOR AREA PER UNIT OF A = 1,500 SQ. FT. (EXAMPLE: 2A SHALL PROTECT 3,000 SQ. FT.)
- MAXIMUM TRAVEL DISTANCE TO EXTINGUISHER = 75'

CLASS B HAZARD (ORDINARY)
- MAXIMUM TRAVEL DISTANCE TO 10B RATED EXTINGUISHER = 30'
- MAXIMUM TRAVEL DISTANCE TO 20B RATED EXTINGUISHER = 50'

CLASS C HAZARD
- REQUIRED WHERE ENERGIZED ELECTRICAL EQUIPMENT CAN BE ENCOUNTERED
- SHALL BE SIZED AND LOCATED ON THE BASIS OF CLASS A OR CLASS B HAZARD

CLASS K HAZARD
- REQUIRED WHERE THERE IS A POTENTIAL FOR FIRES INVOLVING COMBUSTIBLE COOKING MEDIA.
- MAXIMUM TRAVEL DISTANCE TO EXTINGUISHER = 30'

GENERAL NOTES
- A. DESIGN CRITERIA PER APPLICABLE BUILDING/FIRE CODES AND NFPA 10.
- B. PROVIDE MINIMUM 2A-10B:C EXTINGUISHERS AS INDICATED ON PLAN OR AS DIRECTED BY AHJ.
- C. COORDINATE FINAL QUANTITIES, LOCATIONS AND INSTALLATION w/ AHJ.
- D. EXTINGUISHERS SHALL HAVE A GROSS WEIGHT NOT TO EXCEED 40 LBS.
- E. EXTINGUISHERS SHALL BE INSTALLED w/ BOTTOM @ 4"AFF MIN.
- F. EXTINGUISHERS SHALL BE INSTALLED w/ TOP @ 3'-6"AFF MAX - U.N.O.
- G. EXTINGUISHER CABINETS (WHERE OCCUR) SHALL BE INSTALLED w/ TOP OF CABINET @ 4'-0"AFF MAX - U.N.O.

ACCESSIBILITY SIGNAGE TYPES

TYPE	DESCRIPTION	VISUAL LETTERING	RAISED LETTERING	BRAILLE	PICTOGRAM	NOTES
AU	ACCESSIBLE UNIT IDENTIFICAION	X	X	X	X	1, 2
EX	EXIT SIGN	X	X	X		1
RI	ROOM INDENTIFICATION SIGN	X	X	X		1, 3
RR	UNISEX SINGLE-USER RESTROOM SIGN	X	X	X	X	1
TW	TWO-WAY COMMUNICATION SYSTEM INSTRUCTIONS	X				4

NOTES:
1. REFER TO SHEET G2.0 FOR REQUIREMENTS OF RAISED LETTERING, BRAILLE, AND MOUNTING.
2. PROVIDED AS A PART OF UNIT MANUFACTURER'S COMPLIANCE KITS. REFER TO "UNIT COUNTS AND ACCESSIBILITY" ON G0.0 AND 15/A9.6.
3. ROOM NAME SHALL BE AS DETERMINED BY OWNER. INCLUDE IDENTIFED ROOM NAMES IN SIGNANGE SUBMITTAL FOR REVIEW AND APPROVAL.
4. CONTENT OF THE TWO-WAY COMMUNICAION INSTRUCTIONS SHALL BE PER THE MANUFACTURER. EACH SIGN SHALL IDENTIFY THE LOCATION AS REQUIRED BY IBC 2021 1009.8.2.

DONALD W. ALEXANDER | ARCHITECT

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STORAGE FACILITY

97 WARREN AVE
PORTLAND, ME 04103

Project No.:	25.0991
Drawn By:	CB
Date	Issue
03-30-26	Bid & Permit

G1.4

LIFE SAFETY PLAN - LEVEL 4

CLEAR FLOOR SPACE NOTES:
1. DOORS SHALL BE PERMITTED TO SWING INTO TURNING SPACES (304.4)
2. ONE FULL UNOBSTRUCTED SIDE OF THE CLEAR FLOOR SPACE MUST ADJOIN AN ACCESSIBLE ROUTE OR ANOTHER CLEAR FLOOR SPACE (305.6)
3. A CLEAR FLOOR SPACE IS REQUIRED AT ANY DEVICE WITH AN OPERABLE PART (309.2)

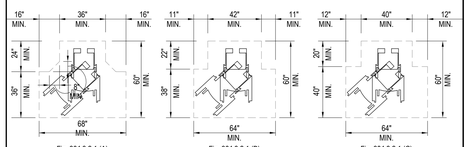


Fig. 304.3.2.1 (A)
T-SHAPED SPACE (OPTION 1)

Fig. 304.3.2.1 (B)
T-SHAPED SPACE (OPTION 2)

Fig. 304.3.2.1 (C)
T-SHAPED SPACE (OPTION 3)

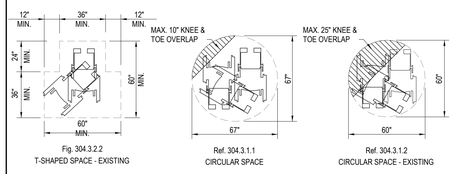


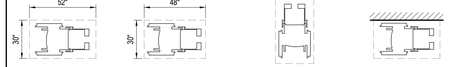
Fig. 304.3.2.2
T-SHAPED SPACE - EXISTING

Ref. 304.3.1.1
CIRCULAR SPACE

Ref. 304.3.1.2
CIRCULAR SPACE - EXISTING

Fig. 305.7.1

Fig. 305.7.2



CLEAR FLOOR SPACE
Fig. 305.3.1

CLEAR FLOOR SPACE
Fig. 305.3.2

FORWARD APPROACH
Fig. 305.5 (A)

PARALLEL APPROACH
Fig. 305.5 (B)

TURNING/CLEAR FLOOR SPACE
Ref. Sections 304 & 305

NOTE:
CHANGES IN LEVEL GREATER THAN 1/2" SHALL BE RAMPED, AND SHALL COMPLY w/ SECTIONS 405 OR 406. (303.4)

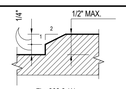


Fig. 303.3 (A)

Fig. 302.2
CARPET PILE THICKNESS

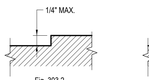


Fig. 303.2
CHANGES IN LEVEL

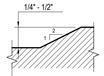
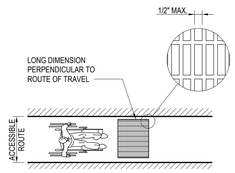
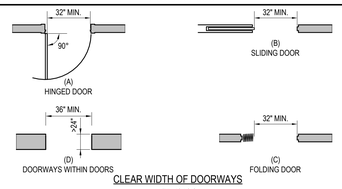


Fig. 303.3 (B)



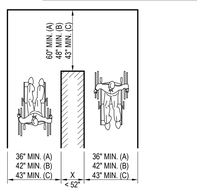
OPENINGS IN FLOOR OR GROUND SURFACE
Ref. Section 302.3

FLOOR & GROUND SURFACES
Ref. Sections 302 & 303

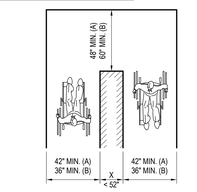


CLEAR WIDTH OF DOORWAYS
Fig. 404.2.2

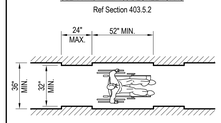
ACCESSIBLE ROUTE NOTE:
THE SLOPE OF A WALKING SURFACE ALONG AN ACCESSIBLE ROUTE SHALL NOT BE STEEPER THAN 1:20 AND CROSS SLOPES SHALL NOT EXCEED 1:48 (402)



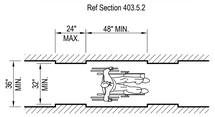
CLEAR WIDTH AT 180 DEGREE TURNS
Ref Section 403.5.2



CLEAR WIDTH AT 180 DEGREE TURNS - EXISTING
Ref Section 403.5.2

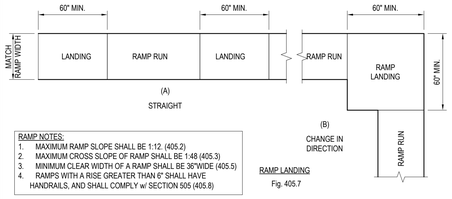


CLEAR WIDTH (INTERIOR)
Fig. 403.5.1 (A)



CLEAR WIDTH (EXISTING INTERIOR)
Fig. 403.5.1 (C)

ACCESSIBLE ROUTES & WALKING SURFACES
Ref. Section 402 & 403

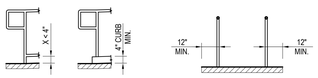


(A)
STRAIGHT

(B)
CHANGE IN DIRECTION

RAMP LANDING
Fig. 405.7

RAMP NOTES:
1. MAXIMUM RAMP SLOPE SHALL BE 1:12. (405.2)
2. MAXIMUM CROSS SLOPE OF RAMP SHALL BE 1:48 (405.3)
3. MINIMUM CLEAR WIDTH OF A RAMP SHALL BE 36"WIDE (405.5)
4. RAMPS WITH A RISE GREATER THAN 6" SHALL HAVE HANDRAILS, AND SHALL COMPLY w/ SECTION 505 (405.8)



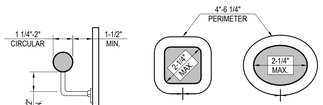
Ref. Section 405.9.2
BARRIER

CURB

Fig. 405.9.1
EXTENDED FLOOR OR GROUND SURFACE

EDGE PROTECTION
Ref. Section 405.9

RAMPS
Ref. Section 405



HANDRAIL CLEARANCES
Fig. 505.5 & 505.6

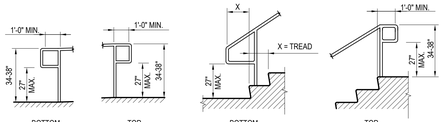
NON-CIRCULAR HANDRAIL CROSS SECTIONS
Fig. 505.7 (B) & (C)

HANDRAIL SIZES & CLEARANCES

STAIRS
Fig. 505.4 (A)

RAMPS
Fig. 505.4 (B)

HANDRAIL HEIGHTS
Ref. Section 505



BOTTOM
TOP

HANDRAIL EXTENSIONS @ RAMP
Fig. 505.10.1

BOTTOM
Fig. 505.10.3

TOP
Fig. 505.10.2

HANDRAIL EXTENSIONS @ STAIR
Fig. 505.10.2 & 505.10.3

NOTES:
1. MAXIMUM SLOPE OF A TREAD SURFACE SHALL BE 1:48 (504.4)
2. VISUAL CONTRAST - THE LEADING 1 TO 2 INCHES OF EVERY TREAD SHALL CONSIST OF A SOLID COLOR HAVING VISUAL CONTRAST THE ENTIRE WIDTH OF THE TREAD (504.6)

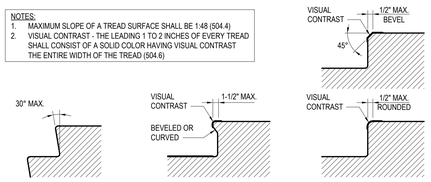


Fig. 504.5 (D)
ANGLED RISER

Fig. 504.5 (B) & (C)
NOSING PROJECTION

Fig. 504.5 (A)
NOSING EDGE

STAIRWAYS & HANDRAILS
Ref. Sections 504 & 505

NOTES:
1. PROTRUDING OBJECTS SHALL NOT REDUCE THE REQUIRED WIDTH OF AN ACCESSIBLE ROUTE (307.5)
2. PROTRUDING OBJECTS ON A CIRCULATION PATH SHALL COMPLY w/ SECTION 307

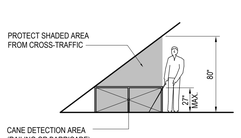


Fig. 307.4
VERTICAL CLEARANCES

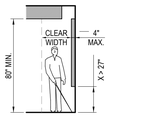


Fig. 307.2
LIMITS OF PROTRUDING OBJECTS

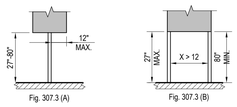
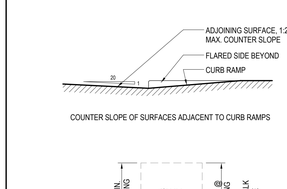


Fig. 307.3 (A)

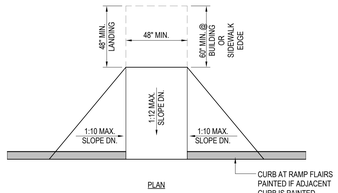
Fig. 307.3 (B)

POST-MOUNTED PROTRUDING OBJECTS

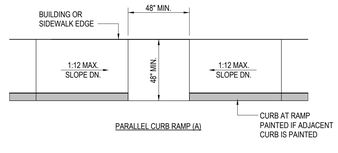
PROTRUDING OBJECTS
Ref. Section 307



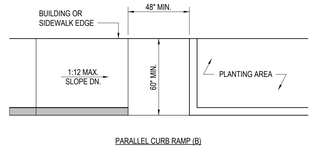
COUNTER SLOPE OF SURFACES ADJACENT TO CURB RAMPS



PLAN
CURB AT RAMP FLAIRS PAINTED IF ADJACENT CURB IS PAINTED



PARALLEL CURB RAMP (A)
CURB AT RAMP PAINTED IF ADJACENT CURB IS PAINTED



PARALLEL CURB RAMP (B)

CURB RAMPS
Ref. Section 406

MANEUVERING CLEARANCE NOTES:
1. DOORS, DOORWAYS AND GATES THAT ARE PART OF AN ACCESSIBLE ROUTE SHALL COMPLY WITH SECTION 404
2. ADJUST DOOR CLOSERS SO THAT THE DOOR TAKES AT LEAST 5 SECONDS TO MOVE FROM 90 DEGREE OPEN POSITION TO 12 DEGREES FROM LATCH (404.2.7.1)
3. FIRE DOORS SHALL HAVE MINIMUM OPENING FORCE ALLOWABLE BY THE BUILDING AND FIRE CODES. OTHER INTERIOR DOORS, 5 POUNDS MAXIMUM. (404.2.8)
4. MANEUVERING CLEARANCES ARE REQUIRED AT AUTOMATIC DOORS UNLESS DOOR OPERATION HAS STANDBY POWER AND/OR INCLUDE BREAK-AWAY FEATURE (404.3.4)

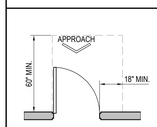
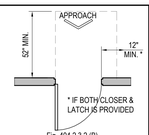
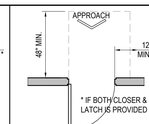


Fig. 404.2.3.2 (A)
FRONT APPROACH, PULL SIDE



* IF BOTH CLOSER & LATCH IS PROVIDED

Fig. 404.2.3.2 (B)
FRONT APPROACH, PUSH SIDE (NEW)



* IF BOTH CLOSER & LATCH IS PROVIDED

Fig. 404.2.3.2 (C)
FRONT APPROACH, PUSH SIDE (EXISTING)

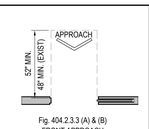


Fig. 404.2.3.3 (A) & (B)
FRONT APPROACH

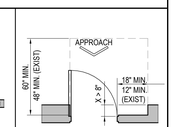


Fig. 404.2.3.5 (A)
PULL SIDE

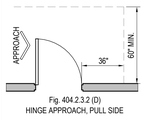


Fig. 404.2.3.2 (D)
HINGE APPROACH, PULL SIDE

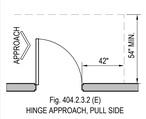
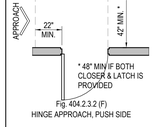


Fig. 404.2.3.2 (E)
HINGE APPROACH, PULL SIDE



* 48" MIN IF BOTH CLOSER & LATCH IS PROVIDED

Fig. 404.2.3.2 (F)
HINGE APPROACH, PUSH SIDE

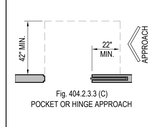


Fig. 404.2.3.3 (C)
POCKET OR HINGE APPROACH

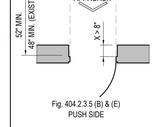


Fig. 404.2.3.5 (B) & (E)
PUSH SIDE

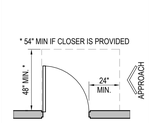


Fig. 404.2.3.2 (G)
LATCH APPROACH, PULL SIDE

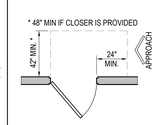


Fig. 404.2.3.2 (H)
LATCH APPROACH, PUSH SIDE

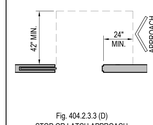


Fig. 404.2.3.3 (D)
STOP OR LATCH APPROACH

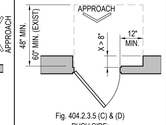


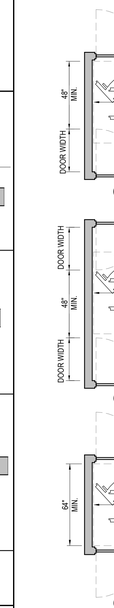
Fig. 404.2.3.5 (C) & (D)
PUSH SIDE:
DOOR w/ BOTH CLOSER & LATCH

MANUAL SWINGING DOORS & GATES
Ref. Section 404.2

DOORWAYS w/o DOORS, SLIDING DOORS, GATES & FOLDING DOORS
Ref. Section 404.2.3.4

RECESSED DOORS & GATES
Ref. Section 404.2.3.5

MANEUVERING CLEARANCES
Ref. Section 404.2.3



DOORS OR GATES IN SERIES
Ref. Section 404.2.5

NOTE:
ANY OPERABLE PART OF ANY DEVICE SHALL BE INSTALLED WITHIN THE REACHES SHOWN (309)

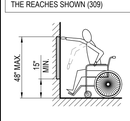
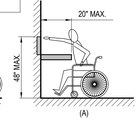
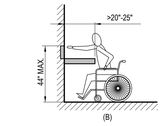


Fig. 308.2.1
UNOBSTRUCTED FORWARD REACH



(A)

Fig. 308.2.2
OBSTRUCTED HIGH FORWARD REACH



(B)

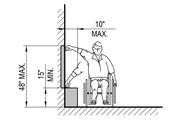
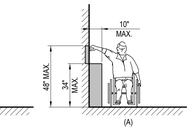
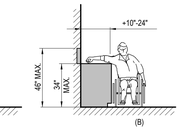


Fig. 308.3.1
UNOBSTRUCTED SIDE REACH



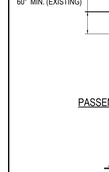
(A)



(B)

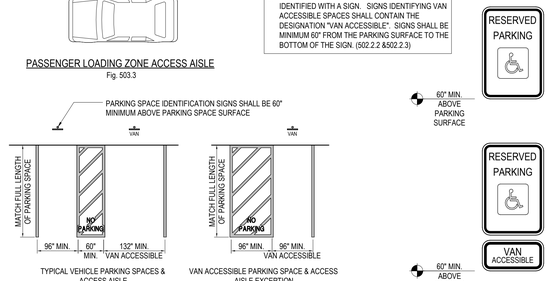
Fig. 308.3.2
OBSTRUCTED HIGH SIDE REACH

REACH RANGES
Ref. Section 308



PASSENGER LOADING ZONE ACCESS AISLE
Fig. 503.3

GENERAL SITE NOTES:
1. ACCESSIBLE PARKING SPACES AND ACCESS AISLE SHALL BE LEVEL, MAXIMUM PERMITTED SLOPE IS 1:48 (502.5)
2. ACCESSIBLE PARKING SPACES MUST BE IDENTIFIED WITH A SIGN. SIGNS IDENTIFYING VAN ACCESSIBLE SPACES SHALL CONTAIN THE DESIGNATION "VAN ACCESSIBLE". SIGNS SHALL BE MINIMUM 60" FROM THE PARKING SURFACE TO THE BOTTOM OF THE SIGN. (§502.2.2 &502.2.3)



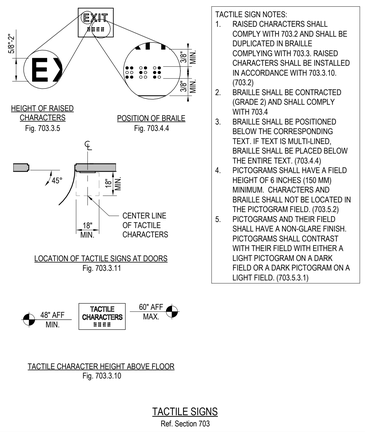
TYPICAL VEHICLE PARKING SPACES & ACCESS AISLE
Fig. 502.2 (A)

VAN ACCESSIBLE PARKING SPACE & ACCESS AISLE EXCEPTION
Fig. 502.2 (B)

VEHICAL PARKING SPACES & ACCESS AISLE
Ref. Section 502

IDENTIFICATION
Ref. Section 502.7

PARKING & PASSENGER LOADING ZONES
Ref. Sections 502 & 503



TACTILE SIGN NOTES:
1. RAISED CHARACTERS SHALL COMPLY WITH 703.2 AND SHALL BE DUPLICATED IN BRAILLE COMPLYING WITH 703.3. RAISED CHARACTERS SHALL BE INSTALLED IN ACCORDANCE WITH 703.3.10. (703.2)
2. BRAILLE SHALL BE CONTRACTED (GRADE 2) AND SHALL COMPLY WITH 703.4
3. BRAILLE SHALL BE POSITIONED BELOW THE CORRESPONDING TEXT. IF TEXT IS MULTI-LINED, BRAILLE SHALL BE PLACED BELOW THE ENTIRE TEXT. (703.4.4)
4. PICTOGRAMS SHALL HAVE A FIELD HEIGHT OF 6 INCHES (150 MM) MINIMUM. CHARACTERS AND BRAILLE SHALL NOT BE LOCATED IN THE PICTOGRAM FIELD. (703.5.2)
5. PICTOGRAMS AND THEIR FIELD SHALL HAVE A NON-GLARE FINISH. PICTOGRAMS SHALL CONTRAST WITH THEIR FIELD WITH EITHER A LIGHT PICTOGRAM ON A DARK FIELD OR A DARK PICTOGRAM ON A LIGHT FIELD. (703.5.3.1)

TACTILE SIGNS
Ref. Section 703

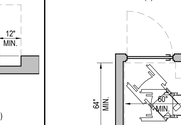
ICC/ANSI A117.1-2017

ACCESSIBLE GUIDELINES

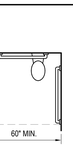
THIS DRAWING IS A REPRESENTATIVE SUMMARY OF THE REQUIREMENTS OF THE ICC/ANSI A117.1 STANDARDS THAT MAY BE APPLICABLE TO THE PROJECT. WHERE SPECIFIC DIMENSIONAL INFORMATION AND CLEARANCES ARE NOT NOTED ON THE DRAWINGS, CONSTRUCT TO THE CLEARANCES AND TOLERANCES DEPICTED ON ACCESSIBLE GUIDELINES SHEET(S). WHERE DRAWINGS SPECIFICALLY INDICATE DIFFERENT OR CONFLICTING INFORMATION WITH THE STANDARDS, CONSTRUCT USING THE MORE STRINGENT REQUIREMENT OR CONTACT THE ARCHITECT FOR RESOLUTION.

TOILET
Ref. Chapter 6

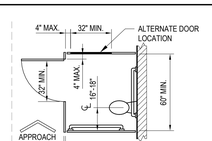
URINAL
Ref. Section 605



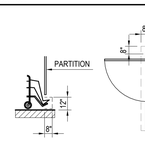
LAVATORY
Ref. Sections 606 & 603.3



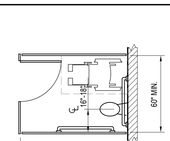
CLEARANCE AT WATER CLOSETS
Fig. 604.3



WHEELCHAIR ACCESSIBLE TOILET COMPARTMENT
Ref. Section 604

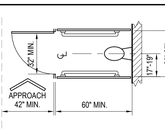


WHEELCHAIR ACCESSIBLE TOILET COMPARTMENT TOE CLEARANCE
Fig. 604.9.5



* Toilet compartment size per Section 604.9.2.3

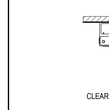
ALTERNATE WHEELCHAIR ACCESSIBLE TOILET COMPARTMENT
Fig. 604.9.3 (B)



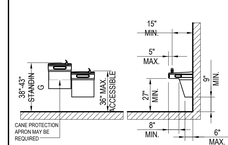
AMBULATORY ACCESSIBLE TOILET COMPARTMENT
Fig. 604.10.1

TOILET ROOM NOTES:
1. A TURNING SPACE PER SECTION 304 IS REQUIRED WITHIN A TOILET ROOM (603.2.1)
2. ONLY THE FOLLOWING OBJECTS ARE PERMITTED TO OVERLAP THE REQUIRED CLEARANCE: GRAB BARS, DISPENSERS, SANITARY NAPKIN DISPOSAL UNIT, COAT HOOKS AND SHELVES (604.3.3)
3. FLUSH CONTROLS SHALL BE LOCATED ON THE OPEN SIDE OF THE WATER CLOSET (604.6)
4. URINALS SHALL HAVE A CLEAR FLOOR SPACE COMPLYING WITH 305 POSITIONED FOR FORWARD APPROACH AND CENTERED ON UNIT (605.3)
5. LAVATORIES SHALL HAVE A CLEAR FLOOR SPACE COMPLYING WITH 305 POSITIONED FOR FORWARD APPROACH AND CENTERED ON UNIT (606.2)
6. EXPOSED WATER SUPPLY AND DRAIN PIPES SHALL BE INSULATED. THERE SHALL BE NO SHARP OR ABRASIVE SURFACES UNDER LAVATORIES (606.6)
7. INSTALL GRAB BARS TO WITHSTAND NOT LESS THAN A 250 POUND FORCE APPLIED AT ANY POINT ON THE BAR (609.8)

DRINKING FOUNTAIN NOTES:
1. KNEE & TOE CLEARANCE COMPLYING WITH 306 SHALL BE PROVIDED (602.2)
2. WHERE A DRINKING FOUNTAIN IS REQUIRED, TWO SHALL BE PROVIDED; ONE HIGH & ONE LOW (211.2)
3. UNITS SHALL HAVE A CLEAR FLOOR SPACE COMPLYING WITH 305 POSITIONED FOR FORWARD APPROACH AND CENTERED ON UNIT (602.2)



CLEAR FLOOR SPACE



OUTLET HEIGHTS

KNEE & TOE CLEARANCES

DRINKING FOUNTAIN
Ref. Section 602

DONALD W. ALEXANDER | ARCHITECT

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STORAGE FACILITY

97 WARREN AVE
PORTLAND, ME 04103

Project No.: 25.0991
Drawn By: CB

Date	Issue
03-30-26	Bid & Permit

G2.0

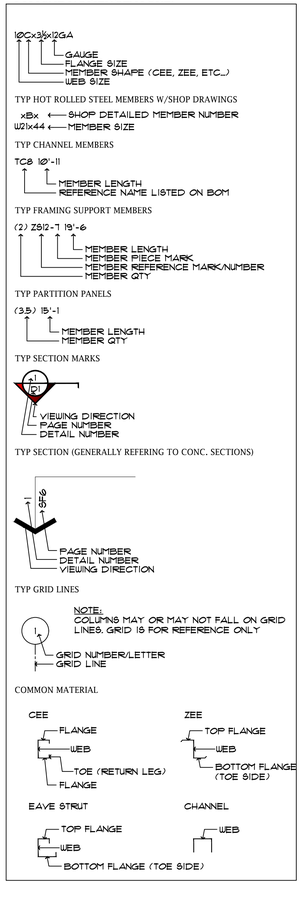
ACCESSIBILITY SHEET

Storage Facility
97 Warren Ave., Portland, ME

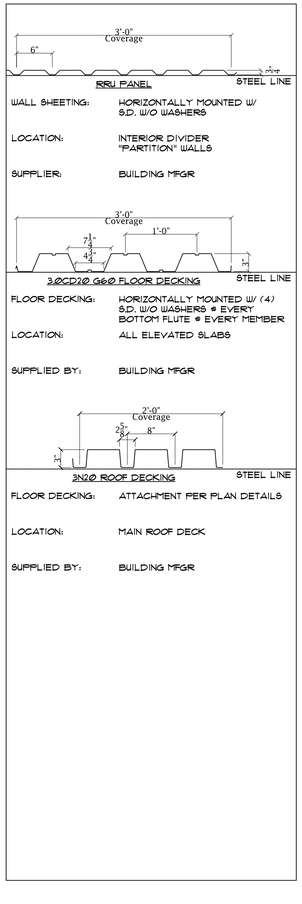
ABBREVIATIONS:

C-PNL	C-PANEL
R-PNL	R-PANEL
U-PNL	U-PANEL
RRU	REVERSED ROLLED U-PANEL
RUL	REVERSED ROLLED U-PANEL (LINER)
PBC	PURLIN BEARING C-PANEL
PBU	PURLIN BEARING U-PANEL
PBR	PURLIN BEARING R-PANEL
7.2-PNL	7.2-PANEL
S.SEAM	STANDING SEAM
A.F.F.	AFTER FINISHED FLOOR
BOM	BILL OF MATERIALS
BOS	BOTTOM OF STEEL
BT	BASE TYPE
CMU	CONCRETE MASONRY UNIT
CONC.	CONCRETE
CONT'S	CONTINUOUS
DBL	DOUBLE
EL	ELEVATION
E.HT.	EAVE HEIGHT
GA	GAUGE
F.F. / F.FLOOR	FINISHED FLOOR
FMG	FRAMING
F.W.	FIRE WALL
INSL	INSULATION
MFGR	MANUFACTURER
N.T.S.	NOT TO SCALE
O.C. / O/C	ON CENTER
PNL	PANEL
QTY	QUANTITY
REF	REFERENCE
REQ'D	REQUIRED
S.D. / S.D.S.	SELF DRILLING SCREW
TOS	TOP OF STEEL
TS	TUBE STEEL
TYP	TYPICAL
U.N.	UNLESS NOTED
W.A. WEDGE ANCHOR	WEDGE ANCHOR
<	CENTER LINE
>	PLATE
L-	ANGLE

TYPICAL NOMENCLATURE:



TYPICAL PANELS:



Cover Sheet	CB-CS
Structural Specifications	CB-S01-S05
Stud & Channel Layout	CB-A1.01
Partition & Unit Layout	CB-A1.02
2nd Floor Framing Plan	CB-A1.03
2nd Floor Decking Plan	CB-A1.04
Stud & Channel Layout	CB-A1.05
Partition & Unit Layout	CB-A1.06
3rd Floor Framing Plan	CB-A1.07
3rd Floor Decking Plan	CB-A1.08
Stud & Channel Layout	CB-A1.09
Partition & Unit Layout	CB-A1.10
4th Floor Framing Plan	CB-A1.11
4th Floor Decking Plan	CB-A1.12
Stud & Channel Layout	CB-A1.13
Partition & Unit Layout	CB-A1.14
Roof Framing Plan	CB-A1.15
Roof Decking Plan	CB-A1.16
Elevations	CB-A2.01-2.02
CMU Elevations	CB-A3.01-3.02
Foundation Plans	CB-AF1
Details	CB-d1 - d3

Review - v1.4 Summary

Job Number / Name:
1719-RCD / Storage Facility

2026-01-28_v1.0-Review
1. Initial Review

2026-02-10_v1.1-Review
1. Updated per 2-9-26 revisions

2026-02-13_v1.2-Review
1. Added detail per email

2026-03-06_v1.3-Review
1. Updated per latest revisions

2026-03-18_v1.4-Review
1. Updated per latest comments
2. Added 2 hr fire rated shafts on 2nd - 4th floors
3. Updated bumpout framing

COMPASS BUILDING SYSTEMS
4547 SILVER SPRINGS BLVD., POWDER SPRINGS, GEORGIA, 30127
(770) 439-1250 / (800) 243-8438 / FAX: (770) 439-0087 / www.compassbuilding.com

Storage Facility
97 Warren Ave.
Portland, ME

Engineer

Drawn By:	Checked By:
1719-RCD	CBS
Project#	CBS#1086
Date:	1/28/2026
Rev:	Review - v1.4
Rev:	

CB-CS

3/18/2026 5:23:22 PM

GENERAL NOTES

GENERAL

1. ALL MATERIALS, WORKMANSHIP, DESIGN, AND CONSTRUCTION SHALL CONFORM TO THE DRAWINGS AND THE CURRENT MAINE UNIFORM BUILDING AND ENERGY CODE (2021 IBC).
2. STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH ARCHITECTURAL AND MEP DRAWINGS FOR BIDDING AND CONSTRUCTION. CONTRACTOR SHALL VERIFY DIMENSIONS AND COMPATIBILITY AND NOTIFY THE ARCHITECT OR ENGINEER OF RECORD OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.
3. ALL REFERENCED STANDARDS REFER TO THE EDITION IN FORCE AT THE TIME THESE PLANS ARE ISSUED FOR PERMIT.
4. IN ANY CASE OF CONFLICT BETWEEN THE NOTES, PLANS, AND DETAILS, THE MOST RIGID REQUIREMENT SHALL GOVERN.
5. COORDINATE ROOF OPENING SIZES AND LOCATIONS WITH ARCHITECTURAL AND MEP DRAWINGS. FOR OPENINGS LARGER THAN 1'-0" x 1'-0", CONTACT ENGINEER OF RECORD.
6. THE CONTRACTOR SHALL ENSURE THAT ALL CONSTRUCTION METHODS USED WILL NOT CAUSE DAMAGE TO ADJACENT BUILDINGS, UTILITIES, OR OTHER PROPERTY.
7. CONTRACTOR IS SOLELY RESPONSIBLE FOR ERECTION BRACING, SHORING, AND ALL OTHER MEANS AND METHODS OF CONSTRUCTION.
8. JOB SAFETY AND CONSTRUCTION PROCEDURES ARE THE RESPONSIBILITY OF THE CONTRACTOR.

FOUNDATION

1. FOUNDATION DESIGN BASED ON GEOTECHNICAL REPORT BY S.W. COLE ENGINEERING INC, PROJECT NUMBER 25-1648 S DATED OCTOBER, 2025:
   1.1. BEARING PRESSURE 4,000 PSF
2. SUBGRADE TO BE PREPARED IN ACCORDANCE WITH RECOMMENDATIONS GIVEN BY A QUALIFIED GEOTECHNICAL ENGINEER. GEOTECHNICAL ENGINEER TO VERIFY THE CONDITION AND/OR ADEQUACY OF ALL SUB-GRADES, FILLS, AND BACKFILLS PRIOR TO THE PLACEMENT OF FOUNDATIONS.
3. FILLS:
   3.1. REMOVE ALL UNSUITABLE SOILS AND REPLACE WITH CLEAN STRUCTURAL FILL AT THE DIRECTION OF THE GEOTECHNICAL ENGINEER.
   3.2. PLACE FILL SOILS IN 6" MAXIMUM (LOOSE) LIFTS AT MOISTURE CONTENTS AS DESCRIBED IN THE GEOTECHNICAL REPORT.
   3.3. COMPACT ALL FILL WITHIN 10'-0" OF THE BUILDING LIMIT TO WITHIN 95% STANDARD PROCTOR.
   3.4. TEST FIELD DENSITY TO VERIFY ADEQUATE COMPACTION AND DESIGN BEARING PRESSURE.

STRUCTURAL MASONRY:

1. PROVIDE STRUCTURAL MASONRY CONFORMING TO THE FOLLOWING STANDARDS:
   A. ACI 530-11 / ASCE 5-11 / TMS 402-11, BUILDING CODE REQUIREMENTS FOR CONCRETE MASONRY STRUCTURES.
   B. ACI 530.1-11 / ASCE 6-11 / TMS 602-11, SPECIFICATIONS FOR CONCRETE MASONRY STRUCTURES.
2. LOAD BEARING MASONRY WALLS ARE DESIGNED IN ACCORDANCE WITH CHAPTERS 1 AND 2 OF ACI 530.
3. PROVIDE HOLLOW, LOAD BEARING CONCRETE MASONRY UNITS (CMU) CONFORMING TO ASTM C 90 WITH A MINIMUM COMPRESSIVE STRENGTH OF MASONRY (F'_M) OF 1500 PSI AND A NET STRENGTH OF 2000 PSI ON THE NET CROSS-SECTIONAL AREA OF CMU DETERMINED IN ACCORDANCE WITH ASTM C 140.
4. PROVIDE BRICK MASONRY UNITS CONSTRUCTED OF CLAY OR SHALE CONFORMING TO ASTM C 652.
5. PROVIDE MORTAR CONFORMING TO ASTM C 270, TYPE S. STANDARD MORTAR BED JOINT THICKNESS IS 3/8" AND MUST NOT VARY OUTSIDE OF THE RANGE BETWEEN ONE QUARTER INCH AND ONE HALF INCH. DO NOT USE AIR ENTRAINED MORTAR.
6. PROVIDE GROUT FOR REINFORCED MASONRY CONFORMING TO ASTM C-476 WITH MINIMUM COMPRESSIVE STRENGTH OF 2500 PSI AND A MINIMUM SLUMP OF 10".
7. PROVIDE STEEL REINFORCEMENT IN MASONRY WALLS CONFORMING TO ASTM A615, GRADE 60,
8. PROVIDE MASONRY TIES AND ANCHORS OF THE TYPE AND SPACING AS DETAILED ON THE STRUCTURAL DRAWINGS AND IN CONFORMANCE WITH ASTM A82.
9. PROVIDE LADDER TYPE HORIZONTAL JOINT REINFORCING CONFORMING TO ASTM A951 IN ALL MASONRY WALLS. UNLESS NOTED OTHERWISE, PLACE 9 GAGE ZINC COATED LADDER TYPE HORIZONTAL JOINT REINFORCING AT 16" ON CENTER. LAP HORIZONTAL JOINT REINFORCING MINIMUM 12". USE PREFABRICATED 'L'S AND 'T'S AT CORNERS AND INTERSECTIONS.
10. LAY ALL MASONRY UNITS IN RUNNING BOND.
11. FOR GROUTED WALLS:
    A. THE MAXIMUM HEIGHT OF GROUT LIFTS MUST NOT EXCEED 5'-0".
    B. THE MAXIMUM UN-GROUTED HEIGHT OF 8" OR THICKER CMU WALLS PRIOR TO GROUTING MUST NOT EXCEED 12'-0".
    C. REFER TO TABLE 7 OF ACI 530.1 FOR THE MAXIMUM UN-GROUTED HEIGHT OF CMU WALLS THINNER THAN 8".
    D. CONSOLIDATE AND RECONSOLIDATE GROUT IN ACCORDANCE WITH PARAGRAPH 3.5.E OF ACI 530.1.
    E. ALL GROUT POURS HIGHER THAN 5'-0" MUST HAVE INSPECTION HOLES AT THE BASE OF THE WALL.
12. REINFORCEMENT:
    A. DETAIL REINFORCEMENT IN LOAD BEARING CMU WALLS IN ELEVATION ON SHOP DRAWINGS.
    B. LAP VERTICAL MASONRY WALL REINFORCING AS SHOWN IN THE MASONRY LAP LENGTH SCHEDULE AND PROVIDE MINIMUM BAR SPLICE LENGTH.
13. PROVIDE VERTICAL CONTROL JOINTS IN ALL MASONRY WALLS NOT RETAINING EARTH. UNLESS NOTED OTHERWISE ON THE ARCHITECTURAL DRAWINGS, PLACE VERTICAL CONTROL JOINTS AT THREE TIMES THE WALL STORY HEIGHT, BUT NOT CLOSER THAN 25'-0" ON CENTER OR FARTHER THAN 40'-0" ON CENTER.
14. UNLESS NOTED OTHERWISE, PROVIDE MINIMUM (1) #5 VERTICAL BAR, GROUTED FULL STORY HEIGHT, AT EACH SIDE OF OPENINGS AND AT ALL CORNERS AND ENDS OF WALLS, INCLUDING BOTH SIDES AT ENDS OF WALL PANELS AT VERTICAL CONTROL JOINTS.
15. UNLESS NOTED OTHERWISE, ANCHOR SIDES AND TOPS OF MASONRY WALL PANELS TO THE STRUCTURE BY DOVETAIL ANCHORS, METAL STRAPS, OR EQUIVALENT.
16. PLACE CONNECTORS FOR MASONRY VENEERS AT NOT MORE THAN 16" ON CENTER VERTICALLY OR 24" ON CENTER HORIZONTALLY.
17. PROVIDE A CONTINUOUS BOND BEAM AT THE TOP OF ALL MASONRY WALLS, UNLESS NOTED OTHERWISE REINFORCE BOND BEAMS WITH (2) #4 CONTINUOUS REINFORCING BARS.
18. PROVIDE LEVEL B QUALITY ASSURANCE AS DESCRIBED IN TABLE 4 OF ACI 530.1-11 / ASCE 6-11 / TMS 602-11.
19. SAMPLE AND TEST GROUT IN ACCORDANCE WITH ARTICLES 1.4 B AND 1.6 OF ACI 530.1-11 / ASCE 6-11 / TMS 602-11.

REINFORCED CONCRETE

1. STRUCTURAL CONCRETE AND PRACTICES TO CONFORM TO ACI 318 LATEST EDITION. DETAILS TO CONFORM TO ACI 315 LATEST EDITION AND ACI SP-66 LATEST EDITION UNLESS NOTED OTHERWISE.
2. CONTRACTOR TO VERIFY ALL ACI REQUIREMENTS FOR HOT AND COLD WEATHER CONCRETE CONSTRUCTION ARE ADHERED TO.
3. PROVIDE REINFORCING STEEL CONFORMING TO ASTM A 615, GRADE 60 UNLESS NOTED OTHERWISE.
4. PROVIDE NORMAL WEIGHT CONCRETE WITH A 28 DAY COMPRESSIVE STRENGTH OF 4,000 PSI.
5. CONCRETE PERMANENTLY EXPOSED TO WEATHER TO HAVE 4%-6% ENTRAINED AIR.
6. PLACE CONCRETE WITH A SLUMP OF 5"±1" UNLESS NOTED OTHERWISE.
7. THE USE OF CALCIUM CHLORIDE, CHLORIDE IONS, OR OTHER SALTS IS NOT PERMITTED.
8. PROVIDE WELDED WIRE REINFORCEMENT (W.W.R.) IN SLABS-ON-GRADE IN FLAT SHEETS CONFORMING TO ASTM A 1064, LAP W.W.R. A MINIMUM OF 6" AT EACH SPLICE. PLACE W.W.R. 1 1/2" BELOW THE TOP OF SLABS-ON-GRADE.
9. UNLESS NOTED OTHERWISE, PROVIDE THE FOLLOWING CONCRETE COVER ON ALL REINFORCING STEEL:
   9.1. CONCRETE AGAINST EARTH (NOT FORMED): 3"
   9.2. FORMED CONCRETE EXPOSED TO EARTH OR WEATHER: 1 1/2"
   9.3. FORMED CONCRETE NO EXPOSED TO EARTH OR WEATHER: 3/4"
10. TIE ALL REINFORCING STEEL AND EMBEDDED ITEMS SECURELY IN PLACE PRIOR TO PLACING CONCRETE. PROVIDE ADEQUATE SUPPORT TO MAINTAIN THE POSITION OF THE REINFORCEMENT WITHIN SPECIFIED TOLERANCES DURING ALL CONSTRICTION ACTIVITIES. "STICKING" DOWELS OR OTHER EMBEDDED ITEMS INTO WET CONCRETE IS NOT PERMITTED.
11. THE LOCATION OF CONSTRUCTION JOINTS REQUIRES THE APPROVAL OF THE ENGINEER OF RECORD. THOROUGHLY ROUGHEN AND CLEAN CONSTRUCTION JOINTS.
12. THE ADDITION OF SITE WATER TO INCREASE CONCRETE SLUMP IS NOT PERMITTED.
13. SUBMIT PROPOSED CONCRETE MIX DESIGN TO STRUCTURAL ENGINEER OF RECORD FOR APPROVAL PRIOR TO POURING CONCRETE.

CHAMFER ALL EXPOSED CORNERS A MINIMUM OF 3/4".

STRUCTURAL STEEL :

1. PROVIDE STRUCTURAL STEEL CONFORMING TO THE FOLLOWING STANDARDS:
   a. AISC MANUAL OF STEEL CONSTRUCTION, 15TH EDITION
   b. AISC 360-16, SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS
   c. AISC 303-10, CODE OF STANDARD PRACTICE FOR STRUCTURAL STEEL BUILDINGS AND BRIDGES
   d. AISC 326-09, DETAILING FOR STEEL CONSTRUCTION, 3RD EDITION
2. SHOP DRAWINGS:
   a. SUBMIT SHOP DRAWINGS PREPARED IN ACCORDANCE WITH AISC 326-09.
   b. PROVIDE COMPLETE WELDING INFORMATION USING AWS SYMBOLS.
   c. USE PREQUALIFIED WELDED JOINTS PER AISC AND AWS D1.1 "STRUCTURAL WELDING CODE."
   d. DO NOT BEGIN FABRICATION UNTIL SHOP DRAWINGS ARE COMPLETED AND REVIEWED BY THE STRUCTURAL ENGINEER OF RECORD.
3. UNLESS NOTED OTHERWISE PROVIDE STRUCTURAL STEEL CONFORMING TO:
   a. WIDE FLANGE SHAPES: ASTM A992
   b. CHANNELS, ANGLES AND PLATES: ASTM A36
   c. HOLLOW STEEL SECTIONS (HSS): ASTM A500, GRADE B
   d. STRUCTURAL PIPES: ASTM A53, TYPE E OR S, GRADE B
   e. HEADED STUDS: ASTM A 29
   f. DEFORMED BAR ANCHORS (DBA): ASTM A 496
   g. ANCHOR RODS: ASTM F 1554, GRADE 36.
4. BOLTED CONNECTIONS:
   a. UNLESS NOTED OTHERWISE, MAKE ALL CONNECTIONS WITH 3/4" DIAMETER ASTM A 325 BOLTS.
   b. ASSEMBLE AND INSPECT BOLTED CONNECTIONS IN ACCORDANCE WITH RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS (RCSC) "SPECIFICATION FOR JOINTS USING HIGH STRENGTH BOLTS", DECEMBER 31, 2009.
   c. PROVIDE SNUG TIGHT JOINTS.
5. WELDED CONNECTIONS:
   a. MAKE ALL WELDED CONNECTIONS IN ACCORDANCE WITH AWS D1.1 "STRUCTURAL WELDING CODE", USING TYPE E70XX ELECTRODES.
   b. EMPLOY ONLY CERTIFIED WELDERS.
   c. MAINTAIN PROOF OF CERTIFICATION AT THE JOB SITE.
6. PROVIDE CONNECTIONS FOR BEAMS WHICH CANNOT CONFORM TO THE TYPICAL CONNECTION DETAILS IN ACCORDANCE WITH THE FOLLOWING:
   a. WHERE MEMBER REACTIONS ARE NOT SHOWN ON THE DRAWINGS, DETAIL CONNECTIONS FOR THE MAXIMUM UNIFORM LOAD SHOWN IN THE MAXIMUM TOTAL UNIFORM LOAD TABLES, IN TABLE 3-6 OF THE AISC STEEL CONSTRUCTION MANUAL FOR THE SPAN SHOWN ON THE DRAWING.
   b. WHERE MEMBER REACTIONS ARE SHOWN, PROVIDE CONNECTIONS TO DEVELOP THE REACTIONS SHOWN.
   c. WHERE CONNECTIONS ARE SUBJECT TO ECCENTRICITY, DETAIL CONNECTIONS THAT ACCOUNT FOR THE ECCENTRICITY.
7. PROVIDE SPECIAL CONNECTIONS BETWEEN STEEL FRAMING COMPONENTS NOT DETAILED BY THE STRUCTURAL ENGINEER OF RECORD DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE WHERE THE PROJECT IS TO BE CONSTRUCTED INCLUDING BUT NOT LIMITED TO BRACE END CONNECTIONS, MOMENT RESISTING CONNECTIONS, MODIFIED BEAM SEAT CONNECTIONS, AND MEMBER SPLICE CONNECTIONS.
8. DO NOT USE GAS CUTTING TORCHES TO CORRECT FABRICATION ERRORS IN STRUCTURAL STEEL FRAMING.
9. PROVIDE TEMPORARY BRACING FOR STRUCTURAL STEEL FRAMING UNTIL ALL PERMANENT BRACING, MOMENT CONNECTIONS, AND FLOOR/ROOF DECKS (DIAPHRAGMS) ARE COMPLETELY INSTALLED.
10. PAINT STRUCTURAL STEEL IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS. DO NOT PAINT STEEL SURFACES TO BE ENCASED IN CONCRETE. SURFACES TO RECEIVE FIREPROOFING, CONNECTIONS DESIGNATED AS FRICTION TYPE, SURFACES TO BE WELDED, OR SURFACES RECEIVING WELDED STUDS OR DEFORMED BAR ANCHORS ("DBA'S") IN THE FIELD.

COLD FORMED METAL FRAMING:

1. PROVIDE COLD-FORMED METAL FRAMING CONFORMING WITH THE FOLLOWING STANDARDS:
   AISI S100-07 / S1.09 NORTH AMERICAN SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS
2. PROVIDE CURTAIN WALL FRAMING INSTALLATION TO ACCOMMODATE VERTICAL DISPLACEMENT OF THE PRIMARY STRUCTURE.
3. DESIGN SLIP TRACK USING THE GUIDELINES ESTABLISHED IN STEEL STUD MANUFACTURER'S ASSOCIATION (SSMA) TECHNICAL NOTE NUMBER 3, PUBLISHED APRIL 2000.
4. PROVIDE STUDS, RUNNER TRACK, AND ASSOCIATED ACCESSORIES OF THE TYPE AND THICKNESS INDICATED ON THE DRAWINGS.
5. PROVIDE STUDS, JOISTS, RUNNER TRACK, AND ACCESSORIES MANUFACTURED OF HOT DIP GALVANIZED ASTM A 1003 STEEL WITH THE FOLLOWING YIELD STRENGTH:
   33,000 PSI 43-MIL (18 GAGE) MEMBERS
   50,000 PSI 54-MIL (16 GAGE), 68-MIL (14 GAGE), AND 97-MIL (12 GAGE) MEMBERS
6. SUBMIT SHOP DRAWINGS SHOWING THE SIZE OF ALL MEMBERS AND ALL CONNECTIONS SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE WHERE THE PROJECT IS TO BE CONSTRUCTED.
   A. REVIEW OF SHOP DRAWINGS BY THE STRUCTURAL ENGINEER OF RECORD IS FOR:
1. GENERAL CONFORMANCE WITH THE CONTRACT DOCUMENTS REGARDING ARRANGEMENT AND SIZES OF MEMBERS.
2. THE DESIGNER'S INTERPRETATION OF THE DESIGN LOADS AND CONTRACT DOCUMENT DETAILS.
7. MINIMUM CONNECTIONS (UNLESS NOTED OTHERWISE ON THE DRAWINGS):
   A. STUD TO STUD CONNECTIONS: A MINIMUM OF TWO 10 - 16 SELF TAPPING SCREWS.
   B. STUD TO TRACK CONNECTIONS: TWO 10 - 16 SELF TAPPING SCREWS.
   C. TRACK ON CONCRETE SLAB: 0.157" Ø X 1 ¼"POWER ACTUATED FASTENERS AT 1'-6" ON CENTER MAXIMUM.
   D. MULTIPLE STUD JAMBS: #10 SCREWS AT 12" ON CENTER PENETRATING EACH MEMBER.
   E. STUD TO WALL SHEATHING: ½" X 1 ⅝" BUGLE HEAD #6 SELF DRILLING SCREWS AT 8" ON CENTER AT EDGES AND 12" ON CENTER IN FIELD.
1. SEE ARCHITECTURAL DRAWINGS FOR EXACT SHEATHING TYPE.
   F. STUD TO STRUCTURAL STEEL: AS SHOWN ON SECTIONS.
8. PROVIDE BRIDGING AND BRACING PER STUD MANUFACTURERS RECOMMENDATIONS.
9. REINFORCE EXTERIOR STUDS THAT ARE CUT TO INSTALL MECHANICAL OR ELECTRICAL MATERIAL. SUBMIT REINFORCEMENT DETAIL FOR APPROVAL BEFORE PROCEEDING WITH CONSTRUCTION.

POST-INSTALLED ANCHORS:

1. GENERAL
   A. PRE-CONSTRUCTION DUTIES OF THE CONTRACTOR:
1. ARRANGE FOR AN ANCHOR MANUFACTURER'S REPRESENTATIVE TO PROVIDE ONSITE INSTALLATION TRAINING FOR ALL OF THEIR ANCHORING PRODUCTS SPECIFIED.
2. PROVIDE THE STRUCTURAL ENGINEER OF RECORD MUST RECEIVE DOCUMENTED CONFIRMATION THAT ALL OF THE CONTRACTOR'S PERSONNEL WHO INSTALL ANCHORS ARE TRAINED PRIOR TO THE COMMENCEMENT OF INSTALLING ANCHORS.
   B. INSTALL POST-INSTALLED ANCHORS ONLY WHERE SPECIFIED ON THE CONSTRUCTION DOCUMENTS.
   C. OBTAIN APPROVAL FROM THE ENGINEER-OF-RECORD PRIOR TO INSTALLING POST-INSTALLED ANCHORS IN PLACE OF MISSING OR MISPLACED CAST-IN-PLACE ANCHORS.
   D. ANCHOR CAPACITY IS DEPENDANT UPON SPACING BETWEEN ADJACENT ANCHORS AND PROXIMITY OF ANCHORS TO EDGE OF CONCRETE. INSTALL ANCHORS IN ACCORDANCE WITH SPACING AND EDGE CLEARANCES INDICATED ON THE DRAWINGS.
   E. EXISTING REINFORCING BARS AND OTHER EMBEDDED MATERIAL CONTAINED IN THE CONCRETE STRUCTURE MAY CONFLICT WITH SPECIFIC ANCHOR LOCATIONS.
1. CONTRACTOR REVIEW THE EXISTING STRUCTURAL DRAWINGS AND UNDERTAKE TO LOCATE THE POSITION OF MATERIAL EMBEDDED IN THE CONCRETE AT THE LOCATIONS OF THE DETAILED ANCHORS, BY HILTI FERROSCAN, GPR, X-RAY, CHIPPING OR OTHER MEANS UNLESS IT IS NOTED ON THE DRAWINGS THAT THE BARS CAN BE CUT.
   F. DRILL AND CLEAN HOLES IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.
   G. SUBMIT SUBSTITUTION REQUESTS, FOR PRODUCTS OTHER THAN THOSE SPECIFIED BELOW TO THE ENGINEER-OF-RECORD PRIOR TO USE ALONG WITH:
1. PROVIDE CALCULATIONS THAT ARE PREPARED & SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
2. PROVIDE CALCULATIONS THAT DEMONSTRATE THE SUBSTITUTED PRODUCT IS CAPABLE OF ACHIEVING EQUIVALENT PERFORMANCE VALUES (MINIMUM) OF THE SPECIFIED PRODUCT USING THE APPROPRIATE DESIGN PROCEDURE AND/OR STANDARD(S) AS REQUIRED BY THE BUILDING CODE.
3. INCLUDE CONSIDERATION OF CREEP, IN-SERVICE TEMPERATURE AND INSTALLATION TEMPERATURE IN SUBSTITUTION REQUEST.
4. EVALUATION OF SUBSTITUTIONS WILL BE BASED ON THEIR HAVING AN ICC ESR SHOWING COMPLIANCE WITH THE RELEVANT BUILDING CODE FOR SEISMIC USES, LOAD RESISTANCE, INSTALLATION CATEGORY, AND AVAILABILITY OF COMPREHENSIVE INSTALLATION INSTRUCTIONS.
2. CONCRETE ANCHORS
   A. MEDIUM DUTY MECHANICAL ANCHORS FOR USE IN CRACKED AND UN-CRACKED CONCRETE THAT HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ACI 355.2 AND ICC-ES AC193. PRE-APPROVED MECHANICAL ANCHORS INCLUDE:
1. SIMPSON STRONG-TIE "STRONG-BOLT" (ICC-ES ESR-1771)
2. HILTI KWIK BOLT-TZ EXPANSION ANCHORS (ICC ESR-1917)
3. HILTI KWIK HUS-EZ AND KWIK HUS EZ-I SCREW ANCHORS (ICC ESR-3027)
4. SIMPSON STRONG-TIE "TITEN-HD" (ICC-ES ESR-2713)
5. SIMPSON STRONG-TIE "STRONG-BOLT 2" (ICC-ES ESR-3037)
6. HILTI KWIK BOLT 3 EXPANSION ANCHORS (UN-CRACKED CONCRETE ONLY) (ICC ESR-2302)
   B. HEAVY DUTY MECHANICAL ANCHORS FOR CRACKED AND UN-CRACKED CONCRETE USE:
1. HILTI HDA UNDERCUT ANCHORS (ICC ESR 1546)
2. HILTI HSL-3 EXPANSION ANCHORS (ICC ESR 1545)
   C. ADHESIVE ANCHORS FOR USE IN CRACKED AND UN-CRACKED CONCRETE THAT HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ICC-ES AC308. PRE-APPROVED ADHESIVE ANCHORS INCLUDE:
1. SIMPSON STRONG-TIE "SET-XP" (ICC-ES ESR-2508)
2. HILTI HIT-HY 200 SAFE SET SYSTEM WITH HILTI HIT-Z ROD (ICC ESR-3187)
3. HILTI HIT-RE 500-V3 EPOXY ADHESIVE ANCHORING SYSTEM WITH HAS-E THREADED ROD (ICC ESR-3814 FOR SLOW CURE APPLICATIONS),
3. MASONRY ANCHORS
   A. ANCHORAGE TO SOLID-GROUTED CONCRETE MASONRY
1. MECHANICAL AND CONCRETE SCREW ANCHORS FOR USE IN SOLID-GROUTED CONCRETE MASONRY SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ICC-ES AC01 OR AC106, RESPECTIVELY. PRE-APPROVED MECHANICAL AND CONCRETE SCREW ANCHORS INCLUDE:
   A. SIMPSON STRONG-TIE "WEDGE-ALL" (ICC-ES ESR-1396)
   B. SIMPSON STRONG-TIE "TITEN-HD" (ICC-ES ESR-1056)
   C. HILTI KWIK HUS-EZ SCREW ANCHOR (ICC ESR-3056)
   D.HILTI KWIK BOLT-3 EXPANSION ANCHORS (ICC ESR-1385)
2. ADHESIVE ANCHORS FOR USE IN SOLID-GROUTED CONCRETE MASONRY SHALL HAVE BEEN TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ICC-ES AC58. PRE-APPROVED ADHESIVE ANCHORS INCLUDE:
   A. SIMPSON STRONG-TIE "SET" (ICC-ES ESR-1772)
   B. SIMPSON STRONG-TIE "ACRYLIC-TIE" (ICC-ES ER-5791)
   C. HILTI HIT-HY 70 MASONRY ADHESIVE ANCHORING SYSTEM (ICC PENDING).
   D. PROVIDE STEEL ANCHOR ELEMENT CONSISTING OF CONTINUOUSLY THREADED ROD.
   B. ANCHORAGE TO HOLLOW CONCRETE MASONRY/UNREINFORCED CLAY BRICK MASONRY
1. SCREW ANCHORS FOR USE IN HOLLOW CONCRETE MASONRY SHALL HAVE BEEN TESTED AND QUALIFIED IN ACCORDANCE WITH ICC-ES AC106. PRE-APPROVED SCREW ANCHORS INCLUDE:
   A. SIMPSON STRONG-TIE "TITEN-HD" (ICC-ES ESR-1056) HILTI KWIK HUS-EZ SCREW ANCHOR PER ICC ESR-3056
   B. HILTI KWIK HUS-EZ SCREW ANCHOR (ICC ESR-3056)
2. ADHESIVE ANCHORS WITH SCREEN TUBES THAT ARE TESTED AND QUALIFIED IN ACCORDANCE WITH ICC-ES AC58 OR AC60, AS APPROPRIATE. USE THE APPROPRIATE SCREEN TUBE AS RECOMMENDED BY THE ADHESIVE MANUFACTURER. PRE-APPROVED ADHESIVE ANCHORS WITH SCREEN TUBES INCLUDE:
   A. SIMPSON STRONG-TIE "SET" (ICC-ES ESR-1772)
   B. SIMPSON STRONG-TIE "ACRYLIC-TIE" (ICC-ES ER-5791)
   C. SIMPSON STRONG-TIE "ET" (ICC-ES ER-4945)
   D. HILTI HIT-HY 70 MASONRY ADHESIVE ANCHORING SYSTEM (ICC ESR-3342.)

E. PROVIDE STEEL ANCHOR ELEMENT CONSISTING OF CONTINUOUSLY THREADED ROD.

DESIGN LOADING CRITERIA

1.	DEAD LOADS	
	ROOF DEAD LOAD	10 PSF
2.	LIVE LOADS	
	FLOOR LIVE LOAD	125 PSF
	ROOF LIVE LOAD	20 PSF
3.	SNOW LOADS	
	GROUND SNOW LOAD (Pg)	60 PSF
	SNOW EXPOSURE FACTOR (Ce)	1.0
	SNOW LOAD IMPORTANCE FACTOR (Is)	1.0
	THERMAL FACTOR (Ct)	1.0
	UNIFORM ROOF SNOW LOAD	42.0 PSF
4.	WIND LOADS	
	ULTIMATE DESIGN WIND SPEED (Vult)	112 MPH
	NOMINAL DESIGN WIND SPEED (Vasd)	87 MPH
	RISK CATEGORY	II
	WIND EXPOSURE	B
	INTERNAL PRESSURE COEFFICIENT	± 0.18
	COMPONENTS AND CLADDING PRESSURES	SEE TABLE
5.	SEISMIC LOADS	
	RISK CATEGORY	II
	IMPORTANCE FACTOR (Ie)	1.0
	SITE CLASS	D
	SEISMIC PARAMETERS	
	Ss = 0.280 S1 = 0.070	
	Sds = 0.298 Sd1 = 0.115	
	DESIGN CATEGORY	B
	SEISMIC FORCE RESISTING SYSTEM	LIGHT FRAMED WALLS SHEATHED WITH STEEL SHEETS
	RESPONSE MODIFICATION FACTOR (R)	6.5
	ANALYSIS PROCEDURE	EQUIVALENT LATERAL FORCE
	BASE SHEAR	V = 310 KIPS
6.	FLOOD DESIGN DATA	
	FLOOD HAZARD ZONE	X (UNSHADED)

COMPONENT AND CLADDING DESIGN
WIND PRESSURES (PSF)

ROOF SURFACE PRESSURES

Area	10 sf	20 sf	50 sf	100 sf	200 sf	350 sf	500 sf	1000 sf
Negative Zone 1	-39.6	-37.0	-33.5	-30.9	-28.3	-26.2	-24.8	-24.8
Negative Zone 2	-22.7	-22.7	-22.7	-22.7	-19.6	-17.0	-16.0	-16.0
Negative Zone 2e	-52.2	-48.9	-44.4	-41.1	-37.7	-35.0	-33.3	-33.3
Negative Zone 3	-52.2	-48.9	-44.4	-41.1	-37.7	-35.0	-33.3	-33.3
Positive Zone 1 & 2	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0
Positive Zones 2 & 3	22.7	21.7	20.4	19.4	18.4	17.6	17.1	17.1
Overhang Zone 1&1'	-35.8	-35.2	-34.3	-33.7	-28.2	-23.9	-21.1	-21.1
Overhang Zone 2	-48.4	-43.9	-38.0	-33.6	-29.1	-25.5	-23.2	-23.2
Overhang Zone 3	-48.4	-43.9	-38.0	-33.6	-29.1	-25.5	-23.2	-23.2

PARAPET SURFACE PRESSURES

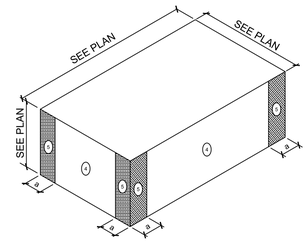
SOLID PARAPET PRESSURE	10 sf	20 sf	50 sf	100 sf	200 sf	500 sf
CASE A: Zone 2	69.6	65.1	59.1	54.6	50.1	44.1
Zone 3	69.6	65.1	59.1	54.6	50.1	44.1
CASE B: Interior zone	-41.1	-39.0	-36.3	-34.2	-32.1	-29.3
Corner zone	-47.0	-43.8	-39.7	-36.6	-33.5	-29.3

WALL SURFACE PRESSURES

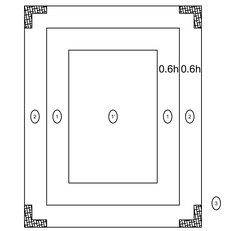
Area	10 sf	100 sf	200 sf	500 sf
NEGATIVE ZONE 4	-24.6	-21.5	-20.3	-18.9
NEGATIVE ZONE 5	-30.5	-25.6	-21.6	-18.9
POSITIVE ZONE 4 & 5	22.7	19.4	18.4	17.1

NOTES:
1) TABLE PRESSURES ARE FOR THE SQUARE FOOT (SF) TRIBUTARY AREA'S=DWN. FOR OTHER TRIBUTARY AREAS, LINEARLY INTERPOLATE BETWEEN VALUES S=DWN ABOVE
2) POSITIVE PRESSURES ACT TOWARD THE BUILDING. NEGATIVE PRESSURES ACT AWAY FROM THE BUILDING.
3) SEE DIAGRAMS FOR LOCATION OF ZONES.
4) PRESSURES SHOWN ARE ULTIMATE PRESSURES, MULTIPLY BY 0.6 FOR NOMINAL PRESSURES

0.6h = 25.2 ft a = 13.0 ft



WALLS



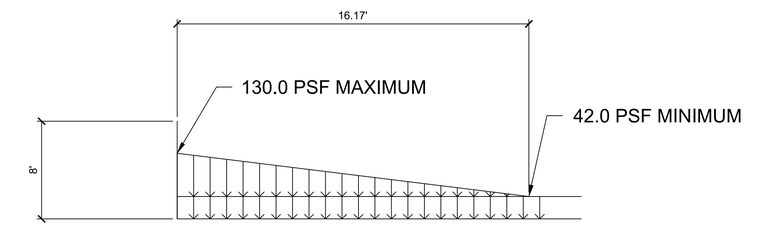
ROOF

COMPONENTS AND CLADDING WIND PRESSURES

TENSION SPLICE LENGTHS *(IN INCHES)*

BAR SIZE	LAP CLASS	3,000 psi CONCRETE			
		TOP BARS		OTHER BARS	
		CASE 1	CASE 2	CASE 1	CASE 2
#3	A	22	32	17	25
	B	28	42	22	32
#4	A	29	43	22	33
	B	37	56	29	43
#5	A	36	54	28	41
	B	47	70	36	54
#6	A	43	64	33	50
	B	56	84	43	64
#7	A	63	94	48	72
	B	81	122	63	94

TENSION LAP SPLICE LENGTHS



SNOW DRIFT LOAD AT HIGH PARAPETS

SCALE: NONE

COMPASS
BUILDING SYSTEMS
4547 SILVER SPRINGS BLVD., POWDER SPRINGS, GEORGIA, 30127
(770) 439-1250 / (800) 243-8438 / FAX: (770) 439-0087 / www.compassbuilding.com

Storage Facility
97 Warren Ave.
Portland, ME

Engineer

Drawn By:	Checked By:
1719-RCD	CBS
Project#	CBS#1086
Date:	1/28/2026
Rev:	Review - v1.4
Rev:	

CB-S01

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SCHEDULE OF SPECIAL INSPECTION SERVICES

PROJECT

MATERIAL / ACTIVITY	SERVICE	APPLICABLE TO THIS PROJECT Y/N	EXTENT	AGENT*	DATE COMPLETED
1704.2 Inspection of Fabricators					
Verify fabrication/quality control procedures.	In-plant review (3)	.	Periodic	.	.
1705.1.1 Special Cases (work unusual in nature, including but not limited to alternative materials and systems, unusual design applications, materials and systems with special manufacturer's requirements)	Submittal review, shop (3) and/or field inspection	.		.	.
1705.2 Steel Construction					
1. Fabricator and erector documents (Verify reports and certificates as listed in AISC 360, chapter N, paragraph 3.2 for compliance with construction documents)	Submittal Review	.	Each submittal	.	.
2. Material verification of structural steel	Shop (3) and field inspection	.	Periodic	.	.
3. Embedments (Verify diameter, grade, type, length, embedment. See 1705.3 for anchors)	Field inspection	.	Periodic	.	.
4. Verify member locations, braces, stiffeners, and application of joint details at each connection comply with construction documents	Field inspection	.	Periodic	.	.
5. Structural steel welding:					
a. Inspection tasks Prior to Welding (Observe, or perform for each welded joint or member, the QA tasks listed in AISC 360, Table N5,4-1)	Shop (3) and field inspection	.	Observe or Perform as noted (4)	.	.
b. Inspection tasks During Welding (Observe, or perform for each welded joint or member, the QA tasks listed in AISC 360, Table N5,4-2)	Shop (3) and field inspection	.	Observe (4)	.	.
c. Inspection tasks After Welding (Observe, or perform for each welded joint or member, the QA tasks listed in AISC 360, Table N5.4-3)	Shop (3) and field inspection	.	Observe or Perform as noted (4)	.	.
d. Nondestructive testing (NDT) of welded joints: see Commentary					
1) Complete penetration groove welds 5/16" or greater in *risk category* III or IV	Shop (3) or field Ultrasonic testing - 100%	.	Periodic	.	.
2) Complete penetration groove welds 5/16" or greater in *risk category* II	Shop (3) or field Ultrasonic testing - 10% of welds mimimum	.	Periodic	.	.
3) Thermally cut surfaces of access holes when material t > 2"	Shop (3) or field magnetic Partical or Penetrant testing	.	Periodic	.	.
4) Welded joints subject to fatigue when required by AISC 360, Appendix 3, Table A-3,1	Shop (3) or field radiographic or Ultrasonic testing	.	Periodic	.	.
5) Fabricator's NDT reports when fabricator performs NDT	Verify reports	.	Each submittal (5)	.	.
6. Structural steel bolting:	Shop (3) and field inspection				
a. Inspection tasks Prior to Bolting (Observe, or perform for each bolted connection, in accordance with QA tasks listed in AISC 360, Table N5,6-1)		.	Observe or Perform as noted (4)	.	.
b. Inspection tasks During Bolting (Observe the QA tasks listed in AISC 360, Table N5,6-2)		.	Observe (4)	.	.
1) Pre-tensioned and slip-critical joints					
a) Turn-of-nut with matching markings		.	Periodic	.	.
b) Direct tension indicator		.	Periodic	.	.
c) Twist-off type tension control bolt		.	Periodic	.	.
d) Turn-of-nut without matching markings		.	Continuous	.	.
e) Calibrated wrench		.	Continuous	.	.
2) Snug-tight joints		.	Periodic	.	.
c. Inspection tasks After Bolting (Perform tasks for each bolted connection in accordance with QA tasks listed in AISC 360, Table N5,6-3)		.	Perform (4)	.	.
7. Inspection of steel elements of composite construction prior to concrete placement in accordance with QA tasks listed in AISC 360, Table N6,1	Shop (3) and field inspection and testing	.	Observe or Perform as noted (4)	.	.
1705.2.2 Steel Construction Other Than Structural Steel					
1. Material verification of cold-formed steel deck:					
a. Identification markings	Field inspection	.	Periodic	.	.
b. Manufacturer's certified test reports	Submittal review	.	Each submittal	.	.
2. Connection of cold-formed steel deck to supporting structure:	Shop (3) and field inspection	.		.	.
a. Welding		.	Periodic	.	.
b. Other fasteners (in accordance with AISC 360, Section N6)		.		.	.
1) Verify fasteners are in conformance with approved submittal		.	Periodic	.	.
2) Verify fasteners installation is in conformance with approved submittal and manufacturer's recommendations		.	Periodic	.	.
3. Reinforcing steel	Shop (3) and field inspection				
a. Verification of weldability of steel other than ASTM A706		.	Periodic	.	.
b. Reinforcing steel resisting flexural and axial forces in intermediate and special moment frames, boundary elements of special concrete structural walls and shear reinforcement		.	Continuous	.	.
c. Shear reinforcement		.	Continuous	.	.
d. Other reinforcing steel		.	Periodic	.	.
1705.3 Concrete Construction					
1. Inspection of reinforcing steel installment (see 1705.2.2 for welding)	Shop (3) and field inspection	.	Periodic	.	.
2. Inspection of prestressing steel installation	Shop (3) and field inspection	.	Periodic	.	.
3. Inspection of anchors cast in concrete where allowable loads have been increased per section 1908.5 or where strength design is used	Shop (3) and field inspection	.	Periodic	.	.

SCHEDULE OF SPECIAL INSPECTION SERVICES

PROJECT

MATERIAL / ACTIVITY	SERVICE	APPLICABLE TO THIS PROJECT Y/N	EXTENT	AGENT*	DATE COMPLETED
4. Inspection of anchors and reinforcing steel post-installed in hardened concrete: Per research reports including verification of anchor type, anchor dimensions, hole dimensions, hole cleaning procedures, anchor spacing, edge distances,concrete embedment and tightening torque	Field inspection	.	Periodic or as required by the research report issued by an approved source	.	.
5. Verify use of approved design mix	Shop (3) and field inspection	.	Periodic	.	.
6. Fresh concrete sampling, perform slump and air content tests and determine temperature of concrete	Shop (3) and field inspection	.	Continuous	.	.
7. Inspection for concrete and shotcrete placement for proper application techniques	Shop (3) and field inspection	.	Continuous	.	.
8. Inspection for maintenance of specified curing temperature and techniques	Shop (3) and field inspection	.	Periodic	.	.
9. Inspection of formwork for shape, lines, location and dimensions	Field inspection	.	Periodic	.	.
10. Concrete strength testing and verification of compliance with construction documents	Field testing and review of laboratory reports	.	Periodic	.	.
1705.4 Masonry Construction					
(A) Level A, B and C Quality Assurance:					
1. Verify compliance with approved submittals	Field inspection	.	Periodic	.	.
(B) Level B Quality Assurance:					
1. Verification of f'm and f_{AAC} prior to construction	Testing by unit strength method or prism test method	.	Periodic	.	.
(C) Level C Quality Assurance:					
1. Verification of f'm and f_{AAC} prior to construction and for every 5,000 SF during construction	Testing by unit strength method or prism test method	.	Periodic	.	.
2. Verification of proportions of materials in premixed or preblended mortar, prestressing grout, and grout other than self-consolidating grout, as delivered to the project site	Field inspection	.	Continuous	.	.
3. Verify placement of masonry units	Field inspection	.	Periodic	.	.
(D) Levels B and C Quality Assurance:					
1. Verification of Slump Flow and Visual Stability Index (VSI) of self-consolidating grout as delivered to the project	Field testing	.	Continuous	.	.
2. Verify compliance with approved submittals	Field inspection	.	Periodic	.	.
3. Verify proportions of site-mixed mortar, grout and prestressing grout for bonded tendons	Field inspection	.	Periodic	.	.
4. Verify grade, type, and size of reinforcement and anchor bolts, and prestressing tendons and anchorages	Field inspection	.	Periodic	.	.
5. Verify construction of mortar joints	Field inspection	.	Periodic	.	.
6. Verify placement of reinforcement, connectors, and prestressing tendons and anchorages	Field inspection	.	Level B - Periodic	.	.
		.	Level C - Continuous	.	.
7. Verify grout space prior to grouting	Field inspection	.	Level B - Periodic	.	.
		.	Level C - Continuous	.	.
8. Verify placement of grout and prestressing grout for bonded tendons	Field inspection	.	Continuous	.	.
9. Verify size and location of structural masonry elements	Field inspection	.	Periodic	.	.
10. Verify type, size, and location of anchors, including details of anchorage of masonry to structural members, frames, or other construction	Field inspection	.	Level B - Periodic	.	.
		.	Level C - Continuous	.	.
11. Verify welding of reinforcement (see 1705.2.2)	Field inspection	.	Continuous	.	.
12. Verify preparation, construction, and protestion of masonry during cold weather (temperature below 40°F) or hot weather (temperature above 90°F)	Field inspection	.	Periodic	.	.
13. Verify application and measurement of prestressing force	Field inspection	.	Continuous	.	.
14. Verify placement of AAC masonry units and construction of thin-bed mortar joints (first 5000 SF of AAC masonry)	Field inspection	.	Continuous	.	.
15. Verify placement of AAC masonry units and construction of thin-bed mortar joints (after the first 5000 SF of AAC masonry)	Field inspection	.	Level B - Periodic	.	.
		.	Level C - Continuous	.	.
16. Verify properties of thin-bed mortar for AAC masonry (first 5000 SF of AAC masonry)	Field inspection	.	Continuous	.	.
17. Verify properties of thin-bed mortar for AAC masonry (after the first 5000 SF of AAC masonry)	Field inspection	.	Level B - Periodic	.	.
		.	Level C - Continuous	.	.
18. Prepare grout and mortar specimens	Field testing	.	Level B - Periodic	.	.
		.	Level C - Continuous	.	.
19. Observe preparation of prisms	Field inspection	.	Level B - Periodic	.	.
		.	Level C - Continuous	.	.
1705.6 Soils					
1. Verify materials below shallow foundations are adequate to achieve the design bearing capacity.	Field inspection	.	Periodic	.	.
2. Verify excavations are extended to proper depth and have reached proper material.	Field inspection	.	Periodic	.	.
3. Perform classification and testing of controlled fit materials.	Field inspection	.	Periodic	.	.
4. Verify use of proper materials, densities, and lift thicknesses during placement and compaction of controlled fill	Field inspection	.	Continuous	.	.
5. Prior to placement of controlled fill, observe subgrade and verify that site has been prepared properly	Field inspection	.	Periodic	.	.

SCHEDULE OF SPECIAL INSPECTION SERVICES

PROJECT

MATERIAL / ACTIVITY	SERVICE	APPLICABLE TO THIS PROJECT Y/N	EXTENT	AGENT*	DATE COMPLETED
1705.10.3 Wind-resisting Components					
1. Roof cladding	Shop (3) and field inspection	.	Periodic	.	.
2. Wall cladding	Shop (3) and field inspection	.	Periodic	.	.
1705.11.1 Structural Steel Special Inspections for Seismic Resistance					
Inspection of structural steel in accordance with AISC 341	Shop (3) and field inspection	.	In accordance with AISC 341	.	.
1705.11.2 Structural Wood Special Inspections for Seismic Resistance					
1. Inspection of field gluing operations of elements of the seismic-force resisting system	Field inspection	.	Continuous	.	.
2. Inspection of nailing, bolting, anchoring and other fastening of components within the seismic-force-resisting system	Shop (3) and field inspection	.	Periodic	.	.
1705.11.3 Cold-formed Steel Light-Frame Construction Special Inspections for Seismic Resistance					
1. Inspection during welding operations of elements of the seismic-force-resisting system	Shop (3) and field inspection	.	Periodic	.	.
2. Inspections for screw attachment, bolting, anchoring and other fastening of components within the seismic-force-resisting system	Shop (3) and field inspection	.	Periodic	.	.
1705.11.4 Designated Seismic Systems Verification					
Inspect and verify that the component label, anchorage or mounting conforms to the certificate of compliance in accordance with Section 1705.12.3	Field inspection	.	Periodic	.	.

* INSPECTION AGENTS	FIRM	ADDRESS	TELEPHONE NO.
1. To be determinded.			
2. Thomas Heckman	Heckman Engineering	2020 Brooke Forest Ct Alpharetta, GA 30022	(404) 919 -7165
3.			
4.			

Notes:

1. *The inspection and testing agent(s) shall be engaged by the Owner or the Owner's Agent, and not by the Contractor or subcontractor whose work is to be inspected or tested. Any conflict of interest must be disclosed to the Building Official prior to commencing work. The qualifications of the Special Inspector(s) and/or testing agencies may be subject to the approval of the Building Official and/or the Design Professional.*
2. *The list of Special Inspectors may be submitted as a separate document, if noted so above.*
3. *Special Inspections as required by Section 1704.2.5 are not required where the fabricator is approved in accordance with IBC Section 1704.2.5.2.*
4. *Observe on a random basis, operations need not be delayed pending these inspections. Perform these tasks on each welded joint, bolted connection, or steel element.*
5. *NDT of welds competed in an approved fabricator's shop may be performed by that fabricator when approved by the AHJ. Refer to AISC 360, N7.*

Encircle "Yes" or "No" as appropriate and date this document below:

Are Requirements for Seismic Resistance included in the Statement of Special Inspections? **Yes** (No)

Are Requirements for Wind Resistance included in the Statement of Special Inspections? **Yes** (No)

DATE: 01-16-2026

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Storage Facility

97 Warren Ave.
Portland, ME

Engineer

Drawn By:	Checked By:
1719-RCD	CBS

Project#	CBS#1086
Date:	1/28/2026
Rev:	Review - v1.4
Rev:	

CB-S02

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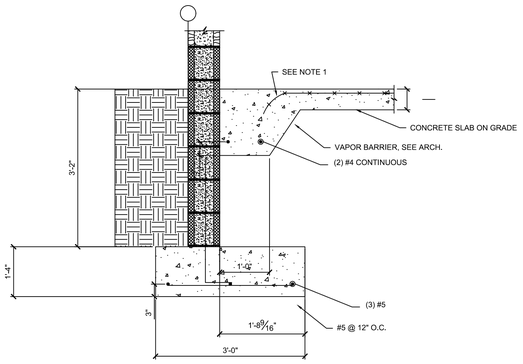
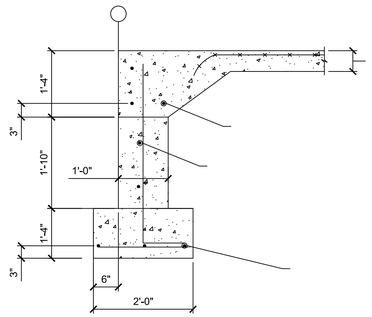
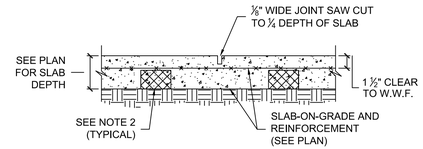


DETAIL OF EXTERIOR CMU WALL FOUNDATION 1
SCALE: NONE S04

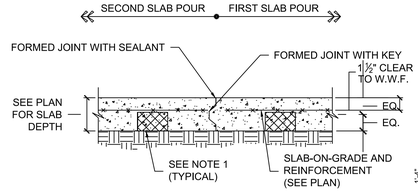


DETAIL OF EXTERIOR STUD WALL FOUNDATION 2
SCALE: NONE S04



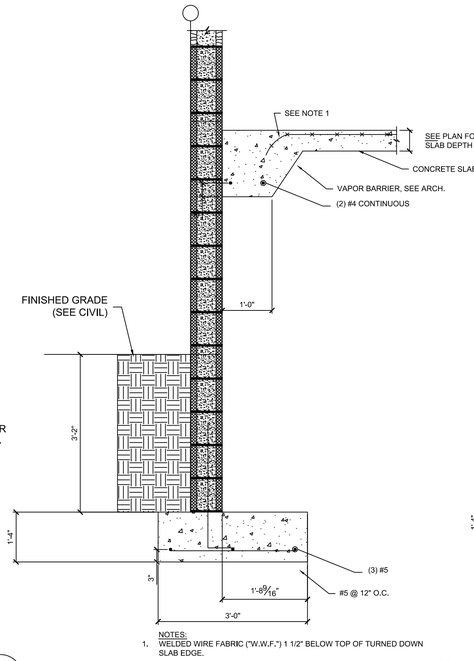
NOTES:
1. JOINT IN SLAB TO BE SAW CUT AS SOON AS THE CONCRETE WILL SAFELY SUPPORT WORKERS AND EQUIPMENT.
2. SUPPORT REINFORCEMENT WITH CONCRETE BRICKS OR SPECIALIZED ACCESSORY FOR SUPPORT BEARING ON GRADE.
3. SLAB TO BEAR ON 4" SUB-BASE, SEE FOUNDATION NOTES.

DETAIL OF TYPICAL SAWN CONTRACTION JOINT AT SLAB ON GRADE 5
SCALE: NONE S04



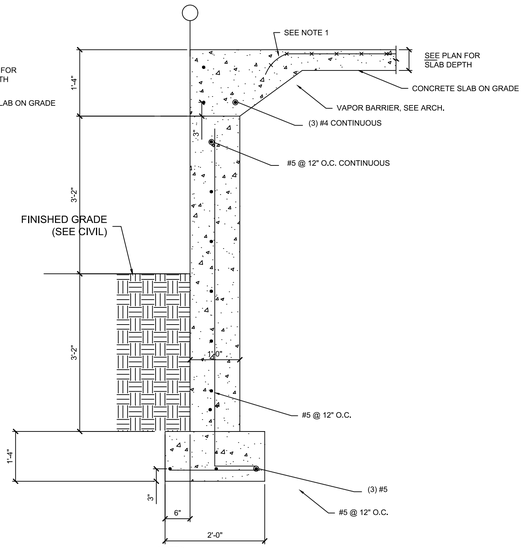
NOTES:
1. SUPPORT REINFORCEMENT WITH CONCRETE BRICKS OR SPECIALIZED ACCESSORY FOR SUPPORT BEARING ON GRADE.
2. SLAB TO BEAR ON 4" SUB-BASE, SEE FOUNDATION NOTES.

DETAIL OF TYPICAL CONSTRUCTION JOINT AT SLAB ON GRADE 6
SCALE: NONE S04



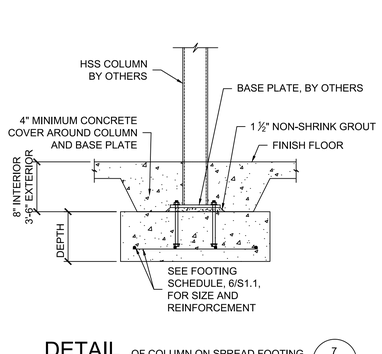
NOTES:
1. WELDED WIRE FABRIC ("W.W.F.") 1 1/2" BELOW TOP OF TURNED DOWN SLAB EDGE.

DETAIL OF EXTERIOR CMU WALL FOUNDATION 3
SCALE: NONE CB-S04



NOTES:
1. WELDED WIRE FABRIC ("W.W.F.") 1 1/2" BELOW TOP OF TURNED DOWN SLAB EDGE.

DETAIL OF EXTERIOR STUD WALL FOUNDATION 4
SCALE: NONE CB-S04

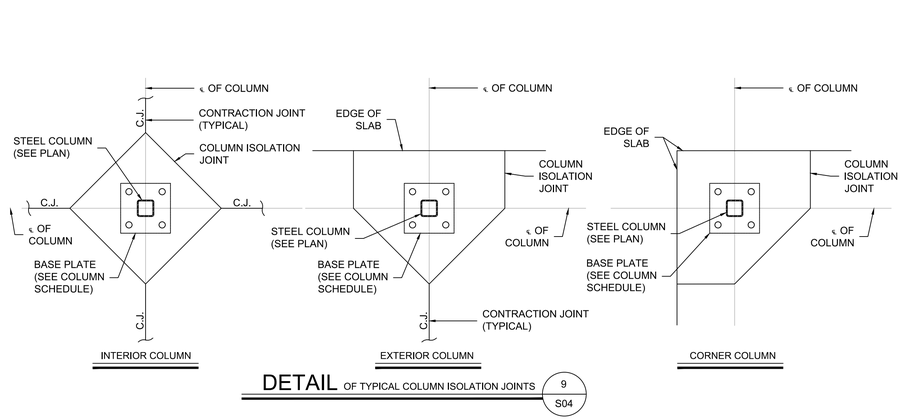


DETAIL OF COLUMN ON SPREAD FOOTING 7
SCALE: ¾" = 1'-0" S04

COLUMN FOOTING SCHEDULE

MARK	F4.0	F5.0	F6.0	F7.0
SIZE	4'-0" x 4'-0"	5'-0" x 5'-0"	6'-0" x 6'-0"	7'-0" x 7'-0"
DEPTH	1'-0"	1'-0"	1'-0"	1'-4"
REINF.	(4) #5 EACH WAY BOTTOM	(5) #5 EACH WAY BOTTOM	(6) #5 EACH WAY BOTTOM	(7) #5 EACH WAY TOP & BOTTOM
REMARKS				

SCHEDULE OF COLUMN FOOTINGS 8
SCALE: NONE S04



DETAIL OF TYPICAL COLUMN ISOLATION JOINTS 9
S04

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Storage Facility

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Engineer

Drawn By:	Checked By:
1719-RCD	CBS
Project#	CBS#1086
Date:	1/28/2026
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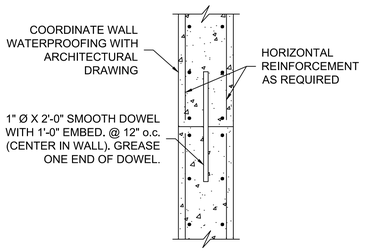
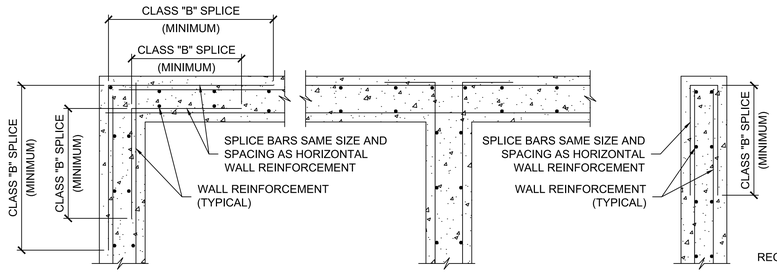


DETAIL OF CONCRETE WALL EXPANSION JOINT (X/X)

SCALE: NONE



TYPICAL BAR ARRANGEMENT AT WALL CORNERS, INTERSECTIONS AND ENDS

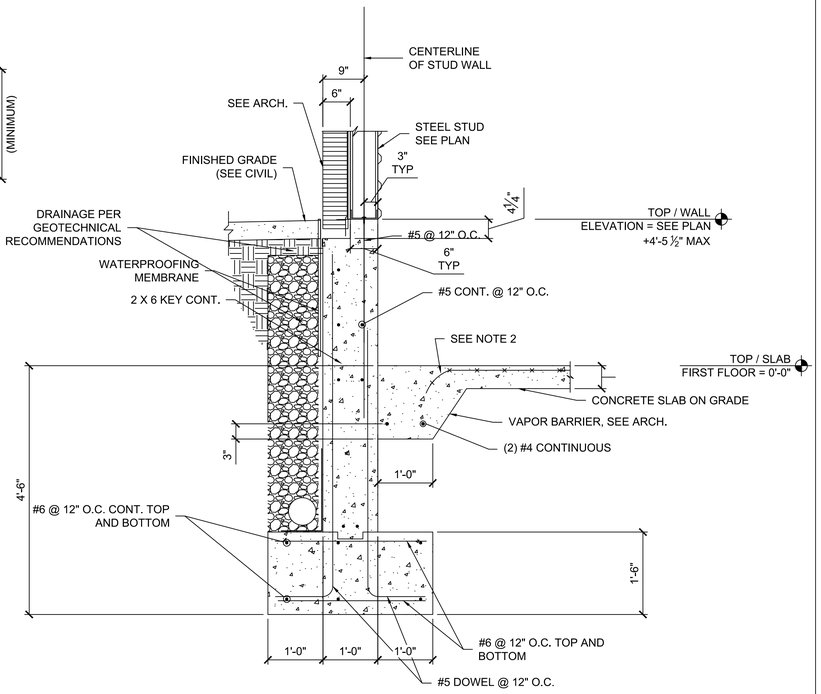
(BARS IN BOTH FACES)

NOTES:

1. BAR SPLICES SHALL BE CLASS "B" FOR HORIZONTAL AND VERTICAL STEEL TYPICALLY. ONLY 50% OF THE HORIZONTAL REINFORCING SHALL BE SPLICED AT ANY ONE VERTICAL PLANE.

DETAIL OF TYP. WALL REINFORCING ARRANGEMENT (X/X)

SCALE: NONE

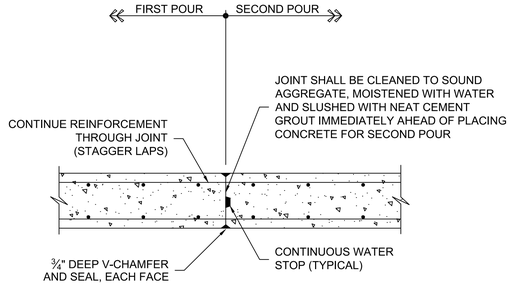


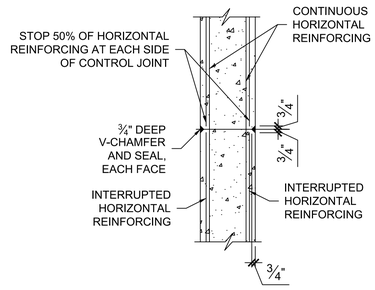
NOTES:

1. WALL TO BE BACKFILLED AFTER MAT SLAB HAS REACHED 7 DAY STRENGTH AND PRIOR TO SECOND FLOOR SLAB CONSTRUCTION.
2. WELDED WIRE FABRIC ("W.W.F.") 1 1/2" BELOW TOP OF TURNED DOWN SLAB EDGE.

SECTION THROUGH RETAINING WALL (X/X)

SCALE: ¾" = 1'-0"



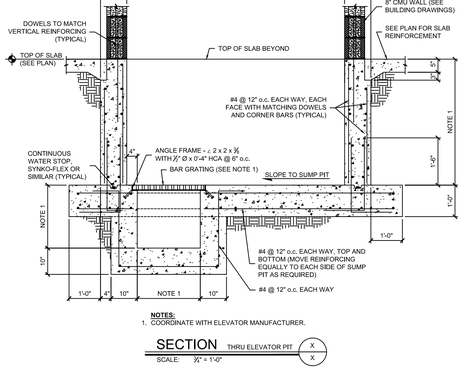


DETAIL OF WATERSTOP AT WALL JOINT (X/X)

SCALE: NONE

DETAIL OF CONCRETE WALL CONTROL JOINT (X/X)

SCALE: NONE

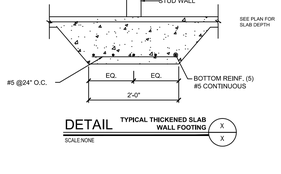


NOTES:

1. COORDINATE WITH ELEVATOR MANUFACTURER.

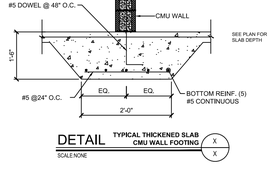
SECTION THRU ELEVATOR PIT (X/X)

SCALE: ¾" = 1'-0"



DETAIL TYPICAL THICKENED SLAB WALL FOOTING (X/X)

SCALE:NONE



DETAIL TYPICAL THICKENED SLAB CMU WALL FOOTING (X/X)

SCALE:NONE

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1719-RCD	CBS
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Rev:	

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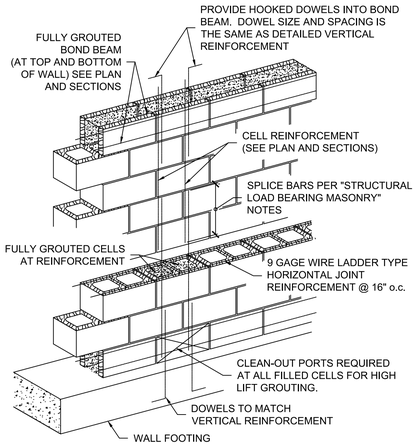
TENSION LAP SPLICE LENGTHS *(IN INCHES)*									
UNCOATED BARS - NORMAL WEIGHT CONCRETE - GRADE 60 BARS									
BAR SIZE	LAP CLASS	3,000 psi CONCRETE				4,000 psi CONCRETE			
		TOP BARS		OTHER BARS		TOP BARS		OTHER BARS	
		CASE 1	CASE 2	CASE 1	CASE 2	CASE 1	CASE 2	CASE 1	CASE 2
#3	A	22	32	17	25	19	28	15	22
	B	28	42	22	32	24	36	19	28
#4	A	29	43	22	33	25	37	19	29
	B	37	56	29	43	32	48	25	37
#5	A	36	54	28	41	31	47	24	36
	B	47	70	36	54	40	60	31	47
#6	A	43	64	33	50	37	56	29	43
	B	56	84	43	64	48	72	37	56

NOTES:
1. TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 12 INCHES OF CONCRETE CAST BELOW THE BARS. CASES 1 AND 2, WHICH DEPEND ON THE TYPE OF STRUCTURAL ELEMENT, CONCRETE COVER, AND THE CENTER TO CENTER SPACING OF THE BARS ARE DEFINED AS FOLLOWS:
2. BEAMS OR COLUMNS:
   CASE 1: COVER AT LEAST ONE BAR DIAMETER AND CENTER - CENTER SPACING AT LEAST TWO BAR DIAMETERS.
   CASE 2: COVER LESS THAN ONE BAR DIAMETER OR CENTER - CENTER SPACING LESS THAN TWO BAR DIAMETERS.
   ALL OTHERS:
   CASE 1: COVER AT LEAST ONE BAR DIAMETER AND CENTER - CENTER SPACING AT LEAST THREE BAR DIAMETERS.
   CASE 2: COVER LESS THAN ONE BAR DIAMETER OR CENTER - CENTER SPACING LESS THAN THREE BAR DIAMETERS.

TABLE OF CONCRETE REINFORCEMENT SPLICE LENGTHS

SCALE: NONE



LOW LIFT GROUTING PROCEDURE:
1. CONSTRUCT WALL TO A HEIGHT OF 5'-0".
2. ALLOW MORTAR TO SET SUFFICIENTLY TO WITHSTAND GROUT PRESSURE.
3. INSPECT UNITS FOR ALIGNMENT.
4. CLEAN OUT CELLS TO BE FILLED.
5. FILL CELLS TO 1 ½" BELOW TOP COURSE.
6. DELAY THREE TO FIVE MINUTES PRIOR TO CONSOLIDATING TO ALLOW WATER TO BE ABSORBED BY MASONRY.

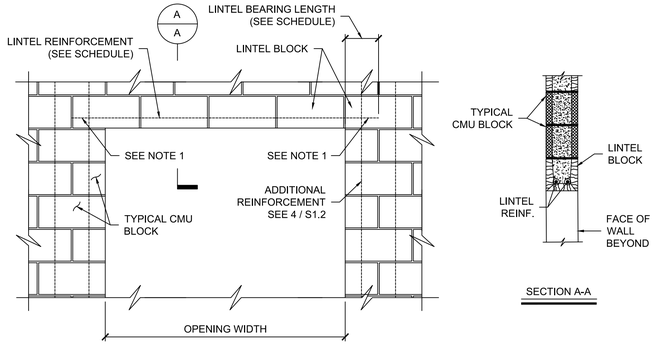
HIGH LIFT GROUTING PROCEDURE:
1. CONSTRUCT WALL TO FULL HEIGHT (24'-0" MAXIMUM).
2. ALLOW MASONRY TO CURE AT LEAST THREE DAYS.
3. CLEAN OUT CELLS TO BE FILLED THROUGH CLEAN-OUT PORTS.
4. PLACE GROUT IN FOUR FOOT LIFTS AND CONSOLIDATE AFTER EXCESS MOISTURE HAS BEEN ABSORBED BY MASONRY.
5. PLACE NEXT LIFT AS SOON AS POSSIBLE BUT NO LONGER THAN ONE HOUR LATER.
6. LIFT MASONRY UNITS OVER REINFORCEMENT. DO NOT INSTALL REINFORCEMENT AFTER UNITS HAVE BEEN PLACED.

DETAIL OF TYPICAL REINFORCED CMU WALL CONSTRUCTION

SCALE: NONE

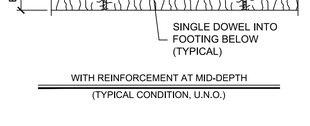
MASONRY WALL LINTEL SCHEDULE				
OPENING WIDTH		WALL DIMENSION AND REINFORCING		
MINIMUM	MAXIMUM	CONCRETE BLOCK OR CONCRETE		
		DEPTH	8" WALL	
	2'-0"	7 ⅝"	(2) #4 BOTTOM	
2'-1"	3'-6"	7 ⅝"	(2) #4 BOTTOM	
3'-7"	5'-0"	7 ⅝"	(2) #5 BOTTOM	
5'-1"	6'-6"	7 ⅝"	(2) #6 BOTTOM	
6'-7"	8'-0"	7 ⅝"	(2) #6 BOTTOM	
8'-1"	10'-0"	15 ⅝"	(4) #6 BOTTOM	

SCHEDULE NOTES:
1. DO NOT USE THIS SCHEDULE IF A LOAD OTHER THAN THE WALL LOAD IS IMPOSED ON THE LINTEL.
2. 8" BEARING EACH END ON SOLIDLY GROUTED CELL EACH SIDE OF OPENING REINFORCED PER DETAIL 3 / S1.3. SEE GENERAL NOTES FOR GROUT AND GROUT INSTALLATION INFORMATION.



DETAIL OF CMU WALL LINTELS

SCALE: ¾" = 1'-0"



WITH REINFORCEMENT AT MID-DEPTH
(TYPICAL CONDITION, U.N.O.)

PLAN DETAIL OF TYPICAL REINFORCED MASONRY CONSTRUCTION

SCALE: NONE

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Storage Facility

97 Warren Ave.
Portland, ME

Engineer

Drawn By:	Checked By:
1719-RCD	CBS
Project#	CBS#1086
Date:	1/28/2026
Rev:	Review - v1.4
Rev:	

CB-S05

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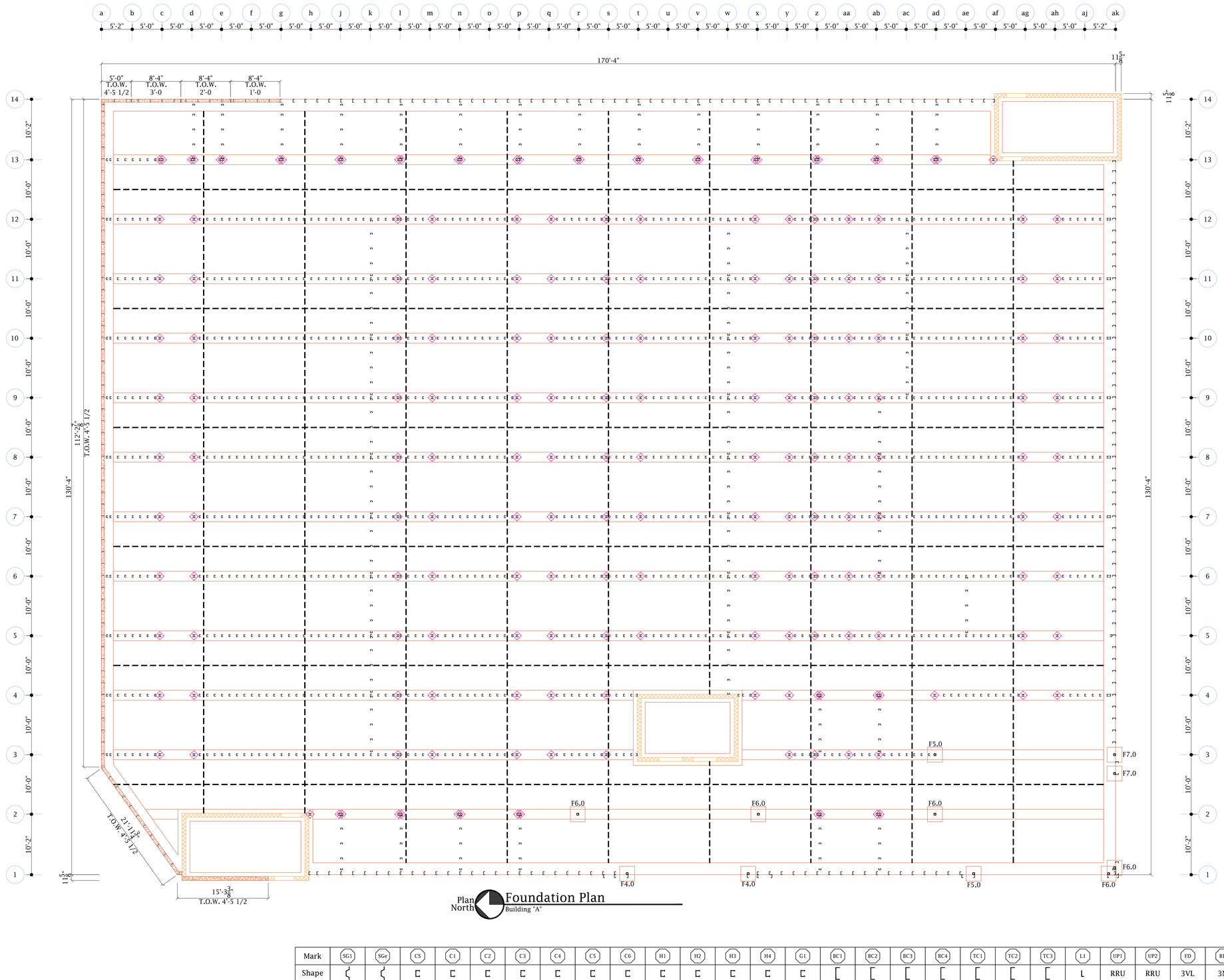

Plan North

Foundation Plan

Building "A"

FOUNDATION PLAN NOTES:
1.SLAB ON GRADE:
A.4" THICK (F'/C = 4000 PSI) REINFORCED WITH 6 x 6 - W1.6 x W1.6 1 1/2" BELOW TOP OF SLAB OVER VAPOR BARRIER(SEE ARCH) OVER 4" AGGREGATE GRAVEL LAYER BY CONCRETE CONTRACTOR.
2.SLAB-ON-GRADE CONTRACTION JOINTS: SEE DETAILS XXXX & XXXX
3.PROVIDE (2) #5 CRACK PREVENTION BARS AT EACH REENTRANT CORNER, 6'-0" LONG, CENTERED, MID-DEPTH OF SLAB.
4.PROVIDE CONTROL JOINT VIA SAW CUT AT 10'-0" O.C. MAXIMUM IN EACH DIRECTION, SEE TYPICAL SAW JOINT DETAIL FOR MORE INFORMATION. PLACE CONTROL JOINTS HALFWAY BETWEEN LOAD BEARING WALLS.
5.SEE ARCHITECTURAL AND CIVIL DRAWINGS FOR BUILDING ORIENTATION, LOCATION AND SIDEWALK LOCATIONS.
6.ALL STAIRS AND ELEVATOR SHAFTS ARE 8" CMU REINFORCED WITH #5 @ 32" ON CENTER VERTICALLY AND #9 WIRE LADDER HORIZONTAL REINFORCEMENT @ 16" ON CENTER. SEE DETAILS ON SHEET XXXX FOR ADDITIONAL REINFORCING REQUIREMENTS.

Mark	SG1	SGe	CS	C1	C2	C3	C4	C5	C6	H1	H2	H3	H4	G1	BC1	BC2	BC3	BC4	TC1	TC2	TC3	L1	UP1	UP2	FD	RD
Shape																							RRU	RRU	3VL	3N
Web	4 3/4"	4 3/4"	1 5/8"	4"	4"	4"	6"	6"	6"	6"	8"	10"	12"	6"	4 1/8"	4 1/8"	4 1/8"	6 1/8"	4 1/8"	4 1/8"	6 1/8"	5 1/2"	36"	36"	36"	36"
Flange	1"	1"	1 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2"	2"	2"	2"	3"	3"	3"	5 1/2"	3/4"	3/4"	3"	3"
Gauge	16	16	18	16	14	12	16	14	12	16	14	12	12	16	16	14	12	16	14	12	16	12	29	26	20	20
Use	Sub Girt	Exterior Sub Girt	Channel Section	Stud	Stud	Stud	Stud	Stud	Stud	Header	Header	Header	Header	Girt	Base Channel	Base Channel	Base Channel	Base Channel	Top Channel	Top Channel	Top Channel	Pour Stop Angle	Partition Panel	Partition Panel	Floor Decking	Roof Decking

CMU HALL QUAD STUDS

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Drawn By:	Checked By:
1719-RCD	CBS
Project#	CBS#1086
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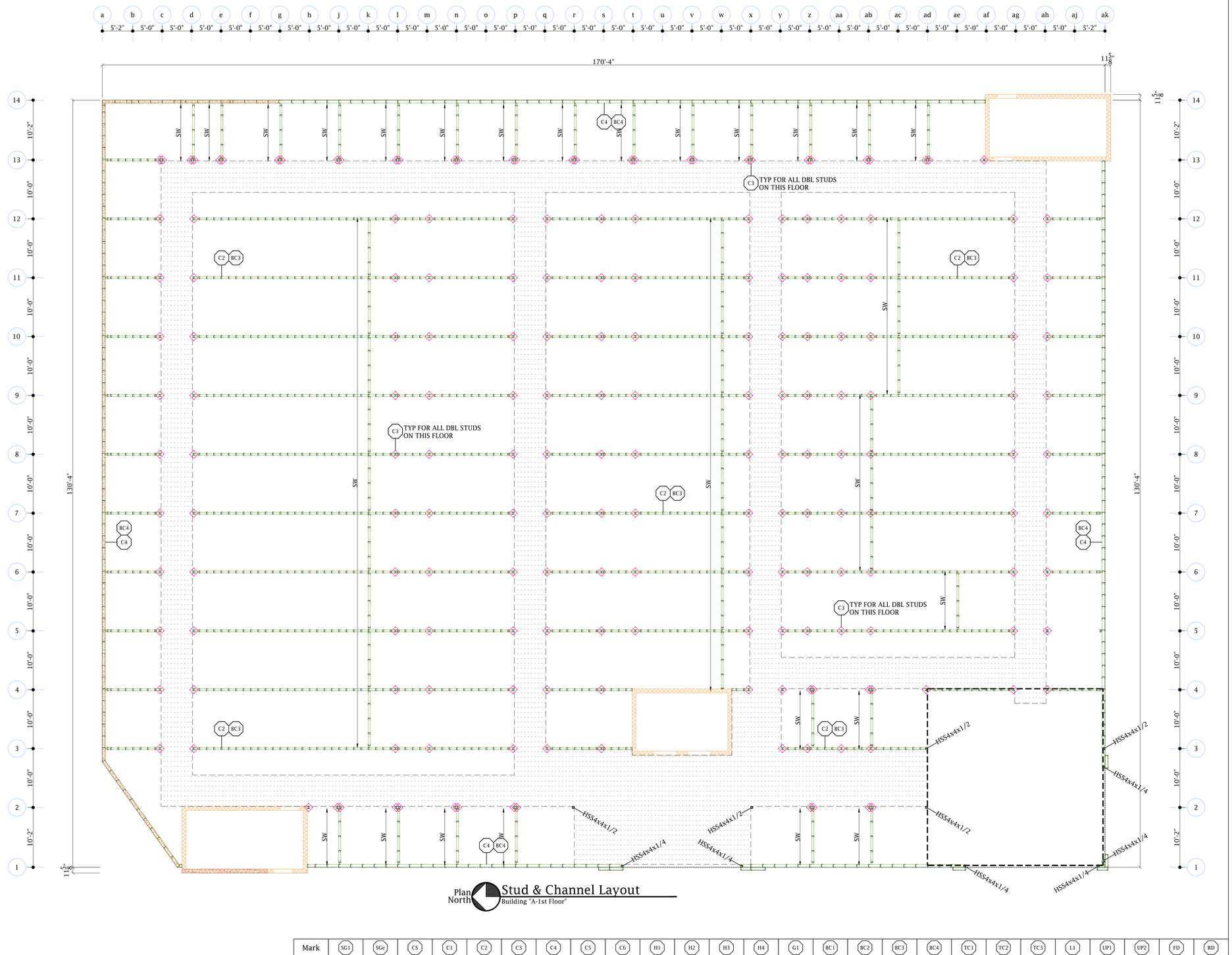

Plan North

Stud & Channel Layout

Building "A-1st Floor"

Mark	SG1	SGe	CS	C1	C2	C3	C4	C5	C6	H1	H2	H3	H4	G1	BC1	BC2	BC3	BC4	TC1	TC2	TC3	L1	UP1	UP2	FD	RD
Shape	⊂	⊂	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	[	[	[	[	[	[	[	L	RRU	RRU	3VL	3N
Web	4 3/4"	4 3/4"	1 5/8"	4"	4"	4"	6"	6"	6"	6"	8"	10"	12"	6"	4 1/8"	4 1/8"	4 1/8"	6 1/8"	4 1/8"	4 1/8"	6 1/8"	5 1/2"	36"	36"	36"	36"
Flange	1"	1"	1 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2"	2"	2"	2"	3"	3"	3"	5 1/2"	3/4"	3/4"	3"	3"
Gauge	16	16	18	16	14	12	16	14	12	16	14	12	12	16	16	14	12	16	14	12	16	12	29	26	20	20
Use	Sub Girt	Exterior Sub Girt	Channel Section	Stud	Stud	Stud	Stud	Stud	Stud	Header	Header	Header	Header	Girt	Base Channel	Base Channel	Base Channel	Base Channel	Top Channel	Top Channel	Top Channel	Pour Stop Angle	Partition Panel	Partition Panel	Floor Decking	Roof Decking

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97 Warren Ave.
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Drawn By:	Checked By:
1719-RCD	CBS
Project#	CBS#1086
Date:	1/28/2026
Rev:	Review - v1.4
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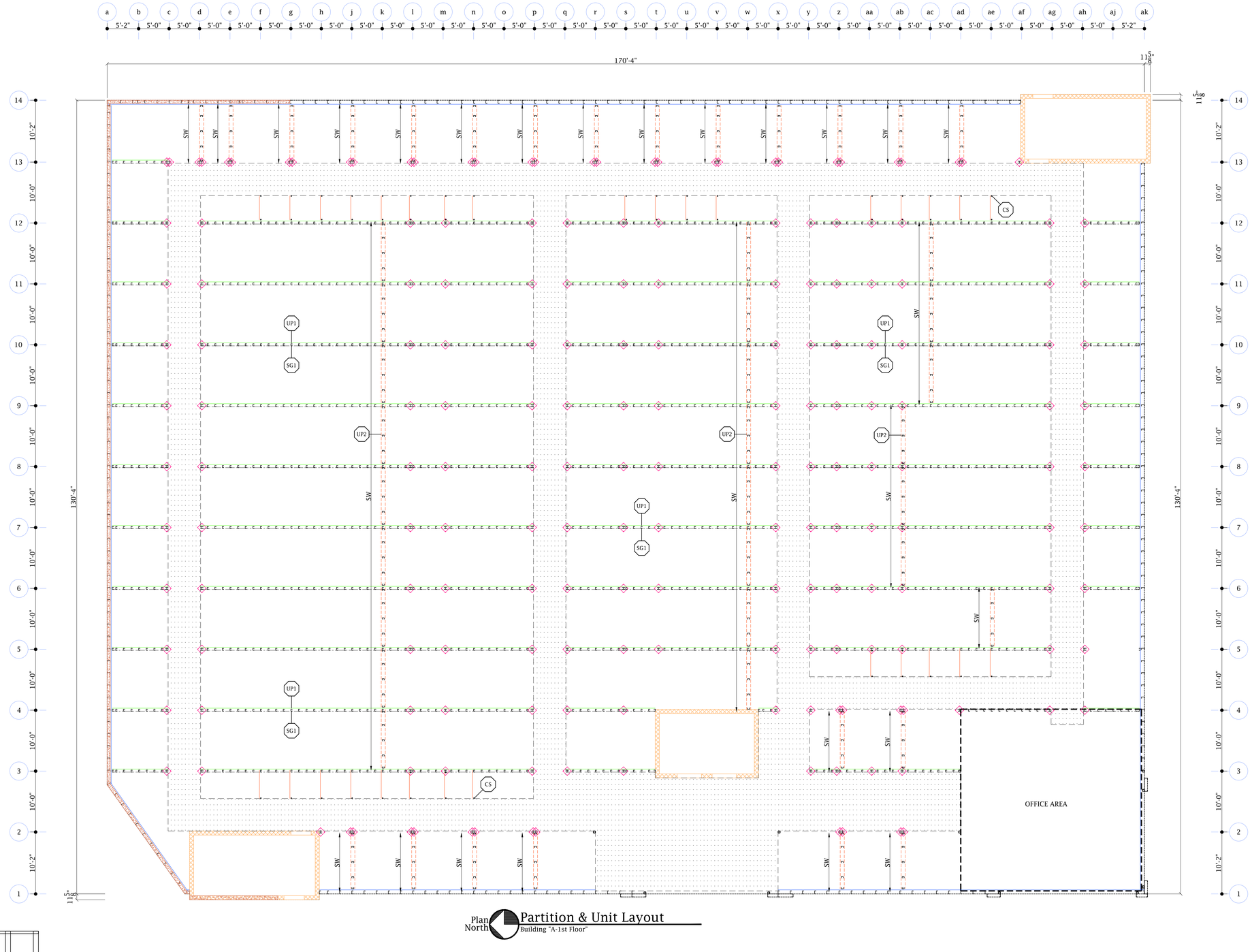
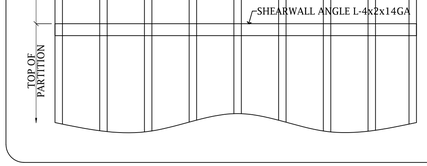


Plan North

Partition & Unit Layout

Building "A-1st Floor"



Mark	SG1	SGe	CS	C1	C2	C3	C4	C5	C6	H1	H2	H3	H4	G1	BC1	BC2	BC3	BC4	TC1	TC2	TC3	L1	UP1	UP2	FD	RD
Shape	⊂	⊂	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	[	[	[	[	[	[	[	L	RRU	RRU	3VL	3N
Web	4 3/4"	4 3/4"	1 5/8"	4"	4"	4"	6"	6"	6"	6"	8"	10"	12"	6"	4 1/8"	4 1/8"	4 1/8"	6 1/8"	4 1/8"	4 1/8"	6 1/8"	5 1/2"	36"	36"	36"	36"
Flange	1"	1"	1 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2"	2"	2"	2"	3"	3"	3"	5 1/2"	3/4"	3/4"	3"	3"
Gauge	16	16	18	16	14	12	16	14	12	16	14	12	12	16	16	14	12	16	14	12	16	12	29	26	20	20
Use	Sub Girt	Exterior Sub Girt	Channel Section	Stud	Stud	Stud	Stud	Stud	Stud	Header	Header	Header	Header	Girt	Base Channel	Base Channel	Base Channel	Base Channel	Top Channel	Top Channel	Top Channel	Pour Stop Angle	Partition Panel	Partition Panel	Floor Decking	Roof Decking

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Storage Facility

97 Warren Ave.
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Engineer

Drawn By:	Checked By:
1719-RCD	CBS
Project#	CBS#1086
Date:	1/28/2026
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Rev:	

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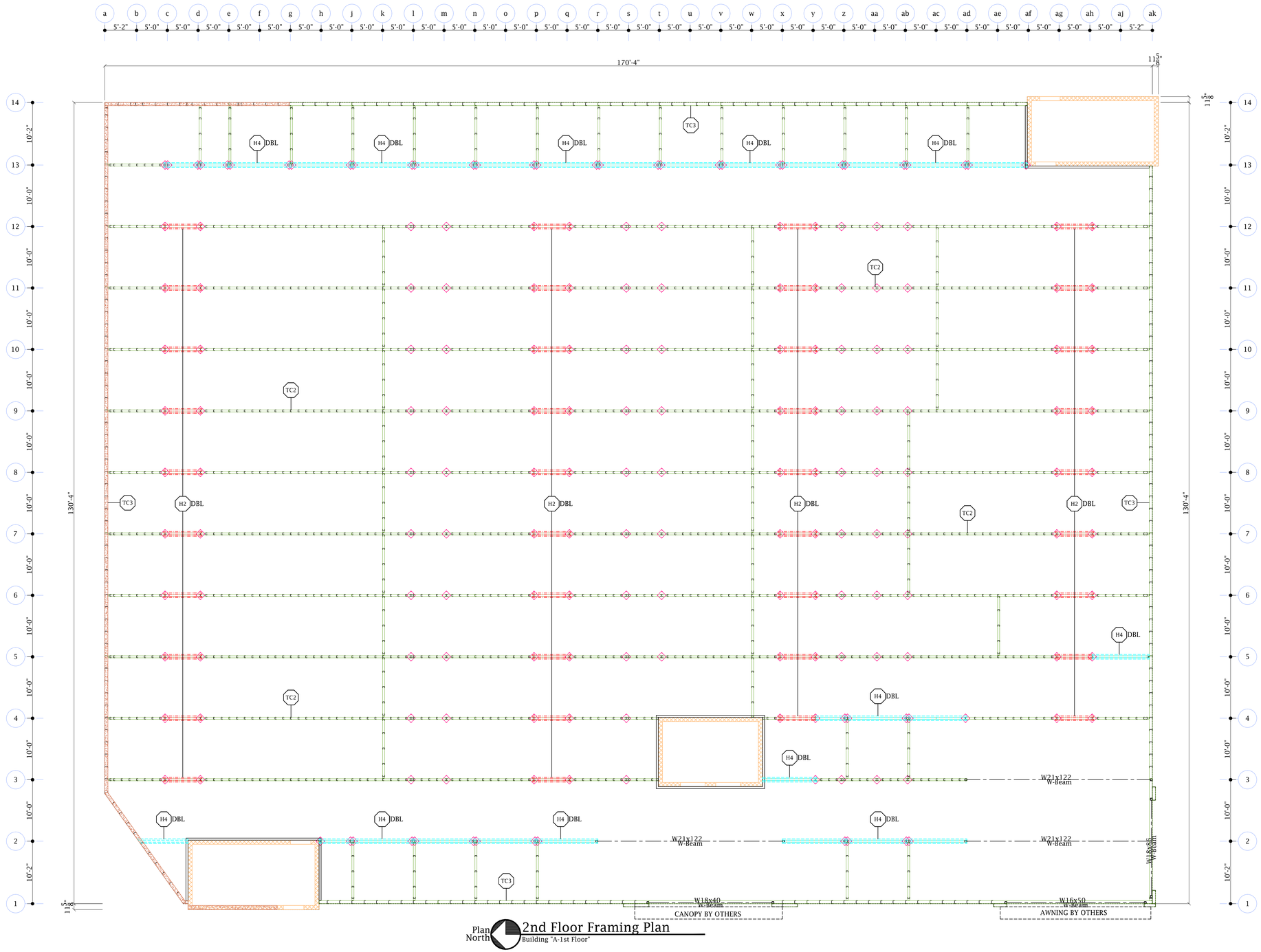

Plan North

2nd Floor Framing Plan

Building "A-1st Floor"

Mark	SG1	SGe	CS	C1	C2	C3	C4	C5	C6	H1	H2	H3	H4	G1	BC1	BC2	BC3	BC4	TC1	TC2	TC3	L1	UP1	UP2	FD	RD
Shape	⊂	⊂	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	[	[	[	[	[	[	[	L	RRU	RRU	3VL	3N
Web	4 3/4"	4 3/4"	1 5/8"	4"	4"	4"	6"	6"	6"	6"	8"	10"	12"	6"	4 1/8"	4 1/8"	4 1/8"	6 1/8"	4 1/8"	4 1/8"	6 1/8"	5 1/2"	36"	36"	36"	36"
Flange	1"	1"	1 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2"	2"	2"	2"	3"	3"	3"	5 1/2"	3/4"	3/4"	3"	3"
Gauge	16	16	18	16	14	12	16	14	12	16	14	12	12	16	16	14	12	16	14	12	16	12	29	26	20	20
Use	Sub Girt	Exterior Sub Girt	Channel Section	Stud	Stud	Stud	Stud	Stud	Stud	Header	Header	Header	Header	Girt	Base Channel	Base Channel	Base Channel	Base Channel	Top Channel	Top Channel	Top Channel	Pour Stop Angle	Partition Panel	Partition Panel	Floor Decking	Roof Decking

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Drawn By:	Checked By:
1719-RCD	CBS
Project#	CBS#1086
Date:	1/28/2026
Rev:	Review - v1.4
Rev:	

CB-A1.03

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Plan North

2nd Floor Decking Plan

Building "A-1st Floor"

Mark	SG1	SGe	CS	C1	C2	C3	C4	C5	C6	H1	H2	H3	H4	G1	BC1	BC2	BC3	BC4	TC1	TC2	TC3	L1	UP1	UP2	FD	RD
Shape	⊂	⊂	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	[	[	[	[	[	[	[	L	RRU	RRU	3VL	3N
Web	4 3/4"	4 3/4"	1 5/8"	4"	4"	4"	6"	6"	6"	6"	8"	10"	12"	6"	4 1/8"	4 1/8"	4 1/8"	6 1/8"	4 1/8"	4 1/8"	6 1/8"	5 1/2"	36"	36"	36"	36"
Flange	1"	1"	1 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2"	2"	2"	2"	3"	3"	3"	5 1/2"	3/4"	3/4"	3"	3"
Gauge	16	16	18	16	14	12	16	14	12	16	14	12	12	16	16	14	12	16	14	12	16	12	29	26	20	20
Use	Sub Girt	Exterior Sub Girt	Channel Section	Stud	Stud	Stud	Stud	Stud	Stud	Header	Header	Header	Header	Girt	Base Channel	Base Channel	Base Channel	Base Channel	Top Channel	Top Channel	Top Channel	Pour Stop Angle	Partition Panel	Partition Panel	Floor Decking	Roof Decking

CMU HALL QUAD STUDS

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1719-RCD	CBS
Project#	CBS#1086
Date:	1/28/2026
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Rev:	

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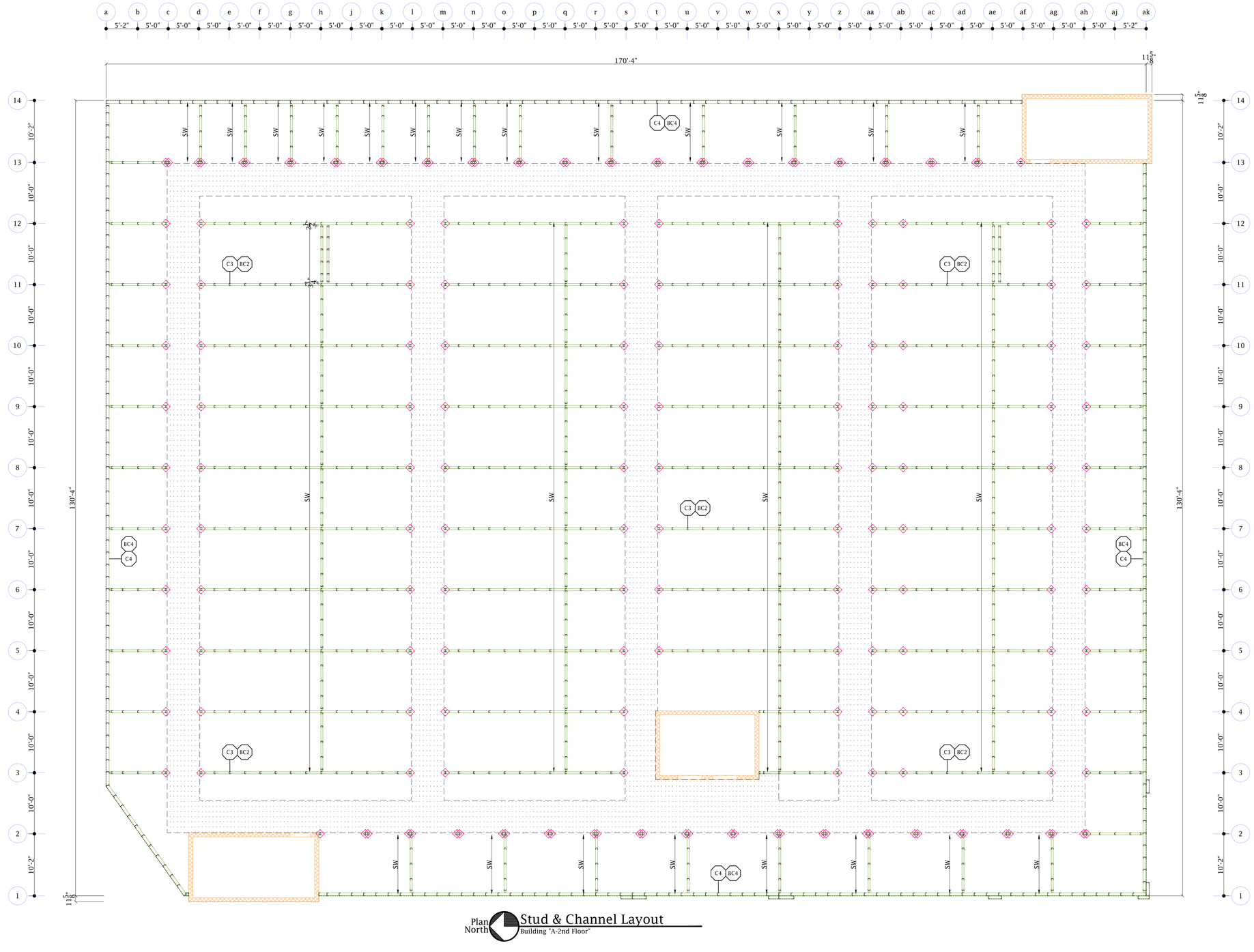

Plan North

Stud & Channel Layout

Building "A-2nd Floor"

Mark	SG1	SGe	CS	C1	C2	C3	C4	C5	C6	H1	H2	H3	H4	G1	BC1	BC2	BC3	BC4	TC1	TC2	TC3	L1	UP1	UP2	FD	RD
Shape	⊂	⊂	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	[	[	[	[	[	[	[	L	RRU	RRU	3VL	3N
Web	4 3/4"	4 3/4"	1 5/8"	4"	4"	4"	6"	6"	6"	6"	8"	10"	12"	6"	4 1/8"	4 1/8"	4 1/8"	6 1/8"	4 1/8"	4 1/8"	6 1/8"	5 1/2"	36"	36"	36"	36"
Flange	1"	1"	1 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2"	2"	2"	2"	3"	3"	3"	5 1/2"	3/4"	3/4"	3"	3"
Gauge	16	16	18	16	14	12	16	14	12	16	14	12	12	16	16	14	12	16	14	12	16	12	29	26	20	20
Use	Sub Girt	Exterior Sub Girt	Channel Section	Stud	Stud	Stud	Stud	Stud	Stud	Header	Header	Header	Header	Girt	Base Channel	Base Channel	Base Channel	Base Channel	Top Channel	Top Channel	Top Channel	Pour Stop Angle	Partition Panel	Partition Panel	Floor Decking	Roof Decking

CMU HALL QUAD STUDS

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Drawn By:	Checked By:
1719-RCD	CBS
Project#	CBS#1086
Date:	1/28/2026
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Rev:	

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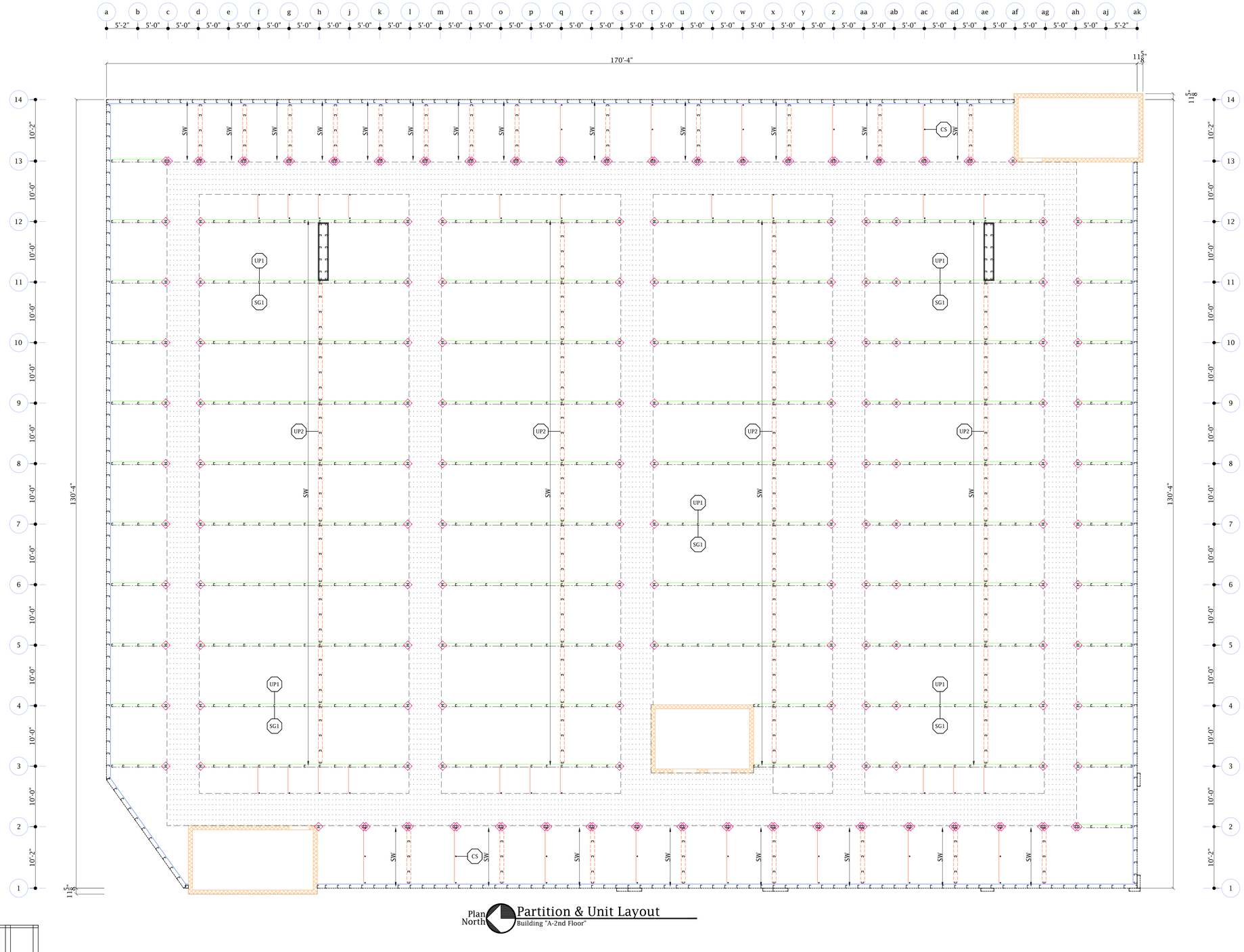
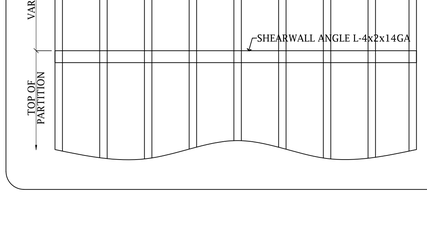


Plan North

Partition & Unit Layout

Building "A-2nd Floor"



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Shape	⊂	⊂	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	[	[	[	[	[	[	[	L	RRU	RRU	3VL	3N
Web	4 3/4"	4 3/4"	1 5/8"	4"	4"	4"	6"	6"	6"	6"	8"	10"	12"	6"	4 1/8"	4 1/8"	4 1/8"	6 1/8"	4 1/8"	4 1/8"	6 1/8"	5 1/2"	36"	36"	36"	36"
Flange	1"	1"	1 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2"	2"	2"	2"	3"	3"	3"	5 1/2"	3/4"	3/4"	3"	3"
Gauge	16	16	18	16	14	12	16	14	12	16	14	12	12	16	16	14	12	16	14	12	16	12	29	26	20	20
Use	Sub Girt	Exterior Sub Girt	Channel Section	Stud	Stud	Stud	Stud	Stud	Stud	Header	Header	Header	Header	Girt	Base Channel	Base Channel	Base Channel	Base Channel	Top Channel	Top Channel	Top Channel	Pour Stop Angle	Partition Panel	Partition Panel	Floor Decking	Roof Decking

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Engineer

Drawn By:	Checked By:
1719-RCD	CBS
Project#	CBS#1086
Date:	1/28/2026
Rev:	Review - v1.4
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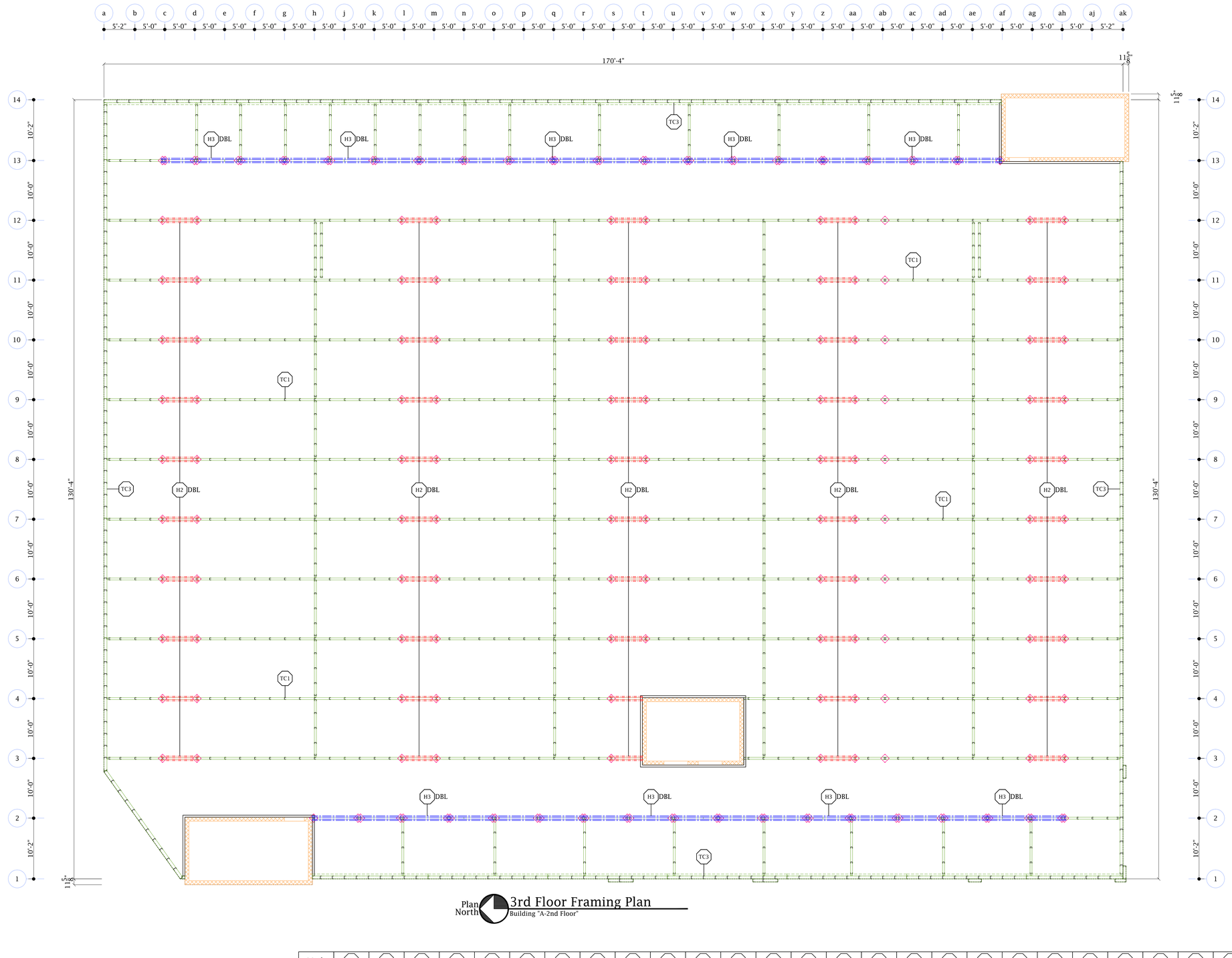

Plan North

3rd Floor Framing Plan

Building "A-2nd Floor"

Mark	SG1	SGe	CS	C1	C2	C3	C4	C5	C6	H1	H2	H3	H4	G1	BC1	BC2	BC3	BC4	TC1	TC2	TC3	L1	UP1	UP2	FD	RD
Shape	⊂	⊂	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	[	[	[	[	[	[	[	L	RRU	RRU	3VL	3N
Web	4 3/4"	4 3/4"	1 5/8"	4"	4"	4"	6"	6"	6"	6"	8"	10"	12"	6"	4 1/8"	4 1/8"	4 1/8"	6 1/8"	4 1/8"	4 1/8"	6 1/8"	5 1/2"	36"	36"	36"	36"
Flange	1"	1"	1 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2"	2"	2"	2"	3"	3"	3"	5 1/2"	3/4"	3/4"	3"	3"
Gauge	16	16	18	16	14	12	16	14	12	16	14	12	12	16	16	14	12	16	14	12	16	12	29	26	20	20
Use	Sub Girt	Exterior Sub Girt	Channel Section	Stud	Stud	Stud	Stud	Stud	Stud	Header	Header	Header	Header	Girt	Base Channel	Base Channel	Base Channel	Base Channel	Top Channel	Top Channel	Top Channel	Pour Stop Angle	Partition Panel	Partition Panel	Floor Decking	Roof Decking

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Storage Facility

97 Warren Ave.
Portland, ME

Engineer

Drawn By:	Checked By:
1719-RCD	CBS
Project#	CBS#1086
Date:	1/28/2026
Rev:	Review - v1.4
Rev:	

CB-A1.07

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Plan North

3rd Floor Decking Plan

Building "A-2nd Floor"

Mark	SG1	SGe	CS	C1	C2	C3	C4	C5	C6	H1	H2	H3	H4	G1	BC1	BC2	BC3	BC4	TC1	TC2	TC3	L1	UP1	UP2	FD	RD
Shape																							RRU	RRU	3VL	3N
Web	4 3/4"	4 3/4"	1 5/8"	4"	4"	4"	6"	6"	6"	6"	8"	10"	12"	6"	4 1/8"	4 1/8"	4 1/8"	6 1/8"	4 1/8"	4 1/8"	6 1/8"	5 1/2"	36"	36"	36"	36"
Flange	1"	1"	1 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2"	2"	2"	2"	3"	3"	3"	5 1/2"	3/4"	3/4"	3"	3"
Gauge	16	16	18	16	14	12	16	14	12	16	14	12	12	16	16	14	12	16	14	12	16	12	29	26	20	20
Use	Sub Girt	Exterior Sub Girt	Channel Section	Stud	Stud	Stud	Stud	Stud	Stud	Header	Header	Header	Header	Girt	Base Channel	Base Channel	Base Channel	Base Channel	Top Channel	Top Channel	Top Channel	Pour Stop Angle	Partition Panel	Partition Panel	Floor Decking	Roof Decking

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Engineer

Drawn By:	Checked By:
1719-RCD	CBS
Project#	CBS#1086
Date:	1/28/2026
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Rev:	

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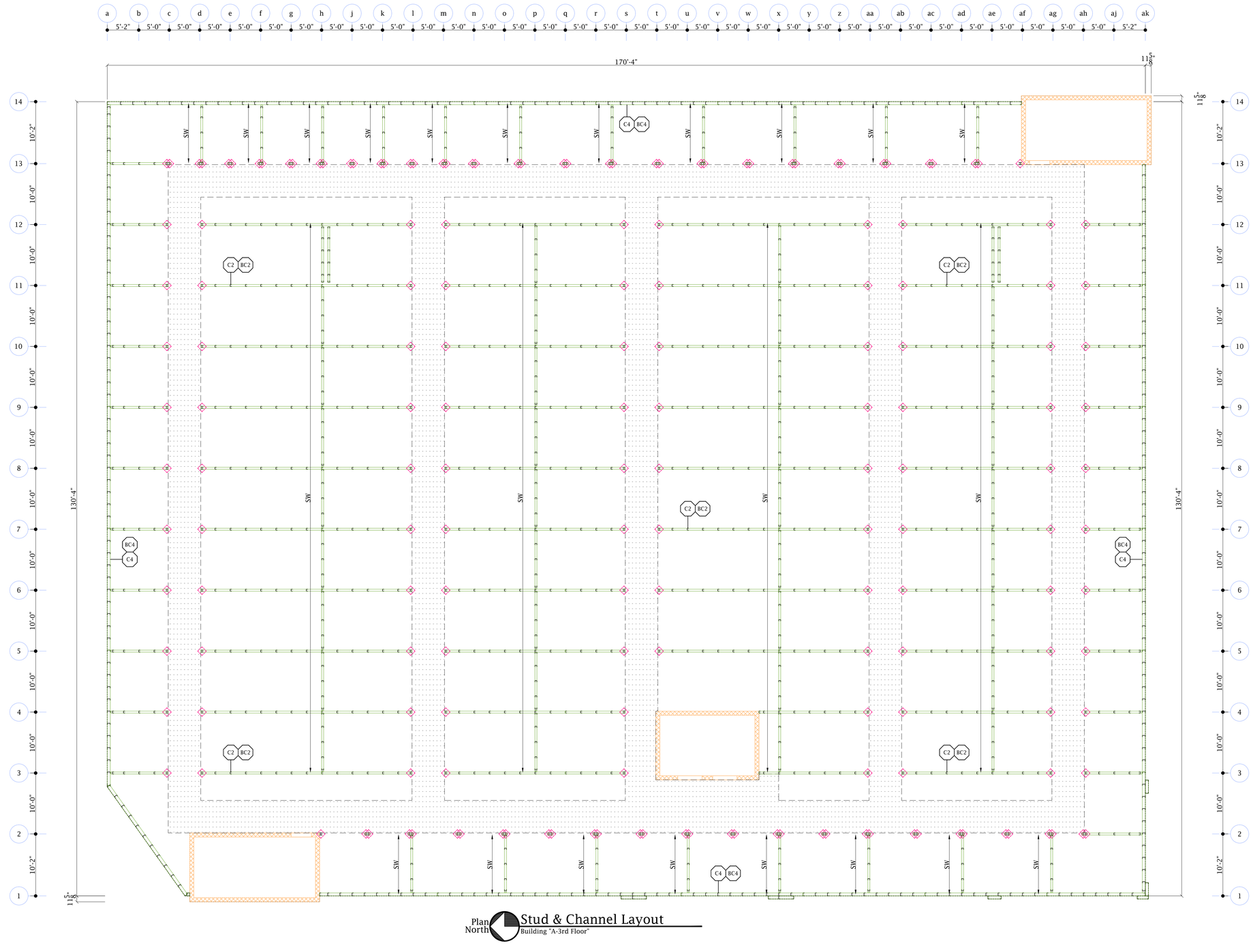

Plan North

Stud & Channel Layout

Building "A-3rd Floor"

Mark	SG1	SGe	CS	C1	C2	C3	C4	C5	C6	H1	H2	H3	H4	G1	BC1	BC2	BC3	BC4	TC1	TC2	TC3	L1	UP1	UP2	FD	RD
Shape	⊂	⊂	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	[	[	[	[	[	[	[	L	RRU	RRU	3VL	3N
Web	4 3/4"	4 3/4"	1 5/8"	4"	4"	4"	6"	6"	6"	6"	8"	10"	12"	6"	4 1/8"	4 1/8"	4 1/8"	6 1/8"	4 1/8"	4 1/8"	6 1/8"	5 1/2"	36"	36"	36"	36"
Flange	1"	1"	1 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2"	2"	2"	2"	3"	3"	3"	5 1/2"	3/4"	3/4"	3"	3"
Gauge	16	16	18	16	14	12	16	14	12	16	14	12	12	16	16	14	12	16	14	12	16	12	29	26	20	20
Use	Sub Girt	Exterior Sub Girt	Channel Section	Stud	Stud	Stud	Stud	Stud	Stud	Header	Header	Header	Header	Girt	Base Channel	Base Channel	Base Channel	Base Channel	Top Channel	Top Channel	Top Channel	Pour Stop Angle	Partition Panel	Partition Panel	Floor Decking	Roof Decking

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Engineer

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1719-RCD	CBS
Project#	CBS#1086
Date:	1/28/2026
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Rev:	

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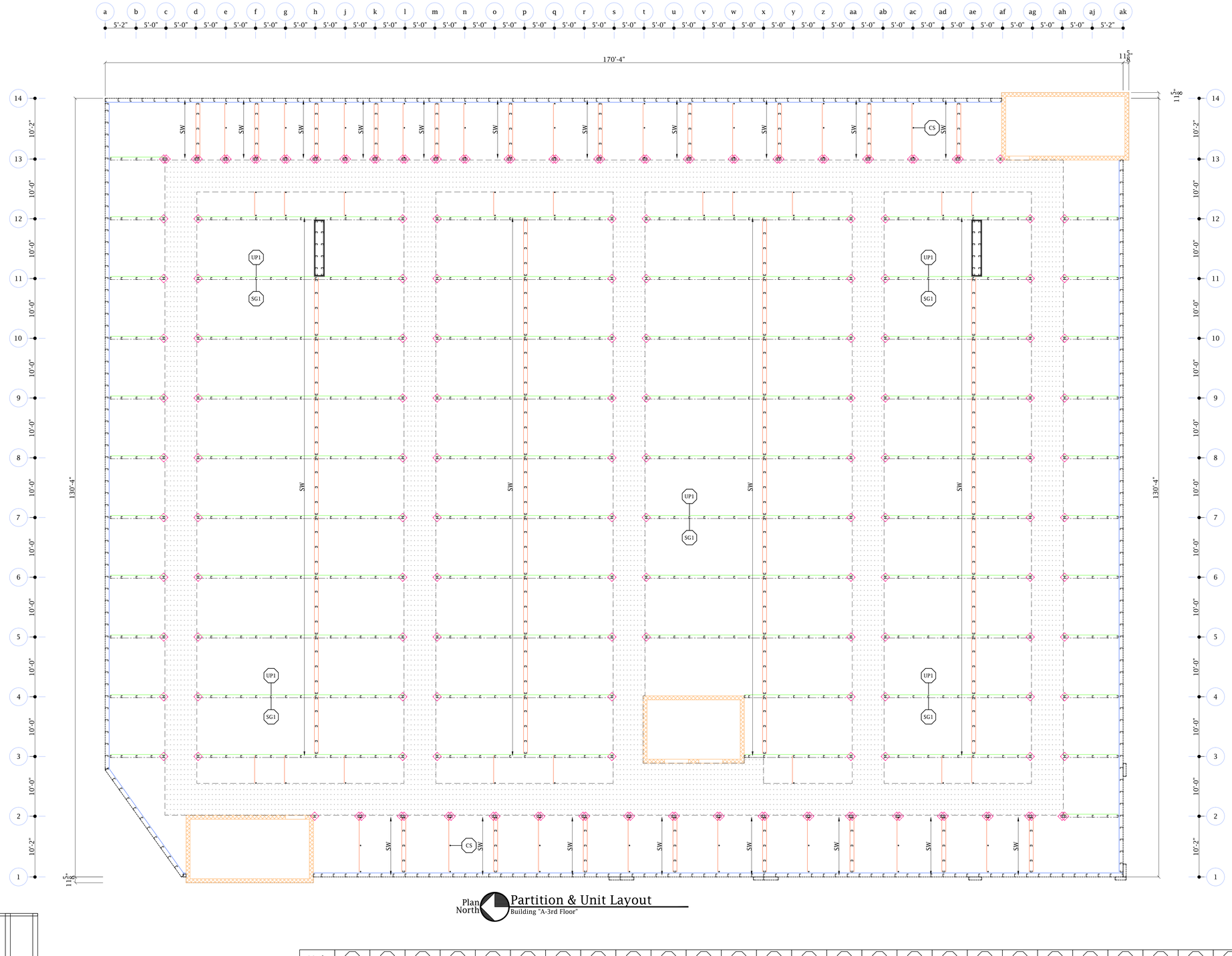
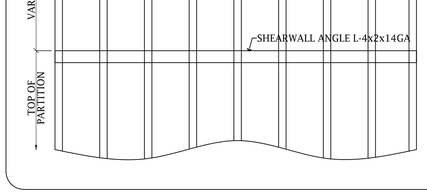


Plan North

Partition & Unit Layout

Building "A-3rd Floor"



Mark	SG1	SGe	CS	C1	C2	C3	C4	C5	C6	H1	H2	H3	H4	G1	BC1	BC2	BC3	BC4	TC1	TC2	TC3	L1	UP1	UP2	FD	RD
Shape	⊂	⊂	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	[	[	[	[	[	[	[	L	RRU	RRU	3VL	3N
Web	4 3/4"	4 3/4"	1 5/8"	4"	4"	4"	6"	6"	6"	6"	8"	10"	12"	6"	4 1/8"	4 1/8"	4 1/8"	6 1/8"	4 1/8"	4 1/8"	6 1/8"	5 1/2"	36"	36"	36"	36"
Flange	1"	1"	1 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2"	2"	2"	2"	3"	3"	3"	5 1/2"	3/4"	3/4"	3"	3"
Gauge	16	16	18	16	14	12	16	14	12	16	14	12	12	16	16	14	12	16	14	12	16	12	29	26	20	20
Use	Sub Girt	Exterior Sub Girt	Channel Section	Stud	Stud	Stud	Stud	Stud	Stud	Header	Header	Header	Header	Girt	Base Channel	Base Channel	Base Channel	Base Channel	Top Channel	Top Channel	Top Channel	Pour Stop Angle	Partition Panel	Partition Panel	Floor Decking	Roof Decking

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1719-RCD	CBS
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Date:	1/28/2026
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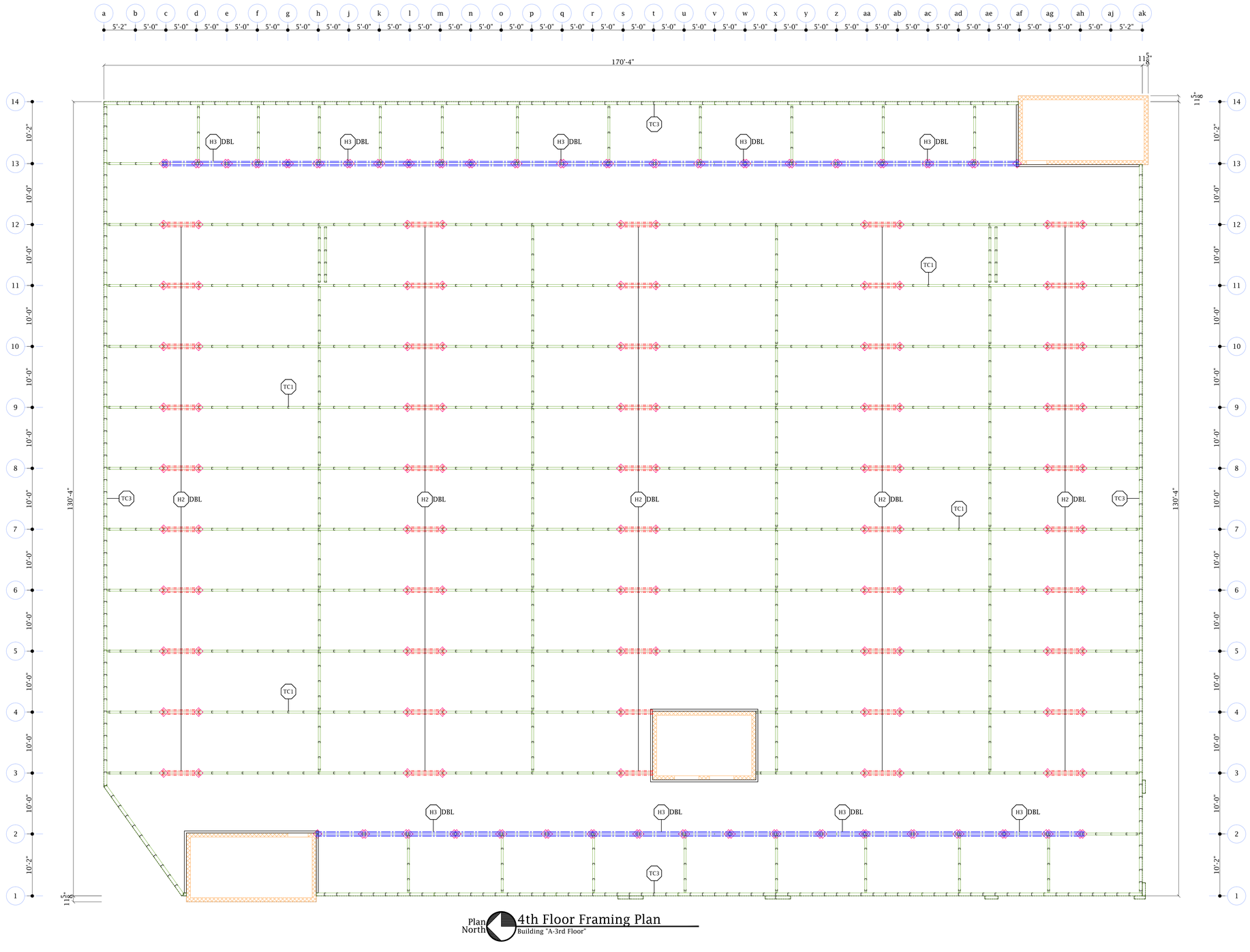

Plan North

4th Floor Framing Plan

Building "A-3rd Floor"

Mark	SG1	SGe	CS	C1	C2	C3	C4	C5	C6	H1	H2	H3	H4	G1	BC1	BC2	BC3	BC4	TC1	TC2	TC3	L1	UP1	UP2	FD	RD
Shape	⊂	⊂	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	[	[	[	[	[	[	[	L	RRU	RRU	3VL	3N
Web	4 3/4"	4 3/4"	1 5/8"	4"	4"	4"	6"	6"	6"	6"	8"	10"	12"	6"	4 1/8"	4 1/8"	4 1/8"	6 1/8"	4 1/8"	4 1/8"	6 1/8"	5 1/2"	36"	36"	36"	36"
Flange	1"	1"	1 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2"	2"	2"	2"	3"	3"	3"	5 1/2"	3/4"	3/4"	3"	3"
Gauge	16	16	18	16	14	12	16	14	12	16	14	12	12	16	16	14	12	16	14	12	16	12	29	26	20	20
Use	Sub Girt	Exterior Sub Girt	Channel Section	Stud	Stud	Stud	Stud	Stud	Stud	Header	Header	Header	Header	Girt	Base Channel	Base Channel	Base Channel	Base Channel	Top Channel	Top Channel	Top Channel	Pour Stop Angle	Partition Panel	Partition Panel	Floor Decking	Roof Decking

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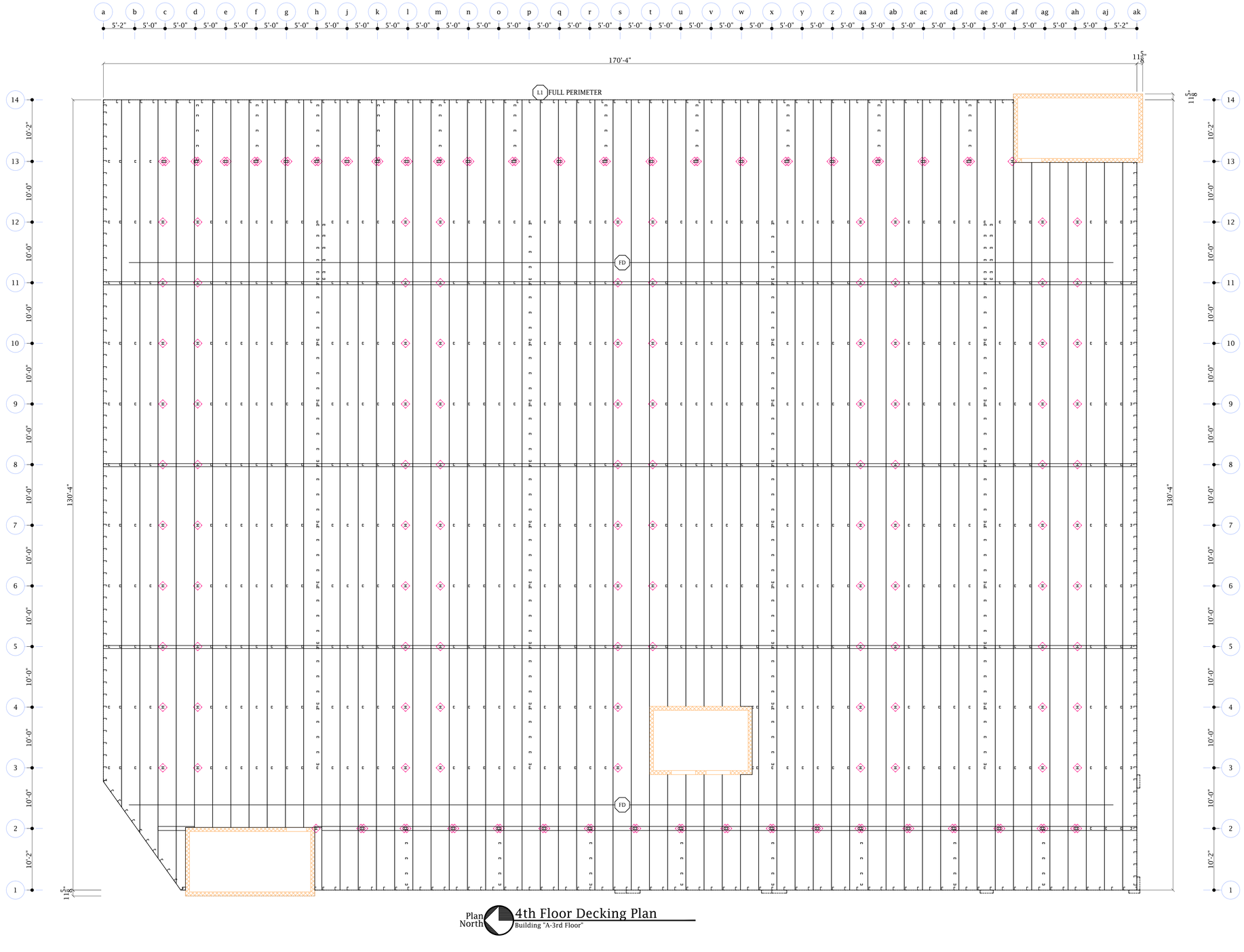

Plan North

4th Floor Decking Plan

Building "A-3rd Floor"

Mark	SG1	SGe	CS	C1	C2	C3	C4	C5	C6	H1	H2	H3	H4	G1	BC1	BC2	BC3	BC4	TC1	TC2	TC3	L1	UP1	UP2	FD	RD
Shape																							RRU	RRU	3VL	3N
Web	4 3/4"	4 3/4"	1 5/8"	4"	4"	4"	6"	6"	6"	6"	8"	10"	12"	6"	4 1/8"	4 1/8"	4 1/8"	6 1/8"	4 1/8"	4 1/8"	6 1/8"	5 1/2"	36"	36"	36"	36"
Flange	1"	1"	1 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2"	2"	2"	2"	3"	3"	3"	5 1/2"	3/4"	3/4"	3"	3"
Gauge	16	16	18	16	14	12	16	14	12	16	14	12	12	16	16	14	12	16	14	12	16	12	29	26	20	20
Use	Sub Girt	Exterior Sub Girt	Channel Section	Stud	Stud	Stud	Stud	Stud	Stud	Header	Header	Header	Header	Girt	Base Channel	Base Channel	Base Channel	Base Channel	Top Channel	Top Channel	Top Channel	Pour Stop Angle	Partition Panel	Partition Panel	Floor Decking	Roof Decking

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Project#	CBS#1086
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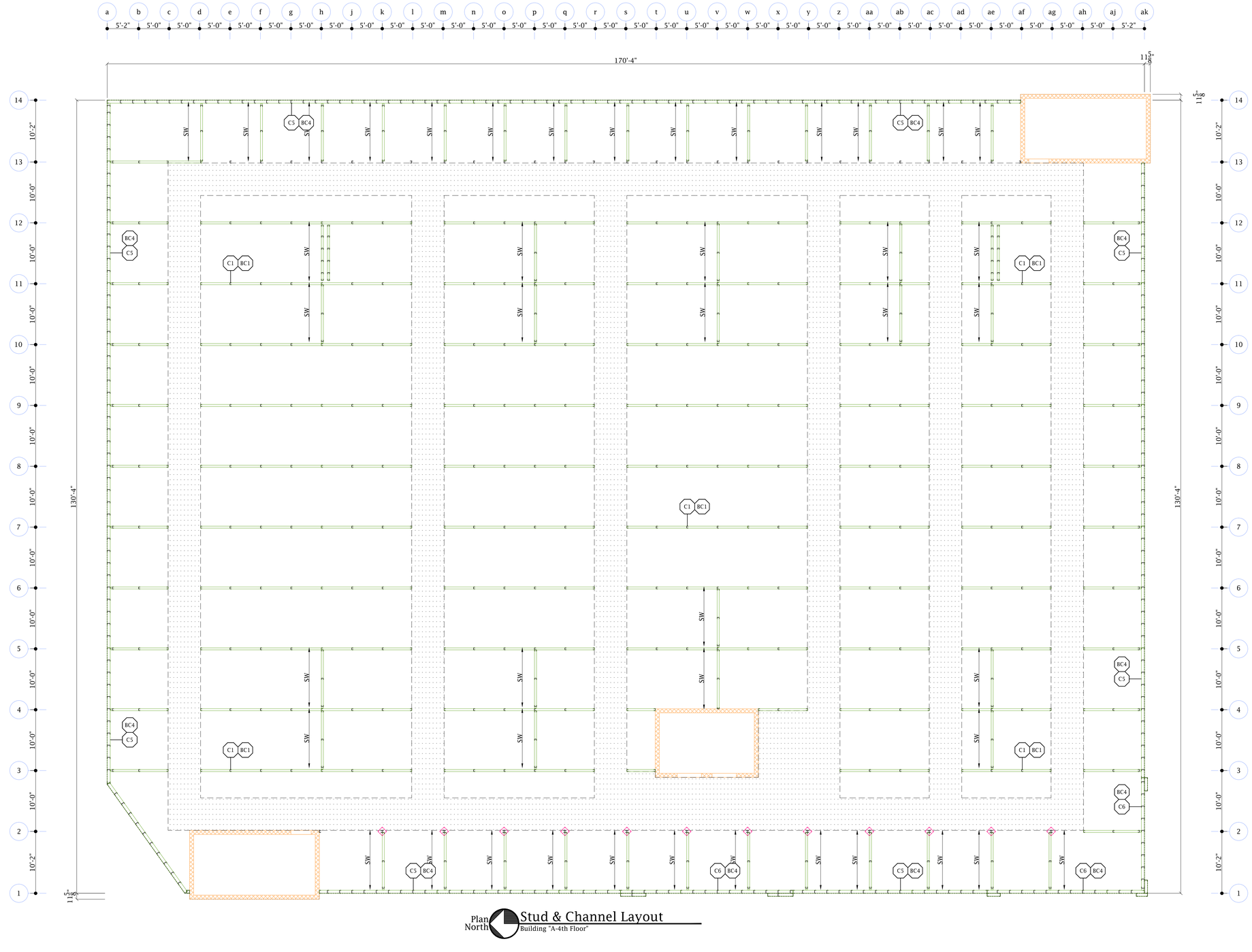

Plan North

Stud & Channel Layout

Building "A-4th Floor"

Mark	SG1	SGe	CS	C1	C2	C3	C4	C5	C6	H1	H2	H3	H4	G1	BC1	BC2	BC3	BC4	TC1	TC2	TC3	L1	UP1	UP2	FD	RD
Shape	⊂	⊂	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	[	[	[	[	[	[	[	L	RRU	RRU	3VL	3N
Web	4 3/4"	4 3/4"	1 5/8"	4"	4"	4"	6"	6"	6"	6"	8"	10"	12"	6"	4 1/8"	4 1/8"	4 1/8"	6 1/8"	4 1/8"	4 1/8"	6 1/8"	5 1/2"	36"	36"	36"	36"
Flange	1"	1"	1 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2"	2"	2"	2"	3"	3"	3"	5 1/2"	3/4"	3/4"	3"	3"
Gauge	16	16	18	16	14	12	16	14	12	16	14	12	12	16	16	14	12	16	14	12	16	12	29	26	20	20
Use	Sub Girt	Exterior Sub Girt	Channel Section	Stud	Stud	Stud	Stud	Stud	Stud	Header	Header	Header	Header	Girt	Base Channel	Base Channel	Base Channel	Base Channel	Top Channel	Top Channel	Top Channel	Pour Stop Angle	Partition Panel	Partition Panel	Floor Decking	Roof Decking

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Drawn By:	Checked By:
1719-RCD	CBS
Project#	CBS#1086
Date:	1/28/2026
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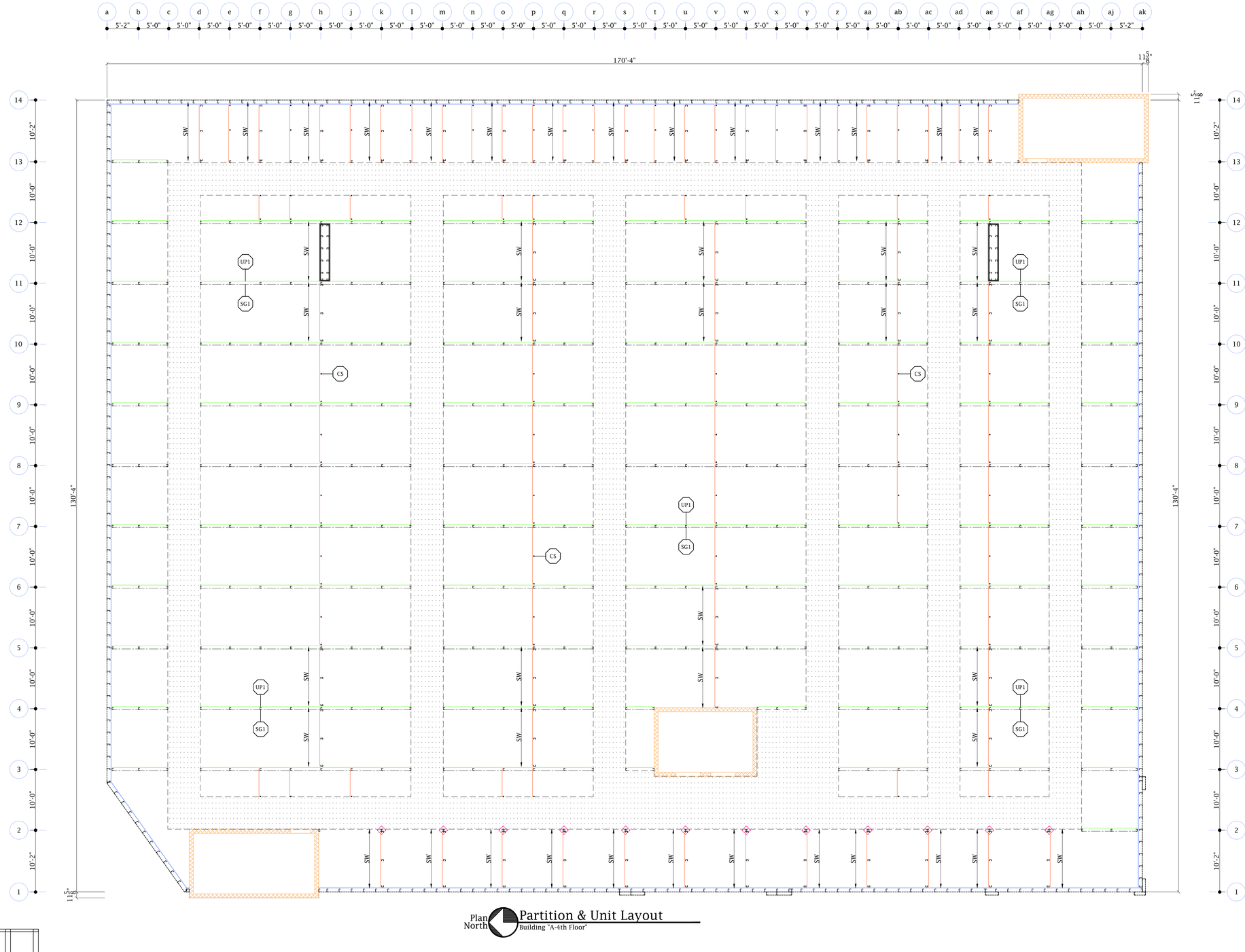
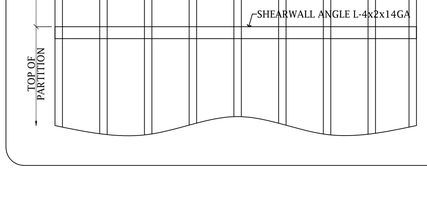


Plan North

Partition & Unit Layout

Building "A-4th Floor"



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Shape	⊂	⊂	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	[	[	[	[	[	[	[	L	RRU	RRU	3VL	3N
Web	4 3/4"	4 3/4"	1 5/8"	4"	4"	4"	6"	6"	6"	6"	8"	10"	12"	6"	4 1/8"	4 1/8"	4 1/8"	6 1/8"	4 1/8"	4 1/8"	6 1/8"	5 1/2"	36"	36"	36"	36"
Flange	1"	1"	1 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2"	2"	2"	2"	3"	3"	3"	5 1/2"	3/4"	3/4"	3"	3"
Gauge	16	16	18	16	14	12	16	14	12	16	14	12	12	16	16	14	12	16	14	12	16	12	29	26	20	20
Use	Sub Girt	Exterior Sub Girt	Channel Section	Stud	Stud	Stud	Stud	Stud	Stud	Header	Header	Header	Header	Girt	Base Channel	Base Channel	Base Channel	Base Channel	Top Channel	Top Channel	Top Channel	Pour Stop Angle	Partition Panel	Partition Panel	Floor Decking	Roof Decking

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1719-RCD	CBS
Project#	CBS#1086
Date:	1/28/2026
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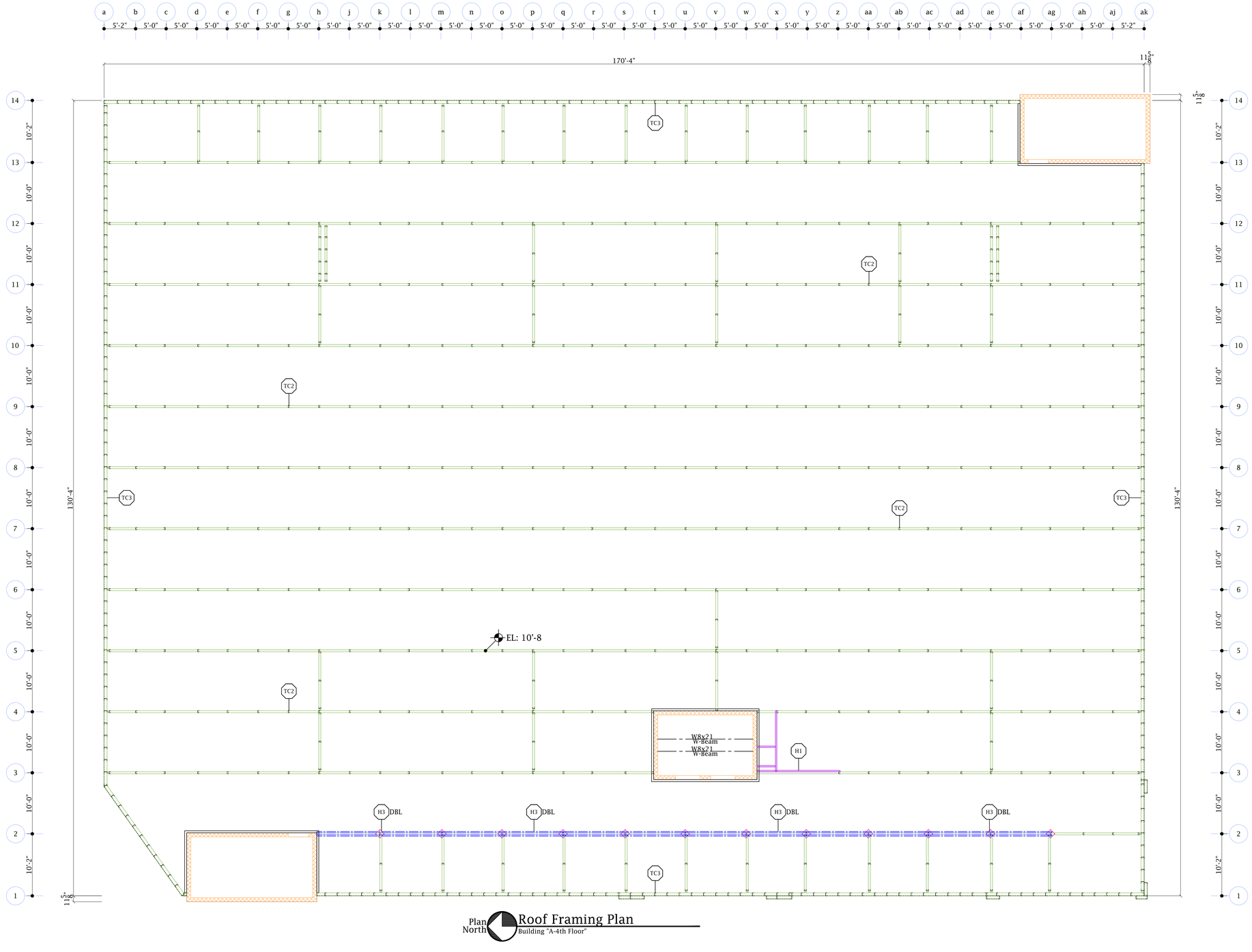

Plan North

Roof Framing Plan

Building "A-4th Floor"

Mark	SG1	SGe	CS	C1	C2	C3	C4	C5	C6	H1	H2	H3	H4	G1	BC1	BC2	BC3	BC4	TC1	TC2	TC3	L1	UP1	UP2	FD	RD
Shape	⊂	⊂	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	[	[	[	[	[	[	[	L	RRU	RRU	3VL	3N
Web	4 3/4"	4 3/4"	1 5/8"	4"	4"	4"	6"	6"	6"	6"	8"	10"	12"	6"	4 1/8"	4 1/8"	4 1/8"	6 1/8"	4 1/8"	4 1/8"	6 1/8"	5 1/2"	36"	36"	36"	36"
Flange	1"	1"	1 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2"	2"	2"	2"	3"	3"	3"	5 1/2"	3/4"	3/4"	3"	3"
Gauge	16	16	18	16	14	12	16	14	12	16	14	12	12	16	16	14	12	16	14	12	16	12	29	26	20	20
Use	Sub Girt	Exterior Sub Girt	Channel Section	Stud	Stud	Stud	Stud	Stud	Stud	Header	Header	Header	Header	Girt	Base Channel	Base Channel	Base Channel	Base Channel	Top Channel	Top Channel	Top Channel	Pour Stop Angle	Partition Panel	Partition Panel	Floor Decking	Roof Decking

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Drawn By:	Checked By:
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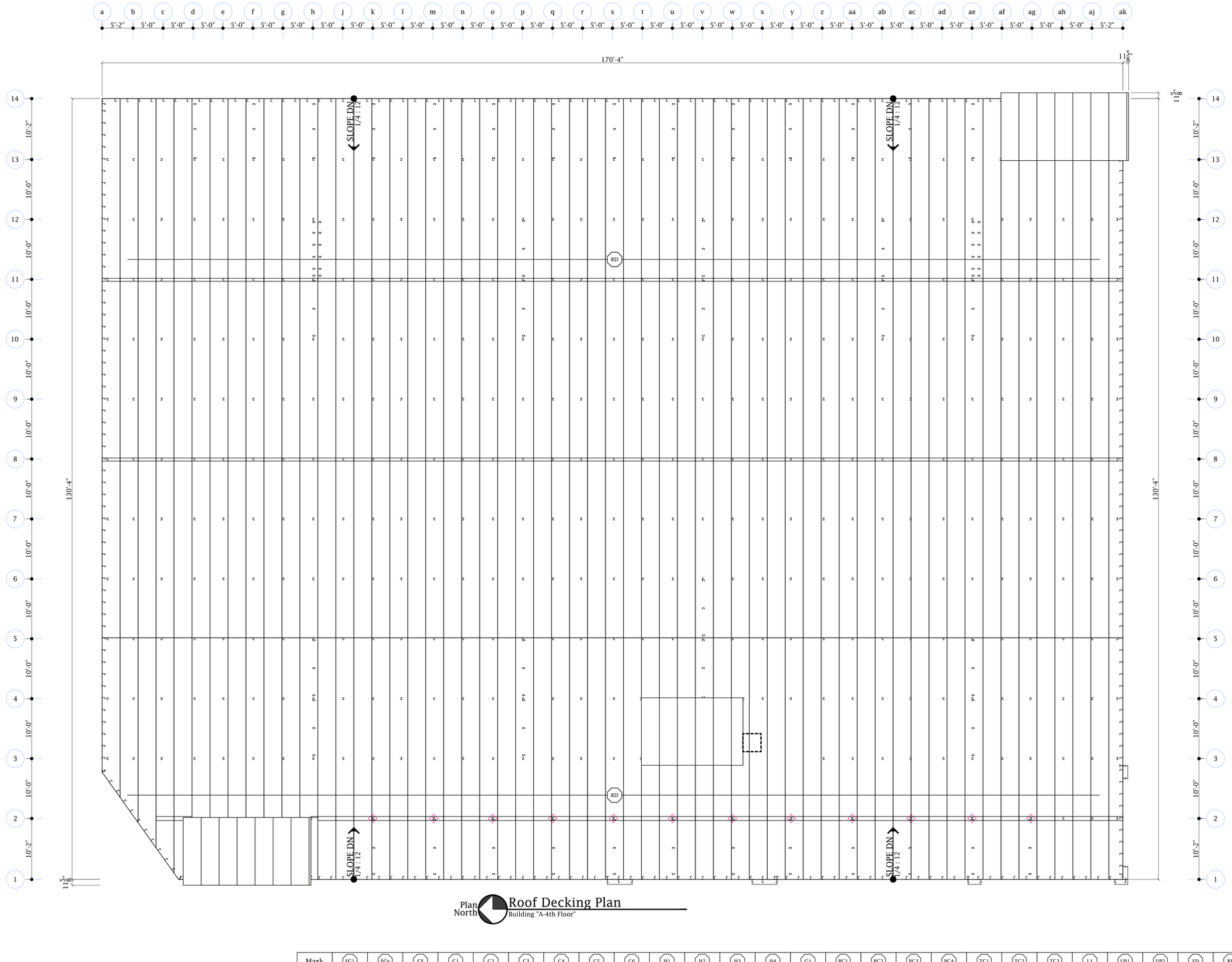

Plan North

Roof Decking Plan

Building "A-4th Floor"

Mark	SG1	SGe	CS	C1	C2	C3	C4	C5	C6	H1	H2	H3	H4	G1	BC1	BC2	BC3	BC4	TC1	TC2	TC3	L1	UP1	UP2	FD	RD
Shape																							RRU	RRU	3VL	3N
Web	4 3/4"	4 3/4"	1 5/8"	4"	4"	4"	6"	6"	6"	6"	8"	10"	12"	6"	4 1/8"	4 1/8"	4 1/8"	6 1/8"	4 1/8"	4 1/8"	6 1/8"	5 1/2"	36"	36"	36"	36"
Flange	1"	1"	1 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2"	2"	2"	2"	3"	3"	3"	5 1/2"	3/4"	3/4"	3"	3"
Gauge	16	16	18	16	14	12	16	14	12	16	14	12	12	16	16	14	12	16	14	12	16	12	29	26	20	20
Use	Sub Girt	Exterior Sub Girt	Channel Section	Stud	Stud	Stud	Stud	Stud	Stud	Header	Header	Header	Header	Girt	Base Channel	Base Channel	Base Channel	Base Channel	Top Channel	Top Channel	Top Channel	Pour Stop Angle	Partition Panel	Partition Panel	Floor Decking	Roof Decking

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(770) 439-1250 / (800) 243-8438 / FAX: (770) 439-0087 / www.compassbuilding.com

Storage Facility

97 Warren Ave.
Portland, ME

Engineer

Drawn By:	Checked By:
1719-RCD	CBS
Project#	CBS#1086
Date:	1/28/2026
Rev:	Review - v1.4
Rev:	

CB-A1.16

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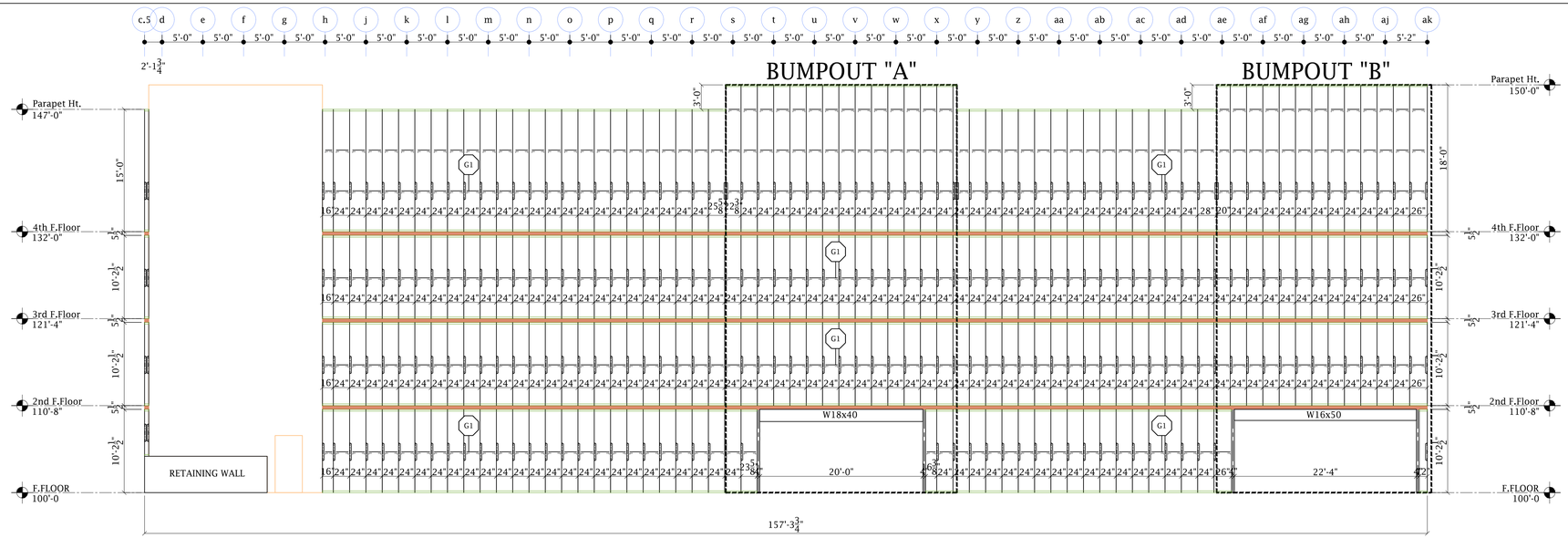
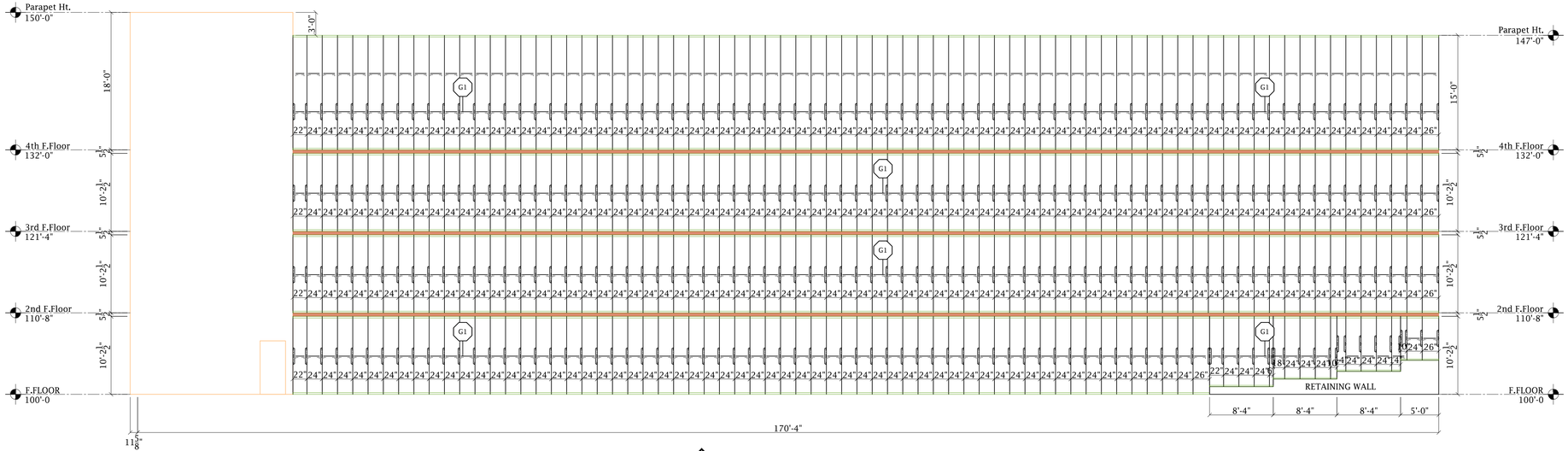


1 Framing @ West Elevation
Building "A"

SEE PAGE A2.03 FOR BUMPOUT FRAMING



2 Framing @ East Elevation
Building "A"

Mark	SG1	SGe	CS	C1	C2	C3	C4	C5	C6	H1	H2	H3	H4	G1	BC1	BC2	BC3	BC4	TC1	TC2	TC3	L1	UP1	UP2	FD	RD
Shape																							RRU	RRU	3VL	3N
Web	4 3/4"	4 3/4"	1 5/8"	4"	4"	4"	6"	6"	6"	6"	8"	10"	12"	6"	4 1/8"	4 1/8"	4 1/8"	6 1/8"	4 1/8"	4 1/8"	6 1/8"	5 1/2"	36"	36"	36"	36"
Flange	1"	1"	1 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2"	2"	2"	2"	3"	3"	3"	5 1/2"	3/4"	3/4"	3"	3"
Gauge	16	16	18	16	14	12	16	14	12	16	14	12	12	16	16	14	12	16	14	12	16	12	29	26	20	20
Use	Sub Girt	Exterior Sub Girt	Channel Section	Stud	Stud	Stud	Stud	Stud	Stud	Header	Header	Header	Header	Girt	Base Channel	Base Channel	Base Channel	Base Channel	Top Channel	Top Channel	Top Channel	Pour Stop Angle	Partition Panel	Partition Panel	Floor Decking	Roof Decking

CMU HALL QUAD STUDS

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1719-RCD	CBS
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Rev:	

CB-A2.01

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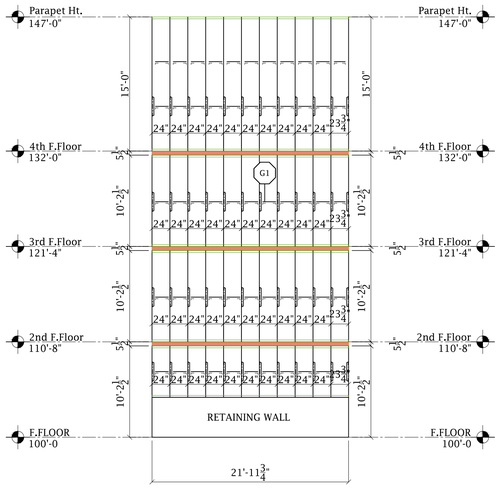
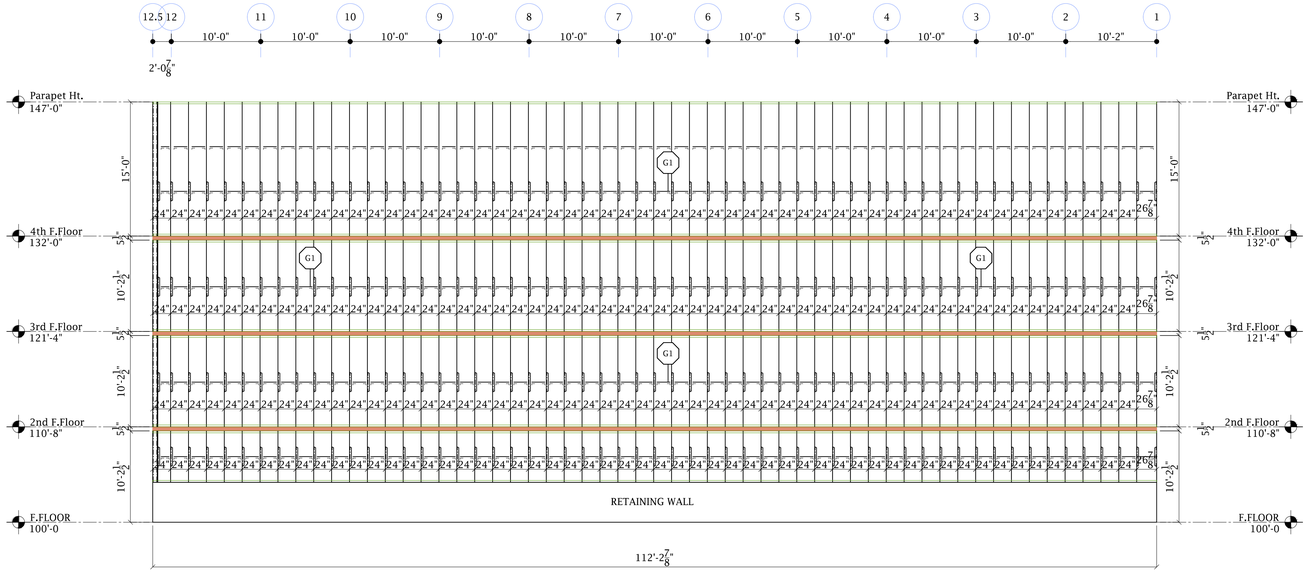
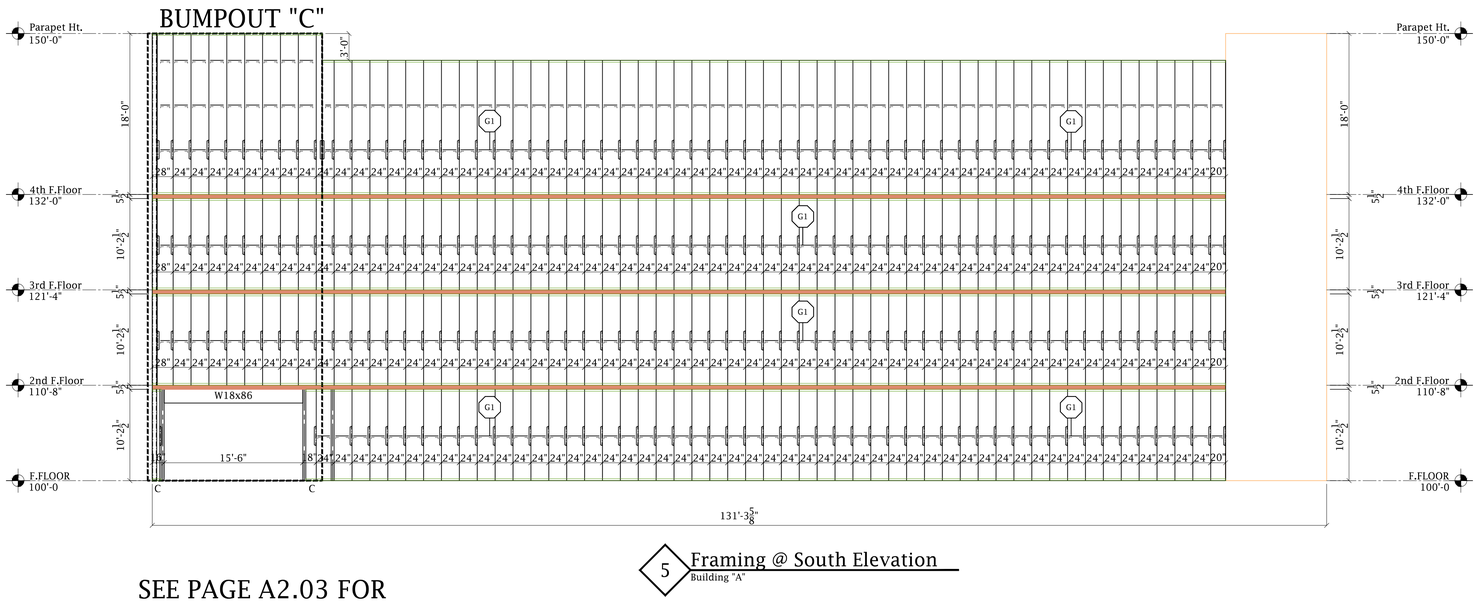


3 Framing @ Northwest Elevation
Building "A"



4 Framing @ North Elevation
Building "A"



5 Framing @ South Elevation
Building "A"

SEE PAGE A2.03 FOR
BUMPOUT FRAMING

Mark	SG1	SGe	CS	C1	C2	C3	C4	C5	C6	H1	H2	H3	H4	G1	BC1	BC2	BC3	BC4	TC1	TC2	TC3	L1	UP1	UP2	FD	RD
Shape	⊂	⊂	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	[	[	[	[	[	[	[	L	RRU	RRU	3VL	3N
Web	4 3/4"	4 3/4"	1 5/8"	4"	4"	4"	6"	6"	6"	6"	8"	10"	12"	6"	4 1/8"	4 1/8"	4 1/8"	6 1/8"	4 1/8"	4 1/8"	6 1/8"	5 1/2"	36"	36"	36"	36"
Flange	1"	1"	1 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2"	2"	2"	2"	3"	3"	3"	5 1/2"	3/4"	3/4"	3"	3"
Gauge	16	16	18	16	14	12	16	14	12	16	14	12	12	16	16	14	12	16	14	12	16	12	29	26	20	20
Use	Sub Girt	Exterior Sub Girt	Channel Section	Stud	Stud	Stud	Stud	Stud	Stud	Header	Header	Header	Header	Girt	Base Channel	Base Channel	Base Channel	Base Channel	Top Channel	Top Channel	Top Channel	Pour Stop Angle	Partition Panel	Partition Panel	Floor Decking	Roof Decking

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Rev:	

CB-A2.02

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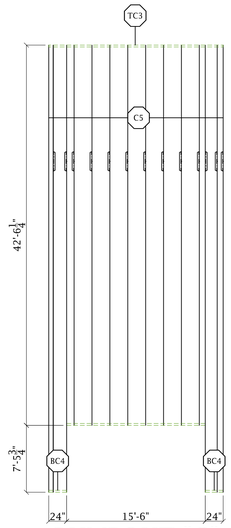
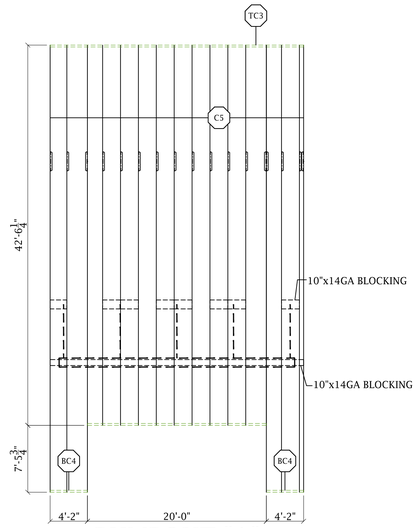
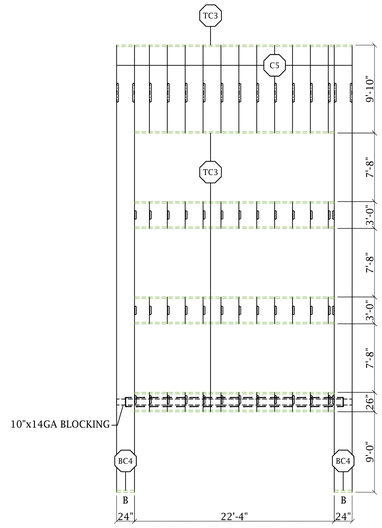


BUMPOUT "C"



BUMPOUT "A"



BUMPOUT "B"

Mark	SG1	SGe	CS	C1	C2	C3	C4	C5	C6	H1	H2	H3	H4	G1	BC1	BC2	BC3	BC4	TC1	TC2	TC3	L1	UP1	UP2	FD	RD
Shape	⊂	⊂	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	[	[	[	[	[	[	[	L	RRU	RRU	3VL	3N
Web	4 3/4"	4 3/4"	1 5/8"	4"	4"	4"	6"	6"	6"	6"	8"	10"	12"	6"	4 1/8"	4 1/8"	4 1/8"	6 1/8"	4 1/8"	4 1/8"	6 1/8"	5 1/2"	36"	36"	36"	36"
Flange	1"	1"	1 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2"	2"	2"	2"	3"	3"	3"	5 1/2"	3/4"	3/4"	3"	3"
Gauge	16	16	18	16	14	12	16	14	12	16	14	12	12	16	16	14	12	16	14	12	16	12	29	26	20	20
Use	Sub Girt	Exterior Sub Girt	Channel Section	Stud	Stud	Stud	Stud	Stud	Stud	Header	Header	Header	Header	Girt	Base Channel	Base Channel	Base Channel	Base Channel	Top Channel	Top Channel	Top Channel	Pour Stop Angle	Partition Panel	Partition Panel	Floor Decking	Roof Decking

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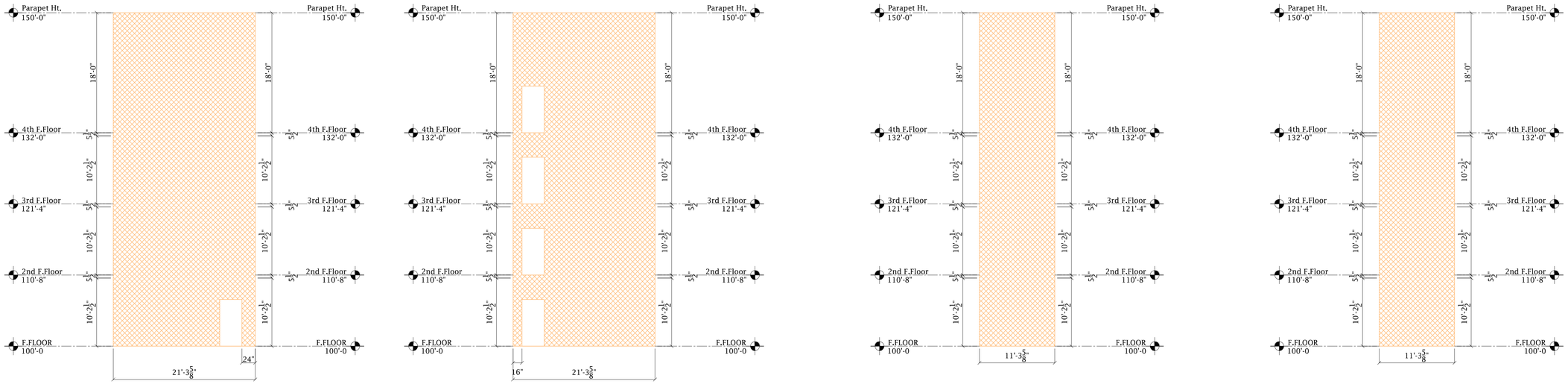
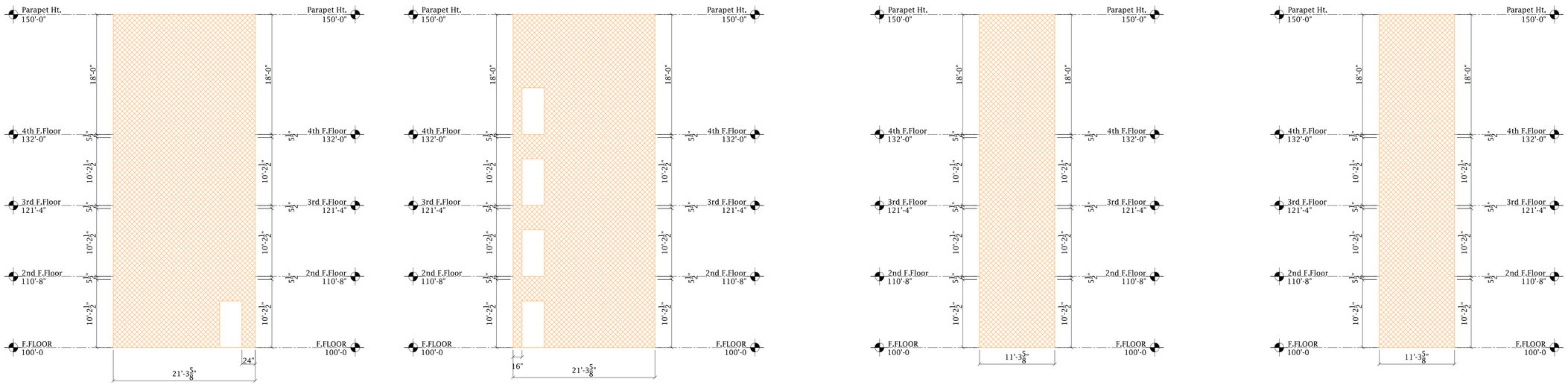


SOUTH STAIR



NORTH STAIR

Mark	SG1	SGe	CS	C1	C2	C3	C4	C5	C6	H1	H2	H3	H4	G1	BC1	BC2	BC3	BC4	TC1	TC2	TC3	L1	UP1	UP2	FD	RD
Shape	⊂	⊂	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	⊏	[	[	[	[	[	[	[	L	RRU	RRU	3VL	3N
Web	4 3/4"	4 3/4"	1 5/8"	4"	4"	4"	6"	6"	6"	6"	8"	10"	12"	6"	4 1/8"	4 1/8"	4 1/8"	6 1/8"	4 1/8"	4 1/8"	6 1/8"	5 1/2"	36"	36"	36"	36"
Flange	1"	1"	1 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2"	2"	2"	2"	3"	3"	3"	5 1/2"	3/4"	3/4"	3"	3"
Gauge	16	16	18	16	14	12	16	14	12	16	14	12	12	16	16	14	12	16	14	12	16	12	29	26	20	20
Use	Sub Girt	Exterior Sub Girt	Channel Section	Stud	Stud	Stud	Stud	Stud	Stud	Header	Header	Header	Header	Girt	Base Channel	Base Channel	Base Channel	Base Channel	Top Channel	Top Channel	Top Channel	Pour Stop Angle	Partition Panel	Partition Panel	Floor Decking	Roof Decking

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1719-RCD	CBS
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CB-A3.01

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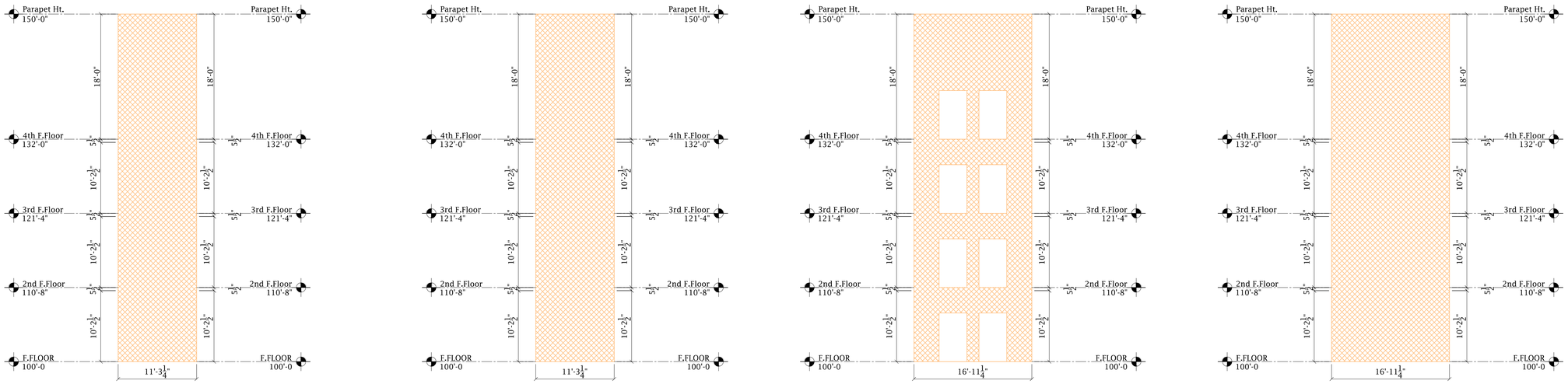

ELEVATOR

Mark	SG1	SGe	CS	C1	C2	C3	C4	C5	C6	H1	H2	H3	H4	G1	BC1	BC2	BC3	BC4	TC1	TC2	TC3	L1	UP1	UP2	FD	RD
Shape																						L	RRU	RRU	3VL	3N
Web	4 3/4"	4 3/4"	1 5/8"	4"	4"	4"	6"	6"	6"	6"	8"	10"	12"	6"	4 1/8"	4 1/8"	4 1/8"	6 1/8"	4 1/8"	4 1/8"	6 1/8"	5 1/2"	36"	36"	36"	36"
Flange	1"	1"	1 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2"	2"	2"	2"	3"	3"	3"	5 1/2"	3/4"	3/4"	3"	3"
Gauge	16	16	18	16	14	12	16	14	12	16	14	12	12	16	16	14	12	16	14	12	16	12	29	26	20	20
Use	Sub Girt	Exterior Sub Girt	Channel Section	Stud	Stud	Stud	Stud	Stud	Stud	Header	Header	Header	Header	Girt	Base Channel	Base Channel	Base Channel	Base Channel	Top Channel	Top Channel	Top Channel	Pour Stop Angle	Partition Panel	Partition Panel	Floor Decking	Roof Decking

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1719-RCD	CBS
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Date:	1/28/2026
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Rev:	

CB-A3.02

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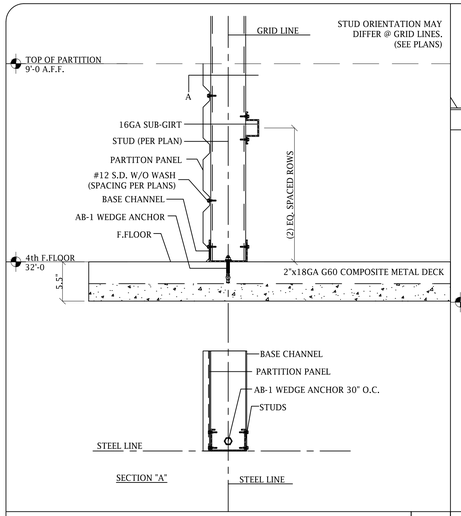
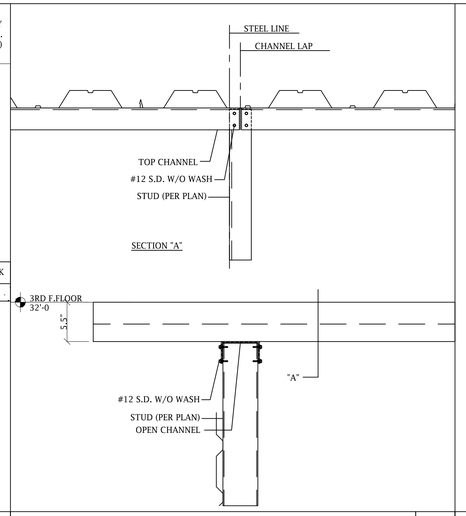
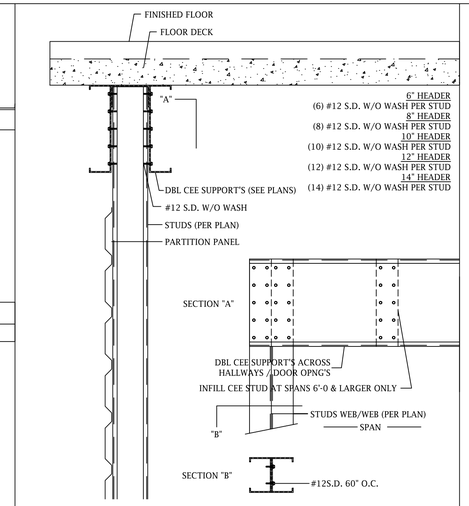


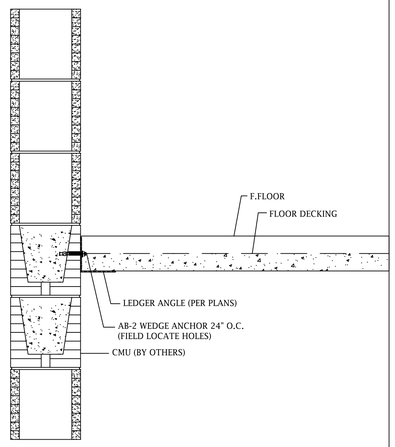
STUD ATTACHMENT @ TOP FLOOR | 1



TOP TRACK @ 2ND FLOOR | 2



HEADER ATTACHMENT | 3



ANGLE FRAMING @ CMU | 4

ANCHOR SCHEDULE

1. AB-1 = 1/2"x 2" MIN EMBEDMENT HILTI KWIK BOLT 3 W/WASHERS (OAE)
2. AB-2 = 5/8"x4" MIN EMBEDMENT EPOXY ANCHOR

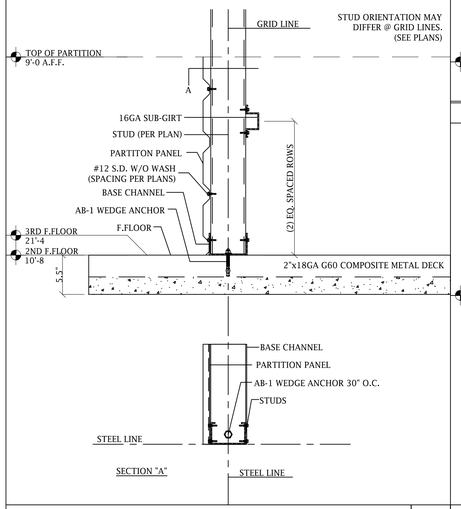
FASTENER SCHEDULE

1. SD-12A = #12x3/4 S.D. W/O WASH
2. SD-14A = #14x7/8 S.D. W/O WASH
3. WSD-12a = #12x1 S.D. W/WASH
4. WSD-14a = #14x7/8 S.D. W/WASH

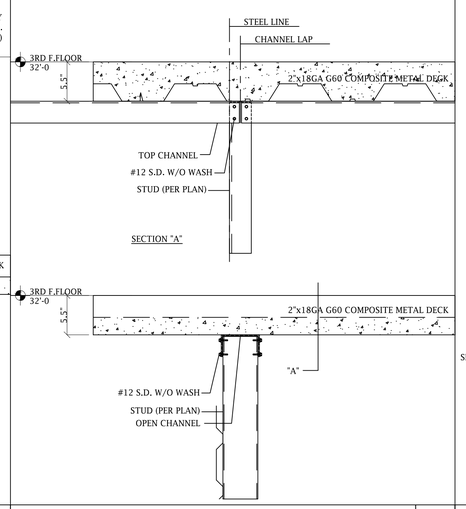
THE DETAILS SHOWN IN THIS SECTION OF THESE DRAWINGS ARE INTENDED TO DEPICT THE DIFFERENT CONNECTION TYPES REQ'D FOR BUILDING ERECTION AND FASTENER SIZING AND FREQUENCY.

REFER TO BUILDING PLANS FOR MATERIAL SIZES, GAUGES, FREQUENCY, LOCATIONS, ETC...

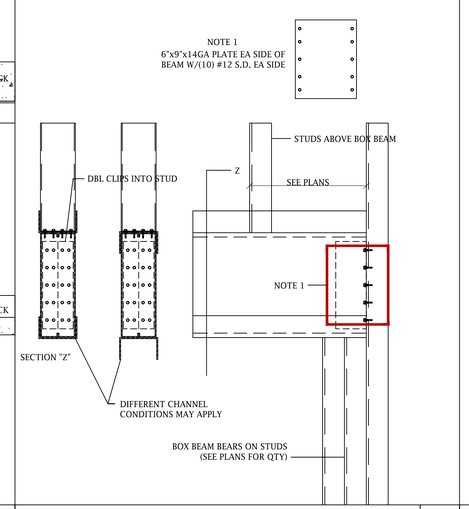
DETAIL NOTES | 5



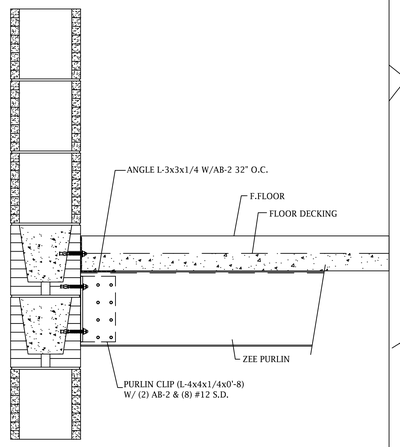
STUD ATTACHMENT @ 2ND FLOOR | 6



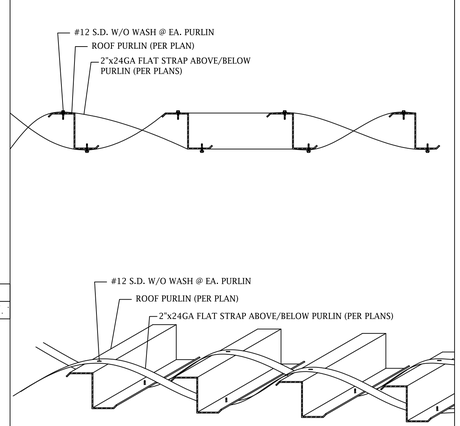
TOP TRACK @ 2ND FLOOR | 7



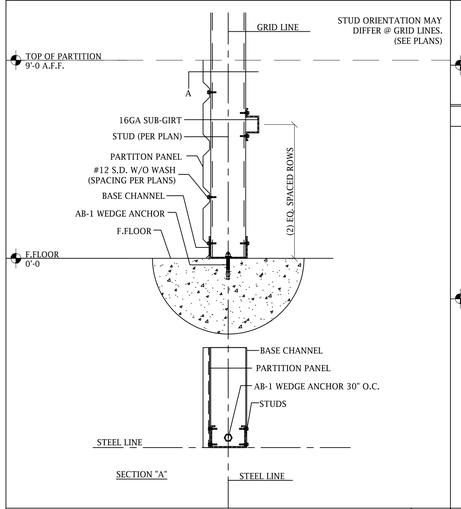
BOX BEAM ATTACHMENT | 8



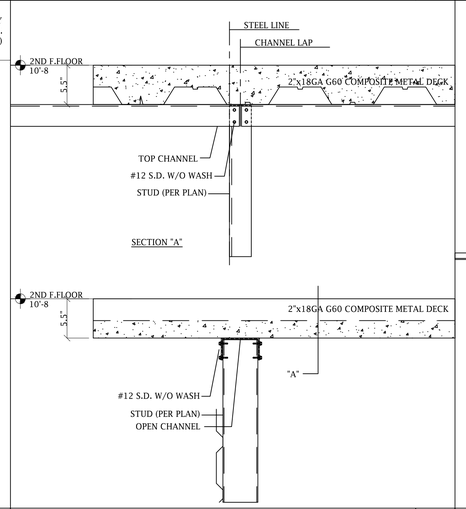
ZEE FRAMING @ CMU | 9



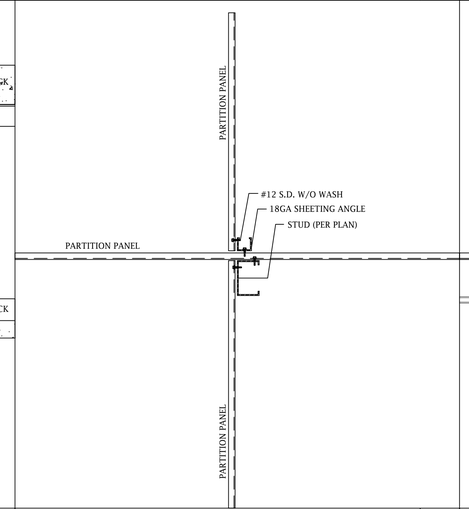
ROOF FLAT STRAPPING @ ZEE PURLIN | 10



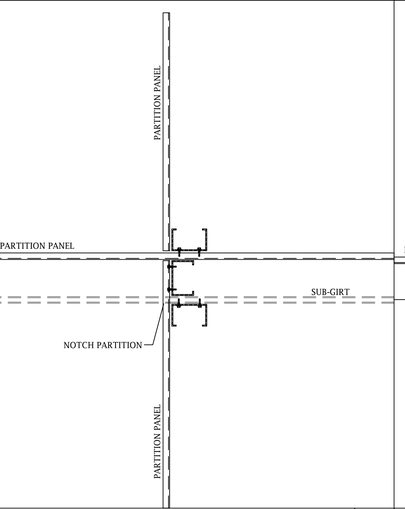
STUD ATTACHMENT @ 1ST FLOOR | 11



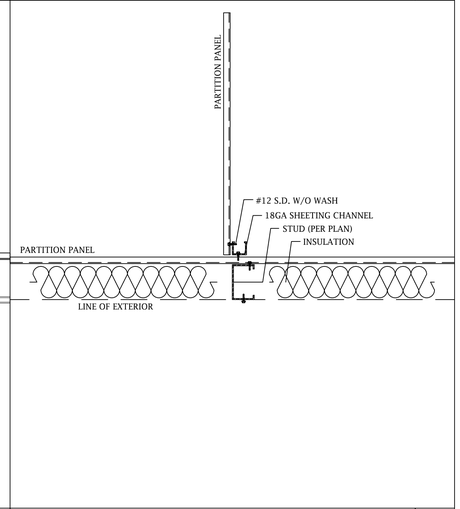
TOP TRACK @ 1ST FLOOR | 12



TYP PARTITION ATTACHMENT | 13



PARTITION ATTACHMENT @ SW INTERSECTION | 14



PARTITION ATTACHMENT @ EXTERIOR INSL WALL | 15

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1719-RCD	CBS
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Rev:	

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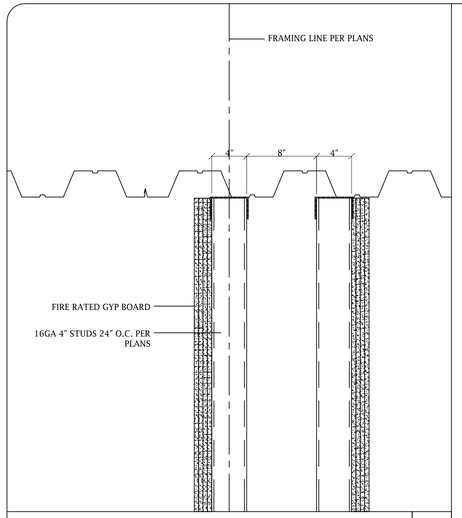
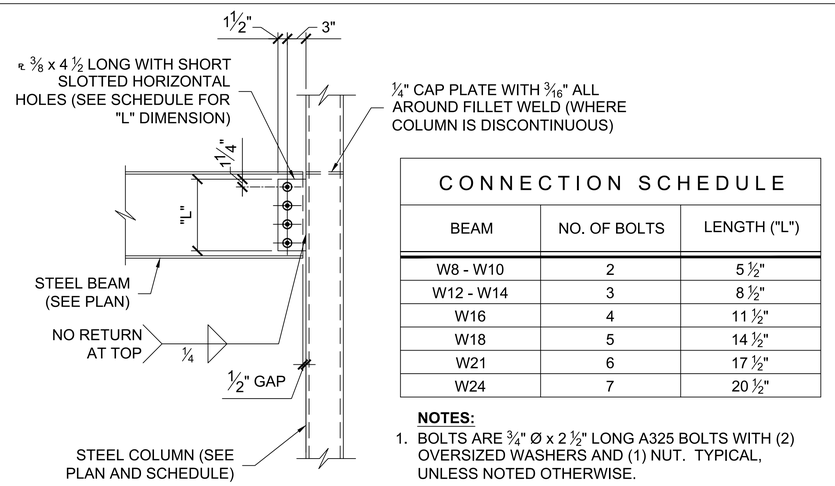


2HR FIREWALL @ CHASE **16**

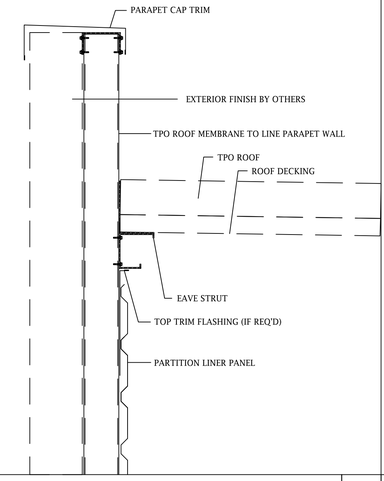


CONNECTION SCHEDULE		
BEAM	NO. OF BOLTS	LENGTH ("L")
W8 - W10	2	5 ½"
W12 - W14	3	8 ½"
W16	4	11 ½"
W18	5	14 ½"
W21	6	17 ½"
W24	7	20 ½"

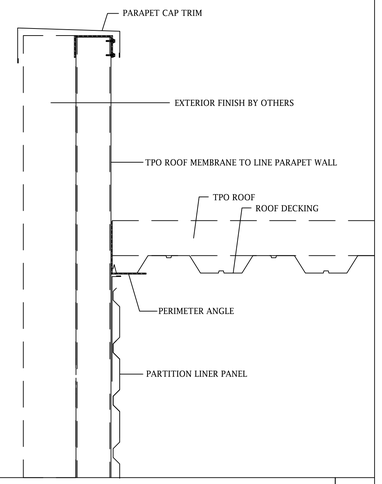
NOTES:

1. BOLTS ARE ¾" Ø x 2 ½" LONG A325 BOLTS WITH (2) OVERSIZED WASHERS AND (1) NUT. TYPICAL, UNLESS NOTED OTHERWISE.

STRUCT COLUMN / BEAM ATTACHMENT **18**



HIGH EAVE PARAPET CONDITION **19**



RAKE PARAPET CONDITION **20**

21 **22** **23** **24** **25**

26 **27** **28** **29** **30**

COMPASS BUILDING SYSTEMS
4547 SILVER SPRINGS BLVD., POWDER SPRINGS, GEORGIA, 30127
(770) 439-1250 / (800) 243-8438 / FAX: (770) 439-0087 / www.compassbuilding.com

Storage Facility

97 Warren Ave.
Portland, ME

Engineer

Drawn By:	Checked By:
1719-RCD	CBS
Project#	CBS#1086
Date:	1/28/2026
Rev:	Review - v1.4
Rev:	

CB-d2

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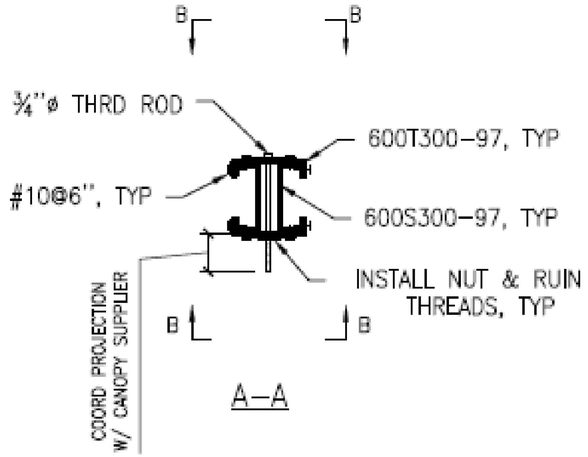
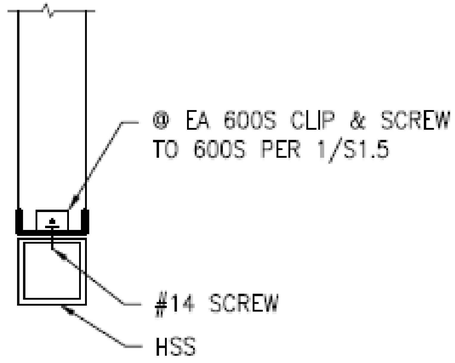
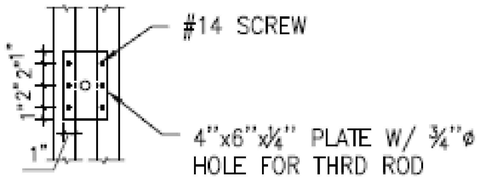


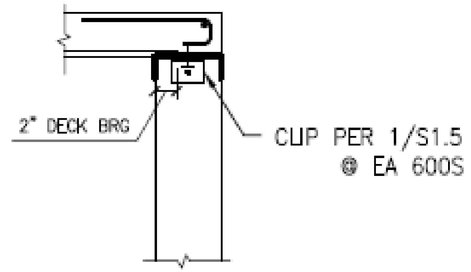
A–A



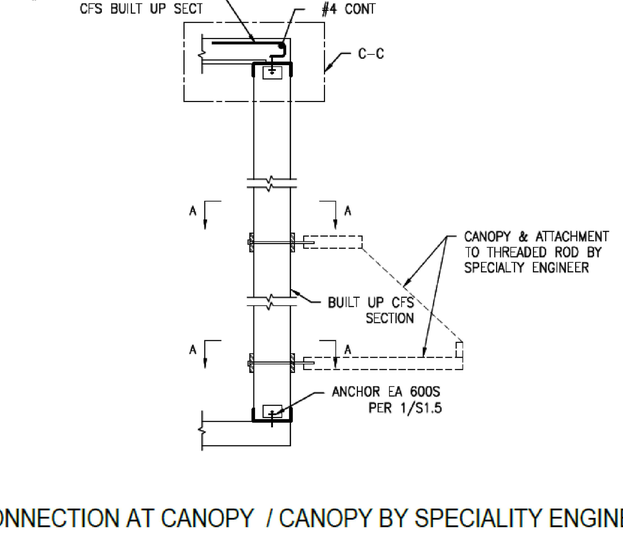
ALT DETAIL WHERE STUD IS SUPPORTED ON HSS



B–B



C–C



TYPICAL CONNECTION AT CANOPY / CANOPY BY SPECIALITY ENGINEER

COMPASS
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Storage Facility

97 Warren Ave.
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Engineer

Drawn By:	Checked By:
1719-RCD	CBS
Project#	CBS#1086
Date:	1/28/2026
Rev:	Review - v1.4
Rev:	

CB-d3

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SECTION 00 7200 - GENERAL CONDITIONS

FORM OF GENERAL CONDITIONS
AIA Document A201, General Conditions of the Contract for Construction, 2017 Edition.

SECTION 01 2000 - PRICE AND PAYMENT PROCEDURES

1.01 SCHEDULE OF VALUES
A. Submit a printed schedule on AIA Form G703 - Application and Certificate for Payment Continuation Sheet. Contractor's standard form or electronic media printout will be considered.
1.02 APPLICATIONS FOR PROGRESS PAYMENTS
A. Form: AIA G702 Application and Certificate for Payment and AIA G703 - Continuation Sheet. Include additional sheets when required.
B. When Architect requires substantiating information, submit data justifying dollar amounts in question.
1.03 MODIFICATION PROCEDURES
A. Contractor may propose a change by submitting a request for change to Architect, describing the proposed change and its full effect on the work, with a statement describing the reason for the change, and the effect on the Contract Sum and Contract Time with full documentation. Document any requested substitutions in accordance with Section 01 6000.
1.04 APPLICATION FOR FINAL PAYMENT
A. Prepare Application for Final Payment as specified for progress payments, identifying total adjusted Contract Sum, previous payments, and sum remaining due.
B. Application for Final Payment will not be considered until the following have been accomplished:
1. Closeout procedures specified in Section 01 7000
2. Closeout submittals in accordance with Sections 01 3000 and 01 7800.

SECTION 01 2500 - SUBSTITUTION PROCEDURES

1.01 DEFINITIONS
A. Substitutions: Changes from Contract Documents requirements proposed by Contractor to materials, products, assemblies, and equipment.
1. Substitutions for Cause: Proposed due to changed Project circumstances beyond Contractor's control.
2. Substitutions for Convenience: Proposed due to possibility of offering substantial advantage to the Project.
a. Substitution requests offering advantages solely to the Contractor will not be considered.

3.01 GENERAL REQUIREMENTS
A. A Substitution Request for products, assemblies, materials, and equipment constitutes a representation that the submitter:
1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product, equipment, assembly, or system.
2. Agrees to provide the same warranty for the substitution as for the specified product.
3. Agrees to coordinate installation and make changes to other work that may be required for the work to be complete, with no additional cost to Owner.
4. Waives claims for additional costs or time extension that may subsequently become apparent.
5. Agrees to reimburse Owner and Architect for review or redesign services associated with re-approval by authorities.
B. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents. Burden of proof is on proposer.
C. Content: Include information necessary for tracking the status of each Substitution Request, and information necessary to provide an actionable response.
1. No specific form is required. Contractor's Substitution Request documentation must include the following:
a. Substitution Request Information:
1) Indication of whether the substitution is for cause or convenience.
2) Issue date.
3) Reference to particular Contract Document(s) specification section number, title, and article/paragraph(s).
4) Description of Substitution.
5) Reason why the specified item cannot be provided.
6) Differences between proposed substitution and specified item.
7) Description of how proposed substitution affects other parts of work.
b. Comparative Data: Provide point-by-point, side-by-side comparison addressing essential attributes specified, as appropriate and relevant for the item:
1) Physical characteristics.
2) In-service performance.
3) Expected durability.
4) Visual effect.
5) Warranties.
6) Other salient features and requirements.
7) Include, as appropriate or requested, the following types of documentation:
(a)Product Data:
(b)Samples.
(c)Certificates, test, reports or similar qualification data.
(d)Drawings, when required to show impact on adjacent construction elements.
c. Impact of Substitution:
1) Savings to Owner for accepting substitution.
2) Change to Contract Time due to accepting substitution.
D. Limit each request to a single proposed substitution item.
3.02 SUBSTITUTION PROCEDURES DURING CONSTRUCTION
A. Architect will consider requests for substitutions only within 15 days after date of Agreement.
B. Submit request for Substitution for Cause within 14 days of discovery of need for substitution, but not later than 14 days prior to time required for review and approval by Architect, in order to stay on approved project schedule.
C. Submit request for Substitution for Convenience immediately upon discovery of its potential advantage to the project, but not later than 14 days prior to time required for review and approval by Architect, in order to stay on approved project schedule.
1. In addition to meeting general documentation requirements, document how the requested substitution benefits the Owner through cost savings, time savings, greater energy conservation, or in other specific ways.
2. Document means of coordinating of substitution item with other portions of the work, including work by affected subcontractors.
3. Bear the costs engendered by proposed substitution of:
a. Owner's compensation to the Architect for any required redesign, time spent processing and evaluating the request.
D. Substitutions will not be considered under one or more of the following circumstances:
1. When they are indicated or implied on shop drawing or product data submittals, without having received prior approval.
2. Without a separate written request.
3.03 RESOLUTION
A. Architect may request additional information and documentation prior to rendering a decision. Provide this data in an expeditious manner.
B. Architect will notify Contractor in writing of decision to accept or reject request.
3.04 ACCEPTANCE
A. Accepted substitutions change the work of the Project. They will be documented and incorporated into work of the project by Change Order, Construction Change Directive, Architectural Supplementary Instructions, or similar instruments provided for in the Conditions of the Contract.

SECTION 01 3000 - ADMINISTRATIVE REQUIREMENTS

1.01 GENERAL ADMINISTRATIVE REQUIREMENTS
A. Comply with requirements of Section 01 7000 - Execution and Closeout Requirements for coordination of execution of administrative tasks with timing of construction activities.
B. Make the following types of submittals to Architect through the General Contractor:
1. Requests for Information (RFI).
2. Requests for substitution.
3. Shop drawings, product data, and samples.
4. Test and inspection reports.
5. Design data.
6. Manufacturer's instructions and field reports.
7. Applications for payment and change order requests.
8. Progress schedules.
9. Correction Punch List and Final Correction Punch List for Substantial Completion.
10. Closeout submittals.

3.01 PROGRESS MEETINGS
A. Schedule and administer meetings throughout progress of the Work at regular intervals, appropriate to the stage of Work.
B. Make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.
C. Record minutes and distribute copies within two days after meeting to participants, with copies to Architect, Owner, participants, and those affected by decisions made.
3.02 CONSTRUCTION PROGRESS SCHEDULE
A. Within 10 days after date established in Notice to Proceed, submit preliminary schedule defining planned operations for the first 60 days of work, with a general outline for remainder of work.
3.03 PROGRESS PHOTOGRAPHS
A. Submit photographs with each application for payment, taken not more than 3 days prior to submission of application for payment.
3.04 REQUESTS FOR INFORMATION (RFI)
A. Definition: A request seeking one of the following:
1. An interpretation, amplification, or clarification of some requirement of Contract Documents arising from inability to determine from them the exact material, process, or system to be installed; or when the elements of construction are required to occupy the same space (interference); or when an item of work is described differently at more than one place in Contract Documents.
2. A resolution to an issue which has arisen due to field conditions and affects design intent.
B. Whenever possible, request clarifications at the next appropriate project progress meeting, with response entered into meeting minutes, rendering unnecessary the issuance of a formal RFI.
C. Preparation: Prepare an RFI immediately upon discovery of a need for interpretation of Contract Documents. Failure to submit a RFI in a timely manner is not a legitimate cause for claiming additional costs or delays in execution of the work.
1. Prepare a separate RFI for each specific item.
a. Review, coordinate, and comment on requests originating with subcontractors and/or materials suppliers.
b. Do not forward requests which solely require internal coordination between subcontractors.
2. The Architect and the architect's consultants will not accept Requests For Information directly from subcontractors and suppliers.
D. Reason for the RFI: Prior to initiation of an RFI, carefully study all Contract Documents to confirm that information sufficient for their interpretation is definitely not included.
1. Include in each request Contractor's signature attesting to good faith effort to determine from Contract Documents information requiring interpretation.
2. Unacceptable Uses for RFIs: Do not use RFIs to request the following::
a. Approval of submittals.
b. Approval of substitutions.
c. Changes that entail change in Contract Time and Contract Sum.
d. Different methods of performing work than those indicated in the Contract Drawings and Specifications.
3. Improper RFIs: Requests not prepared in compliance with requirements of this section, and/or missing key information required to render an actionable response. They will be returned without a response, with an explanatory notation.
4. Frivolous RFIs: Requests regarding information that is clearly indicated on, or reasonably inferable from, Contract Documents, with no additional input required to clarify the question. They will be returned without a response, with an explanatory notation.
a. The Owner reserves the right to assess the Contractor for the costs (on time-and-materials basis) incurred by the Architect, and any of its consultants, due to processing of such RFIs.
E. Content: Include identifiers necessary for tracking the status of each RFI, and information necessary to provide an actionable response.
1. Official Project name and number, and any additional required identifiers established in Contract Documents.
2. Discrete and consecutive RFI number, and descriptive subject/title.
3. Issue date, and requested reply date.
4. Reference to particular Contract Document(s) requiring additional information/interpretation. Identify pertinent drawing and detail number and/or specification section number, title, and paragraph(s).
5. Annotations: Field dimensions and/or description of conditions which have engendered the request.
6. Contractor's suggested resolution: A written and/or a graphic solution, to scale, is required in cases where clarification of coordination issues is involved, for example; routing, clearances, and/or specific locations of work shown diagrammatically in Contract Documents. If applicable, state the likely impact of the suggested resolution on Contract Time or the Contract Sum.
F. Attachments: Include sketches, coordination drawings, descriptions, photos, submittals, and other information necessary to substantiate the reason for the request.
G. RFI Log: Prepare and maintain a tabular log of RFIs for the duration of the project.
H. Review Time: Architect will respond and return RFIs to Contractor within 7 calendar days of receipt. For the purpose of establishing the start of the mandated response period, RFIs received after 12:00 noon will be considered as having been received on the following regular working day.
1. Response period may be shortened or lengthened for specific items, subject to mutual agreement, and recorded in a timely manner in progress meeting minutes.
I. Responses: Content of answered RFIs will not constitute in any manner a directive or authorization to perform extra work or delay the project. If in Contractor's belief it is likely to lead to a change to Contract Sum or Contract Time, promptly issue a notice to this effect, and follow up with an appropriate Change Order request to Owner.
1. Response may include a request for additional information, in which case the original RFI will be deemed as having been answered, and an amended one is to be issued forthwith. Identify the amended RFI with an R suffix to the original number.
2. Do not extend applicability of a response to specific item to encompass other similar conditions, unless specifically so noted in the response.
3. Upon receipt of a response, promptly review and distribute it to all affected parties, and update the RFI Log.
4. Notify Architect within seven calendar days if an additional or corrected response is required by submitting an amended version of the original RFI, identified as specified above.
3.05 SUBMITTALS FOR REVIEW
A. When the following are specified in individual sections, submit them for review:
1. Product data, shop drawings, samples for selection and samples for verification.
B. Submit to Architect for review for the limited purpose of checking for compliance with information given and the design concept expressed in Contract Documents.
C. Samples will be reviewed for aesthetic, color, or finish selection.
D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record documents purposes described in Section 01 7800 - Closeout Submittals.
3.06 SUBMITTALS FOR INFORMATION
A. When the following are specified in individual sections, submit them for information:
1. Design data, certificates, test reports, inspection reports, manufacturer's instructions, manufacturer's field reports and other types indicated.
B. Submit for Architect's knowledge as contract administrator or for Owner. No action will be taken.
3.07 NUMBER OF COPIES OF SUBMITTALS
A. Documents for Information: Submit one copy electronically in .pdf format.
B. Documents for Project Closeout: Make one reproduction of submittal originally reviewed. Submit one extra of submittals for information.
C. Samples: Submit the number specified in individual specification sections, but not less than 3; one of which will be retained by Architect.
3.08 SUBMITTAL PROCEDURES
A. General Requirements:
1. Use a separate transmittal for each item.
2. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction work, and coordination of information is in accordance with the requirements of the work and Contract Documents.
a. Submittals from sources other than the Contractor, or without Contractor's stamp will not be acknowledged, reviewed, or returned.
b. Submittals not bearing the contractor's approval will be returned with no action taken.
3. Send submittals in electronic format via email to Architect.
4. Schedule submittals to expedite the Project, and coordinate submission of related items.
a. For each submittal for review, allow 10 days excluding delivery time to and from the Contractor.
b. For sequential reviews involving Architect's consultants, Owner, or another affected party, allow an additional 7 days.
5. Identify variations from Contract Documents and product or system limitations that may be detrimental to successful performance of the completed work.
6. Provide space for Contractor and Architect review stamps.
7. When revised for resubmission, identify all changes made since previous submission.
8. Distribute reviewed submittals. Instruct parties to promptly report inability to comply with requirements.
9. Incomplete submittals will not be reviewed, unless they are partial submittals for distinct portion(s) of the work, and have received prior approval for their use.
10. Submittals not requested will not be recognized or processed.
11. The Architect and the architect's consultants will not accept submittals from subcontractors and suppliers.
12. Architect will return copies of submittals for review to the Contractor by e-mail.
13. Architect will place copies of submittals for information into the project's electronic record.
14. Make submittals that require field verification or field measurements only when progress of the work is complete to the point where verification and measurements can be performed and such information is included on the submittal.
B. Product Data Procedures:
1. Submit only information required by individual specification sections.
2. Collect required information into a single submittal.
3. Do not submit (Material) Safety Data Sheets for materials or products.
C. Shop Drawing Procedures:
1. Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting Contract Documents and coordinating related work.
2. Do not reproduce Contract Documents to create shop drawings.
3. Generic, non-project-specific information submitted as shop drawings do not meet the requirements for shop drawings.
D. Samples Procedures:
1. Transmit related items together as single package.
2. Identify each item to allow review for applicability in relation to shop drawings showing installation locations.
E. Transmitting Procedures:
1. Transmit electronic submittals via e-mail. Include in the e-mail identification of the attachments as a submittal for review or for information. Do not include questions, comments, information or attachments pertaining to other than the submittal being sent in any submittal e-mail.
a. Scans are to be of suitable resolution so as to be legible in all respects, but not less than 200 x 200 DPI
b. Information originally in color is to be scanned and submitted in color.
c. E-mail to the Architect's designated Project Architect.
2. Transmit samples and other submittals that cannot be converted to electronic format with the Contractor's standard transmittal form.
a. Deliver to the Architect at architect's business address.
3.09 SUBMITTAL REVIEW
A. Architect will place copies of submittals for information into the project's electronic record.
B. Submittals for Review: Architect will review each submittal, and approve, or take other appropriate action.
C. Submittals for Information: Architect will acknowledge receipt and review. See below for actions to be taken.
D. Architect's actions will be reflected by marking each returned submittal using virtual stamp on electronic submittals.
1. Notations may be made directly on submitted items and/or listed on appended Submittal Review cover sheet.
E. Architect's and consultants' actions on items submitted for review:
1. Authorizing purchasing, fabrication, delivery, and installation:
a. "NO EXCEPTIONS TAKEN", or language with same legal meaning: Submittal is in compliance with project requirements.
b. "EXCEPTIONS NOTED", or language with same legal meaning: Relatively minor changes and corrections are needed.
1) At Contractor's option, submit corrected item, with review notations acknowledged and incorporated.
c. "REVISE & RESUBMIT", or language with same legal meaning: Comments and corrections are so extensive as to require significant changes, and further review, in order to show the submittal is in compliance with project requirements.
2. Not Authorizing fabrication, delivery, and installation:
a. "REJECTED": Submittal is not in compliance with project requirements. In the Architect's opinion, the only reasonable course of action is a new submittal.
1) Submit item complying with requirements of Contract Documents.
F. Architect's and consultants' actions on items submitted for information:
1. Items for which no action was taken:
a. "Received" - to notify the Contractor that the submittal has been received for record only.
2. Items for which action was taken:
a. "Reviewed" - no further action is required from Contractor.

SECTION 01 4000 - QUALITY REQUIREMENTS

1.01 SECTION INCLUDES
A. Submittals.
B. Quality assurance.
C. References and standards.
D. Testing and inspection agencies and services.
E. Control of installation.
F. Tolerances.
G. Manufacturers' field services.
1.02 SUBMITTALS
A. Design Data: Submit for project record, for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.
B. Certificates: When specified in individual specification sections, submit certification by the manufacturer and Contractor or installation/application subcontractor to Architect, in quantities specified for Product Data.
1. Indicate material or product complies with or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
2. Certificates may be recent or previous test results on material or product, but must be acceptable to Architect.
1.03 QUALITY ASSURANCE
A. Testing Agency Qualifications:
1. Prior to start of work, submit agency name, address, and telephone number, and names of full time registered Engineer and responsible officer.
2. Submit copy of report of laboratory facilities inspection made by NIST Construction Materials Reference Laboratory during most recent inspection, with memorandum of remedies of any deficiencies reported by the inspection.
3. Qualification Statement: Provide documentation showing testing laboratory is accredited under IAS AC89.
1.04 REFERENCES AND STANDARDS
A. For products and workmanship specified by reference to a document or documents not included in the Project Manual, also referred to as reference standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
B. Comply with reference standard of date of issue current on date of Contract Documents, except where a specific date is established by applicable code.
C. Obtain copies of standards where required by product specification sections.
D. Maintain copy at project site during submittals, planning, and progress of the specific work, until Substantial Completion.
E. Should specified reference standards conflict with Contract Documents, request clarification from Architect before proceeding.
F. Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of Architect shall be altered from Contract Documents by mention or inference otherwise in any reference document.
1.05 TESTING AND INSPECTION AGENCIES AND SERVICES
A. Owner will employ services of an independent testing agency to perform certain code required special testing and inspection.
B. Contractor shall employ and pay for services of an independent testing agency to perform other specified testing and inspection.
C. Employment of agency in no way relieves Contractor of obligation to perform Work in accordance with requirements of Contract Documents.
D. Contractor Employed Agency:
1. Testing agency: Comply with requirements of ASTM E329, ASTM E543, ASTM E699, ASTM C1021, ASTM C1077, ASTM C1093, and ASTM D3740.
2. Inspection agency: Comply with requirements of ASTM D3740 and ASTM E329.
3. Laboratory: Authorized to operate in the State in which the Project is located.
4. Testing Equipment: Calibrated at reasonable intervals either by NIST or using an NIST established Measurement Assurance Program, under a laboratory measurement quality assurance program.

3.01 CONTROL OF INSTALLATION
A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship, to produce work of specified quality.
B. Comply with manufacturers' instructions, including each step in sequence.
C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.
D. Comply with specified standards as minimum quality for the work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
E. Have work performed by persons qualified to produce required and specified quality.
F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
G. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, and disfigurement.
3.02 TOLERANCES
A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.
B. Comply with manufacturers' tolerances except where industry standard tolerances are more restrictive. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Architect before proceeding.
C. Adjust products to appropriate dimensions; position before securing products in place.
3.03 TESTING AND INSPECTION
A. See individual specification sections for testing and inspection required.
B. Testing Agency Duties:
1. Provide qualified personnel at site. Cooperate with Architect and Contractor in performance of services.
2. Perform specified sampling and testing of products in accordance with specified standards.
3. Ascertain compliance of materials and mixes with requirements of Contract Documents.
4. Promptly notify Architect and Contractor of observed irregularities or non-compliance of Work or products.
5. Perform additional tests and inspections required by Architect.
6. Submit reports of all tests/inspections specified.
C. Limits on Testing/Inspection Agency Authority:
1. Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
2. Agency may not approve or accept any portion of the Work.
3. Agency may not assume any duties of Contractor.
4. Agency has no authority to stop the Work.
D. Contractor Responsibilities:
1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
2. Cooperate with laboratory personnel and provide access to the Work and to manufacturers' facilities.
3. Provide incidental labor and facilities:
a. To provide access to Work to be tested/inspected.
b. To obtain and handle samples at the site or at source of Products to be tested/inspected.
c. To facilitate tests/inspections.
d. To provide storage and curing of test samples.
4. Provide testing and inspection agency sufficient notice prior to expected time for operations requiring testing/inspection services.
5. Arrange with Owner's agency and pay for additional samples, tests, and inspections required by Contractor beyond specified requirements.
E. Re-testing required because of non-conformance to specified requirements shall be performed by the same agency.
F. Re-testing required because of non-compliance with specified requirements shall be paid for by Contractor.
3.04 MANUFACTURERS' FIELD SERVICES
A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment as applicable, and to initiate instructions when necessary.
B. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.
3.05 CORRECTION
A. Replace Work or portions of the Work not complying with specified requirements.

SECTION 01 5000 - TEMPORARY FACILITIES AND CONTROLS

1.01 TEMPORARY UTILITIES
A. Provide and pay for electrical power, lighting, water, heating and cooling, and ventilation required for construction purposes.
B. Use trigger-operated nozzles for water hoses, to avoid waste of water.
1.02 TELECOMMUNICATIONS SERVICES
A. Provide, maintain, and pay for telecommunications services to field office at time of project mobilization.
B. Telecommunications services shall include:
1. Telephone service with a number dedicated for project use and with voice messaging capability.
2. Internet Connections: Minimum of one; DSL modem or faster.
a. Provide printer/copier/scanner or equivalent to allow for transfer of drawings and information to and from the field.
1.03 TEMPORARY SANITARY FACILITIES
A. Provide and maintain required facilities and enclosures. Provide at time of project mobilization.
B. Maintain daily in clean and sanitary condition.
1.04 BARRIERS
A. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
B. Provide barricades and covered walkways for public rights-of-way and to maintain safe public access to and egress from existing building.
C. Provide protection for plants designated to remain. Replace damaged plants.
D. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.
1.05 FENCING
A. Construction: Commercial grade chain link fence.
B. Provide 6 foot high fence around construction site; equip with vehicular and pedestrian gates with locks.
1.06 EXTERIOR ENCLOSURES
A. Provide temporary insulated weather tight closure of exterior openings to accommodate acceptable working conditions and protection for Products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification sections, and to prevent entry of unauthorized persons. Provide access doors with self-closing hardware and locks.
B. When the project site or portions there-of is to be occupied during construction, provide temporary insulated weather tight closure consistent with the requirements of paragraph A above.
1.07 INTERIOR ENCLOSURES
A. Provide temporary partitions and ceilings as indicated to separate work areas from Owner-occupied areas, to prevent penetration of dust and moisture into Owner-occupied areas, and to prevent damage to existing materials and equipment.
B. Construction: Framing and gypsum board sheet materials with closed joints and sealed edges at intersections with existing surfaces, unless otherwise indicated on the drawings:
1. Maximum flame spread rating of 25 in accordance with ASTM E84.
1.08 SECURITY
A. Provide security and facilities to protect Work, existing facilities, and Owner's operations from unauthorized entry, vandalism, or theft.
1.09 VEHICULAR ACCESS AND PARKING
A. Comply with regulations relating to use of streets and sidewalks, access to emergency facilities, and access for emergency vehicles.
B. Coordinate access and haul routes with governing authorities and Owner.
C. Provide and maintain access to fire hydrants, free of obstructions.
D. Provide means of removing mud from vehicle wheels before entering streets.
E. Provide temporary parking areas to accommodate construction personnel. When site space is not adequate, provide additional off-site parking.
1.10 WASTE REMOVAL
A. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.
B. Provide containers with lids. Remove trash from site periodically.
C. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.
D. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.
1.12 FIELD OFFICES
A. Office: Weathertight, with lighting, electrical outlets, heating, cooling equipment, and equipped with sturdy furniture, drawing rack, and drawing display table.
B. Provide space for Project meetings, with table and chairs to accommodate 10 persons.
1.13 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS
A. Remove temporary utilities, equipment, facilities, materials, prior to Date of Substantial Completion inspection.
B. Clean and repair damage caused by installation or use of temporary work.
C. Restore existing facilities used during construction to original condition.
D. Restore new permanent facilities used during construction to specified condition.

SECTION 01 6000 - PRODUCT REQUIREMENTS

1.01 SUBMITTALS
A. Product Data Submittals: Submit manufacturer's standard published data. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
B. Shop Drawing Submittals: Prepared specifically for this Project; indicate utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
C. Sample Submittals: Illustrate functional and aesthetic characteristics of the product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.

2.01 EXISTING PRODUCTS
A. Do not use materials and equipment removed from existing premises unless specifically required or permitted by Contract Documents.
B. Unforeseen historic items encountered remain the property of the Owner; notify Owner promptly upon discovery; protect, remove, handle, and store as directed by Owner.
C. Existing materials and equipment indicated to be removed, but not to be re-used, relocated, reinstalled, delivered to the Owner, or otherwise indicated as to remain the property of the Owner, become the property of the Contractor; remove from site.
2.02 NEW PRODUCTS
A. Provide new products unless specifically required or permitted by Contract Documents.
B. Where other criteria are met, Contractor shall give preference to products that:
1. If used on interior, have lower emissions, as defined in Section 01 6116.
2. If wet-applied, have lower VOC content, as defined in Section 01 6116.
3. Are extracted, harvested, and/or manufactured closer to the location of the project.
4. Have longer documented life span under normal use.
5. Result in less construction waste. See Section 01 7419
6. Are made of vegetable materials that are rapidly renewable.
C. Provide interchangeable components of the same manufacture for components being replaced.
2.03 PRODUCT OPTIONS
A. Products Specified by Reference Standards or by Description Only: Use any product meeting those standards or description.
B. Products Specified by Naming One or More Manufacturers: Use a product of one of the manufacturers named and meeting specifications, no options or substitutions allowed.
C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.
D. Specifications are, in general, written to be non-proprietary, however; where specific products are required, for example a certain size, color, texture, configuration or other characteristic, manufacturer and product information are provided on the drawings in the form of notes or schedules as appropriate.
1. Substitutions for products so indicated will be considered in accordance with "Substitution Procedures" of this specification Section.
2.04 MAINTENANCE MATERIALS
A. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.
B. Deliver and place in location as directed; obtain receipt prior to final payment.

3.01 SUBSTITUTION LIMITATIONS
A. See Section 01 2500 - Substitution Procedures.
3.02 OWNER-SUPPLIED PRODUCTS
A. Owner's Responsibilities:
1. Arrange for and deliver Owner reviewed shop drawings, product data, and samples, to Contractor.
2. Arrange and pay for product delivery to site.
3. Submit claims for transportation damage and replace damaged, defective, or deficient items.
4. Arrange for manufacturers' warranties, inspections, and service.
B. Contractor's Responsibilities:
1. Review Owner reviewed shop drawings, product data, and samples.
2. Receive and unload products at site; inspect for completeness or damage and report damaged, defective, or deficient items to Owner.
3. Handle, store, install and finish products.
4. Repair or replace items damaged after receipt.
3.03 TRANSPORTATION AND HANDLING
A. Package products for shipment in manner to prevent damage; for equipment, package to avoid loss of factory calibration.
B. If special precautions are required, attach instructions prominently and legibly on outside of packaging.
C. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.
D. Transport and handle products in accordance with manufacturer's instructions.
E. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.
F. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
G. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.
H. Arrange for the return of packing materials, such as wood pallets, where economically feasible.
3.04 STORAGE AND PROTECTION
A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area.
B. Store and protect products in accordance with manufacturers' instructions.
C. Store with seals and labels intact and legible.
D. Store sensitive products in weathertight, climate-controlled enclosures in an environment favorable to product.
E. For exterior storage of fabricated products, place on sloped supports above ground.
F. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.
G. Comply with manufacturer's warranty conditions, if any.
H. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
I. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
J. Prevent contact with material that may cause corrosion, discoloration, or staining.
K. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
L. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

SECTION 01 7000 - EXECUTION REQUIREMENTS

1.01 SECTION INCLUDES
A. Examination, preparation, and general installation procedures.
B. Requirements for alterations work, including selective demolition, except removal, disposal, and/or remediation of hazardous materials and toxic substances.
C. Pre-installation meetings.
D. Cutting and patching.
E. Surveying for laying out the work.
F. Cleaning and protection.
G. Starting of systems and equipment.
H. Demonstration and instruction of Owner personnel.
I. Closeout procedures, including Contractor's Correction Punch List, except payment procedures.
J. General requirements for maintenance service.
1.02 QUALIFICATIONS
A. For demolition work, employ a firm specializing in the type of work required.
1. Minimum of 5 years of experience.
B. For survey work, employ a land surveyor registered in the State in which the Project is located.
C. For field engineering, employ a professional engineer of the discipline required for specific service on Project, licensed in the State in which the Project is located. Employ only individual(s) trained and experienced in establishing and maintaining horizontal and vertical control points necessary for laying out construction work on project of similar size, scope and/or complexity.
D. For design of temporary shoring and bracing, employ a Professional Engineer experienced in design of this type of work and licensed in the State in which the Project is located.
1.03 PROJECT CONDITIONS
A. Comply with Safeguards During Construction requirements as outlined in the International Building Code, Chapter 33, edition as adopted at the project location.
B. For demolition work comply with ANSI A10.6.
C. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.
D. Protect site from puddling or running water.
E. Protect areas not undergoing alteration as specified for protection of installed work.
F. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.
G. Dust Control: Execute work by methods to minimize raising dust from demolition or construction operations. Provide positive means to prevent air-borne dust from dispersing into the atmosphere.
1. Provide dust-proof barriers between construction areas and areas continuing to be occupied by Owner.
H. Erosion and Sediment Control: Plan and execute work by methods to control surface drainage from cuts and fills, from borrow and waste disposal areas. Prevent erosion and sedimentation.
1. Minimize the amount of bare soil exposed at one time.
2. Provide temporary measures such as berms, dikes, and drains, to manage water flow.
3. Construct fill and waste areas by selective placement to avoid erosive surface silts or clays.
4. Periodically inspect earthwork to detect evidence of erosion and sedimentation; promptly apply corrective measures.
I. Noise Control: Provide methods, means, and facilities to minimize noise produced by demolition or construction operations. Comply with local requirements for noise control.
J. Pest and Insect Control: Provide methods, means, and facilities to prevent pests and insects from damaging the work.
K. Rodent Control: Provide methods, means, and facilities to prevent rodents from accessing or invading premises.
L. Pollution Control: Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances, and pollutants produced by demolition or construction operations.
1.04 COORDINATION
A. Coordinate scheduling, submittals, and work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
B. Notify affected utility companies and comply with their requirements.
C. Verify that utility requirements and characteristics of new operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
D. Coordinate space requirements, supports, and installation of mechanical and electrical work that are indicated diagrammatically on drawings. Follow routing indicated for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize space efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
E. In finished areas except as otherwise indicated, conceal pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.
F. Coordinate completion and clean-up of work of separate sections.
G. After Owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

2.01 PATCHING MATERIALS
A. New Materials: As specified in product sections; match existing products and work for patching and extending work.
B. Type and Quality of Existing Products: Determine by inspecting and testing products where necessary, referring to existing work as a standard.
C. Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 6000 - Product Requirements.

3.01 EXAMINATION
A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.
B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
C. Examine and verify specific conditions described in individual specification sections.
D. Take field measurements before confirming product orders or beginning fabrication.
E. Verify that utility services are available, of the correct characteristics, and in the correct locations.
F. Prior to Cutting: Examine existing conditions prior to commencing work, including elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.
3.02 PREPARATION
A. Clean substrate surfaces prior to applying the next material or substance.
B. Seal cracks or openings of substrate prior to applying the next material or substance.
C. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.
3.03 PREINSTALLATION MEETINGS
A. When required in individual specification sections, convene a preinstallation meeting at the site prior to commencing work of the section.
B. Require attendance of parties directly affecting, or affected by, work of the specific section.
C. Notify Architect four days in advance of meeting date.
D. Prepare agenda and preside at meeting:
1. Review conditions of examination, preparation, and installation procedures.
2. Review coordination with related work.
E. Record minutes and distribute copies within two days after meeting to participants, with one copy to Architect, Owner, participants, and those affected by decisions made.
3.04 LAYING OUT THE WORK
A. Verify locations of survey control points prior to starting work.
B. Do not scale drawings. Request clarifications from the Architect.
C. Promptly notify Architect of any discrepancies discovered.
D. Contractor shall locate and protect survey control and reference points.
E. Protect survey control points prior to starting site work; preserve permanent reference points during construction.
F. Replace dislocated survey control points based on original survey control. Make no changes without prior written notice to the Architect.
G. Utilize recognized engineering survey practices.
H. Establish elevations, lines, and levels. Locate and lay out by instrumentation and similar appropriate means:
1. Site improvements including pavements; stakes for grading, fill and topsoil placement; utility locations, slopes, and invert elevations.
2. Grid or axis for structures.
3. Building foundation, column locations, ground floor elevations.
I. Periodically verify layouts by same means.
J. Maintain a complete and accurate log of control and survey work as it progresses.
3.05 GENERAL INSTALLATION REQUIREMENTS
A. In addition to compliance with regulatory requirements, conduct construction operations in compliance with NFPA 241, including applicable recommendations in Appendix A.
B. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to the necessity for replacement.
C. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.
D. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
E. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
F. Make neat transitions between different surfaces, maintaining texture and appearance.
G. Do not install products that are defective, including warped, bowed, dented, chipped, cracked or broken members, and members with damaged finishes.
3.06 CUTTING AND PATCHING
A. Whenever possible, execute the work by methods that avoid cutting or patching.
B. See Alterations article above for additional requirements.
C. Perform whatever cutting and patching is necessary to:
1. Complete the work.
2. Fit products together to integrate with other work.
3. Provide openings for penetration of mechanical, electrical, and other services.
4. Match work that has been cut to adjacent work.
5. Repair areas adjacent to cuts to required condition.
6. Repair new work damaged by subsequent work.
7. Remove samples of installed work for testing when requested.
8. Remove and replace defective and non-complying work.
D. Execute work by methods that avoid damage to other work and that will provide appropriate surfaces to receive patching and finishing. In existing work, minimize damage and restore to original condition.
E. Employ skilled and experienced installer to perform cutting for weather exposed and moisture resistant elements; employ skilled and experienced installer to perform cutting for other sight exposed surfaces.
F. Examine areas to be cut or core drilled for presence of concealed utilities and structural elements including piping, electrical distribution, reinforcing steel and post-tensioning cables. Utilize x-ray equipment where necessary.
G. Cut rigid materials using masonry saw or core drill.
H. Restore work with new products in accordance with requirements of Contract Documents.
I. Fit work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
J. At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with fire rated material in accordance with Section 07 8400, to maintain fire rating.
K. Patching:
1. Finish patched surfaces to match the finish that existed prior to patching. On continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
2. Match color, texture, and appearance.
3. Repair patched surfaces that are damaged, lifted, discolored, or showing other imperfections due to patching work. If defects are due to condition of substrate, repair substrate prior to repairing finish.
4. When the finish cannot be matched, refinish entire surface to nearest intersections.
3.07 PROGRESS CLEANING
A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
C. Broom and vacuum clean interior areas prior to start of surface finishing and continue cleaning to eliminate dust.
D. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.
3.08 PROTECTION OF INSTALLED WORK
A. Protect installed work from damage by construction operations.
B. Provide special protection where specified in individual specification sections.
C. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
D. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
E. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
F. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
G. Remove protective coverings when no longer needed; reuse or recycle coverings if possible.
3.9 SYSTEM STARTUP
A. Coordinate schedule for start-up of various equipment and systems.
B. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and for conditions that may cause damage.
C. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
D. Verify that wiring and support components for equipment are complete and tested.
E. Execute start-up under supervision of applicable Contractor personnel and manufacturer's representative in accordance with manufacturers' instructions.
F. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.
3.10 DEMONSTRATION AND INSTRUCTION
A. Demonstrate operation and maintenance of products to Owner's personnel prior to date of Substantial Completion.
B. Demonstrate start-up, operation, control, adjustment, troubleshooting, servicing, maintenance, and shutdown of each item of equipment at scheduled time, at equipment location.
C. For equipment or systems requiring seasonal operation, perform demonstrations for other season within six months.
D. Provide a qualified person who is knowledgeable about the Project to perform demonstration and instruction of Owner's personnel.
E. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.
F. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.
3.11 ADJUSTING
A. Adjust operating products and equipment to ensure smooth and unhindered operation.
3.12 FINAL CLEANING
A. Execute final cleaning.
1. Clean areas to be occupied by Owner prior to final completion before Owner occupancy.
B. Use cleaning materials that are nonhazardous.
C. Clean interior and exterior glass, surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
D. Remove all labels that are not permanent. Do not paint or otherwise cover fire test labels or nameplates on mechanical and electrical equipment.
E. Clean equipment and fixtures to a sanitary condition with cleaning materials appropriate to the surface and material being cleaned.
F. Replace filters of operating equipment.
G. Clean debris from roofs, gutters, downspouts, scuppers, overflow drains, area drains, and drainage systems.
H. Clean site: sweep paved areas, rake clean landscaped surfaces.
I. Remove waste, surplus materials, trash/rubbish, and construction facilities from the site; dispose of it in legal manner; do not burn or bury.
3.13 CLOSEOUT PROCEDURES
A. In addition to the requirements of AIA A201, General Conditions of the Contract for Construction, comply with the following:
1. Make submittals that are required by governing or other authorities.
a. Provide copies to Owner.
2. Comply with requirements of Section 01780, Closeout Submittals.
3. Notify Architect when work is considered ready for Architect's Substantial Completion inspection.
4. Submit written certification that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for review.
5. Correct items of work listed in Final Correction Punch List and comply with requirements for access to Owner-occupied areas.
6. Complete items of work determined by final inspection.
3.14 MAINTENANCE
A. Provide service and maintenance of components indicated in specification sections.
B. Maintenance Period: As indicated in specification sections or, if not indicated, not less than one year from the Date of Substantial Completion or the length of the specified warranty, whichever is longer.
C. Furnish service and maintenance of components indicated in specification sections.
D. Examine system components at a frequency consistent with reliable operation. Clean, adjust, and lubricate as required.
E. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.
F. Maintenance service shall not be assigned or transferred to any agent or subcontractor without prior written consent of the Owner.

SECTION 01 7800 - CLOSEOUT SUBMITTALS

1.01 SUBMITTALS
A. Project Record Documents: Submit documents to Owner when submitting final application for payment.
B. Operation and Maintenance Data: Submit two sets of final documents in final form.
C. Warranties and Bonds: Submit prior to final Application for Payment.
D. Certificate of Occupancy: Submit to owner when requesting Substantial Completion inspection

3.01 PROJECT RECORD DOCUMENTS
A. Maintain on site one set of the following record documents; record actual revisions to the Work: including but not limited to, Drawings, Specifications, Addenda, Change Orders, and reviewed submittals.
B. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction.
3.02 OPERATION AND MAINTENANCE DATA
A. For Each Product or System: List names, addresses and telephone numbers of Subcontractors and suppliers.
B. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
C. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use Project Record Documents as maintenance drawings.
D. For Each Product, Applied Material, and Finish:
1. Product data, with catalog number, size, composition, and color and texture designations.
2. Information for re-ordering custom mixed or manufactured products.
3. Manufacturer's instructions for Care and Maintenance.
E. Moisture protection and weather-exposed products; Provide manufacturer recommendations for inspections, maintenance, and repair.
F. For Each Item of Equipment and Each System, provide the manufacturer's installation, operation and maintenance manuals. Include test and balancing reports.
3.03 WARRANTIES AND BONDS
A. Obtain warranties and bonds, executed in duplicate by responsible Subcontractors, suppliers, and manufacturers. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial completion is determined.

SECTION 03 3000 - CAST-IN-PLACE CONCRETE

1.01 SUBMITTALS
A. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.
1. For curing compounds, provide data on method of removal in the event of incompatibility with floor covering adhesives.
B. Mix Design: Submit proposed concrete mix design.
1. Indicate proposed mix design complies with requirements of ACI SPEC-301, Section 4 - Concrete Mixtures.
2. Indicate proposed mix design complies with requirements of ACI CODE-318, Chapter 5 - Concrete Quality, Mixing and Placing.
3. Indicate proposed mix design complies with fiber reinforcing manufacturer's written recommendations.
4. Indicate proposed mix design complies with admixture manufacturer's written recommendations.
C. Test Reports: Submit report for each test or series of tests specified.
1.02 QUALITY ASSURANCE
A. Perform work of this section in accordance with ACI SPEC-301 and ACI CODE-318.
B. Follow recommendations of ACI PRC-305 when concreting during hot weather.
C. Follow recommendations of ACI PRC-306 when concreting during cold weather.

2.01 FORMWORK
A. Formwork Design and Construction: Comply with guidelines of ACI PRC-347 to provide formwork that will produce concrete complying with tolerances of ACI SPEC-117.
B. Form Materials: Contractor's choice of standard products with sufficient strength to withstand hydrostatic head without distortion in excess of permitted tolerances.
1. Form Facing for Exposed Finish Concrete: Contractor's choice of materials that will provide smooth, stain-free final appearance.
2. Form Coating: Release agent that will not adversely affect concrete or interfere with application of coatings.
3. Form Ties: Cone snap type that will leave no metal within 1-1/2 inches of concrete surface.
2.02 REINFORCEMENT MATERIALS
A. Reinforcing Steel: ASTM A615/A615M, Grade 60 (60,000 psi).
1. Type: Deformed billet-steel bars.
2. Finish: Unfinished, unless otherwise indicated.
B. Steel Welded Wire Reinforcement (WWR): Galvanized, plain type, ASTM A1064/A1064M.
1. Form: Flat Sheets.
2. WWR Style: 6X6 - W2.1XW2.1.
C. Reinforcement Accessories:
1. Tie Wire: Annealed, minimum 16 gauge, 0.0508 inch.
2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.

(CONTINUED)

DONALD W. ALEXANDER | ARCHITECT

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STORAGE FACILITY
97 WARREN AVE
PORTLAND, ME 04103

Project No.:	25.0991
Drawn By:	CB
Date	Issue
03-30-26	Bid & Permit

A0.1

ARCHITECTURAL SPECIFICATIONS

SECTION 03 3000 - CAST-IN-PLACE CONCRETE (CON'T)

2.03 CONCRETE MATERIALS
A. Cement: ASTM C150/C150M, Type I - Normal Portland type.
1. Acquire cement for entire project from same source.
B. Cement: ASTM C150/C150M, Type II - Moderate Portland type.
1. Acquire cement for entire project from same source.
C. Cement: ASTM C150/C150M, Type III - High Early Strength Portland type.
1. Acquire cement for entire project from same source.
D. Fine and Coarse Aggregates: ASTM C33/C33M.
1. Acquire aggregates for entire project from same source.
E. Fly Ash: ASTM C618, Class C or F.
F. Ground Granulated Blast Furnace Slag: ASTM C989/C989M.
G. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to concrete.
H. Structural Fiber Reinforcement: ASTM C1116/C1116M.
1. Fiber Length: 2.0 inch , nominal.
2.04 ADMIXTURES
A. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.
B. Air Entrainment Admixture: ASTM C260/C260M.
C. High Range Water Reducing Admixture: ASTM C494/C494M Type F.
D. Accelerating Admixture: ASTM C494/C494M Type C.
E. Retarding Admixture: ASTM C494/C494M Type B.
2.05 ACCESSORY MATERIALS
A. Underslab Vapor Retarder:
1. Sheet Material: ASTM E1745, Class A; stated by manufacturer as suitable for installation in contact with soil or granular fill under concrete slabs. Single-ply polyethylene is prohibited.
2. Accessory Products: Vapor retarder manufacturer's recommended tape, adhesive, mastic, prefabricated boots, etc., for sealing seams and penetrations.
B. Non-Shrink Cementitious Grout: Premixed compound consisting of nonmetallic aggregate, cement, water reducing and plasticizing agents.
1. Minimum Compressive Strength at 48 Hours: 2,000 pounds per square inch.
2. Minimum Compressive Strength at 28 Days: 7,000 pounds per square inch.
2.06 BONDING AND JOINTING PRODUCTS
A. Latex Bonding Agent: Non-redispersable acrylic latex, complying with ASTM C1059/C1059M, Type II.
B. Slab Isolation Joint Filler: 1/2-inch thick, height equal to slab thickness, with removable top section forming 1/2-inch deep sealant pocket after removal.
1. Material: ASTM D8139, semi-rigid, closed-cell polypropylene foam.
2.07 CURING MATERIALS
A. Curing Compound, Naturally Dissipating: Clear, water-based, liquid membrane-forming compound; complying with ASTM C309.
2.08 CONCRETE MIX DESIGN
A. Proportioning Normal Weight Concrete: Comply with ACI PRC-211.1 recommendations.
B. Concrete Strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in ACI SPEC-301.
1. For trial mixtures method, employ independent testing agency acceptable to Architect for preparing and reporting proposed mix designs.
C. Admixtures: Add acceptable admixtures as recommended in ACI PRC-211.1 and at rates recommended or required by manufacturer.
D. Fiber Reinforcement: Add to mix at rate of 3 pounds per cubic yard, or as recommended by manufacturer for specific project conditions.
E. Normal Weight Concrete:
1. Compressive Strength, when tested in accordance with ASTM C39/C39M at 28 days: As scheduled.
2. Fly Ash Content: Maximum 15 percent of cementitious materials by weight.
3. Cement Content: Minimum 520 lbs/cubic yd.
4. Water-Cement Ratio: Maximum 48 percent by weight.
5. Total Air Content: 3 percent, determined in accordance with ASTM C173/C173M.
a. 5% minimum to 7% maximum for exterior concrete.
6. Maximum Slump: 3-5 inches before water reducing admixture.
7. Maximum Aggregate Size: 1 inch.
2.09 MIXING
A. On Project Site: Mix in drum type batch mixer, complying with ASTM C685/C685M. Mix each batch not less than 1-1/2 minutes and not more than 5 minutes.
1. Fiber Reinforcement: Batch and mix as recommended by manufacturer for specific project conditions.
B. Transit Mixers: Comply with ASTM C94/C94M.
C. Adding Water: If concrete arrives on-site with slump less than suitable for placement, do not add water that exceeds the maximum water-cement ratio or exceeds the maximum permissible slump.

3.01 EXAMINATION
A. Verify lines, levels, and dimensions before proceeding with work of this section.
3.02 PREPARATION
A. Formwork: Comply with requirements of ACI SPEC-301. Design and fabricate forms to support all applied loads until concrete is cured and for easy removal without damage to concrete.
B. Verify that forms are clean and free of rust before applying release agent.
C. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.
D. Where new concrete is to be bonded to previously placed concrete, prepare existing surface by cleaning and applying bonding agent in according to bonding agent manufacturer's instructions.
1. Use latex bonding agent only for non-load-bearing applications.
E. Dowel new concrete to existing concrete. Drill 6 inch deep holes into existing concrete, insert 12 inch long #4 steel dowels, and install with adhesive anchor system per manufacturers recommendations. Space dowels 24" o.c., 12" o.c. for slabs greater than 4 inches thick.
F. Interior Slabs on Grade: Install vapor retarder under interior slabs on grade. Comply with ASTM E1643. Lap joints minimum 6 inches. Seal joints, seams and penetrations watertight with manufacturer's recommended products and follow manufacturer's written instructions. Repair damaged vapor retarder before covering.
3.03 INSTALLING REINFORCEMENT AND OTHER EMBEDDED ITEMS
A. Comply with requirements of ACI SPEC-301. Clean reinforcement of loose rust and mill scale, and accurately position, support, and secure in place to achieve not less than minimum concrete coverage required for protection.
B. Install welded wire reinforcement in maximum possible lengths, and offset end laps in both directions. Splice laps with tie wire.
1. Locate reinforcement in top third of slab with 3/4 inch minimum cover.
2. Lap reinforcement one wire space plus 2 inches minimum.
C. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with concrete placement.
3.04 PLACING CONCRETE
A. Place concrete in accordance with ACI PRC-304.
B. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.
C. Ensure reinforcement, inserts, waterstops, and embedded parts will not be disturbed during concrete placement.
D. Place concrete continuously without construction (cold) joints wherever possible; where construction joints are necessary, before next placement prepare joint surface by removing laitance and exposing the sand and sound surface mortar, by sandblasting or high-pressure water jetting.
3.05 SLAB JOINTING
A. Locate joints as indicated on drawings.
B. Anchor joint fillers and devices to prevent movement during concrete placement.
C. Isolation Joints: Use preformed joint filler with removable top section for joint sealant, total height equal to thickness of slab, set flush with top of slab.
1. Install wherever necessary to separate slab from other building members, including columns, walls, equipment foundations, footings, stairs, manholes, sumps, and drains.
D. Saw Cut Contraction Joints: Saw cut joints before concrete begins to cool, within 1 to 4 hours after placing with an early-entry dry-cut saw; use 3/16 inch thick blade and cut 1 inch deep but not less than one quarter (1/4) the depth of the slab.
3.06 FLOOR FLATNESS AND LEVELNESS TOLERANCES
A. Maximum Variation of Surface Flatness for interior floor slabs: 1/8 inch in 10 ft., unless indicated otherwise on drawings.
B. Correct the slab surface if tolerances are less than specified.
C. Correct defects by grinding or by removal and replacement of the defective work. Areas requiring corrective work will be identified. Re-measure corrected areas by the same process.
3.07 CONCRETE FINISHING
A. Repair surface defects, including tie holes, immediately after removing formwork.
B. Unexposed Form Finish: Rub down or chip off fins or other raised areas 1/4 inch or more in height.
C. Exposed Form Finish: Rub down or chip off and smooth fins or other raised areas 1/4 inch or more in height. Provide finish as follows:
1. Grout Cleaned Finish: Wet areas to be cleaned and apply grout mixture by brush or spray; scrub immediately to remove excess grout. After drying, rub vigorously with clean burlap, and keep moist for 36 hours.
D. Concrete Slabs: Finish to requirements of ACI PRC-302.1 and as follows:
1. Surfaces to Receive Thin Floor Coverings: "Steel trowel" as described in ACI PRC-302.1; thin floor coverings include carpeting, resilient flooring, seamless flooring, resinous matrix terrazzo, thin set quarry tile, and thin set ceramic tile.
2. Other Surfaces to Be Left Exposed: Trowel as described in ACI PRC-302.1, minimizing burnish marks and other appearance defects.
E. In areas with floor drains, maintain floor elevation at walls; pitch surfaces uniformly to drains at 1:100 nominal.
3.08 CURING AND PROTECTION
A. Comply with requirements of ACI PRC-308. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
3.09 FIELD QUALITY CONTROL
A. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of concrete operations.
B. Tests of concrete and concrete materials may be performed at any time to ensure compliance with specified requirements.
C. Compressive Strength Tests: ASTM C39/C39M, for each test, mold and cure three concrete test cylinders. Obtain test samples for every 100 cubic yards or less of each class of concrete placed.
D. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.
E. Perform one slump test for each set of test cylinders taken, following procedures of ASTM C143/C143M.
3.10 DEFECTIVE CONCRETE
A. Defective Concrete: Repair or replace concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.
3.11 SCHEDULE - CONCRETE TYPES AND FINISHES
A. Foundations: 3,000 pounds per square inch 28 day concrete.
B. Slab on Grade: 4,000 psi 28 day concrete, fiber reinforced, steel trowel finish.
Light Pole Supports: 4,000 psi 28 day concrete, grout cleaned finish.

SECTION 03 3511 - CONCRETE FLOOR FINISHES

1.01 SECTION INCLUDES
A. Surface treatments.
B. Liquid densifiers and hardeners.
C. Polished concrete.
1.02 ADMINISTRATIVE REQUIREMENTS
A. Coordinate the work with concrete floor placement and concrete floor curing.
1.03 SUBMITTALS
A. Product Data: Manufacturer's published data on each finishing product, including information on compatibility of different products and limitations.
1.04 QUALITY ASSURANCE
A. For slabs indicated to receive concrete polishing system, do not proceed with concrete polishing unless manufacturer's representative and specialized equipment is present for every day of placement.
B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with at least 3 years of documented experience.
C. Installer Qualifications: Company specializing in performing work of type specified and with at least 3 years of documented experience.
1.05 DELIVERY, STORAGE, AND HANDLING
A. Deliver materials in manufacturer's sealed packaging, including application instructions.
1.06 FIELD CONDITIONS
A. Maintain light level equivalent to a minimum 200 W light source at 8 feet above the floor surface over each 20 foot square area of floor being finished.
B. Do not finish floors until interior heating system is operational.
C. Maintain ambient temperature of 50 degrees F minimum.
1.07 WARRANTY
A. Finish Warranty: Provide five-year manufacturer warranty against excessive degradation of finish. Include provision for replacement of units with excessive fading, chalking, or flaking.

2.01 APPLICATIONS
A. Unless otherwise indicated, all concrete floors are to be finished using polished concrete finish.
2.02 SURFACE TREATMENTS
A. Troweling Aid, Densifier and Curing Agent: Liquid reactive colloidal silica-based topical treatment, spray-applied to wet concrete and floated or troweled into the surface.
2.03 DENSIFIERS AND HARDENERS
A. Liquid Densifier and Hardener: Penetrating chemical compound that reacts with concrete, filling the pores, hardening, and dustproofing.
1. Composition: Sodium silicate.
2.04 POLISHED CONCRETE SYSTEM
A. Description: Materials, equipment, and procedures designed and furnished by single manufacturer to produce densely polished concrete of specified sheen.

3.01 EXAMINATION
A. Verify that floor surfaces are acceptable to receive the work of this section.
B. Verify that flaws in concrete have been patched and joints filled with methods and materials suitable for further finishes.
3.02 GENERAL
A. Apply materials in accordance with manufacturer's instructions.
3.03 CONCRETE POLISHING
A. Execute using materials, equipment, and procedures specified by manufacturer, using manufacturer approved installer.
1. Final Polished Sheen: Satin finish; other sheens are included as comparison to illustrate required sheen; final sheen is before addition of any sealer or coating, regardless of whether that is also specified or not.
2. Satin Finish: Reflecting images from side lighting.
B. Protect finished surface as required and as recommended by manufacturer of polishing system.
3.04 PROTECTION
A. Protect installed coatings and polished concrete floors from subsequent construction operations.
B. Do not permit traffic over unprotected floor surface.

SECTION 03 5400 - SELF-LEVELING UNDERLAYMENT

1.01 SUBMITTALS
A. Product Data: Provide manufacturer's data sheets documenting physical characteristics and product limitations of underlayment materials. Include information on surface preparation and environmental limitations.
1.02 QUALITY ASSURANCE
A. Applicator Qualifications: Company specializing in performing the work of this section, and approved by manufacturer.
1.03 DELIVERY, STORAGE, AND HANDLING
A. Store products in manufacturer's unopened packaging until ready for installation.
B. Keep dry and protect from direct sun exposure, freezing, and ambient temperature greater than 105 degrees F.
1.04 FIELD CONDITIONS
A. Do not install underlayment until floor penetrations and peripheral work are complete.
B. During the curing process, ventilate spaces to remove excess moisture.

2.01 MATERIALS
A. Cementitious Underlayment: Blended cement mix, that when mixed with water in accordance with manufacturer's directions will produce self-leveling underlayment with the following properties:
1. Compressive Strength: Minimum 4000 pounds per square inch after 28 days, tested per ASTM C109/C109M.
B. Water: ASTM C1602/C1602M; clean, potable, and not detrimental to underlayment mix materials.
C. Primer: Manufacturer's recommended type.
D. Joint and Crack Filler: As recommended by manufacturer.
2.02 MIXING
A. Site mix materials in accordance with manufacturer's instructions.
B. Mix to self-leveling consistency without over-watering.

3.01 EXAMINATION
A. Verify that substrate surfaces are clean, dry, unfrozen, do not contain petroleum byproducts, or other compounds detrimental to underlayment material bond to substrate.
3.02 PREPARATION
A. Concrete: Mechanically prepare steel troweled concrete to create a textured surface necessary to achieve the best bond; acceptable methods include bead blasting and scarifying. Do not use acid etching.
3.03 APPLICATION
A. Install underlayment in accordance with manufacturer's instructions.
B. Place to indicated thickness, with top surface level to 1/8 inch in 10 ft.
C. Place before partition installation.
3.04 CURING
A. Once underlayment starts to set, prohibit foot traffic until final set has been reached.
B. Air cure in accordance with manufacturer's instructions.
3.05 PROTECTION
A. Protect against direct sunlight, heat, and wind; prevent rapid drying to avoid shrinkage and cracking.
B. Do not permit traffic over unprotected floor underlayment surfaces.

SECTION 04 2000 - UNIT MASONRY

1.01 SECTION INCLUDES
A. Concrete block.
B. Mortar and grout.
C. Reinforcement and anchorage.
D. Flashings.
E. Accessories.
1.02 SUBMITTALS
A. Product Data: Provide data for masonry units, fabricated wire reinforcement, mortar, and masonry accessories.
B. Manufacturer's Certificate: Certify that masonry units meet or exceed specified requirements.
C. Manufacturer's Certificate: Certify that water repellent admixture manufacturer has certified masonry unit manufacturer as an approved user of water repellent admixture in the manufacture of concrete block.
1.03 QUALITY ASSURANCE
A. Comply with provisions of TMS 402/602, except where exceeded by requirements of Contract Documents.
1.04 DELIVERY, STORAGE, AND HANDLING
A. Deliver, handle, and store masonry units by means that will prevent mechanical damage and contamination by other materials.

2.01 CONCRETE MASONRY UNITS
A. Concrete Block: Comply with referenced standards and as follows:
1. Size: Standard units with nominal face dimensions of 16 by 8 inches and nominal depths as indicated on drawings for specific locations.
2. Special Shapes: Provide nonstandard blocks configured for corners.
3. Load-Bearing Units: ASTM C90, normal weight.
a. Both hollow and solid block, as indicated.
4. Nonloadbearing Units: ASTM C129.
a. Both hollow and solid block, as indicated.
5. Integral Water Repellent: Provide concrete block units as specified in this section with polymeric liquid or powder admixture added to concrete masonry units at the time of manufacture.
a. Performance of Units with Integral Water Repellent:
1) Water Permeance: When tested per ASTM E514/E514M and for a minimum of 72 hours.
(a) No water visible on back of wall above flashing at the end of 24 hours.
(b) No flow of water from flashing equal to or greater than 0.032 gallons per hour at the end of 24 hours.
(c) No more than 25 percent of wall area above flashing visibly damp at end of test.
2) Flexural Bond Strength: ASTM C1072; minimum 10 percent increase.
3) Compressive Strength: ASTM C1314; maximum 5 percent decrease.
b. Use only in combination with mortar that also has integral water repellent admixture.
c. Use water repellent admixtures for masonry units and mortar by a single manufacturer.
2.02 NOT USED
2.03 MORTAR AND GROUT MATERIALS
A. Masonry Cement: ASTM C91/C91M, Types as scheduled in this section.
B. Pigments for Colored Mortar: Pure, concentrated mineral pigments specifically intended for mixing into mortar and complying with ASTM C979/C979M.
1. Color(s): As indicated on drawings.
C. Water: Clean and potable.
D. Integral Water Repellent Admixture for Mortar and Grout: Polymeric liquid or powder admixture added to mortar and grout at the time of manufacture.
1. Use only in combination with masonry units manufactured with integral water repellent admixture.
2. Use only water repellent admixture for mortar from the same manufacturer as water repellent admixture in masonry units.
3. Meet or exceed performance specified for water repellent admixture used in masonry units.
E. Packaged Dry Material for Mortar for Unit Masonry: Premixed masonry cement and mason's sand; complying with ASTM C1714/C1714M and capable of producing mortar of the specified strength in accordance with ASTM C270 with the addition of water only.
1. Type: Types as scheduled in this section.
2. Color: Standard gray and as indicated in drawings.
3. Water-repellent mortar for use with water-repellent masonry units.
F. Packaged Dry Material for Grout for Masonry: Premixed cementitious materials and dried aggregates; capable of producing grout of the specified strength in accordance with ASTM C476 with the addition of water only.
1. Type: Fine.
2.04 REINFORCEMENT AND ANCHORAGE
A. Single Wythe Joint Reinforcement: ASTM A951/A951M.
1. Type: Truss or ladder.
2. Material: ASTM A1064/A1064M steel wire, hot dip galvanized after fabrication to ASTM A153/A153M Class B.
3. Size: 0.1483 inch side rods with 0.1483 inch cross rods; width as required to provide not less than 5/8 inch of mortar coverage on each exposure.
B. Adjustable Multiple Wythe Joint Reinforcement: ASTM A951/A951M.
1. Type: Truss, with adjustable ties or tabs spaced at 16 in on center.
2. Material: ASTM A1064/A1064M steel wire, hot dip galvanized after fabrication to ASTM A153/A153M Class B.
3. Size: 0.1875 inch side rods with 0.1483 inch cross rods and adjustable components of 0.1875 inchwire, width of components as required to provide not less than 5/8 inch of mortar coverage from each masonry face.
4. Vertical adjustment: Not more than 1 1/4 inches.
C. Two-Piece Wall Ties: Formed steel wire, 0.1875 inch thick, adjustable, eye and pintle type, hot dip galvanized to ASTM A 153/A 153M, Class B, sized to provide not less than 5/8 inch of mortar coverage from masonry face and to allow vertical adjustment of up to 1-1/4 in.
D. Masonry Veneer Anchors: 2-piece anchors that permit differential movement between masonry veneer and structural backup, hot dip galvanized to ASTM A 153/A 153M, Class B.
1. Anchor plates: Not less than 0.075 inch thick, designed for fastening to structural backup through sheathing by two fasteners; provide design with legs that penetrate sheathing and insulation to provide positive anchorage.
2. Wire ties: Manufacturer's standard shape, 0.1875 inch thick.
3. Vertical adjustment: Not less than 3-1/2 inches.
E. Metal-to-Metal Fasteners: Self-drilling, self-tapping screws; corrosion resistant finish or hot dip galvanized to ASTM A153/A153M.
2.05 FLASHINGS
A. Metal Flashing Materials:
1. Stainless Steel Flashing: ASTM A666, Type 304, soft temper; 26 gauge, 0.0187 inch thick; finish 2B to 2D.
B. Stainless Steel/Polymer Fabric Flashing - Self-adhering: ASTM A240/A240M; 2 mil type 304 stainless steel sheet bonded on inward facing side to a sheet of polymer fabric that has a clear adhesive with a removable release liner.
C. Membrane Asphaltic Flashing Materials:
1. Rubberized Asphalt Flashing: Self-adhering polymer modified asphalt sheet; 40 mils (0.040 inch) minimum total thickness; 8 mil cross-laminated polyethylene bonded to adhesive rubberized asphalt, with a removable release liner.
D. Through-wall pan flashing: One piece molded polypropylene with integral weep and integral or separate bridge units to connect the individual units and divert moisture to the flashing pan.
1. Drainage matte or 2" to 3" of washed pea gravel fill to prevent mortar clogging the weep tubes.
E. Factory-Fabricated Flashing Corners and End Dams: Stainless steel.
F. Flashing Sealant/Adhesives: Silicone, polyurethane, or silyl-terminated polyether/polyurethane or other type required or recommended by flashing manufacturer; type capable of adhering to type of flashing used.
G. Drip Edge: Stainless steel; angled drip with hemmed edge; compatible with membrane and adhesives.
H. Lap Sealants and Tapes: As recommended by flashing manufacturer; compatible with membrane and adhesives.
2.06 ACCESSORIES
A. Preformed Control Joints: Rubber material. Provide with corner and tee accessories, fused joints.
B. Cavity Mortar Control: Semi-rigid polyethylene or polyester mesh panels, sized to thickness of wall cavity, and designed to prevent mortar droppings from clogging weeps and cavity vents and allow proper cavity drainage.
1. Mortar Diverter: Semi-rigid mesh designed for installation at flashing locations.
C. Weeps: Molded PVC grilles, insect resistant.
1. Color(s): To match mortar color.
D. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials.
2.07 MORTAR AND GROUT MIXING
A. Mortar for Unit Masonry: ASTM C270, using the Proportion Specification:
1. Masonry below grade and in contact with earth: Type S.
2. Exterior, loadbearing masonry: Type S.
3. Exterior, non-loadbearing masonry: Type S.
4. Interior, loadbearing masonry: Type S.
5. Interior, non-loadbearing masonry: Type O.
B. Colored Mortar: Proportion selected pigments and other ingredients without exceeding manufacturer's recommended pigment-to-cement ratio.
C. Grout: ASTM C476; consistency required to fill completely volumes indicated for grouting; fine grout for spaces with smallest horizontal dimension of 2 inches or less; coarse grout for spaces with smallest horizontal dimension greater than 2 inches.
D. Admixtures: Add to mixture at manufacturer's recommended rate and in accordance with manufacturer's instructions; mix uniformly.

3.01 EXAMINATION
A. Verify that field conditions are acceptable and are ready to receive masonry.
B. Verify that related items provided under other sections are properly sized and located.
C. Verify that built-in items are in proper location, and ready for roughing into masonry work.
3.02 PREPARATION
A. Direct and coordinate placement of metal anchors supplied for installation under other sections.
B. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.
3.03 COLD AND HOT WEATHER REQUIREMENTS
A. Comply with requirements of TMS 402/602 or applicable building code, whichever is more stringent.
3.04 COURSING
A. Establish lines, levels, and coursing indicated. Protect from displacement.
B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.
C. Concrete Masonry Units:
1. Bond: Running unless noted otherwise in the drawings.
2. Mortar Joints: Concave unless noted otherwise in the drawings.
3.05 PLACING AND BONDING
A. Lay solid masonry units in full bed of mortar, with full head joints, uniformly jointed with other work.
B. Lay hollow masonry units with face shell bedding on head and bed joints.
C. Buttering corners of joints or excessive furrowing of mortar joints is not permitted.
D. Remove excess mortar and mortar smears as work progresses.
E. Remove excess mortar with water repellent admixture promptly. Do not use acids, sandblasting or high pressure cleaning methods.
F. Interlock intersections and external corners, except for units laid in stack bond.
G. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.
H. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.
I. Cut mortar joints flush where wall tile is scheduled, cement parging is required, resilient base is scheduled, cavity insulation vapor barrier adhesive is applied, or bitumen dampproofing is applied.
J. Isolate masonry partitions from vertical structural framing members with a control joint.
K. Isolate top joint of masonry partitions from horizontal structural framing members and slabs or decks with compressible joint filler.
L. Support flashings with solid grouted core.
3.06 WEEPS
A. Install weeps in concrete masonry walls at 32 inches on center horizontally above through-wall flashing, above shelf angles and lintels, and at bottom of walls.
B. Install weeps in [brick masonry] walls at 24 inches on center horizontally above through-wall flashing, above shelf angles and lintels, and at bottom of walls.
3.07 CAVITY MORTAR CONTROL
A. Do not permit mortar to drop or accumulate into cavity air space or to plug weep/cavity vents.
B. For cavity walls, build inner wythe ahead of outer wythe to accommodate accessories.
C. Install cavity mortar diverter at base of cavity and at other flashing locations as recommended by manufacturer to prevent mortar droppings from blocking weep/cavity vents.
3.08 REINFORCEMENT AND ANCHORAGE - GENERAL, SINGLE WYTHE MASONRY, AND CAVITY WALL MASONRY
A. Unless otherwise indicated on drawings or specified under specific wall type, install horizontal joint reinforcement 16 inches on center.
B. Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 16 inches each side of opening.
C. Place continuous joint reinforcement in first and second joint below top of walls.
D. Embed longitudinal wires of joint reinforcement in mortar joint with at least 5/8 inch mortar cover on each side.
E. Lap joint reinforcement ends minimum 6 inches.
F. Fasten anchors to structural framing and embed in masonry joints as masonry is laid. Unless otherwise indicated on drawings or closer spacing is indicated under specific wall type, space anchors at maximum of 24 inches horizontally and 16 inches vertically.
G. Embed ties and anchors in mortar joint and extend into masonry unit a minimum of 1-1/2 inches with at least 5/8 inch mortar cover to the outside face of the anchor.
3.09 REINFORCEMENT AND ANCHORAGE - MASONRY VENEER
A. Masonry Back-Up: Unless noted otherwise in the drawings, embed anchors in masonry back-up to bond veneer at maximum 2-2/3 sq ft of wall surface per anchor. Place additional anchors at perimeter of openings and ends of panels, so maximum spacing of anchors is 8 inches on center.
B. Stud Back-Up: Unless noted otherwise in the drawings, secure veneer anchors to stud framed back-up and embed into masonry veneer at maximum 2-2/3 sq ft of wall surface per anchor. Place additional anchors at perimeter of openings and ends of panels, so maximum spacing of anchors is 8 inches on center.
3.10 MASONRY FLASHINGS
A. Install masonry flashing to divert water to exterior at all locations where downward flow of water will be interrupted.
1. Extend flashings full width at such interruptions and at least 6 inches into adjacent masonry and terminate with an end dam or turn up at least 8 inches to form watertight pan at non-masonry construction.
2. Remove or cover protrusions or sharp edges that could puncture flashings.
3. Seal lapped ends and penetrations of flashing before covering with mortar.
B. Terminate flashing up 8 inches minimum on vertical surface of backing:
1. Install vertical leg of flashing behind water-resistive barrier sheet over backing.
2. Install vertical leg of flashing over fluid-applied or self-adhered air/vapor barriers over backing or per manufacturer's directions.
3. Apply cap bead of sealant on top edge of self-adhered flashing.
C. Install flashing in accordance with manufacturer's instructions and BIA Technical Notes No. 7.
D. Extend metal drip edge through exterior face of masonry and turn down to form drip. Set in bed of mastic or elastic sealant to prevent moisture migration under flashing.
E. Support flexible flashings across gaps and openings.
F. Extend specified flexible flashings to within 1/4 inch of exterior face of masonry, and bond to top of metal drip edge with minimum 2 inch overlap.
G. Lap end joints of flexible flashings at least 4 inches and seal watertight with mastic or elastic sealant.
H. Butt, do not lap, end joints of metal drip edges with minimal gaps between adjacent pieces.
I. Install through-wall pan flashing in accordance with manufacturer's instructions.
3.11 GROUTED COMPONENTS
A. Lap splices minimum 24 bar diameters.
B. Support and secure reinforcing bars from displacement. Maintain position within 1/2 inch of dimensioned position.
C. Place and consolidate grout fill without displacing reinforcing.
D. At bearing locations, fill masonry cores with grout for a minimum 12 inches either side of opening.
3.12 CONTROL AND EXPANSION JOINTS
A. Do not continue horizontal joint reinforcement through control or expansion joints.
B. Install preformed control joint device in continuous lengths. Seal butt and corner joints in accordance with manufacturer's instructions.
C. Locate and form expansion joint as detailed.
3.13 BUILT-IN WORK
A. As work progresses, install built-in metal door frames, glazed frames, fabricated metal frames, window frames, anchor bolts, and plates and other items to be built into the work and furnished under other sections.
B. Install built-in items plumb, level, and true to line.
C. Bed anchors of metal door and glazed frames in adjacent mortar joints. Fill frame voids solid with grout.
1. Fill adjacent masonry cores with grout minimum 12 inches from framed openings.
D. Do not build into masonry construction organic materials that are subject to deterioration.
3.14 TOLERANCES
A. Install masonry within the site tolerances found in TMS 402/602.
B. Maximum Variation from Alignment of Columns and Pilasters: 1/4 inch.
C. Maximum Variation From Unit to Adjacent Unit: 1/16 inch.
D. Maximum Variation from Plane of Wall: 1/4 inch in 10 ft and 1/2 inch in 20 ft or more.
E. Maximum Variation from Plumb: 1/4 inch per story non-cumulative; 1/2 inch in two stories or more.
F. Maximum Variation from Level Coursing: 1/8 inch in 3 ft and 1/4 inch in 10 ft; 1/2 inch in 30 ft.
G. Maximum Variation of Mortar Joint Thickness: Head joint, minus 1/4 inch, plus 3/8 inch.
H. Maximum Variation from Cross Sectional Thickness of Walls: 1/4 inch.
3.15 CUTTING AND FITTING
A. Cut and fit for pipes, conduit, and sleeves. Coordinate with other sections of work to provide correct size, shape, and location.
B. Obtain approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.
3.16 PARGING
A. Dampen masonry walls prior to parging.
B. Scarify each parging coat to ensure full bond to subsequent coat.
C. Parge masonry walls in two uniform coats of mortar to a total thickness of 3/4 inch.
D. Steel trowel surface smooth and flat with a maximum surface variation of 1/8 inch per foot.
E. Strike top edge of parging at 45 degrees.
3.17 CLEANING
A. Remove excess mortar and mortar droppings.
B. Replace defective mortar. Match adjacent work.
C. Clean soiled surfaces with cleaning solution.
D. Use non-metallic tools in cleaning operations.
3.18 PROTECTION
A. Without damaging completed work, provide protective boards at exposed external corners that are subject to damage by construction activities.

SECTION 05 5000 - METAL FABRICATIONS

1.01 SECTION INCLUDES
A. Shop fabricated steel items.
1.02 SUBMITTALS
A. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
1. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.

2.01 MATERIALS - STEEL
A. Steel Sections: ASTM A 36/A 36M.
B. Steel Tubing: ASTM A501/A501M hot-formed structural tubing.
C. Plates: ASTM A283/A283M.
D. Pipe: ASTM A 53/A 53M Grade B Schedule 40, black finish.
E. Mechanical Fasteners: Same material as or compatible with materials being fastened; type consistent with design and specified quality level.
F. Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1, plain.
G. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.
H. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.
I. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20, Type I - Inorganic, complying with VOC limitations of authorities having jurisdiction.
2.02 FABRICATION
A. Fit and shop assemble items in largest practical sections, for delivery to site.
B. Fabricate items with joints tightly fitted and secured.
C. Continuously seal joined members by continuous welds.
D. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
E. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of component, except where specifically noted otherwise.
F. Furnish components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.
2.03 FABRICATED ITEMS
A. Bollards: Steel pipe, concrete filled, crowned cap, as detailed; prime paint finish.
B. Door Frames for Overhead Door Openings and Wall Openings: Channel sections; galvanized finish.
C. Loading Dock Edge Angles: As detailed; galvanized finish.
D. Downspout Guards: As detailed; galvanized finish.
E. Elevator Pit Ladders: Steel; in compliance with ASME A17.1; with mounting brackets and attachments; prime paint finish.
2.04 FINISHES - STEEL
A. Prepare surfaces to be primed in accordance with SSPC-SP2.
B. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
C. Prime Painting: One coat.
D. Galvanizing of Steel Members: Galvanize after fabrication to ASTM A 123/A 123M requirements. Provide minimum 1.7 oz/sq ft galvanized coating.
2.05 FABRICATION TOLERANCES
A. Squareness: 1/8-inch maximum difference in diagonal measurements.
B. Maximum Offset Between Faces: 1/16 inch.
C. Maximum Misalignment of Adjacent Members: 1/16 inch.
D. Maximum Bow: 1/8 inch in 48 inches.
E. Maximum Deviation from Plane: 1/16 inch in 48 inches.
3.01 EXAMINATION
A. Verify that field conditions are acceptable and are ready to receive work.
3.02 PREPARATION
A. Clean and strip primed steel items to bare metal where site welding is required.
B. Furnish setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.
3.03 INSTALLATION
A. Install items plumb and level, accurately fitted, free from distortion or defects.
B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
C. Perform field welding in accordance with AWS D1.1/D1.1M.
D. Obtain approval prior to site cutting or making adjustments not scheduled.
E. After erection, prime welds, abrasions and surfaces not shop primed or galvanized, except surfaces to be in contact with concrete.
3.04 TOLERANCES
A. Maximum Variation from Plumb: 1/4 inch per story, non-cumulative.
B. Maximum Offset from True Alignment: 1/4 inch.
C. Maximum Out-of-Position: 1/4 inch.

SECTION 05 5100 - METAL STAIRS

1.01 SECTION INCLUDES
A. Stairs with concrete treads.
B. Stairs with metal treads.
C. Stairs with grating treads.
D. Structural steel stair framing and supports.
E. Handrails and guards.
1.02 SUBMITTALS
A. Shop Drawings: Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories.
1. Include the design engineer's seal and signature on each sheet of shop drawings.
1.03 QUALITY ASSURANCE
A. Structural Designer Qualifications: Professional Structural Engineer experienced in design of this work and licensed in the State in which the Project is located, or personnel under direct supervision of such an engineer.

2.01 METAL STAIRS - GENERAL
A. Metal Stairs: Provide stairs of the design specified, complete with landing platforms, vertical and horizontal supports, railings, and guards, fabricated accurately for anchorage to each other and to building structure.
1. Structural Design: Provide complete stair and railing assemblies that comply with the applicable local code.
2. Dimensions: As indicated on drawings.
3. Shop assemble components; disassemble into largest practical sections suitable for transport and access to site.
4. No sharp or rough areas on exposed travel surfaces and surfaces accessible to touch.
5. Separate dissimilar metals using paint or permanent tape.
B. Metal Jointing and Finish Quality Levels:
1. Service: Exposed joints tight with face surfaces aligned; underside of stair not covered by soffit is not considered exposed to view.
a. Welded Joints: Welded on back side wherever possible.
b. Welds Exposed to View: Ground smooth; not required to be flush.
c. Bolts Exposed to View: Countersunk flat or oval head bolts; no exposed nuts or screw threads.
d. Metal Surfaces to be Painted: Sanded smooth, suitable for satin or matte finish.
C. Fasteners: Same material or compatible with materials being fastened; type consistent with design and specified quality level.
D. Anchors and Related Components: Same material and finish as item to be anchored, except where specifically indicated otherwise; provide all anchors and fasteners required.
2.02 METAL STAIRS WITH CONCRETE TREADS
A. Jointing and Finish Quality Level: Service, as defined above.
B. Risers: Closed.
C. Treads: Metal pan with field-installed concrete fill.
1. Concrete Depth: 1-1/2 inches, minimum.
2. Tread Pan Material: Steel sheet.
3. Tread Pan Thickness: As required by design; 14 gauge, 0.075 inch minimum.
4. Pan Anchorage to Stringers: Welded or bolted to carrier angles welded or bolted to stringers.
5. Concrete Reinforcement: Fibrillated polypropylene fiber; 1 1/2 inch length; 1.5 lb./cubic yard.
6. Concrete Finish: Steel troweled.
D. Risers: Same material and thickness as tread pans.
1. Riser/Nosing Profile: Sloped riser with rounded nosing of minimum radius.
2. Nosing Depth: Not more than 1-1/2 inch overhang.
3. Nosing Return: Flush with top of concrete fill, not more than 1/2 inch wide.
E. Stringers: Rolled steel channels.
1. Stringer Depth: As indicated on drawings.
2. End Closure: Sheet steel of same thickness as risers welded across ends.
F. Landings: Same construction as treads, supported and reinforced as required to achieve design load capacity.
G. Railings: Steel pipe railings.
H. Finish: Shop- or factory-prime painted.
1. Exterior application: Hot-dipped galvanized.
I. Under Side of Stair: Exposed to view, to be finished same as specified for other exposed to view surfaces.
2.03 METAL STAIRS WITH METAL TREADS
A. Jointing and Finish Quality Level: Service, as defined above.
B. Risers: Closed.
C. Treads: Checkered steel plate.
1. Tread Thickness: 1/4 inch, minimum.
2. Anchorage to Stringers: Welded or bolted to carrier angles welded or bolted to stringers.
D. Risers: Steel sheet.
1. Riser Thickness: As required by design; 14 gauge, 0.075 inch minimum.
2. Riser/Nosing Profile: Sloped riser with rounded nosing of minimum radius.
E. Stringers: Rolled steel channels.
1. Stringer Depth: As indicated on drawings.
2. End Closure: Sheet steel of same thickness as risers welded across ends.
F. Landings: Same construction as treads, supported and reinforced as required to achieve design load capacity.
G. Railings: Steel pipe railings.
H. Finish: Shop- or factory-prime painted.
1. Exterior application: Hot-dipped galvanized.
2.04 METAL STAIRS WITH GRATING TREADS
A. Jointing and Finish Quality Level: Service, as defined above.
B. Risers: Closed.
C. Treads: Steel bar grating.
1. Grating Type: Welded.
2. Bearing Bar Depth: 1 inch, minimum.
a. Thickness: 3/16", minumum.
b. Spacing: 5/8" center to center (1/2" max. clear opening).
3. Top Surface: Standard.
4. Nosing: Checkered plate.
5. Nosing Width: 1-1/4 inch, minimum.
6. Anchorage to Stringers: End plates welded to grating, bolted to stringers.
D. Stringers: Rolled steel channels.
1. Stringer Depth: As indicated on drawings.
2. End Closure: Sheet steel, 14 gauge, 0.075 inch minimum; welded across ends.
E. Landings: Same construction as treads, supported and reinforced as required to achieve design load capacity.
F. Railings: Steel pipe railings.
G. Finish: Shop- or factory-prime painted.
1. Exterior application: Hot-dipped galvanized.
2.05 HANDRAILS AND GUARDS
A. Wall-Mounted Rails: See Section 05 5213.
B. Guards: Pipe railings, see Section 05 5213.
2.06 MATERIALS
A. Steel Sections: ASTM A 36/A 36M.
B. Steel Tubing: ASTM A500/A500M or ASTM A501/A501M structural tubing, round and shapes as indicated.
C. Steel Plates: ASTM A6/A6M or ASTM A283/A283M.
D. Pipe: ASTM A 53/A 53M, Grade B Schedule 40, black finish.
E. Ungalvanized Steel Sheet: Hot- or cold-rolled, except use cold-rolled where finished work will be exposed to view.
1. Hot-Rolled Steel Sheet: ASTM A1011/A1011M, Designation CS (commercial steel).
2. Cold-Rolled Steel Sheet: ASTM A1008/A1008M, Designation CS (commercial steel).
F. Checkered Plate: ASTM A786/A786M, rolled steel floor plate; manufacturer's standard pattern.
G. Gratings: Bar gratings that comply with NAAMM MBG 531 or NAAMM MBG 532, whichever applies based on bar sizes.
H. Concrete Fill: Portland cement Type I, 3000 psi 28 day strength, 2 to 3 inch slump.
2.07 SHOP FINISHING
A. Clean surfaces of rust, scale, grease, and foreign matter prior to finishing.
B. Do not prime surfaces in direct contact with concrete or where field welding is required.
C. Prime Painting: Use specified shop- and touch-up primer.
1. Preparation of Steel: In accordance with SSPC-SP 2, Hand Tool Cleaning.
2. Number of Coats: One.
D. Galvanizing: Hot-dip galvanize to minimum requirements of ASTM A123/A123M.
1. Touch up abraded areas after fabrication using specified touch-up primer for galvanized surfaces.

3.01 EXAMINATION
A. Verify that field conditions are acceptable and are ready to receive work.
3.02 PREPARATION
A. When field welding is required, clean and strip primed steel items to bare metal.
B. Supply items required to be cast into concrete and embedded in masonry with setting templates.
3.03 INSTALLATION
A. Install components plumb and level, accurately fitted, free from distortion or defects.
B. Provide anchors, plates, angles, hangers, and struts required for connecting stairs to structure.
C. Allow for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
D. Provide welded field joints where specifically indicated on drawings. Perform field welding in accordance with AWS D1.1/D1.1M.
E. Other field joints may be either welded or bolted provided the result complies with the limitations specified for jointing quality levels.
F. Obtain approval prior to site cutting or creating adjustments not scheduled.
G. After erection, prime welds, abrasions, and surfaces not shop primed or galvanized, except surfaces to be in contact with concrete.
3.04 TOLERANCES
A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.
B. Maximum Offset From True Alignment: 1/4 inch.

SECTION 05 5133 - METAL LADDERS

1.01 SECTION INCLUDES
A. Shop-fabricated metal ladders.
1.02 SUBMITTALS
A. Shop Drawings:
1. Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners, and accessories. Include erection drawings, elevations, and details where applicable.
2. Indicate welded connections using standard AWS A2.4 welding symbols. Indicate net weld lengths.
1.03 QUALITY ASSURANCE
A. Welder Qualifications: Welding processes and welding operators qualified in accordance with AWS D1.1/D1.1M and AWS D1.2/D1.2M and dated no more than 12 months before start of scheduled welding work.
B. Fabricator Qualifications: A qualified steel fabricator that is accredited by IAS AC172.

2.01 MATERIALS - STEEL
A. Steel Sections: ASTM A36/A36M.
B. Steel Tubing: ASTM A501/A501M hot-formed structural tubing.
C. Plates: ASTM A283/A283M.
D. Pipe: ASTM A53/A53M, Grade B Schedule 40, black finish.
E. Mechanical Fasteners: Same material or compatible with materials being fastened; type consistent with design and specified quality level.
F. Bolts, Nuts, and Washers: ASTM A307, plain.
G. Bolts, Nuts, and Washers: ASTM F3125/F3125M, Type 1, plain.
H. Welding Materials: AWS D1.1/D1.1M; type required for materials being welded.
I. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.
2.02 FABRICATION
A. Fit and shop assemble items in largest practical sections, for delivery to site.
B. Fabricate items with joints tightly fitted and secured.
C. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.
D. Supply components required for anchorage of fabrications. Fabricate anchors and related components of same material and finish as fabrication, except where specifically noted otherwise.
2.03 FABRICATED LADDERS
A. Ladders: Steel; in compliance with ANSI A14.3; with mounting brackets and attachments; prime paint finish.
1. Side Rails: 3/8 by 2-1/2 inches members spaced at 20 inches.
2. Rungs: One inch diameter solid round bar spaced 12 inches on center.
3. Space rungs 8 inches from wall surface.
2.04 FINISHES - STEEL
A. Prime paint steel items.
B. Prime Painting: One coat.
2.05 FABRICATION TOLERANCES
A. Squareness: 1/8 inch maximum difference in diagonal measurements.
B. Maximum Offset Between Faces: 1/16 inch.
C. Maximum Misalignment of Adjacent Members: 1/16 inch.
D. Maximum Bow: 1/8 inch in 48 inches.
E. Maximum Deviation From Plane: 1/16 inch in 48 inches.

3.01 EXAMINATION
A. Verify that field conditions are acceptable and are ready to receive work.
3.02 PREPARATION
A. Clean and strip primed steel items to bare metal where site welding is required.
B. Supply setting templates to the appropriate entities for steel items required to be cast into concrete or embedded in masonry.
3.03 INSTALLATION
A. Install items plumb and level, accurately fitted, free from distortion or defects.
B. Provide for erection loads, and for sufficient temporary bracing to maintain true alignment until completion of erection and installation of permanent attachments.
C. Obtain approval prior to site cutting or making adjustments not scheduled.
3.04 TOLERANCES
A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.
B. Maximum Offset From True Alignment: 1/4 inch.
C. Maximum Out-of-Position: 1/4 inch.

SECTION 05 5213 - PIPE AND TUBE RAILINGS

1.01 SECTION INCLUDES
A. Wall mounted handrails.
B. Stair railings and guardrails.
C. Ramp railings and guardrails.
D. Free-standing railings at steps.
E. Balcony railings and guardrails.
1.02 SUBMITTALS
A. Shop Drawings: Indicate profiles, sizes, connection attachments, anchorage, size and type of fasteners, and accessories.

2.01 RAILINGS - GENERAL REQUIREMENTS
A. Design, fabricate, and test railing assemblies in accordance with the most stringent requirements of ASTM E 935 and applicable local code.
B. Allow for expansion and contraction of members and building movement without damage to connections or members.
C. Dimensions: See drawings for configurations and heights.
D. Provide anchors and other components as required to attach to structure, made of same materials as railing components unless otherwise indicated; where exposed fasteners are unavoidable provide flush countersunk fasteners.
1. For anchorage to concrete, provide inserts to be cast into concrete, for bolting anchors.
2. For anchorage to masonry, provide brackets to be embedded in masonry, for bolting anchors.
3. For anchorage to stud walls, provide backing plates, for bolting anchors.
E. Provide welding fittings to join lengths, seal open ends, and conceal exposed mounting bolts and nuts, including but not limited to elbows, T-shapes, splice connectors, flanges, escutcheons, and wall brackets.
2.02 STEEL RAILING SYSTEM
A. Steel Tube: ASTM A500/A500M, Grade B cold-formed structural tubing.
B. Steel Pipe: ASTM A 53/A 53M, Grade B Schedule 40, black finish.
C. Welding Fittings: Factory- or shop-welded from matching pipe or tube; seams continuously welded; joints and seams ground smooth.
D. Exposed Fasteners: Flush countersunk screws or bolts; consistent with design of railing.
E. Straight Splice Connectors: Steel concealed spigots.
F. Shop and Touch-Up Primer: SSPC-Paint 15, complying with VOC limitations of authorities having jurisdiction.
2.03 FABRICATION
A. Accurately form components to suit specific project conditions and for proper connection to building structure.
B. Fit and shop assemble components in largest practical sizes for delivery to site.
C. Fabricate components with joints tightly fitted and secured. Provide spigots and sleeves to accommodate site assembly and installation.
D. Welded Joints:
1. Exterior Components: Continuously seal joined pieces by continuous welds. Drill condensate drainage holes at bottom of members at locations that will not encourage water intrusion.
2. Interior Components: Continuously seal joined pieces by continuous welds.
3. Grind exposed joints flush and smooth with adjacent finish surface. Make exposed joints butt tight, flush, and hairline. Ease exposed edges to small uniform radius.

3.01 EXAMINATION
A. Verify that field conditions are acceptable and are ready to receive work.
3.02 PREPARATION
A. Clean and strip primed steel items to bare metal where site welding is required.
B. Supply items required to be cast into concrete or embedded in masonry with setting templates, for installation as work of other sections.
3.03 INSTALLATION
A. Install in accordance with manufacturer's instructions.
B. Install components plumb and level, accurately fitted, free from distortion or defects, with tight joints.
C. Anchor railings securely to structure.
D. Field weld anchors as indicated on shop drawings. Touch-up welds with primer. Grind welds smooth.
E. Conceal anchor bolts and screws whenever possible. Where not concealed, use flush countersunk fastenings.
3.04 TOLERANCES
A. Maximum Variation From Plumb: 1/4 inch per floor level, non-cumulative.
B. Maximum Offset From True Alignment: 1/4 inch.
Maximum Out-of-Position: 1/4 inch.

DONALD W. ALEXANDER | ARCHITECT

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STORAGE FACILITY
97 WARREN AVE
PORTLAND, ME 04103

Project No.: 25.0991
Drawn By: CB
Date: 03-30-26 Issue: Bid & Permit

A0.2

ARCHITECTURAL SPECIFICATIONS

SECTION 06 1000 - ROUGH CARPENTRY

1.01 SECTION INCLUDES
- A. Sheathing.
- B. Roofing nailers.
- C. Preservative treated wood materials.
- D. Fire retardant treated wood materials.
- E. Communications and electrical room mounting boards.
- F. Concealed wood blocking, nailers, and supports.

1.02 SUBMITTALS
- A. Manufacturer's Certificate: Certify that wood products supplied for rough carpentry meet or exceed specified requirements.

1.03 DELIVERY, STORAGE, AND HANDLING
- A. General: Cover wood products to protect against moisture. Support stacked products to prevent deformation and to allow air circulation.
- B. Fire Retardant Treated Wood: Prevent exposure to precipitation during shipping, storage, or installation.

2.01 GENERAL REQUIREMENTS
- A. Dimension Lumber: Comply with PS 20 and requirements of specified grading agencies.
  1. If no species is specified, provide any species graded by the agency specified; if no grading agency is specified, provide lumber graded by any grading agency meeting the specified requirements.
  2. Grading Agency: Any grading agency whose rules are approved by the Board of Review, American Lumber Standard Committee (www.alsc.org) and who provides grading service for the species and grade specified; provide lumber stamped with grade mark unless otherwise indicated.

2.02 DIMENSION LUMBER
- A. Sizes: Nominal sizes as indicated on drawings, S4S.
- B. Moisture Content: S-dry or MC19.
- C. Miscellaneous Blocking, Nailers, and Furring:
  1. Lumber: S4S, No. 2 or Standard Grade.
  2. Boards: Standard or No. 3.

2.03 CONSTRUCTION PANELS
- A. Roof Sheathing: Any PS 2 type, rated Structural I Sheathing.
  1. Bond Classification: Exterior.
  2. Span Rating: 60.
  3. Performance Category: 3/4 PERF CAT.
- B. Wall Sheathing: Any PS 2 type.
  1. Bond Classification: Exterior.
  2. Grade: Structural I Sheathing.
  3. Span Rating: 24.
  4. Performance Category: 5/8 PERF CAT.
- C. Wall Sheathing: Glass mat faced gypsum, ASTM C1177/C1177M, 5/8 inch Type X fire resistant.
  1. At Assemblies Indicated with Fire-Rating: Use type required by indicated tested assembly.
- D. Wall Sheathing: Extruded Polystyrene (XPS) board insulation, ASTM C578.
  1. Board Edges: Tongue-and-groove.
  2. Type and Thermal Resistance, R-value (RSI-value): Type IV, 5.0 (0.88) per 1 inch at 75 degrees F mean temperature using ASTM C177 test method.
- E. Communications and Electrical Room Mounting Boards: PS 1 A-D plywood; 3/4 inch thick; flame spread index of 25 or less, smoke developed index of 450 or less, when tested in accordance with ASTM E84.

2.04 ACCESSORIES
- A. Fasteners and Anchors:
  1. Metal and Finish: Hot-dipped galvanized steel per ASTM A 153/A 153M for exterior, roof related and preservative-treated wood locations, unfinished steel elsewhere.

2.05 FACTORY WOOD TREATMENT
- A. Treated Lumber and Plywood: Comply with requirements of AWPA U1 - Use Category System for wood treatments determined by use categories, expected service conditions, and specific applications.
  1. Fire-Retardant Treated Wood: Mark each piece of wood with producer's stamp indicating compliance with specified requirements.
- B. Fire Retardant Treatment:
  1. Exterior Type: AWPA U1, Category UCFB, Commodity Specification H, chemically treated and pressure impregnated; capable of providing a maximum flame spread index of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes both before and after accelerated weathering test performed in accordance with ASTM D2898.
     - a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
     - b. Do not use treated wood in direct contact with the ground.
  2. Interior Type A: AWPA U1, Use Category UCFA, Commodity Specification H, low temperature (low hygroscopic) type, chemically treated and pressure impregnated; capable of providing a maximum flame spread index of 25 when tested in accordance with ASTM E84, with no evidence of significant combustion when test is extended for an additional 20 minutes.
     - a. Kiln dry wood after treatment to a maximum moisture content of 19 percent for lumber and 15 percent for plywood.
     - b. Treat rough carpentry items as indicated .
     - c. Do not use treated wood in applications exposed to weather or where the wood may become wet.

3.01 INSTALLATION - GENERAL
- A. Select material sizes to minimize waste.
- B. Reuse scrap to the greatest extent possible; clearly separate scrap for use on site as accessory components, including: shims, bracing, and blocking.
- C. Where treated wood is used on interior, provide temporary ventilation during and immediately after installation sufficient to remove indoor air contaminants.

3.02 BLOCKING, NAILERS, AND SUPPORTS
- A. Provide framing and blocking members as indicated or as required to support finishes, fixtures, specialty items, and trim.
- B. In framed assemblies that have concealed spaces, provide solid wood fireblocking as required by applicable local code, to close concealed draft openings between floors and between top story and roof/attic space; other material acceptable to code authorities may be used in lieu of solid wood blocking.
- C. In walls, provide blocking attached to studs as backing and support for wall-mounted items, unless item can be securely fastened to two or more studs or other method of support is explicitly indicated.
- D. Where ceiling-mounting is indicated, provide blocking and supplementary supports above ceiling, unless other method of support is explicitly indicated.
- E. Provide the following specific non-structural framing and blocking:
  1. Handrails.
  2. Grab bars.
  3. Toilet room accessories.

3.03 ROOF-RELATED CARPENTRY
- A. Coordinate installation of roofing carpentry with deck construction, framing of roof openings, and roofing assembly installation.

3.04 INSTALLATION OF CONSTRUCTION PANELS
- A. Roof Sheathing: Secure panels with long dimension perpendicular to framing members, with ends staggered and over firm bearing.
  1. At long edges use sheathing clips where joints occur between roof framing members.
  2. Screw panels to framing; staples are not permitted.
- B. Wall Sheathing: Secure with long dimension perpendicular to wall studs, with ends over firm bearing and staggered, using nails, screws, or staples.
- C. Communications and Electrical Room Mounting Boards: Secure with screws to studs with edges over firm bearing; space fasteners at maximum 24 inches on center on all edges and into studs in field of board.
  1. At fire-rated walls, install board over wall board indicated as part of the fire-rated assembly.
  2. Where boards are indicated as full floor-to-ceiling height, install with long edge of board parallel to studs.
  3. Install adjacent boards without gaps.

3.05 SITE APPLIED WOOD TREATMENT
- A. Apply preservative treatment compatible with factory applied treatment at site-sawn cuts, complying with manufacturer's instructions.
- B. Allow preservative to dry prior to erecting members.

3.06 TOLERANCES
- A. Variation from Plane (Other than Floors): 1/4 inch in 10 feet maximum, and 1/4 inch in 30 feet maximum.

3.07 CLEANING
- A. Waste Disposal: Comply with the requirements of Section 01 7419 - Construction Waste Management and Disposal.
  1. Comply with applicable regulations.
  2. Do not burn scrap on project site.
  3. Do not burn scraps that have been pressure treated.
  4. Do not send materials treated with pentachlorophenol, CCA, or ACA to co-generation facilities or "waste-to-energy" facilities.
- B. Do not leave any wood, shavings, sawdust, etc. on the ground or buried in fill.
- C. Prevent sawdust and wood shavings from entering the storm drainage system.

SECTION 06 2000 - FINISHED CARPENTRY

1.01 SECTION INCLUDES
- A. Finish carpentry items.
- B. Wood door frames, glazed frames.
- C. Wood standing and running trim.
- D. Plastic laminate panels.

1.02 ADMINISTRATIVE REQUIREMENTS
- A. Coordinate the work with plumbing rough-in, electrical rough-in, and installation of associated and adjacent components.
- B. Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.

1.03 SUBMITTALS
- A. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
  1. Provide the information required by AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS).
- B. Samples: Submit two samples of wood trim 6 inch long.

1.04 QUALITY ASSURANCE
- A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum five years of documented experience.

2.01 FINISH CARPENTRY ITEMS
- A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.
- B. Surface Burning Characteristics: Provide materials having fire and smoke properties as required by applicable code.

2.02 SHEET MATERIALS
- A. Particleboard: ANSI A208.1; Composed of wood chips, sawdust, or flakes of medium density, made with waterproof resin binders; of grade to suit application; sanded faces.
- B. Medium-Density Fiberboard (MDF): ANSI A208.2, Grade 130.

2.03 PLASTIC LAMINATE MATERIALS
- A. Plastic Laminate: NEMA LD 3; color as indicated; finish as selected.
- B. Laminate Adhesive: Type recommended by laminate manufacturer to suit application; not containing formaldehyde or other volatile organic compounds.

2.04 FASTENINGS
- A. Adhesive for Purposes Other Than Laminate Installation: Suitable for the purpose; not containing formaldehyde or other volatile organic compounds.
- B. Fasteners: Of size and type to suit application; use corrosion resistant fasteners for exterior locations.

2.05 ACCESSORIES
- A. Lumber for Shimming and Blocking: Softwood lumber of any appropriate species.
- B. Primer: Alkyd primer sealer.
- C. Wood Filler: Solvent base, tinted to match surface finish color.

2.06 FABRICATION
- A. Shop assemble work for delivery to site, permitting passage through building openings.
- B. Cap exposed plastic laminate finish edges with material of same finish and pattern.
- C. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting.
- D. Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners. Slightly bevel arises. Locate counter butt joints minimum 2 feet from sink cut-outs.
- E. Apply laminate backing sheet to reverse face of plastic laminate finished surfaces.

2.07 SHOP FINISHING
- A. Sand work smooth and set exposed nails and screws.
- B. Apply wood filler in exposed nail and screw indentations.
- C. On items to receive transparent finishes, use wood filler that matches surrounding surfaces and is of type recommended for the applicable finish.
- D. Finish work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), Section 5 - Finishing for grade specified and as follows:
  1. Transparent:
     - a. System - 12, Polyurethane, Water-based.
     - b. Stain: As indicated on drawings.
     - c. Sheen: As indicated on drawings.
  2. Opaque:
     - a. System - 4, Latex Acrylic, Water-based.
     - b. Color: As indicated on drawings.
     - c. Sheen: As indicated on drawings.
- E. Back prime woodwork items to be field finished, prior to installation.

3.01 EXAMINATION
- A. Verify adequacy of backing and support framing.
- B. Verify mechanical, electrical, and building items affecting work of this section are placed and ready to receive this work.

3.02 INSTALLATION
- A. Install custom fabrications in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade indicated.
- B. Set and secure materials and components in place, plumb and level.
- C. Carefully scribe work abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim to conceal larger gaps.
- D. Install trim with appropriate mechanical fasteners.
- E. Install panels with concealed fasteners.

3.03 PREPARATION FOR SITE FINISHING
- A. Set exposed fasteners. Apply wood filler in exposed fastener indentations. Sand work smooth.
- B. Before installation, prime paint surfaces of items or assemblies to be in contact with cementitious materials.

3.04 TOLERANCES
- A. Maximum Variation from True Position: 1/16 inch.
- B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch.

SECTION 06 4100 - ARCHITECTURAL CASEWORK

1.01 SECTION INCLUDES
- A. Specially fabricated cabinet units.
- B. Countertops.
- C. Hardware.
- D. Preparation for installing utilities.

1.02 SUBMITTALS
- A. Shop Drawings: Indicate materials, component profiles, fastening methods, jointing details, and accessories.
  1. Provide the information required by AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS).
- B. Product Data: Provide data for hardware accessories.

1.03 QUALITY ASSURANCE
- A. Fabricator Qualifications: Company specializing in fabricating the products specified in this section with minimum three years of experience.

1.04 DELIVERY, STORAGE, AND HANDLING
- A. Protect units from moisture damage.

1.05 FIELD CONDITIONS
- A. During and after installation of custom cabinets, maintain temperature and humidity conditions in building spaces at same levels planned for occupancy.

2.01 CABINETS
- A. Quality Standard: Custom Grade, in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS), unless noted otherwise.
- B. Plastic Laminate Faced Cabinets: Custom grade.
- C. Cabinets:
  1. Finish - Exposed Exterior Surfaces: Decorative laminate.
  2. Door and Drawer Front Edge Profiles: Self-Edge banding with material of same finish and pattern.
  3. Casework Construction Type: Type A - Frameless.
  4. Interface Style for Cabinet and Door: Style 1 - Overlay; flush overlay.
  5. Adjustable Shelf Loading: 50 lbs. per sq. ft.

2.02 LAMINATE MATERIALS
- A. High Pressure Decorative Laminate (HPDL): NEMA LD 3, types as recommended for specific applications.
- B. Provide specific types as follows:
  1. Horizontal Surfaces: HGL, 0.039 inch nominal thickness, colors as indicated, finish as indicated.
  2. Vertical Surfaces: VGS, 0.028 inch nominal thickness, colors as indicated, finish as indicated.
  3. Cabinet Liner: CLS, 0.020 inch nominal thickness, colors as indicated, finish as indicated.
  4. Laminate Backer: BKL, 0.020 inch nominal thickness, undecorated; for application to concealed backside of panels faced with high pressure decorative laminate.

2.03 COUNTERTOPS
- A. Plastic Laminate Countertops: Medium density fiberboard substrate covered with HPDL, Self-Edge banding with material of same finish and pattern.
- B. Wall-Mounted Counters: Provide skirts, aprons, brackets, and braces as indicated on drawings, finished to match.

2.04 ACCESSORIES
- A. Adhesive: Type recommended by fabricator to suit application.
- B. Fasteners: Size and type to suit application.
- C. Bolts, Nuts, Washers, Lags, Pins, and Screws: Of size and type to suit application; galvanized or chrome-plated finish in concealed locations and stainless steel or chrome-plated finish in exposed locations.
- D. Concealed Joint Fasteners: Threaded steel.
- E. Grommets: Standard plastic, painted metal, or rubber grommets for cut-outs, in color to match adjacent surface.

2.05 HARDWARE
- A. Hardware: BHMA A156.9, types as recommended by fabricator for quality grade specified.
- B. Drawer and Door Pulls: If not specified in drawings then provide "U" shaped wire pull, aluminum with satin finish, 4 inch centers.
- C. Drawer Slides:
  1. Type: Full extension.
  2. Static Load Capacity: Commercial grade.
  3. Mounting: Side mounted.
- D. Hinges: European style concealed self-closing type, steel with polished finish.

2.06 FABRICATION
- A. Assembly: Shop assemble cabinets for delivery to site in units easily handled and to permit passage through building openings.
- B. Edging: Fit shelves, doors, and exposed edges with specified edging. Do not use more than one piece for any single length.
- C. Fitting: When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide matching trim for scribing and site cutting.
- D. Plastic Laminate: Apply plastic laminate finish in full uninterrupted sheets consistent with manufactured sizes. Fit corners and joints hairline; secure with concealed fasteners. Slightly bevel arises. Locate counter butt joints minimum 2 feet from sink cut-outs.
  1. Apply laminate backing sheet to reverse side of plastic laminate finished surfaces.
- E. Provide cutouts for plumbing fixtures. Verify locations of cutouts from on-site dimensions. Seal cut edges.

3.01 EXAMINATION
- A. Verify adequacy of backing and support framing.
- B. Verify location and sizes of utility rough-in associated with work of this section.

3.02 INSTALLATION
- A. Install work in accordance with AWI/AWMAC/WI (AWS) or AWMAC/WI (NAAWS) requirements for grade indicated.
- B. Set and secure custom cabinets in place, assuring that they are rigid, plumb, and level.
- C. Use fixture attachments in concealed locations for wall mounted components.
- D. Use concealed joint fasteners to align and secure adjoining cabinet units.
- E. Carefully scribe casework abutting other components, with maximum gaps of 1/32 inch. Do not use additional overlay trim for this purpose.
- F. Secure cabinets to floor using appropriate angles and anchorages.
- G. Countersink anchorage devices at exposed locations. Conceal with solid wood plugs of species to match surrounding wood; finish flush with surrounding surfaces.
- H. Securely attach countertops to cabinets using concealed fasteners. Make flat surfaces level; shim where required.
- I. Attach plastic laminate countertops using screws with minimum penetration into substrate board of 5/8 inch.
- J. Seal joint between back/end splashes and vertical surfaces.

3.03 ADJUSTING
- A. Adjust installed work.
- B. Adjust moving or operating parts to function smoothly and correctly.

3.04 CLEANING
- A. Clean casework, counters, shelves, hardware, fittings, and fixtures.

SECTION 07 1400 - FLUID-APPLIED WATERPROOFING

1.01 SECTION INCLUDES
- A. Water-based asphalt emulsion waterproofing.

1.02 SUBMITTALS
- A. Product Data: Provide data for membrane, surface conditioner, and joint and crack sealants.
- B. Shop Drawings: Indicate special joint or termination conditions and conditions of interface with other materials.
- C. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.03 QUALITY ASSURANCE
- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than five years experience.
- B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of experience and approved by manufacturer.

1.04 FIELD CONDITIONS
- A. Maintain ambient temperatures above 40 degrees F for 24 hours before and during application and until cured.

1.05 WARRANTY
- A. Installer Warranty: Provide 2-year warranty for waterproofing failing to resist penetration of water commencing on Date of Substantial Completion. Complete forms in Owner's name and register with installer.

2.01 FLUID-APPLIED WATERPROOFING MATERIALS
- A. Water-Based Asphalt Emulsion Waterproofing:
  1. Cured Thickness: 60 mil, 0.060 inch, minimum.
  2. Suitable for installation over concrete, concrete masonry, and insulated concrete forms substrates.
  3. Elongation: 1,000 percent, minimum, measured in accordance with ASTM D412.
  4. Water Vapor Permeability: 0.02 perm, maximum, measured in accordance with ASTM E96/E96M.
  5. Adhesion: 150 psi, minimum, measured in accordance with ASTM D4541.
- B. Flexible Flashings: Type recommended by membrane manufacturer.

2.02 ACCESSORIES
- A. Surface Conditioner: Compatible with membrane compound; as recommended by membrane manufacturer.
- B. Sealant for Joints and Cracks in Substrate: Type compatible with waterproofing material and as recommended by waterproofing manufacturer.
- C. Protection Board: Provide type capable of preventing damage to waterproofing due to backfilling and construction traffic.
  1. Polystyrene foam board, 2 inch thick.
- D. Drainage Panel: Drainage layer with geotextile filter fabric on earth side.
  1. Composition: Dimpled polyethylene, polypropylene, or polystyrene core; polypropylene or polyester filter fabric.
  2. Thickness: 1/4 inch.
- E. Cant Strips: Premolded composition material.

3.01 EXAMINATION
- A. Verify existing conditions before starting work.
- B. Verify substrate surfaces are free of frozen matter, dampness, loose particles, cracks, pits, projections, penetrations, or foreign matter detrimental to adhesion or application of waterproofing system.
- C. Verify that substrate surfaces are smooth, free of honeycomb or pitting, and not detrimental to full contact bond of waterproofing materials.
- D. Verify that items penetrating surfaces to receive waterproofing are securely installed.

3.02 PREPARATION
- A. Protect adjacent surfaces from damage not designated to receive waterproofing.
- B. Clean and prepare surfaces to receive waterproofing in accordance with manufacturer's instructions; vacuum substrate clean.
- C. Do not apply waterproofing to surfaces unacceptable to waterproofing manufacturer.
- D. Seal moving cracks with sealant and non-rigid filler, using procedures recommended by sealant and waterproofing manufacturers.
- E. Install cant strips at inside corners.

3.03 INSTALLATION
- A. Install waterproofing to specified minimum thickness in accordance with manufacturers instructions and NRCA (WM) applicable requirements.
- B. Apply primer or surface conditioner at a rate recommended by manufacturer, and protect conditioner from rain or frost until dry.
- C. Apply cover sheet over joints and cracks, including joints between horizontal and vertical surfaces, in accordance with manufacturer's recommendations for type and width of joint.
- D. Apply waterproofing in accordance with manufacturer's instructions to specified minimum thickness.
- E. Apply extra thickness of waterproofing material at corners, intersections, and angles.
- F. Flexible Flashings: Seal items watertight that penetrate through waterproofing membrane with flexible flashings.
- G. Seal membrane and flashings to adjoining surfaces.

3.04 INSTALLATION - PROTECTION BOARD
- A. Immediately after cooling, dust membrane with tack-reducing surfacing at rate of approximately 10 lb/100 sq ft.
- B. Place drainage panel directly against membrane, butt joints, place to encourage drainage downward, and scribe and cut boards around projections, penetrations, and interruptions.
- C. Place protection board directly against drainage panel; butt joints, and scribe and cut boards around projections, penetrations, and interruptions.
- D. Adhere protection board to substrate with compatible adhesive.

3.05 PROTECTION
- A. Do not permit traffic over unprotected or uncovered membrane.

SECTION 07 2100 - THERMAL INSULATION

1.01 SECTION INCLUDES
- A. Board insulation and integral vapor retarderat cavity wall construction, perimeter foundation wall, underside of floor slabs, exterior wall behind wall finish, and as indicated on drawings.
- B. Batt insulation and vapor retarder in exterior wall, ceiling, and roof construction.
- C. Batt insulation for filling perimeter window and door shim spaces and crevices in exterior wall and roof.

1.02 SUBMITTALS
- A. Product Data: Provide data on product characteristics, performance criteria, and product limitations.

1.03 FIELD CONDITIONS
- A. Do not install insulation adhesives when temperature or weather conditions are detrimental to successful installation.

2.01 APPLICATIONS
- A. Perimeter Insulation Under Concrete Slabs: Extruded polystyrene board.
- B. Insulation at Perimeter of Foundation: Extruded polystyrene (XPS) board.
- C. Insulation Inside Masonry Cavity Walls: Extruded polystyrene (XPS) board.
- D. Insulation Over Metal Stud Framed Walls, Continuous: Extruded polystyrene (XPS) carbon black board.

2.02 FOAM BOARD INSULATION MATERIALS
- A. Expanded Polystyrene (EPS) Board Insulation: Comply with ASTM C578.
  1. For use in Climate Zones 1,2 3, 4a & 4b; where no vapor retarder is required.
  2. Flame Spread Index (FSI): Class A - 0 to 25, when tested in accordance with ASTM E84.
  3. Smoke Developed Index (SDI): 450 or less, when tested in accordance with ASTM E84.
  4. Type and Thermal Resistance, R-value: Type XI, 3.1 (0.55), minimum, per 1 inch thickness at 75 degrees F mean temperature.
- B. Extruded Polystyrene (XPS) Board Insulation: Comply with ASTM C578 with either natural skin or cut cell surfaces.
  1. For use in Climate Zones 4c and above; where a vapor retarder is required.
  2. Flame Spread Index (FSI): Class A - 0 to 25, when tested in accordance with ASTM E84.
  3. Smoke Developed Index (SDI): 450 or less, when tested in accordance with ASTM E84.
  4. Type and Thermal Resistance, R-value: Type IV, 5.0 (0.88), minimum, per 1 inch thickness at 75 degrees F mean temperature.
- C. Extruded Polystyrene (XPS) Continuous Insulation (CI) Board: Comply with ASTM C578, and manufactured using carbon black technology.
  1. Flame Spread Index (FSI): Class A - 0 to 25, when tested in accordance with ASTM E84.
  2. Smoke Developed Index (SDI): 450 or less, when tested in accordance with ASTM E84.
  3. Type and Thermal Resistance, R-value: Type IV, 5.6 (0.98), minimum, per 1 inch thickness at 75 degrees F mean temperature.
  4. Board Size: 48 inch by 96 inch.
  5. Board Thickness: 1-3/4 inch.
  6. Board Edges: Shiplap, at long edges.

2.03 MINERAL FIBER BLANKET INSULATION MATERIALS
- A. Flexible Glass Fiber Blanket Thermal Insulation: Preformed insulation, complying with ASTM C665; friction fit.
  1. Flame Spread Index: 25 or less, when tested in accordance with ASTM E84.
  2. Smoke Developed Index: 450 or less, when tested in accordance with ASTM E84.
  3. Combustibility: Non-combustible, when tested in accordance with ASTM E136, except for facing, if any.
  4. Formaldehyde Content: Zero.
  5. Facing: Unfaced.
     - a. In Climate Zones 4c and above; where a separate vapor retarder is being used.
     - b. In Climate Zones 1, 2, 3, 4a & 4b; where no vapor retarder is required.
  6. Facing: Asphalt treated Kraft paper, one side.
     - a. In Climate Zones 4c and above; where a vapor retarder is required.
     - b. Facing can not be exposed.

2.04 ACCESSORIES
- A. Sheet Vapor Retarder: Polyamide film with variable vapor permeability based on ambient humidity. Permeance of 1 perm or less by the dry cup method, increasing to 10 perms by the wet cup method. Flame spread rating of 25 or less, when tested in accordance with ASTM E84.
- B. Tape joints of rigid insulation in accordance with roofing and insulation manufacturers' instructions.
- C. Insulation Fasteners: Lengths of unfinished, 13-gauge, 0.072-inch high carbon spring steel with chisel or mitered tips, held in place by tension, length to suit insulation thickness and substrate, capable of securely and rigidly fastening insulation in place.
- D. Insulation Fasteners: Impaling clip of unfinished steel with washer retainer and clips, to be adhered to surface to receive insulation, length to suit insulation thickness and substrate, capable of securely and rigidly fastening insulation in place.
- E. Adhesive: Type recommended by insulation manufacturer for application.

3.01 EXAMINATION
- A. Verify that substrate, adjacent materials, and insulation materials are dry and that substrates are ready to receive insulation.
- B. Verify substrate surfaces are flat, free of honeycomb, fins, irregularities, or materials or substances that may impede adhesive bond.

3.02 BOARD INSTALLATION AT FOUNDATION PERIMETER
- A. Install boards vertically on foundation perimeter.
  1. Install in running bond pattern.
  2. Butt edges and ends tightly to adjacent boards and to protrusions.
- B. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

3.03 BOARD INSTALLATION CONTINUOUS ON INTERIOR AT EXTERIOR WALLS
- A. Install rigid insulation directly to concrete or masonry with manufacturer recommended adhesive. Tape all joints with manufacturer's minimum 4 inch wide sealant tape; comply with ASTM E2357.
  1. Three continuous beads per board length.
- B. Install rigid insulation directly to steel studs with manufacturer recommended mechanical fasteners. Tape all joints with manufacturer's minimum 4 inch wide sealant tape; comply with ASTM E2357.
- C. Install boards vertically on walls.
  1. Place boards to maximize adhesive contact.
  2. Install in running bond pattern.
  3. Butt edges and ends tightly to adjacent boards and to protrusions.
- D. Extend boards over expansion joints, unbonded to wall on one side of joint.

3.04 BOARD INSTALLATION AT CAVITY WALLS
- A. Install boards to fit snugly between wall ties.
- B. Install boards horizontally on walls.
  1. Install in running bond pattern.
  2. Butt edges and ends tightly to adjacent boards and protrusions.
- C. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.

3.05 BOARD INSTALLATION UNDER CONCRETE SLABS
- A. Place perimeter insulation under slabs on grade after base for slab has been compacted.
- B. Cut and fit insulation tightly to protrusions or interruptions to the insulation plane.
- C. Prevent insulation from being displaced or damaged while placing vapor retarder and placing slab.

3.06 BATT INSTALLATION
- A. Install insulation and vapor retarder in accordance with manufacturer's instructions.
- B. Install in exterior wall, roof, and ceiling spaces without gaps or voids. Do not compress insulation.
- C. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.
- D. Fit insulation tightly in cavities and tightly to exterior side of mechanical and electrical services within the plane of the insulation.
- E. Install with factory applied vapor retarder membrane facing warm side of wall assembly. Lap ends and side flanges of membrane over framing members.
- F. Tape seal butt ends, lapped flanges, and tears or cuts in membrane.
- G. Place Sheet Vapor Retarder on warm side of insulation; lap and seal sheet retarder joints over member face.
- H. Tape seal tears or cuts in vapor retarder.
- I. Extend vapor retarder membrane tightly to full perimeter of adjacent window and door frames and other items interrupting the plane of the membrane. Tape seal in place.

3.07 PROTECTION

Do not permit installed insulation to be damaged prior to its concealment.

SECTION 07 4213 - INSULATED METAL WALL PANELS

1.01 SECTION INCLUDES
- A. Steel faced, QuadCore (polyisocyanurate) metal wall panels.
- B. Products requiring coordination with this section, but furnished and installed in other Sections include: Unit Masonry Veneer (40 2000); Metal Wall Panels (074214).
- C. Accessories including KarrierRails, hat channel, fasteners, flashings, and perimeter trim.

1.02 ADMINISTRATIVE REQUIREMENTS
- A. Pre-installation meeting: Conduct a pre-installation meeting at the job site attended by Owner, Architect, Manufacturer's Technical Representative, Panel Installer, and Contractors of related trades. Coordinate structural support requirements in relation to insulated wall panel system, treatment of fenestration, and other requirements specific to the project.

1.03 SUBMITTALS
- A. Product Data: Submit manufacturer current technical literature for each type of product.
- C. Shop Drawings: Submit detailed drawings and panel analysis showing:
  1. Profile
  2. Gauge of both exterior and interior sheet
  3. Location, layout and dimensions of panels
  4. Location and type of fasteners
  5. Shape and method of attachment of all trim
  6. Locations and type of sealants
  7. Installation sequence
  8. Coordination Drawings: Provide elevation drawings and building sections which show panels in relationship to required locations for structural support. Include panel details and details showing attachment to structural support.
  9. Other details as may be required for a weathertight installation
- D. Panel Analysis: Provide panel calculations to verify panels will withstand the design wind loads indicated without detrimental effects or deflection exceeding L/180. Include effects of thermal differential between the exterior and interior panel facings and resistance to fastener pullout.
- E. Samples: Provide nominal 3 x 5 inch of each color indicated on drawings.

1.04 QUALITY ASSURANCE
  1. Manufacturer shall have a minimum of five (5) years experience in the production of insulated wall panels. Manufacturer shall demonstrate past experience with examples of projects of similar type and exposure.
  2. Manufacturer to be registered with a Program Operator with a Certified, Environmental Product Declaration, in conformance with ISO 14025, for Insulated Metal Panels.
- B. Installer Qualifications: Authorized by the manufacturer and the work shall be supervised by a person having a minimum of five (5) years experience installing insulated wall panels on similar type and size projects.

1.05 DELIVERY, STORAGE, AND HANDLING
- A. Deliver panel materials and components in manufacturer's original, unopened, undamaged packaging with identification labels intact.
- B. Store wall panel materials on dry, level, firm, and clean surface. Stack no more than two bundles high. Elevate one end of bundle to allow moisture run-off, cover and ventilate to allow air to circulate and moisture to escape.

1.06 WARRANTY
- A. Limited Warranty: Standard form in which manufacturer agrees to repair or replace items that fail in materials or workmanship within specified warranty period. The items covered by the warranty include structural performance including bond integrity, deflection and buckling.
  1. Warranty Period: Two (2) years from date of Substantial Completion, or 2 years and 6 months from the date of shipment from manufacturer's plant, whichever occurs first.
- B. Finish Warranty: Submit Manufacturer's limited warranty on the exterior paint

finish for adhesion to the metal substrate and limited warranty on the exterior paint finish for chalk and fade.
- C. Thermal Warranty: Standard form in which manufacturer agrees to repair or replace panels that exhibit greater than 10% reduction from published material R-value at time of manufacture as measured in accordance with ASTM C518 within specified warranty period.
  1. Warranty Period: Thirty (30) years from date of Substantial Completion or 30 years and 3 months from date of shipment from manufacturer's plant, whichever occurs first.

2.01 MANUFACTURER
- A. Manufacturer: Kingspan Insulated Panels, Inc., 726 Summerhill Drive, Deland, FL 32724 (888-882-5862); 2000 Morgan Road, Modesto, CA 95358 (800-377-5110) (www.kingspanpanels.us)

2.02 INSULATED METAL WALL PANELS
- A. Performance Criteria:
  1. Structural Test: Structural performance shall be verifiable by witnessed structural testing for simulated wind loads in accordance with ASTM E72 and E330. Deflection criteria shall be L/180.
  2. Freeze / Heat Cycling Test: Panels shall exhibit no delamination, surface blisters, permanent bowing or deformation when subjected to cyclic temperature extremes of minus 36 deg. F to plus 180 deg. F temperatures for twenty one, eight-hour cycles.
  3. Water Penetration: There shall be no uncontrolled water penetration through the panel joints at a pressure differential of 20 psf, when tested in accordance with ASTM E331.
  4. Dynamic Water Penetration: There shall be no uncontrolled water penetration through the panel assembly at a pressure difference of 15 psf, when tested in accordance with AAMA 501.1.
  5. Air Infiltration: Air infiltration through the panel shall not exceed 0.01 cfm/sf at 6.24 psf air pressure differential when tested in accordance with ASTM E283.
  6. Humidity Test: Panels shall exhibit no delamination or metal interface corrosion when subjected to plus 140 deg. F temperature and 100 percent relative humidity for a total of 1500 hours (62 days).
  7. Autoclave Test: Panels shall exhibit no delamination or shrinkage/melting of the foam core from the metal skins after being subjected in an autoclave to a pressure of 2psig (13.8kPa) at a temperature of plus 218 deg. F (plus 103 deg. C) for a period of 2 1/2 hours.
  8. Seismic Performance: Comply with ASCE 7, Section 13, "Seismic Design Requirements for Non-Structural Components". Panels shall be hard-fastened to structure along one edge only such that lateral slippage between panels can occur in the event of seismic activity.
  9. Fire Test Response Characteristics: Steel-faced panels with polyisocyanurate (ISO) core shall fully comply with Chapter 26 of International Building Code regarding the use of Foam Plastic.
  10. Paint Finish Characteristics:
      - a. Gloss: 15 ± 5 measured at 60 degree an tested in accordance with ASTM D523.
      - b. Pencil Hardness: HB-H minimum tested in accordance with ASTM D3363.
      - c. Flexibility, T-Bend: 1-2T bend with no adhesion loss when tested in accordance with ASTM D4145.
      - d. Flexibility, Mandrel: No cracking when bent 180° around a 1/8 mandrel as tested in accordance with ASTM e522.
      - f. Adhesion: No adhesion loss tested in accordance with ASTM D3359.
      - g. Reverse Impact: No cracking or adhesion loss when impacted 3000 by inches of metal thickness (lb-in), hested in accordance with ASTM D2794.
      - i. Abrasion Resistance: Nominal 65 liters of falling sand to expose 5/32 inch diameter of metal substrate when tested in accordance with ASTM D968.
      - j. Graffiti Resistance: Minimal effect.
      - k. Acid Pollutant Resistance: No effect when subjected to 30 percent sulfuric acid for 18 hours, or 10 percent muriatic acid for 15 minutes when tested in accordance with ASTM D1308.
      - l. Salt Fog Resistance: Passes 1000 hours, when tested in accordance with ASTM B117 (5 percent salt fog at 95 deg. F).
      - m. Cyclic Salt Fog and UV Exposure: Passes 2016 hours when tested in accordance with ASTM D5894.
      - n. Humidity Resistance: Passes 1500 hours at 100 percent relative humidity and 95 deg. F, with a test rating of 10 when tested in accordance with ASTM D2247, and D714.
      - o. Color Retention: Passes 5000 hours when tested in accordance with ASTM G153 and G154.
      - p. Chalk Resistance: Maximum chalk is a rating of 8 when tested in accordance with ASTM D4214, Method A.
      - q. Color Tolerances: Maximum of 5∆E Hunter units on panels when tested in accordance with ASTM D2244.
- B. Exterior Wall Panels:
  1. Kingspan KS QuadCore Series wall panel
     - a. Panel Thickness: 2-1/2" (Min R-20)
     - b. Panel Width: 36 inches
     - c. Panel Lengths: As indicated on drawings.
     - d. Panel Attachment: Vertical install orientation. Shall consist of fasteners and stainless steel attachment clip completely concealed within the panel side joint.
     - e. Vertical Panel Joint Reveals: 3/8 inch
     - f. Horizontal Panel Joints: Surface mounted top hat metal flashing
     - g. Exterior Face of Panel:
       - Profile: Micro-Rib
       - Texture: Smooth
       - Color: Solid Color - as indicated on drawings.
     - h. Interior Face of Panel:
       - Profile: Shadowline
       - Texture: Non-directional stucco embossed
       - Color: Imperial White
  2. Kingspan KarrierPanel® QuadCore Series wall panel
     - a. Panel Thickness: 2-1/2" (Min R-20)
     - b. Panel Width: 36 inches
     - c. Panel Lengths: As indicated on drawings.
     - d. Panel Attachment: Vertical install orientation. Shall consist of fasteners and 16 gauge galvanized Kingspan KarrierRail subgirt integrated with the panel side joint.
     - e. Vertical Panel Joint Reveals: 3/8 inch
     - f. Horizontal Panel Joints: Panel trimless ends with black gasket insert
     - g. Exterior Face of Panel:
       - Profile: Shadowline
       - Texture: Non-directional stucco embossed
       - Color: Solid Color - as indicated on drawings.
     - h. Interior Face of Panel:
       - Profile: Shadowline
       - Texture: Non-directional stucco embossed
       - Color: Imperial White
  3. Kingspan QuadCore® Optimo® wall panel
     - a. Panel Thickness: 2-1/2" (Min R-20)
     - b. Panel Width: 40 inches
     - c. Panel Lengths: As indicated on drawings.
     - d. Panel Attachment: Horizontal install orientation. Shall consist of fasteners and stainless steel attachment clip completely concealed within the panel side joint.
     - e. Horizontal Panel Joint Reveals: 3/8 inch
     - f. Vertical Panel Joints: Surface mounted top hat metal flashing
     - g. Exterior Face of Panel:
       - Profile: Flat (unprofiled)
       - Texture: Smooth
       - Color: Solid Color - as indicated on drawings.
     - h. Interior Face of Panel:
       - Profile: Shadowline
       - Texture: Non-directional stucco embossed
       - Color: Imperial White

2.02 ACCESSORIES
- A. Fasteners:
  1. Self drilling fasteners shall be corrosion resistant plated steel with neoprene washer, as recommended by manufacturer.
  2. Material: Hex-head type with steel and neoprene washer and 12 gauge stainless steel clip supplied by the manufacturer.
  3. Size: As recommended by manufacturer.
- B. Perimeter Trim:
  1. Fabricated perimeter trim and metal flashing: Shall be same gauge, material and coating color as exterior face of insulated metal wall panel.
  2. Extruded perimeter trim: Shall be extruded aluminum 6063-T5 alloy with spray applied PVF coating in same color as exterior face of insulated metal wall panel.
- C. Sealants: Butyl, non-skinning/curing type as recommended by manufacturer.
- D. Butyl Tape: As recommended by manufacturer.
- E. KarrierRails: Manufacturer's standard, ASTM A653 cold-formed, G90 hot-dip galvanized KarrierRails.

3.01 EXAMINATION
- A. Provide field measurements to manufacturer as required to achieve proper fit of the preformed wall panel envelope.
- B. Verify field conditions meet manufacturer's required tolerances for installation. Notify Architect if construction is not acceptable.
- C. Do not begin installation until unacceptable conditions have been corrected.
- D. Examine individual panels upon removing from the bundle; notify manufacturer of panel defects. Do not install defective panels.

3.02 PANEL INSTALLATION
- A. Installation shall be in accordance with manufacturer's installation guidelines and recommendations.
- B. Install panels plumb, level, and true-to-line to dimensions and layout indicated on approved shop drawings.
- C. Cut panels prior to installing, where indicated on shop drawings, using a power circular saw with fine tooth carbide tip blade per manufacturer's instructions. Personnel should wear respiratory and eye protection devices.
- D. Butyl Weather Barrier Sealant:
  1. Apply non-skinning butyl sealant as shown on shop drawings and manufacturer's installation instructions as necessary to establish the vapor barrier for the panels.
  2. Use non-skinning butyl tube sealant only for tight metal-to-metal contact.
  3. Do not use non-skinning butyl tube sealant to bridge gaps.
- E. Place panel fasteners through pre-punched holes in attachment clips, concealed within the joint of the panel. Secure units to the structural supports. Space clips as recommended by manufacturer or otherwise indicated on the approved shop drawings.
- F. Trim Installation:
  1. Place trim and trim fasteners only as indicated per details on the approved shop drawings.
  2. Field drill weep holes where appropriate in horizontal trim; minimum 1/4 inch diameter at 24 inches on center.
  3. Place a continuous strip of butyl tube sealant between the inside back face of closure trims and interior panel faces for proper vapor seal.
- G. Sealant Installation for Exposed Joints:
  1. Clean and prime surfaces to receive exterior exposed sealants in accordance with sealant manufacturer's recommendations.
  2. Follow sealant manufacturer's recommendations for joint width-to-depth ratio, application temperature range, size and type of backer rod, and compatibility of materials for adhesion.
  3. Direct contact between butyl and silicone sealants shall not be permitted.
- A. KarrierRail Attachment
  1. Attachment at panel joint: Place panel fasteners through KarrierRails. Fasteners are concealed within the joint of the panel. Set fastener in Butyl Sealant. Secure KarrierRail to structural supports.
  2. Secure opposite side of KarrierRail, using manufacturer recommended fasteners.
  3. Space fasteners as recommended by manufacturer or otherwise indicated on the approved shop drawings.
  4. Alter KarrierRails as required to accommodate panel accessories per approved shop drawings and manufacturer's standard details.

3.03 QUALITY CONTROL
- B. Field Water Test: After completing portion of metal wall panel assembly including accessories and trim, GC shall engage an independent testing and inspection agency acceptable to the owner to test a 2-bay area selected by the architect for water penetration in accordance with AAMA 501.2.

3.04 CLEANING AND PROTECTION
- A. Remove protective film immediately after installation.
- B. Touch-up, repair or replace metal panels and trim that have been damaged.
- C. After metal wall panel installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.

SECTION 07 4214 - METAL WALL PANELS

1.01 SECTION INCLUDES
- A. Manufactured metal panels for exterior wall panels and sub-girt framing assembly, with related flashings and accessory components.
- B. Products requiring coordination with this section, but furnished and installed in other Sections include: Insulated Metal Wall Panels - KarrierPanel (074213).

1.02 ADMINISTRATIVE REQUIREMENTS
- C. Pre-installation meeting: Convene meeting prior to ordering materials to review scope of work and verify construction details, attended by General Contractor, Owner's Representatice, Architect, Manufacturer's Technical Representative, Installing Contractor, and Contractors of related trades.

1.03 SUBMITTALS
- A. Shop Drawings: Indicate dimensions, layout, joints, construction details and methods of anchorage.
- B. Show work to be field fabricated or field assembled.
- C. Samples: Submit two samples of wall panel, 12 inches by 12 inches (305 mm by 305 mm) in size illustrating finish color, sheen, and texture.
- D. Manufacturer's Qualification Statement.
- E. Installer's Qualification Statement.

1.04 QUALITY ASSURANCE
- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum ten years of documented experience.
  1. Manufacturer to be ISO 9001:2015 with design.
- B. Installer Qualifications: Company specializing in installing products of the type specified in this section with minimum three years of documented experience.
- D. Source Limitation: Obtain all components of the wall system from or approved by wall panel manufacturer.

1.05 MOCK-UP
- A. Construct mock-up, 4 feet long by 4 feet wide; include panel system, attachments to building frame, associated air seal materials, weep drainage system, sealants and seals in mock-up.
- B. Locate where directed by Architect.
- C. Mock-up may remain as part of the Work.

1.06 DELIVERY, STORAGE, AND HANDLING
- A. Package metal panels for protection during transportation and handling.
- B. Protect panels from accelerated weathering by removing or venting sheet plastic shipping wrap.
- C. Store prefinished material off the ground and protected from weather; prevent twisting, bending, or abrasion; provide ventilation; slope metal sheets to ensure proper drainage.
- D. Prevent contact with materials that may cause discoloration or staining of products.

1.07 WARRANTY
- A. Manufacturers standard finish warranty to correct defective work within a thirty-year period after Date of Substantial Completion for degradation of panel finish, including color fading caused by exposure to weather.

2.01 MANUFACTURERS
- A. Basis of Design: Metal Wall Panels - Exposed Fasteners
- B. Corrugated Panel (BWC374) manufactured by ATAS International, Inc.
- C. Substitutions: See Section 01 6000 - Product Requirements
  1. Substitutions will be considered only if materials meet requirements of Basis of Design and are approved by Architect in writing 10 days prior to bid.

2.02 MANUFACTURED METAL PANELS
- A. Wall Panel System: Factory fabricated prefinished metal panel system; site assembled.
  1. Provide exterior wall panels.
  2. Design and size components to support assembly dead loads, and to withstand live loads caused by positive and negative wind pressure acting normal to plane of wall.
  3. Design Pressure: In accordance with applicable codes.
  4. Maximum Allowable Deflection of Panel: L/180 for length(L) of span.
  5. Movement: Accommodate movement within system without damage to components or deterioration of seals, movement between system and perimeter components when subject to seasonal temperature cycling; dynamic loading and release of loads; and deflection of structural support framing.
  6. Drainage: Provide positive drainage to exterior for moisture entering or condensation occurring within panel system.
  7. Panels to be tension leveled during the roll forming process.
  8. Fabrication: Formed true to shape, accurate in size, square, and free from distortion or defects; pieces of longest practical lengths.
- B. Exterior Wall Panels:
  1. Profile: Corrugated Panel (BWC374); symmetrical corrugated ribs spaced 2-11/16" apart
  2. Horizontal Orientation
  3. Side and Top Seams: Lapped
  4. Material: Precoated steel sheet, 24 gauge, 0.0239 inch (0.61 mm) minimum thickness.
  5. Panel Width: Minimum 37 ¾ inches (946 mm)
  6. Panel Depth: Maximum ⅞" (22 mm)
  7. Texture: Smooth
  8. Color: To match selection by Architect from ATAS International.
  9. Color: Brite Red
  10. Brake-formed panels will not be accepted.
  11. Sub-girt Framing Assembly:
      - a. KarrierRail System as provided in section 074213
      - b. Panel support framing spaced per design pressures indicated by ASCE-7
      - c. Internal and External Corners: Same material, thickness, and finish as exterior sheets; profile to suit system; shop cut and factory mitered to required angles. Coordinate trim with Insulated Metal Panel Trim.
  12. Corner Post; Corners: As indicated on drawings.
  13. Expansion Joints: Same material, thickness and finish as exterior sheets; manufacturer's standard brake formed type of design to suit system.
  14. Trim:
      - a. Snap J: Factory formed two-piece J-channel to be used in trim areas without clip securement to minimize exposed fasteners
      - b. Penetration Covers (Z Boxes) to be supplied by panel manufacturer, factory fabricated in same gauge and finish as metal panels.

2.03 MATERIALS
- A. Non-Precoated Steel Sheet: Hot-dipped galvanized sheet, ASTM A653/A653M, SS Grade 33/320 with G90/Z275 coating.
- B. Select materials with surface flatness, smoothness, and lack of surface blemishes where exposed to view in finished system.

2.04 FINISHES
- A. Cleaning and Pretreatment using Wet chemistry technology
  1. Complex Chrome oxide pretreatment
  2. Chrome final rinse
- B. Panel Backside Finish: Panel manufacturer's standard siliconized polyester wash coat.
- C. Fluoropolymer Coil Coating System: Manufacturer's standard multi-coat steel coil coating system, including at least 70 percent polyvinylidene fluoride (PVDF) resin, and at least 80 percent of coil coated steel surfaces having minimum total dry film thickness (DFT) of 0.9 mil, 0.0009 inch (0.023 mm); color and gloss to match sample.
- D. Color: As indicated on drawings.

2.05 ACCESSORIES
- A. Cladding Support Clips: Thermally broken, galvanized steel clips for support of cladding z-girts, angles, channels and other framing.
- B. Miscellaneous Sheet Metal Items: Provide factory formed flashings, gutters, downspouts, trim, moldings, closure strips, preformed crickets, caps, and equipment curbs of the same material, thickness, and finish as used for the roofing panels. Items completely concealed after installation may optionally be made of stainless steel.
  1. Fabricate trim and flashing components in minimum 12'-0 lengths, or as dictated by project conditions and approved by panel manufacturer
- C. Gaskets:
  1. Manufacturer's standard type suitable for use with system, permanently resilient; ultraviolet and ozone resistant.
  2. Profiled Rib Closures: Provide prefabricated, factory pre-notched closures to match the panel profile close fitting components .032 Aluminum in the same color and finish as the wall panel system.
- D. Sealants:
  1. Exposed Sealant: High Performance Elastomeric; clear tri-polymer, as recommended by manufacturer.
  2. Concealed Sealant: High Performance Space Cubes to prevent bottoming out of sealant when fasteners are installed non-curing butyl tape.
  3. Seam Sealant: Factory Applied High Performance, high solid, non-skinning, non-drying formulated for roll forming application into concealed panel joints.
- E. Fasteners: Provide as recommended by panel manufacturer suitable for application meeting the following characteristics.
  1. Self-tapping and Self-drilling for metal to metal
  2. Self-tapping wood screws for metal to wood applications
  3. Carbon steel thread with organic long-life coating
  4. Exposed fasteners type 304 stainless steel cap head.
     - a. Encapsulated EPDM washer
     - b. Baked on High performance compatible, chip resistant finish to match panel color.
- F. Field Touch up Paint; As recommended by manufacturer

3.01 EXAMINATION
- A. Verify substrate framing members and KarrierRail subgirts are securely fastened to substrates, shimmed and leveled to uniform plane, and spaced at intervals indicated, ready to receive panels.
- B. Do not begin installation of preformed metal panels until substrate and subgirts have been prepared.
- C. If substrate and subgirt preparation is the responsibility of another installer, notify the Architect of unsatisfactory preparation before proceeding.

3.02 INSTALLATION
- A. Install panels on walls in accordance with manufacturer's instructions.
- B. Remove protective film from surface of panels immediately prior to installation. Strip film carefully to avoid damage to prefinished surfaces.
- C. Coordinate work with other adjoining work and trades to assure wall assembly and flashings are in accordance with approved shop drawings.
- D. Protect surfaces in contact with cementitious materials and dissimilar metals with bituminous paint. Allow to dry prior to installation.
- E. Fasten panels to structural supports; aligned, level, and plumb.
- F. Locate joints over supports.
- G. Lap panel ends minimum 3 inches.
- H. Provide expansion joints where indicated.
- I. Use concealed fasteners unless otherwise approved by Architect.
- J. Seal and place gaskets to prevent weather penetration. Maintain neat appearance.

3.04 TOLERANCES
- A. Maximum Offset From True Alignment Between Adjacent Members Butting or In Line: 1/16 inch (1.6 mm).
- B. Maximum Variation from Plane or Location Indicated on Drawings: 1/4 inch (6.4 mm).

3.05 FIELD QUALITY CONTROL
- A. Barrier Wall Water-Spray Test: Test assembled area as directed by Architect for water penetration in accordance with AAMA 501.2.
- B. Do not cover installed air/water barriers until required inspections have been completed.
- C. Obtain approval of installation procedures by air/water barrier manufacturer based on a mockup installed in place, prior to proceeding with remainder of installation.
- D. Take digital photographs of each portion of installation prior to covering up.

3.06 CLEANING
- A. Remove site cuttings from finish surfaces.
- B. Remove temporary protective material from prefinished surfaces. Maintain in a clean condition during construction.
- C. Protection: Provide as required completed work of this section will be without damage or deterioration at the date of substantial completion.
- D. Clean and wash prefinished surfaces with mild soap and water, rinse with clean water.
- E. After metal wall panel installation, remove scraps and debris from project site.
- F. Upon completion of installation, thoroughly clean prefinished aluminum surfaces in accordance with AAMA 609 & 610.

DONALD W. ALEXANDER | ARCHITECT

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STORAGE FACILITY
97 WARREN AVE
PORTLAND, ME 04103

Project No.: 25.0991
Drawn By: CB
Date: 03-30-26 Issue: Bid & Permit

A0.3

ARCHITECTURAL SPECIFICATIONS

SECTION 07 5400 - THERMOPLASTIC MEMBRANE ROOFING (TPO)

1.01 ADMINISTRATIVE REQUIREMENTS
E. Preinstallation Meeting: Convene one week before starting work of this section.
1. Review preparation and installation procedures and coordinating and scheduling required with related work.
1.02 SUBMITTALS
A. Product Data: Provide data indicating membrane materials, flashing materials, insulation, surfacing, and fasteners.
B. Shop Drawings: Submit drawings that indicate joint or termination detail conditions, conditions of interface with other materials, and setting plan for tapered insulation.
1.03 QUALITY ASSURANCE
A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of experience.
B. Installer Qualifications: Company specializing in performing the work of this section with at least three years of experience and approved by manufacturer.
1.04 DELIVERY, STORAGE, AND HANDLING
A. Deliver materials in manufacturer's original containers, dry and undamaged, with seals and labels intact.
B. Store materials in weather protected environment, clear of ground and moisture.
C. Ensure storage and staging of materials does not exceed static and dynamic load-bearing capacities of roof decking.
D. Protect foam insulation from direct exposure to sunlight.
1.05 FIELD CONDITIONS
A. Do not apply roofing membrane during unsuitable weather.
B. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.
C. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.
D. Schedule applications so that no partially completed sections of roof are left exposed at end of workday.
1.06 WARRANTY
A. System Warranty: Manufacturer's standard form, no dollar limit (NDL), in which manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within specified warranty period.
1. Warranty Term: 15 years.
2. For repair and replacement include costs of both material and labor in warranty.
3. Warranty includes roofing membrane, base flashings, roofing membrane accessories, roof insulation, fasteners, cover boards, walkway products, and other components of the roofing system.

2.01 ROOFING
A. Thermoplastic Membrane Roofing: One ply membrane, mechanically fastened, spot adhered or fully adhered as indicated on the drawings, over insulation.
B. Roofing Assembly Requirements:
1. Roof Covering External Fire Resistance Classification: UL (FRD) Class A.
C. Acceptable Insulation Types - Constant Thickness Application: Any type that meets requirements and is approved by membrane manufacturer for application.
1. Two layers of approximately equal thickness of polyisocyanurate board plus a cover board.
D. Acceptable Insulation Types - Tapered Application: Any type that meets requirements and is approved by membrane manufacturer for application.
2.02 MEMBRANE ROOFING AND ASSOCIATED MATERIALS
A. Membrane Roofing Materials:
1. TPO: Thermoplastic polyolefin (TPO) complying with ASTM D6878/D6878M, sheet contains reinforcing fabrics or scrims.
a. Thickness: 60 mil, 0.060 inch, minimum.
2. Sheet Width: Factory fabricated into largest sheets possible.
3. Color: White.
B. Seaming Materials: As recommended by membrane manufacturer.
C. Membrane Fasteners: As recommended and approved by membrane manufacturer.
D. Flexible Flashing Material: Same material as membrane.
2.03 COVER BOARDS
A. Cover Boards: Faced high compressive strength polyisocyanurate (ISO) insulation complying with ASTM C1289, and the following characteristics:
1. Classification:
a. Type II - Faced with either cellulosic facers or glass fiber mat facers on both major surfaces of the core foam.
1) Class 4 - faced with coated or uncoated glass-fiber-mat facers on both major surfaces of core foam.
(a) Compressive Strength: Grade 1, 80 psi.
(b) Thickness: 1/2 inch, maximum.
2. Board Size: 48 by 48 inches.
3. Insulation Thermal Resistance, R-value: R-value (RSI-value) of 2.9, nominal.
2.04 INSULATION
A. Polyisocyanurate (ISO) Board Insulation: Rigid cellular foam, complying with ASTM C1289.
1. Classifications:
a. Type II:
1) Class 2 - Faced with coated polymer-bonded glass fiber mat facers on both major surfaces of core foam.
2) Compressive Strength: Classes 1-2-3, Grade 2 - 20 psi (138 kPa), minimum.
2. Board Size: 48 by 96 inch.
3. Maximum Board Thickness: 2.0 inch.
4. Thermal Resistance: R-value [as indicated on the drawings].
5. Tapered Board: Slope as indicated; minimum thickness 1/2 inch; fabricate of fewest layers possible.
2.05 ACCESSORIES
A. Insulation Joint Tape: Glass fiber reinforced type as recommended by insulation manufacturer, compatible with roofing materials; 6 inches wide; self-adhering.
B. Insulation Fasteners: Appropriate for purpose intended and approved by roofing manufacturer.
C. Membrane Adhesive: As recommended by membrane manufacturer.
D. Cover tape: Tape adhesive laminated to cover strip, as recommended by manufacturer, used to strip in metal flashings.
E. Surface Conditioner for Adhesives: Compatible with membrane and adhesives.
F. Thinners and Cleaners: As recommended by adhesive manufacturer, compatible with membrane.
G. Strip Reglet Devices: Stainless steel, maximum possible lengths per location, with attachment flanges.
H. Walkway Pads: Suitable for maintenance traffic, contrasting color or otherwise visually distinctive from roof membrane.
1. Composition: Roofing membrane manufacturer's standard.
I. Coated Metal: Laminate of TPO membrane and galvanized steel.
J. Flexible foam rod: Closed cell polyethylene, 1 1/2 inch diameter unless noted.

3.01 EXAMINATION
A. Verify that surfaces and site conditions are ready to receive work.
B. Verify deck is supported and secure.
C. Verify deck is clean and smooth, flat, free of depressions, waves, or projections, properly sloped and suitable for installation of roof system.
D. Verify deck surfaces are dry and free of snow or ice.
E. Verify that roof openings, curbs, and penetrations through roof are solidly set, and nailing strips and reglets are in place.
3.02 INSTALLATION - GENERAL
A. Perform work in accordance with manufacturer's instructions, NRCA (RM), and NRCA (WM) applicable requirements.
B. Do not apply roofing membrane during unsuitable weather.
C. Do not apply roofing membrane when ambient temperature is outside the temperature range recommended by manufacturer.
D. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.
E. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.
F. Coordinate this work with installation of associated counterflashings installed by other sections as the work of this section proceeds.
G. Fasten roofing assembly to resist the design uplift pressures as indicated on structural drawings.
H. In the absence of structural drawings, fasten roofing assembly to resist the design uplift pressures calculated in accordance with:
1. IBC Chapter 15.
2. IBC Chapter 16.
3. ASCE 7.
3.03 INSULATION
A. Attachment of Insulation: Mechanically fasten insulation to deck in accordance with roofing manufacturer's instructions and Factory Mutual requirements.
B. Cover Boards: Mechanically fasten cover boards in accordance with roofing manufacturer's instructions and FM (AG) Factory Mutual requirements.
C. Lay subsequent layers of insulation with joints staggered minimum 6 inch from joints of preceding layer.
D. Place tapered insulation to the required slope pattern in accordance with manufacturer's instructions.
E. On metal deck, place boards parallel to flutes with insulation board edges bearing on deck flutes.
F. Lay boards with edges in moderate contact without forcing. Cut insulation to fit neatly to perimeter blocking and around penetrations through roof.
G. At roof drains, use factory-tapered boards to slope down to roof drains over a distance of 18 inches.
H. Do not apply more insulation than can be covered with membrane in same day.
3.04 MEMBRANE APPLICATION
A. Roll out membrane, free from wrinkles or tears. Place sheet into place without stretching.
B. Shingle joints on sloped substrate in direction of drainage.
C. Fully Adhered Application: Fully embed membrane in adhesive except in areas directly over or within 3 inches of expansion joints. Fully adhere one roll before proceeding to adjacent rolls.
D. Spot Adhered Application: Mechanically fasten adhesion discs to substrate. Apply adhesive to discs and bond membrane. Fully adhere one roll before proceeding to adjacent rolls.
E. Overlap edges and ends and seal seams by heat welding. Seal permanently waterproof.
F. Apply seam sealant at membrane edges and patches where recommended by roof membrane manufacturer.
G. Mechanical Attachment: Apply membrane and mechanical attachment devices in accordance with manufacturer's instructions.
H. At intersections with vertical surfaces:
1. Extend membrane up a minimum of 8 inches onto vertical surfaces.
a. Place flexible foam rod at roof to wall intersection where roof is not suported by walls and as detailed.
2. Fully adhere flexible flashing over membrane and up to top of wall.
a. Continue across nailer to front edge and turn down face of wall.
3. Insert flashing into reglets and secure where detailed.
I. At gravel stops and perimeter metal flashings, extend membrane under metal and turn down the outside face of the wall.
1. Fully adhere flexible flashing over flange of metal and extend onto roof membrane.
J. Around roof penetrations, seal flanges and flashings with flexible flashing.
K. Coordinate installation of roof drains and sumps and related flashings.
3.05 FINISHING
A. Install walkway pads. Space pad joints to permit drainage.
3.06 FIELD QUALITY CONTROL
A. See Section 01 4000 - Quality Requirements, for general requirements for field quality control and inspection.
B. Require site attendance of roofing material manufacturers daily during installation of the Work.
C. Test membrane seam welds in accordance with roofing manufacturer's requirements.
1. Test welds with probe to verify seam weld continuity. Test 100% of seams.
2. Verify field strength of seams; not less than 3 tests per work day.
3. Repair tears, voids and lapped seams in roofing membrane that do not meet requirements.
3.07 CLEANING
A. Remove excess materials, and debris from roof surfaces.
B. In areas where finished surfaces are soiled by work of this section, consult manufacturer of surfaces for cleaning advice and comply with their documented instructions.
C. Repair or replace defaced or damaged finishes caused by work of this section.
3.08 PROTECTION
A. Protect installed roofing and flashings from construction operations.
B. Where traffic must continue over finished roof membrane, protect surfaces using durable materials.

SECTION 07 6200 - SHEET METAL FLASHING AND TRIM

1.01 SECTION INCLUDES
A. Fabricated sheet metal items, including gravel stops, copings. fascias, flashings, counterflashings, gutters, downspouts, and as indicated on drawings.
B. Sealants for joints within sheet metal fabrications.
C. Precast concrete splash pads.
1.02 SUBMITTALS
A. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.
1.03 QUALITY ASSURANCE
A. Perform work in accordance with SMACNA Architectural Sheet Metal Manual or The NRCA Roofing and Waterproofing Manual recommendations and standard details, except as otherwise indicated.
B. Fabricator and Installer Qualifications: Company specializing in sheet metal work with 5 years of experience.
1.04 DELIVERY, STORAGE, AND HANDLING
A. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
B. Prevent contact with materials that could cause discoloration or staining.
1.05 WARRANTY
A. Provide manufacturer's standard material finish warranty, agreeing to repair or replace panels that show evidence of finish degradation, including fading, chalking, cracking, or peeling.
1. Warranty period 10 years, non-prorated.

2.01 EDGE SYSTEMS USED WITH LOW SLOPE ROOFING SYSTEMS
A. Edge System Requirements
1. Metal edge to resist the design uplift pressures calculated according to:
a. IBC Chapter 15 section on Performance Requirements.
b. SPRI ES-1.
2.02 SHEET MATERIALS
A. Galvanized Steel: ASTM A653/A653M, with G90/Z275 zinc coating; minimum 24-gauge, 0.0239-inch thick base metal.
B. Anodized Aluminum: ASTM B209/B209M, 3005 alloy, H12 or H14 temper; 0.032 inch thick; anodized finish of color as selected.
1. Clear Anodized Finish: AAMA 611, AA-M12C22A41, Class I, clear anodic coating not less than 0.7 mil, 0.0007 inch thick.
2. Color Anodized Finish: AAMA 611, AA-M12C22A42/44, Class I, integrally or electrolytically colored anodic coating not less than 0.7 mil, 0.0007 inch thick.
a. Color: As indicated on drawings.
C. Stainless Steel: ASTM A666, Type 304 alloy, soft temper, 28 gauge, 0.0156 inch thick; smooth No. 4 - Brushed finish.
2.03 PREFINISHED ALUMINUM SHEETS
A. Description: Factory-applied topcoat systems applied to aluminum flat sheet substrates prior to fabrication by coil coating; topcoat systems consist of primers and organic topcoats on exposed side and backing coats on unexposed side.
B. Aluminum Sheet Substrates: ASTM B209/B209M, alloy and temper as recommended by manufacturer for application; 0.040 inch thick; color as scheduled.
C. High-Performance Organic Coating System: Comply with AAMA 2604 for aluminum preparation, pretreatment, primer and finish coat system; provide thermally cured, 50-percent PVDF or silicone-modified polyester systems; tested for weathering for 5 years with 5 delta units color change maximum.
2.04 PREPAINTED, METALLIC-COATED STEEL SHEETS
A. Description: Factory-applied coatings applied to metallic-coated steel sheet substrates prior to fabrication by coil coating; topcoat systems consist of primers and organic topcoats on exposed, top side of sheet; washcoats on bottom, unexposed sheet side.
B. Comply with ASTM A755/A755M.
C. Metallic-Coated Steel Sheet Substrates:
1. Zinc-Coated, Galvanized, Steel Sheets: Commercial steel sheets, galvanized by hot-dip process; comply with ASTM A653/A653M; coating designation G90.
2. Aluminum-Zinc-Alloy-Coated Steel Sheets: Commercial steel sheets, alloy-coated by hot-dip process; comply with ASTM A792/A792M; coating designation AZ50.
D. Substrate Preparation for Prefinishing: Clean and prepare substrate surfaces in accordance with coating manufacturer's recommendations for substrate type and application.
E. Washcoats or Backercoats: Provide washcoats or backercoats in accordance with organic coating manufacturer's recommendations.
F. Primer Coats: Provide basecoat primers in accordance with coating manufacturer's recommendations for substrate type, topcoat, and application.
G. High-Performance Organic Coating System: Provide thermally cured, 50-percent PVDF or silicone-modified polyester systems in accordance with AAMA 2604; tested for weathering for 5 years with 5 delta units maximum of color change.
2.05 FABRICATION
A. Form sections true to shape, accurate in size, square, and free from distortion or defects.
B. Fabricate cleats of same material as sheet, continuous, interlocking with sheet.
C. Form pieces in longest possible lengths.
D. Hem exposed edges on underside 1/2 inch; miter and seam corners.
E. Form material with flat lock seams, except where otherwise indicated. At moving joints, use butt joints with concealed backup plate.
1. Fabricate concealed backup plate, minimum 12 inch long.
F. Fabricate vertical faces with bottom edge formed outward 1/4 inch and hemmed to form drip.
2.06 GUTTER, SCUPPER AND DOWNSPOUT FABRICATION
A. Gutters, Downspouts and Scuppers: SMACNA (ASMM) Rectangular profile.
B. Gutters, Downspouts & Scuppers: Size for rainfall intensity determined by a storm occurrence of 1 in 10 years in accordance with ICC (IPC).
C. Accessories: Profiled to suit gutters, scuppers and downspouts.
1. Anchorage Devices: In accordance with SMACNA (ASMM) requirements.
2. Gutter Supports: Brackets & Straps.
3. Downspout Supports: Brackets & Straps.
D. Splash Pads: Precast concrete type, of sizes and profile appropriate to the application; minimum 3000 psi at 28 days, with minimum 5 percent air entrainment.
E. Downspout Boots: Plastic.
F. Seal metal joints.
2.07 ACCESSORIES
A. Fasteners: Galvanized steel, with soft neoprene washers.
B. Underlayment: ASTM D226/D226M, organic roofing felt, Type I, No. 15.
C. Primer Type: Zinc chromate.
D. Concealed Sealants: Non-curing butyl sealant.
E. Exposed Sealants: ASTM C920; elastomeric sealant, with minimum movement capability as recommended by manufacturer for substrates to be sealed; color to match adjacent material.
F. Asphalt Roof Cement: ASTM D4586/D4586M, Type I, asbestos-free.
G. Reglets: Surface mounted or recessed as detailed type, Stainless Steel.
H. Solder: ASTM B32, Alloy Grade - Sn50 (50/50).

3.01 EXAMINATION
A. Verify roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, reglets in place, and nailing strips located.
B. Verify roofing termination and base flashings are in place, sealed, and secure.
3.02 PREPARATION
A. Install starter and edge strips, and cleats before starting installation.
B. Install surface mounted reglets true to lines and levels, and seal top of reglets with sealant.
C. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil, 0.015 inch.
3.03 INSTALLATION
A. Fasten metal edge systems to resist the design uplift pressures calculated according to:
1. IBC Chapter 15 section on Performance Requirements.
2. SPRI ES-1.
B. Insert flashings into reglets to form tight fit; secure in place with lead wedges; pack remaining spaces with lead wool; seal flashings into reglets with sealant.
C. Secure flashings in place using concealed fasteners, and use exposed fasteners only where permitted.
D. Apply plastic cement compound between metal flashings and felt flashings.
E. Fit flashings tight in place; make corners square, surfaces true and straight in planes, and lines accurate to profiles.
F. Roof Edge Flashing (Gravel Stop), Fascia Cap and Coping Joint Style: Butt, with 12 inch wide concealed backup plates.
G. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection.
1. Provide two rows of butyl sealant on backup plate each side of movement joint.
H. Seal metal joints watertight.
I. Secure gutters and downspouts in place with concealed fasteners.
J. Slope gutters 1/4 inch per 10 feet, minimum.
K. Connect downspouts to downspout boots, and grout connection watertight.
L. Set splash pads under downspouts.
3.04 FIELD QUALITY CONTROL
A. Inspect the work during installation to ascertain compliance with specified requirements.
3.05 SCHEDULE
A. Gravel stop, Fascia and Coping Cap: Prefinished galvanized steel.
B. Gutters and Downspouts: Prefinished galvanized steel.
C. Scuppers: Prefinished galvanized steel.
D. Sill and head flashings, including transition flashing between materials: Prefinished aluminum.
E. Coping, Cap, Parapet, Sill and Ledge Flashings:
F. Exposed trim & accessories related to aluminum framed storefronts: Anodized aluminum, color to match storefront.
G. Sheet Metal Roof Expansion Joint Covers, and Roof-to-Wall Joint Covers:
H. Counterflashings at Roofing Terminations (over roofing base flashings): Stainless steel
I. Counterflashings at Curb-Mounted Roof Items, including skylights and roof hatches: Match material of item being flashed.
J. Roofing Penetration Flashings, for Pipes, Structural Steel, and Equipment Supports.

SECTION 07 7200 - ROOF ACCESSORIES

1.01 SECTION INCLUDES
A. Roof hatches.
1.02 SUBMITTALS
A. Product Data: Manufacturer's data sheets on each product to be used.
1.03 DELIVERY, STORAGE, AND HANDLING
A. Store products in manufacturer's unopened packaging until ready for installation.
B. Store products under cover and elevated above grade.

2.01 ROOF HATCHES
A. Frames and Curbs: One-piece curb and frame with integral cap flashing to receive roof flashings; extended bottom flange to suit mounting.
1. Material: Galvanized steel, 14 gauge, 0.0747 inch 14 gauge, 0.0747 inch thick.
2. Finish: Factory prime paint.
3. Insulation: Manufacturer's standard; 1 inch rigid glass fiber, located on inside hollow curb.
4. Curb Height: 12 inches from surface of roof deck, minimum.
b. Mounting Substrate: Provide modified flanges suitable for roof system.
B. Hardware: Steel, zinc coated and chromate sealed, unless otherwise indicated or required by manufacturer.
1. Lifting Mechanisms: Compression or torsion spring operator with shock absorbers that automatically opens upon release of latch; capable of lifting covers despite 10 psf load.
2. Hinges: Manufacturer's standard type.
3. Hold open arm with vinyl-coated handle for manual release.
4. Latch: Upon closing, engage latch automatically and reset manual release.
5. Manual Release: Pull handle on interior and exterior.
6. Locking: Padlock hasp on interior.
C. Ladder Safety Post: Furnish and install with roof hatch.
1. Safety post shall be pre-assembled from the manufacturer.
2. Safety post shall lock automatically when fully extended.
3. Release lever shall disengage the post to allow it to be returned to its lowered position.
a. Post shall have adjustable mounting brackets to fit ladder rung spacing up to 14" on center.
b. Post shall be manufactured of high strength square tubing. A pull up loop shall be provided at the upper end of the post to facilitate raising the post.
c. Material of construction: Steel.
d. Balancing spring: A steel spring balancing mechanism shall be provided to provide smooth, easy, controlled operation when raising and lowering the safety post.
4. Finish: Safety Yellow powder coat.

3.01 EXAMINATION
A. Do not begin installation until substrates have been properly prepared.
3.02 PREPARATION
A. Clean surfaces thoroughly prior to installation.
B. Prepare surfaces using methods recommended by manufacturer for achieving acceptable results for applicable substrate under project conditions.
3.03 INSTALLATION
A. Install in accordance with manufacturer's instructions, in manner that maintains roofing system weather-tight integrity.
3.04 CLEANING
A. Clean installed work to like-new condition.
3.05 PROTECTION
A. Protect installed products until completion of project.
B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

SECTION 07 8100 - APPLIED FIRE PROTECTION

1.01 ADMINISTRATIVE REQUIREMENTS
A. Coordinate with placement of ceiling hanger tabs, mechanical component hangers, and electrical components.
1.02 SUBMITTALS
A. Product Data: Provide data indicating product characteristics, performance criteria, and limitations of use.
1.03 QUALITY ASSURANCE
A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of experience.
B. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of experience
1.04 FIELD CONDITIONS
A. Do not apply fireproofing when temperature of substrate material and surrounding air is below 40 degrees F or when temperature is predicted to be below said temperature for 24 hours after application.
B. Provide ventilation in areas to receive fireproofing during application and 24 hours afterward, to dry applied material.
C. Provide temporary enclosure to prevent spray from contaminating air.

2.01 APPLIED FIRE PROTECTION ASSEMBLIES
A. Provide assemblies as indicated on drawings.
2.02 MATERIALS
A. Applied Fire Protection Material for Interior Applications, Concealed: Manufacturer's standard factory mixed material, which when combined with water is capable of providing indicated fire resistance, and complying with following requirements:
1. Composition: Gypsum-based; not mineral-fiber-based.
2. Bond Strength: 150 pounds per square foot, minimum, when tested in accordance with ASTM E736 when set and dry.
3. Dry Density: As required by fire resistance design.
4. Effect of Impact on Bonding: No cracking, spalling or delamination, when tested in accordance with ASTM E760.
5. Corrosivity: No evidence of corrosion, when tested in accordance with ASTM E937.
6. Air Erosion Resistance: Weight loss of 0.025 g/sq ft, maximum, when tested in accordance with ASTM E859 after 24 hours.
7. Surface Burning Characteristics: Maximum flame spread index of 0 (zero) and maximum smoke developed index of 0 (zero), when tested in accordance with ASTM E84.
8. Effect of Deflection: No cracking, spalling, or delamination, when tested in accordance with ASTM E759.
B. Applied Fire Protection Material Exposed to Damage or Moisture: Manufacturer's standard factory mixed material, which when combined with water is capable of providing indicated fire resistance, and complying with following requirements:
1. Composition: Portland cement-based; not mineral fiber-based.
2. Bond Strength: 1,000 psf, minimum, when tested in accordance with ASTM E736 when set and dry.
3. Dry Density: As required by fire resistance design.
4. Compressive Strength: 100 psi, minimum.
5. Effect of Impact on Bonding: No cracking, spalling or delamination, when tested in accordance with ASTM E760.
6. Corrosivity: No evidence of corrosion, when tested in accordance with ASTM E937.
7. Air Erosion Resistance: Weight loss of 0.025 g/sq ft, maximum, when tested in accordance with ASTM E859 after 24 hours.
8. Surface Burning Characteristics: Maximum flame spread index of 0 (zero) and maximum smoke developed index of 0 (zero), when tested in accordance with ASTM E84.
2.03 ACCESSORIES
A. Primer Adhesive: Of type recommended by applied fire protection manufacturer.
B. Overcoat: As recommended by manufacturer of applied fire protection material.
C. Metal Lath: Expanded metal lath; minimum weight of 1.7 psf, galvanized finish.
D. Water: Clean, potable.

3.01 EXAMINATION
A. Verify that surfaces are ready to receive fireproofing.
B. Verify that clips, hangers, supports, sleeves, and other items required to penetrate fireproofing are in place.
C. Verify that ducts, piping, equipment, or other items that would interfere with application of fireproofing have not been installed.
D. Verify that voids and cracks in substrate have been filled.
E. Verify that projections have been removed where fireproofing will be exposed to view as a finish material.
3.02 PREPARATION
A. Perform tests as recommended by fireproofing manufacturer in applications where adhesion of fireproofing to substrate is in question.
B. Remove incompatible materials that could effect bond by scraping, brushing, scrubbing, or sandblasting.
C. Prepare substrates to receive fireproofing in strict accordance with instructions of fireproofing manufacturer.
D. Apply fireproofing manufacturer's recommended bonding agent on primed steel.
E. Protect surfaces not scheduled for fireproofing and equipment from damage by overspray, fall-out, and dusting.
F. Close off and seal duct work in areas where fireproofing is being applied.
3.03 APPLICATION
A. Install metal lath over structural members as indicated or as required by UL Assembly Design Numbers.
B. Apply primer coating and fireproofing in accordance with manufacturer's instructions.
C. Apply fireproofing in uniform thickness and density as necessary to achieve required ratings.
D. In exposed locations, trowel surface smooth and form square edges, using tools and procedures recommended by fireproofing manufacturer.
E. Apply overcoat at the rate recommended by fireproofing manufacturer.
3.04 FIELD QUALITY CONTROL
A. Perform field inspection and testing in accordance with Section 01 4000 - Quality Requirements.
B. Inspect installed fireproofing after application and curing for integrity, prior to its concealment.
C. Ensure that actual thicknesses, densities, and bond strengths meet requirements for specified ratings and requirements of authorities having jurisdiction (AHJ).
D. Re-inspect installed fireproofing for integrity of fire protection, after installation of subsequent Work.
3.05 CLEANING
A. Remove excess material, overspray, droppings, and debris.
B. Remove fireproofing from materials and surfaces not required to be fireproofed.
C. At exposed fireproofing, clean surfaces that have become soiled or stained, using manufacturer's recommended procedures.

SECTION 07 8400 - FIRESTOPPING

1.01 SUBMITTALS
A. Schedule of Firestopping: List each type of penetration, fire rating of the penetrated assembly, and firestopping test or design number.
B. Product Data: Provide data on product characteristics, performance ratings, and limitations.
1.02 QUALITY ASSURANCE
A. Fire Testing: Provide firestopping assemblies of designs that provide the scheduled fire ratings when tested in accordance with methods indicated.
1. Listing in UL (FRD), FM (AG), or ITS (DIR) will be considered as constituting an acceptable test report.
2. Valid evaluation report published by ICC Evaluation Service, Inc. (ICC-ES) at www.icc-es.org will be considered as constituting an acceptable test report.
B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years experience.
C. Installer Qualifications: Company specializing in performing the work of this section and:
1. Verification of minimum three years experience installing work of this type.
1.03 FIELD CONDITIONS
A. Comply with firestopping manufacturer's recommendations for temperature and conditions during and after installation; maintain minimum temperature before, during, and for three days after installation of materials.
B. Provide ventilation in areas where solvent-cured materials are being installed.

2.01 MATERIALS
A. Firestopping Materials: Any materials meeting requirements.
B. Primers, Sleeves, Forms, Insulation, Packing, Stuffing, and Accessories: Provide type of materials as required for tested firestopping assembly.
C. Fire Ratings: See Drawings for required ratings.
2.02 FIRESTOPPING ASSEMBLY REQUIREMENTS
A. Perimeter Fire Containment Firestopping: Use system that has been tested according to ASTM E2307 to have fire resistance F Rating equal to required fire rating of floor assembly.
B. Head-of-Wall Joint System Firestopping at Joints Between Fire-Rated Wall Assemblies and Non-Rated Horizontal Assemblies: Use system that has been tested according to ASTM E2837 to have fire resistance F Rating equal to required fire rating of floor or wall, whichever is greater.
C. Floor-to-Floor, Wall-to-Wall, and Wall-to-Floor Joints, Except Perimeter, Where Both Are Fire-Rated: Use system that has been tested according to ASTM E1966 or UL 2079 to have fire resistance F Rating equal to required fire rating of the assembly in which the joint occurs.
D. Through Penetration Firestopping: Use system that has been tested according to ASTM E814 to have fire resistance F Rating equal to required fire rating of penetrated assembly.
2.03 FIRESTOPPING SYSTEMS
A. Firestopping: Any material meeting requirements.
1. Fire Ratings: Use any system listed by UL, FM, or ITS (Warnock Hersey) or tested in accordance with ASTM E 814 or ASTM E 119 that has F Rating equal to fire rating of penetrated assembly and minimum T Rating Equal to F Rating, unless otherwise required by code, and that meets all other specified requirements. Refer to drawings for required ratings.

3.01 EXAMINATION
A. Verify openings are ready to receive the work of this section.
3.02 PREPARATION
A. Clean substrate surfaces of dirt, dust, grease, oil, loose material, or other materials that could adversely affect bond of firestopping material.
B. Remove incompatible materials that could adversely affect bond.
C. Install backing materials to prevent liquid material from leakage.
3.03 INSTALLATION
A. Install materials in manner described in fire test report and in accordance with manufacturer's instructions, completely closing openings.
B. Do not cover installed firestopping until inspected by authorities having jurisdiction.
C. Install labeling required by code.
3.04 CLEANING
A. Clean adjacent surfaces of firestopping materials.

SECTION 07 9200 - JOINT SEALANTS

1.01 SECTION INCLUDES
A. Nonsag gunnable joint sealants.
B. Self-leveling pourable joint sealants.
C. Joint backings and accessories.
1.02 SUBMITTALS
A. Product Data: Submit manufacturer's technical datasheets for each product to be used; include the following:
1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
2. List of backing materials approved for use with the specific product.
3. Backing material recommended by sealant manufacturer.
4. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
5. Substrates the product should not be used on.
6. Substrates for which use of primer is required.
B. Color Cards for Selection: Where sealant color is not specified, submit manufacturer's color cards showing standard colors available for selection.
1. Where standard colors do not match color of adjacent materials, submit custom color.
1.03 QUALITY ASSURANCE
A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years experience.
B. Installer Qualifications: Company specializing in performing the work of this section and with at least three years of experience.
C. Field Adhesion Tests of Joints: Test for adhesion using most appropriate method in accordance with ASTM C1521, or another applicable method as recommended by manufacturer.
1.04 WARRANTY
A. Manufacturer Warranty: Provide 2-year manufacturer warranty for installed sealants and accessories that fail to achieve a watertight seal, exhibit loss of adhesion or cohesion, or do not cure. Complete forms in Owner's name and register with manufacturer.

2.01 JOINT SEALANT APPLICATIONS
A. Scope:
1. Exterior Joints:
a. Seal open joints except open joints indicated on drawings as not sealed.
b. Seal the following joints:
1) Wall expansion and control joints.
2) Joints between doors, windows, and other frames or adjacent construction.
3) Joints between different exposed materials.
2. Interior Joints:
a. Do not seal interior joints indicated on drawings as not sealed.
b. Do not seal gaps and openings in gypsum board, plaster, and suspended ceilings
c. Do not seal through-penetrations in sound-rated assemblies that are also fire-rated assemblies.
d. Seal the following joints:
1) Joints between door frames and window frames and adjacent construction.
2) In sound-rated wall and ceiling assemblies, gaps at electrical outlets, wiring devices, and piping penetrations.
3) In sound-rated wall and ceiling assemblies, seal joints between wall assemblies and ceiling assemblies; between wall assemblies and other construction; between ceiling assemblies and other construction.
3. Do Not Seal:
a. Intentional weep holes in masonry.
b. Joints indicated to be covered with expansion joint cover assemblies.
c. Joints where sealant is specified to be furnished and installed by manufacturer of product to be sealed.
d. Joints where sealant installation is specified in other sections.
e. Joints between suspended ceilings and walls.
B. Exterior Joints: Use nonsag non-staining silicone sealant, unless otherwise indicated.
1. Lap Joints in Sheet Metal Fabrications: Butyl rubber, non-curing.
2. Lap Joints between Manufactured Metal Panels: Butyl rubber, non-curing.
3. Control and Expansion Joints in Concrete Paving: Self-leveling polyurethane "traffic-grade" sealant.
C. Interior Joints: Use nonsag polyurethane sealant, unless otherwise indicated.
1. Wall and Ceiling Joints in Non-Wet Areas: Acrylic emulsion latex sealant.
2. Wall and Ceiling Joints in Wet Areas: Nonsag polyurethane sealant for continuous liquid immersion.
3. Floor Joints in Wet Areas: Nonsag polyurethane "nontraffic-grade" sealant suitable for continuous liquid immersion.
4. Joints between Fixtures in Wet Areas and Floors, Walls, and Ceilings: Mildew-resistant silicone sealant; white.
5. In Sound-Rated Assemblies: Acrylic emulsion latex sealant.
6. Narrow Control Joints in Interior Concrete Slabs: Self-leveling epoxy sealant.
7. Other Floor Joints: Self-leveling polyurethane "traffic-grade" sealant.
D. Interior Wet Areas: Bathrooms, restrooms, kitchens, food service areas, and food processing areas; fixtures in wet areas include plumbing fixtures, food service equipment, countertops, cabinets, and other similar items.
E. Sound-Rated Assemblies: Walls and ceilings identified as STC-rated, sound-rated, or acoustical.
2.02 NONSAG JOINT SEALANTS
A. Non-Staining Silicone Sealant: ASTM C920, Grade NS, Uses M and A; not expected to withstand continuous water immersion or traffic.
1. Movement Capability: Plus and minus 50 percent, minimum.
2. Nonstaining to Porous Stone: Nonstaining to light-colored natural stone when tested in accordance with ASTM C1248.
3. Dirt Pick-Up: Reduced dirt pick-up compared to other silicone sealants.
4. Color: Match adjacent finished surfaces.
B. Mildew-Resistant Silicone Sealant: ASTM C920, Grade NS, Uses M and A; single component, mildew resistant; not expected to withstand continuous water immersion or traffic.
1. Color: Clear.
C. Polyurethane Sealant: ASTM C920, Grade NS, Uses M and A; single or multicomponent; not expected to withstand continuous water immersion or traffic.
1. Color: Match adjacent finished surfaces.
D. Polyurethane Sealant for Continuous Water Immersion: ASTM C920, Grade NS, Uses M and A; single or multicomponent; explicitly approved by manufacturer for continuous water immersion; suitable for traffic exposure when recessed below traffic surface .
1. Movement Capability: Plus and minus 35 percent, minimum.
2. Color: Match adjacent finished surfaces.
E. Acrylic Emulsion Latex: Water-based; ASTM C834, single component, non-staining, non-bleeding, non-sagging; not intended for exterior use.
1. Color: Standard colors matching finished surfaces, Type OP (opaque).
F. Non-Curing Butyl Sealant: Solvent-based; ASTM C1311; single component, nonsag, non-skinning, non-hardening, non-bleeding; vapor-impermeable; intended for fully concealed applications.
2.03 SELF-LEVELING JOINT SEALANTS
A. Self-Leveling Polyurethane Sealant: ASTM C920, Grade P, Uses M and A; single or multicomponent; explicitly approved by manufacturer for traffic exposure; not expected to withstand continuous water immersion .
1. Movement Capability: Plus and minus 25 percent, minimum.
2. Color: Gray or match adjacent finish.
B. Self-Leveling Polyurethane Sealant for Continuous Water Immersion: Polyurethane; ASTM C920, Grade P, Uses M and A; single or multicomponent; explicitly approved by manufacturer for traffic exposure and continuous water immersion.
1. Movement Capability: Plus and minus 25 percent, minimum.
2. Color: Gray.
C. Semi-Rigid Self-Leveling Epoxy Joint Filler: Epoxy or epoxy/polyurethane copolymer; intended for filling cracks and control joints not subject to significant movement; rigid enough to support concrete edges under traffic.
1. Composition: Multicomponent, 100 percent solids by weight.
2. Durometer Hardness: Minimum of 85 for Type A or 35 for Type D, after seven days when tested in accordance with ASTM D2240.
3. Color: Match adjacent finished surfaces.
4. Joint Width, Minimum: 1/8 inch.
5. Joint Width, Maximum: 1/4 inch.
2.04 ACCESSORIES
A. Backing Tape: Self-adhesive polyethylene tape with surface that sealant will not adhere to and recommended by tape and sealant manufacturers for specific application.
B. Masking Tape: Self-adhesive, nonabsorbent, nonstaining, removable without adhesive residue, and compatible with surfaces adjacent to joints and sealants.
C. Joint Cleaner: Noncorrosive and nonstaining type, type recommended by sealant manufacturer; compatible with joint forming materials.
D. Primers: Type recommended by sealant manufacturer to suit application; nonstaining.

3.01 EXAMINATION
A. Verify that joints are ready to receive work.
B. Verify that backing materials are compatible with sealants.
C. Verify that backer rods are of the correct size.
3.02 PREPARATION
A. Remove loose materials and foreign matter that could impair adhesion of sealant.
B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.
C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.
D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.
3.03 INSTALLATION
A. Install this work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.
B. Provide joint sealant installations complying with ASTM C1193.
C. Install acoustical sealant application work in accordance with ASTM C919.
D. Install bond breaker backing tape where backer rod cannot be used.
E. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.
F. Do not install sealant when ambient temperature is outside manufacturer's recommended temperature range, or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.
G. Nonsag Sealants: Tool surface concave, unless otherwise indicated; remove masking tape immediately after tooling sealant surface.
H. Concrete Floor Joint Filler: After full cure, shave joint filler flush with top of concrete slab.
3.04 FIELD QUALITY CONTROL
A. See Section 01 4000 - Quality Requirements for additional requirements.
B. Perform field quality control inspection/testing as specified in PART 1 under QUALITY ASSURANCE article.
C. C. Remove and replace failed portions of sealants using same materials and procedures as indicated for original installation.

SECTION 08 1113 - HOLLOW METAL DOORS AND FRAMES

1.01 SUBMITTALS
A. Product Data: Materials and details of design and construction, hardware locations, reinforcement type and locations, anchorage and fastening methods, and finishes.
B. Shop Drawings: Details of each opening, showing elevations, glazing, frame profiles, and any indicated finish requirements.
1.02 QUALITY ASSURANCE
A. Manufacturer Qualifications: Provide hollow metal doors and frames from SDI Certified manufacturer: www.steeldoor.org/sdicertified.php/#sle.
1.03 DELIVERY, STORAGE, AND HANDLING
A. Comply with NAAMM HMMA 840 or ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.
B. Protect with resilient packaging; avoid humidity build-up under coverings; prevent corrosion and adverse effects on factory applied painted finish.

2.01 PERFORMANCE REQUIREMENTS
A. Requirements for Hollow Metal Doors and Frames:
1. Steel Sheet: Comply with one or more of the following requirements; galvannealed steel complying with ASTM A653/A653M, cold-rolled steel complying with ASTM A1008/A1008M, or hot-rolled pickled and oiled (HRPO) steel complying with ASTM A1011/A1011M, commercial steel (CS) Type B, for each.
2. Accessibility: Comply with applicable accessibility standards.
3. Door Edge Profile: Manufacturers standard for application indicated.
4. Typical Door Face Sheets: Flush.
5. Glazed Lights: Non-removable stops on non-secure side; sizes and configurations as indicated on drawings. Style: Manufacturers standard.
6. Hardware Preparations, Selections and Locations: Comply with NAAMM HMMA 830 and NAAMM HMMA 831 or BHMA A156.115 and ANSI/SDI A250.8 (SDI-100) in accordance with specified requirements.
B. Combined Requirements: If a particular door and frame unit is indicated to comply with more than one type of requirement, comply with the specified requirements for each type; for instance, an exterior door that is also indicated as being sound-rated must comply with the requirements specified for exterior doors and for sound-rated doors; where two requirements conflict, comply with the most stringent.
2.02 HOLLOW METAL DOORS
A. Door Finish: Factory primed and field finished.
B. Exterior Doors: Thermally insulated.
1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
a. Level 3 - Extra Heavy-duty.
b. Physical Performance Level A, 1,000,000 cycles; in accordance with ANSI/SDI A250.4.
c. Model 2 - Seamless.
d. Door Face Metal Thickness: 16 gauge, 0.053 inch, minimum.
2. Door Core Material: Manufacturers standard core material/construction and in compliance with requirements.
3. Door Thermal Resistance: R-Value of 2.5.
4. Door Thickness: 1-3/4 inches, nominal.
5. Top Closures for Outswinging Doors: Flush with top of faces and edges.
6. Weatherstripping: Refer to Section 08 7100.
C. Interior Doors, Non-Fire Rated:
1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
a. Level 2 - Heavy-duty.
b. Physical Performance Level B, 500,000 cycles; in accordance with ANSI/SDI A250.4.
c. Model 1 - Full Flush.
d. Door Face Metal Thickness: 18 gauge, 0.042 inch, minimum.
2. Door Thickness: 1-3/4 inches, nominal.
D. Fire-Rated Doors:
1. Based on SDI Standards: ANSI/SDI A250.8 (SDI-100).
a. Level 2 - Heavy-duty.
b. Physical Performance Level B, 500,000 cycles; in accordance with ANSI/SDI A250.4.
c. Model 1 - Full Flush.
d. Door Face Metal Thickness: 18 gauge, 0.042 inch, minimum.
2. Fire Rating: As indicated on drawings, tested in accordance with UL 10C and NFPA 252 ("positive pressure fire tests").
a. Provide units listed and labeled by UL (DIR) or ITS (DIR).
b. Attach fire rating label to each fire rated unit.
c. Smoke and Draft Control Doors (as indicated on drawings): Self-closing or automatic closing doors in accordance with NFPA 80 and NFPA 105, with fire-resistance-rated wall construction rated the same or greater than the fire-rated doors, and the following;
1) Maximum Air Leakage: 3.0 cfm/sq ft of door opening at 0.10 inch w.g. pressure, when tested in accordance with UL 1784 at both ambient and elevated temperatures.
2) Gasketing: Provide gasketing or edge sealing as necessary to achieve leakage limit.
3) Label: Include the "S" label on fire-rating label of door.
3. Door Core Material: Manufacturers standard core material/construction in compliance with requirements.
4. Door Thickness: 1-3/4 inches, nominal.
2.03 HOLLOW METAL FRAMES
A. Comply with standards and/or custom guidelines as indicated for corresponding door in accordance with applicable door frame requirements.
B. Frame Finish: Factory primed and field finished.
C. Exterior Door Frames: Face welded type.
1. Galvanizing: Components hot-dipped zinc-iron alloy-coated (galvannealed) in accordance with ASTM A653/A653M, with A40/ZF120 coating.
2. Frame Metal Thickness: 16 gauge, 0.053 inch, minimum.
3. Weatherstripping: Separate, see Section 08 7100.
D. Interior Door Frames, Non-Fire Rated: Knock-down type.
1. Frame Metal Thickness: 16 gauge, 0.053 inch, minimum.
E. Door Frames, Fire-Rated: Knock-down type.
1. Fire Rating: Same as door, labeled.
2. Frame Metal Thickness: 16 gauge, 0.053 inch, minimum.
F. Provide mortar guard boxes for hardware cut-outs in frames to be installed in masonry or to be grouted.
G. Frames in Masonry Walls: Size to suit masonry coursing with head member 4 inches high to fill opening without cutting masonry units.
H. Frames Wider than 48 inches: Reinforce with steel channel fitted tightly into frame head, flush with top.
2.04 FINISHES
A. Primer: Rust-inhibiting, complying with ANSI/SDI A250.10, door manufacturer's standard.
B. Bituminous Coating: Cold-applied asphalt mastic, compounded for 15 mil, 0.015 inch dry film thickness (DFT) per coat; provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.
1. Fire-Rated Frames: Comply with fire rating requirements indicated.
2.05 ACCESSORIES
A. Louvers: Roll formed steel with overlapping frame; finish same as door components; factory-installed.
1. In Fire-Rated Doors: UL (DIR) or ITS (DIR) listed fusible link louver, same rating as door.
2. Style: Standard straight slat blade.
3. Louver Free Area: 50 percent.
4. Fasteners: Concealed fasteners.
B. Glazing: As specified in Section 08 8000.
C. Removable Stops: Formed sheet steel, mitered corners; prepared for countersink style tamper proof screws.
D. Astragals for Double Doors: Specified in Section 08 7100.
1. Exterior Doors: 14GA Galvanized Steel, Flat.
E. Grout for Frames: Mortar grout complying with ASTM C476 with maximum slump of 4 inches as measured in accordance with ASTM C143/C143M for hand troweling in place; plaster grout and thinner pumpable grout are prohibited.
F. Silencers: Resilient rubber or vinyl, fitted into drilled hole; provide three on strike side of single door, three on center mullion of pairs, and two on head of pairs without center mullions.
G. Temporary Frame Spreaders: Provide for factory- or shop-assembled frames.

3.01 EXAMINATION
A. Verify existing conditions before starting work.
B. Verify that opening sizes and tolerances are acceptable.
C. Verify that finished walls are in plane to ensure proper door alignment.
3.02 PREPARATION
A. Coat inside of frames to be installed in masonry or to be grouted, with bituminous coating, prior to installation.
3.03 INSTALLATION
A. Install doors and frames in accordance with manufacturer's instructions and related requirements of specified door and frame standards or custom guidelines indicated.
B. Install fire rated units in accordance with NFPA 80.
C. Coordinate frame anchor placement with wall construction.
D. Install door hardware as specified in Section 08 7100.
E. Coordinate installation of electrical connections to electrical hardware items.
3.04 TOLERANCES
A. Clearances Between Door and Frame: Comply with related requirements of specified frame standards or custom guidelines indicated in accordance with SDI 117 or NAAMM HMMA 861.
B. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.
3.05 ADJUSTING
A. Adjust for smooth and balanced door movement.
B. Adjust closers for full closure and applicable accessiblity operating forces.

SECTION 08 3100 - ACCESS DOORS & PANELS

1.01 SUBMITTALS
A. Product Data: Provide sizes, types, finishes, hardware, scheduled locations, and details of adjoining work.

2.01 ACCESS DOORS AND PANELS ASSEMBLIES
A. Wall-Mounted Units:
1. Panel Material: Steel.
2. Size: As indicated on the drawings or as necessary to allow access to concealed items.
3. Door/Panel: Hinged, standard duty, with tool-operated spring or cam lock and no handle.
4. Gypsum Board Mounting Criteria: Provide drywall bead frame with door surface flush with wall surface.
B. Walls in Wet Areas and Exterior:
1. Panel Material: Steel, hot-dipped zinc, or zinc-aluminum-alloy coated.
2. Size: As indicated on the drawings or as necessary to allow access to concealed items.
3. Door/Panel: Hinged, standard duty, with tool-operated spring or cam lock and no handle.
4. Gypsum Board Mounting Criteria: Provide drywall bead frame with door surface flush with wall surface.
5. In Masonry, Tile, Concrete, EIFS or other surfaces: Surface mounted frame with door surface flush with frame surface.
C. Fire-Rated Wall-Mounted Units:
1. Wall Fire-Rating: As indicated on drawings.
2. Panel Material: Steel.
3. Size: As indicated on the drawings or as necessary to allow access to concealed items.
4. Door/Panel: Insulated double-surface panel, with tool-operated spring or cam lock and no handle.
D. Ceiling-Mounted Units:
1. Panel Material: Steel.
2. Material: Steel, hot-dipped zinc or zinc-aluminum-alloy coated, for use in wet locations and exterior.
3. Size: As indicated on the drawings or as necessary to allow access to concealed items.
4. Door/Panel: Hinged, standard duty, with tool-operated spring or cam lock and no handle.
E. Fire-Rated Ceiling-Mounted Units:
1. Ceiling Fire-Rating: As indicated on drawings.
2. Panel Material: Steel.
3. Size: As indicated on the drawings or as necessary to allow access to concealed items.
4. Door/Panel: Hinged, standard duty, with tool-operated spring or cam lock and no handle.
2.02 WALL AND CEILING MOUNTED ACCESS UNITS
A. Wall and Ceiling Mounted Units: Factory fabricated door and frame, fully assembled units with corner joints welded, filled and ground flush; square and without rack or warp; coordinate requirements with type of installation assembly being used for each unit.
1. Style: Frame concealed by door panel.
2. Door Style: Single thickness with rolled or turned in edges.
3. Frames: 16 gauge, 0.0598 inch, minimum thickness.
4. Single Steel Sheet Door Panels: 1/16 inch, minimum thickness.
5. Door Panels to Receive Wall/Ceiling Finish: Surface recessed 5/8 inch back from wall face.
6. Insulation: Non-combustible mineral wool or glass fiber.
7. Units in Fire-Rated Assemblies: Fire rating as required by applicable code for fire-rated assembly that access doors are being installed.
8. Steel Finish: Primed.
9. Hardware:
a. Hardware for Fire-Rated Units: As required for listing.
b. Hinges for Non-Fire-Rated Units: Continuous piano hinge.
c. Latch/Lock: Tamperproof tool-operated cam latch.
d. Number of Locks/Latches Required: As recommended by manufacturer for size of unit.
e. Inside Latch Release: Mechanism that allows door/panel to be opened from inside.
3.01 EXAMINATION
A. Verify that rough openings are correctly sized and located.
B. Begin installation only after substrates have been properly prepared, and if the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
3.02 PREPARATION
A. Clean surfaces thoroughly prior to proceeding with this work.
B. Prepare surfaces using methods recommended by manufacturer for applicable substrates in accordance with project conditions.
3.03 INSTALLATION
A. Install units in accordance with manufacturer's instructions.
B. Install frames plumb and level in openings, and secure units rigidly in place.
C. Position units to provide convenient access to concealed equipment when necessary.

SECTION 08 4229 - AUTOMATIC ENTRANCES

1.01 SECTION INCLUDES
A. Sliding type packaged power-operated door assemblies.
B. Controllers, actuators and safety devices.
1.02 SUBMITTALS
A. Shop Drawings:
1. Indicate layout and dimensions; head, jamb, and sill conditions; elevations; components, anchorage, recesses, materials, and finishes, electrical characteristics and connection requirements.
B. Product Data: Include system components, sizes, features, and finishes.
1.03 QUALITY ASSURANCE
A. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc., as suitable for the purpose specified and indicated.
B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of experience, and a member of AAADM.
C. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years <> experience and approved by manufacturer.
D. Certified by AAADM.

2.01 POWER OPERATED DOORS
A. Power Operated Doors: Provide products that comply with NFPA 101 and requirements of authorities having jurisdiction; provide equipment selected for actual door weight and for light pedestrian traffic, unless otherwise indicated.
1. Sliding Door Operators: In the event of power failure, provide for manual open, close, and break-away operation of door leaves.
2. Packaged Door Assemblies: Provide components by single manufacturer, factory-assembled, including doors, frames, thresholds, operators, actuators, and safeties.
a. Finish exposed equipment components to match door and frame finish.
B. Exterior and Vestibule Doors: Provide equipment suitable for operating temperature range of minus 20 to plus 140 degrees F ambient.

(CONTINUED)

DONALD W. ALEXANDER
ARCHITECT

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STORAGE FACILITY
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PORTLAND, ME 04103

Project No.:	25.0991
Drawn By:	CB
Date	Issue
03-30-26	Bid & Permit

A0.4

ARCHITECTURAL SPECIFICATIONS

SECTION 08 4229 - AUTOMATIC ENTRANCES (CON"T)

2.02 AUTOMATIC ENTRANCE DOOR ASSEMBLIES
A. Comply with applicable accessibility standards for egress requirements.
B. Framing and Transom Members: Provide manufacturer's standard extruded aluminum framing, reinforced as required to support imposed loads.
1. Transoms: Provide flush glazed transom with framing that is integral with automatic entrance framing system.
C. Sliding Automatic Door: Single leaf track-mounted, electric operation, extruded aluminum glazed door, with frame, and operator concealed overhead.
1. Operation: Power open, power close operation.
2. Exterior-Side Actuator/Safety: Motion sensor.
3. Interior-Side Actuator/Safety: Motion sensor.
4. Hold Open: Toggle switch at inside head of doors; this is not a fire-rated door.
5. Door and Frame Finish: Same as adjacent framing system.
D. Sliding Automatic Door: Bi-parting double leaf track-mounted, electric operation, extruded aluminum glazed door, with frame, and operator concealed overhead.
1. Operation: Power open, power close operation.
2. Exterior-Side Actuator/Safety: Motion sensor.
3. Interior-Side Actuator/Safety: Motion sensor.
4. Hold Open: Toggle switch at inside head of doors; this is not a fire-rated door.
5. Door and Frame Finish: Same as adjacent framing system.
2.03 CONTROLLERS, ACTUATORS, AND SAFETIES
A. Controller: Provide microprocessor operated controller for each door.
B. Comply with BHMA A156.10 for actuator and safety types and zones.
C. Proximity Detector Safety: Passive infrared; distance of control sensitivity adjustable.
D. Motion Sensor Actuator: Microwave; Units shall be programmable for bi-directional or uni-directional operation.

3.01 EXAMINATION
A. Verify that surfaces are ready to receive work and dimensions are as indicated on shop drawings.
B. Verify that electric power is available, at the correct location, and is of the correct characteristics.
3.02 INSTALLATION
A. Install equipment in accordance with manufacturer's written instructions, except where more stringent requirements are specified.
B. Coordinate installation of components with related and adjacent work; level and plumb.
3.03 ADJUSTING
A. Adjust entrances for correct function and smooth operation, without binding or scraping and without excessive noise; lubricate operating hardware and other moving parts.
3.04 CLEANING
A. Remove temporary protection; clean exposed surfaces.
3.05 CLOSEOUT ACTIVITIES
A. Demonstrate operation, operating components, adjustment features, and lubrication requirements.

SECTION 08 4313 - ALUMINUM-FRAMED STOREFRONTS

1.01 ADMINISTRATIVE REQUIREMENTS
A. Coordinate with installation of other components that comprise the exterior enclosure.
1.02 SUBMITTALS
A. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, door hardware, and internal drainage details.
B. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related work, expansion and contraction joint location and details, and field welding required.
1.03 QUALITY ASSURANCE
A. Manufacturer Qualifications: Company specializing in performing work of type specified and with at least three years of experience.
B. Installer Qualifications: Company specializing in performing work of type specified and with at least three years of experience.
1.04 DELIVERY, STORAGE, AND HANDLING
A. Handle products of this section in accordance with AAMA CW-10.
B. Protect finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond to aluminum when exposed to sunlight or weather.
1.05 FIELD CONDITIONS
A. Do not install sealants when ambient temperature is less than 40 degrees F. Maintain this minimum temperature during and 48 hours after installation.
1.06 WARRANTY
A. Provide two year manufacturer warranty against defects in material and workmanship
B. Provide five year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking.

2.01 ALUMINUM-FRAMED STOREFRONT
A. Aluminum-Framed Storefront: Factory fabricated, factory finished aluminum framing members with infill, and related flashings, anchorage and attachment devices.
1. Glazing Rabbet: For 1 inch insulating glazing.
2. Glazing Rabbet: For 1/4 inch monolithic glazing.
3. Glazing Position: Centered (front to back).
4. Vertical Mullion Dimensions: 2 inches wide by 4-1/2 inches deep, unless otherwise noted on drawings.
6. Finish: Class I color dark bronze.
a. Factory finish all surfaces that will be exposed in completed assemblies.
b. Coat concealed metal surfaces that will be in contact with cementitious materials or dissimilar metals with bituminous paint.
7. Fabrication: Joints and corners flush, hairline, and weatherproof, accurately fitted and secured; prepared to receive anchors and hardware; fasteners and attachments concealed from view; reinforced as required for imposed loads.
8. Construction: Eliminate noises caused by wind and thermal movement, prevent vibration harmonics, and prevent "stack effect" in internal spaces.
9. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.
10. Expansion/Contraction: Provide for expansion and contraction within system components caused by cycling temperature range of 170 degrees F over a 12 hour period without causing detrimental effect to system components, anchorages, and other building elements.
11. Movement: Allow for movement between storefront and adjacent construction, without damage to components or deterioration of seals.
12. Perimeter Clearance: Minimize space between framing members and adjacent construction while allowing expected movement.
B. Performance Requirements:
1. Wind Loads: Design and size components to withstand the specified load requirements without damage or permanent set, when tested in accordance with ASTM E330/E330M, using loads 1.5 times the design wind loads and 10 second duration of maximum load.
a. Design Wind Loads: Comply with requirements of ASCE 7.
b. Member Deflection: Limit member deflection to flexure limit of glass in any direction, with full recovery of glazing materials.
2. Water Penetration Resistance on Manufactured Assembly: No uncontrolled water on interior face, when tested in accordance with ASTM E331 at pressure differential of 8 psf.
3. Air Leakage Laboratory Test: Maximum of 0.06 cu ft/min sq ft of wall area, when tested in accordance with ASTM E283 at 6.27 psf pressure differential across assembly.
2.02 COMPONENTS
A. Aluminum Framing Members: Tubular aluminum sections, thermally broken with interior section insulated from exterior, drainage holes and internal weep drainage system.
1. Framing members for interior applications need not be thermally broken.
2. Provide a compensating head receptor to allow vertical deflection at the head without deforming other framing components.
3. Glazing Stops: Flush.
4. Structurally Reinforced Members: Extruded aluminum with internal reinforcement of structural steel member.
B. Glazing: As specified in Section 08 8000.
C. Swing Doors: Glazed aluminum.
1. Thickness: 1-3/4 inches.
2. Top Rail: 4 inches wide.
3. Vertical Stiles: 4-1/2 inches wide.
4. Bottom Rail: 10 inches wide.
5. Glazing Stops: Square.
6. Finish: Same as storefront.
2.03 MATERIALS
A. Extruded Aluminum: ASTM B221 (ASTM B221M).
B. Sheet Aluminum: ASTM B209 (ASTM B209M).
C. Fasteners: Stainless steel.
D. Exposed Flashings: Aluminum sheet, 20 gauge, 0.032 inch minimum thickness; finish to match framing members.
E. Glazing Gaskets: Type to suit application to achieve weather, moisture, and air infiltration requirements.
2.04 FINISHES
A. Class I Color Anodized Finish: AAMA 611 AA-M10C21A31 Dark Bronze integrally colored anodic coating not less than 0.7 mils thick.
B. Color: As indicated on drawings.
C. Touch-Up Materials: As recommended by coating manufacturer for field application.
2.05 HARDWARE
A. Door Hardware: As indicated on drawings.

3.01 EXAMINATION
A. Verify dimensions, tolerances, and method of attachment with other work.
B. Verify that wall openings and adjoining air and vapor seal materials are ready to receive work of this section.
3.02 INSTALLATION
A. Install wall system in accordance with manufacturer's instructions.
B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.
C. Provide alignment attachments and shims to permanently fasten system to building structure.
D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.
E. Provide thermal isolation where components penetrate or disrupt building insulation.
F. Install sill flashings. Turn up ends and edges; seal to adjacent work to form water tight dam.
G. Where fasteners penetrate sill flashings, make watertight by seating and sealing fastener heads to sill flashing.
H. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
I. Set thresholds in bed of sealant and secure.
J. Install hardware using templates provided.
K. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.
3.03 TOLERANCES
A. Maximum Variation from Plumb: 0.06 inch per 3 feet non-cumulative or 0.06 inch per 10 feet, whichever is less.
B. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32 inch.
3.04 ADJUSTING
A. Adjust operating hardware and sash for smooth operation.

SECTION 08 7100 - DOOR HARDWARE

1.01 ADMINISTRATIVE REQUIREMENTS
A. Coordinate the manufacture, fabrication, and installation of products that door hardware is installed on.
B. Sequence installation to ensure utility connections are achieved in an orderly and expeditious manner.
C. Furnish templates for door and frame preparation to manufacturers and fabricators of products requiring internal reinforcement for door hardware.
1.02 SUBMITTALS
A. Product Data: Manufacturer's catalog literature for each type of hardware, marked to clearly show products to be furnished for this project, and includes construction details, material descriptions, finishes, and dimensions and profiles of individual components.
B. Shop Drawings - Door Hardware Schedule: Submit detailed listing that includes each item of hardware to be installed on each door. Use door numbering scheme as included in Contract Documents.
1. Comply with DHI (H&S) using door numbers and hardware set numbers as indicated in construction documents.
2. List groups and suffixes in proper sequence.
3. Provide complete description for each door listed.
4. Provide manufacturer's and product names, and catalog numbers; include functions, types, styles, sizes and finishes of each item.
5. Include account of abbreviations and symbols used in schedule.
1.03 QUALITY ASSURANCE
A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years of experience.
B. Installer Qualifications: Company specializing in performing work of the type specified for commercial door hardware with at least three years of experience and approved by manufacturer.
1.04 DELIVERY, STORAGE, AND HANDLING
A. Package hardware items individually; label and identify each package with door opening code to match door hardware schedule.
1.05 WARRANTY
A. Warranty against defects in material and workmanship for period indicated, from Date of Substantial Completion.
1. Closers: Ten years, minimum.
2. Exit Devices: Three years, minimum.
3. Locksets and Cylinders: Three years, minimum.
4. Other Hardware: Two years, minimum.

2.01 DESIGN AND PERFORMANCE CRITERIA
A. Provide specified door hardware as required to make doors fully functional, compliant with applicable codes, and secure to extent indicated.
B. Provide individual items of single type, of same model, and by same manufacturer.
C. Provide door hardware products that comply with the following requirements:
1. Applicable provisions of federal, state, and local codes.
2. Accessibility: ADA Standards and ICC A117.1.
3. Applicable provisions of NFPA 101.
4. Fire-Rated Doors: NFPA 80, listed and labeled by qualified testing agency for fire protection ratings indicated, based on testing at positive pressure in accordance with NFPA 252 or UL 10C.
5. Hardware on Fire-Rated Doors: Listed and classified by UL (DIR), ITS (DIR), or testing firm acceptable to authorities having jurisdiction as suitable for application indicated.
6. Hardware for Smoke and Draft Control Doors: Provide door hardware that complies with local codes, and requirements of assemblies tested in accordance with UL 1784.
7. Products Requiring Electrical Connection: Listed and classified by UL (DIR) as suitable for the purpose specified.
D. Electrically Operated and/or Controlled Hardware: Provide necessary power supplies, power transfer hinges, relays, and interfaces as required for proper operation; provide wiring between hardware and control components and to building power connection in compliance with NFPA 70.
E. Lock Function: Provide lock and latch function numbers and descriptions of manufacturer's series. Refer to Door Hardware Schedule.
F. Fasteners:
1. Provide fasteners of proper type, size, quantity, and finish that comply with commercially recognized standards for proposed applications.
a. Aluminum fasteners are not permitted.
b. Provide phillips flat-head screws with heads finished to match door surface hardware unless otherwise indicated.
2. Fire-Rated Applications: Comply with NFPA 80.
a. Provide wood or machine screws for hinges mortised to doors or frames, strike plates to frames, and closers to doors and frames.
b. Provide steel through bolts for attachment of surface mounted closers, hinges, or exit devices to door panels unless proper door blocking is provided.
2.02 HINGES
A. Hinges: Complying with BHMA A156.1.
1. Butt Hinges: Comply with BHMA A156.1 and BHMA A156.7 for templated hinges.
a. Provide hinge width required to clear surrounding trim.
2. Provide hinges on every swinging door.
3. Provide five-knuckle full mortise butt hinges unless otherwise indicated.
4. Provide ball-bearing hinges at each door unless otherwise indicated.
5. Provide non-removable pins on exterior outswinging doors.
6. Provide following quantity of butt hinges for each door:
a. Doors From 60 inches High up to 90 inches High: Three hinges.
b. Doors 90 inches High up to 120 inches High: Four hinges.
2.03 EXIT DEVICES
A. Exit Devices: Comply with BHMA A156.3, Grade 1.
1. Lever design to match lockset trim.
2. Provide cylinder with cylinder dogging or locking trim.
3. Provide exit devices properly sized for door width and height.
4. Provide strike as recommended by manufacturer for application indicated.
5. Provide less bottom rod (LBR) at scheduled locations to eliminate use of floor mounted strikes.
6. Provide UL (DIR) listed exit device assemblies for fire-rated doors and panic device assemblies for non-fire-rated doors.
7. For electrical options, provide quick connect plug-in pre-wired connectors.
2.04 DELAYED-EGRESS ELECTROMAGNETIC LOCKS
A. Delayed-Egress Electromagnetic Locks: Comply with BHMA A156.24, Grade 1.
1. Delayed-Egress Timer: Upon depressing push bar provide 15 seconds delay before door egress permitted, in compliance with NFPA 101.
2. Holding Force: 600 lbs, minimum.
3. Voltage: 12 VDC, and provide power supplies by same manufacturer as locks.
4. Provide electromagnetic locks for fire-rated doors in compliance with UL 10C.
5. Mounting: Surface mounted to door and frame on secure side, with fasteners, brackets, and spacer bars as required for application.
2.05 LOCK CYLINDERS
A. Lock Cylinders: Provide key access on outside of each lock, unless otherwise indicated.
1. Provide cylinders from same manufacturer as locking device.
2. Provide cams and/or tailpieces as required for locking devices.
2.06 CYLINDRICAL LOCKS
A. Cylindrical Locks (Bored): Comply with BHMA A156.2, Grade 1, 4000 Series.
1. Bored Hole: 2-1/8 inch diameter.
2. Latchbolt Throw: 1/2 inch, minimum.
3. Backset: 2-3/4 inch unless otherwise indicated.
4. Strikes: Provide manufacturer's standard strike for each latchset or lockset with strike box and curved lip extending to protect frame in compliance with indicated requirements.
a. Finish: To match lock or latch.
5. Provide a lock for each door, unless otherwise indicated that lock is not required.
6. Trim: Provide lever handle or pull trim on outside of each lock, unless otherwise indicated.
2.07 DOOR PULLS AND PUSH PLATES
A. Door Pulls and Push Plates: Comply with BHMA A156.6.
1. Pull Type: Straight, unless otherwise indicated.
2. Push Plate Type: Flat, with rounded corners, unless otherwise indicated.
a. Edges: Beveled, unless otherwise indicated.
3. Material: Stainless steel, unless otherwise indicated.
4. On solid doors, provide matching door pull and push plate on opposite faces.
2.08 CLOSERS
A. Closers: Comply with BHMA A156.4, Grade 1.
1. Type: Surface mounted to door unless otherwise indicated.
2. Provide door closer on each exterior door.
3. Provide door closer on each fire-rated and smoke-rated door.
a. Spring hinges are not an acceptable self-closing device, unless otherwise indicated.
4. Where an overlapping astragal is included on pairs of swinging doors, provide coordinator to ensure door leaves close in proper order.
5. At corridor entry doors, mount closer on room side of door.
6. At outswinging exterior doors, mount closer on interior side of door.
2.09 PROTECTION PLATES
A. Protection Plates: Comply with BHMA A156.6.
B. Metal Properties: Stainless steel.
1. Metal, Heavy Duty: Thickness 0.062 inch, minimum.
C. Edges: Beveled, on four sides unless otherwise indicated.
D. Fasteners: Countersunk screw fasteners.
E. Drip Guard: Provide at head of exterior doors unless covered by roof or canopy.
2.10 FLOOR STOPS
A. Floor Stops: Comply with BHMA A156.16, Grade 1 and Resilient Material Retention Test as described in this standard.
1. Provide floor stops when wall surface is not available; be cautious not to create a tripping hazard.
2. Material: Aluminum housing with rubber insert.
2.11 WALL STOPS
A. Wall Stops: Comply with BHMA A156.16, Grade 1 and Resilient Material Retention Test as described in this standard.
1. Provide wall stops to prevent damage to wall surface upon opening door.
2. Type: Bumper, concave, wall stop.
3. Material: Aluminum housing with rubber insert.
2.12 THRESHOLDS
A. Thresholds: Comply with BHMA A156.21.
1. Provide threshold at each exterior door, unless otherwise indicated.
2. Type: Flat surface.
3. Material: Aluminum.
4. Threshold Surface: Thermally broken.
5. Field cut threshold to profile of frame and width of door sill for tight fit.
6. Provide non-corroding fasteners at exterior locations.
2.13 WEATHERSTRIPPING AND GASKETING
A. Weatherstripping and Gasketing: Comply with BHMA A156.22.
1. Provide gasketing for smoke and draft control doors that complies with local codes, requirements of assemblies tested in accordance with UL 1784.
2. Provide weatherstripping on each exterior door at head, jambs, and meeting stiles of door pairs, unless otherwise indicated; .
3. Provide door bottom sweep on each exterior door, unless otherwise indicated.
2.14 VIEWER
A. Viewer: Provide at inside of door at eye level to see who is on outside of door.
1. Material: Brass.
2.15 FIRE DEPARTMENT LOCK BOX
A. Fire Department Lock Box:
1. Heavy-duty, surface mounted, solid stainless-steel box with hinged door and interior gasket seal; single drill resistant lock with dust covers and tamper alarm.
2. Capacity: Holds 2 keys.
3. Finish: Manufacturer's standard black.
2.16 FINISHES
A. Finishes: Identified in Door Hardware Schedule.

3.01 EXAMINATION
A. Verify that doors and frames are ready to receive this work; labeled, fire-rated doors and frames are properly installed, and dimensions are as indicated on shop drawings.
B. Verify that electric power is available to power operated devices and of correct characteristics.
3.02 INSTALLATION
A. Install hardware in accordance with manufacturer's instructions and applicable codes.
B. Install hardware on fire-rated doors and frames in accordance with applicable codes and NFPA 80.
C. Install hardware for smoke and draft control doors in accordance with NFPA 105.
D. Use templates provided by hardware item manufacturer.
E. Do not install surface mounted items until application of finishes to substrate are fully completed.
F. Door Hardware Mounting Heights: Distance from finished floor to center line of hardware item. Mounting heights in compliance with applicable accessibility standards.
G. Set exterior door thresholds with full-width bead of elastomeric sealant at each point of contact with floor providing a continuous weather seal; anchor thresholds with stainless steel countersunk screws.
3.03 ADJUSTING
A. Adjust hardware for smooth operation.
B. Adjust gasketing for complete, continuous seal; replace if unable to make complete seal.
3.04 CLEANING
A. Clean finished hardware in accordance with manufacturer's written instructions after final adjustments have been made.
B. Clean adjacent surfaces soiled by hardware installation.
C. Replace items that cannot be cleaned to manufacturer's level of finish quality at no additional cost.

SECTION 08 8000 - GLAZING

1.01 SUBMITTALS
A. Product Data on Insulating Glass Unit and Glazing Unit Glazing Types: Provide structural, physical and environmental characteristics, size limitations, special handling and installation requirements.
B. Certificate: Certify that products of this section meet or exceed specified requirements.
C. Warranty Documentation: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
1.02 QUALITY ASSURANCE
A. Perform Work in accordance with GANA (GM), GANA (SM), GANA (LGRM), and IGMA TM-3000 for fabrication and installation.
B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum five years of experience.
C. Installer Qualifications: Company specializing in performing work of the type specified and with at least five years experience.
1.03 WARRANTY
A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
B. Insulating Glass Units: Provide a ten (10) year manufacturer warranty to include coverage for seal failure, interpane dusting or misting, including replacement of failed units.
C. Laminated Glass: Provide a five (5) year manufacturer warranty to include coverage for delamination, including providing products to replace failed units.

2.01 PERFORMANCE REQUIREMENTS - EXTERIOR GLAZING ASSEMBLIES
A. Provide type and thickness of exterior glazing assemblies to support assembly dead loads, and to withstand live loads caused by positive and negative wind pressure acting normal to plane of glass.
1. Design Pressure: Calculated in accordance with ASCE 7.
2. Comply with ASTM E1300 for design load resistance of glass type, thickness, dimensions, and maximum lateral deflection of supported glass.
3. Provide glass edge support system sufficiently stiff to limit the lateral deflection of supported glass edges to less than 1/175 of their lengths under specified design load.
4. Glass thicknesses listed are minimum.
B. Vapor Retarder and Air Barrier Seals: Provide completed assemblies that maintain continuity of building enclosure vapor retarder and air barrier.
1. In conjunction with vapor retarder and joint sealer materials described in other sections.
C. Thermal and Optical Performance: Provide exterior glazing products with performance properties as indicated. Performance properties are in accordance with manufacturer's published data as determined with the following procedures and/or test methods:
1. Center of Glass U-Value: Comply with NFRC 100 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 6.3 computer program.
2. Center of Glass Solar Heat Gain Coefficient (SHGC): Comply with NFRC 200 using Lawrence Berkeley National Laboratory (LBNL) WINDOW 6.3 computer program.
3. Solar Optical Properties: Comply with NFRC 300 test method.
2.02 GLASS MATERIALS
A. Float Glass: Provide float glass based glazing unless otherwise indicated.
1. Annealed Type: ASTM C1036, Type I - Transparent Flat, Class 1 - Clear, Quality - Q3.
2. Fully Tempered Safety Glass: Complies with ANSI Z97.1 or 16 CFR 1201 criteria for safety glazing used in hazardous locations.
3. Impact Resistant Safety Glass: Complies with ANSI Z97.1 and 16 CFR 1201 criteria; Class A/Category II.
B. Laminated Glass: Float glass laminated in accordance with ASTM C1172.
1. Laminated Safety Glass: Complies with ANSI Z97.1 - Class B or 16 CFR 1201 - Category I impact test requirements.
2.03 INSULATING GLASS UNITS
A. Insulating Glass Units: Types as indicated.
1. Durability: Certified by an independent testing agency to comply with ASTM E2190.
2. Coated Glass: Comply with requirements of ASTM C1376 for pyrolytic (hard-coat) or magnetic sputter vapor deposition (soft-coat) type coatings on flat glass; coated vision glass, Kind CV; coated overhead glass, Kind CO; or coated spandrel glass, Kind CS.
3. Spacer Color: Black.
4. Edge Seal:
a. Dual-Sealed System: Provide polyisobutylene sealant as primary seal applied between spacer and glass panes, and silicone, polysulfide, or polyurethane sealant as secondary seal applied around perimeter.
b. Color: Black.
5. Purge interpane space with dry air, hermetically sealed.
B. Insulating Glass Units: Vision glass, double glazed.
1. Applications: Exterior glazing unless otherwise indicated.
2. Space between lites filled with argon.
3. Outboard Lite: Annealed float glass, 1/4 inch thick, minimum.
a. Tint: Clear.
b. Coating: Low-E, on #2 surface.
4. Inboard Lite: Annealed float glass, 1/4 inch thick, minimum.
a. Tint: Clear.
5. Total Thickness: 1 inch.
6. Thermal Transmittance (U-Value), Summer - Center of Glass: 0.24, maximum.
7. Solar Heat Gain Coefficient (SHGC): 0.38 percent, maximum.
C. Insulating Glass Units: Spandrel glazing.
1. Applications: Exterior spandrel glazing unless otherwise indicated.
2. Space between lites filled with air.
3. Outboard Lite: Annealed float glass, 1/4 inch thick, minimum.
a. Tint: Clear.
b. Coating: Same as on vision units, on #2 surface.
4. Inboard Lite: Heat-strengthened float glass, 1/4 inch thick.
a. Tint: Clear.
b. Opacifier: Ceramic frit, on #4 surface.
c. Opacifier Color: As indicated drawings.
5. Total Thickness: 1 inch.
D. Insulating Glass Units: Safety glazing.
1. Applications:
a. Glazed lites in exterior doors.
b. Glazed sidelights and panels next to doors.
c. Other locations required by applicable federal, state, and local codes and regulations.
d. Other locations indicated on drawings.
2. Space between lites filled with argon.
3. Glass Type: Same as other vision glazing except use fully tempered or laminated float glass for both outboard and inboard lites.
4. Total Thickness: 1 inch.
5. Thermal Transmittance (U-Value), Summer - Center of Glass: 0.24, maximum.
6. Solar Heat Gain Coefficient (SHGC): 0.38, maximum.
2.04 GLAZING UNITS
A. Monolithic Interior Vision Glazing:
1. Applications: Interior glazing unless otherwise indicated.
2. Glass Type: Annealed float glass.
3. Tint: Clear.
4. Thickness: 1/4 inch, nominal.
B. Monolithic Interior Safety Glazing:
1. Applications:
a. Glazed lites in doors.
b. Glazed sidelights to doors.
c. Other locations required by applicable federal, state, and local codes and regulations.
d. Other locations indicated on drawings.
2. Glass Type: fully tempered or laminated safety glass as specified.
3. Tint: Clear.
4. Thickness: 1/4 inch, nominal. Unless noted otherwise.

3.01 VERIFICATION OF CONDITIONS
A. Verify that openings for glazing are correctly sized and within tolerances, including those for size, squareness, and offsets at corners.
B. Verify that surfaces of glazing channels or recesses are clean, free of obstructions that may impede moisture movement, weeps are clear, and support framing is ready to receive glazing system.
C. Proceed with glazing system installation only after unsatisfactory conditions have been corrected.
3.02 PREPARATION
A. Clean contact surfaces with appropriate solvent and wipe dry immediately before glazing. Remove coatings that are not tightly bonded to substrates.
B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.
C. Prime surfaces scheduled to receive sealant where required for proper sealant adhesion.
3.03 INSTALLATION, GENERAL
A. Install glazing in compliance with written instructions of glass, gaskets, and other glazing material manufacturers, unless more stringent requirements are indicated, including those in glazing referenced standards.
B. Install glazing sealants in accordance with ASTM C1193, GANA (SM), and manufacturer's instructions.
C. Do not exceed edge pressures around perimeter of glass lites as stipulated by glass manufacturer.
D. Set glass lites of system with uniform pattern, draw, bow, and similar characteristics.
E. Set glass lites in proper orientation so that coatings face exterior or interior as indicated.
F. Prevent glass from contact with any contaminating substances that may be the result of construction operations such as, and not limited to the following; weld splatter, fire-safing, plastering, mortar droppings, etc.
3.04 FIELD QUALITY CONTROL
A. Glass and Glazing product manufacturers to provide field surveillance of the installation of their products.
B. Monitor and report installation procedures and unacceptable conditions.
3.05 CLEANING
A. Remove excess glazing materials from finish surfaces immediately after application using solvents or cleaners recommended by manufacturers.
B. Remove non-permanent labels immediately after glazing installation is complete.
C. Clean glass and adjacent surfaces after sealants are fully cured.
D. Clean glass on both exposed surfaces just prior to Date of Substantial Completion in accordance with glass manufacturer's written recommendations.
3.06 PROTECTION
A. After installation, mark pane with an 'X' by using removable plastic tape or paste; do not mark heat absorbing or reflective glass units.
B. Remove and replace glass that is damaged during construction period prior to Date of Substantial Completion.

SECTION 09 0561
COMMON WORK RESULTS FOR FLOORING PREPARATION

1.01 SECTION INCLUDES
A. This section applies to floors identified in Contract Documents that are receiving floor coverings
B. Removal of existing floor coverings.
C. Preparation of new and existing concrete floor slabs for installation of floor coverings.
D. Testing of concrete floor slabs for moisture and alkalinity (pH).
E. Remediation of concrete floor slabs due to unsatisfactory moisture or alkalinity (pH) conditions.
1. Contractor shall perform all specified remediation of concrete floor slabs. If such remediation is indicated by testing agency's report and is due to a condition not under Contractor's control or could not have been predicted by examination prior to entering into the contract, a contract modification will be issued.
F. Patching compound.
G. Remedial floor coatings.
1.02 ADMINISTRATIVE REQUIREMENTS
A. Coordinate scheduling of cleaning and testing, so that preliminary cleaning has been completed for at least 24 hours prior to testing.
1.03 SUBMITTALS
A. Visual Observation Report: For existing floor coverings to be removed.
B. Floor Covering and Adhesive Manufacturers' Product Literature: For each specific combination of substrate, floor covering, and adhesive to be used; showing:
1. Moisture and alkalinity (pH) limits and test methods.
2. Manufacturer's required bond/compatibility test procedure.
C. Remedial Materials Product Data: Manufacturer's published data on each product to be used for remediation.
D. Testing Agency's Report:
1. Description of areas tested; include floor plans and photographs if helpful.
2. Summary of conditions encountered.
3. Moisture and alkalinity (pH) test reports.
4. Copies of specified test methods.
5. Recommendations for remediation of unsatisfactory surfaces.
6. Product data for recommended remedial coating.
7. Submit report to Architect.
8. Submit report not more than two business days after conclusion of testing.
E. Adhesive Bond and Compatibility Test Report.
F. Floor Moisture Testing Technician Certificate: International Concrete Repair Institute (ICRI) Concrete Slab Moisture Testing Technician- Grade I certificate.
1.04 QUALITY ASSURANCE
A. Moisture and alkalinity (pH) testing shall be performed by an independent testing agency employed and paid by Contractor.
B. Contractor may perform adhesive and bond test with Contractor's own personnel or hire a testing agency.
C. Testing Agency Qualifications: Independent testing agency experienced in the types of testing specified.
1. Submit evidence of experience consisting of at least 3 test reports of the type required, with project Owner's project contact information.
D. Contractor's Responsibility Relating to Independent Agency Testing:
1. Provide access for and cooperate with testing agency.
2. Confirm date of start of testing at least 10 days prior to actual start.
3. Allow at least 4 business days on site for testing agency activities.
4. Achieve and maintain specified ambient conditions.
E. Floor Moisture Testing Technician Qualifications: International Concrete Repair Institute (ICRI) Concrete Slab Moisture Testing Technician Certification- Grade I.
F. Remedial Coating Installer Qualifications: Company specializing in performing work of the type specified in this section, trained by or employed by coating manufacturer, and able to provide at least 3 project references showing at least 3 years' experience installing moisture emission coatings.
1.05 DELIVERY, STORAGE, AND HANDLING
A. Deliver, store, handle, and protect products in accordance with manufacturer's instructions and recommendations.
B. Deliver materials in manufacturer's packaging; include installation instructions.
C. Keep materials from freezing.
1.06 FIELD CONDITIONS
A. Maintain ambient temperature in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 65 degrees F or more than 85 degrees F.
B. Maintain relative humidity in spaces where concrete testing is being performed, and for at least 48 hours prior to testing, at not less than 40 percent and not more than 60 percent.

2.01 MATERIALS
A. Patching Compound: Floor covering manufacturer's recommended product, suitable for conditions, and compatible with adhesive and floor covering. In the absence of any recommendation from flooring manufacturer, provide a product with the following characteristics:
1. Cementitious moisture-, mildew-, and alkali-resistant compound, compatible with floor, floor covering, and floor covering adhesive, and capable of being feathered to nothing at edges.
2. Compressive Strength: 3000 psi, minimum, after 28 days, when tested in accordance with ASTM C109/C109M or ASTM C472, whichever is appropriate.
B. Alternate Flooring Adhesive: Floor covering manufacturer's recommended product, suitable for the moisture and pH conditions present; low-VOC. In the absence of any recommendation from flooring manufacturer, provide a product recommended by adhesive manufacturer as suitable for substrate and floor covering and for conditions present.
C. Remedial Floor Coating, Two-Component: Single-layer coating resistant to water vapor transmission meeting flooring manufacturer's emission limits, resistant to alkalinity (pH) level found, and suitable for flooring adhesion without further treatment.
1. Material: Comply with ASTM F3010.
2. Thickness: As required for application and in accordance with manufacturer's installation instructions.
D. Remedial Floor Coating, Single Component: Single-layer coating resistant to water vapor transmission meeting flooring manufacturer's emission limits, resistant to alkalinity (pH) level found, and suitable for flooring adhesion without further treatment.
1. Material: Comply with ASTM F3513.
2. Thickness: As required for application and in accordance with manufacturer's installation instructions.

3.01 CONCRETE SLAB PREPARATION
A. Perform following operations in the order indicated:
1. Existing concrete slabs (on-grade and elevated) with existing floor coverings:
a. Visual observation of existing floor covering, for adhesion, water damage, alkaline deposits, and other defects.
b. Removal of existing floor covering.
2. Existing concrete slabs with coatings or penetrating sealers/hardeners/dustproofers:
a. Do not attempt to remove coating or penetrating material.
b. Do not abrade surface.
c. Remove existing coatings and curing agents from surface according to recommendations of remedial coating manufacturer.
d. Prepare surface according to recommendations of remedial coating manufacturer and according to ASTM D4259.
3. Preliminary cleaning.
4. Moisture vapor emission tests; 3 tests in the first 1000 square feet and one test in each additional 1000 square feet, unless otherwise indicated or required by flooring manufacturer.
5. Internal relative humidity tests; in same locations as moisture vapor emission tests, unless otherwise indicated.
6. Alkalinity (pH) tests; in same locations as moisture vapor emission tests, unless otherwise indicated.
7. Specified remediation, if required.
8. Patching, smoothing, and leveling, as required.
9. Other preparation specified.
10. Adhesive bond and compatibility test.
11. Protection.
B. Remediations:
1. Active Water Leaks or Continuing Moisture Migration to Surface of Slab: Correct this condition before doing any other remediation; re-test after correction.
2. Excessive Moisture Emission or Relative Humidity: If an adhesive that is resistant to the level of moisture present is available and acceptable to flooring manufacturer, use that adhesive for installation of the flooring; if not, apply remedial floor coating or remedial sheet membrane over entire suspect floor area.
3. Excessive Alkalinity (pH): If remedial floor coating is necessary to address excessive moisture, no additional remediation is required; if not, if an adhesive that is resistant to the level present is available and acceptable to the flooring manufacturer, use that adhesive for installation of the flooring; otherwise, apply a skim coat of specified patching compound over entire suspect floor area.
3.02 REMOVAL OF EXISTING FLOOR COVERINGS
A. Comply with local, State, and federal regulations and recommendations of RFCI (RWP), as applicable to floor covering being removed.
B. Dispose of removed materials in accordance with local, State, and federal regulations and as specified.
3.03 PRELIMINARY CLEANING
A. Clean floors of dust, solvents, paint, wax, oil, grease, asphalt, residual adhesive, adhesive removers, film-forming curing compounds, sealing compounds, alkaline salts, excessive laitance, mold, mildew, and other materials that might prevent adhesive bond.
B. Do not use solvents or other chemicals for cleaning.
3.04 MOISTURE VAPOR EMISSION TESTING
A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.
B. Where this specification conflicts with the referenced test method, comply with the requirements of this section.
C. Test in accordance with ASTM F1869 and as follows.
D. Plastic sheet test and mat bond test may not be substituted for the specified ASTM test method, as those methods do not quantify the moisture content sufficiently.
E. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if test values exceed 3 pounds per 1000 square feet per 24 hours.
F. Report: Report the information required by the test method.
3.05 INTERNAL RELATIVE HUMIDITY TESTING
A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.
B. Where this specification conflicts with the referenced test method, comply with the requirements of this section.
C. Test in accordance with ASTM F2170 Procedure A and as follows.
D. Testing with electrical impedance or resistance apparatus may not be substituted for the specified ASTM test method, as the values determined are not comparable to the ASTM test values and do not quantify the moisture content sufficiently.
E. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if any test value exceeds 75 percent relative humidity.
F. Report: Report the information required by the test method.
3.06 ALKALINITY TESTING
A. Where the floor covering manufacturer's requirements conflict with either the referenced test method or this specification, comply with the manufacturer's requirements.
B. The following procedure is the equivalent of that described in ASTM F710, repeated here for the Contractor's convenience.
1. Use a wide range alkalinity (pH) test paper, its associated chart, and distilled or deionized water.
2. Place several drops of water on a clean surface of concrete, forming a puddle approximately 1 inch in diameter. Allow the puddle to set for approximately 60 seconds, then dip the alkalinity (pH) test paper into the water, remove it, and compare immediately to chart to determine alkalinity (pH) reading.
3. Use of a digital pH meter with probe is acceptable; follow meter manufacturer's instructions.
C. In the event that test values exceed floor covering manufacturer's limits, perform remediation as indicated. In the absence of manufacturer limits, perform remediation if alkalinity (pH) test value is over 10.
3.07 PREPARATION
A. See individual floor covering section(s) for additional requirements.
B. Comply with requirements and recommendations of floor covering manufacturer.
C. Fill and smooth surface cracks, grooves, depressions, control joints and other non-moving joints, and other irregularities with patching compound.
D. Do not fill expansion joints, isolation joints, or other moving joints.
3.08 ADHESIVE BOND AND COMPATIBILITY TESTING
A. Comply with requirements and recommendations of floor covering manufacturer.
3.09 APPLICATION OF REMEDIAL FLOOR COATING
A. Comply with requirements and recommendations of coating manufacturer.

SECTION 09 2116 - GYPSUM BOARD ASSEMBLIES

1.01 SECTION INCLUDES
A. Performance criteria for gypsum board assemblies.
B. Metal stud wall framing.
C. Metal channel ceiling framing.
D. Resilient sound isolation clips.
E. Acoustic insulation.
F. Gypsum sheathing.
G. Backing board.
H. Gypsum wallboard.
I. Joint treatment and accessories.
1.02 SUBMITTALS
A. Product Data:
1. Provide data on metal framing, gypsum board, accessories, and joint finishing system.
2. Provide manufacturer's data on partition head to structure connectors, showing compliance with requirements.
B. Shop Drawings: Indicate special details associated with fireproofing and acoustic seals.
1.03 QUALITY ASSURANCE
A. Installer Qualifications: Company specializing in performing work of the type specified and with at least three years of experience.

2.01 GYPSUM BOARD ASSEMBLIES
A. Provide completed assemblies complying with ASTM C840 and GA-216.
B. Shaft Walls at HVAC Shafts: Provide completed assemblies with the following characteristics:
1. Air Pressure Within Shaft: Sustained loads of 5 lbf/sq ft with maximum mid-span deflection of L/240.
2. Acoustic Attenuation: STC of 35-39 calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90.
C. Shaft Walls at Elevator Shafts: Provide completed assemblies with the following characteristics:
1. Air Pressure Within Shaft: Intermittent loads of 5 lbf/sq ft with maximum mid-span deflection of L/240.
2. Acoustic Attenuation: STC of 35-39 calculated in accordance with ASTM E413, based on tests conducted in accordance with ASTM E90.
D. Fire-Resistance-Rated Assemblies: Provide completed assemblies with the following characteristics:
1. UL Assembly Numbers: Provide construction equivalent to that listed for the particular assembly in the current UL (FRD).
2.02 METAL FRAMING MATERIALS
A. Steel Sheet: ASTM A1003/A1003M, subject to the ductility limitations indicated in AISI S220 or equivalent.
B. Non-Loadbearing Framing System Components: ASTM C645; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 for the spacing indicated, with maximum deflection of wall framing of L/240 at 5 psf.
1. Studs: C-shaped.
2. Runners: U shaped, sized to match studs.
3. Ceiling Channels: C-shaped.
4. Resilient Furring Channels: 1/2 inch depth, for attachment to substrate through one leg only.
5. Security Barriers: Type II, expanded and flattened, Class 1 carbon steel mesh complying with ASTM F1267 in gauge indicated; applied between studs and gypsum board where indicated.
C. Shaft Wall Studs and Accessories: AISI S220; galvanized sheet steel, of size and properties necessary to comply with ASTM C754 and specified performance requirements.
D. Partition Head to Structure Connections: Provide mechanical anchorage devices that accommodate deflection and prevent rotation of studs while maintaining structural performance of partition.
1. Structural Performance: Maintain lateral load resistance and vertical movement capacity required by applicable code, when evaluated in accordance with AISI S100.
2. Material: ASTM A653/A653M steel sheet, SS Grade 50/340, with G60/Z180 hot-dipped galvanized coating.
E. Preformed Top Track Firestop Seal:
1. Provide components UL-listed for use in UL-listed fire-resistance-rated head of partition joint systems indicated on drawings.
F. Non-structural Framing Accessories:
1. Ceiling Hangers: Type and size as specified in ASTM C754 for spacing required.
2. Partial Height Wall Framing Support: Provides stud reinforcement and anchored connection to floor.
a. Materials: ASTM A36/A36M formed sheet steel support member with factory-welded ASTM A1003/A1003M steel plate base.
3. Framing Connectors: ASTM A653/A653M G90 galvanized steel clips; secures cold rolled channel to wall studs for lateral bracing.
4. Flexible Wood Backing: Fire-retardant-treated wood with sheet steel connectors.
5. Sheet Metal Backing: 18 gauge, 0.042 inch thick, galvanized, 6" wide.
G. Grid Suspension Systems: Steel grid system of main tees and support bars connected to structure using hanging wire.
2.03 BOARD MATERIALS
A. Gypsum Wallboard: Paper-faced gypsum panels as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
1. Application: Use for vertical surfaces, unless otherwise indicated.
2. Mold Resistance: Score of 10, when tested in accordance with ASTM D3273.
a. Mold-resistant board is required whenever board is being installed before the building is enclosed and conditioned.
b. Mold resistant board is required in toilet room and janitor closet walls and where indicated in drawings.
3. At Assemblies Indicated with Fire-Resistance Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X board, UL or WH listed.
4. Thickness:
a. Vertical Surfaces: 5/8 inch unless otherwise indicated or required by tested assembly.
B. Backing Board For Wet Areas:
1. Application: Surfaces behind tile in wet areas including tub and shower surrounds and shower ceilings.
2. Glass Mat Faced Board: Coated glass mat water-resistant gypsum backing panel as defined in ASTM C1178/C1178M.
a. Fire-Resistance-Rated Type: Type X core, thickness 5/8 inch.
C. Backing Board For Non-Wet Areas: Water-resistant gypsum backing board as defined in ASTM C1396/C1396M; sizes to minimum joints in place; ends square cut.
1. Application: Vertical surfaces behind thinset tile, except in wet areas.
2. Type X Thickness: 5/8 inch.
3. Edges: Tapered.
D. Ceiling Board: Special sag resistant gypsum ceiling board as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
1. Application: Ceilings, unless otherwise indicated.
2. Thickness: 1/2 inch, unless otherwise indicated.
3. Edges: Tapered.
E. Exterior Sheathing Board: Sizes to minimize joints in place; ends square cut.
1. Application: Exterior sheathing, unless otherwise indicated.
2. Glass Mat Faced Sheathing: Glass mat faced gypsum substrate as defined in ASTM C1177/C1177M.
3. Regular Board Thickness: 5/8 inch unless otherwise indicated.
4. Edges: Square.
F. Exterior Soffit Board: Exterior gypsum soffit board as defined in ASTM C1396/C1396M; sizes to minimize joints in place; ends square cut.
1. Application: Ceilings and soffits in protected exterior areas, unless otherwise indicated.
2. At Assemblies Indicated with Fire-Resistance Rating: Use type required by indicated tested assembly; if no tested assembly is indicated, use Type X.
3. Regular Type Thickness: 1/2 inch, unless otherwise indicated.
4. Edges: Tapered.
G. Shaftwall and Coreboard: Type X; 1 inch thick by 24 inches wide, beveled long edges, ends square cut.
1. Paper-Faced Type: Gypsum shaftliner board or gypsum coreboard as defined ASTM C1396/C1396M; water-resistant faces.
2.04 GYPSUM BOARD ACCESSORIES
A. Acoustic Insulation: ASTM C665; preformed glass fiber, friction fit type, unfaced. Thickness: 3 inch or as indicated on drawings.
B. Water-Resistive Barrier: See Section 07 2500.
C. Finishing Accessories: ASTM C1047, extruded aluminum alloy (6063 T5) or galvanized steel sheet ASTM A924/A924M G90, unless noted otherwise.
1. Types: As detailed or required for finished appearance.
2. Special Shapes: In addition to conventional corner bead and control joints, provide U-bead at exposed panel edges.
D. Joint Materials: ASTM C475/C475M and as recommended by gypsum board manufacturer for project conditions.
1. Joint Compound: Drying type, vinyl-based, ready-mixed.
E. Finishing Compound: Surface coat and primer, takes the place of skim coating.
F. High Build Drywall Surfacer: Vinyl acrylic latex-based coating for spray application, designed to take the place of skim coating and separate paint primer in achieving Level 5 finish.
G. Anchorage to Substrate: Tie wire, nails, screws, and other metal supports, of type and size to suit application; to rigidly secure materials in place.
H. Exterior Soffit Vents: One piece, perforated, ASTM B221 6063 T5 alloy aluminum, with edge suitable for direct application to gypsum board and manufactured especially for soffit application. Provide continuous vent.

3.01 EXAMINATION
A. Verify that project conditions are appropriate for work of this section to commence.
3.02 SHAFT WALL INSTALLATION
A. Shaft Wall Framing: Install in accordance with manufacturer's installation instructions.
1. Install studs at spacing required to meet performance requirements.
B. Shaft Wall Liner: Cut panels to accurate dimensions and install sequentially between special friction studs.
3.03 FRAMING INSTALLATION
A. Metal Framing: Install in accordance with ASTM C1007AISI S220 and manufacturer's instructions.
B. Suspended Ceilings and Soffits: Space framing and furring members as indicated.
1. Laterally brace entire suspension system.
2. Install bracing as required at exterior locations to resist wind uplift.
C. Studs: Space studs as indicated.
1. Extend partition framing to height indicated on drawings.
2. Partitions Terminating at Ceiling: Attach ceiling runner securely to ceiling track in accordance with manufacturer's instructions.
3. Partitions Penetrating Ceiling, not Terminating at Structure: Brace top track securely to structure at 48 inches on center, unless otherwise indicated.
4. Partitions Terminating at Structure: Attach top runner to structure, maintain clearance between top of studs and structure, and connect studs to track using specified mechanical devices in accordance with manufacturer's instructions; verify free movement of top of stud connections; do not leave studs unattached to track.
D. Openings: Reinforce openings as required for weight of doors or operable panels, using not less than double studs at jambs.
E. Standard Wall Furring: Install at concrete and masonry walls scheduled to receive gypsum board, not more than 4 inches from floor and ceiling lines and abutting walls. Secure in place on alternate channel flanges at maximum 24 inches on center.
1. Orientation: Vertical.
2. Spacing: As indicated.
F. Blocking: Use sheet metal backing secured to studs. Provide blocking for support of wall cabinets, toilet accessories, hardware, opening frames, and other wall mounted items requiring secure attachment.
1. Use wood blocking secured to studs for plumbing fixtures, toilet partitions, grab bars, handrails and other items indicated on the drawings to be supported with wood blocking.
3.04 ACOUSTIC ACCESSORIES INSTALLATION
A. Acoustic Insulation: Place tightly within spaces, around cut openings, behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.
3.05 BOARD INSTALLATION
A. Comply with ASTM C840, GA-216, and manufacturer's instructions. Install to minimize butt end joints, especially in highly visible locations.
B. Single-Layer Nonrated: Install gypsum board in most economical direction, with ends and edges occurring over firm bearing.
1. Exception: Tapered edges to receive joint treatment at right angles to framing.
C. Double-Layer, Nonrated: Use gypsum board for first layer, placed parallel to framing or furring members, with ends and edges occurring over firm bearing. Use glass mat faced gypsum board at exterior walls and at other locations as indicated. Place second layer perpendicular to framing or furring members. Offset joints of second layer from joints of first layer.
D. Fire-Resistance-Rated Construction: Install gypsum board in strict compliance with requirements of assembly listing.
E. Exterior Sheathing: Comply with ASTM C1280. Install sheathing vertically, with edges butted tight and ends occurring over firm bearing.
1. Paper-Faced Sheathing: Immediately after installation, protect from weather by application of water-resistive barrier.
F. Exterior Soffits: Install exterior soffit board perpendicular to framing, with staggered end joints over framing members or other solid backing.
G. Cementitious Backing Board: Install over steel framing members and wood framing members where indicated, in accordance with ANSI A108.11 and manufacturer's instructions.
H. Installation on Metal Framing: Use screws for attachment of gypsum board except face layer of nonrated double-layer assemblies, which may be installed by means of adhesive lamination.
I. Installation on Wood Framing: For rated assemblies, comply with requirements of listing authority. For nonrated assemblies, install as follows:
1. Single-Layer Applications: Screw attachment.
2. Double-Layer Application: Install base layer using screws or nails. Install face layer using screws.
J. Curved Surfaces: Apply gypsum board to curved substrates in accordance with GA-226.
K. Moisture Protection: Treat cut edges and holes in moisture resistant gypsum board and exterior gypsum soffit board with sealant.
3.06 INSTALLATION OF TRIM AND ACCESSORIES
A. Control Joints: Place control joints consistent with lines of building spaces and as follows:
1. Space in accordance with ASTM C840 and as indicated.
2. Not more than 30 feet apart on walls and ceilings over 50 feet long.
3. At exterior soffits, not more than 30 feet apart in both directions.
4. Where partition, wall or ceiling traverses a construction joint (expansion, seismic, or building control element) in the base building structure.
5. Where floor supported partition adjoins ceiling supported structures.
B. Corner Beads: Install at external corners, using longest practical lengths.
C. Edge Trim: Install at locations where gypsum board abuts dissimilar materials.
D. Exterior Soffit Vents: Install according to manufacturer's written instructions and in locations indicated on drawings. Provide vent area specified.
3.07 JOINT TREATMENT
A. Glass Mat Faced Gypsum Board and Exterior Glass Mat Faced Sheathing: Use fiberglass joint tape, embed and finish with setting type joint compound.
B. Paper Faced Gypsum Board: Use paper joint tape, embed with setting type joint compound and finish with drying type joint compound.
C. Finish gypsum board in accordance with levels defined in ASTM C840, as follows:
1. Level 5: Walls and ceilings to receive semi-gloss or gloss paint finish and other areas specifically indicated.
2. Level 4: Walls and ceilings to receive paint finish or wall coverings, unless otherwise indicated.
3. Level 3: Walls to receive textured wall finish.
4. Level 2: In utility areas, behind cabinetry, and on backing board to receive tile finish.
5. Level 1: Fire-resistance-rated wall areas above finished ceilings, whether or not accessible in the completed construction.

DONALD W. ALEXANDER | ARCHITECT

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STORAGE FACILITY
97 WARREN AVE
PORTLAND, ME 04103

Project No.:	25.0991
Drawn By:	CB
Date	Issue
03-30-26	Bid & Permit

A0.5

ARCHITECTURAL SPECIFICATIONS

SECTION 09 2116 - GYPSUM BOARD ASSEMBLIES (CON'T)

D. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
1. Feather coats of joint compound so that camber is maximum 1/32 inch.
E. Where Level 5 finish is indicated, spray apply high build drywall surfacer over entire surface after joints have been properly treated; achieve a flat and tool mark-free finish.
F. Fill and finish joints and corners of cementitious backing board as recommended by manufacturer.

3.08 TOLERANCES
A. Maximum Variation of Finished Gypsum Board Surface from True Flatness: 1/8 inch in 10 feet in any direction.

SECTION 09 3000 - TILING

1.01 ADMINISTRATIVE REQUIREMENTS
A. Preinstallation Meeting: Convene a preinstallation meeting one week before starting work of this section; require attendance by affected installers.

1.02 SUBMITTALS
A. Product Data: Provide manufacturers' data sheets on tile, mortar, grout, and accessories. Include instructions for using grouts and adhesives.
B. Samples: Mount tile and apply grout on two plywood panels, minimum 18 by 18 inches in size illustrating pattern, color variations, and grout joint size variations.
C. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
1. See Section 01 6000 - Product Requirements, for additional provisions.
2. Extra Tile: 2 percent of each size, color, and surface finish combination, but not less than 10 sq. ft. of each type.

1.03 QUALITY ASSURANCE
A. Manufacturer Qualifications: Company specializing in manufacturing the types of products specified in this section, with minimum 5 years of experience.
B. Installer Qualifications:
1. Company specializing in performing tile installation, with minimum of five years of documented experience.

2.01 TILE
A. Tile : ANSI A137.1 and as scheduled in the drawings.

2.02 TRIM AND ACCESSORIES
A. Tile Trim: Provide tile shapes in sizes coordinated with field tile unless otherwise indicated.
1. Applications:
a. Open Edges: Bullnose.
b. Inside Corners: Jointed.
c. Floor to Wall Joints: Straight base.
2. Manufacturers: Same as for tile.
B. Non-tile Trim: Finish, style and dimensions to suit application unless otherwise indicated, for setting using tile mortar or adhesive.
1. Applications: Use in the following locations, whether indicated or not:
a. Open edges of wall tile.
b. Open edges of floor tile.
c. Transition between floor finishes of different heights.
d. Expansion and control joints, floor and wall.

2.03 SETTING MATERIALS
A. Latex-Portland Cement Mortar Bond Coat: ANSI A118.4.
1. Applications: Use this type of bond coat where indicated, and where no other type of bond coat is indicated.

2.04 GROUTS
A. High Performance Polymer Modified Grout: ANSI A118.7 polymer modified cement grout.
1. Applications: Use this type of grout where indicated and where no other type of grout is indicated.
2. Use sanded grout for joints 1/8 inch wide and larger; use unsanded grout for joints less than 1/8 inch wide.
3. Color(s): As indicated on drawings.

2.05 MAINTENANCE MATERIALS
A. Grout Sealer: Liquid-applied, moisture and stain protection for existing or new Portland cement grout.
1. Composition: Water-based colorless silicone.
B. Tile Sealer: Stain protection for natural stone and concrete tile.
C. Grout Release: Temporary, water-soluble pre-grout coating.

2.06 ACCESSORY MATERIALS
A. Concrete Floor Slab Crack Isolation Membrane: Material complying with ANSI A118.12; not intended as waterproofing.
1. Crack Resistance: No failure at 1/8 inch gap, minimum.
2. Fluid or Trowel Applied Type:
a. Material: Synthetic rubber or Acrylic.
b. Thickness: 20 mils, maximum.
B. Waterproofing Membrane: Specifically designed for bonding to cementitious substrate under thick mortar bed or thin-set tile; complying with ANSI A118.10.
1. Crack Resistance: No failure at 1/16 inch gap, minimum; comply with ANSI A118.12.
2. Fluid or Trowel Applied Type:
a. Material: Synthetic rubber or Acrylic.
b. Thickness: 25 mils, minimum, dry film thickness.
C. Backer Board: Cementitious type complying with ANSI A118.9; high density, glass fiber reinforced, 1/2 inch thick; 2 inch wide coated glass fiber tape for joints and corners.
D. Backer Board: Coated glass mat type complying with ASTM C1178/C1178M; inorganic fiberglass mat on both surfaces and integral acrylic coating vapor retarder.
E. Mesh Tape: 2 inch wide self-adhesive fiberglass mesh tape.
F. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement-based product provided by manufacturer of tile-setting materials.

3.01 EXAMINATION
A. Verify that subsurface and preparations by others are in accordance with ANSI A108.01
B. Verify that subfloor surfaces are smooth and flat within the tolerances specified for that type of work and are ready to receive tile.
C. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive tile.
D. Verify that subfloor surfaces are dust free and free of substances that could impair bonding of setting materials to subfloor surfaces.
E. Cementitious Subfloor Surfaces: Verify that substrates are ready for tiling installation by testing for moisture and alkalinity (pH).
1. Test in accordance with Section 09 0561.
2. Obtain instructions if test results are not within limits recommended by tiling material manufacturer and setting material manufacturer.
3. Follow moisture and alkalinity remediation procedures in Section 09 0561.
F. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION
A. Protect surrounding work from damage.
B. Vacuum clean surfaces and damp clean.
C. Seal substrate surface cracks with filler. Level existing substrate surfaces to acceptable flatness tolerances.
D. Install backer board in accordance with ANSI A108.11 and board manufacturer's instructions. Tape joints and corners, cover with skim coat of setting material to a feather edge.

3.03 INSTALLATION - GENERAL
A. Install tile and grout in accordance with applicable requirements of ANSI A108.1 through A108.13, manufacturer's instructions, and TCA Handbook recommendations.
B. Lay tile to pattern indicated. Do not interrupt tile pattern through openings.
C. Cut and fit tile to penetrations through tile, leaving sealant joint space. Form corners and bases neatly. Align floor joints.
D. Place tile joints uniform in width, subject to variance in tolerance allowed in tile size. Make grout joints without voids, cracks, excess mortar or excess grout, or too little grout.
E. Form internal angles square and external angles bullnosed.
F. Install non-ceramic trim in accordance with manufacturer's instructions.
1. Install tile expansion joints at 16 to 20 foot intervals, unless otherwise noted.
G. Sound tile after setting. Replace hollow sounding units.
H. Keep control and expansion joints free of mortar, grout, and adhesive.
I. Prior to grouting, allow installation to completely cure; minimum of 48 hours.
J. Grout tile joints unless otherwise indicated. Use standard grout unless otherwise indicated.
K. At changes in plane and tile-to-tile control joints, use tile sealant instead of grout, with either bond breaker tape or backer rod as appropriate to prevent three-sided bonding.

3.04 INSTALLATION - FLOORS - THIN-SET METHODS
A. Over interior concrete substrates, install in accordance with TCNA (HB) Method F113, dry-set or latex-Portland cement bond coat, with standard grout, unless otherwise indicated.
1. Where waterproofing membrane is indicated, install in accordance with TCNA (HB) Method F122, with latex-Portland cement grout.
2. Where crack suppression membrane is required by this section, install in accordance with TCNA Handbook Method F125.

3.05 INSTALLATION - WALL TILE
A. Over exterior Concrete and Masonry - Previously coated or otherwise unsuitable for direct application: Metal Lath and Two-coat application; TCNA W201.
B. On exterior walls install in accordance with TCNA (HB) Method W244, thin-set over cementitious backer units, with waterproofing membrane.
C. Over cementitious backer units install in accordance with TCNA (HB) Method W223, organic adhesive.
D. Over coated glass mat backer board on studs, install in accordance with TCNA (HB) Method W245.
E. Over gypsum wallboard on wood or metal studs install in accordance with TCNA (HB) Method W243, thin-set with dry-set or latex-Portland cement bond coat, unless otherwise indicated.
F. Over interior concrete and masonry install in accordance with TCNA (HB) Method W202, thin-set with dry-set or latex-Portland cement bond coat.

3.06 CLEANING
A. Clean tile and grout surfaces.

3.07 PROTECTION
A. Do not permit traffic over finished floor surface until mortar and grout have adequately cured.

SECTION 09 5100 - ACOUSTICAL CEILINGS

1.01 ADMINISTRATIVE REQUIREMENTS
A. Sequence work to ensure acoustical ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.
B. Do not install acoustical units until after interior wet work is dry.

1.02 SUBMITTALS
A. Product Data: Provide data on suspension system components and acoustical units.
B. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
1. See Section 01 6000 - Product Requirements, for additional provisions.
2. Extra Acoustical Units: Quantity equal to 5 percent of total installed.

1.05 QUALITY ASSURANCE
A. Suspension System Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years experience.
B. Acoustical Unit Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years experience.

1.06 FIELD CONDITIONS
A. Maintain uniform temperature of minimum 60 degrees F, and maximum humidity of 40 percent prior to, during, and after acoustical unit installation.

2.01 PERFORMANCE REQUIREMENTS
A. Seismic Performance: Ceiling systems designed to withstand the effects of earthquake motions determined according to ASCE 7 for Seismic Design Category D, E, or F and complying with the following:
1. Local authorities having jurisdiction.

2.02 ACOUSTICAL UNITS
A. Acoustical Units - General: ASTM E 1264, Class A. Refer to drawings for products.

2.03 SUSPENSION SYSTEM(S)
A. Suspension Systems - General: Complying with ASTM C635/C635M; die cut and interlocking components, with stabilizer bars, clips, splices, perimeter moldings, and hold down clips as required. Refer to drawings for products.

2.04 ACCESSORIES
A. Support Channels and Hangers: Galvanized steel; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.
B. Hanger Wire: 12-gauge 0.08 inch galvanized steel wire.
C. Hold-Down Clips: Manufacturer's standard clips to suit application.
D. Seismic Clips: Manufacturer's standard clips for seismic conditions and to suit application.
E. Perimeter Moldings: Same metal and finish as grid.
1. Size: As required for installation conditions and specified Seismic Design Category.
F. Touch-up Paint: Type and color to match acoustical and grid units.

3.01 EXAMINATION
A. Verify existing conditions before starting work.
B. Verify that layout of hangers will not interfere with other work.

3.02 PREPARATION
A. Install after major above-ceiling work is complete.
B. Coordinate the location of hangers with other work.

3.03 INSTALLATION - SUSPENSION SYSTEM
A. Install suspension system in accordance with ASTM C636/C636M, ASTM E580/E580M, and manufacturer's instructions and as supplemented in this section.
B. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.
C. Lay out system to a balanced grid design with edge units no less than 50 percent of acoustical unit size, unless otherwise indicated on drawings.
D. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
1. Use longest practical lengths.
2. Overlap and rivet corners.
E. Suspension System, Non-Seismic: Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.
F. Seismic Suspension System, Seismic Design Category C: Hang suspension system independent of walls, columns, ducts, pipes and conduit. Maintain a 3/8 inch clearance between grid ends and wall.
G. Seismic Suspension System, Seismic Design Categories D, E, F: Hang suspension system with grid ends attached to the perimeter molding on two adjacent walls; on opposite walls, maintain a 3/4 inch clearance between grid ends and wall.
H. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affected hangers and related carrying channels to span the extra distance.
I. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.
J. Support fixture loads using supplementary hangers located within 6 inches of each corner, or support components independently.
K. Do not eccentrically load system or induce rotation of runners.

3.04 INSTALLATION - ACOUSTICAL UNITS
A. Install acoustical units in accordance with manufacturer's instructions.
B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.
C. Fit border trim neatly against abutting surfaces.
D. Install acoustical units level, in uniform plane, and free from twist, warp, and dents.
E. Cutting Acoustical Units:
1. Make field cut edges of same profile as factory edges.
2. Double cut and field paint exposed reveal edges.
F. Where round obstructions occur, provide preformed closures to match perimeter molding.
G. Install hold-down clips on panels in entrance vestibules, within 20 ft of an exterior door, and where indicated.

3.05 TOLERANCES
A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet.
B. Maximum Variation from Plumb of Grid Members Caused by Eccentric Loads: 2 degrees.

SECTION 09 6813 - TILE CARPETING

1.01 SUBMITTALS
A. Product Data: Provide data on specified products, describing physical and performance characteristics; sizes, patterns, colors available, and method of installation.
B. Samples: Submit two carpet tiles illustrating color and pattern design for each carpet color selected.
C. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
1. See Section 01 6000 - Product Requirements, for additional provisions.
2. Extra Carpet Tiles: Quantity equal to 5 percent of total installed of each color and pattern installed.

1.02 QUALITY ASSURANCE
A. Manufacturer Qualifications: Company specializing in manufacturing specified carpet tile with minimum three years experience.
B. Installer Qualifications: Company specializing in installing carpet tile with minimum three years experience and approved by carpet tile manufacturer.

1.03 FIELD CONDITIONS
A. Store materials in area of installation for minimum period of 24 hours prior to installation.

2.01 MATERIALS
A. Tile Carpeting, Tufted, manufactured in one color dye lot.
1. Critical Radiant Flux: Minimum of 0.22 watts/sq cm, when tested in accordance with ASTM E648 or NFPA 253.
2. Surface Flammability Ignition: Pass ASTM D2859 (the "pill test").

2.02 ACCESSORIES
A. Subfloor Filler: White premix latex; type recommended by flooring material manufacturer.
B. Edge Strips: Material and color as selected.
C. Adhesives:
1. Compatible with materials being adhered; maximum VOC content of 50 g/L; CRI (GLP) certified; in lieu of labeled product, independent test report showing compliance is acceptable.
D. Carpet Tile Adhesive: Recommended by carpet tile manufacturer; releasable type.

3.01 EXAMINATION
A. Verify that subfloor surfaces are smooth and flat within tolerances specified for that type of work and are ready to receive carpet tile.
B. Verify that subfloor surfaces are dust-free and free of substances that could impair bonding of adhesive materials to subfloor surfaces.
C. Cementitious Subfloor Surfaces: Verify that substrates are ready for flooring installation by testing for moisture and alkalinity (pH).
1. Test in accordance with Section 09 0561.
2. Test Internal Relative Humidity in accordance with ASTM F2170 Procedure A.
D. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION
A. Prepare floor substrates for installation of flooring in accordance with Section 09 0561.

3.03 INSTALLATION
A. Starting installation constitutes acceptance of subfloor conditions.
B. Install carpet tile in accordance with manufacturer's instructions.
C. Blend carpet from different cartons to ensure minimal variation in color match.
D. Cut carpet tile clean. Fit carpet tight to intersection with vertical surfaces without gaps.
E. Lay carpet tile in patterns as indicated on drawings.
F. Locate change of color or pattern between rooms under door centerline.
G. Fully adhere carpet tile to substrate.
H. Adhere roll carpet as base finish up vertical surfaces to form base. Terminate top of base with cap strip.
I. Trim carpet tile neatly at walls and around interruptions.
J. Complete installation of edge strips, concealing exposed edges.

3.04 CLEANING
A. Remove excess adhesive without damage, from floor, base, and wall surfaces.
B. Clean and vacuum carpet surfaces.

SECTION 09 6500 - RESILIENT FLOORING

1.01 SECTION INCLUDES
A. Resilient base.
B. Installation accessories.

1.02 SUBMITTALS
A. Product Data: Provide data on specified products, describing physical and performance characteristics; including sizes, patterns and colors available; and installation instructions.
B. Concrete Subfloor Test Report: Submit a copy of the moisture and alkalinity (pH) test reports.
C. Certification: Prior to installation of flooring, submit written certification by flooring manufacturer and adhesive manufacturer that condition of subfloor is acceptable.
D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
1. Extra Wall Base: 8 linear feet of each type and color.

1.03 QUALITY ASSURANCE
A. Manufacturer Qualifications: Company specializing in manufacturing specified flooring with minimum three years experience.
B. Installer Qualifications: Company specializing in installing specified flooring with minimum three years experience and approved by flooring manufacturer.
C. Testing Agency Qualifications: Independent firm specializing in performing concrete slab moisture testing and inspections of the type specified in this section.

1.04 DELIVERY, STORAGE, AND HANDLING
A. Upon receipt, immediately remove any shrink-wrap and check materials for damage and the correct style, color, quantity and run numbers.
B. Store all materials off of the floor in an acclimatized, weather-tight space.
C. Maintain temperature in storage area between 55 degrees F and 90 degrees F.
D. Protect roll materials from damage by storing on end.
E. Do not double stack pallets.

1.05 FIELD CONDITIONS
A. Store materials for not less than 48 hours prior to installation in area of installation at a temperature of 70 degrees F to achieve temperature stability. Thereafter, maintain conditions above 55 degrees F.

2.01 RESILIENT BASE
A. Resilient Base: ASTM F1861, as indicated on drawings; top set.
1. Height, Color, and Finish : As indicated on the drawings.
2. Thickness: 0.125 inch.
3. Length: Roll.
4. Accessories: Premolded external corners and internal corners.

2.04 ACCESSORIES
A. Subfloor Filler: White premix latex; type recommended by adhesive material manufacturer.
B. Primers, Adhesives, and Seam Sealer: Waterproof; types recommended by flooring manufacturer.
1. Provide only products having lower VOC content than allowed by local regulation.
C. Moldings, Transition and Edge Strips: As indicated on the drawings.
D. Sealer and Polish: Types recommended by flooring manufacturer.

3.01 EXAMINATION
A. Verify that surfaces are flat to tolerances acceptable to flooring manufacturer, free of cracks that might telegraph through flooring, clean, dry, and free of curing compounds, surface hardeners, and other chemicals that might interfere with bonding of flooring to substrate.
B. Verify that wall surfaces are smooth and flat within the tolerances specified for that type of work, are dust-free, and are ready to receive resilient base.
C. Cementitious Subfloor Surfaces: Verify that substrates are ready for resilient flooring installation by testing for moisture and alkalinity (pH).
1. Test in accordance with Section 09 0561.
2. Obtain instructions if test results are not within limits recommended by resilient flooring manufacturer and adhesive materials manufacturer.
3. Follow moisture and alkalinity remediation procedures in Section 09 0561.
D. Verify that required floor-mounted utilities are in correct location.

3.02 PREPARATION
A. Prepare floor substrates for installation of flooring in accordance with Section 09 0561.
B. Prohibit traffic until filler is fully cured.
C. Clean substrate.
D. Apply primer as required to prevent "bleed-through" or interference with adhesion by substances that cannot be removed.

3.03 INSTALLATION - GENERAL
A. Starting installation constitutes acceptance of subfloor conditions.
B. Install in accordance with manufacturer's written instructions.
C. Adhesive-Applied Installation:
1. Spread only enough adhesive to permit installation of materials before initial set.
2. Fit joints and butt seams tightly.
3. Set flooring in place, press with heavy roller to attain full adhesion.
D. Where type of floor finish, pattern, or color are different on opposite sides of door, terminate flooring under centerline of door.
E. Install edge strips at unprotected or exposed edges, where flooring terminates, and where indicated.
1. Metal Strips: Attach to substrate before installation of flooring using stainless steel screws.
2. Resilient Strips: Attach to substrate using adhesive.
F. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce tight joints.
G. Install flooring in recessed floor access covers, maintaining floor pattern.
H. Install feature strips where indicated.

3.04 INSTALLATION - RESILIENT BASE
A. Fit joints tightly and make vertical. Maintain minimum dimension of 18 inches between joints.
B. Miter internal corners. At external corners, use premolded units. At exposed ends, use premolded units.
C. Install base on solid backing. Bond tightly to wall and floor surfaces.
D. Scribe and fit to door frames and other interruptions.

3.05 CLEANING
A. Remove excess adhesive from floor, base, and wall surfaces without damage.
B. Clean in accordance with manufacturer's written instructions.

3.06 PROTECTION
A. Prohibit traffic on resilient flooring for 48 hours after installation.

SECTION 09 9113 - EXTERIOR PAINTING

1.01 SECTION INCLUDES
A. Surface preparation.
B. Field application of paints.
C. Scope: Finish exterior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated, including the following:
1. Exposed surfaces of steel lintels and ledge angles.
D. Do Not Paint or Finish the Following Items:
1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
2. Items indicated to receive other finishes.
3. Items indicated to remain unfinished.
4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.
5. Non-metallic roofing and flashing.
6. Stainless steel, anodized aluminum, bronze, terne coated stainless steel, zinc, and lead.
7. Marble, granite, slate, and other natural stones.
8. Floors, unless specifically indicated.
9. Ceramic and other types of tiles.
10. Glass.
11. Concealed pipes, ducts, and conduits.

1.02 SUBMITTALS
A. Product Data: Provide complete list of products to be used, with the following information for each:
1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
2. MPI product number (e.g. MPI #47).
3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
B. Samples: Submit three paper "draw down" samples, 8-1/2 by 11 inches in size, illustrating range of colors available for each finishing product specified.
1. Where sheen is specified, submit samples in only that sheen.
2. Where sheen is not specified, discuss sheen options with Architect before preparing samples, to eliminate sheens definitely not required.
C. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
1. See Section 01 6000 - Product Requirements, for additional provisions.
2. Extra Paint and Finish Materials: 1 gallon of each color; from the same product run, store where directed.
3. Label each container with color in addition to the manufacturer's label.

1.03 QUALITY ASSURANCE
A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum three years experience.
B. Applicator Qualifications: Company specializing in performing the type of work specified with minimum three years experience.

1.04 DELIVERY, STORAGE, AND HANDLING
A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.05 FIELD CONDITIONS
A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.
B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
C. Do not apply exterior paint and finishes during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.
D. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

2.01 MANUFACTURERS
A. Provide paints and finishes from the same manufacturer to the greatest extent possible.
1. Substitution of other products by the same manufacturer is preferred over substitution of products by a different manufacturer.
2. Substitution of a different paint system using MPI-approved products by the same manufacturer will be considered.

2.02 PAINTS AND FINISHES - GENERAL
A. Paints and Finishes: Ready mixed, unless required to be a field-catalyzed paint.
1. Where MPI paint numbers are specified, provide products listed in Master Painters Institute Approved Product List, current edition available at www.paintinfo.com, for specified MPI categories, except as otherwise indicated.
2. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
3. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
4. Supply each paint material in quantity required to complete entire project's work from a single production run.
5. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.
B. Volatile Organic Compound (VOC) Content:
1. Provide paints and finishes that comply with the most stringent requirements specified in the following:
a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.
C. Flammability: Comply with applicable code for surface burning characteristics.
D. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect from the manufacturer's full line.
E. Colors: As indicated on drawings.

2.03 PAINT SYSTEMS - EXTERIOR
A. Exterior Surfaces to be Painted, Unless Otherwise Indicated: Including concrete, concrete masonry units, brick, fiber cement siding, primed wood, and primed metal.
1. Two top coats and one coat primer.
2. Top Coat(s): Exterior Latex; MPI #10, 11, 15, 119, or 214.
3. Primer: As recommended by top coat manufacturer for specific substrate.
B. Wood, Opaque, Latex, 3 Coat:
1. One coat of latex primer sealer.
2. Semi-gloss: Two coats of latex enamel; MPI #11.
C. Exterior Gypsum Board and Exterior Plaster, Opaque, Latex, 3 Coat:
1. One coat of latex primer sealer.
2. Flat: Two coats of latex; MPI #10.
D. Ferrous Metals, Unprimed, Latex, 3 Coat:
1. One coat of latex primer.
2. Semi-gloss: Two coats of latex enamel; MPI #163.
E. Ferrous Metals, Primed, Latex, 2 Coat:
1. Touch-up with rust-inhibitive primer recommended by top coat manufacturer.
2. Semi-gloss: Two coats of latex enamel; MPI #163.
F. Galvanized Metals, Latex, 3 Coat:
1. One coat galvanize primer.
2. Semi-gloss: Two coats of latex enamel; MPI #163.

2.04 PRIMERS
A. Primers: Provide the following unless other primer is required or recommended by manufacturer of top coats.
1. Interior/Exterior Latex Block Filler; MPI #4.
2. Water Based Primer for Galvanized Metal; MPI #134.
3. Rust-Inhibitive Water Based Primer; MPI #107.
4. Latex Primer for Exterior Wood; MPI #6.

2.05 ACCESSORY MATERIALS
A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.
B. Patching Material: Latex filler.
C. Fastener Head Cover Material: Latex filler.

3.01 EXAMINATION
A. Do not begin application of paints and finishes until substrates have been properly prepared.
B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially effect proper application.
D. Test shop-applied primer for compatibility with subsequent cover materials.
E. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
1. Exterior Plaster and Stucco: 12 percent.
2. Fiber Cement Siding: 12 percent.
3. Masonry, Concrete, and Concrete Masonry Units: 12 percent.
4. Exterior Wood: 15 percent, measured in accordance with ASTM D4442.
5. Concrete Floors and Traffic Surfaces: 8 percent.

3.02 PREPARATION
A. Clean surfaces thoroughly and correct defects prior to application.
B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
C. Remove or repair existing paints or finishes that exhibit surface defects.
D. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces for finishing.
E. Seal surfaces that might cause bleed through or staining of topcoat.
F. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
G. Concrete:
1. Remove release agents, curing compounds, efflorescence, and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
2. Clean concrete according to ASTM D4258. Allow to dry.
3. Prepare surface as recommended by top coat manufacturer and according to SSPC-SP 13.
H. Masonry:
1. Remove efflorescence and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces or if alkalinity of mortar joints exceed that permitted in manufacturer's written instructions. Allow to dry.
2. Prepare surface as recommended by top coat manufacturer.
I. Fiber Cement Siding: Remove dirt, dust and other foreign matter with a stiff fiber brush. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
J. Exterior Gypsum Board: Fill minor defects with exterior filler compound. Spot prime defects after repair.
K. Exterior Plaster: Fill hairline cracks, small holes, and imperfections with exterior patching plaster. Make smooth and flush with adjacent surfaces. Wash and neutralize high alkali surfaces.
L. Insulated Coverings: Remove dirt, grease, and oil from canvas and cotton.
M. Concrete Floors and Traffic Surfaces: Remove contamination, acid etch, and rinse floors with clear water. Verify required acid-alkali balance is achieved. Allow to dry.
N. Galvanized Surfaces:
1. Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.
2. Prepare surface according to SSPC-SP 2.
O. Ferrous Metal:
1. Solvent clean according to SSPC-SP 1.
2. Shop-Primed Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces.
3. Remove rust, loose mill scale, and other foreign substances using using methods recommended in writing by paint manufacturer and blast cleaning according to SSPC-SP 6 "Commercial Blast Cleaning". Protect from corrosion until coated.
P. Exterior Wood Surfaces to Receive Opaque Finish: Remove dust, grit, and foreign matter. Seal knots, pitch streaks, and sappy sections. Fill nail holes with tinted exterior calking compound after prime coat has been applied. Back prime concealed surfaces before installation.
Q. Metal Doors to be Painted: Prime metal door top and bottom edge surfaces.

3.03 APPLICATION
A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.
B. Exterior Wood to Receive Opaque Finish: If final painting must be delayed more than 2 weeks after installation of woodwork, apply primer within 2 weeks and final coating within 4 weeks.
C. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".
D. Where adjacent sealant is to be painted, do not apply finish coats until sealant is applied.
E. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
F. Apply each coat to uniform appearance.
G. Dark Colors and Deep Clear Colors: Regardless of number of coats specified, apply additional coats until complete hide is achieved.
H. Sand wood and metal surfaces lightly between coats to achieve required finish.
I. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
J. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 CLEANING
A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.05 PROTECTION
A. Protect finishes until completion of project.
B. Touch-up damaged finishes after Substantial Completion.

SECTION 09 9123 - INTERIOR PAINTING

1.01 SECTION INCLUDES
A. Surface preparation.
B. Field application of paints.
C. Scope: Finish interior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated, including the following:
1. Prime surfaces to receive wall coverings.
2. Mechanical and Electrical:
a. In finished areas, paint insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hangers, brackets, collars and supports, mechanical equipment, and electrical equipment, unless otherwise indicated.
b. In finished areas, paint shop-primed items.
D. Do Not Paint or Finish the Following Items:
1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
2. Items indicated to receive other finishes.
3. Items indicated to remain unfinished.
4. Fire rating labels, equipment serial number and capacity labels, bar code labels, and operating parts of equipment.
5. Floors, unless specifically indicated.
6. Glass.
7. Concealed pipes, ducts, and conduits.

1.02 SUBMITTALS
A. Product Data: Provide complete list of products to be used, with the following information for each:
1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").
2. MPI product number (e.g. MPI #47).
3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.
B. Samples: Submit three paper "draw down" samples, 8-1/2 by 11 inches in size, illustrating range of colors available for each finishing product specified.
1. Where sheen is specified, submit samples in only that sheen.
2. Where sheen is not specified, discuss sheen options with Architect before preparing samples, to eliminate sheens definitely not required.
C. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
1. See Section 01 6000 - Product Requirements, for additional provisions.
2. Extra Paint and Finish Materials: 1 gallon of each color, type, and sheen; from the same product run, store where directed.
3. Label each container with color, type, texture, and room locations in addition to the manufacturer's label.

1.03 QUALITY ASSURANCE
A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum three years experience.
B. Applicator Qualifications: Company specializing in performing the type of work specified with minimum three years experience.

1.04 DELIVERY, STORAGE, AND HANDLING
A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.
B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.
C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.05 FIELD CONDITIONS
A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.
B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.
C. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

2.01 MANUFACTURERS
A. Provide paints and finishes from the same manufacturer to the greatest extent possible.
1. Substitution of other products by the same manufacturer is preferred over substitution of products by a different manufacturer.
2. Substitution of a different paint system using MPI-approved products by the same manufacturer will be considered.

2.02 PAINTS AND FINISHES - GENERAL
A. Paints and Finishes: Ready mixed, unless intended to be a field-catalyzed paint.
1. Where MPI paint numbers are specified, provide products listed in Master Painters Institute Approved Product List, current edition available at www.paintinfo.com, for specified MPI categories, except as otherwise indicated.
2. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.
3. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.
4. Supply each paint material in quantity required to complete entire project's work from a single production run.
5. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.
B. Volatile Organic Compound (VOC) Content:
1. Provide paints and finishes that comply with the most stringent requirements specified in the following:
a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.
C. Flammability: Comply with applicable code for surface burning characteristics.
D. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect from the manufacturer's full line.
E. Colors: As indicated on drawings.
1. In finished areas, finish pipes, ducts, conduit, and equipment the same color as the wall/ceiling they are mounted on/under.

2.03 PAINT SYSTEMS - INTERIOR
A. Interior Surfaces to be Painted, Unless Otherwise Indicated: Including gypsum board, concrete, concrete masonry units, brick, wood, plaster, uncoated steel, shop primed steel, galvanized steel, and aluminum.
1. Two top coats and one coat primer.
2. Top Coat(s): Interior Latex; MPI #43, 44, 52, 53, 54, or 114.
3. Top Coat Sheen, unless noted otherwise on drawings:
a. Flat: MPI gloss level 1; use this sheen for ceilings and other overhead surfaces.
b. Eggshell: MPI gloss level 3; use this sheen at all locations.
4. Primer: As recommended by top coat manufacturer for specific substrate.
B. Medium Duty Door/Trim: For surfaces subject to frequent contact by occupants, including metals and wood:
1. Medium duty applications include doors, door frames, railings, handrails, guardrails, and balustrades.
2. Two top coats and one coat primer.
3. Top Coat(s): High Performance Architectural Interior Latex; MPI #139, 140, or 141.
4. Top Coat Sheen:
a. Semi-Gloss: MPI gloss level 5; use this sheen unless noted otherwise.
5. Primer: As recommended by top coat manufacturer for specific substrate.
C. Dry Fall: Metals; exposed structure and overhead-mounted services or as indicated on drawings, including shop primed steel deck, structural steel, metal fabrications, galvanized ducts, galvanized conduit, and galvanized piping.
1. Shop primer by others.
2. One top coat .
3. Top Coat: Latex Dry Fall; MPI #118, 155, or 226.
4. Top Coat Sheen:
a. Flat: MPI gloss level 1; use this sheen unless noted otherwise.
D. Transparent Finish on Concrete Floors, unless noted otherwise.
1. 2 coats sealer.
2. Sealer: Water Based Sealer for Concrete Floors; MPI #99.
3. Sealer Sheen:
a. Eggshell: MPI gloss level 3; use this sheen unless noted otherwise.
E. Wood, Opaque, Latex, 3 Coat:
1. One coat of latex primer sealer.
2. Semi-gloss: Two coats of latex enamel; MPI #54,unless noted otherwise.
F. Concrete/Masonry, Opaque, Latex, 3 Coat:
1. One coat of block filler.
2. Flat: Two coats of latex enamel; MPI #53, unless noted otherwise.
G. Ferrous Metals, Unprimed, Latex, 3 Coat:
1. One coat of latex primer.
2. Semi-gloss: Two coats of latex enamel; MPI #153, unless noted otherwise.
H. Ferrous Metals, Primed, Latex, 2 Coat:
1. Touch-up with latex primer.
2. Semi-gloss: Two coats of latex enamel; MPI #153, unless noted otherwise.
I. Galvanized Metals, Latex, 3 Coat:
1. One coat galvanize primer.
2. Semi-gloss: Two coats of latex enamel; MPI #153, unless noted otherwise.
J. Fabrics/Insulation Jackets, Alkyd, 3 Coat:
1. One coat of alkyd primer sealer.
2. Flat: Two coats of alkyd enamel; MPI #49, unless noted otherwise.

2.04 PRIMERS
A. Primers: Provide the following unless other primer is required or recommended by manufacturer of top coats.
1. Interior/Exterior Latex Block Filler; MPI #4.
2. Interior Latex Primer Sealer; MPI #50.
3. Interior Water Based Primer for Galvanized Metal; MPI #134.
4. Latex Primer for Interior Wood; MPI #39.

2.05 ACCESSORY MATERIALS
A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.
B. Patching Material: Latex filler.
C. Fastener Head Cover Material: Latex filler.

3.01 EXAMINATION
A. Do not begin application of paints and finishes until substrates have been properly prepared.
B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially effect proper application.
D. Test shop-applied primer for compatibility with subsequent cover materials.
E. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
1. Gypsum Wallboard: 12 percent.
2. Plaster and Stucco: 12 percent.
3. Masonry, Concrete, and Concrete Masonry Units: 12 percent.
4. Interior Wood: 15 percent, measured in accordance with ASTM D4442.
5. Concrete Floors and Traffic Surfaces: 8 percent.

3.02 PREPARATION
A. Clean surfaces thoroughly and correct defects prior to application.
B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
C. Remove or repair existing paints or finishes that exhibit surface defects.
D. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing.
E. Seal surfaces that might cause bleed through or staining of topcoat.
F. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
G. Concrete:
1. Remove release agents, curing compounds, efflorescence, and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces to be coated exceeds that permitted in manufacturer's written instructions.
2. Clean concrete according to ASTM D4258. Allow to dry.
3. Prepare surface as recommended by top coat manufacturer and according to SSPC-SP 13.
H. Masonry:
1. Remove efflorescence and chalk. Do not coat surfaces if moisture content or alkalinity of surfaces or if alkalinity of mortar joints exceed that permitted in manufacturer's written instructions. Allow to dry.
2. Prepare surface as recommended by top coat manufacturer.
I. Concrete Floors and Traffic Surfaces: Remove contamination, acid etch, and rinse floors with clear water. Verify required acid-alkali balance is achieved. Allow to dry.
J. Gypsum Board: Fill minor defects with filler compound. Spot prime defects after repair.
K. Plaster: Fill hairline cracks, small holes, and imperfections with latex patching plaster. Make smooth and flush with adjacent surfaces. Wash and neutralize high alkali surfaces.
L. Insulated Coverings: Remove dirt, grease, and oil from canvas and cotton.
M. Aluminum: Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.
N. Copper: Remove contamination by steam, high pressure water, or solvent washing.
O. Galvanized Surfaces:
1. Remove surface contamination and oils and wash with solvent according to SSPC-SP 1.
2. Prepare surface according to SSPC-SP 2.
P. Ferrous Metal:
1. Solvent clean according to SSPC-SP 1.
2. Shop-Primed Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces.
3. Remove rust, loose mill scale, and other foreign substances using using methods recommended in writing by paint manufacturer and blast cleaning according to SSPC-SP 6 "Commercial Blast Cleaning". Protect from corrosion until coated.
Q. Wood Surfaces to Receive Opaque Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats. Back prime concealed surfaces before installation.
R. Wood Doors to be Field-Finished: Seal wood door top and bottom edge surfaces with clear sealer.
S. Metal Doors to be Painted: Prime metal door top and bottom edge surfaces.

3.03 APPLICATION
A. Remove unfinished louvers, grilles, covers, and access panels on mechanical and electrical components and paint separately.
B. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".
C. Where adjacent sealant is to be painted, do not apply finish coats until sealant is applied.
D. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.
E. Apply each coat to uniform appearance in thicknesses specified by manufacturer.
F. Dark Colors and Deep Clear Colors: Regardless of number of coats specified, apply as many coats as necessary for complete hide.
G. Sand wood and metal surfaces lightly between coats to achieve required finish.
H. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.
I. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 PROTECTION
A. Protect finishes until completion of project.
B. Touch-up damaged finishes after Substantial Completion.

SECTION 10 2800 - TOILET, BATH & LAUNDRY ACCESSORIES

1.01 SECTION INCLUDES
A. Commercial toilet accessories.
B. Under-lavatory pipe supply covers.
C. Utility room accessories.

1.02 SUBMITTALS
A. Product Data: Submit data on accessories describing size, finish, details of function, and attachment methods.

2.01 MATERIALS
A. Accessories - General: Shop assembled, free of dents and scratches and packaged complete with anchors and fittings, steel anchor plates, adapters, and anchor components for installation.
1. Grind welded joints smooth.
2. Fabricate units made of metal sheet of seamless sheets with flat surfaces.
B. Keys: Provide two keys for each accessory to Owner; master key lockable accessories.
C. Stainless Steel Sheet: ASTM A666, Type 304.
D. Stainless Steel Tubing: ASTM A269/A269M, Grade TP304 or TP316.
E. Mirror Glass: Annealed float glass, ASTM C1036 Type I, Class 1, Quality Q2, with silvering, protective and physical characteristics complying with ASTM C1503.
F. Adhesive: Contact type, waterproof.
G. Fasteners, Screws, and Bolts: Hot dip galvanized; tamper-proof; security type.
H. Expansion Shields: Fiber, lead, or rubber as recommended by accessory manufacturer for component and substrate.

2.02 FINISHES
A. Stainless Steel: Satin finish, unless otherwise noted.
B. Galvanizing for Items Other than Sheet: Comply with ASTM A123/A123M; galvanize ferrous metal and fastening devices.

2.03 COMMERCIAL TOILET ACCESSORIES
A. As scheduled on the drawings.

2.04 UNDER-LAVATORY PIPE AND SUPPLY COVERS
A. Under-Lavatory Pipe and Supply Covers:
1. Insulate exposed drainage piping, including hot, cold, and tempered water supplies under lavatories or sinks to comply with ADA Standards.
2. Exterior Surfaces: Smooth non-absorbent, non-abrasive surfaces.
3. Construction: 1/8 inch flexible PVC.
a. Surface Burning Characteristics: Flame spread index of 25 or less and smoke developed index of 450 or less, when tested in accordance with ASTM E84.
4. Color: White.

2.05 UTILITY ROOM ACCESSORIES
A. Combination Utility Shelf/Mop and Broom Holder: 0.05 inch thick stainless steel, Type 304, with 1/2 inch returned edges, 0.06 inch steel wall brackets.
1. Drying rod: Stainless steel, 1/4 inch diameter.
2. Hooks: Two, 0.06 inch stainless steel rag hooks at shelf front.
3. Mop/broom holders: Three spring-loaded rubber cam holders at shelf front.
4. Length: Manufacturer's standard length for number of holders/hooks.

3.01 EXAMINATION
A. Verify existing conditions before starting work.
B. Verify exact location of accessories for installation.
C. For electrically-operated accessories, verify that electrical power connections are ready and in the correct locations.
D. See Section 06 1000 - Rough Carpentry for installation of blocking, reinforcing plates, and concealed anchors in walls.

3.02 PREPARATION
A. Deliver inserts and rough-in frames to site for timely installation.
B. Provide templates and rough-in measurements as required.

3.03 INSTALLATION
A. Install accessories in accordance with manufacturers' instructions in locations indicated on drawings.
B. Install plumb and level, securely and rigidly anchored to substrate.
C. Mounting Heights: As required by accessibility regulations, unless otherwise indicated.

3.04 PROTECTION
A. Protect installed accessories from damage due to subsequent construction operations.

SECTION 10 4400 - FIRE PROTECTION SPECIALTIES

1.01 SECTION INCLUDES
A. Fire extinguishers.
B. Fire extinguisher cabinets.
C. Accessories.

1.02 SUBMITTALS
A. Product Data: Provide extinguisher operational features and color and finish.
B. Shop Drawings: Indicate cabinet physical dimensions and accessories required for complete installation.

1.03 FIELD CONDITIONS
A. Do not install extinguishers when ambient temperature may cause freezing of extinguisher ingredients.

2.01 FIRE EXTINGUISHERS
A. Fire Extinguishers - General: Comply with product requirements of NFPA 10 and applicable codes, whichever is more stringent.
1. Provide extinguishers labeled by UL (DIR) or FM (AG) for purpose specified and as indicated.
B. Multipurpose Dry Chemical Type Fire Extinguishers: Carbon steel tank, with pressure gauge.
1. Class: A:B:C type.
2. Size: 5 pound minimum.
3. Finish: Baked polyester powder coat red color.
4. Temperature range: Minus 40 degrees F to 120 degrees F.
C. Dry Chemical Type Fire Extinguishers: Stainless steel tank, with pressure gauge.
1. Class: K type.
2. Size: 1.6 gallons.
3. Finish: Polished stainless steel.
4. Temperature range: Minus 20 degrees F to 120 degrees F.

2.02 FIRE EXTINGUISHER CABINETS
A. Cabinet Construction: Non-fire rated.
1. Formed primed steel sheet; 0.036 inch thick base metal.
B. Cabinet Configuration: Semi-recessed type.
1. Size to accommodate accessories.
2. Trim: Returned to wall surface, with 2-1/2 inch projection, 1-3/4 inch wide face.
C. Door: 0.036 inch metal thickness, reinforced for flatness and rigidity with nylon catch. Hinge doors for 180 degree opening with two butt hinges.
D. Door Glazing: Acrylic plastic, clear, 1/8 inch thick, flat shape and set in resilient channel glazing gasket.
E. Cabinet Mounting Hardware: Appropriate to cabinet, with pre-drilled holes for placement of anchors.
F. Finish of Cabinet Exterior Trim and Door: Baked enamel, color as selected.
G. Finish of Cabinet Interior: White colored enamel.

2.03 ACCESSORIES
A. Extinguisher Brackets: As provided by storage unit manufacturer for use mounted on hallway wall system.
B. Graphic Identification: Fire Extinguisher.
C. Lettering: “FIRE EXTINGUISHER” decal, or vinyl self-adhering, prespaced black lettering in accordance with authorities having jurisdiction (AHJ).

3.01 EXAMINATION
A. Verify existing conditions before starting work.
B. Verify rough openings for cabinet are correctly sized and located.

3.02 INSTALLATION
A. Install in accordance with manufacturer's instructions.
B. Install one (1) extinguisher per 3,000 s.f. floor area and not more than 75' travel distance from any point to an extinguisher.
C. Install cabinets plumb and level in wall openings, 24 inches from finished floor to inside bottom of cabinet, unless noted otherwise.
D. Secure rigidly in place.
E. Place extinguishers and accessories in cabinets and on wall brackets, unless noted otherwise.
F. Install Dry Chemical, K type extinguishers in kitchens and in other areas involving cooking fluids, such as oils and fats and as directed by authority having jurisdiction.
G. Install Multipurpose Dry Chemical type extinguisher in other areas and as directed by authority having jurisdiction.
H. Final size, location and quantity shall be confirmed by the authority having jurisdiction.

DONALD W. ALEXANDER | ARCHITECT

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STORAGE FACILITY
97 WARREN AVE
PORTLAND, ME 04103

Project No.: 25.0991
Drawn By: CB

Date	Issue
03-30-26	Bid & Permit

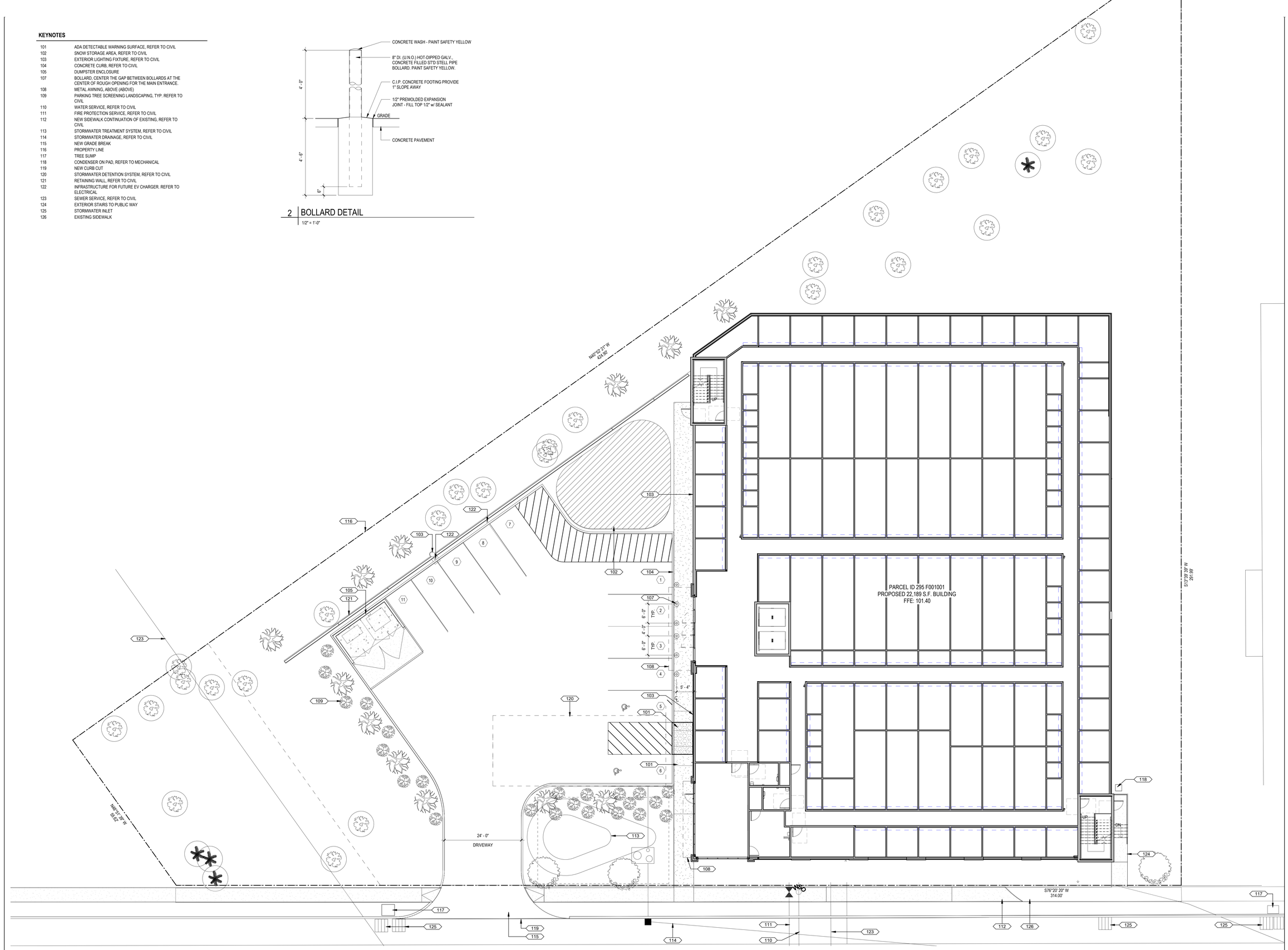
A0.6

ARCHITECTURAL SPECIFICATIONS

KEYNOTES

101	ADA DETECTABLE WARNING SURFACE, REFER TO CIVIL
102	SNOW STORAGE AREA, REFER TO CIVIL
103	EXTERIOR LIGHTING FIXTURE, REFER TO CIVIL
104	CONCRETE CURB, REFER TO CIVIL
105	DUMPSTER ENCLOSURE
107	BOLLARD, CENTER THE GAP BETWEEN BOLLARDS AT THE CENTER OF ROUGH OPENING FOR THE MAIN ENTRANCE.
108	METAL AWNING, ABOVE (ABOVE)
109	PARKING TREE SCREENING LANDSCAPING, TYP. REFER TO CIVIL
110	WATER SERVICE, REFER TO CIVIL
111	FIRE PROTECTION SERVICE, REFER TO CIVIL
112	NEW SIDEWALK CONTINUATION OF EXISTING, REFER TO CIVIL
113	STORMWATER TREATMENT SYSTEM, REFER TO CIVIL
114	STORMWATER DRAINAGE, REFER TO CIVIL
115	NEW GRADE BREAK
116	PROPERTY LINE
117	TREE SUMP
118	CONDENSER ON PAD, REFER TO MECHANICAL
119	NEW CURB CUT
120	STORMWATER DETENTION SYSTEM, REFER TO CIVIL
121	RETAINING WALL, REFER TO CIVIL
122	INFRASTRUCTURE FOR FUTURE EV CHARGER. REFER TO ELECTRICAL
123	SEWER SERVICE, REFER TO CIVIL
124	EXTERIOR STAIRS TO PUBLIC WAY
125	STORMWATER INLET
126	EXISTING SIDEWALK

2 BOLLARD DETAIL
1/2" = 1'-0"



1 SITE PLAN
3/32" = 1'-0"

DONALD W. ALEXANDER | ARCHITECT

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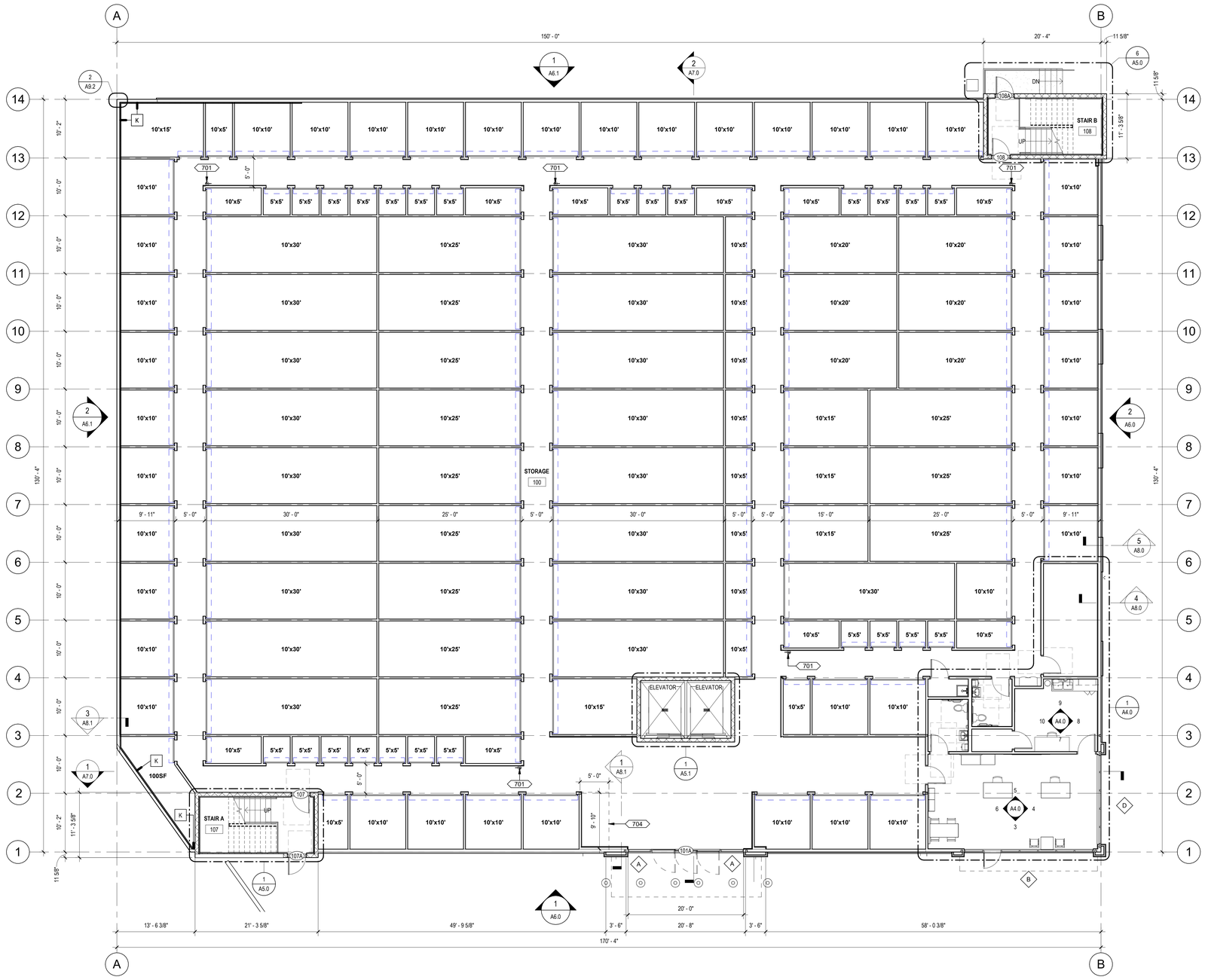
STORAGE FACILITY

97 WARREN AVE
PORTLAND, ME 04103

Project No.:	25.0991
Drawn By:	GRG
Date	Issue
03-30-26	Bid & Permit

A1.0

SITE PLAN



1 LEVEL 1 FLOOR PLAN
1/8" = 1'-0"

GENERAL NOTES

A. ALL GRIDLINES ARE AT CENTERLINE OF BEARING STUD OR TO OUTSIDE FACE OF STRUCTURE. DIMENSIONS ON THIS SHEET ARE GIVEN TO CENTERLINE OF STUD AND TO FACE OF MASONRY.

B. CONCRETE STEM WALL TO 4" AFF WHERE EXTERIOR GRADE IS CLOSER THAN 4" BELOW FINISH FLOOR ELEVATION, UNLESS NOTED OTHERWISE.

UNIT DESIGN CRITERIA

BASIS OF DESIGN: TRACHTE NEW CONSTRUCTION SYSTEM

- 8'-0" HIGH WALLS
- OVERHEAD DOORS FOR ALL UNIT SIZES
- BRIGHT WHITE RIGID RB PANEL AT CORRIDORS
- GALVALUME PARTITIONS BETWEEN UNITS AND WHERE INDICATED ON PLANS AT EXTERIOR WALLS
- 16" JAMBS AT OVERHEAD DOORS
- BURGLER BARS FROM 8'-0" TO UNDERSIDE OF DECK AT 8" O.C. ON FIRST, SECOND, AND THIRD FLOOR.
- BRIDGING ANGLES AND BRACING WITH WIRE MESH HORIZONTAL OVER UINTS ON FOURTH FLOOR.
- 4' HIGH DIAMOND PLATE CORNER GUARDS AT OUTSIDE CORNERS
- 12" HIGH DIAMOND PLATE KICK PLATES AT CORRIDOR WALLS
- 12" HIGH DIAMOND PLATE JAMB GUARDS AT DOOR JAMBS
- PROVIDE FIRE EXTINGUISHER PANELS AT LOCATIONS IDENTIFIED ON PLANS
- PROVIDE ASSESSIBLE COMPLIANCE KITS AT UNITS INDICATED ON PLANS TO BE ACCESSIBLE

LEVEL 1 UNIT COUNTS

UNIT SIZE	COUNT
5'x5'	25
5'x10'	13
10'x5'	8
10'x10'	40
10'x15'	5
10'x20'	6
10'x25'	12
10'x30'	18

KEYNOTES

701	FIRE EXTINGUISHER PANEL PER HALLWAY MFR, COORDINATE WITH LIFE SAFETY PLAN
704	CART STORAGE

DONALD W. ALEXANDER | ARCHITECT

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STORAGE FACILITY

97 WARREN AVE
PORTLAND, ME 04103

Project No.:	25.0991
Drawn By:	CB
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A2.1

FLOOR PLAN - LEVEL 1

GENERAL NOTES

A. ALL GRIDLINES ARE AT CENTERLINE OF BEARING STUD OR TO OUTSIDE FACE OF STRUCTURE. DIMENSIONS ON THIS SHEET ARE GIVEN TO CENTERLINE OF STUD AND TO FACE OF MASONRY.

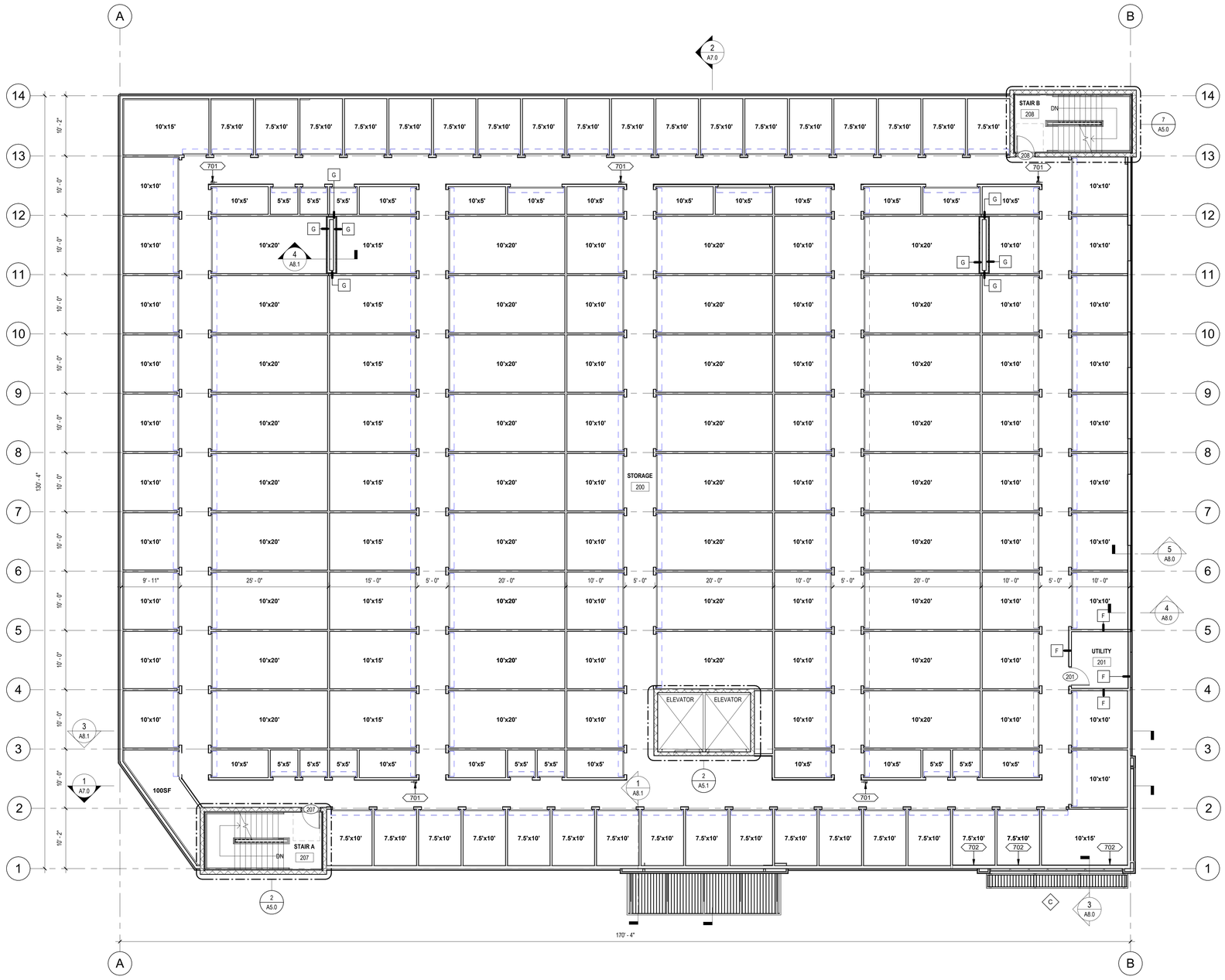
B. CONCRETE STEM WALL TO 4" AFF WHERE EXTERIOR GRADE IS CLOSER THAN 4" BELOW FINISH FLOOR ELEVATION, UNLESS NOTED OTHERWISE.

LEVEL 1 UNIT COUNTS

UNIT SIZE	COUNT
5'x5'	10
5'x10'	15
7.5'x10'	35
10'x5'	3
10'x10'	47
10'x15'	11
10'x20'	37

KEYNOTES

701	FIRE EXTINGUISHER PANEL PER HALLWAY MFR, COORDINATE WITH LIFE SAFETY PLAN
702	CORREGATED METAL LINER PANEL THIS UNIT



1 LEVEL 2 FLOOR PLAN
1/8" = 1'-0"

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A2.2

FLOOR PLAN - LEVEL 2

GENERAL NOTES

A. ALL GRIDLINES ARE AT CENTERLINE OF BEARING STUD OR TO OUTSIDE FACE OF STRUCTURE. DIMENSIONS ON THIS SHEET ARE GIVEN TO CENTERLINE OF STUD AND TO FACE OF MASONRY.

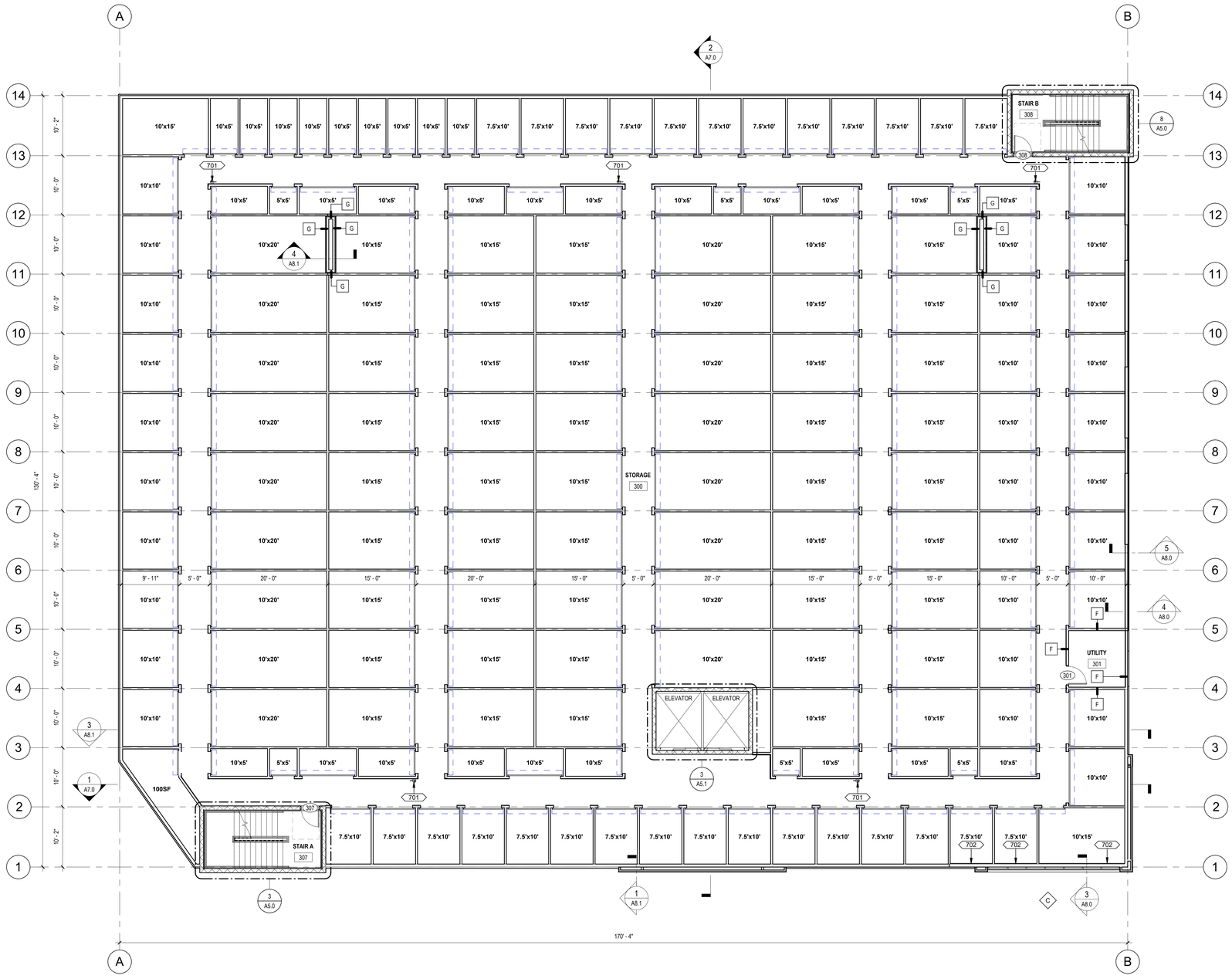
B. CONCRETE STEM WALL TO 4" AFF WHERE EXTERIOR GRADE IS CLOSER THAN 4" BELOW FINISH FLOOR ELEVATION, UNLESS NOTED OTHERWISE.

LEVEL 1 UNIT COUNTS

UNIT SIZE	COUNT
5'x5'	6
5'x10'	24
7.5'x10'	28
10'x5'	5
10'x10'	29
10'x15'	47
10'x20'	17

KEYNOTES

701	FIRE EXTINGUISHER PANEL PER HALLWAY MFR, COORDINATE WITH LIFE SAFETY PLAN
702	CORREGATED METAL LINER PANEL THIS UNIT



1 LEVEL 3 FLOOR PLAN

1/8" = 1'-0"

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A2.3

FLOOR PLAN - LEVEL 3

GENERAL NOTES

A. ALL GRIDLINES ARE AT CENTERLINE OF BEARING STUD OR TO OUTSIDE FACE OF STRUCTURE. DIMENSIONS ON THIS SHEET ARE GIVEN TO CENTERLINE OF STUD AND TO FACE OF MASONRY.

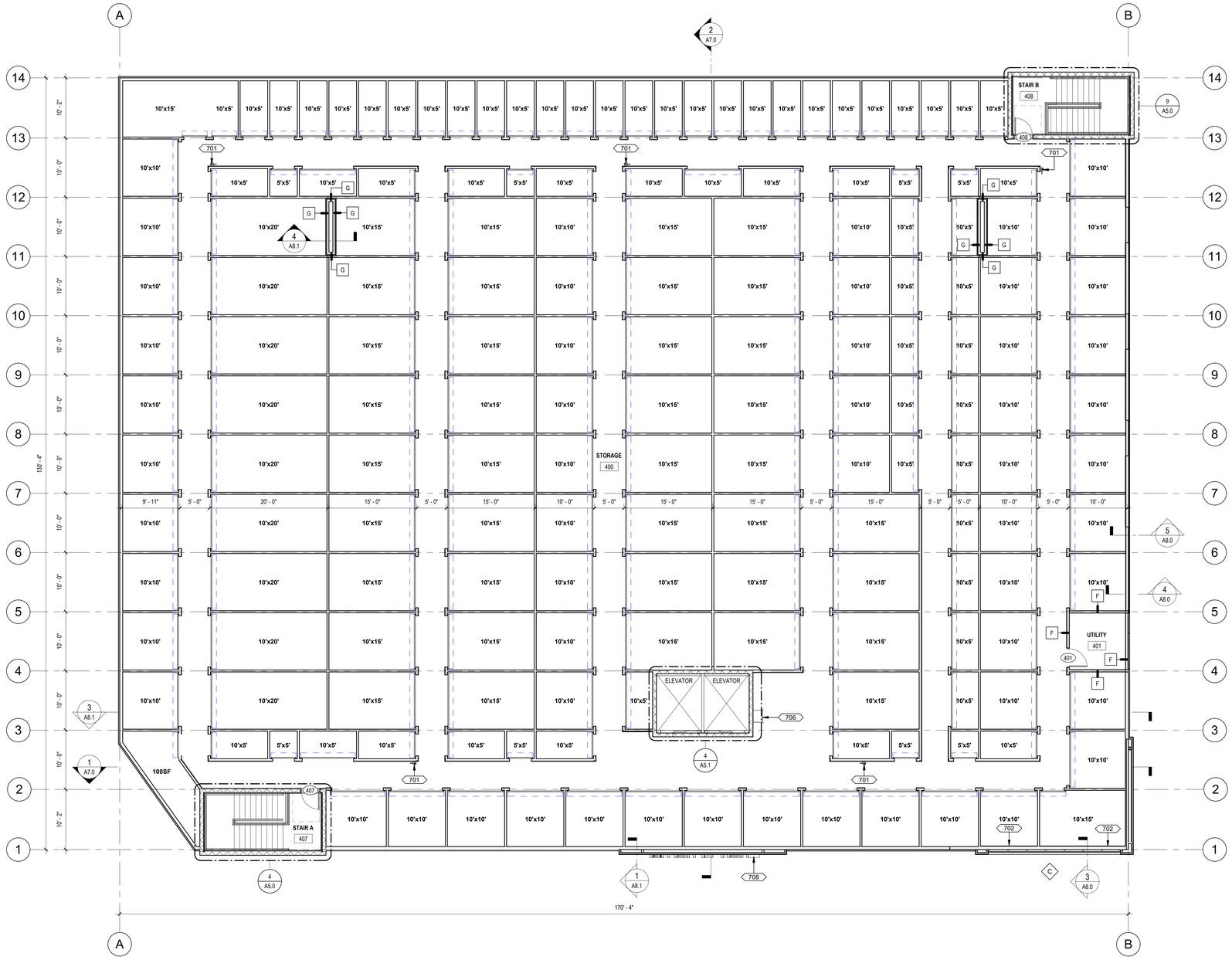
B. CONCRETE STEM WALL TO 4" AFF WHERE EXTERIOR GRADE IS CLOSER THAN 4" BELOW FINISH FLOOR ELEVATION, UNLESS NOTED OTHERWISE.

LEVEL 1 UNIT COUNTS

UNIT SIZE	COUNT
5'x5'	8
5'x10'	41
10'x5'	18
10'x10'	55
10'x15'	40
10'x20'	9

KEYNOTES

701	FIRE EXTINGUISHER PANEL PER HALLWAY MFR, COORDINATE WITH LIFE SAFETY PLAN
702	CORREGATED METAL LINER PANEL THIS UNIT
706	ROOF ACCESS LADDER
708	PROVIDE SIGNAGE BLOCKING PER VENDOR RECOMMENDATION.



1 LEVEL 4 FLOOR PLAN
1/8" = 1'-0"

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A2.4

FLOOR PLAN - LEVEL 4

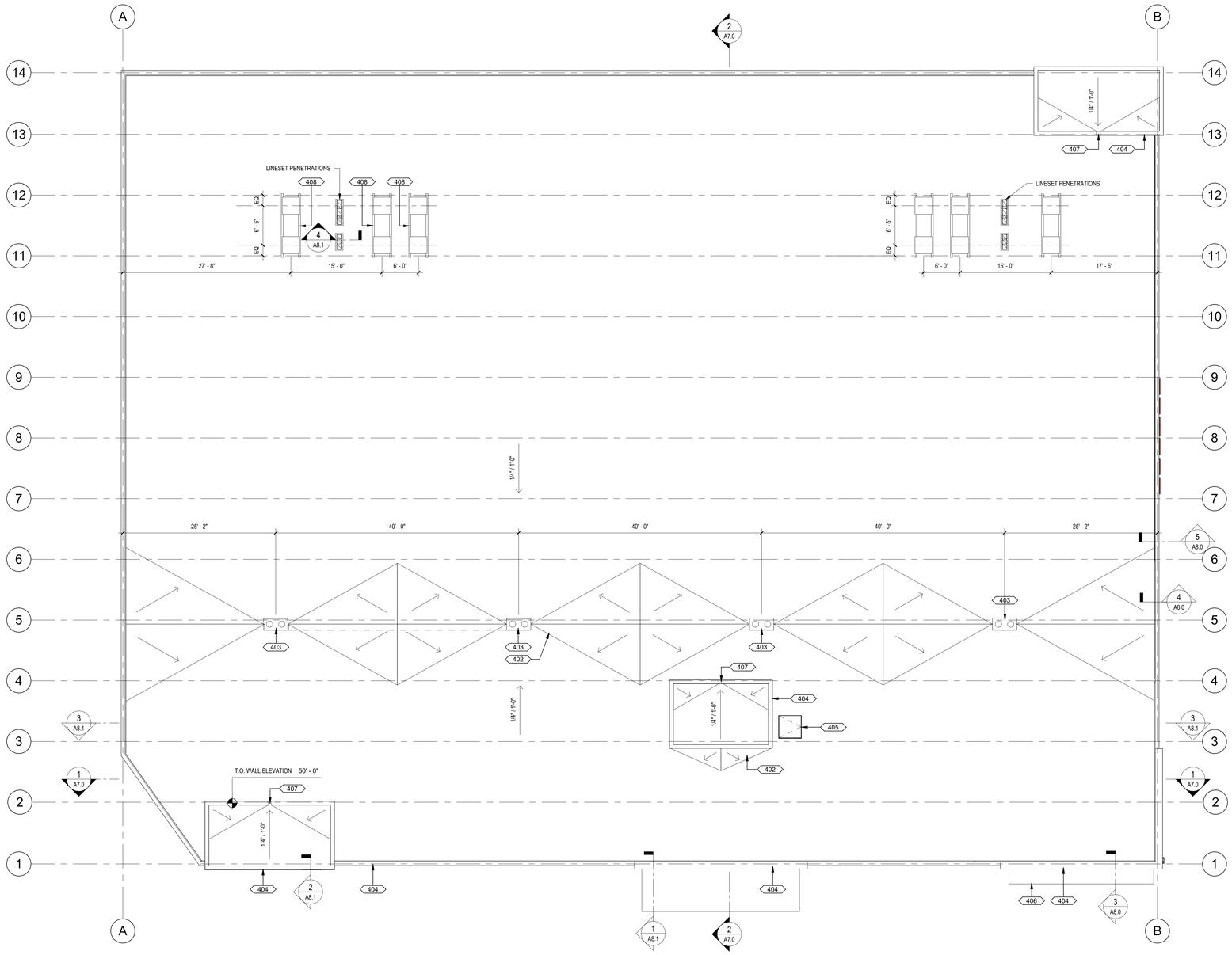
GENERAL NOTES

A. ALL GRIDLINES ARE AT CENTERLINE OF BEARING STUD OR TO OUTSIDE FACE OF STRUCTURE. DIMENSIONS ON THIS SHEET ARE GIVEN TO CENTERLINE OF STUD AND TO FACE OF MASONRY.

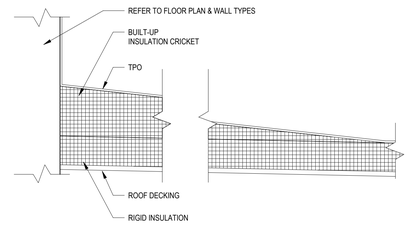
B. CONCRETE STEM WALL TO 4" AFF WHERE EXTERIOR GRADE IS CLOSER THAN 4" BELOW FINISH FLOOR ELEVATION, UNLESS NOTED OTHERWISE.

KEYNOTES

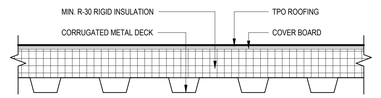
402	CRICKET, PROVIDE MINIMUM 1/4" PER 1'-0" SLOPE AT VALLEY
403	PRIMARY AND OVERFLOW ROOF DRAIN. REFER TO ROOF DRAIN DETAIL ON 9.3.
404	PAINTED BRAKE METAL PARAPET COPING
405	3'-0" X 3'-0" ROOF ACCESS HATCH. BASIS OF DESIGN: BILCO E-TB
406	PREFABRICATED ALUMINUM CANOPY WITH CANTILEVER SUPPORT. BASIS OF DESIGN: MAPES SUPER LUMIDECK FLAT SOFFIT.
407	THROUGH WALL SCUPPER, REFER TO THROUGH WALL SCUPPER DETAIL ON 9.3.
408	CONDENSING UNIT ON SUPPORT RAILS



1 | ROOF PLAN
1/8" = 1'-0"



2 | CRICKET DETAIL
3/4" = 1'-0"



3 | ROOF ASSEMBLY
1 1/2" = 1'-0"

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A3.0

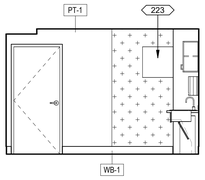
ROOF PLAN

GENERAL NOTES

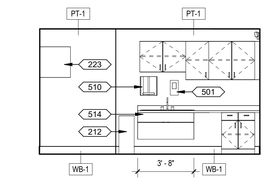
A. ALL GRIDLINES ARE AT CENTERLINE OF BEARING STUD OR TO OUTSIDE FACE OF STRUCTURE. DIMENSIONS ON THIS SHEET ARE GIVEN TO CENTERLINE OF STUD.
B. REFER TO WALL TYPES ON SHEET A9.0.

KEYNOTES

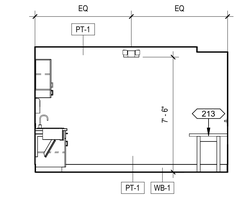
201	MAPLELEAF HOSPITALITY TABLE PER CUBESMART STANDARDS
202	MAPLELEAF PODIUM PER CUBE SMARTSTANDARDS
203	MAPLELEAF WORK TABLE PER CUBESMART STANDARDS
204	MAPLELEAF MERCHANDISING WALL PER CUBESMART STANDARDS
205	MAPLELEAF LATERAL DOUBLE FILE W/ SIDE STAND PER CUBE SMART STANDARDS
206	MAPLELEAF CUBESMART LOGO SIGN PER CUBESMART STANDARDS
207	50" SECURITY MONITOR
208	MAPLELEAF HOSPITALITY CHAIR PER CUBESMART STANDARDS
209	MAPLELEAF MANAGER HIGH STOOL CHAIR PER CUBESMART STANDARDS
210	MAPLELEAF CUSTOMER LOW DESK CHAIR PER CUBESMART STANDARDS
211	KITCHENETTE PER CUBESMART STANDARDS
212	TRASH CAN PER CUBESMART STANDARDS
213	TABLE PER CUBESMART STANDARDS
215	MOPSINK, PROVIDE MINIMUM 4' x 4' FRP ON ADJACENT WALLS
219	60" MARKETING TV
221	ADA ACCESSIBLE PODIUM - MAX 2'-10" HIGH - BY MAPLELEAF CABINETS, PER CUBE SMART STANDARDS
222	HI-LOW DRINKING FOUNTAIN WITH BOTTLE FILLER, REFER TO PLUMBING.
223	IT CABINET, PROVIDE 4' W PLYWOOD ON WALL FOR MOUNTING REFER TO ELECTRICAL
224	KNOX BOX. MODEL TO BE AS DIRECTED BY FIRE MARSHAL. KNOX BOX TO CONTAIN THE KEYS REQUIRED TO ACCESS THE SPRINKLER VALVE, ALARM PANEL, ELECTRICAL ROOM, ROOF, FIRE ALARM CONTROL PANEL, FIRE DEPARTMENT ELEVATOR CONTROL. IN ADDITION, A CARD SHALL BE PROVIDDED IN THE KNOX BOX THAT CONTAINS: 1. INVENTORY OF ALL KEYS STORED IN THE BOX; 2. SPRINKLER VALVE LOCATION; 3. FDC LOCATION; 4. FACP LOCATION; 5. ELECTRICAL ROOM LOCATION; 6. ELEVATOR CONTROL LOCATION; 7. DOOR CODE; 8. CRITICAL BUILDING DATA; 9. DATE LAST UPDATED.
225	PROVIDE SIGN READING "FACP" ON DOOR.
501	SOAP DISPENSER
510	HAND TOWEL DISPENSER
514	ADA SINK PANEL ON BRACKETS



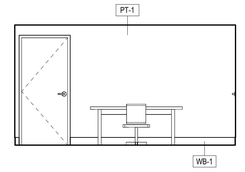
10 BREAKROOM WEST
1/4" = 1'-0"



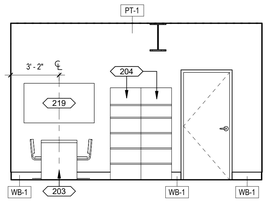
9 BREAKROOM NORTH
1/4" = 1'-0"



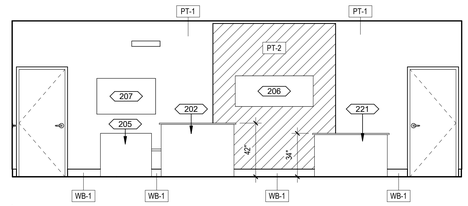
8 BREAKROOM EAST
1/4" = 1'-0"



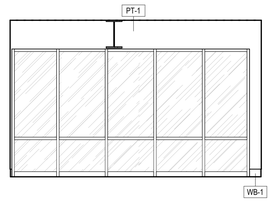
7 BREAKROOM SOUTH
1/4" = 1'-0"



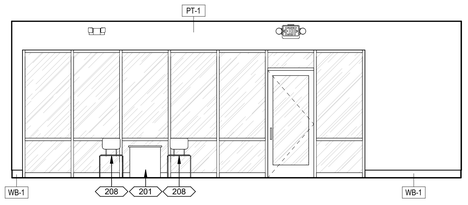
6 OFFICE WEST
1/4" = 1'-0"



5 OFFICE NORTH
1/4" = 1'-0"



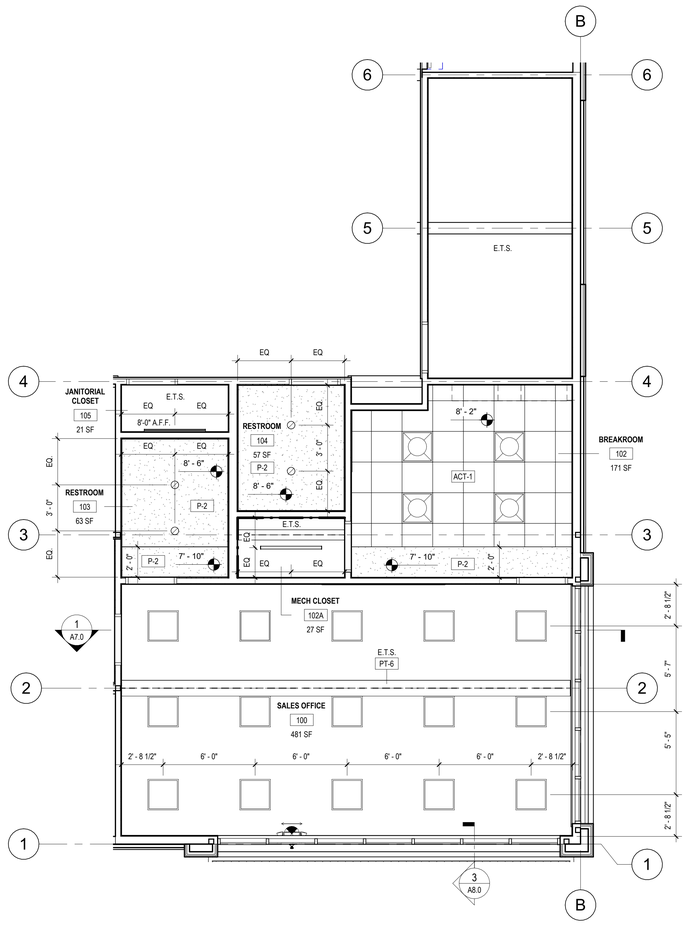
4 OFFICE EAST
1/4" = 1'-0"



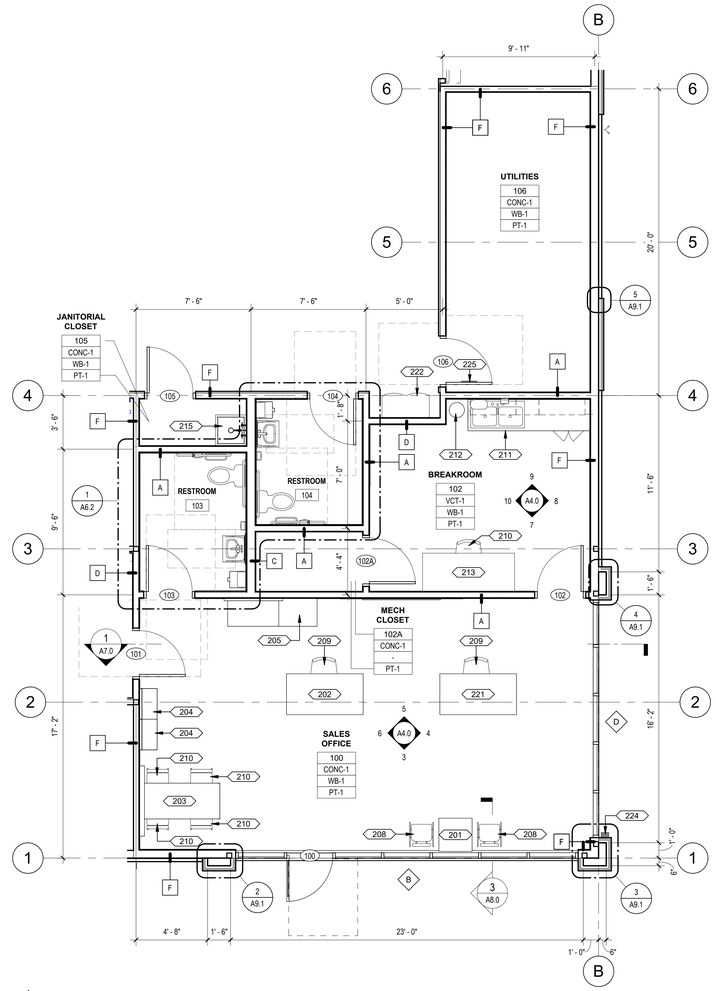
3 OFFICE SOUTH
1/4" = 1'-0"

LEGEND

- LED RECESSED CAN LIGHT
- LINEAR LED STRIP LIGHT
- 24" X 24" ACT CEILING
- 24" X 24" TROFFER LIGHT
- 24" X 24" TROFFER LIGHT, SUSPENDED A.F.F. 8'-6"
- GWB HARD LID CEILING
- PLYWOOD BACKER BOARD
- BRAND WALL



2 OFFICE RCP
1/4" = 1'-0"



1 ENLARGED OFFICE PLAN
1/4" = 1'-0"

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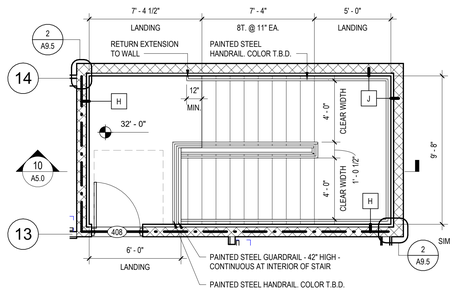
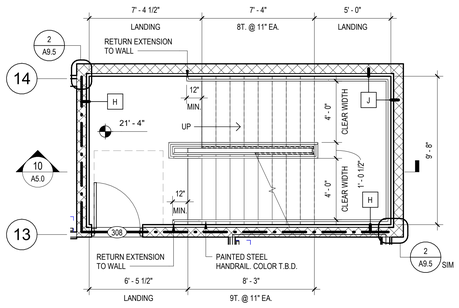
A4.0

ENLARGED PLANS, OFFICE RCP, & INT. ELEVATIONS



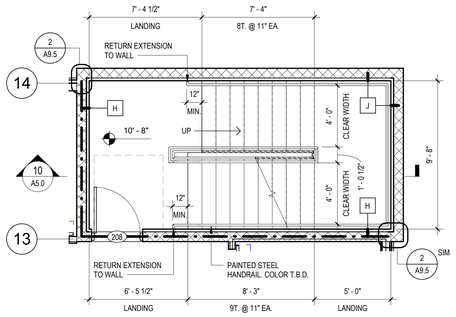
9 | STAIR B - LEVEL 4

1/4" = 1'-0"



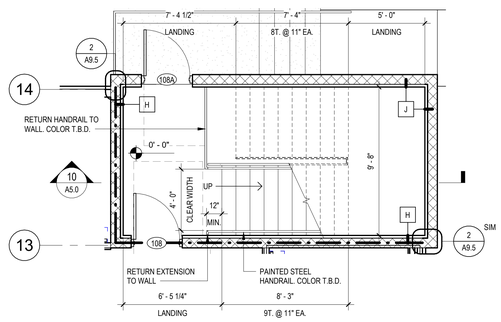
8 | STAIR B - LEVEL 3

1/4" = 1'-0"



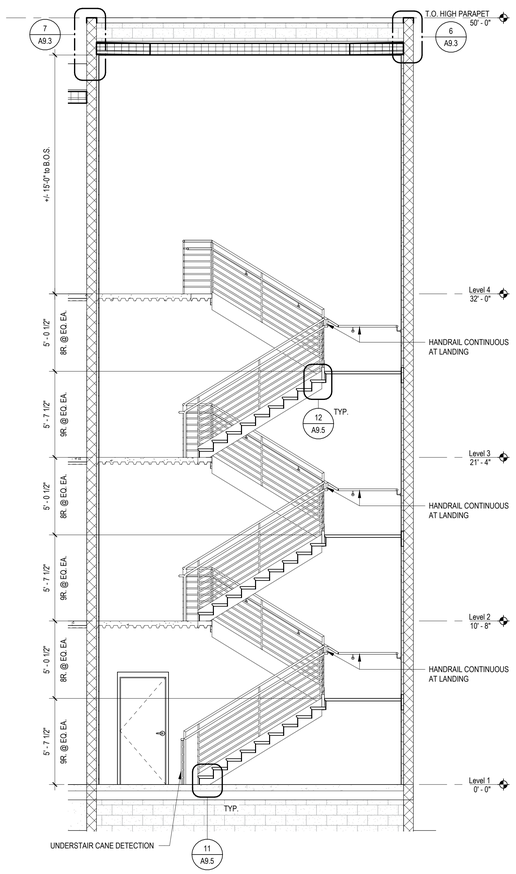
7 | STAIR B - LEVEL 2

1/4" = 1'-0"



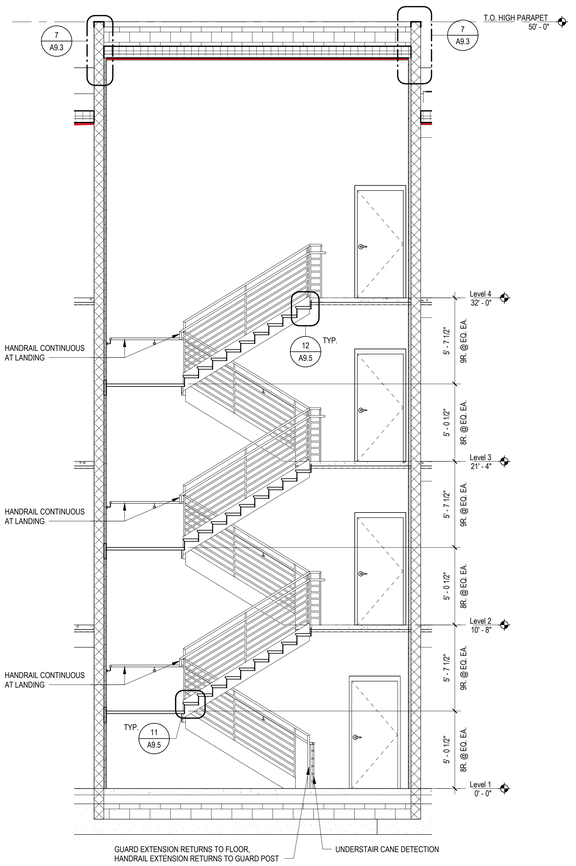
6 | STAIR B - LEVEL 1

1/4" = 1'-0"



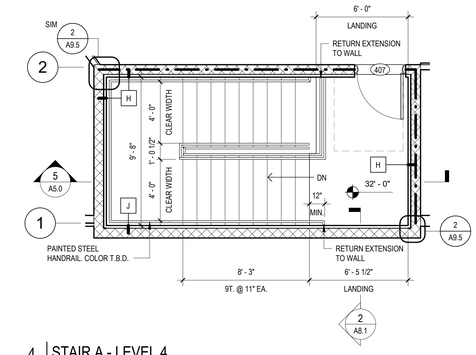
10 | STAIR B SECTION

1/4" = 1'-0"



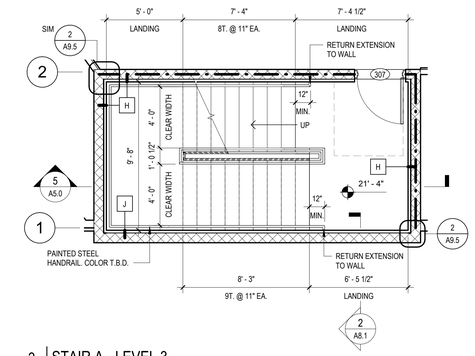
5 | STAIR A SECTION

1/4" = 1'-0"



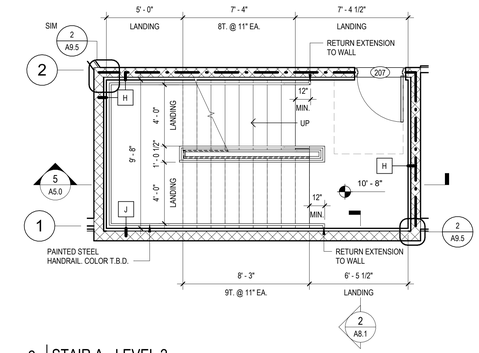
4 | STAIR A - LEVEL 4

1/4" = 1'-0"



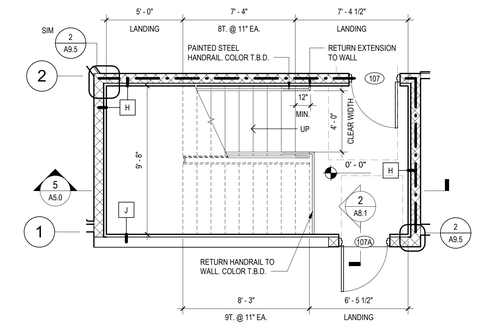
3 | STAIR A - LEVEL 3

1/4" = 1'-0"



2 | STAIR A - LEVEL 2

1/4" = 1'-0"



1 | STAIR A - LEVEL 1

1/4" = 1'-0"

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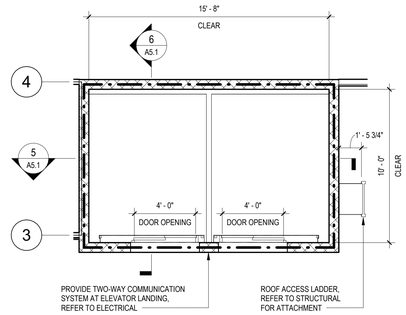
A5.0

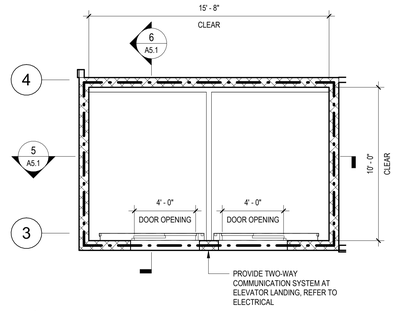
STAIR PLAN & SECTION

ELEVATOR BASIS OF DESIGN

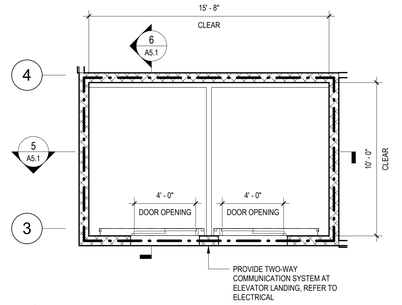
MODEL:	KONE MONOSPACE 500DX
CAPACITY:	4,500 LB.
SPEED:	150 FPM
CAR HEIGHT:	8'-0" CLEAR MINIMUM
DOOR SIZE:	48" X 84" MINIMUM
CAB FINISHES:	STAINLESS STEEL DOORS AND JAMBS MFR'S STANDARD DIMPLED STAINLESS STEEL WALL PANELS MATS INC SUPREME NOP CHARCOAL CARPET TILE FLOORING MFR'S STANDARD STAINLESS STEEL CANOPY CEILING W/ RECESSED LED LIGHTING
HANDRAILS:	STAINLESS STEEL, AT REAR AND SIDES
FEATURES:	FIREFIGHTER'S SERVICE PHASE I AND PHASE II CAR STALL PROTECTION TOP OF CAR INSPECTION MFR'S STANDARD 1-YEAR SERVICE AGREEMENT



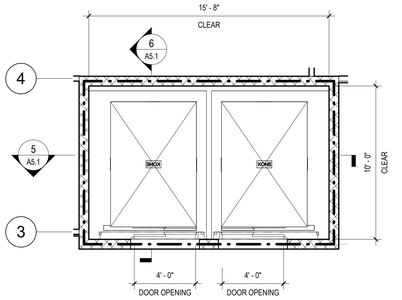
4 ELEVATOR PLAN - LEVEL 4
1/4" = 1'-0"



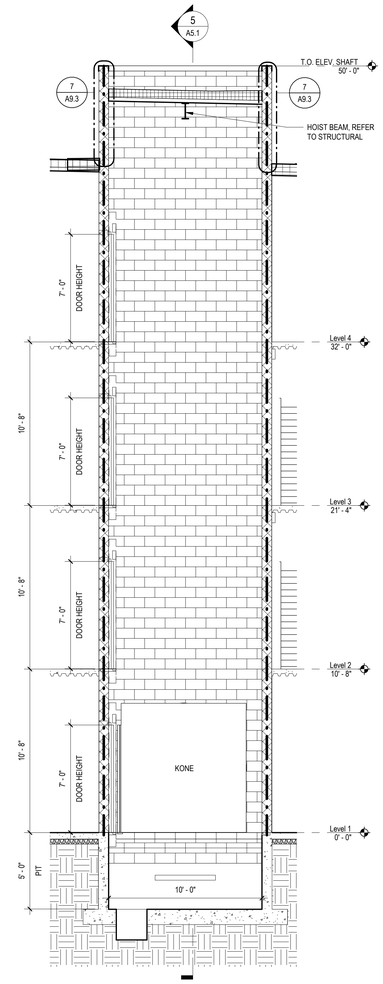
3 ELEVATOR PLAN - LEVEL 3
1/4" = 1'-0"



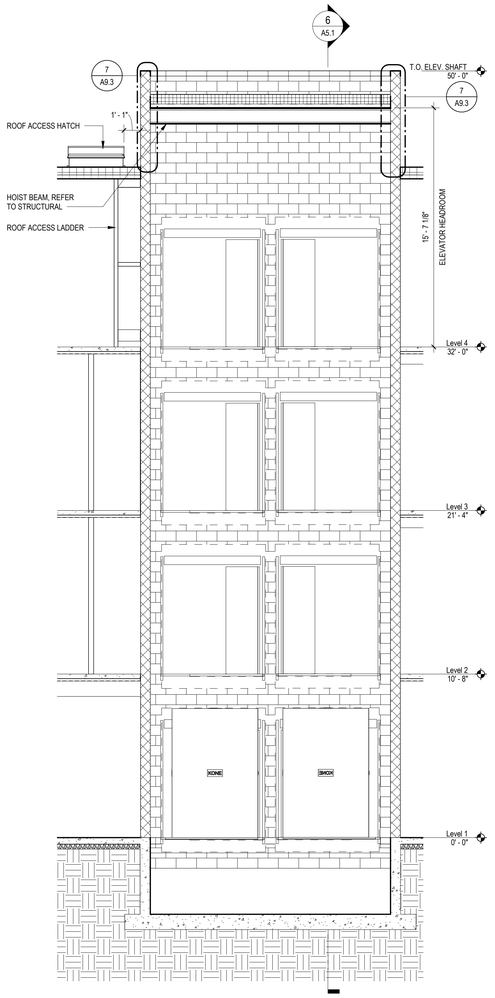
2 ELEVATOR PLAN - LEVEL 2
1/4" = 1'-0"



1 ELEVATOR PLAN - LEVEL 1
1/4" = 1'-0"



6 ELEVATOR SECTION B
1/4" = 1'-0"



5 ELEVATOR SECTION A
1/4" = 1'-0"

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DONALD W. ALEXANDER | ARCHITECT

STORAGE FACILITY

97 WARREN AVE
PORTLAND, ME 04103

Project No.:	25.0991
Drawn By:	CB

Date	Issue
03-30-26	Bid & Permit

A5.1

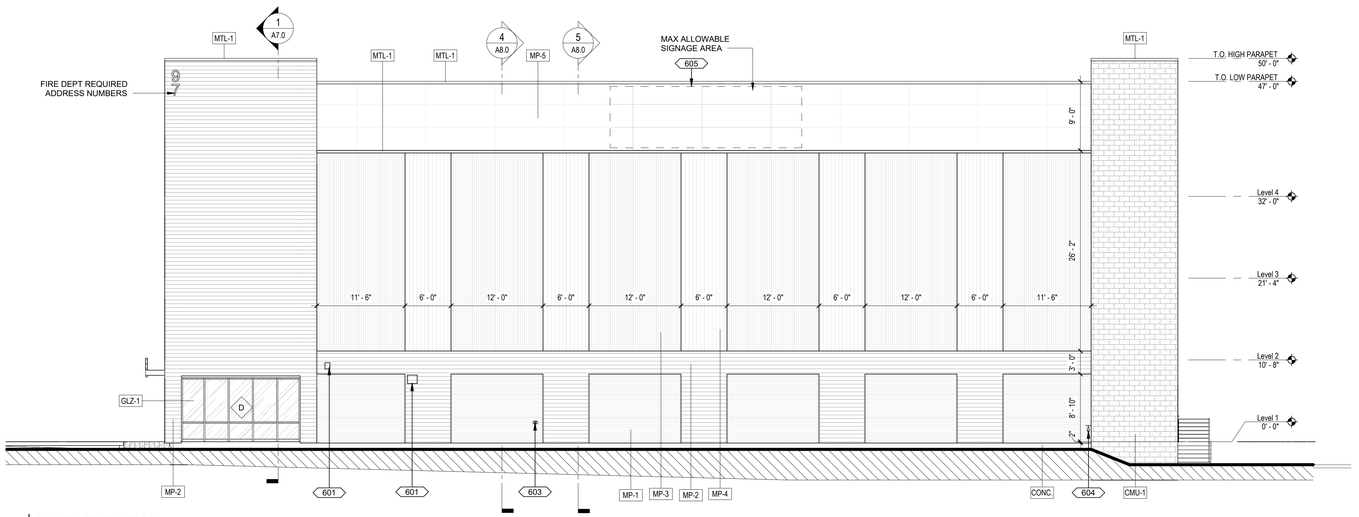
ELEVATOR PLAN & SECTION

EXTERIOR FINISH SCHEDULE

SYMBOL	MATERIAL	COLOR	MANUFACTURER	COMMENTS
AWN-1	PREFABRICATED METAL CANOPY	CUSTOM COLOR: MATCH PANTONE 186C	-	BASIS OF DESIGN: MAPES SUPER LUMIDECK FLAT SOFFIT
CMU-1	SPLITFACE CONCRETE MASONRY UNITS	RUTHERFORD GREY	ECHELON	
GLZ-1	CLEAR GLAZING	-	-	
MP-1	2.5" INSULATED METAL PANEL - KS SERIES	ZINC GRAY	KINGSPAN	MICRO-RIB, 36" WIDE, HORIZONTAL INSTALL
MP-2	4" INSULATED METAL PANEL - QUADCORE B-VALE	CUSTOM COLOR TO MATCH PANTONE 186C	KINGSPAN	B-VALE, 36" WIDE, HORIZONTAL INSTALL
MP-3	2.5" INSULATED METAL PANEL - KS SERIES	DOVE GRAY	KINGSPAN	MICRO-RIB, 36" WIDE, VERTICAL INSTALL
MP-4	2.5" INSULATED METAL PANEL - KS SERIES	REGAL WHITE	KINGSPAN	VEKTRA, 36" WIDE, VERTICAL INSTALL
MP-5	2.5" INSULATED METAL PANEL - OPTIMO	REGAL WHITE	KINGSPAN	OPTIMO, 36" WIDE, HORIZONTAL INSTALL
MTL-1	PERIMETER EDGE TRIM/METAL COPING/FASCIA	MUSKET GRAY	PAC-CLAD	
SPN-1	OPAQUE SPANDREL INFILL	-	-	GLOSS FINISH, GRAY OR BLACK COLOR TO SIMULATE GLAZING

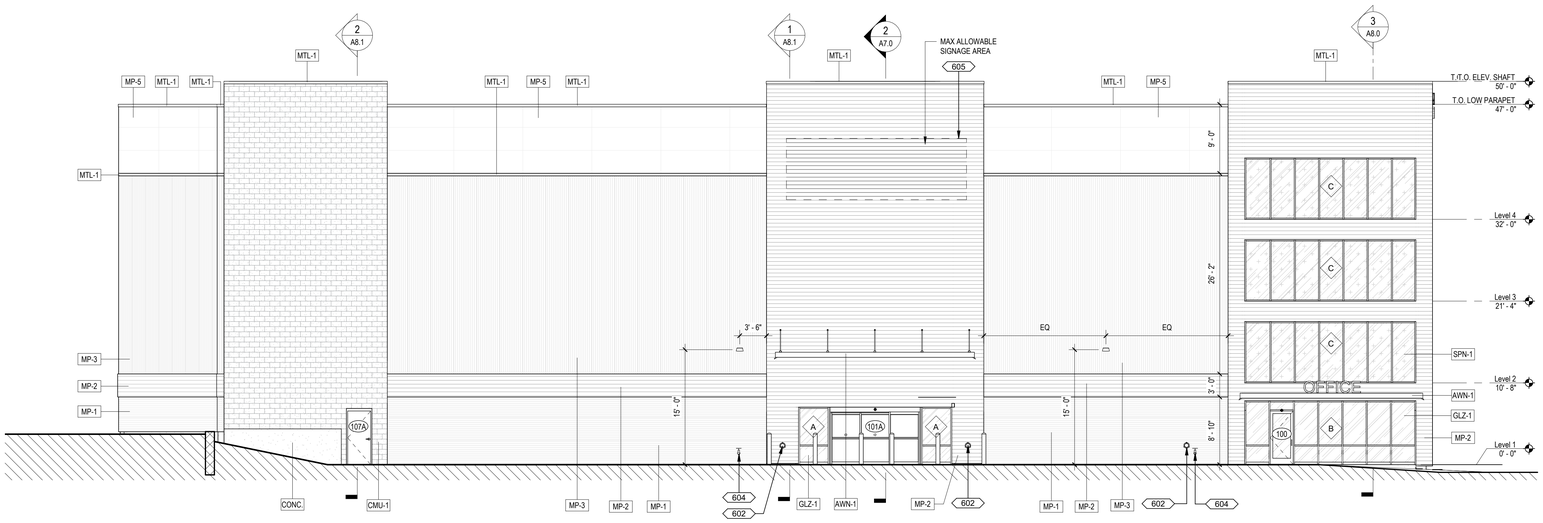
KEYNOTES

601	MECHANICAL LOUVER, PAINTED TO MATCH FINISH OF INSULATED METAL PANEL. MOUNT AT 8'-0" TO BOTTOM OF LOUVER FROM LEVEL
602	OVERFLOW NOZZLE, REFER TO PLUMBING.
603	FIRE DEPARTMENT CONNECTION, REFER TO PLUMBING.
604	RECESSED SATIN GREY WALL HYDRANT, REFER TO PLUMBING.
605	BUILDING SIGN. SIGNAGE SHALL BE PERMITTED VIA SEPARATE SUBMITTAL BY SIGNAGE VENDOR.



2 SOUTH ELEVATION

1/8" = 1'-0"



1 WEST ELEVATION

1/8" = 1'-0"

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STORAGE FACILITY

97 WARREN AVE
PORTLAND, ME 04103

Project No.:	25.0991
Drawn By:	CB
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03-30-26	Bid & Permit

A6.0

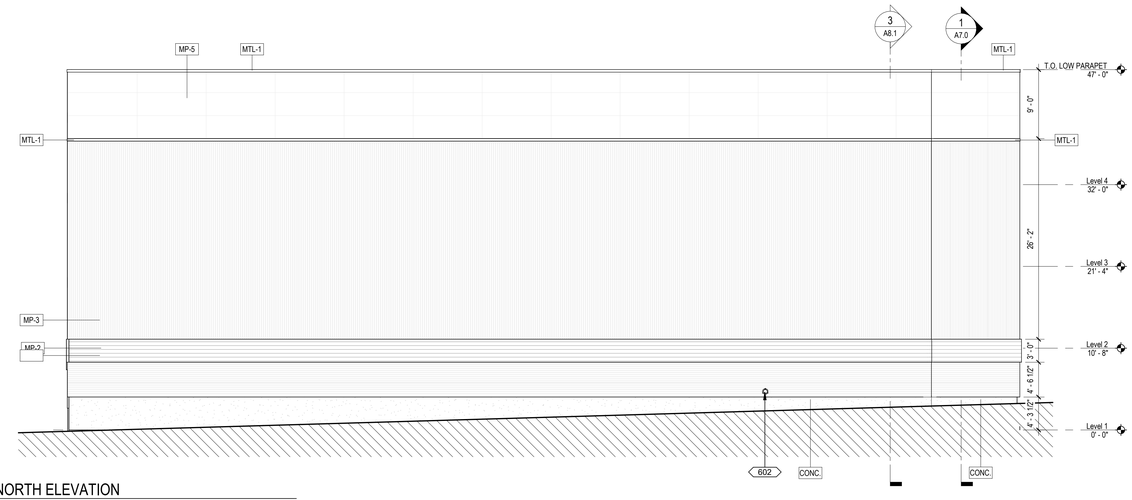
EXTERIOR ELEVATIONS

EXTERIOR FINISH SCHEDULE

SYMBOL	MATERIAL	COLOR	MANUFACTURER	COMMENTS
CMU-1	SPLITFACE CONCRETE MASONRY UNITS	RUTHERFORD GREY	ECHELON	
MP-1	2.5" INSULATED METAL PANEL - KS SERIES	ZINC GRAY	KINGSPAN	MICRO-RIB, 36" WIDE, HORIZONTAL INSTALL
MP-2	4" INSULATED METAL PANEL - QUADCORE B-VALE	CUSTOM COLOR TO MATCH PANTONE 18BC	KINGSPAN	B-VALE, 36" WIDE, HORIZONTAL INSTALL
MP-3	2.5" INSULATED METAL PANEL - KS SERIES	DOVE GRAY	KINGSPAN	MICRO-RIB, 36" WIDE, VERTICAL INSTALL
MP-5	2.5" INSULATED METAL PANEL - OPTIMO	REGAL WHITE	KINGSPAN	OPTIMO, 36" WIDE, HORIZONTAL INSTALL
MTL-1	PERIMETER EDGE TRIM/METAL COPING/FASCIA	MUSKET GRAY	PAC-CLAD	

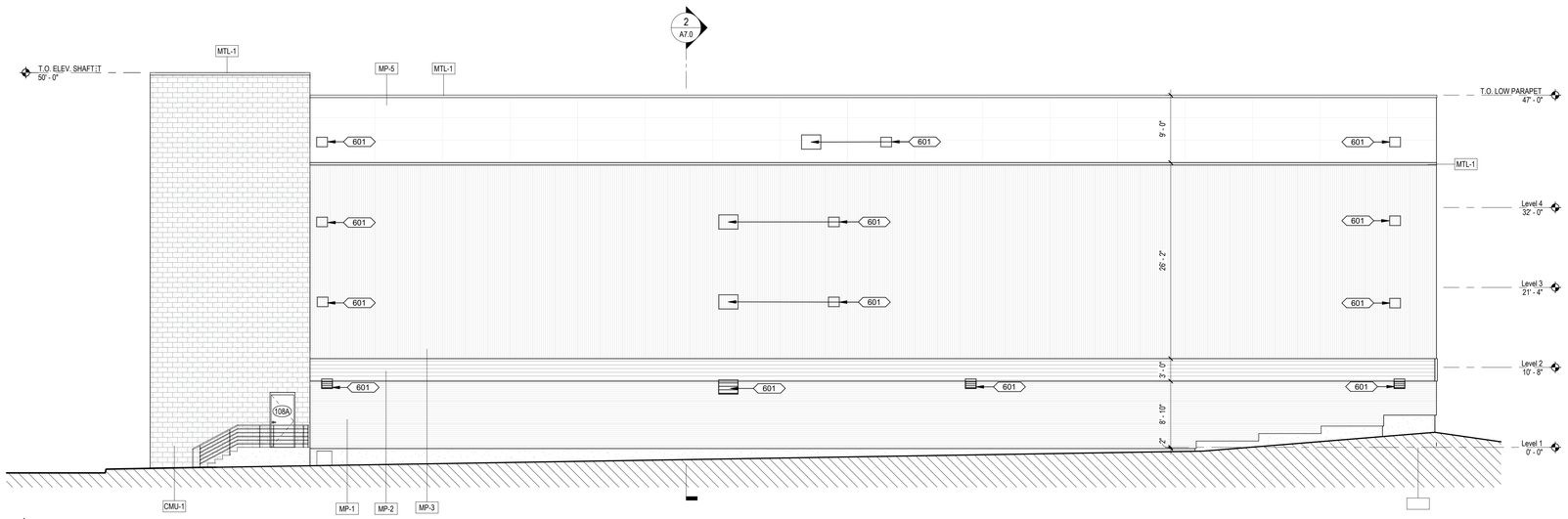
KEYNOTES

601	MECHANICAL LOUVER, PAINTED TO MATCH FINISH OF INSULATED METAL PANEL. MOUNT AT 8'-0" TO BOTTOM OF LOUVER FROM LEVEL
602	OVERFLOW NOZZLE, REFER TO PLUMBING.



2 NORTH ELEVATION

1/8" = 1'-0"



1 EAST ELEVATION

1/8" = 1'-0"

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EXTERIOR ELEVATIONS

RESTROOM ACCESSORIES SCHEDULE

DESCRIPTION	MFGR	MODEL #	FINISH	REMARKS
SOAP DISPENSER	GOJO	2730-12	BLACK	PROVIDE (1) PER RESTROOM AND (1) IN JANITORIAL ROOM
MIRROR	PER PLAN	PER PLAN	PER PLAN	AS SELECTED BY THE PROJECT TEAM, PROVIDE (1) PER RESTROOM
NAPKIN DISPOSAL	PER PLAN	PER PLAN	PER PLAN	PROVIDE (1) PER RESTROOM AND (1) IN JANITORIAL ROOM
TOILET TISSUE HODER	TORK	5555290	BLACK	PROVIDE (1) PER RESTROOM
GRAB BARS	PER PLAN	PER PLAN	PER PLAN	AS SELECTED BY PROJECT TEAM
FREE-STANDING WASTE CAN	BOBRICK	B-221216	SATIN SS	PROVIDE (1) PER RESTROOM AND (1) IN BREAKROOM
ELECTRIC HAND DRYER	XLERATOR	HAND DRYER	WHITE	PROVIDE (1) PER RESTROOM
HAND TOWEL DISPENSER	TORK	5510282	BLACK	PROVIDE (1) IN BREAKROOM AND (1) IN JANITORIAL ROOM

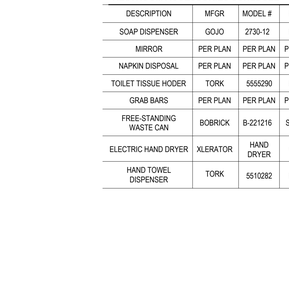
KEYNOTES

501	SOAP DISPENSER
502	MIRROR
503	NAPKIN DISPOSAL
504	TOILET TISSUE HOLDER
505	36" HORIZONTAL GRAB BAR
506	42" HORIZONTAL GRAB BAR
507	18" VERTICAL GRAB BAR
508	TRASH BIN
509	ELECTRIC HAND DRYER
511	FLOOR MOUNTED WATER CLOSET, REFER TO PLUMBING
512	WALL MOUNTED LAVATORY, REFER TO PLUMBING

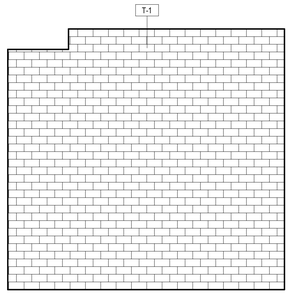
9 RESTROOM ELEVATION
1/2" = 1'-0"

8 RESTROOM ELEVATION
1/2" = 1'-0"

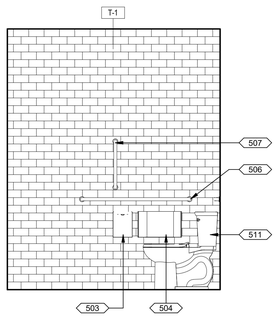
7 RESTROOM ELEVATION
1/2" = 1'-0"



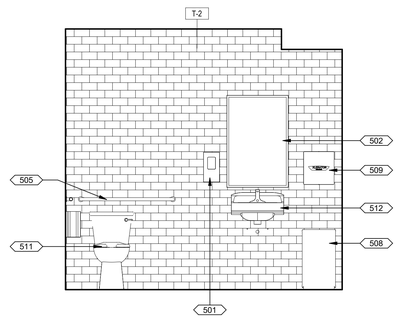
6 RESTROOM ELEVATION
1/2" = 1'-0"



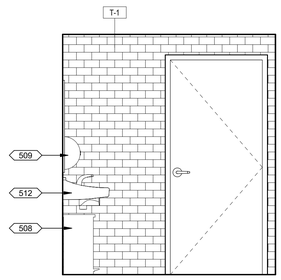
5 RESTROOM ELEVATION
1/2" = 1'-0"



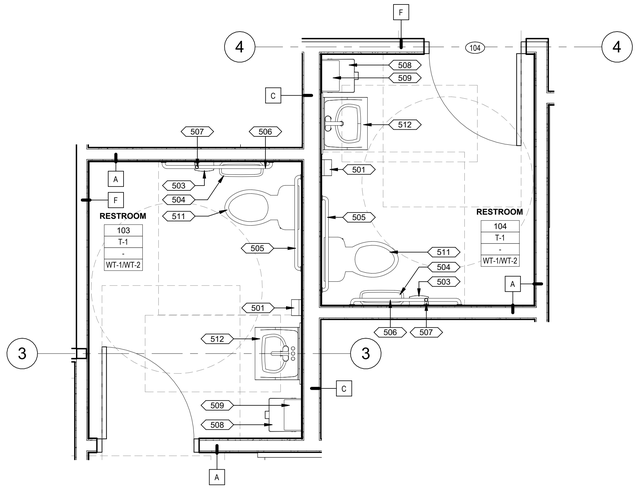
4 RESTROOM ELEVATION
1/2" = 1'-0"



3 RESTROOM ELEVATION
1/2" = 1'-0"



2 RESTROOM ELEVATION
1/2" = 1'-0"



1 RESTROOM FLOOR PLAN
1/2" = 1'-0"

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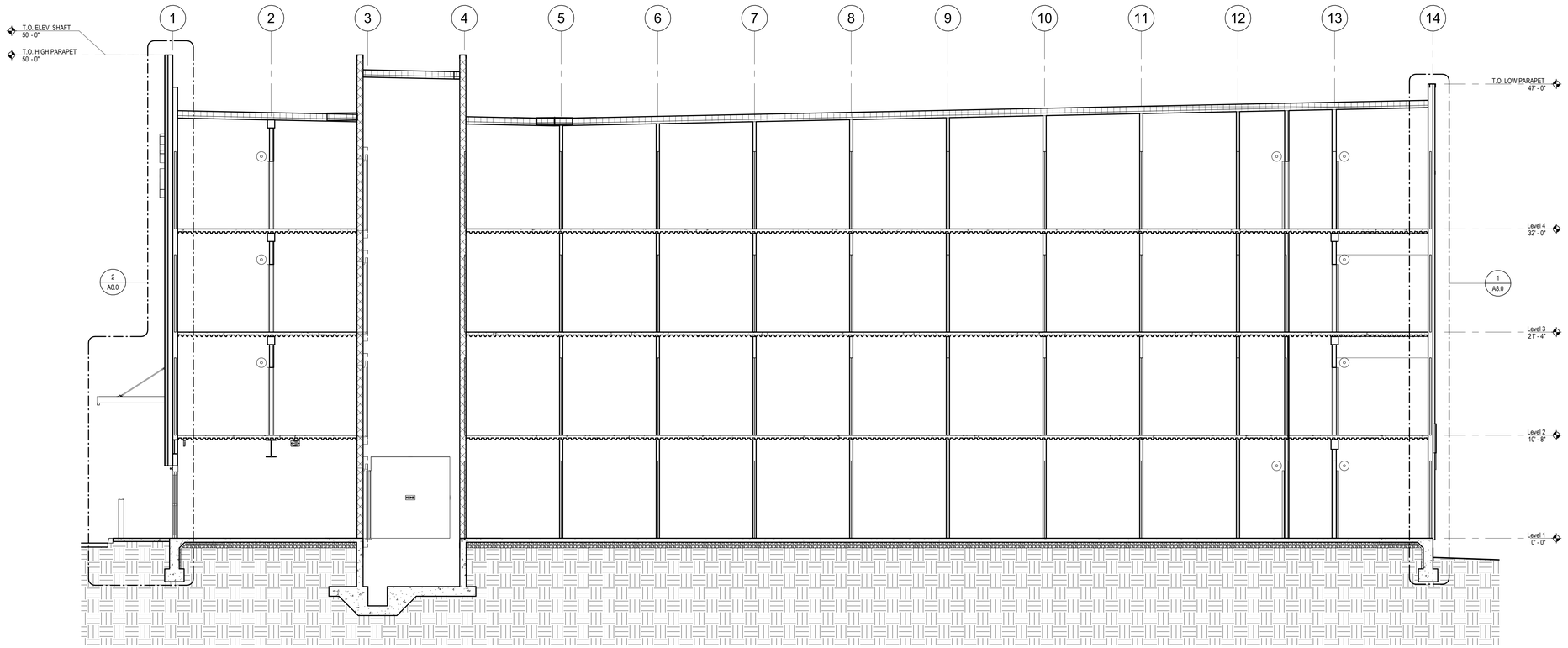
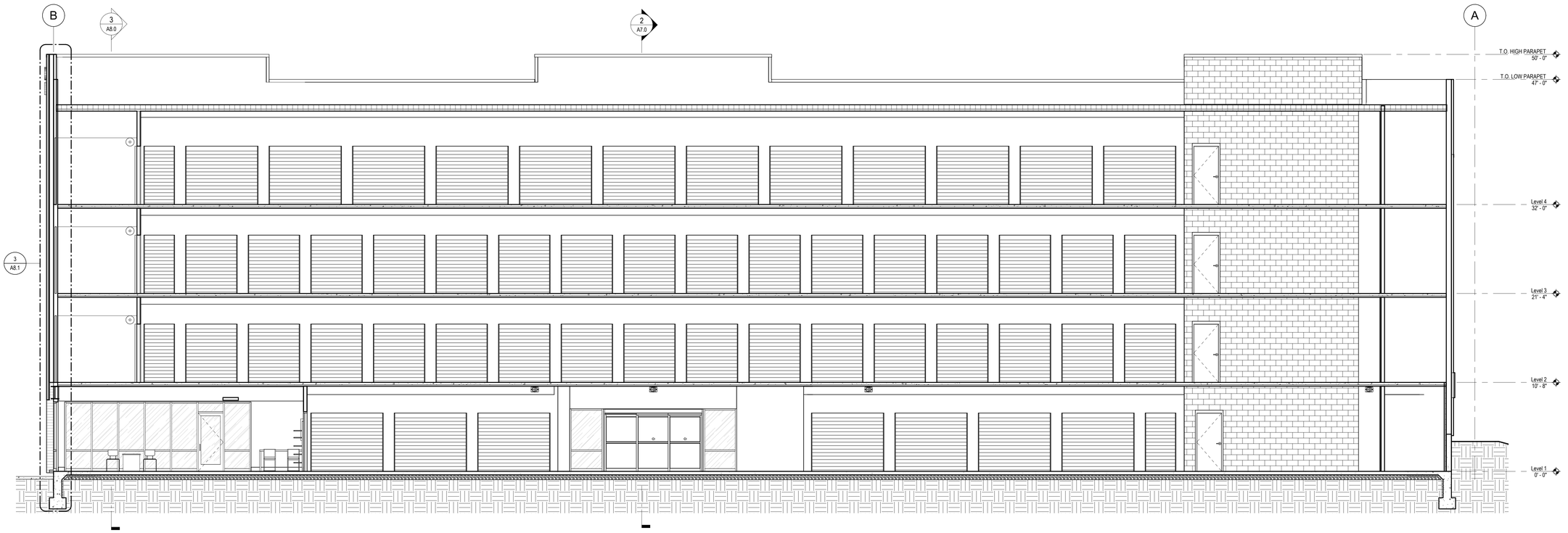
A6.2

RESTROOM PLANS & INTERIOR ELEV.



2 | BUILDING SECTION B

3/16" = 1'-0"



1 | BUILDING SECTION A

3/16" = 1'-0"

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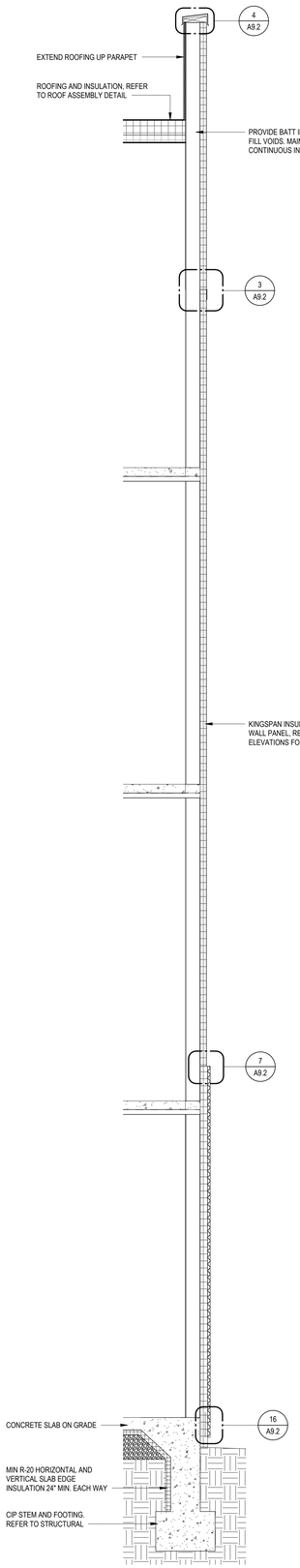
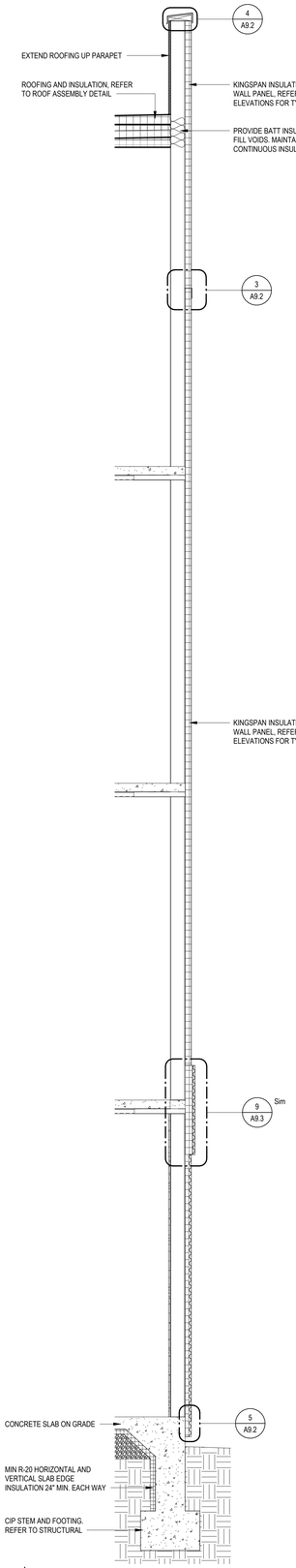
BUILDING SECTIONS



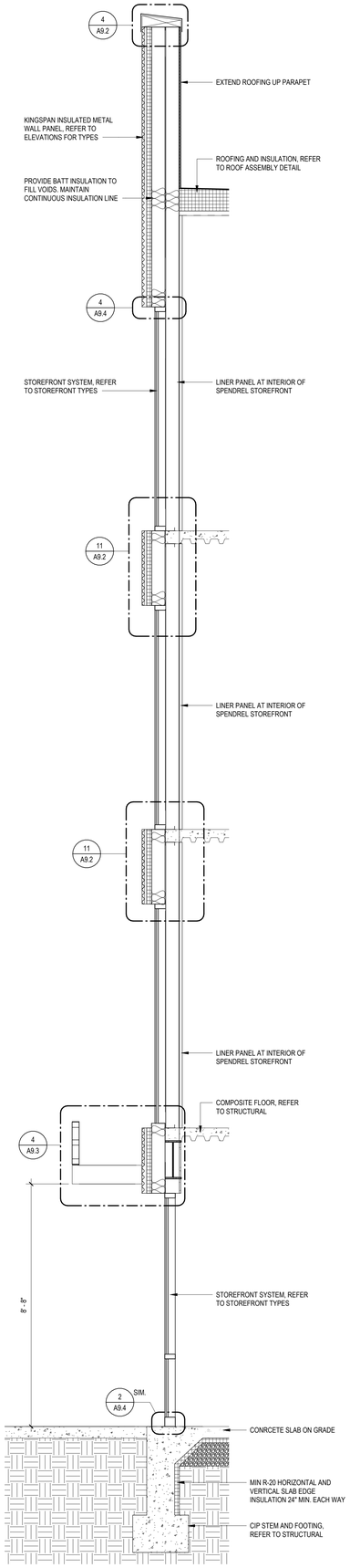
5 | ACCENT WALL A

1/2" = 1'-0"



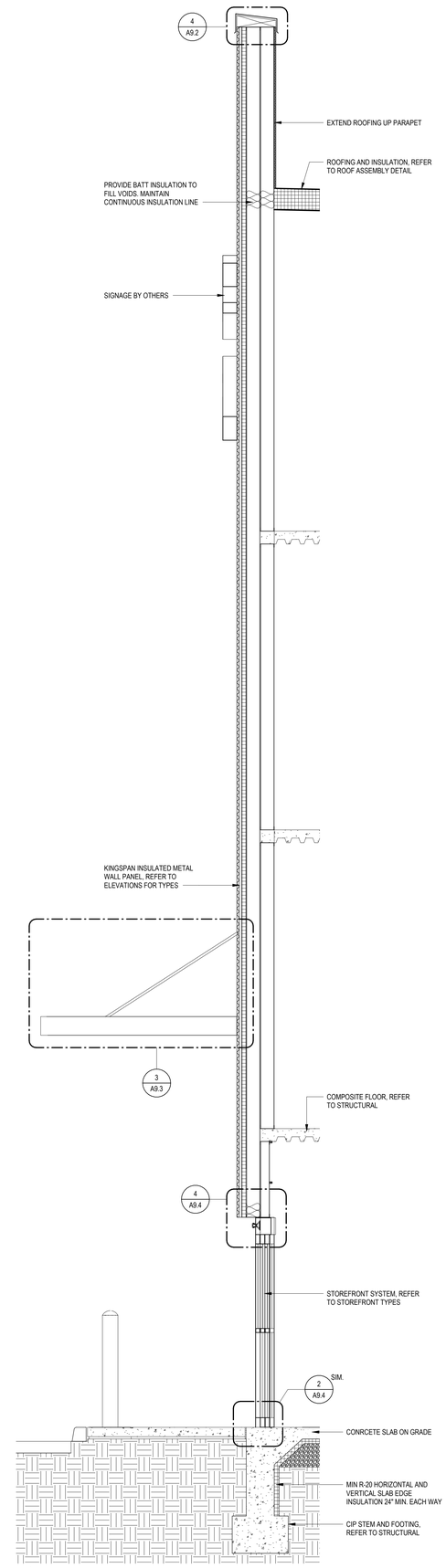
4 | ACCENT WALL B

1/2" = 1'-0"



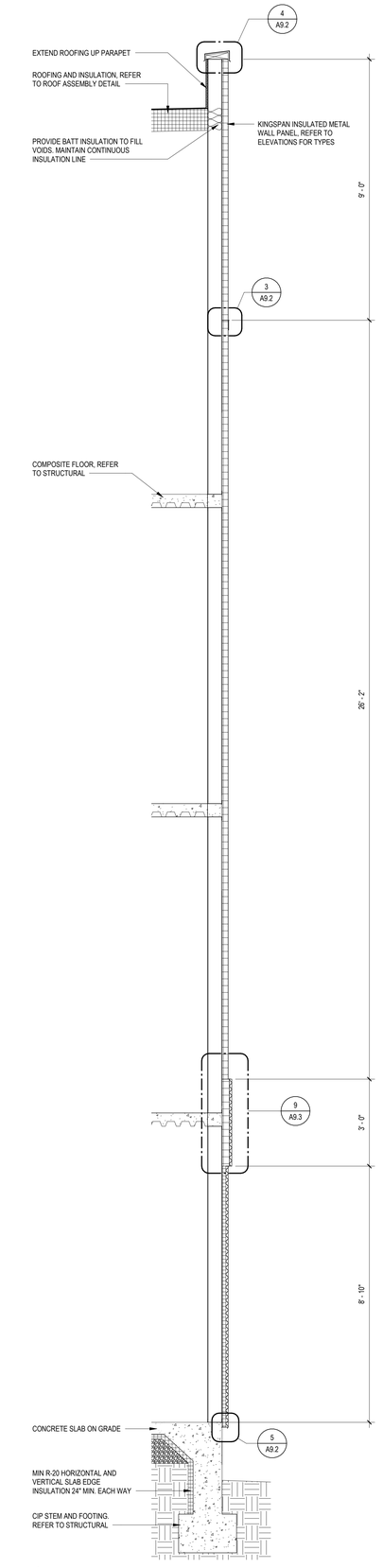
3 | OFFICE WALL SECTION

1/2" = 1'-0"



2 | ENTRY PORTAL SECTION

1/2" = 1'-0"



1 | TYPICAL WALL SECTION

1/2" = 1'-0"

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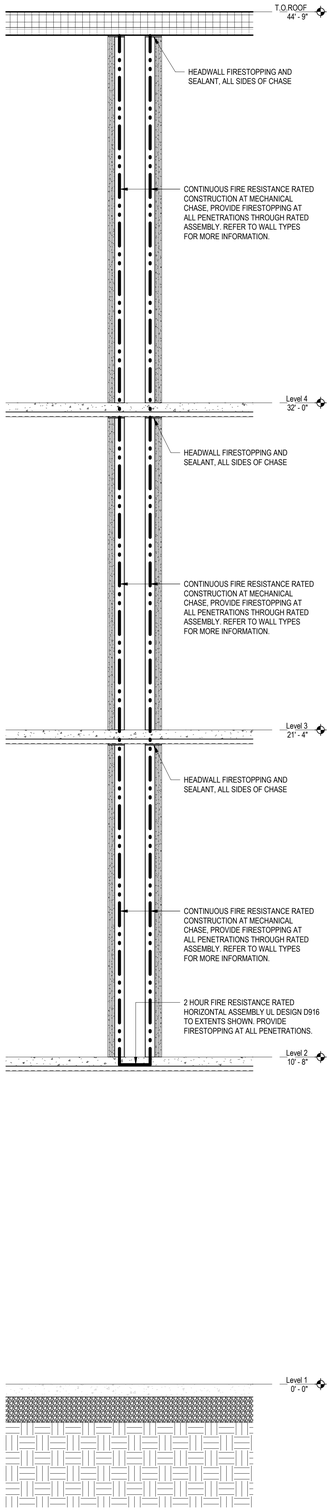
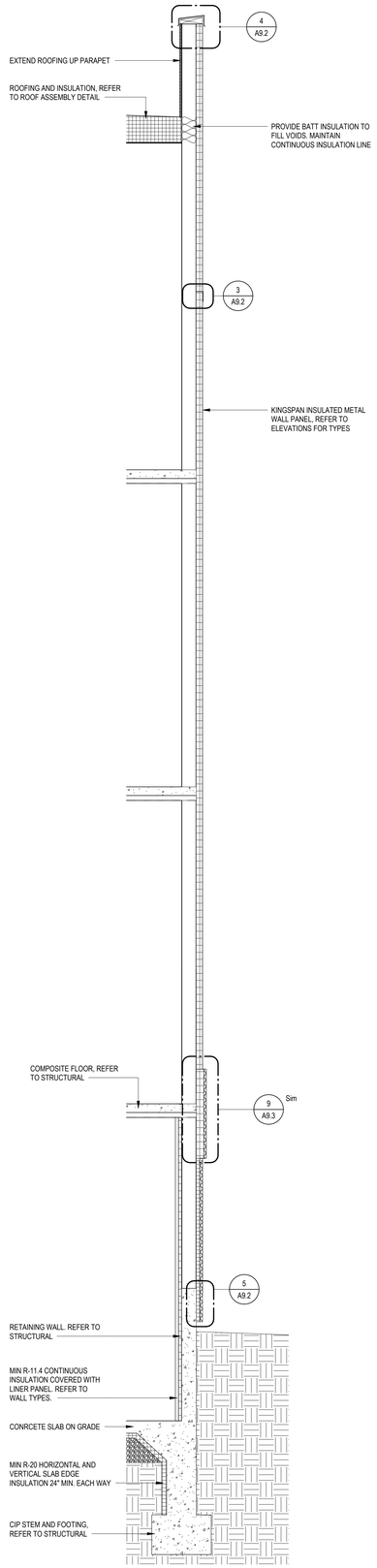
WALL SECTIONS



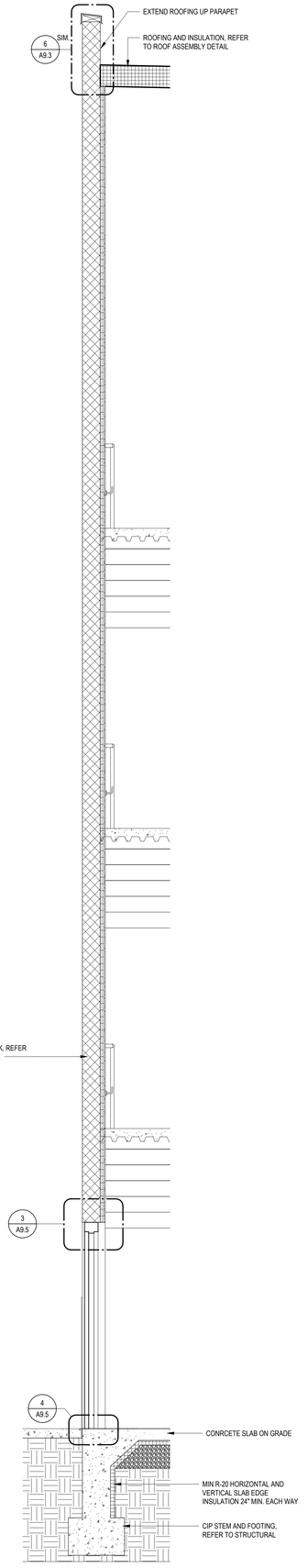
4 | MECHANICAL CHASE SECTION

1/2" = 1'-0"



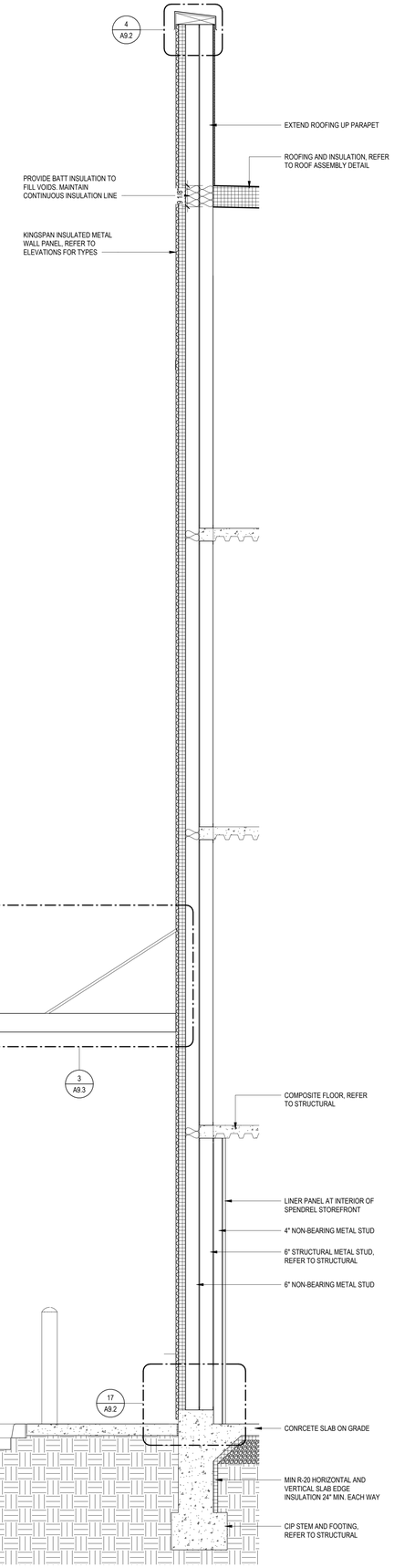
3 | RETAINING WALL SECTION

1/2" = 1'-0"



2 | STAIRWELL WALL SECTION

1/2" = 1'-0"



1 | ENTRY PILASTER SECTION

1/2" = 1'-0"

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WALL SECTIONS

INTERIOR MATERIAL SCHEDULE

MATERIAL	SYMBOL	DESCRIPTION	NUMBER	COLOR	MFGR.	COMMENT
CARPET	CPT-1	CARPET TILE	101085	PLAIN WEAVE - RUSTIC	INTERFACE	-
	CPT-2	CARPET TILE	#07	SUPREME NOP - CHARCOAL	MATS INC	ELEVATOR CAB
VINYL	VCT-1	VINYL TILE	51941	POLAR WHITE	ARMSTRONG	-
WALL BASE	WB-1	VINYL	727	THUNDER	EUCLID CHEMICAL	-
CONCRETE	CONC-1	SUPER AQUA-CURE VOX CONCRETE SEALER	-	CLEAR	BURKE MERCER	-
TILE	T-1	CERAMIC TILE	12" X 12"	A825 MERCURY	CROSVILLE	-
	WT-1	CERAMIC TILE	3" x 6" (STACK COVE BASE)	K175 BISCUIT	DALTILE	-
	WT-2	CERAMIC TILE	3" x 6" (NO COVE BASE)	9 RED PEPPER	ROCA	-
PAINT	PT-1	PAINT	7004	SNOWBOUND	SHERWIN WILLIAMS	WALLS (EGSHEEL SHEEN)
	PT-2	PAINT	6868	REAL RED	SHERWIN WILLIAMS	-
	PT-3	PAINT	7004	SNOWBOUND	SHERWIN WILLIAMS	CEILING (FLAT SHEEN)
	PT-4	PAINT	7004	SNOWBOUND	SHERWIN WILLIAMS	INT. DOORS, AND FRAMES (SEMI-GLOSS SHEEN)
	PT-5	PAINT	7048	URBANE BRONZE	SHERWIN WILLIAMS	EXT. DOORS AND FRAMES (SEMI-GLOSS SHEEN)
	PT-6	PAINT	2127-10	TWILIGHT ZONE	BENJAMIN MOORE	CEILING (FLAT SHEEN). PAINT EXPOSED STRUCTURE
ACOUSTIC TILE	ACT-1	2" X 2" ACOUSTIC TILE	PRELUDE XL 15/16"	CIRROE TILE / WHITE GRID	ARMSTRONG	RESTROOM & BREAKROOM ONLY
	ACT-2	2" X 2" ACOUSTIC TILE	PRELUDE XL 15/16"	CIRROE TILE / WHITE GRID	ARMSTRONG	OFFICE
FRP	FRP-1	FRP	0.090 FRP WALLBOARD	WHITE	GLASSLINER	UP TO 48" A.F.F. PROVIDE ALL REQUIRED TRIM.

HARDWARE SCHEDULE

HARDWARE SHALL BE FROM THE FOLLOWING MANUFACTURERS: ASSA ABLOY, ALLEGION, HAGER OR EQUIVALENT. BASIS OF DESIGN PROVIDED IN SETS BELOW.

SET 1:
- 1 1/2 PAIR BUTT HINGES, ANSI 156.1, A5111, HAGER BB1199
- CLOSER, ANSI A156.4, GRADE 1, NORTON 1600 SERIES, PARALLEL ARM, WITHOUT HOLD OPEN
- PUSH/PULL, ROCKWOOD SERIES 47 STRAIGHT SINGLE BAR SET
- DEADLOCK.DEADLATCH, ADAMS RITE MS+ 1890 SERIES MS
- LATCH PROTECTOR, ROCKWOOD 320CL, FINISH 10BE
- THRESHOLD (MAX 1/2" H). EXTRUDED ALUMINUM, MANUFACTURER'S STANDARD, ADA ACCESSIBLE
- WEATHERSTRIPPING, PEMCO 290_PK HD PERIMETER GASKETING, PROVIDE AT JAMBS AND HEAD
- DOOR SWEEP, PEMKO 321SSN OR LARGER PROFILE AS REQUIRED TO MATCH DOOR UNDERCUT, FASTEN WITH STAINLESS STEEL SCREWS
- SIGN, "THIS DOOR TO REMAIN UNLOCKED WHEN THIS SPACE IS OCCUPIED" - 1" HIGH LETTERS ON A CONTRASTING BACKGROUND MOUNTED ABOVE DOOR
- MAIL SLOT, C.R. LAWRENCE MODEL NDMS13A ANODIZED 3" X 11-1/2" NO-DRAFT MAIL SLOT
- FINISH: DARK BRONZE

SET 2:
- 1 1/2 PAIR BUTT HINGES, ANSI 156.1, A5111, HAGER BB1199
- CLOSER, ANSI A156.4, GRADE 1, NORTON 1600 SERIES, PARALLEL ARM, WITHOUT HOLD OPEN
- LEVERSET, GRADE 1, SCHLAGE ND MECHANICAL RHODES LEVER, FUNCTION ND80
- KICK PLATE, ROCKWOOD K1050, STAINLESS STEEL, FASTEN WITH STAINLESS STEEL SCREWS, PUSH SIDE OF DOOR
- THRESHOLD (MAX 1/2" H). EXTRUDED ALUMINUM, MANUFACTURER'S STANDARD, ADA ACCESSIBLE, WITH RAIN LIP
- WEATHERSTRIPPING, PEMCO 290_PK HD PERIMETER GASKETING, PROVIDE AT JAMBS AND HEAD
- DOOR SWEEP, PEMKO 321SSN OR LARGER PROFILE AS REQUIRED TO MATCH DOOR UNDERCUT, FASTEN WITH STAINLESS STEEL SCREWS
- FLOOR MOUNTED DOOR STOP, HAGER MODEL 241F OR 243F (SELECT MODEL BASED ON HEIGHT IN FIELD)
- DRIP PROTECTION, PEMKO 346 SERIES
- FINISH: DARK BRONZE

SET 3:
- 1 1/2 PAIR BUTT HINGES, ANSI 156.1, A8111, HAGER BB1168
- CLOSER, ANSI A156.4, GRADE 1, NORTON 1600 SERIES, PARALLEL ARM, WITHOUT HOLD OPEN, 626 FINISH
- LEVERSET, GRADE 1, SCHLAGE ND MECHANICAL RHODES LEVER, FUNCTION ND10
- KICK PLATE, ROCKWOOD K1050, STAINLESS STEEL, FASTEN WITH STAINLESS STEEL SCREWS, PUSH SIDE OF DOOR
- FINISH: US26D

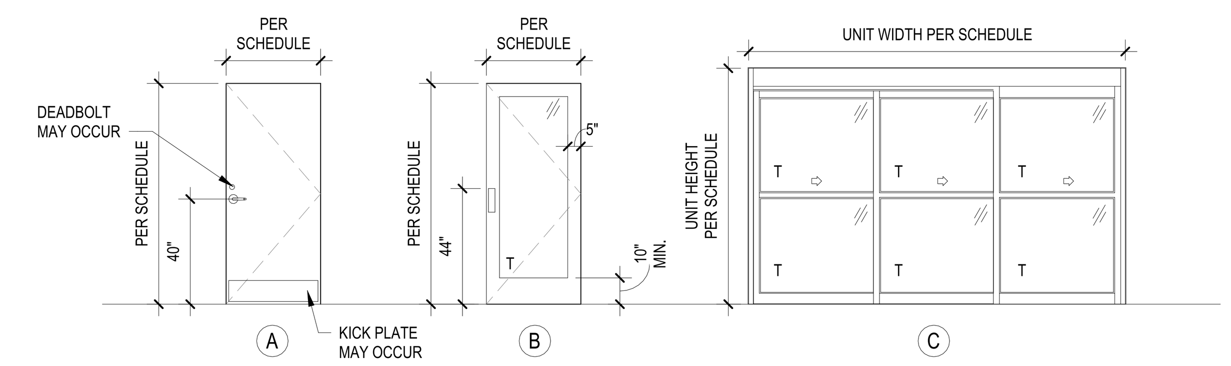
SET 4:
- 1 1/2 PAIR BUTT HINGES, ANSI 156.1, A8111, HAGER BB1168
- CLOSER, ANSI A156.4, GRADE 1, NORTON 1600 SERIES, PARALLEL ARM, WITHOUT HOLD OPEN, 626 FINISH
- LEVERSET, GRADE 1, SCHLAGE ND MECHANICAL RHODES LEVER, FUNCTION ND80
- KICK PLATE, ROCKWOOD K1050, STAINLESS STEEL, FASTEN WITH STAINLESS STEEL SCREWS, BOTH SIDES OF DOOR
- FINISH: US26D

SET 5:
- MANUFACTURER'S ADA COMPLIANT THRESHOLD (MAX 1/2" H), WITH RAIN LIP
- MANUFACTURER'S STANDAD MOTION SENSING AND BEAM DETECTION
- DRIP PROTECTION, PEMKO 346 SERIES
- FINISH: DARK BRONZE

SET 6:
- 1 1/2 PAIR BUTT HINGES, ANSI 156.1, A8111, HAGER BB1168
- CLOSER, ANSI A156.4, GRADE 1, NORTON 1600 SERIES, PARALLEL ARM, WITHOUT HOLD OPEN, 626 FINISH
- LEVERSET, GRADE 1, SCHLAGE ND MECHANICAL RHODES LEVER, FUNCTION ND10
- INDICATOR DEADBOLT, GRADE 1, SCHLAGE B660 (ANSI E0151)
- KICK PLATE, ROCKWOOD K1050, STAINLESS STEEL, FASTEN WITH STAINLESS STEEL SCREWS, PUSH SIDE OF DOOR
- FINISH:US26D

	DOORS					FRAMES				
NO.	TYPE	DESCRIPTION	WIDTH	HEIGHT	FINISH	MATERIAL	FINISH	FIRE RATING	HARDWARE	COMMENTS
100	B	ALUMINUM/ GLASS	3' - 0"	7' - 0"	MFR	ALUMINUM	MFR	-	1	DARK BRONZE FINISH BY MFR
101	A	HOLLOW METAL	3' - 0"	7' - 0"	PT-4	HOLLOW METAL	PT-4	-	4	
101A	C	ALUMINUM/ GLASS	11' - 11 1/2"	7' - 5 3/4"	MFR	ALUMINUM	MFR	-	5	DARK BRONZE FINISH BY MFR
102	A	HOLLOW METAL	3' - 0"	7' - 0"	PT-4	HOLLOW METAL	PT-4	-	3	
102A	A	HOLLOW METAL	3' - 0"	7' - 0"	PT-4	HOLLOW METAL	PT-4	-	4	12" W x 6" H GRILLE THIS DOOR, COORD W/ MECH
103	A	HOLLOW METAL	3' - 0"	7' - 0"	PT-4	HOLLOW METAL	PT-4	-	6	
104	A	HOLLOW METAL	3' - 0"	7' - 0"	PT-4	HOLLOW METAL	PT-4	-	6	
105	A	HOLLOW METAL	3' - 0"	7' - 0"	PT-4	HOLLOW METAL	PT-4	-	4	
106	A	HOLLOW METAL	3' - 0"	7' - 0"	PT-4	HOLLOW METAL	PT-4	-	4	PROVIDE SIGN READING "FACP" ON EXTERIOR OF DOOR
107	A	HOLLOW METAL	3' - 0"	7' - 0"	PT-4	HOLLOW METAL	PT-4	60 MIN	3	
107A	A	HOLLOW METAL	3' - 0"	7' - 0"	PT-4	HOLLOW METAL	PT-4	-	2	
108	A	HOLLOW METAL	3' - 0"	7' - 0"	PT-4	HOLLOW METAL	PT-4	60 MIN	3	
108A	A	HOLLOW METAL	3' - 0"	7' - 0"	PT-4	HOLLOW METAL	PT-4	-	2	
201	A	HOLLOW METAL	3' - 0"	7' - 0"	PT-4	HOLLOW METAL	PT-4	-	4	
207	A	HOLLOW METAL	3' - 0"	7' - 0"	PT-4	HOLLOW METAL	PT-4	60 MIN	3	
208	A	HOLLOW METAL	3' - 0"	7' - 0"	PT-4	HOLLOW METAL	PT-4	60 MIN	3	
301	A	HOLLOW METAL	3' - 0"	7' - 0"	PT-4	HOLLOW METAL	PT-4	-	4	
307	A	HOLLOW METAL	3' - 0"	7' - 0"	PT-4	HOLLOW METAL	PT-4	60 MIN	3	
308	A	HOLLOW METAL	3' - 0"	7' - 0"	PT-4	HOLLOW METAL	PT-4	60 MIN	3	
401	A	HOLLOW METAL	3' - 0"	7' - 0"	PT-4	HOLLOW METAL	PT-4	-	4	
407	A	HOLLOW METAL	3' - 0"	7' - 0"	PT-4	HOLLOW METAL	PT-4	60 MIN	3	
408	A	HOLLOW METAL	3' - 0"	7' - 0"	PT-4	HOLLOW METAL	PT-4	60 MIN	3	

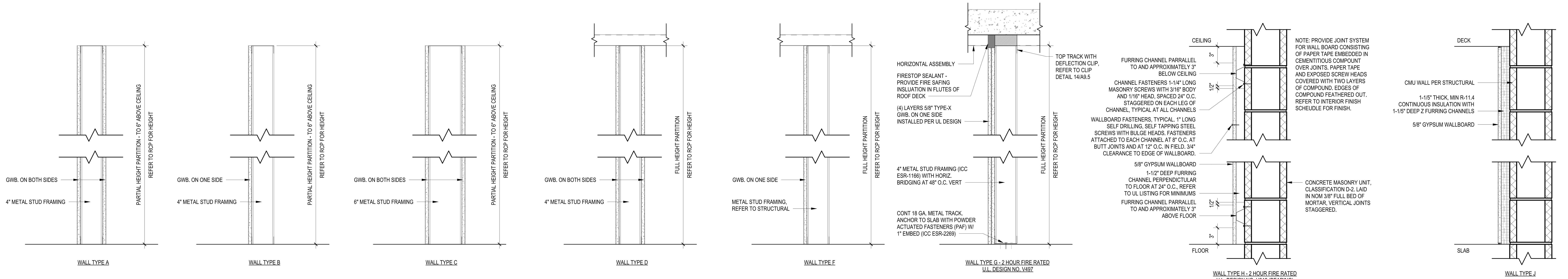
DOOR TYPES



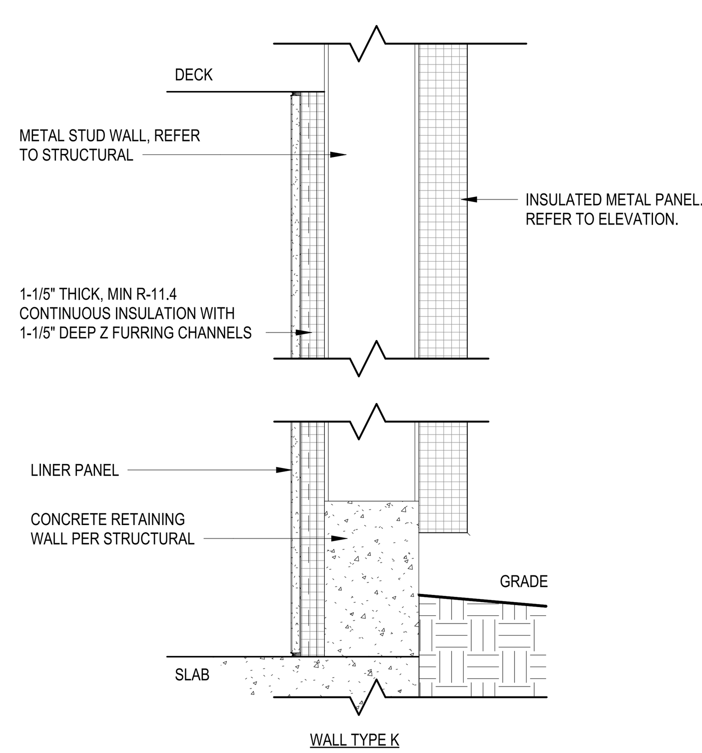
T - SYMBOL DENOTES SAFETY GLASS, TEMPERED

B.O.D.: ASSA ABLOY/BESAM ENTRANCE SYSTEM MODEL SL500. - SINGLE SLIDE NARROW STILE *MATCH STOREFRONT FINISH

WALL TYPES

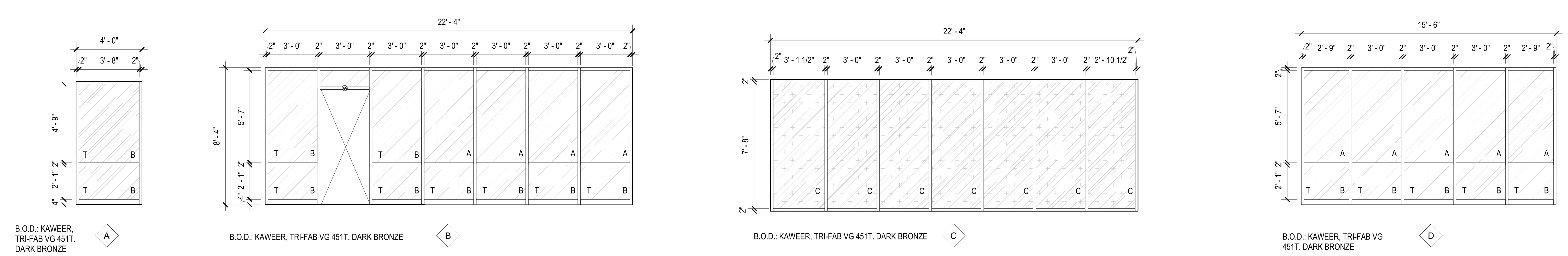


COMPLIANCE NOTE: UL DESIGN U912 IS INTENDED TO PROVIDE 4 HOUR FIRE RESISTANCE. THAT RATING IS NOT REQUIRED FOR THIS APPLICATION AND ALL JOINT STOPPINGS AND OTHER PENETRATIONS THAT OCCUR IN THIS ASSEMBLY NEED ONLY MEET THE REUIREMENTS OF THE 2 HOUR FIRE RESISTANCE REQUIRED FOR THIS APPLICATION.



STOREFRONT TYPES

GLAZING SCHEDULE	
A	1" INSULATED GLASS MAXIMUM U-VALUE OF 0.36 MAXIMUM SHGC OF 0.38
B	1" INSULATED TEMPERED GLASS MAXIMUM U-VALUE OF 0.36 MAXIMUM SHGC OF 0.38
C	1" INSULATED OPAQUE SPANDREL INFILL PANEL MAXIMUM U-VALUE OF 0.36 MAXIMUM SHGC OF 0.38



B.O.D.: KAWEER, TRI-FAB VG 451T. DARK BRONZE

B.O.D.: KAWEER, TRI-FAB VG 451T. DARK BRONZE

B.O.D.: KAWEER, TRI-FAB VG 451T. DARK BRONZE

B.O.D.: KAWEER, TRI-FAB VG 451T. DARK BRONZE

DONALD W. ALEXANDER | ARCHITECT

Design and construction documents as instruments of service are given in confidence and remain the property of Donald W. Alexander, Architect. The use of this design and these construction documents for purposes other than the specific project named herein is strictly prohibited without expressed written consent of Donald W. Alexander, Architect.

STORAGE FACILITY
97 WARREN AVE
PORTLAND, ME 04103

Project No.:	25.0991
Drawn By:	CB
Date	Issue
03-30-26	Bid & Permit

A9.0

SCHEDULES & TYPES

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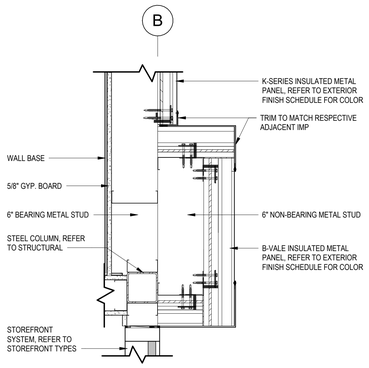
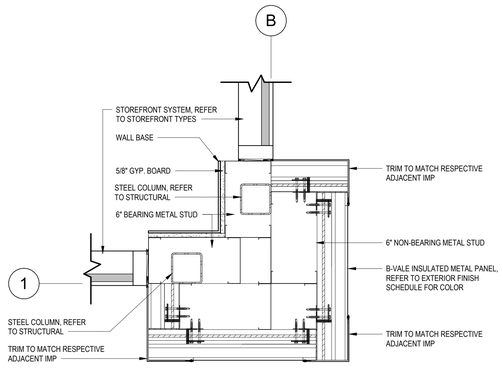
A9.1

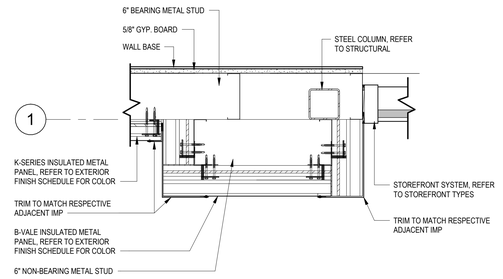
EXTERIOR DETAILS



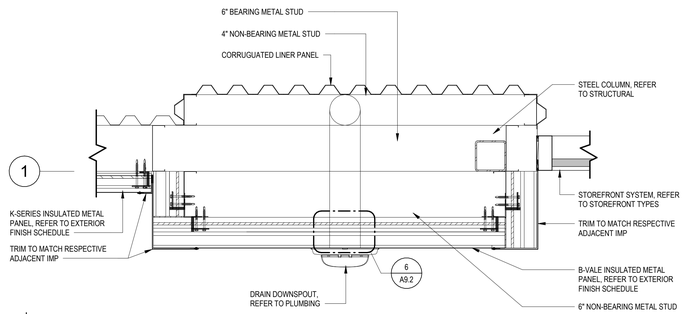
4 | EAST OFFICE PILASTER
1 1/2" = 1'-0"



3 | OFFICE PILASTER - CORNER
1 1/2" = 1'-0"

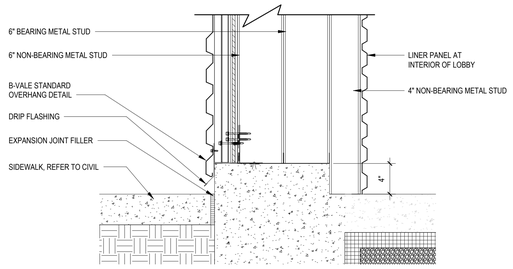


2 | WEST OFFICE PILASTER
1 1/2" = 1'-0"

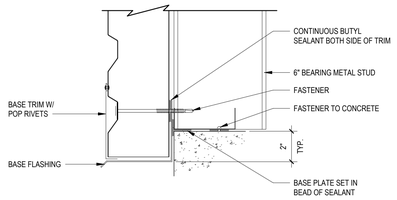


1 | LOADING ENTRY PILASTER
1 1/2" = 1'-0"

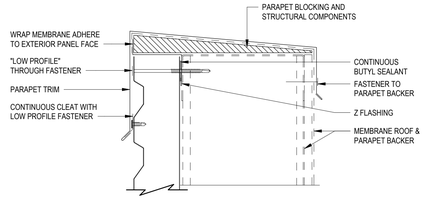
5 | B-VALE TRANSITION
3" = 1'-0"



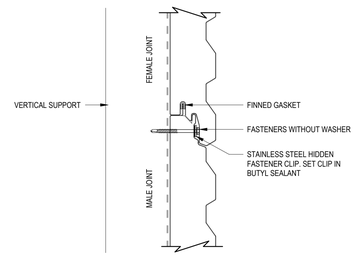
17 ENTRY PILASTER CURB
1 1/2" = 1'-0"



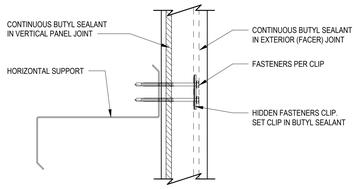
16 B-VALE OVERHANG
3" = 1'-0"



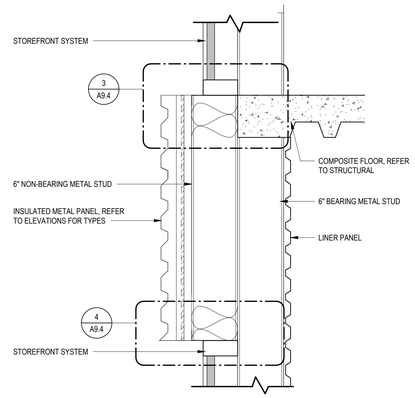
15 B-VALE PARAPET DETAIL
3" = 1'-0"



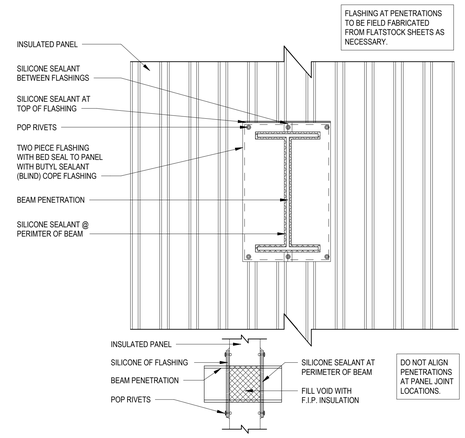
14 B-VALE PANEL JOINT
3" = 1'-0"



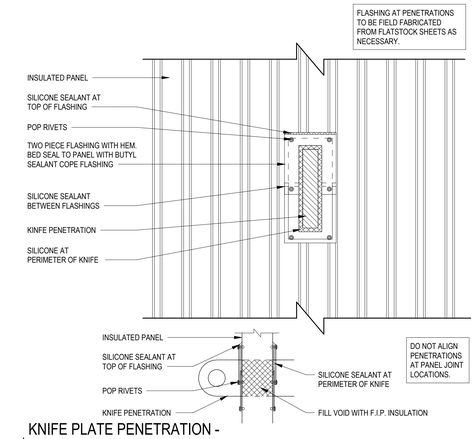
INTERMEDIATE SUPPORT - KS-SERIES & OPTIMO, TYPICAL
13
3" = 1'-0"



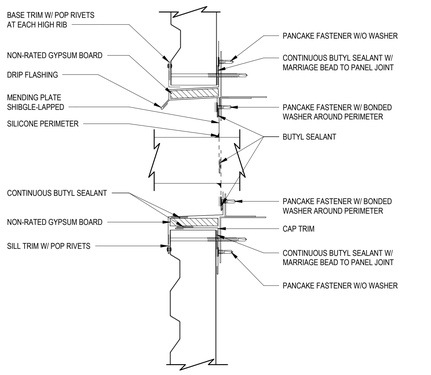
KS-SERIES STOREFRONT TRANSITION
11
1 1/2" = 1'-0"



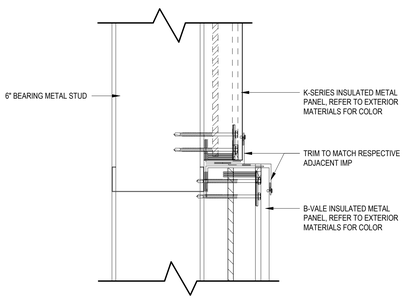
10 BEAM PENETRATION
3" = 1'-0"



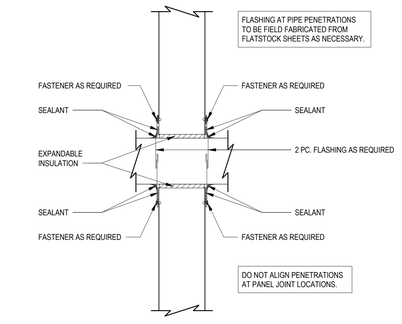
KNIFE PLATE PENETRATION - KS
9
3" = 1'-0"



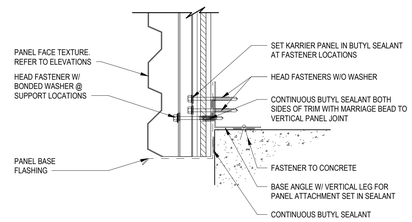
8 B-VALE PIPE PENETRATION
3" = 1'-0"



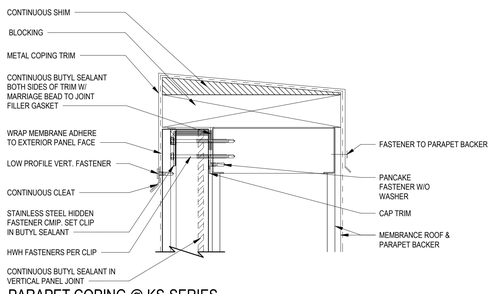
7 B-VALE TRANSITION
3" = 1'-0"



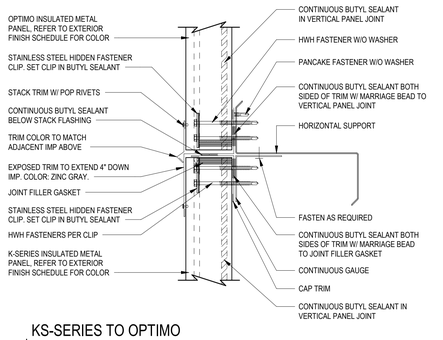
6 PIPE PENETRATION SECTION
3" = 1'-0"



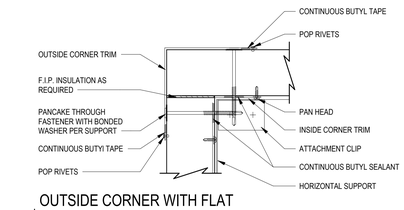
5 KS-SERIES OVERHANG
3" = 1'-0"



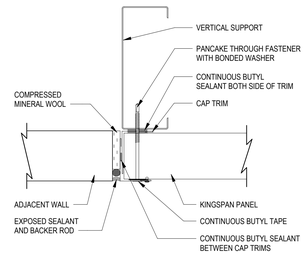
PARAPET COPING @ KS-SERIES KINGSPAN PANEL
4
3" = 1'-0"



KS-SERIES TO OPTIMO TRANSITION W/ GREY TRIM
3
3" = 1'-0"



OUTSIDE CORNER WITH FLAT TRIM - KS
2
3" = 1'-0"



1 END TERMINATION - KS
3" = 1'-0"

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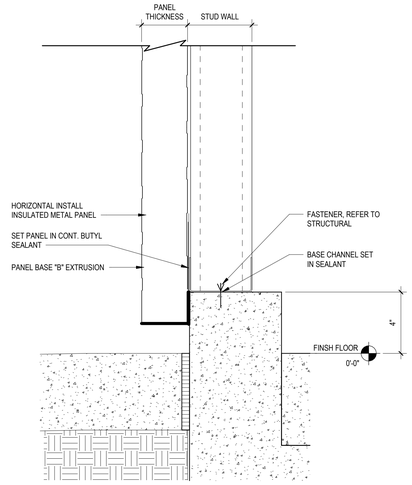
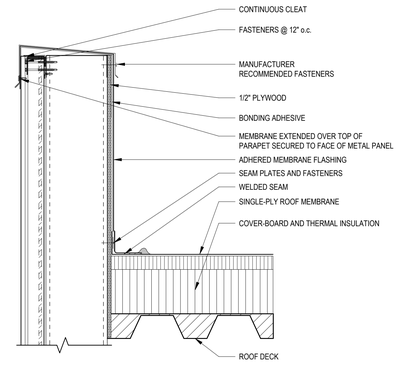
A9.2

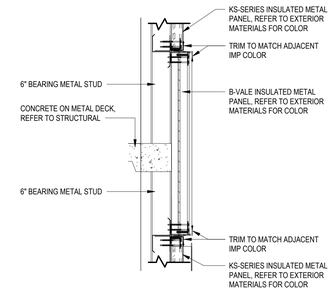
EXTERIOR DETAILS



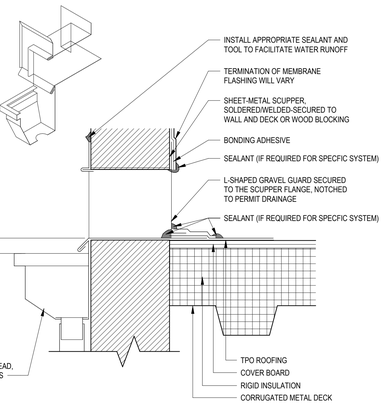
11 KS AT GRADE
3" = 1'-0"



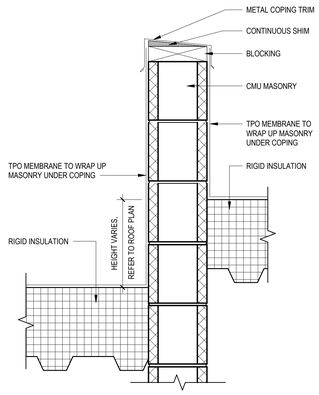
10 PARAPET COPING @ METAL STUD
1 1/2" = 1'-0"



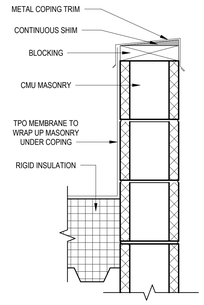
9 B-VALE RED BAND TRANSITION
1" = 1'-0"



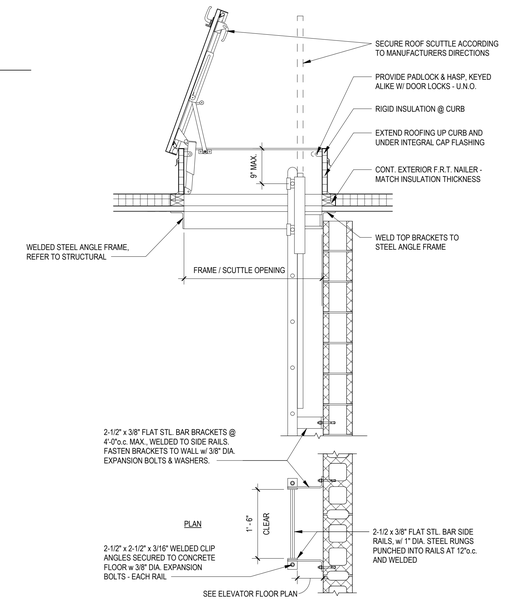
8 THROUGH-WALL SCUPPER
3" = 1'-0"



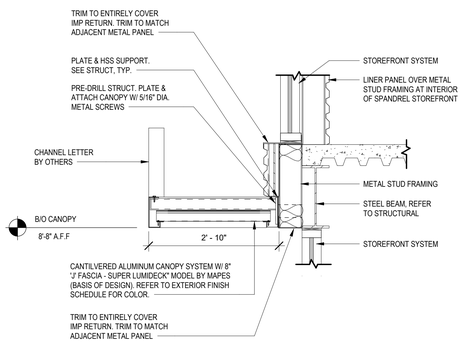
7 PARAPET COPING @ MASONRY
1 1/2" = 1'-0"



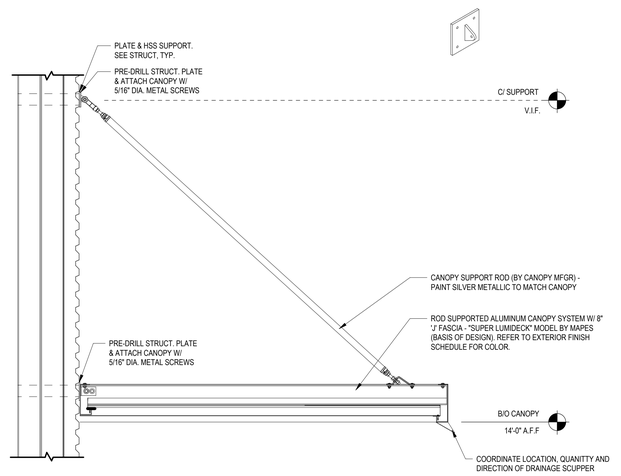
6 PARAPET COPING @ MASONRY
1 1/2" = 1'-0"



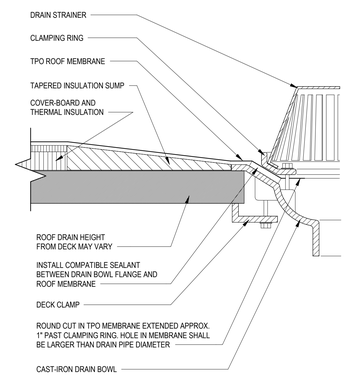
CMU ROOF HATCH & LADDER DETAIL
3/4" = 1'-0"



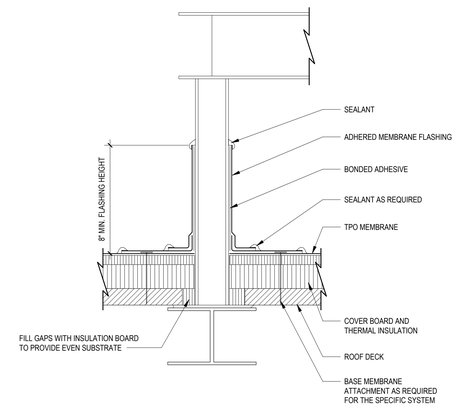
4 CANOPY DETAIL - CANTILVER SUPER LUMIDECK
3/4" = 1'-0"



3 CANOPY DETAIL - SUPER LUMIDECK
3/4" = 1'-0"



2 ROOF DRAIN
3" = 1'-0"



1 EQUIPMENT STAND SUPPORT
3" = 1'-0"

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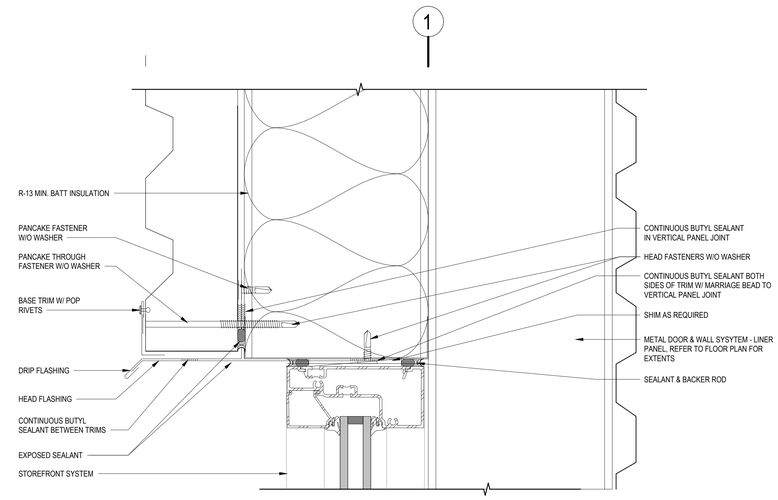
STORAGE FACILITY

97 WARREN AVE
PORTLAND, ME 04103

Project No.:	25.0991
Drawn By:	CB
Date	Issue
03-30-26	Bid & Permit

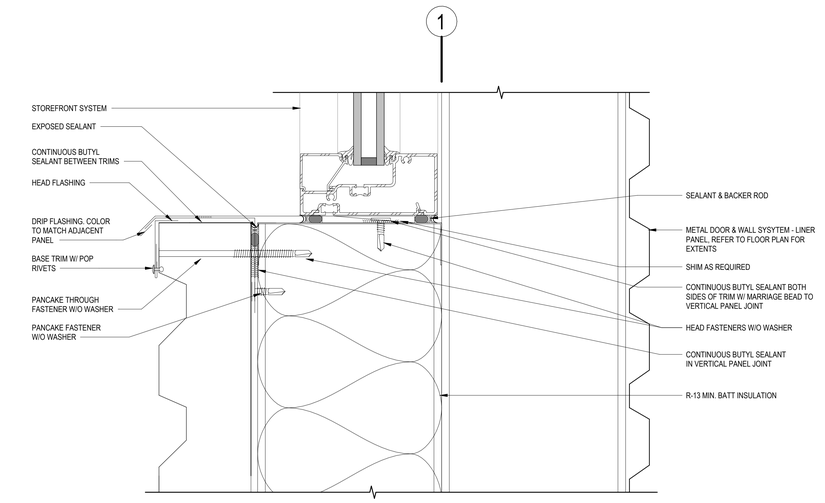
A9.3

EXTERIOR DETAILS



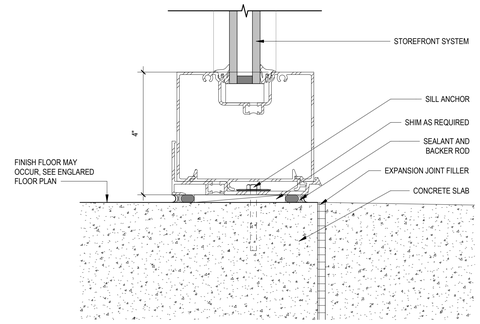
4 STOREFRONT HEAD @ SPANDREL

6" = 1'-0"



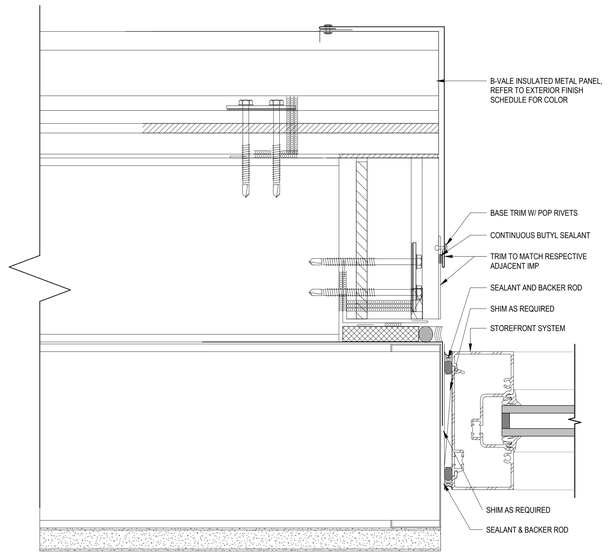
3 STOREFRONT SILL @ SPANDREL

6" = 1'-0"



2 STOREFRONT SILL

6" = 1'-0"



1 STOREFRONT JAMB

6" = 1'-0"

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Project No.:	25.0991
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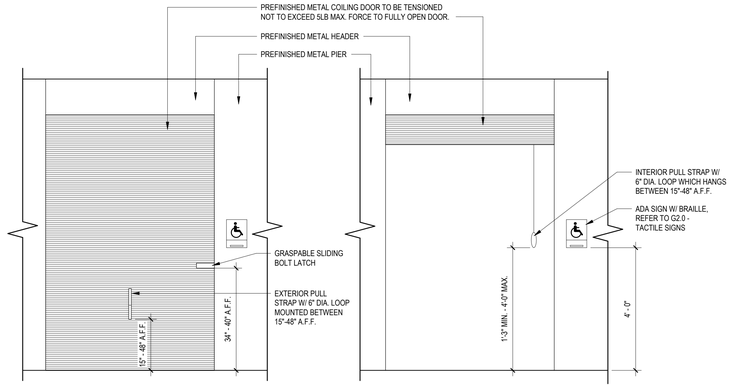
Date	Issue
03-30-26	Bid & Permit

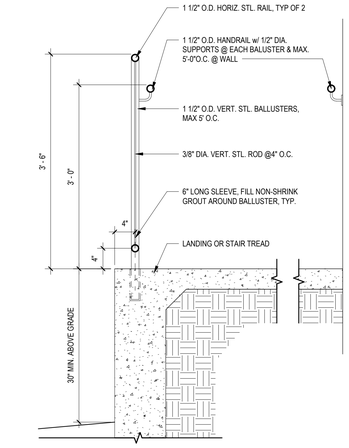
A9.4

STOREFRONT DETAILS



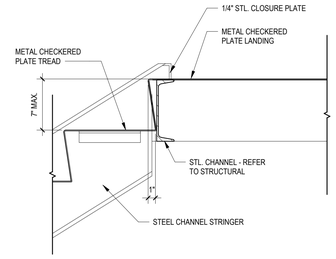
14 | TYP. UNIT ADA INSTALLATION DETAILS

1/2" = 1'-0"



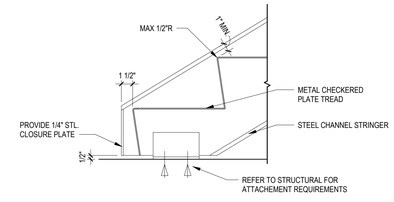
13 | GUARD / HANDRAIL DETAIL

1" = 1'-0"



12 | UPPER STAIR DETAIL

1 1/2" = 1'-0"

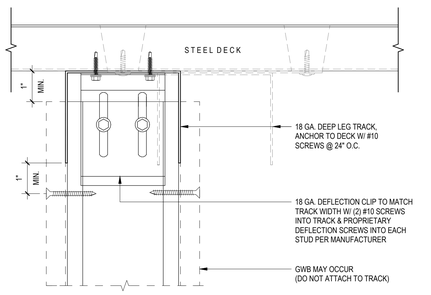


11 | LOWER STAIR DETAIL

1 1/2" = 1'-0"

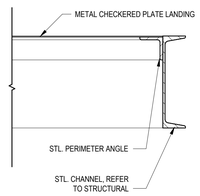
NOTES:
TERMINATE TOP OF PARTITION @ UNDERSIDE OF DECK.

PARTITION PARALLEL TO DECK FLUTES - PROVIDE CONT. 20GA. PLATE ATTACHEDTO PAIR OF FLUTES W/ #8 WAFER HEAD SCREWS @ 24" O.C. WHEN PARTITION DOES NOT CONTACT FLUTE.



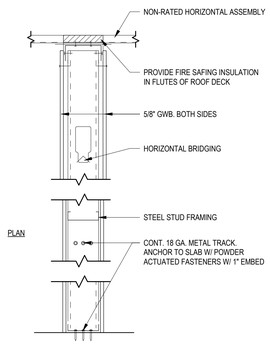
10 | DEFLECTION TRACK

6" = 1'-0"



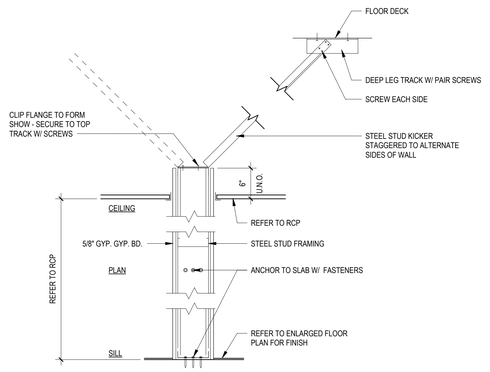
9 | LANDING DETAIL

1 1/2" = 1'-0"



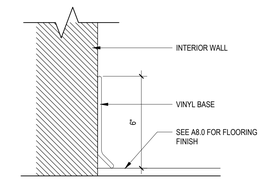
8 | FULL HT. GYP. BD.

1" = 1'-0"



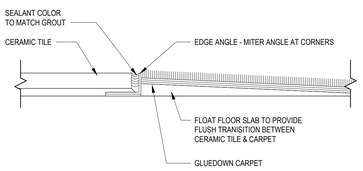
7 | PARTIAL GYP. BD. BRACED

1" = 1'-0"



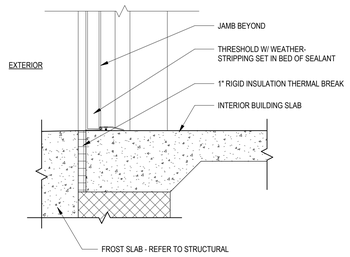
6 | VINYL BASE

3" = 1'-0"



5 | TILE TO CARPET

12" = 1'-0"

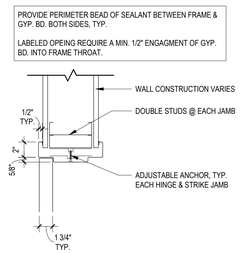


4 | THRESHOLD

1 1/2" = 1'-0"

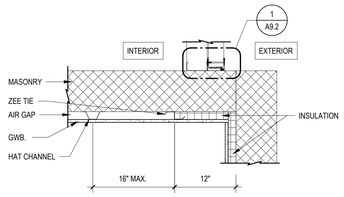
PROVIDE PERIMETER BEAD OF SEALANT BETWEEN FRAME & GYP. BD. BOTH SIDES, TYP.

LABELED OPEING REQUIRE A MIN. 1/2" ENGAGMENT OF GYP. BD. INTO FRAME THROAT.



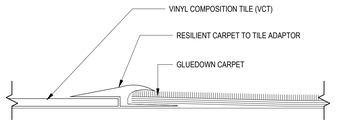
3 | HM DOOR FRAME - JAMB (HEAD SIM.)

1 1/2" = 1'-0"



2 | INSULATION W/ GWB. TRANSITION

1" = 1'-0"



1 | CARPET / VCT TRANSITION

12" = 1'-0"

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STORAGE FACILITY

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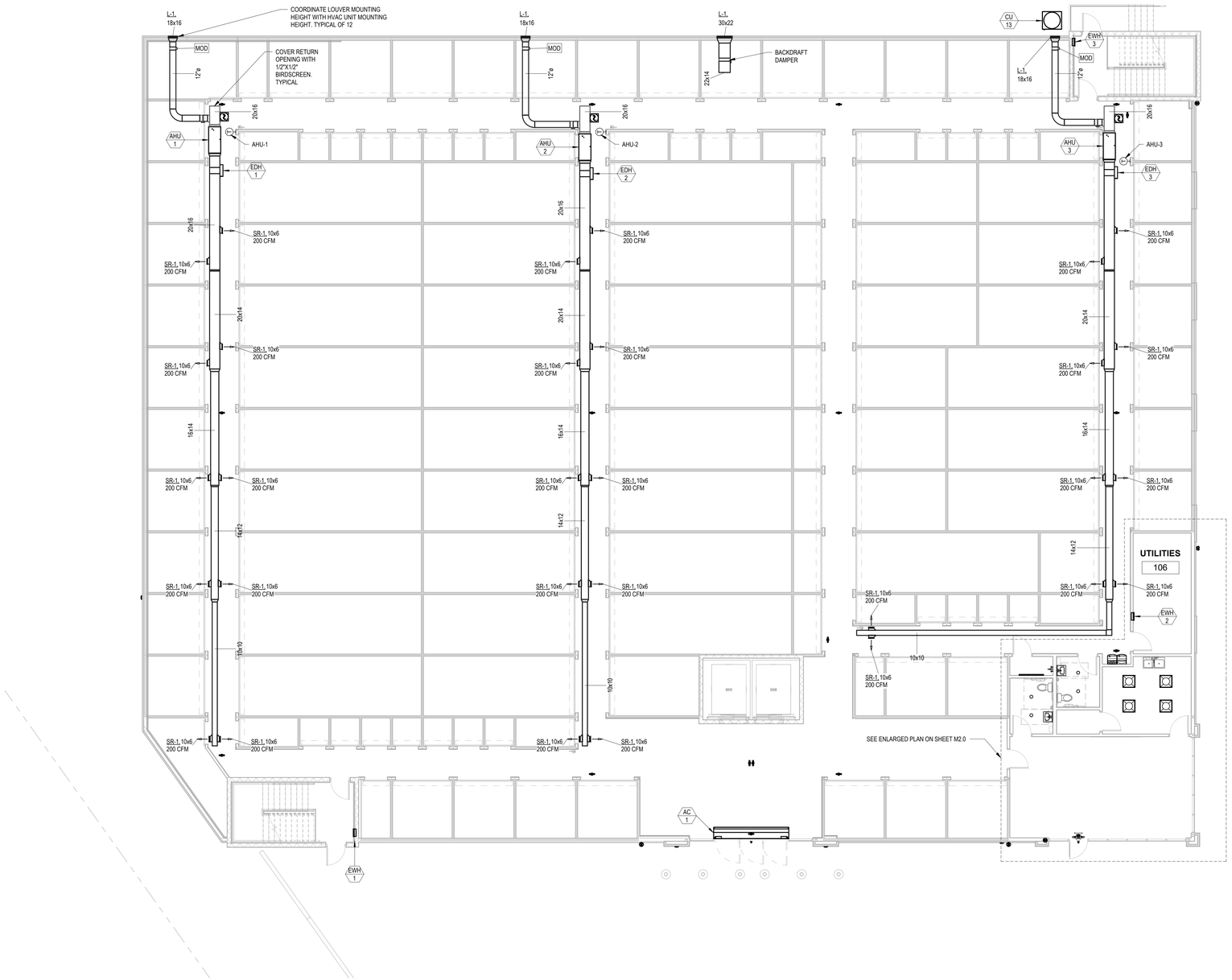
PORTLAND, ME 04103

Project No.:	25.0991
Drawn By:	CB
Date	Issue
03-30-26	Bid & Permit

A9.5

INTERIOR DETAILS



1 Mech Level 1

SCALE: 1/8" = 1'-0"

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Project No.:	25.0991
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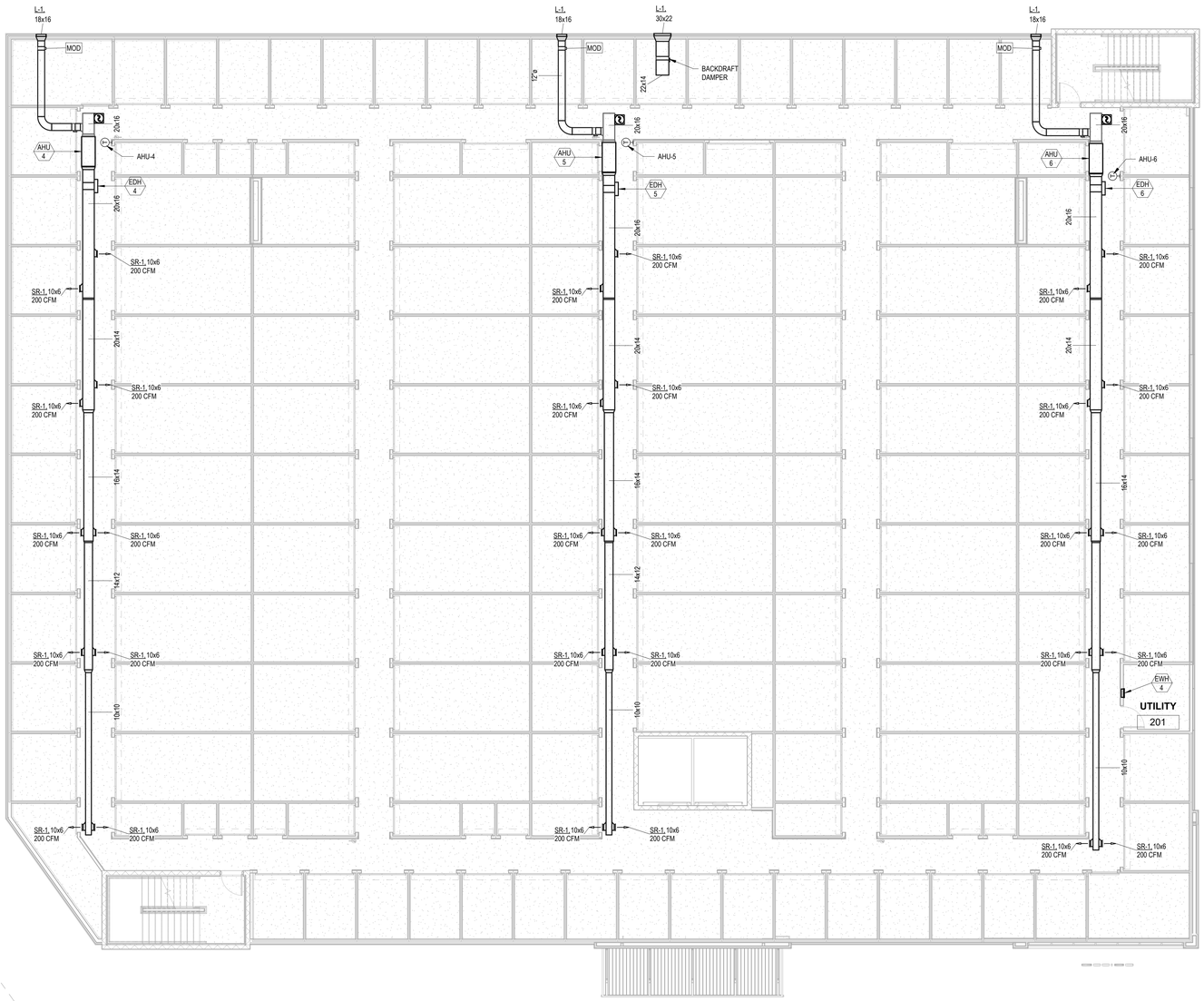
Date	Issue
03-30-2026	BID & PERMIT

M1.1

HVAC PLAN - LEVEL 1



1 Mech Level 2

SCALE: 1/8" = 1'-0"

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216.223.3200 onyxcreative.com

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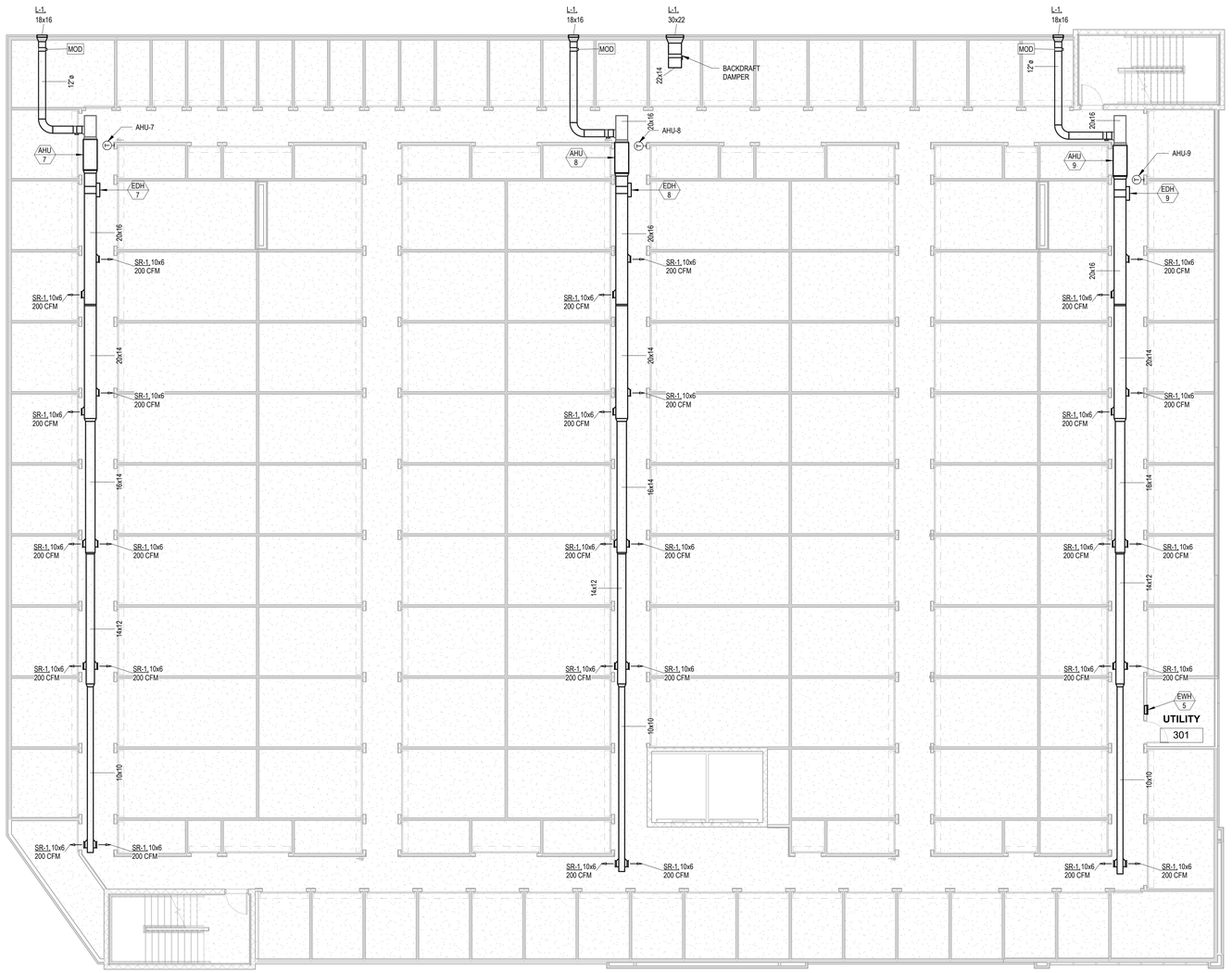
Drawn By:	AMS

Date	Issue
03-30-2026	BID & PERMIT

M1.2

HVAC PLAN - LEVEL 2



1 | Mech Level 3
SCALE: 1/8" = 1'-0"

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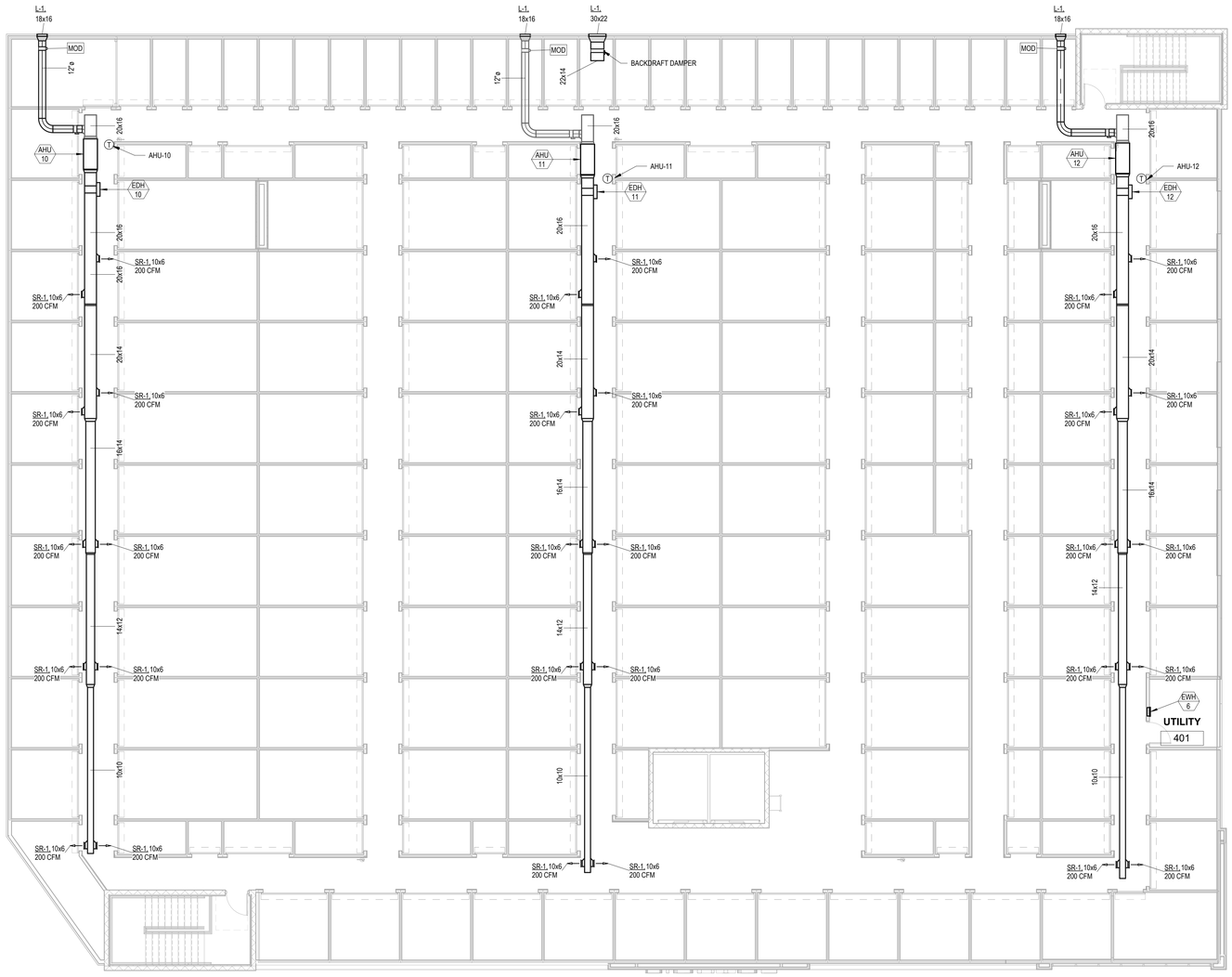
M1.3

HVAC PLAN - LEVEL 3



1 Mech Level 4

SCALE: 1/8" = 1'-0"

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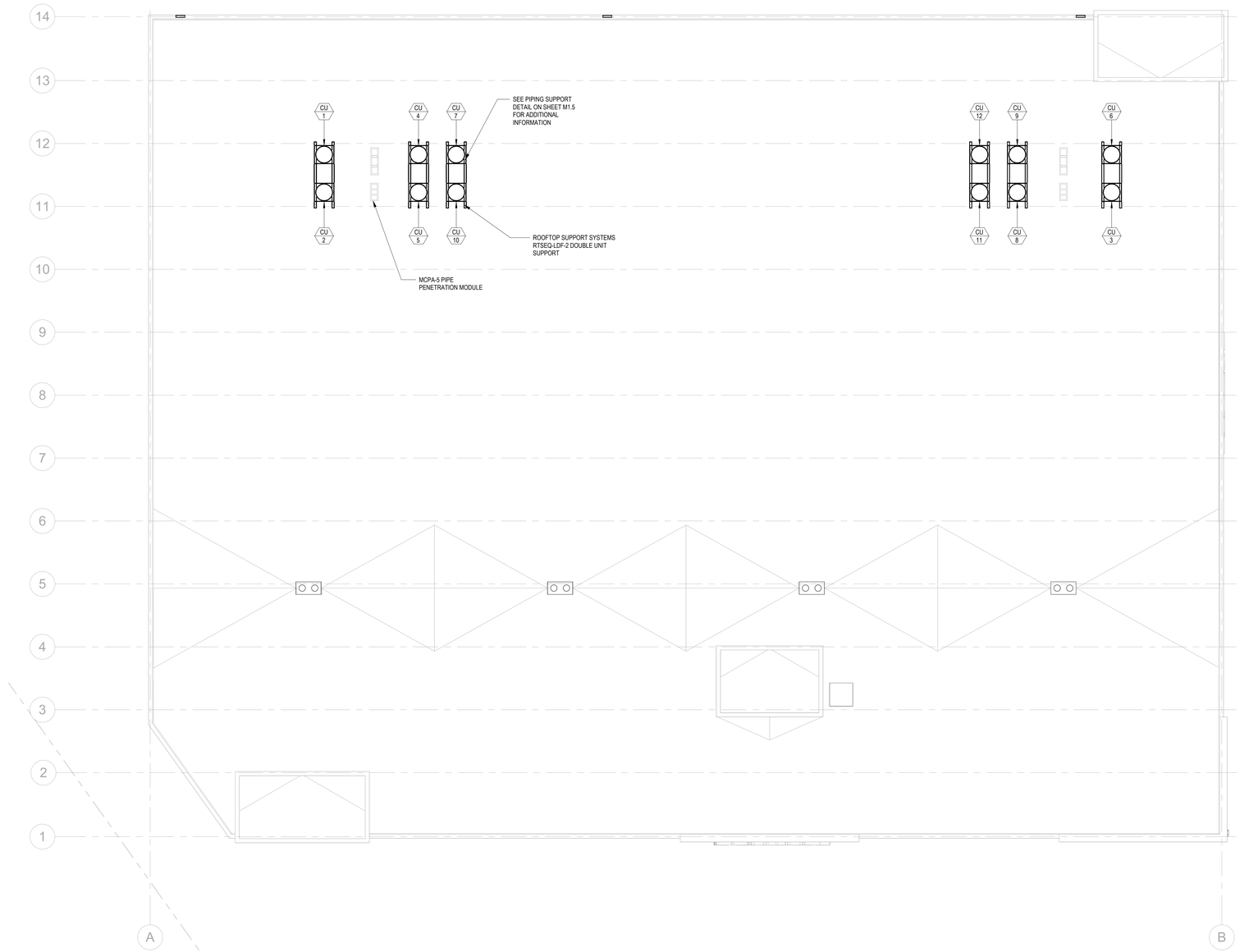
M1.4

HVAC PLAN - LEVEL 4



1 | Mech Level Roof
SCALE: 1/8" = 1'-0"

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Date	Issue
03-30-2026	BID & PERMIT

M1.5

HVAC PLAN - Roof LEVEL

SPLIT SYSTEM AIR HANDLERS WITH ELECTRIC HEATERS

Type Mark	Mark	TAG	MANUFACTURER	MODEL #	NOMINAL TONS	LOCATION	TOTAL COOLING (MBH)	SENSIBLE CAPACITY (MBH)	AIRFLOW (CFM)	HEATER KW	OUTSIDE AIR (CFM)	ESP ("WG)	EER2 / SEER2	POWER (V/PH)	AHU+HEATER SINGLE POINT		AIR HANDLER		WEIGHT (LBS)
															MCA (A)	MOCP (A)	MCA (A)	MOCP (A)	
AHU	1	AHU-1	TRANE	5TEM4D07AC51	5	STORAGE	58.3	44.6	2000	N/A	558	0.5	11/13.4	208/1	N/A	N/A	8	15	174
AHU	2	AHU-2	TRANE	5TEM4D07AC51	5	STORAGE	58.3	44.6	2000	N/A	558	0.5	11/13.4	208/1	N/A	N/A	8	15	174
AHU	3	AHU-3	TRANE	5TEM4D07AC51	5	STORAGE	58.3	44.6	2000	N/A	558	0.5	11/13.4	208/1	N/A	N/A	8	15	174
AHU	4	AHU-4	TRANE	5TEM4D07AC51	5	STORAGE	58.3	44.6	2000	N/A	558	0.5	11/13.4	208/1	N/A	N/A	8	15	174
AHU	5	AHU-5	TRANE	5TEM4D07AC51	5	STORAGE	58.3	44.6	2000	N/A	558	0.5	11/13.4	208/1	N/A	N/A	8	15	174
AHU	6	AHU-6	TRANE	5TEM4D07AC51	5	STORAGE	58.3	44.6	2000	N/A	558	0.5	11/13.4	208/1	N/A	N/A	8	15	174
AHU	7	AHU-7	TRANE	5TEM4D07AC51	5	STORAGE	58.3	44.6	2000	N/A	558	0.5	11/13.4	208/1	N/A	N/A	8	15	174
AHU	8	AHU-8	TRANE	5TEM4D07AC51	5	STORAGE	58.3	44.6	2000	N/A	558	0.5	11/13.4	208/1	N/A	N/A	8	15	174
AHU	9	AHU-9	TRANE	5TEM4D07AC51	5	STORAGE	58.3	44.6	2000	N/A	558	0.5	11/13.4	208/1	N/A	N/A	8	15	174
AHU	10	AHU-10	TRANE	5TEM4D07AC51	5	STORAGE	58.3	44.6	2000	N/A	558	0.5	11/13.4	208/1	N/A	N/A	8	15	174
AHU	11	AHU-11	TRANE	5TEM4D07AC51	5	STORAGE	58.3	44.6	2000	N/A	558	0.5	11/13.4	208/1	N/A	N/A	8	15	174
AHU	12	AHU-12	TRANE	5TEM4D07AC51	5	STORAGE	58.3	44.6	1400	N/A	558	0.5	11/13.4	208/1	N/A	N/A	8	15	174
AHU	13	AHU-13	TRANE	5TEM6D05AV41	4	OFFICE	46.0	32.5	1400	10.8	90	0.5	11/13.4	208/1	55	60	22	25	144

AIR HANDLING ACCESSORIES:

1. PROVIDE LITTLE GIANT VCMA-20 CONDENSATE PUMP. TO BE PUMPED UP TO TOP OF LEVEL AND ROUTE TO DOWNSPOUTS ON SIDES OF BUILDING.
2. PROVIDE SECONDARY DRAIN PAN WITH FLOAT SWITCH TO SHUT DOWN UNIT UPON DETECTION.
3. PROVIDE 7 DAY PROGRAMMABLE THERMOSTAT
4. PROVIDE FLEX CONNECTIONS AT SUPPLY AND RETURN CONNECTION TO UNIT.
5. COVER RETURN OPENING WITH 1/2" X1/2" STAINLESS STEEL BIRDSCREEN.
6. RETURN AIR SMOKE DETECTOR ON AHU-1 THRU 12

SPLIT SYSTEM CONDENSING UNITS

TAG	MANUFACTURER	MODEL #	NOMINAL TONS	REFRIGERANT	COOLING (MBH)	EER2 / SEER2	POWER (V/PH)	MCA (A)	MOCP (A)	WEIGHT (LBS)
CU-1	TRANE	5TTA3060A3000	5	R454B	60	11/13.4	208/3	21	35	211
CU-2	TRANE	5TTA3060A3000	5	R454B	60	11/13.4	208/3	21	35	211
CU-3	TRANE	5TTA3060A3000	5	R454B	60	11/13.4	208/3	21	35	211
CU-4	TRANE	5TTA3060A3000	5	R454B	60	11/13.4	208/3	21	35	211
CU-5	TRANE	5TTA3060A3000	5	R454B	60	11/13.4	208/3	21	35	211
CU-6	TRANE	5TTA3060A3000	5	R454B	60	11/13.4	208/3	21	35	211
CU-7	TRANE	5TTA3060A3000	5	R454B	60	11/13.4	208/3	21	35	211
CU-8	TRANE	5TTA3060A3000	5	R454B	60	11/13.4	208/3	21	35	211
CU-9	TRANE	5TTA3060A3000	5	R454B	60	11/13.4	208/3	21	35	211
CU-10	TRANE	5TTA3060A3000	5	R454B	60	11/13.4	208/3	21	35	211
CU-11	TRANE	5TTA3060A3000	5	R454B	60	11/13.4	208/3	21	35	211
CU-12	TRANE	5TTA3060A3000	5	R454B	60	11/13.4	208/3	21	35	211
CU-13	TRANE	5TTA3048A3000A	4	R454B	48	11/13.4	208/3	16	25	211

CONDENSING UNIT NOTES:

1. REFER TO MANUFACTURER FOR REFRIGERANT PIPE SIZING
2. CONDENSING UNIT IS MOUNTED ON ROOF ON RAIL, SEE DETAIL. FIELD VERIFY EXACT ROOF LOCATION PRIOR TO WORK.
3. CONDENSING UNIT SHALL BE MOUNTED ON 4" CONCRETE PAD THAT SHALL EXTEND 6" BEYONG EACH SIDE OF UNIT.

HVAC - ELECTRIC DUCT HEATER...

TAG	MANUFACTURER	MODEL #	AIR FLOW (CFM)	SIZE (W" x H")	KW	VOLT/PH
EDH-1	INDEECO	SLIP IN	2000 CFM	20X16	24	480/3
EDH-2	INDEECO	SLIP IN	2000 CFM	20X16	24	480/3
EDH-3	INDEECO	SLIP IN	2000 CFM	20X16	24	480/3
EDH-4	INDEECO	SLIP IN	2000 CFM	20X16	24	480/3
EDH-5	INDEECO	SLIP IN	2000 CFM	20X16	24	480/3
EDH-6	INDEECO	SLIP IN	2000 CFM	20X16	24	480/3
EDH-7	INDEECO	SLIP IN	2000 CFM	20X16	24	480/3
EDH-8	INDEECO	SLIP IN	2000 CFM	20X16	24	480/3
EDH-9	INDEECO	SLIP IN	2000 CFM	20X16	24	480/3
EDH-10	INDEECO	SLIP IN	2000 CFM	20X16	24	480/3
EDH-11	INDEECO	SLIP IN	2000 CFM	20X16	24	480/3
EDH-12	INDEECO	SLIP IN	2000 CFM	20X16	24	480/3

NOTES:
1. PROVIDE WITH DUCT MOUNTED TEMPERATURE SENSOR, AIRFLOW SENSOR, AND MONITOR AND CONTROL THROUGH PROGRAMMABLE THERMOSTAT (BUILDING BMS)
2. INTERLOCK CONTROL WITH UNIT. HEATER TO BE ENERGIZED AS REQUIRED TO PROVIDE ADDITIONAL STAGES OF HEAT.

HVAC - EXHAUST FAN SCHEDULE

TAG	MANUFACTURER	MODEL #	TYPE	AREA SERVED	ESP	FAN CFM	FAN RPM	MOTOR POWER	SONES	VOLTAGE	PHASE	WEIGHT	NOTES
EF-1	GREENHECK	SP-LP081OW	CEILING MOUNTED FAN	RESTROOM	0.25 in-wg	100	894	4W	3.0	120 V	1	10 lb	
EF-2	GREENHECK	SP-LP081OW	CEILING MOUNTED FAN	RESTROOM	0.25 in-wg	100	894	4W	3.0	120 V	1	0 lb	
EF-3	GREENHECK	SP-LP081OW	CEILING MOUNTED FAN	JANITOR	0.25 in-wg	100	894	4W	3.0	120 V	1	0 lb	

NOTES:
1. PROVIDE BACKDRAFT DAMPER.
2. FACTORY INTEGRAL DISCONNECT.

ELECTRIC WALL HEATERS

TAG	MANUFACTURER	MODEL #	LOCATION	HEATING CAP	VOLTAGE	PHASE	NOTES
EWH-1	QMARK	AWH4507F	STAIR	4800 W	277 V	1	1 THRU 5
EWH-2	QMARK	AWH4507F	EQUIP 1ST	4800 W	277 V	1	1 THRU 5
EWH-3	QMARK	AWH4507F	STAIR	4800 W	277 V	1	1 THRU 5
EWH-4	QMARK	AWH4507F	EQUIP 2ND	4800 W	277 V	1	1 THRU 5
EWH-5	QMARK	AWH4507F	EQUIP 3RD	4800 W	277 V	1	1 THRU 5
EWH-6	QMARK	SLIP IN	EQUIP 4TH	4800 W	277 V	1	1 THRU 5
EWH-7							
NOTES:							

1. RECESSED WALL MOUNTING KIT
2. INTERGRAL THERMOSTAT
3. FACTORY MOUNTED AND WIRED DISCONNECT SWITCH
4. MANUAL RESET THERMAL OVERLOAD PROTECTION
5. STANDARD GRILLE

LOUVER SCHEDULE

TAG	MANUFACTURER	MODEL #	SIZE	BIRD SCREEN	COLOR
L-1	GREENHECK	EDJ-401	REFER TO PLANS	YES	COORDINATE WITH ARCHITECT

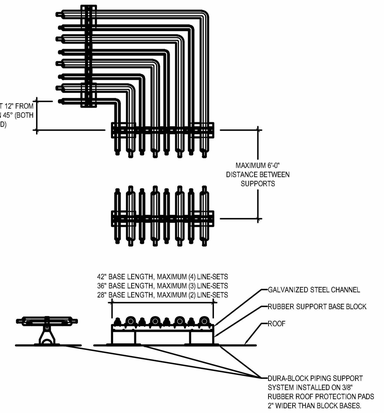
AIR CURTAIN SCHEDULE

Mark	Manufacturer	Model	Kw	Circuit #1 Voltage/Ph	Circuit #1 MCA	Circuit #1 MOCP	Circuit #2 Voltage/Ph	Circuit #2 MCA	Circuit #2 MOCP
AC-1	Berner	AI10-E-3144E	18	208/1	12.9	20	480/3	21.7	30

NOTES:
1. PROVIDE WITH DOOR SWITCH

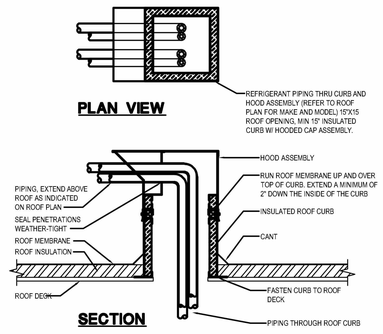
HVAC - GRILLES AND DIFFUSERS SCHEDULE

TAG	MANUFACTURER	MODEL #	MATERIAL	FRAME SIZE	OPPOSED BLADE DAMPER	FINISH
RG-1	TITUS	350RL	STEEL	REFER TO PLANS	YES	WHITE
SR-1	TITUS	300RL	STEEL	REFER TO PLANS	YES	WHITE



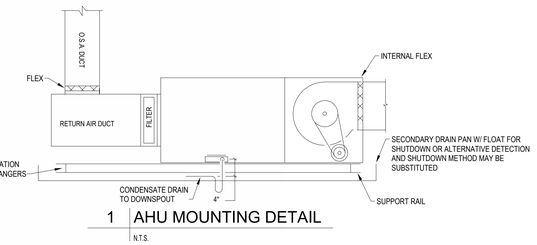
3 | LINE-SET ROOF SUPPORTS

N.T.S.



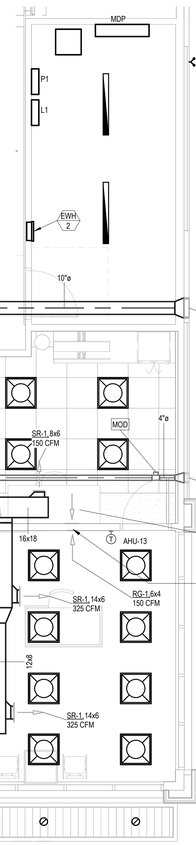
4 | LINE-SET ROOF PENETRATION

N.T.S.



1 | AHU MOUNTING DETAIL

N.T.S.



2 | ENLARGED OFFICE HVAC PLAN

SCALE: 1/4" = 1'-0"

DONALD W. ALEXANDER | ARCHITECT
25001 Emery Road, Suite 400
Cleveland, Ohio 44128
216.223.3200 onyxcreative.com

Design and construction documents as instruments of service are given in confidence and remain the property of Donald W. Alexander, Architect. The use of these documents for purposes other than the specific project named herein is strictly prohibited without expressed written consent of Donald W. Alexander, Architect.

STORAGE FACILITY

97 WARREN AVENUE
PORTLAND, MAINE 04103

Project No.:	25.0991
Drawn By:	AMS
Date	Issue
03-30-2026	BID & PERMIT

M2.0

MECHANICAL SCHEDULES

Mechanical

General Information

A. General
1. Conform to all general and special conditions of contract as specified by architect, tenant and owner.
2. Specifications are applicable to all contractors and subcontractors for mechanical and electrical systems
3. Contractor shall comply with owner's standards, facility specifications, rules and regulations. All owner's criteria shall be complied with and included in this bid. Check other plans and specifications and fully coordinate with other trades and architect's requirements.
4. Visit site, check facilities and conditions, and verify all utility company requirements and connection points in field prior to starting work. Take all items into consideration in bid.
5. Systems are to be complete and workable in all respects, placed in operation and properly adjusted.
6. Each contractor shall provide for his own clean-up, removal and legal disposal of all rubbish daily.
7. The contractor shall be solely responsible for construction means, methods, and sequences of construction and the safety of workmen. comply with all OSHA regulations.
8. No piping, ductwork, controls, etc., shall be installed or routed above electrical panels and equipment or through elevator rooms or shafts.
9. The mechanical and electrical contractors shall coordinate the electrical characteristics of all mechanical equipment prior to ordering of equipment. No additional payment will be made for lack of contractor coordination of electrical characteristics.
10. All mechanical and electrical system components shall be routed tight to underside of structure and through joists or trusses where possible. Coordinate installation to preserve headroom, equipment access, and architectural clearances for finishes, including ceiling heights. Coordinate with all other trades and do not conflict with the architectural requirements for the finished construction. Provide offsets where required to coordinate with other trades.
11. Refer to architectural reflected ceiling plans for locations of all grilles and diffusers.
12. Operation and maintenance manuals: three (3) bound sets of the operation and maintenance manuals shall be provided to the construction representative at turnover, and are required for final acceptance.
13. As built drawings: the HVAC subcontractor shall progressively record all HVAC drawing changes which shall be available at all times for review by the construction representative. An AutoCAD copy of the final as-built drawings shall be provided to the construction representative at turnover. This AutoCAD as-built is required for final acceptance of the project.

B. Codes, standards and regulations
1. Conform to all applicable codes, government regulations, utility company requirements, and national electrical code.
2. Obtain permits and pay all fees. Arrange for all required inspections and approvals.

C. Related work specified elsewhere
1. Openings and chases, when shown on architectural drawings.

D. Drawings
1. The systems as shown on the contract drawings are diagrammatic.
2. The intent is for complete and workable systems. The drawings and these notes are to be used together as a basis of showing and/or describing the system requirements for the facility.
3. Verify all dimensions and clearances by field measurement and check for interferences prior to starting work.

E. Base equipment and materials and substitutions
1. All equipment and materials shall be new, free of defects and U.L. labeled.
2. Submit shop drawings for all equipment, fixtures, etc., including all accessories to be furnished. Base bid manufacturers and models are included in specifications or listed in schedule on drawing. Any other manufacturer or model is a substitution.
3. Substitutions are subject to the approval of the owner and shall be listed on the form of proposal for the owner's consideration prior to contract award. If substitution is submitted, it is the contractor's responsibility to evaluate it and certify that the substitution is equivalent in all respects to the base specifications.
4. If substitutions are approved, notify all other contractors, subcontractors or trades affected by substitution and fully coordinate. Any costs resulting from substitution, whether by contractor or others, shall be responsibility of and paid for by substituting contractor.
5. All equipment shall be installed in full accordance with the manufacturer's installation instructions. It is this contractor's responsibility to check and conform to these requirements prior to starting work.

F. Check, test, start, adjust, balance and instructions
1. After installation, check all equipment, and perform start up in accordance with the manufacturer's instructions.
2. All piping shall be tested and free of leaks.
3. Balance all systems, calibrate controls, check for proper operating sequence under all conditions, and make all necessary adjustments.
4. All wiring shall be fully tested and made free of grounds and short circuits.
5. Instruct owner in operation of systems and submit operating and maintenance manual on all equipment and systems.
6. Provide engraved labels and identification tags for all piping systems, valves and equipment.
7. Provide typed panel directories and engraved labels for all panels and equipment.

G. Cutting, patching and drilling
1. All cutting and chasing of the building construction required for this work shall be by this contractor unless shown on architectural drawings and confirmed as to size and location prior to new construction. Cutting shall be in a neat and workmanlike manner.
2. Neatly saw cut all rectangular openings, set sleeve through opening, and finish patch or provide trim flange around opening.
3. Core drill and sleeve all round openings.
4. Cut and patch existing building walls as required for duct installation. Provide steel lintel above opening wider than 10". See structural drawings for sizes. Provide escutcheons or 2" wide sheet metal flanges around all exposed penetrations.
5. Do not cut any structural components without architect's approval.
6. Patch and finish to match adjacent areas that have been cut, damaged or modified to install equipment for this project.
7. Cutting of roof, installation of curbs, and patching of roof shall be by a certified roofing contractor, approved by building owner, and paid for by this contractor.
8. Fire stop all penetrations of fire rated construction in a code approved manner, using UL listed fire rated materials.
9. All contractors shall confirm with owner, prior to bid, times available for noise producing work such as cutting and core drilling of floors, walls, etc., as well as times for work which require access into adjoining areas. Include any premium time required in bid.
10. Exact location of roof top mechanical units shall be approved by owner's structural engineer. Mechanical contractor shall furnish and install all supplemental support steel for units and roof duct penetrations after approval of structural engineer.

H. Warranty
1. Fully warrant all materials, equipment and workmanship for one (1) year from date of acceptance.
2. Extend all manufacturer's warranties to owner, including five (5) year compressor and ten (10) year heat exchanger extended warranty on HVAC equipment.
3. Repair or replace without charge to the owner all items found defective during the warranty period.

SECTION 23 0553

IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Nameplates.
B. Tags.
C. Stencils.

PART 2 PRODUCTS

2.01 IDENTIFICATION APPLICATIONS
A. Air Handling Units: Nameplates.
B. Automatic Controls: Tags. Key to control schematic.
C. Small-sized Equipment: Tags.
D. Thermostats: Nameplates.
2.02 NAMEPLATES
A. Letter Color: White.
B. Letter Height: 1/4 inch (6 mm).
C. Background Color: Black.
2.03 TAGS
A. Plastic Tags: Laminated three-layer plastic with engraved black letters on light contrasting background color. Tag size minimum 1-1/2 inch (40 mm) diameter.
B. Metal Tags: Brass with stamped letters; tag size minimum 1-1/2 inch (40 mm) diameter with smooth edges.
2.04 STENCILS
A. Stencils: With clean cut symbols and letters of following size:
1. Equipment: 2-1/2 inch (65 mm) high letters.

PART 3 EXECUTION

3.01 PREPARATION
A. Degrease and clean surfaces to receive adhesive for identification materials.
3.02 INSTALLATION
A. Install nameplates with corrosive-resistant mechanical fasteners, or adhesive. Apply with sufficient adhesive to ensure permanent adhesion and seal with clear lacquer.

END OF SECTION

SECTION 23 0593

TESTING, ADJUSTING, AND BALANCING FOR HVAC

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Testing, adjustment, and balancing of air systems.
B. Measurement of final operating condition of HVAC systems.
1.02 SUBMITTALS
A. TAB Plan: Submit a written plan indicating the testing, adjusting, and balancing standard to be followed and the specific approach for each system and component.
1. Include at least the following in the plan:
a. List of all air flow, water flow, sound level, system capacity and efficiency measurements to be performed and a description of specific test procedures, parameters, formulas to be used.
b. Copy of field checkout sheets and logs to be used, listing each piece of equipment to be tested, adjusted and balanced with the data cells to be gathered for each.
c. Final test report forms to be used.
d. Procedures for formal deficiency reports, including scope, frequency and distribution.
B. Final Report: Indicate deficiencies in systems that would prevent proper testing, adjusting, and balancing of systems and equipment to achieve specified performance.
1. Revise TAB plan to reflect actual procedures and submit as part of final report.
2. Submit draft copies of report for review prior to final acceptance of Project. Provide final copies for Architect and for inclusion in operating and maintenance manuals.
3. Include actual instrument list, with manufacturer name, serial number, and date of calibration.
4. Form of Test Reports: Where the TAB standard being followed recommends a report format use that; otherwise, follow ASHRAE Std 111.
5. Units of Measure: Report data in I-P (inch-pound) units only.
6. Include the following on the title page of each report:
a. Name of Testing, Adjusting, and Balancing Agency.
b. Address of Testing, Adjusting, and Balancing Agency.
c. Telephone number of Testing, Adjusting, and Balancing Agency.
d. Project name.
e. Project location.
f. Project Architect.
g. Project Engineer.
h. Project Contractor.
i. Project altitude.
j. Report date.
C. Project Record Documents: Record actual locations of flow measuring stations and balancing valves and rough setting.

PART 2 PRODUCTS - refer to drawings for mechanical equipment schedule.

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS
A. Perform total system balance in accordance with one of the following:
1. AABC (NSTSB), AABC National Standards for Total System Balance.
2. ASHRAE Std 111, Practices for Measurement, Testing, Adjusting and Balancing of Building Heating, Ventilation, Air-Conditioning, and Refrigeration Systems.
3. SMACNA (TAB).
B. Begin work after completion of systems to be tested, adjusted, or balanced and complete work prior to Substantial Completion of the project.
C. Where HVAC systems and/or components interface with life safety systems, including fire and smoke detection, alarm, and control, coordinate scheduling and testing and inspection procedures with the authorities having jurisdiction.
D. TAB Agency Qualifications:
1. Company specializing in the testing, adjusting, and balancing of systems specified in this section.
2. Having minimum of three years documented experience.
3. Certified by one of the following:
a. AABC, Associated Air Balance Council: www.aabc.com/#sle; upon completion submit AABC National Performance Guaranty.
b. NEBB, National Environmental Balancing Bureau: www.nebb.org/#sle.
c. TABB, The Testing, Adjusting, and Balancing Bureau of National Energy Management Institute: www.tabbcertified.org/#sle.
E. TAB Supervisor and Technician Qualifications: Certified by same organization as TAB agency.
3.02 EXAMINATION
A. Verify that systems are complete and operable before commencing work. Ensure the following conditions:
1. Systems are started and operating in a safe and normal condition.
2. Temperature control systems are installed complete and operable.
3. Proper thermal overload protection is in place for electrical equipment.
4. Final filters are clean and in place. If required, install temporary media in addition to final filters.
5. Duct systems are clean of debris.
6. Fans are rotating correctly.
7. Fire and volume dampers are in place and open.
8. Air coil fins are cleaned and combed.
9. Access doors are closed and duct end caps are in place.
10. Air outlets are installed and connected.
11. Duct system leakage is minimized.
12. Hydronic systems are flushed, filled, and vented.
13. Pumps are rotating correctly.
14. Proper strainer baskets are clean and in place.
15. Service and balance valves are open.
B. Submit field reports. Report defects and deficiencies that will or could prevent proper system balance.
C. Beginning of work means acceptance of existing conditions.
3.03 ADJUSTMENT TOLERANCES
A. Air Handling Systems: Adjust to within plus or minus 10 percent of design for supply systems and plus or minus 10 percent of design for return and exhaust systems.
B. Air Outlets and Inlets: Adjust total to within plus 10 percent and minus 10 percent of design to space. Adjust outlets and inlets in space to within plus or minus 10 percent of design.
C. Hydronic Systems: Adjust to within plus or minus 10 percent of design.
3.04 RECORDING AND ADJUSTING
A. Field Logs: Maintain written logs including:
1. Running log of events and issues.
2. Discrepancies, deficient or uncompleted work by others.
3. Contract interpretation requests.
4. Lists of completed tests.
B. Ensure recorded data represents actual measured or observed conditions.
C. Permanently mark settings of valves, dampers, and other adjustment devices allowing settings to be restored. Set and lock memory stops.
D. Mark on drawings the locations where traverse and other critical measurements were taken and cross reference the location in the final report.
E. After adjustment, take measurements to verify balance has not been disrupted or that such disruption has been rectified.
F. Leave systems in proper working order, replacing belt guards, closing access doors, closing doors to electrical switch boxes, and restoring thermostats to specified settings.
3.05 AIR SYSTEM PROCEDURE
A. Adjust air handling and distribution systems to provide required or design supply, return, and exhaust air quantities at site altitude.
B. Make air quantity measurements in ducts by Pitot tube traverse of entire cross sectional area of duct.
C. Measure air quantities at air inlets and outlets.
D. Adjust distribution system to obtain uniform space temperatures free from objectionable drafts and noise.
E. Use volume control devices to regulate air quantities only to extend that adjustments do not create objectionable air motion or sound levels. Effect volume control by duct internal devices such as dampers and splitters.
F. Vary total system air quantities by adjustment of fan speeds. Provide drive changes required. Vary branch air quantities by damper regulation.
G. Measure static air pressure conditions on air supply units, including filter and coil pressure drops, and total pressure across the fan. Make allowances for 50 percent loading of filters.
H. Adjust outside air automatic dampers, outside air, return air, and exhaust dampers for design conditions.
I. Measure temperature conditions across outside air, return air, and exhaust dampers to check leakage.
J. Where modulating dampers are provided, take measurements and balance at extreme conditions. Balance variable volume systems at maximum air flow rate, full cooling, and at minimum air flow rate, full heating.
K. Measure building static pressure and adjust supply, return, and exhaust air systems to provide required relationship between each to maintain approximately 0.05 inches (12.5 Pa) positive static pressure near the building entries.
L. For variable air volume system powered units set volume controller to air flow setting indicated. Confirm connections properly made and confirm proper operation for automatic variable air volume temperature control.
M. On fan powered VAV boxes, adjust air flow switches for proper operation.
3.06 SCOPE
A. Test, adjust, and balance the following:
1. Unit Air Conditioners.
2. Air Coils.
3. Air Handling Units.
4. Fans.
5. Air Terminal Units.
6. Air Inlets and Outlets.
3.07 MINIMUM DATA TO BE REPORTED
A. Electric Motors:
1. Manufacturer.
2. Model/Frame.
3. HP/BHP.
4. Phase, voltage, amperage; nameplate, actual, no load.
5. RPM.
6. Service factor.
7. Starter size, rating, heater elements.
8. Sheave Make/Size/Bore.
B. Air Cooled Condensers:
1. Identification/number.
2. Location.
3. Manufacturer.
4. Model number.
5. Serial number.
6. Entering DB air temperature, design and actual.
7. Leaving DB air temperature, design and actual.
8. Number of compressors.
C. Cooling Coils:
1. Identification/number.
2. Location.
3. Service.
4. Manufacturer.
5. Air flow, design and actual.
6. Entering air DB temperature, design and actual.
7. Entering air WB temperature, design and actual.
8. Leaving air DB temperature, design and actual.
9. Leaving air WB temperature, design and actual.
10. Water flow, design and actual.
11. Water pressure drop, design and actual.
12. Entering water temperature, design and actual.
13. Leaving water temperature, design and actual.
14. Air pressure drop, design and actual.
D. Heating Coils:
1. Identification/number.
2. Location.
3. Service.
4. Manufacturer.
5. Air flow, design and actual.
6. Water flow, design and actual.
7. Water pressure drop, design and actual.
8. Entering water temperature, design and actual.
9. Leaving water temperature, design and actual.
10. Entering air temperature, design and actual.
11. Leaving air temperature, design and actual.
12. Air pressure drop, design and actual.
E. Electric Duct Heaters:
1. Manufacturer.
2. Identification/number.
3. Location.
4. Model number.
5. Design kW.
6. Number of stages.
7. Phase, voltage, amperage.
8. Test voltage (each phase).
9. Test amperage (each phase).
10. Air flow, specified and actual.
11. Temperature rise, specified and actual.
F. Air Moving Equipment:
1. Location.
2. Manufacturer.
3. Model number.
4. Serial number.
5. Air flow, specified and actual.
6. Return air flow, specified and actual.
7. Outside air flow, specified and actual.
8. Total static pressure (total external), specified and actual.
9. Inlet pressure.
10. Discharge pressure.
11. Sheave Make/Size/Bore.
12. Number of Belts/Make/Size.
13. Fan RPM.
G. Return Air/Outside Air:
1. Identification/location.
2. Design air flow.
3. Actual air flow.
4. Design return air flow.
5. Actual return air flow.
6. Design outside air flow.
7. Actual outside air flow.
8. Return air temperature.
9. Outside air temperature.
H. Exhaust Fans:
1. Location.
2. Manufacturer.
3. Model number.
4. Serial number.
5. Air flow, specified and actual.
6. Total static pressure (total external), specified and actual.
7. Inlet pressure.
8. Discharge pressure.
9. Sheave Make/Size/Bore.
10. Number of Belts/Make/Size.
11. Fan RPM.
I. Duct Leak Tests:
1. Description of ductwork under test.
2. Duct design operating pressure.
3. Duct design test static pressure.
4. Duct capacity, air flow.
5. Maximum allowable leakage duct capacity times leak factor.
6. Test apparatus:
a. Blower.
b. Orifice, tube size.
c. Orifice size.
d. Calibrated.
7. Test static pressure.
8. Test orifice differential pressure.
9. Leakage.
J. Terminal Unit Data:
1. Manufacturer.
2. Type, constant, variable, single, dual duct.
3. Identification/number.
4. Location.
5. Model number.
6. Size.
7. Minimum design air flow.
8. Maximum design air flow.
9. Maximum actual air flow.
K. Air Distribution Tests:
1. Air terminal number.
2. Room number/location.
3. Terminal type.
4. Terminal size.
5. Area factor.
6. Design velocity.
7. Design air flow.
8. Test (final) velocity.
9. Test (final) air flow.
L. Sound Level Reports:
1. Location.
2. Octave bands - equipment off.
3. Octave bands - equipment on.

END OF SECTION

SECTION 23 0713

DUCT INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Duct insulation.
B. Duct liner.
1.02 SUBMITTALS
A. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations.
1.03 DELIVERY, STORAGE, AND HANDLING
A. Accept materials on site in original factory packaging, labeled with manufacturer's identification, including product density and thickness.
B. Protect insulation from weather and construction traffic, dirt, water, chemical, and mechanical damage, by storing in original wrapping.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS
A. Surface Burning Characteristics: Flame spread index/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84 or UL 723.
2.02 GLASS FIBER, FLEXIBLE
A. Insulation: ASTM C553; flexible, noncombustible blanket.
1. K (Ksi) value: 0.36 at 75 degrees F (0.052 at 24 degrees C), when tested in accordance with ASTM C518.
2. Maximum Service Temperature: 1200 degrees F (649 degrees C).
3. Maximum Water Vapor Absorption: 5.0 percent by weight.
B. Vapor Barrier Jacket:
1. Kraft paper with glass fiber yarn and bonded to aluminized film.
2. Moisture Vapor Permeability: 0.02 perm inch (0.029 ng/Pa s m), when tested in accordance with ASTM E96/E96M.
3. Secure with pressure sensitive tape.
C. Vapor Barrier Tape:
1. Kraft paper reinforced with glass fiber yarn and bonded to aluminized film, with pressure sensitive rubber based adhesive.
D. Indoor Vapor Barrier Mastic:
1. Vinyl emulsion type acrylic or mastic, compatible with insulation, black color.
2.03 GLASS FIBER, RIGID
A. Insulation: ASTM C612; rigid, noncombustible blanket.
1. K (Ksi) Value: 0.24 at 75 degrees F (0.036 at 24 degrees C), when tested in accordance with ASTM C518.
2. Maximum Service Temperature: 450 degrees F (232 degrees C).
3. Maximum Water Vapor Absorption: 5.0 percent.
4. Maximum Density: 8.0 lb/cu ft (128 kg/cu m).
B. Vapor Barrier Jacket:
1. Kraft paper with glass fiber yarn and bonded to aluminized film.
2. Moisture Vapor Permeability: 0.02 perm inch (0.029 ng/Pa s m), when tested in accordance with ASTM E96/E96M.
3. Secure with pressure sensitive tape.
C. Vapor Barrier Tape:
1. Kraft paper reinforced with glass fiber yarn and bonded to aluminized film, with pressure sensitive rubber based adhesive.
D. Indoor Vapor Barrier Finish:
1. Vinyl emulsion type acrylic, compatible with insulation, black color.
2.04 FLEXIBLE ELASTOMERIC CELLULAR INSULATION
A. Insulation: Preformed flexible elastomeric cellular rubber insulation complying with ASTM C534/C534M Grade 1, in sheet form.
1. Minimum Service Temperature: Minus 40 degrees F (Minus 40 degrees C).
2. Maximum Service Temperature: 180 degrees F (82 degrees C).
3. Connection: Waterproof vapor barrier adhesive.
B. Elastomeric Foam Adhesive: Air dried, contact adhesive, compatible with insulation.
2.05 DUCT LINER
A. Elastomeric Foam Adhesive: Air dried, contact adhesive, compatible with insulation. Comply with ASTM C916.
B. Liner Fasteners: Galvanized steel, self-adhesive pad with integral head.

PART 3 EXECUTION

3.01 EXAMINATION
A. Test ductwork for design pressure prior to applying insulation materials.
B. Verify that surfaces are clean, foreign material removed, and dry.
3.02 INSTALLATION
A. Install in accordance with manufacturer's instructions.
B. Install in accordance with NAIMA National Insulation Standards.
C. Insulated Ducts Conveying Air Below Ambient Temperature:
1. Provide insulation with vapor barrier jackets.
2. Finish with tape and vapor barrier jacket.
3. Continue insulation through walls, sleeves, hangers, and other duct penetrations.
4. Insulate entire system, including fittings, joints, flanges, fire dampers, flexible connections, and expansion joints.
D. Insulated Ducts Conveying Air Above Ambient Temperature:
1. Provide with or without standard vapor barrier jacket.
2. Insulate fittings and joints. Where service access is required, bevel and seal ends of insulation.
E. Ducts Exposed in Mechanical Equipment Rooms or Finished Spaces: Finish with canvas jacket sized for finish painting.
F. Duct and Plenum Liner Application:
1. Adhere insulation with adhesive for 90 percent coverage.
2. Secure insulation with mechanical liner fasteners. Refer to SMACNA (DCS) for spacing.
3. Seal and smooth joints. Seal and coat transverse joints.
4. Seal liner surface penetrations with adhesive.
5. Duct dimensions indicated are net inside dimensions required for air-flow. Increase duct size to allow for insulation thickness.
3.03 SCHEDULES
A. Exhaust Ducts Within 15 ft (3 m) of Exterior Openings: 1 inch
B. Outside Air Intake Ducts: 1 1/2 inch
C. Plenums: 1 1/2 inch
D. Supply Ducts: 1-1/2 inch
E. Supply ducts After Terminal Boxes: 1 1/2 inch

END OF SECTION

SECTION 23 0913

INSTRUMENTATION AND CONTROL DEVICES FOR HVAC

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Pressure independent valves and actuators.
B. Dampers.
C. Damper Operators:
1. Electric operators.
D. Humidistats:
1. Room humidistats.
E. Input/Output Sensors:
1. Temperature sensors.
2. Humidity sensors.
3. Static pressure (air pressure) sensors.
4. Equipment operation (current) sensors.
5. Damper position indicators.
6. Carbon dioxide sensors.
F. Thermostats:
1. Electric room thermostats.
2. Low-limit temperature cutout switch (freezestat)
3. Line voltage thermostats.
4. Room thermostat accessories.
G. Time clocks.
H. Energy Metering:
1. Hydronic BTU (J) meters.
I. Flow Sensors:
1. Gas flow meters.
2. Flow switches.
J. Level Switches:
1. Float Sensors:
a. Float switch.
b. Top mount float type level control.
c. Free-floating level switch.
1.02 SUBMITTALS
A. Product Data: Provide description and engineering data for each control system component. Include sizing as requested. Provide data for each system component and software module.

END OF SECTION

SECTION 23 3100

HVAC DUCTS AND CASINGS

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Metal ductwork.
B. Nonmetal ductwork.
C. Casings and plenums.
D. Duct cleaning.
1.02 QUALITY ASSURANCE
A. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this section, with minimum three years of documented experience, and approved by manufacturer.
1.03 FIELD CONDITIONS
A. Do not install duct sealants when temperatures are less than those recommended by sealant manufacturers.
B. Maintain temperatures within acceptable range during and after installation of duct sealants.

PART 2 PRODUCTS

2.01 DUCT ASSEMBLIES
A. Regulatory Requirements: Construct ductwork to comply with NFPA 90A standards.
B. Ducts: Galvanized steel, unless otherwise indicated.
C. Low Pressure Supply (Heating Systems): 1 inch wg (250 Pa) pressure class, galvanized steel.
D. Low Pressure Supply (System with Cooling Coils): 1 inch wg (250 Pa) pressure class, galvanized steel.
E. Medium and High Pressure Supply: 2 inch w.g. (500 Pa) pressure class, galvanized steel.
F. Return and Relief: 1 inch wg (250 Pa) pressure class, galvanized steel.
G. General Exhaust: 1 inch wg (250 Pa) pressure class, galvanized steel.
K. Outside Air Intake: 1/2 inch wg (125 Pa) pressure class, galvanized steel.
L. Combustion Air: 1/2 inch wg (125 Pa) pressure class, galvanized steel.ps
M. Transfer Air and Sound Boots: 1/2 inch wg (125 Pa) pressure class, galvanized steel.
2.02 MATERIALS
A. Galvanized Steel for Ducts: Hot-dipped galvanized steel sheet, ASTM A653/A653M FS Type B, with G60/Z180 coating.
B. Un-Galvanized Steel for Ducts: ASTM A1008/A1008M Designation CS (commercial steel), cold-rolled.
C. Aluminum for Ducts: ASTM B209 (ASTM B209M); aluminum sheet, alloy 3003-H14. Aluminum Connectors and Bar Stock: Alloy 6061-T651 or of equivalent strength.
D. Stainless Steel for Ducts: ASTM A666, Type 304.
E. Joint Sealers and Sealants: Non-hardening, water resistant, mildew and mold resistant.
1. Type: Heavy mastic or liquid used alone or with tape, suitable for joint configuration and compatible with substrates, and recommended by manufacturer for pressure class of ducts.
2. VOC Content: Not more than 250 g/L, excluding water.
3. Surface Burning Characteristics: Flame spread index of zero and smoke developed index of zero, when tested in accordance with ASTM E84.
F. Gasket Tape: Provide butyl rubber gasket tape for a flexible seal between transfer duct connector (TDC), transverse duct flange (TDF), applied flange connections, and angle rings connections.
G. Hanger Rod: ASTM A36/A36M; steel, galvanized; threaded both ends, threaded one end, or continuously threaded.
H. Hanger Fasteners: Attach hangers to structure using appropriate fasteners, as follows:
1. Concrete Wedge Expansion Anchors: Complying with ICC-ES AC193.
2. Masonry Wedge Expansion Anchors: Complying with ICC-ES AC01.
3. Concrete Screw Type Anchors: Complying with ICC-ES AC193.
4. Masonry Screw Type Anchors: Complying with ICC-ES AC106.
5. Concrete Adhesive Type Anchors: Complying with ICC-ES AC308.
2.03 DUCTWORK FABRICATION
A. Fabricate and support in accordance with SMACNA (DCS) and as indicated.
B. No variation of duct configuration or size permitted except by written permission. Size round duct installed in place of rectangular ducts in accordance with ASHRAE (FUND) Handbook - Fundamentals.
C. Duct systems have been designed for metal duct. At the Contractor's option, fibrous glass duct may be substituted for metal duct.
D. Provide duct material, gauges, reinforcing, and sealing for operating pressures indicated.
E. Construct T's, bends, and elbows with radius of not less than 1-1/2 times width of duct on centerline. Where not possible and where rectangular elbows must be used, provide air foil turning vanes of perforated metal with glass fiber insulation.
F. Provide turning vanes of perforated metal with glass fiber insulation when acoustical lining is indicated.
G. Increase duct sizes gradually, not exceeding 15 degrees divergence wherever possible; maximum 30 degrees divergence upstream of equipment and 45 degrees convergence downstream.
H. Fabricate continuously welded round and oval duct fittings in accordance with SMACNA (DCS).
I. Where ducts are connected to exterior wall louvers and duct outlet is smaller than louver frame, provide blank-out panels sealing louver area around duct. Use same material as duct, painted black on exterior side; seal to louver frame and duct.
2.04 MANUFACTURED DUCTWORK AND FITTINGS
A. Double Wall Insulated Round Ducts: Round spiral lockseam duct with galvanized steel outer wall, perforated galvanized steel inner wall; fitting with solid inner wall.
1. Manufacture in accordance with SMACNA (DCS).
2. Insulation:
a. Thickness: 1 inch (25 mm).
b. Material: Fiberglass.
B. Spiral Ducts: Round spiral lockseam duct with galvanized steel outer wall.
1. Manufacture in accordance with SMACNA (DCS).
C. Round Ducts: Round lockseam duct with galvanized steel outer wall.
1. Manufacture in accordance with SMACNA (DCS).
D. Flexible Ducts: Black polymer film supported by helically wound spring steel wire.
1. UL labeled.
2. Insulation: Fiberglass insulation with polyethylene vapor barrier film.
3. Pressure Rating: 4 inches wg (1000 Pa) positive and 0.5 inches wg (175 Pa) negative.
4. Maximum Velocity: 4000 fpm (20.3 m/sec).
5. Temperature Range: Minus 20 degrees F to 175 degrees F (Minus 28 degrees C to 79 degrees C).
E. Kitchen Hood and Grease Exhaust Ducts:
1. Fabricate in accordance with ductwork manufacturer's instructions, SMACNA (DCS), SMACNA (KVS), and NFPA 96.
F. Dishwasher Exhaust Ducts: Minimum 21 gauge, 0.0344 inch (0.87 mm) thick, single wall, Type 304 stainless steel.
1. Single wall, factory built chimney liner system.
2. Designed, fabricated, and installed to be liquidtight preventing exhaust leakage into the building.
3. Joints to be sealed during installation with factory supplied overlapping V-bands and sealant.
2.05 CASINGS AND PLENUMS
A. Fabricate casings in accordance with SMACNA (DCS) and construct for operating pressures indicated.
B. Reinforce door frames with steel angles tied to horizontal and vertical plenum supporting angles. Install hinged access doors where indicated or required for access to equipment for cleaning and inspection.
C. Fabricate acoustic casings with reinforcing turned inward. Provide 16 gauge, 0.0598 inch (1.52 mm) sheet steel back facing and 22 gauge, 0.0299 inch (0.76 mm) perforated sheet steel front facing with 3/32 inch (2.4 mm) diameter holes on 5/32 inch (4 mm) centers. Construct panels 3 inches (75 mm) thick packed with 4.5 lb/cu ft (72 kg/cu m) minimum glass fiber insulation media, on inverted channels of 16 gauge, 0.0598 inch (1.52 mm) sheet steel.

PART 3 EXECUTION

3.01 INSTALLATION
A. Install, support, and seal ducts in accordance with SMACNA (DCS).
B. Install in accordance with manufacturer's instructions.
C. During construction provide temporary closures of metal or taped polyethylene on open ductwork to prevent construction dust from entering ductwork system.
D. Flexible Ducts: Connect to metal ducts with mechanical fastener.
E. Duct sizes indicated are inside clear dimensions. For lined ducts, maintain sizes inside lining.
F. Provide openings in ductwork where required to accommodate thermometers and controllers. Provide pilot tube openings where required for testing of systems, complete with metal can with spring device or screw to ensure against air leakage. Where openings are provided in insulated ductwork, install insulation material inside a metal ring.
G. Locate ducts with sufficient space around equipment to allow normal operating and maintenance activities.
H. Use crimp joints with or without bead for joining round duct sizes 8 inch (200 mm) and smaller with crimp in direction of air flow.
I. Use double nuts and lock washers on threaded rod supports.
J. Connect terminal units to supply ducts directly or with one foot (300 mm) maximum length of flexible duct. Do not use flexible duct to change direction.
K. At exterior wall louvers, seal duct to louver frame and install blank-out panels.
3.02 CLEANING
A. Clean duct system and force air at high velocity through duct to remove accumulated dust. To obtain sufficient air, clean half the system at a time. Protect equipment that could be harmed by excessive dirt with temporary filters, or bypass during cleaning.

END OF SECTION

SECTION 23 3300

AIR DUCT ACCESSORIES

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Air turning devices/extractors.
B. Backdraft dampers - metal.
C. Duct access doors.
D. Duct test holes.
E. Flexible duct connectors.
F. Volume control dampers.
1.02 SUBMITTALS
A. Product Data: Provide for shop fabricated assemblies including volume control dampers. Include electrical characteristics and connection requirements.
B. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
1. Extra Fusible Links: One of each type and size.
1.03 DELIVERY, STORAGE, AND HANDLING
A. Protect dampers from damage to operating linkages and blades.

PART 2 PRODUCTS

2.01 AIR TURNING DEVICES/EXTRACTORS
A. Multi-blade device with radius blades attached to pivoting frame and bracket, steel construction, with push-pull operator strap.
2.02 BACKDRAFT DAMPERS - METAL
A. Gravity Backdraft Dampers, Size 12x12 inches (300x300 mm) or Smaller, Furnished with Air Moving Equipment: Air moving equipment manufacturer's standard construction.
B. Multi-Blade, Parallel Action Gravity Balanced Backdraft Dampers: Galvanized steel, with center pivoted blades of maximum 6 inch (150 mm) width, with felt or flexible vinyl sealed edges, linked together in rattle-free manner with 90 degree stop, steel ball bearings, and plated steel pivot pin; adjustment device to permit setting for varying differential static pressure.
2.03 DUCT ACCESS DOORS
A. Fabricate in accordance with SMACNA (DCS) and as indicated.
B. Access doors with sheet metal screw fasteners are not acceptable.
2.05 DUCT TEST HOLES
A. Temporary Test Holes: Cut or drill in ducts as required. Cap with neat patches, neoprene plugs, threaded plugs, or threaded or twist-on metal caps.
B. Permanent Test Holes: Factory fabricated, air tight flanged fittings with screw cap. Provide extended neck fittings to clear insulation.
2.06 FLEXIBLE DUCT CONNECTORS
A. Fabricate in accordance with SMACNA (DCS) and as indicated.
B. Flexible Duct Connections: Fabric crimped into metal edging strip.
1. Fabric: UL listed fire-retardant neoprene coated woven glass fiber fabric to NFPA 90A, minimum density 30 oz per sq yd (1.0 kg/sq m).
2. Metal: 3 inches (75 mm) wide, 24 gauge, 0.0239 inch (0.61 mm) thick galvanized steel.
2.07 VOLUME CONTROL DAMPERS
A. Fabricate in accordance with SMACNA (DCS) and as indicated.
B. Splitter Dampers:
1. Material: Same gauge as duct to 24 inches (600 mm) size in either direction, and two gauges heavier for sizes over 24 inches (600 mm).
2. Blade: Fabricate of double thickness sheet metal to streamline shape, secured with continuous hinge or rod.
3. Operator: Minimum 1/4 inch (6 mm) diameter rod in self aligning, universal joint action, flanged bushing with set screw.
C. Single Blade Dampers:
1. Fabricate for duct sizes up to 6 by 30 inch (150 by 760 mm).
2. Blade: 24 gauge, 0.0239 inch (0.61 mm), minimum.
D. Multi-Blade Damper: Fabricate of opposed blade pattern with maximum blade sizes 8 by 72 inch (200 by 1825 mm). Assemble center and edge crimped blades in prime coated or galvanized channel frame with suitable hardware.
1. Blade: 18 gauge, 0.0478 inch (1.21 mm), minimum.
E. Quadrants:
1. Provide locking, indicating quadrant regulators on single and multi-blade dampers.
2. On insulated ducts mount quadrant regulators on stand-off mounting brackets, bases, or adapters.
3. Where rod lengths exceed 30 inches (750 mm) provide regulator at both ends.

PART 3 EXECUTION

3.01 INSTALLATION
A. Install accessories in accordance with manufacturer's instructions, NFPA 90A, and follow SMACNA (DCS).
B. Provide backdraft dampers on exhaust fans or exhaust ducts nearest to outside and where indicated.
C. Provide duct access doors for inspection and cleaning before and after filters, coils, fans, automatic dampers, at fire dampers, combination fire and smoke dampers, and elsewhere as indicated. Provide for cleaning kitchen exhaust ducts in accordance with NFPA 96 Provide minimum 8 by 8 inch (200 by 200 mm) size for hand access, size for shoulder access, and as indicated. Provide 4 by 4 inch (100 by 100 mm) for balancing dampers only. Review locations prior to fabrication.
D. Provide duct test holes where indicated and required for testing and balancing purposes.
E. Provide fire dampers, combination fire and smoke dampers, and smoke dampers at locations indicated, where ducts and outlets pass through fire rated components, and where required by Authorities Having Jurisdiction. Install with required perimeter mounting angles, sleeves, breakaway duct connections, corrosion resistant springs, bearings, bushings and hinges.
F. Install smoke dampers and combination smoke and fire dampers in accordance with NFPA 92.
G. Demonstrate re-setting of fire dampers to Owner's representative.
H. At fans and motorized equipment associated with ducts, provide flexible duct connections immediately adjacent to the equipment.
I. At equipment supported by vibration isolators, provide flexible duct connections immediately adjacent to the equipment.
J. Provide balancing dampers at points on supply, return, and exhaust systems where branches are taken from larger ducts as required for air balancing. Install minimum 2 duct widths from duct take-off.
K. Use splitter dampers only where indicated.
L. Provide balancing dampers on high velocity systems where indicated.
M. Provide balancing dampers on duct take-off to diffusers, grilles, and registers, regardless of whether dampers are specified as part of the diffuser, grille, or register assembly.

END OF SECTION

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Design and construction documents as instruments of service are given in confidence and remain the property of Donald W. Alexander, Architect. The use of this design and these construction documents for purposes other than the specific project named herein is strictly prohibited without expressed written consent of Donald W. Alexander, Architect.

STORAGE FACILITY
97 WARREN AVENUE
PORTLAND, MAINE 04103

Project No.:	25.0991
Drawn By:	AMS
Date	Issue
03-30-2026	BID & PERMIT

MP1.1

MECHANICAL SPECIFICATIONS

Plumbing and Fire Protection

General Information

A. General
1. Conform to all general and special conditions of contract as specified by architect, tenant and owner.
2. Specifications are applicable to all contractors and subcontractors for plumbing and electrical systems
3. Contractor shall comply with owner's standards, facility specifications, rules and regulations. All owner's criteria shall be complied with and included in this bid. Check other plans and specifications and fully coordinate with other trades and architect's requirements.
4. Visit site, check facilities and conditions, and verify all utility company requirements and connection points in field prior to starting work. Take all items into consideration in bid.
5. Systems are to be complete and workable in all respects, placed in operation and properly adjusted.
6. Each contractor shall provide for his own clean-up, removal and legal disposal of all rubbish daily.
7. The contractor shall be solely responsible for construction means, methods, and sequences of construction and the safety of workmen. comply with all OSHA regulations.
8. No piping, controls, etc., shall be installed or routed above electrical panels and equipment or through elevator rooms or shafts.
9. The plumbing and electrical contractors shall coordinate the electrical characteristics of all plumbing equipment prior to ordering of equipment. No additional payment will be made for lack of contractor coordination of electrical characteristics.
10. All plumbing and electrical system components shall be routed tight to underside of structure and through joists or trusses where possible. Coordinate installation to preserve headroom, equipment access, and architectural clearances for finishes, including ceiling heights. Coordinate with all other trades and do not conflict with the architectural requirements for the finished construction. Provide offsets where required to coordinate with other trades.
11. Operation and maintenance manuals: three (3) bound sets of the operation and maintenance manuals shall be provided to the construction representative at turnover, and are required for final acceptance.
12. As built drawings: the plumbing subcontractor shall progressively record all plumbing drawing changes which shall be available at all times for review by the construction representative. An AutoCAD copy of the final as-built drawings shall be provided to the construction representative at turnover. This AutoCAD as-built is required for final acceptance of the project.

B. Codes, standards and regulations
1. Conform to all applicable codes, government regulations, utility company requirements, and national electrical code.
2. Obtain permits and pay all fees. Arrange for all required inspections and approvals.

C. Related work specified elsewhere
1. Openings and chases, when shown on architectural drawings.

D. Drawings
1. The systems as shown on the contract drawings are diagrammatic.
2. The intent is for complete and workable systems. The drawings and these notes are to be used together as a basis of showing and/or describing the system requirements for the facility.
3. Verify all dimensions and clearances by field measurement and check for interferences prior to starting work.

E. Base equipment and materials and substitutions
1. All equipment and materials shall be new, free of defects and U.L. labeled.
2. Submit shop drawings for all equipment, fixtures, etc., including all accessories to be furnished. Base bid manufacturers and models are included in specifications or listed in schedule on drawing. Any other manufacturer or model is a substitution.
3. Substitutions are subject to the approval of the owner and shall be listed on the form of proposal for the owner's consideration prior to contract award. If substitution is submitted, it is the contractor's responsibility to evaluate it and certify that the substitution is equivalent in all respects to the base specifications.
4. If substitutions are approved, notify all other contractors, subcontractors or trades affected by substitution and fully coordinate. Any costs resulting from substitution, whether by contractor or others, shall be responsibility of and paid for by substituting contractor.
5. All equipment shall be installed in full accordance with the manufacturer's installation instructions. It is this contractor's responsibility to check and conform to these requirements prior to starting work.

F. Check, test, start, adjust, balance and instructions
1. After installation, check all equipment, and perform start up in accordance with the manufacturer's instructions.
2. All piping shall be tested and free of leaks.
3. Balance all systems, calibrate controls, check for proper operating sequence under all conditions, and make all necessary adjustments.
4. All wiring shall be fully tested and made free of grounds and short circuits.
5. Instruct owner in operation of systems and submit operating and maintenance manual on all equipment and systems.
6. Provide engraved labels and identification tags for all piping systems, valves and equipment.
7. Provide typed panel directories and engraved labels for all panels and equipment.

G. Cutting, patching and drilling
1. All cutting and chasing of the building construction required for this work shall be by this contractor unless shown on architectural drawings and confirmed as to size and location prior to new construction. Cutting shall be in a neat and workmanlike manner.
2. Neatly saw cut all rectangular openings, set sleeve through opening, and finish patch or provide trim flange around opening.
3. Neatly saw cut floors for sewer installation and patch floor to match existing, including floor covering.
4. Core drill and sleeve all round openings.
5. Do not cut any structural components without architect's approval.
6. Patch and finish to match adjacent areas that have been cut, damaged or modified to install equipment for this project.
7. Cutting of roof, installation of curbs, and patching of roof shall be by a certified roofing contractor, approved by building owner, and paid for by this contractor.
8. Fire stop all penetrations of fire rated construction in a code approved manner, using UL listed fire rated materials.
9. All contractors shall confirm with owner, prior to bid, times available for noise producing work such as cutting and core drilling of floors, walls, etc., as well as times for work which require access into adjoining areas. Include any premium time required in bid.

H. Warranty
1. Fully warrant all materials, equipment and workmanship for one (1) year from date of acceptance.
2. Extend all manufacturer's warranties to owner.
3. Repair or replace without charge to the owner all items found defective during the warranty period.

END OF SECTION

SECTION 21 0500

COMMON WORK RESULTS FOR FIRE SUPPRESSION

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Pipe, fittings, sleeves, escutcheons, seals, and connections for sprinkler systems.

1.02 SUBMITTALS
A. Product Data: Provide manufacturer's catalog information. Indicate valve data and ratings.
B. Shop Drawings: Indicate pipe materials used, jointing methods, supports, and floor and wall penetration seals. Indicate installation, layout, weights, mounting and support details, and piping connections.
C. Operation and Maintenance Data: Include installation instructions and spare parts lists.

PART 2 PRODUCTS

2.01 FIRE PROTECTION SYSTEMS
A. Sprinkler Systems: Comply with NFPA 13.
B. Welding Materials and Procedures: Comply with ASME BPVC-IX.

2.02 BURIED PIPING
A. Steel Pipe: ASTM A53/A53M Schedule 40, ASTM A135/A135M Schedule 10, ASTM A795/A795M Standard Weight, or ASME B36.10M Schedule 40, black, with AWWA C105/A21.5 polyethylene jacket, or double layer, half-lapped polyethylene tape.
B. Ductile Iron Pipe: AWWA C151/A21.51.

2.03 ABOVE GROUND PIPING
A. Steel Pipe: ASTM A53 Schedule 40, black.
1. Cast Iron Fittings: ASME B16.1, flanges and flanged fittings and ASME B16.4, threaded fittings.
2. Malleable Iron Fittings: ASME B16.3, threaded fittings and ASTM A47/A47M.
3. Mechanical Grooved Couplings: Malleable iron housing clamps to engage and lock, "C" shaped elastomeric sealing gasket, steel bolts, nuts, and washers; galvanized for galvanized pipe.

2.04 PIPE SLEEVES
A. Vertical Piping:
1. Sleeve Length: 1 inch (25 mm) above finished floor.
2. Provide sealant for watertight joint.
B. Pipe Passing Through Below Grade Exterior Walls:
1. Zinc-coated or cast-iron pipe.
2. Provide watertight space with link rubber or modular seal between sleeve and pipe on both pipe ends.
C. Clearances:
1. Provide allowance for insulated piping.
2. Wall, Floor, Floor, Partitions, and Beam Flanges: 1 inch (25 mm) greater than external; pipe diameter.
3. Rated Openings: Caulked tight with firestopping material complying with ASTM E814 to prevent the spread of fire, smoke, and gases.

2.05 ESCUTCHEONS
A. Material:
1. Metals and Finish: Comply with ASME A112.18.1.
B. Construction:
1. One-piece for mounting on chrome-plated tubing or pipe and one-piece or split-pattern type elsewhere.
2. Internal spring tension devices or setscrews to maintain a fixed position against a surface.

PART 3 EXECUTION

3.01 INSTALLATION
A. Install sprinkler system and service main piping, hangers, and supports in accordance with NFPA 13.

END OF SECTION

SECTION 21 1300

FIRE-SUPPRESSION SPRINKLER SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Wet-pipe sprinkler system and standpipes.
B. Fire department connections.

1.02 SUBMITTALS
A. Product Data: Provide data on sprinklers, valves, and specialties, including manufacturers catalog information. Submit performance ratings, rough-in details, weights, support requirements, and piping connections.
B. Shop Drawings:
1. Submit preliminary layout of finished ceiling areas indicating only sprinkler locations coordinated with ceiling installation.
2. Indicate hydraulic calculations, detailed pipe layout, hangers and supports, sprinklers, components, and accessories. Indicate system controls.
3. Submit shop drawings to Authorities Having Jurisdiction for approval. Submit proof of approval to Architect.

1.03 DELIVERY, STORAGE, AND HANDLING
A. Store products in shipping containers and maintain in place until installation. Provide temporary inlet and outlet caps. Maintain caps in place until installation.

PART 2 PRODUCTS

2.01 SPRINKLER SYSTEM
A. Sprinkler System: Provide coverage for building areas noted.
B. Water Supply: Determine volume and pressure from water flow test data.
C. Interface system with building control system.
D. Provide fire department connections where indicated.
E. Storage Cabinet for Spare Sprinklers and Tools: Steel, located adjacent to alarm valve.
F. Pipe Hanger Fasteners: Attach hangers to structure using appropriate fasteners, as follows:
1. Concrete Wedge Expansion Anchors: Complying with ICC-ES AC193.
2. Masonry Wedge Expansion Anchors: Complying with ICC-ES AC01.
3. Concrete Screw Type Anchors: Complying with ICC-ES AC193.
4. Masonry Screw Type Anchors: Complying with ICC-ES AC106.
5. Concrete Adhesive Type Anchors: Complying with ICC-ES AC308.
6. Other Types: As required.

2.02 SPRINKLERS
A. Suspended Ceiling Type: Semi-recessed (1/2") pendant type with matching push on escutcheon plate.
1. Response Type: Quick.
2. Coverage Type: Standard.
3. Finish: Chrome.
4. Escutcheon Plate Finish: Chrome.
5. Fusible Link: Fusible solder link type temperature rated for specific area hazard.
B. Exposed Area Type: Upright Sprinklers.
1. Response Type: Quick.
2. Coverage Type: Standard.
3. Finish: Brass.
4. Fusible Link: Fusible solder link type temperature rated for specific area hazard.
C. Sidewall Type: Semi-recessed horizontal sidewall type with matching push on escutcheon plate.
1. Response Type: Quick.
2. Coverage Type: Standard.
3. Finish: Brass.
4. Escutcheon Plate Finish: Brass.
5. Fusible Link: Fusible solder link type temperature rated for specific area hazard.
D. Spray Nozzles: Brass with solid cone discharge, 30 degrees of arc with blow-off dust cap.
1. Finish: Brass.
H. Flexible Drop System: Stainless steel, multiple use, open gate type.
1. Application: Use to properly locate sprinkler heads.
2. Include all supports and bracing.
3. Provide braided type tube as required for the application.

2.03 STANDPIPES
A. Class I manual wet with 2-1/2" hose shall be installed for used by the fire department per NFPA 14.
B. Locations for hose connections in Class I system shall be on each main floor landing and on the roof if stairwell does not have access to the roof per AHJ requirements.
C. Provide a standpipe hydraulic calculation demonstrating that the NFPA 14 required flow rates of 500 gpm at minimum residual pressure of 100 psi can be obtain at the most remote hose valve with a flat supply pressure of 150 psi at the department connection.

2.04 SPRINKLERS PIPES
A. All steel piping shall be listed for at least 175 psi and shall be marked with name of the manufacturer, type of pipe, and ASTM designation.
B. All steel piping shall be Schedule 40.
- Threaded-End, Standard-Weight Steel pipe with threaded fittings.
- Grooved-End, Standard -Weight Steel pipe with grooved-end piping fittings and couplings.

PART 3 EXECUTION

3.01 INSTALLATION
A. Install in accordance with referenced NFPA design and installation standard.
B. Place pipe runs to minimize obstruction to other work.
C. Hydrostatically test entire system.
D. Require test be witnessed by Authority Having Jurisdiction.

END OF SECTION

SECTION 22 0553

IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Pipe markers.

PART 2 PRODUCTS

2.01 IDENTIFICATION APPLICATIONS
A. Piping: Pipe markers.

2.02 PIPE MARKERS
A. Plastic Pipe Markers: Factory fabricated, flexible, semi- rigid plastic, preformed to fit around pipe or pipe covering; minimum information indicating flow direction arrow and identification of fluid being conveyed.
B. Plastic Tape Pipe Markers: Flexible, vinyl film tape with pressure sensitive adhesive backing and printed markings.
C. Color code as follows:
1. Potable, Cooling, Boiler, Feed, Other Water: Green with white letters.
2. Fire Quenching Fluids: Red with white letters.
3. Toxic and Corrosive Fluids: Orange with black letters.
4. Flammable Fluids: Yellow with black letters.
5. Combustible Fluids: Brown with white letters.
6. Compressed Air: Blue with white letters.

PART 3 EXECUTION

3.01 PREPARATION
A. Degrease and clean surfaces to receive adhesive for identification materials.

3.02 INSTALLATION
A. Install plastic pipe markers in accordance with manufacturer's instructions.
B. Install plastic tape pipe markers complete around pipe in accordance with manufacturer's instructions.

END OF SECTION

SECTION 22 0719

PLUMBING PIPING INSULATION

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Piping insulation.
B. Jackets and accessories.

1.02 SUBMITTALS
A. Product Data: Provide product description, thermal characteristics, list of materials and thickness for each service, and locations.

1.03 DELIVERY, STORAGE, AND HANDLING
A. Accept materials on site, labeled with manufacturer's identification, product density, and thickness.

PART 2 PRODUCTS

2.01 REGULATORY REQUIREMENTS
A. Surface Burning Characteristics: Flame spread index/Smoke developed index of 25/50, maximum, when tested in accordance with ASTM E84 or UL 723.

2.02 GLASS FIBER
A. Insulation: ASTM C547 and ASTM C795; rigid molded, noncombustible.
1. K (Ksi) Value: ASTM C177, 0.24 at 75 degrees F (0.035 at 24 degrees C).
2. Maximum Service Temperature: 850 degrees F (454 degrees C).
3. Maximum Moisture Absorption: 0.2 percent by volume.
B. Insulation: ASTM C547 and ASTM C795; rigid molded, noncombustible, with wicking material to transport condensed water to the outside of the system for evaporation to the atmosphere.
1. K (Ksi) Value: ASTM C177, 0.23 at 75 degrees F (0.034 at 24 degrees C).
2. Maximum Service Temperature: 220 degrees F (104 degrees C).
3. Maximum Moisture Absorption: 0.2 percent by volume.
C. Vapor Barrier Jacket: White Kraft paper with glass fiber yarn, bonded to aluminized film; moisture vapor transmission when tested in accordance with ASTM E96/E96M of 0.02 perm-inches (0.029 ng/Pa s m).
D. Vapor Barrier Lap Adhesive: Compatible with insulation.

2.03 FLEXIBLE ELASTOMERIC CELLULAR INSULATION
A. Insulation: Preformed flexible elastomeric cellular rubber insulation complying with ASTM C534/C534M Grade 1; use molded tubular material wherever possible.
1. Minimum Service Temperature: Minus 40 degrees F (Minus 40 degrees C).
2. Maximum Service Temperature: 220 degrees F (104 degrees C).
3. Connection: Waterproof vapor barrier adhesive.

2.04 JACKETS
A. PVC Plastic.
1. Jacket: One piece molded type fitting covers and sheet material, off-white color.
a. Minimum Service Temperature: 0 degrees F (Minus 18 degrees C).
b. Maximum Service Temperature: 150 degrees F (66 degrees C).
c. Moisture Vapor Permeability: 0.002 perm inch (0.0029 ng/Pa s m), maximum, when tested in accordance with ASTM E96/E96M.
d. Thickness: 10 mil (0.25 mm).
e. Connections: Brush on welding adhesive.
2. Covering Adhesive Mastic: Compatible with insulation.

PART 3 EXECUTION

3.01 EXAMINATION
A. Verify that piping has been tested before applying insulation materials.
B. Verify that surfaces are clean and dry, with foreign material removed.

3.02 INSTALLATION
A. Install in accordance with manufacturer's instructions.
B. Install in accordance with North American Insulation Manufacturers Association (NAIMA) National Insulation Standards.
C. Exposed Piping: Locate insulation and cover seams in least visible locations.
D. Insulated pipes conveying fluids below ambient temperature: Insulate entire system including fittings, valves, unions, flanges, strainers, flexible connections, pump bodies, and expansion joints.
E. Glass fiber insulated pipes conveying fluids below ambient temperature:
1. Provide vapor barrier jackets, factory-applied or field-applied. Secure with self-sealing longitudinal laps and butt strips with pressure sensitive adhesive. Secure with outward clinch expanding staples and vapor barrier mastic.
2. Insulate fittings, joints, and valves with molded insulation of like material and thickness as adjacent pipe. Finish with glass cloth and vapor barrier adhesive or PVC fitting covers.
F. For hot piping conveying fluids 140 degrees F (60 degrees C) or less, do not insulate flanges and unions at equipment, but bevel and seal ends of insulation.
G. For hot piping conveying fluids over 140 degrees F (60 degrees C), insulate flanges and unions at equipment.
H. Glass fiber insulated pipes conveying fluids above ambient temperature:
1. Provide standard jackets, with or without vapor barrier, factory-applied or field-applied. Secure with self-sealing longitudinal laps and butt strips with pressure sensitive adhesive. Secure with outward clinch expanding staples.
2. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe. Finish with glass cloth and adhesive or PVC fitting covers.
I. Inserts and Shields:
1. Application: Piping 1-1/2 inches (40 mm) diameter or larger.
2. Shields: Galvanized steel between pipe hangers or pipe hanger rolls and inserts.
3. Insert Location: Between support shield and piping and under the finish jacket.
4. Insert Configuration: Minimum 6 inches (150 mm) long, of same thickness and contour as adjoining insulation; may be factory fabricated.
J. Continue insulation through walls, sleeves, pipe hangers, and other pipe penetrations. Finish at supports, protrusions, and interruptions.
K. Pipe Exposed in Mechanical Equipment Rooms or Finished Spaces (less than 10 feet (3 meters) above finished floor): Finish with PVC jacket and fitting covers.
L. Exterior Applications: Provide vapor barrier jacket. Insulate fittings, joints, and valves with insulation of like material and thickness as adjoining pipe, and finish with glass mesh reinforced vapor barrier cement. Cover with aluminum jacket with seams located on bottom side of horizontal piping.
M. Heat Traced Piping: Insulate fittings, joints, and valves with insulation of like material, thickness, and finish as adjoining pipe. Size large enough to enclose pipe and heat tracer. Cover with aluminum jacket with seams located on bottom side of horizontal piping.

3.03 SCHEDULES
A. Plumbing Systems:
1. Domestic Hot Water Supply:
a. Glass Fiber Insulation:
1) Pipe Size Range: 1 1/2 inch and larger.
2) Thickness: 1 1/2 inch.
b. Glass Fiber Insulation:
1) Pipe Size Range: 1 1/4 inch and smaller .
2) Thickness: 1 inch.
c. Cellular Foam Insulation:
1) Pipe Size Range: 1 1/4 inch and smaller.
2) Thickness: 1 inch.
2. Domestic Hot Water Recirculation:
a. Glass Fiber Insulation:
1) Pipe Size Range: All sizes.
2) Thickness: 1 inch (25 mm).
3. Domestic Cold Water: Glass Fiber 1 inch
4. Plumbing Vents Within 10 Feet (3 Meters) of the Exterior: Glass Fiber 1 inch
5. Trap primer water supply piping: 1/2" Flexible Electrometric.
B. Other Systems:
1. Piping Exposed to Freezing with Heat Tracing: Glass Fiber 1 inch

END OF SECTION

SECTION 22 1005

PLUMBING PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES
A. Pipe, pipe fittings, specialties, and connections for piping systems.
1. Sanitary sewer and Vent piping.
2. Domestic water.
3. Storm water
4. Flanges, unions, and couplings.
5. Pipe hangers and supports.
6. Valves.
7. Flow controls.
8. Check.
9. Water pressure reducing valves.

1.02 SUBMITTALS
A. Product Data: Provide data on pipe materials, pipe fittings, valves, and accessories. Provide manufacturers catalog information. Indicate valve data and ratings.

1.03 FIELD CONDITIONS
A. Do not install underground piping when bedding is wet or frozen.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS
A. Potable Water Supply Systems: Provide piping, pipe fittings, and solder and flux (if used), that comply with NSF 61 and NSF 372 for maximum lead content; label pipe and fittings.

2.02 SANITARY SEWER AND STORM PIPING, BURIED WITHIN 5 FEET (1500 MM) OF BUILDING
A. Cast Iron Pipe: CISPI 301, hubless.
1. Fittings: Cast iron.
2. Joints: CISPI 310, neoprene gasket and stainless steel clamp and shield assemblies.
B. PVC Pipe: ASTM D2665 or ASTM D3034.
1. Fittings: PVC.
2. Joints: Solvent welded, with ASTM D2564 solvent cement.

2.03 SANITARY SEWER, STORM AND VENT PIPING, ABOVE GRADE
A. Cast Iron Pipe: CISPI 301, hubless, service weight. Required in plenum ceiling space.
1. Fittings: Cast iron.
2. Joints: CISPI 310, neoprene gaskets and stainless steel clamp-and-shield assemblies.
B. PVC Pipe: ASTM D2729. Solid core pipe.
1. Fittings: PVC SOLID CORE.
2. Joints: Solvent welded, with ASTM D2564 solvent cement.

2.04 DOMESTIC WATER PIPING, BURIED WITHIN 5 FEET (1500 MM) OF BUILDING
A. Copper Pipe: ASTM B42, hard-drawn, Type K.
1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22 wrought copper and bronze.
2. Joints: ASTM B32, alloy Sn95 solder.

2.05 DOMESTIC WATER PIPING, ABOVE GRADE
A. Copper Tube: ASTM B88 (ASTM B88M), Type L (A), Drawn (H).
1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22, wrought copper and bronze.
2. Joints: ASTM B32, alloy Sn95 solder.
3. Mechanical Press Sealed Fittings: Double-pressed type, NSF 61 and NSF 372 approved or certified, utilizing EPDM, nontoxic, synthetic rubber sealing elements.

2.06 FLANGES, UNIONS, AND COUPLINGS
A. Unions for Pipe Sizes 3 Inches (80 mm) and Under:
1. Ferrous Pipe: Class 150 malleable iron threaded unions.
2. Copper Tube and Pipe: Class 150 bronze unions with soldered joints.
B. Flanges for Pipe Size Over 1 Inch (25 mm):
1. Ferrous Pipe: Class 150 malleable iron threaded or forged steel slip-on flanges; preformed neoprene gaskets.
2. Copper Tube and Pipe: Class 150 slip-on bronze flanges; preformed neoprene gaskets.
C. Mechanical Couplings for Grooved and Shouldered Joints: Two or more curved housing segments with continuous key to engage pipe groove, circular C-profile gasket, and bolts to secure and compress gasket.
1. Dimensions and Testing: In accordance with AWWA C606.
2. Housing Material: Provide ASTM A47/A47M malleable iron or ductile iron, galvanized.
3. Gasket Material: EPDM suitable for operating temperature range from minus 30 degrees F (minus 34 degrees C) to 230 degrees F (110 degrees C).
4. Bolts and Nuts: Hot dipped galvanized or zinc-electroplated steel.
5. When pipe is field grooved, provide coupling manufacturer's grooving tools.
D. Dielectric Connections: Union with galvanized or plated steel threaded end, copper solder end, water impervious isolation barrier.

2.09 PIPE HANGERS AND SUPPORTS
A. Provide hangers and supports that comply with MSS SP-58.
1. If type of hanger or support for a particular situation is not indicated, select appropriate type using MSS SP-58 recommendations.
2. Overhead Supports: Individual steel rod hangers attached to structure or to trapeze hangers.
a. Cold and Hot Pipe Sizes 6 Inches (150 mm) and Over: Double hangers.
3. Trapeze Hangers: Welded steel channel frames attached to structure.
4. Vertical Pipe Support: Steel riser clamp.

2.10 BALL VALVES
A. Construction, 4 Inches (100 mm) and Smaller: MSS SP-110, Class 150, 400 psi (2760 kPa) CWP, bronze or ductile iron body, 304 stainless steel or chrome plated brass ball, regular port, Teflon seats and stuffing box ring, blow-out proof stem, lever handle with balancing stops, threaded or grooved ends with union.

2.11 PIPING SPECIALTIES
A. Flow Controls:
1. Construction: Class 125, Brass or bronze body with union on inlet and outlet, temperature and pressure test plug on inlet and outlet, blowdown/backflush drain.
2. Calibration: Control flow within 5 percent of selected rating, over operating pressure range of 10 times minimum pressure required for control, maximum minimum pressure 3.5 psi (24 kPa).

2.12 WATER PRESSURE REDUCING VALVES
A. Up to 2 Inches (50 mm):
1. ASSE 1003, bronze body, stainless steel, and thermoplastic internal parts, fabric reinforced diaphragm, strainer, threaded single union ends.
B. Over 2 Inches (50 mm):
1. ASSE 1003, cast iron body with interior lining complying with AWWA C550, bronze fitted, elastomeric diaphragm and seat disc, flanged.

PART 3 EXECUTION

3.01 EXAMINATION
A. Verify that excavations are to required grade, dry, and not over-excavated.

3.02 PREPARATION
A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.
B. Remove scale and dirt, on inside and outside, before assembly.
C. Prepare piping connections to equipment with flanges or unions.

3.03 INSTALLATION
A. Install in accordance with manufacturer's instructions.
B. Provide non-conducting dielectric connections wherever jointing dissimilar metals.
C. Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls.
D. Install piping to maintain headroom, conserve space, and not interfere with use of space.
E. Group piping whenever practical at common elevations.
F. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
G. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings.
H. Provide access where valves and fittings are not exposed.
I. Establish elevations of buried piping outside the building to ensure not less than local requirements for cover depth.
J. Install vent piping penetrating roofed areas to maintain integrity of roof assembly.
K. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc-rich primer to welding.
L. Provide support for utility meters in accordance with requirements of utility companies.
M. Prepare exposed, unfinished pipe, fittings, supports, and accessories for finish painting.
N. Install bell and spigot pipe with bell end upstream.
O. Install valves with stems upright or horizontal, not inverted.
P. Install water piping to ASME B31.9.
Q. Copper Pipe and Tube: Make soldered joints in accordance with ASTM B828, using specified solder, and flux meeting ASTM B813; in potable water systems use flux also complying with NSF 61 and NSF 372.
R. PVC Pipe: Make solvent-welded joints in accordance with ASTM D2855.
S. Sleeve pipes passing through partitions, walls, and floors.
T. Inserts:
1. Provide inserts for placement in concrete formwork.
2. Provide inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
3. Provide hooked rod to concrete reinforcement section for inserts carrying pipe over 4 inches (100 mm).
4. Where concrete slabs form finished ceiling, locate inserts flush with slab surface.
5. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut above slab.
U. Pipe Hangers and Supports:
1. Install in accordance with ASME B31.9.
2. Support horizontal piping as indicated.
3. Install hangers to provide minimum 1/2 inch (15 mm) space between finished covering and adjacent work.
4. Place hangers within 12 inches (300 mm) of each horizontal elbow.
5. Use hangers with 1-1/2 inch (40 mm) minimum vertical adjustment. Design hangers for pipe movement without disengagement of supported pipe.
6. Support vertical piping at every other floor. Support riser piping independently of connected horizontal piping.
7. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.
8. Provide copper plated hangers and supports for copper piping.
9. Prime coat exposed steel hangers and supports. Hangers and supports located in crawl spaces, pipe shafts, and suspended ceiling spaces are not considered exposed.
10. Provide hangers adjacent to motor-driven equipment with vibration isolation.
11. Support cast iron drainage piping at every joint.
V. When installing more than one piping system material, ensure system components are compatible and joined to ensure the integrity of the system. Provide necessary joining fittings. Ensure flanges, union, and couplings for servicing are consistently provided.

3.04 APPLICATION
A. Use grooved mechanical couplings and fasteners only in accessible locations.
B. Install unions downstream of valves and at equipment or apparatus connections.
C. Install brass male adapters each side of valves in copper piped system. Solder adapters to pipe.
D. Install ball valves for shut-off and to isolate equipment, part of systems, or vertical risers.
E. Install ball valves for throttling, bypass, or manual flow control services.
F. Provide spring-loaded check valves on discharge of water pumps.
G. Provide flow controls in water recirculating systems where indicated.

3.05 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM
A. Disinfect water distribution system.
B. Prior to starting work, verify system is complete, flushed, and clean.
C. Bleed water from outlets to ensure distribution and test for disinfectant residual at minimum 15 percent of outlets.
D. Maintain disinfectant in system for 24 hours.
E. Flush disinfectant from system until residual equal to that of incoming water or 1.0 mg/L.

3.06 SERVICE CONNECTIONS
A. Provide new sanitary sewer services. Before commencing work, check invert elevations required for sewer connections, confirm inverts and ensure that these can be properly connected with slope for drainage and cover to avoid freezing.
B. Provide new water service complete with approved reduced pressure backflow preventer and water meter with by-pass valves, pressure reducing valve.
1. Provide sleeve in wall for service main and support at wall with reinforced concrete bridge. Calk enlarged sleeve and make watertight with pliable material. Anchor service main inside to concrete wall.
2. Provide 18 gage, 0.0478-inch (1.21 mm) galvanized sheet metal sleeve around service main to 6 inch (150 mm) above floor and 6 feet (1800 mm) minimum below grade. Size for minimum of 2 inches (50 mm) of loose batt insulation stuffing.

3.07 SCHEDULES
A. Pipe Hanger Spacing:
1. Metal Piping:
a. Pipe Size: 1/2 inches (15 mm) to 1-1/4 inches (32 mm):
1) Maximum Hanger Spacing: 6.5 ft (2 m).
2) Hanger Rod Diameter: 3/8 inches (9 mm).
b. Pipe Size: 1-1/2 inches (40 mm) to 2 inches (50 mm):
1) Maximum Hanger Spacing: 10 ft (3 m).
2) Hanger Rod Diameter: 3/8 inch (9 mm).
c. Pipe Size: 2-1/2 inches (65 mm) to 3 inches (75 mm):
1) Maximum Hanger Spacing: 10 ft (3 m).
2) Hanger Rod Diameter: 1/2 inch (13 mm).
d. Pipe Size: 4 inches (100 mm) to 6 inches (150 mm):
1) Maximum Hanger Spacing: 10 ft (3 m).
2) Hanger Rod Diameter: 5/8 inch (15 mm).
2. Plastic Piping:
a. All Sizes:
1) Maximum Hanger Spacing: 6 ft (1.8 m).
2) Hanger Rod Diameter: 3/8 inch (9 mm).

END OF SECTION

SECTION 22 4000

PLUMBING FIXTURES

PART 1 GENERAL

A. Potable Water System: Provide plumbing lead free fittings and faucets that comply with NSF 61 & NSF 372, label pipe and fittings.

PART 2 PRODUCTS - Refer to drawings for plumbing fixture / equipment Schedules

PART 3 EXECUTION

3.01 PREPARATION
A. Rough-in fixture piping connections in accordance with minimum sizes indicated in fixture rough-in schedule for particular fixtures.

3.02 INSTALLATION
A. Install each fixture with trap, easily removable for servicing and cleaning.
B. Provide chrome plated rigid or flexible supplies to fixtures with loose key stops, reducers, and escutcheons.
C. Install components level and plumb.

3.03 INTERFACE WITH WORK OF OTHER SECTIONS
A. Review millwork shop drawings. Confirm location and size of fixtures and openings before rough-in and installation.

3.04 ADJUSTING
A. Adjust stops or valves for intended water flow rate to fixtures without splashing, noise, or overflow.

END OF SECTION

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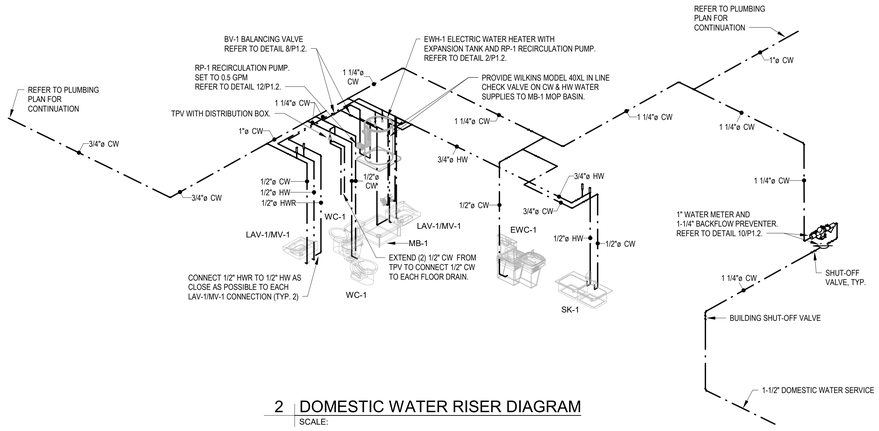
STORAGE FACILITY
97 WARREN AVENUE
PORTLAND, MAINE 04103

Project No.: 25.0991
Drawn By: IEU
Date Issue
03-30-2026 BID & PERMIT

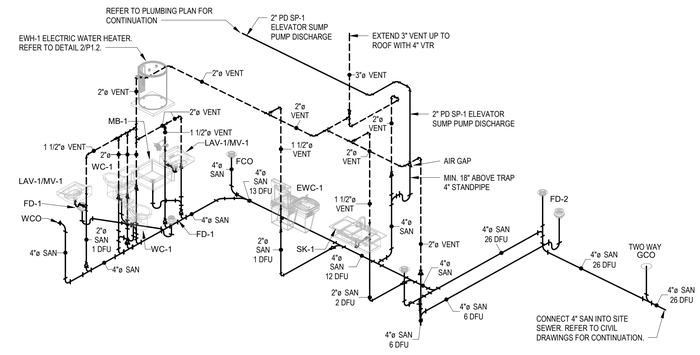
MP1.2

PLUMBING & FIRE PROTECTION SPECIFICATIONS



2 DOMESTIC WATER RISER DIAGRAM

SCALE:



4 SANITARY + VENT RISER DIAGRAM

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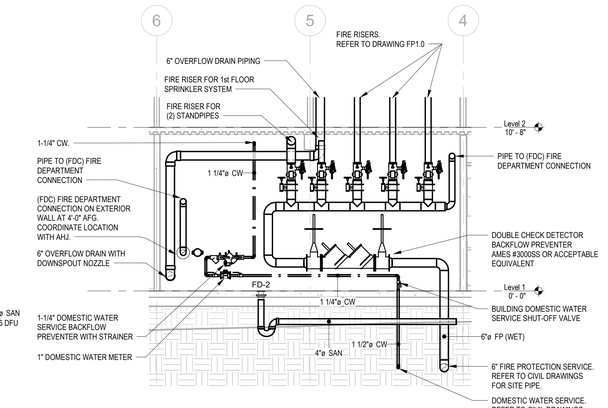
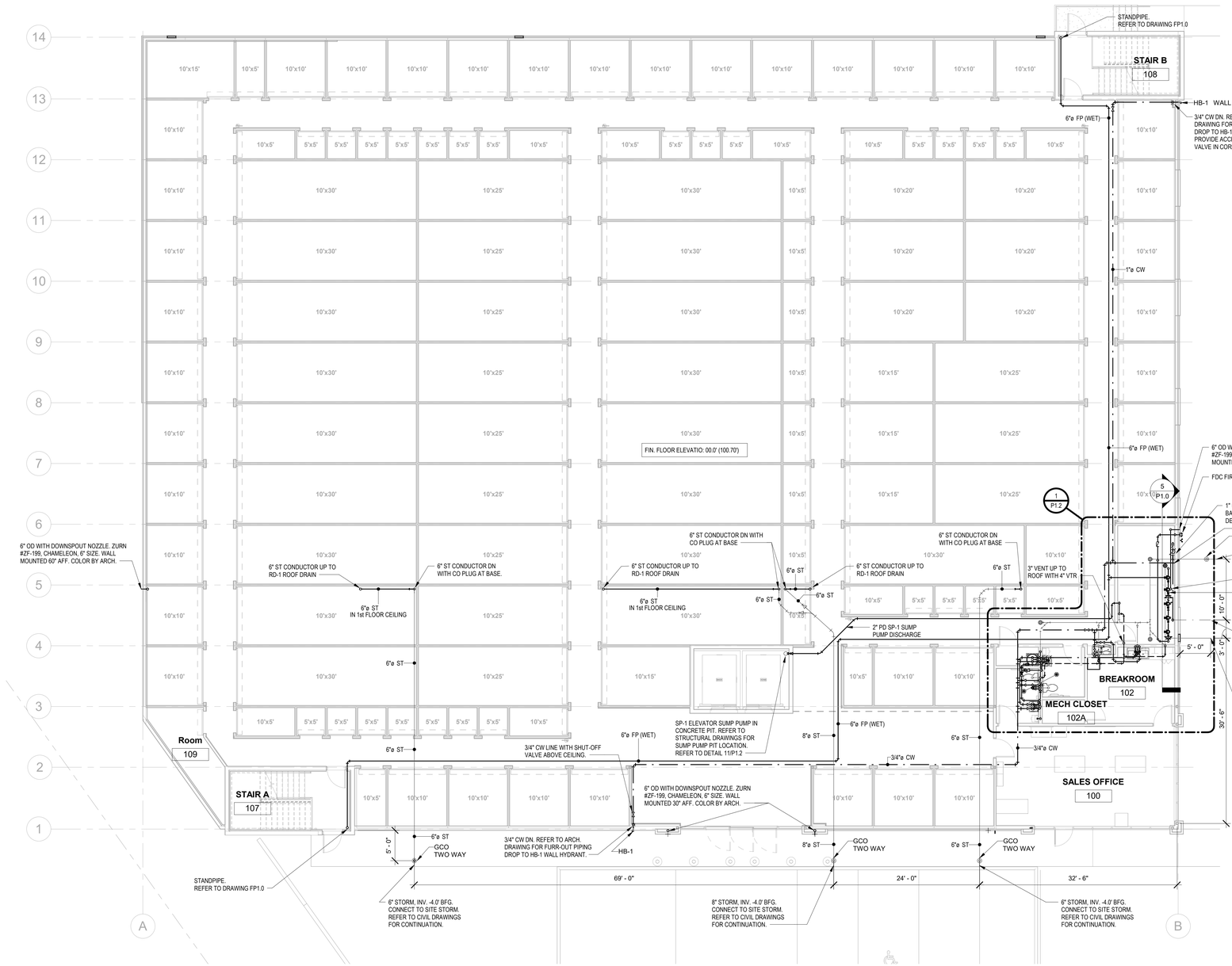


5 DOMESTIC WATER SERVICE DETAIL

SCALE: 1/4" = 1'-0"



1 FIRST FLOOR PLUMBING PLAN

SCALE: 1/8" = 1'-0"

PLUMBING LEGEND

	DOMESTIC COLD WATER (CW)	GALV	GALVANIZED
	DOMESTIC HOT WATER (HW)	GPF	GALLONS PER FLUSH
	DOMESTIC HOT WATER RETURN (HWR)	GPH	GALLONS PER HOUR
FP	FIRE PROTECTION SERVICE (FP)	GPM	GALLONS PER MINUTE
	GAS LINE (G)	HVAC	HEATING, VENTILATION AND AIR CONDITIONING
CD	CONDENSATE DRAIN LINE (CD)	HP	HORSEPOWER
	PLUMBING VENT (VENT)	HZ	HERTZ
	SANITARY WASTE (SAN) - BELOW SLAB/GRADE	ID	INSIDE DIAMETER
	SANITARY WASTE (SAN) - ABOVE SLAB/GRADE	LB	POUND
ST	STORM SEWER (ST) - BELOW SLAB/GRADE	MAX	MAXIMUM
OD	OVERFLOW STORM DRAIN (OD) - ABOVE GRADE	MTD	MOUNTED
	PIPE TURNING UP/DOWN	MIN	MINIMUM
	BALL VALVE	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
	BACKFLOW PREVENTER (BFP)	NPT	NOMINAL PIPE THREAD
M	METER	NRS	NON RISING STEM
?	FIXTURE IDENTIFICATION	OA	OUTDOOR AIR
?_	PLAN NOTE	OD	OVERFLOW DRAIN
	FLOW DIRECTION ARROW	OS&Y	OPEN STEM AND YOKE
AFF/BFF	ABOVE/BELOW FINISHED FLOOR	PSI	POUNDS PER SQUARE INCH
AGA	AMERICAN GAS ASSOCIATION	PVC	POLYVINYL CHLORIDE
AHJ	AUTHORITY HAVING JURISDICTION	REQ'D	REQUIRED
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS	RD	ROOF DRAIN
CFH	CUBIC FEET PER HOUR	RI	ROUGH-IN
CO	CLEANOUT	RPM	REVOLUTIONS PER MINUTE
DN	DOWN	RTU	ROOFTOP UNIT
DWV	DRAIN WASTE AND VENT	SPEC'S	SPECIFICATION
(E)	EXISTING	SF	SQUARE FEET
EA	EACH	TPV	TRAP PRIMER VALVE
ETC	ETCETERA	TYP	TYPICAL
F	FAHRENHEIT	T&P	TEMPERATURE AND PRESSURE
FD	FLOOR DRAIN	UH	UNIT HEATER
FCO	FLOOR CLEANOUT	VTR	VENT THROUGH ROOF
FU	FIXTURE UNIT	WCO	WALL CLEANOUT
GC	GENERAL TRADES CONTRACTOR	WC	WATER COLUMN
GCO	GRADE CLEANOUT		

NOTE: THIS PROJECT MAY NOT USE EVERY SYMBOL, ABBREVIATION OR DEVICE APPEARING ON THIS LEGEND.

PLUMBING PIPING MATERIALS

DOMESTIC COLD WATER SERVICE (BELOW FLOOR):
- PIPING: TYPE "K" SOFT COPPER ASTM B42
- FITTINGS: CAST BRONZE, ASME B.16.26
- JOINTS: ALLOY Sn95, ASTM B32

DOMESTIC COLD, HOT, AND HOT WATER RETURN PIPING (ABOVE FLOOR):
- PIPING: TYPE "L" COPPER ASTM B42
- FITTINGS: WROUGHT COPPER AND BRONZE, ASME B.16.18
- JOINTS: ALLOY Sn95 SOLDER, ASTM B32
- BALL VALVES: SOLDER OR THREADED END, BRONZE BODY, 304 SS BALL, REGULAR PORT, TEFLON SEATS, LEVEL HANDLE

SANITARY AND STORM PIPING (BELOW FLOOR):
- PIPING: CAST IRON PIPE: CISPI 301, HUBLESS, SERVICE WEIGHT
- FITTINGS: CAST IRON
- JOINTS: CISPI 310, NEOPRENE GASKETS AND HEAVY DUTY STAINLESS STEEL CLAMP-AND-SHIELD ASSEMBLIES

- PIPING: PVC DWV, SOLID WALL, SCHEDULE 40, ASTM D2665 (PVC IS NOT ALLOWED IN RETURN AIR PLENUMS, REFER TO MECHANICAL SHEETS)
- FITTINGS: PVC SOCKET, ASTM D2564
- JOINTS: SOLVENT-CEMENTING, ASTM D2564

SANITARY/VENT PIPING (ABOVE FLOOR):
- PIPING: CAST IRON PIPE: CISPI 301, HUBLESS, SERVICE WEIGHT
- FITTINGS: CAST IRON
- JOINTS: CISPI 310, NEOPRENE GASKETS AND HEAVY DUTY STAINLESS STEEL CLAMP-AND-SHIELD ASSEMBLIES

- PIPING: PVC DWV, SOLID WALL, SCHEDULE 40, ASTM D2665 (PVC IS NOT ALLOWED IN RETURN AIR PLENUMS, REFER TO MECHANICAL SHEETS)
- FITTINGS: PVC SOCKET, ASTM D2564
- JOINTS: SOLVENT-CEMENTING, ASTM D2564

DOMESTIC WATER PIPING INSULATION:
- 1/2" HW & HWR PIPES - 1/2" FIBERGLASS INSULATION
- 3/4" HW & HWR PIPES -3/4" FIBERGLASS INSULATION
- 1" HW PIPE - 1" FIBERGLASS INSULATION.
- 1/2"- 1-1/4" CW PIPES - 1" FIBERGLASS INSULATION
- PVC JACKETING SHALL BE PROVIDED ON ALL PIPING IN THE MECHANICAL ROOM

STORM AND OVERFLOW DRAIN PIPING (ABOVE FLOOR):
- PIPING: CAST IRON PIPE: CISPI 301, HUBLESS, SERVICE WEIGHT.
- FITTINGS: CAST IRON
- JOINTS:CISPI 310, NEOPRENE GASKETS AND HEAVY DUTY STAINLESS STEEL CLAMP-AND-SHIELD ASSEMBLIES
- INSULATION: PROVIDE FIBERGLASS PIPE INSULATION ON ALL ROOF/OVERFLOW DRAIN BODIES, HORIZONTAL PIPING UNDER ROOF, AND VERTICAL PIPES IN BUMP OUTS

TRAP PRIMER WATER SUPPLY PIPING:
- PIPING: 1/2" TYPE "K" SOFT COPPER WITHOUT JOINTS
- INSULATION: 1/2" FLEXIBLE ELASTOMERIC

REFER TO SPECIFICATIONS 221005 ON DRAWING MP1.2 FOR ADDITIONAL INFORMATION.

DISINFECTION OF POTABLE WATER SYSTEMS RULES AND REGULATIONS NOTE
POTABLE WATER SYSTEM SHALL BE PURGED OF DELETERIOUS MATTER AND DISINFECTED PRIOR UTILIZATION. THE METHOD TO BE FOLLOWED SHALL BE THAT PRESCRIBED BY PENNSYLVANIA BULLETIN, VOL. 48, NO 17, APRIL 28, 2018 TITLE 25 ENVIRONMENTAL PROTECTION DISINFECTION REQUIREMENTS RULE AND LOCAL HEALTH AUTHORITY.

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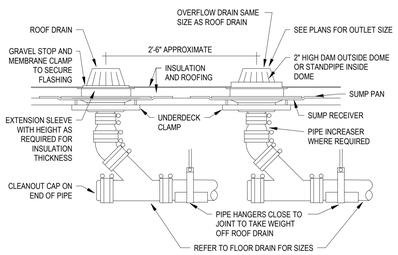
STORAGE FACILITY

97 WARREN AVENUE
PORTLAND, MAINE 04103

Project No.:	25.0991
Drawn By:	IEU
Date	Issue
03-30-2026	BID & PERMIT

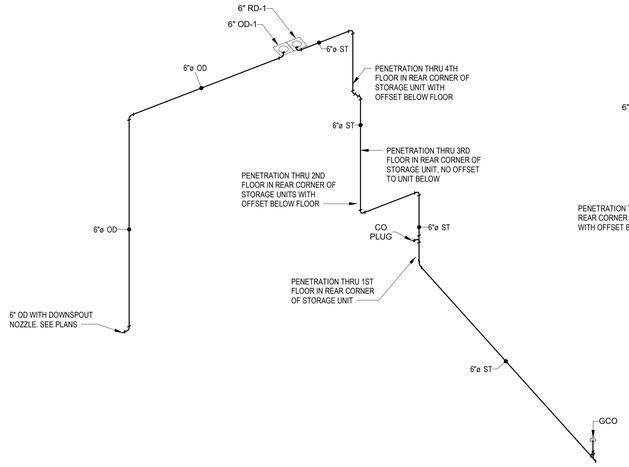
P1.0

PLUMBING PLAN

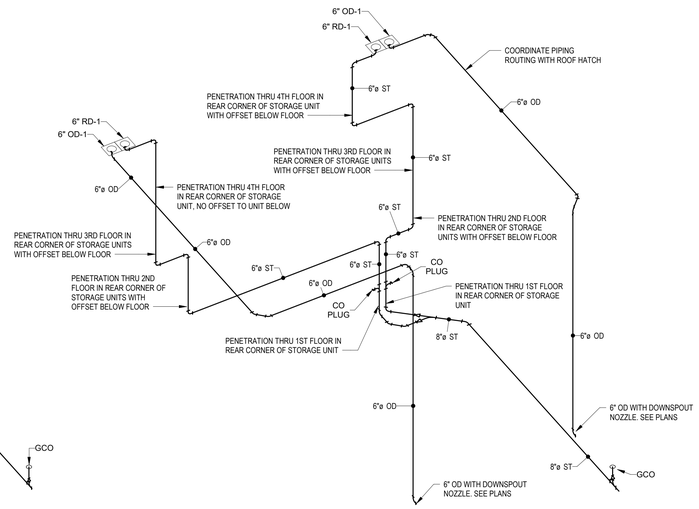


INSTALL PER MANUFACTURER'S RECOMMENDATIONS. PROVIDE INSULATION FOR ALL PRIMARY STORM AND OVERFLOW STORM PIPING AND ROOF DRAIN SUMPS. LOCATE DRAINS WHERE SHOWN ON PLANS, AND VERIFY ROOF LOW POINTS WITH STRUCTURAL PLANS. COORDINATE WITH ROOFING CONTRACTOR. REFER TO STRUCTURAL DRAWINGS AND COORDINATE IF REQUIRED FOR SUPPLEMENTARY STEEL AROUND ROOF OPENING.

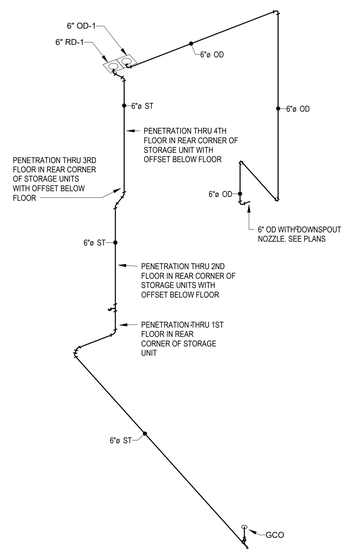
2 ROOF DRAIN & OVERFLOW DRAIN DETAIL
SCALE: 1" = 1'-0"



3 STORM PIPING DIAGRAMS - A
SCALE:



4 STORM PIPING DIAGRAMS - B & C
SCALE:



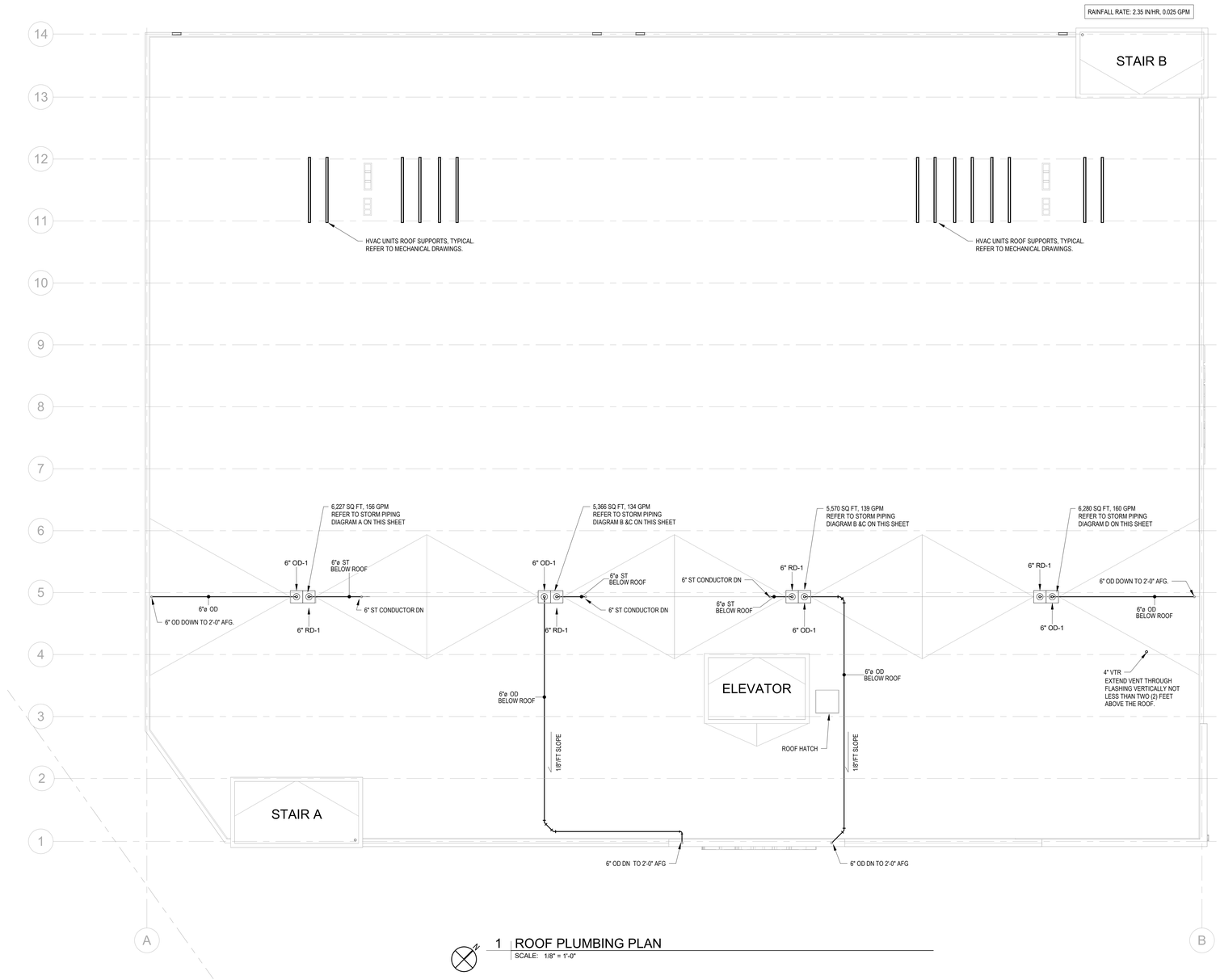
5 STORM PIPING DIAGRAMS - D
SCALE:

PLUMBING NOTES:

1. ALL STORM AND OVERFLOW HORIZONTAL PIPING SHALL BE INSTALLED WITH MIN 1/8"/FT SLOPE.
2. INSTALL RD-1 ROOF DRAIN AND OD-1 OVERFLOW DRAIN PER MANUFACTURER'S REQUIREMENTS AND COORDINATE WITH GENERAL CONTRACTOR.

ALL STORM AND OVERFLOW DRAIN PIPING INDICATED ON ROOF PLAN SHALL BE INSTALLED BELOW ROOF AS HIGH AS POSSIBLE AND COORDINATED WITH DUCTWORK, LIGHT, AND STRUCTURE.
STORM CONDUCTORS AND OVERFLOW DRAIN PIPING SHALL BE LOCATED IN THE CORNER OF SELF STORAGE UNIT.

ALL STORM PIPING AND OVERFLOW DRAIN PIPING SHALL BE CAST IRON. (NO SUBSTITUTIONS)



1 ROOF PLUMBING PLAN
SCALE: 1/8" = 1'-0"

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STORAGE FACILITY
97 WARREN AVENUE
PORTLAND, MAINE 04103

Project No.:	25.0991
Drawn By:	IEU
Date	Issue
03-30-2026	BID & PERMIT

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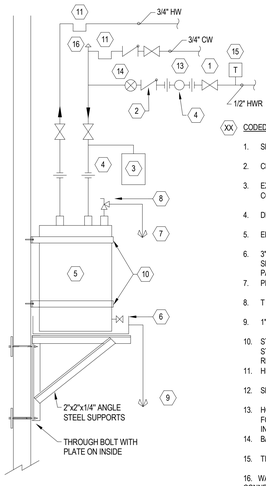
ROOF PLUMBING PAN

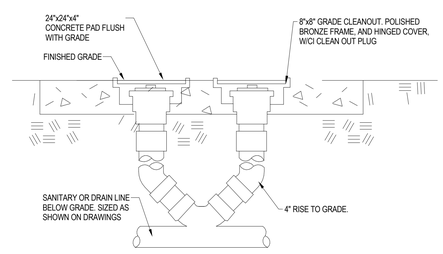


XX CODED NOTES:

1. SHUT OFF VALVE - TYPICAL
2. CHECK VALVE
3. EXPANSION TANK, AMTROL NO. ST-5 WITH UNION CONNECTION
4. DIELECTRIC UNION - TYPICAL
5. ELECTRIC WATER HEATER
6. 3" DEEP GALV. STEEL DRAIN PAN WITH SOLDERED SEAMS AND 2 COATS OF RUST INHIBITING PAINT
7. PIPE RELIEF DRAIN FULL SIZE TO MOP BASIN
8. T & P RELIEF
9. 1" PAN DRAIN, INDIRECT WASTE TO MOP BASIN
10. STRAP TO WALL WITH 1" WIDE x 18 GA GALV. STEEL STRAP (SEISMIC RESTRAINT)
11. HEAT TRAP
12. SHELF MOUNTING HEIGHT AT 6'-8" A.F.F.
13. HOT WATER RECIRC PUMP. REFER TO SCHEDULE FOR ADDITIONAL INFO.
14. BALANCE VALVE
15. TIMECLOCK AND AQUASTAT
16. WATTS LFN36M VACUUM RELIEF VALVE ON CW CONNECTION TO BOTTOM FED WATER HEATER

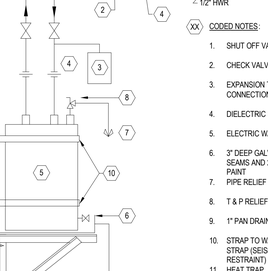
2 WALL BRACKETED WATER HEATER DETAIL

NOT TO SCALE



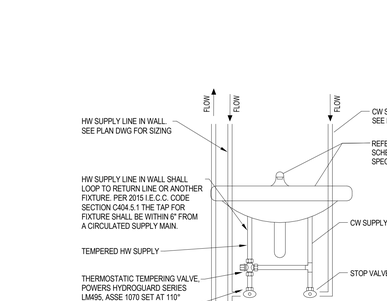
4 TWO WAY EXTERIOR CLEANOUT

NOT TO SCALE



6 CLEVIS HANGER

SCALE: 12" = 1'-0"



PROVIDE UPPER ATTACHMENT AS REQUIRED FOR CASES NOT SHOWN. DO NOT INSTALL HANGER INSIDE INSULATION OR OTHERWISE PENETRATE VAPOR BARRIER. DO NOT HANG ONE PIPE FROM ANOTHER. TRAPEZE HANGERS MAY BE USED FOR MULTIPLE PARALLEL PIPES. LOCATE HANGERS AS CLOSE AS POSSIBLE TO TURNS AND TEES OF PIPE. PROVIDE SUPPLEMENTARY STEEL STRUTS BETWEEN JOISTS IF REQUIRED. LOCATE HANGERS TO TAKE LOAD OFF OF EQUIPMENT CONNECTIONS. ANCHOR WATER PIPE AGAINST SWAYING DUE TO CHANGES IN WATER VELOCITY. PROVIDE SEISMIC BRACING IF/AS REQUIRED BY LOCAL AUTHORITIES. CHAINS OR PERFORATED STRAP IRON OR STEEL IS NOT ACCEPTABLE. REFER TO CODES FOR FURTHER INFORMATION. HANGER SPACING FOR PIPE SIZE AND MATERIAL.
COPPER: 4"=12' 3"=11' 2-1/2"=10' 2"=9' 1-1/2"=8' 1-1/4"=7' 1"=6' 3/4"=6' 1/2"=5'
CAST IRON: 10' AND ONE NEAR ALL JOINTS
STEEL: 4"=12' 3"=12' 2-1/2"=11' 2"=10' 1-1/2"=9' 1"=7' 3/4"=6' 1/2"=5'

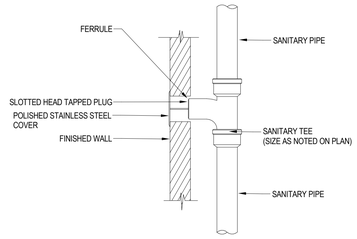
7 PIPE HANGER

SCALE: 12" = 1'-0"

NOTE:
INSULATE ALL EXPOSED WASTE AND SUPPLY PIPING UNDER ADA LAVATORIES WITH THE HANDI-LAV GUARD INSULATION KIT BY TRUEBRO OR EQUAL.

3 PUBLIC LAVATORY PLUMBING DETAIL

NOT TO SCALE



5 WALL CLEANOUT DETAIL

NOT TO SCALE

GENERAL PLUMBING NOTES

A. THIS PROJECT WAS DESIGNED UNDER 32M.R.S. #3403-2 (UNIFORM PLUMBING CODE 2021) AND LOCAL AMENDMENTS.

B. CONTRACTORS AND SUB-CONTRACTORS SHALL CAREFULLY REVIEW THE CONSTRUCTION DOCUMENTS. INFORMATION REGARDING THE COMPLETE WORK IS DISPERSED THROUGHOUT THE DOCUMENT SET AND CANNOT BE ACCURATELY DETERMINED WITHOUT REFERENCE TO THE COMPLETE DOCUMENT SET.

C. COORDINATE WITH THE WORK OF OTHER TRADES, EQUIPMENT FURNISHED BY GC, REQUIREMENTS OF THE OWNER, AND WITH THE CONSTRAINTS OF THE EXISTING CONDITIONS OF THE PROJECT SITE. PROVIDE PIPE RISES, DROPS, AND OFFSETS AS REQUIRED FOR FIELD INSTALLATION AND TRADE COORDINATION. NOTIFY CONSTRUCTION MANAGER OF DISCREPANCIES BEFORE STARTING WORK.

D. DRAWINGS FOR PLUMBING WORK ARE DIAGRAMMATIC, SHOWING THE GENERAL LOCATION, TYPE, LAYOUT, AND EQUIPMENT REQUIRED. DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENT. REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS. REFER TO MANUFACTURER'S STANDARD INSTALLATION DRAWINGS FOR EQUIPMENT CONNECTIONS AND INSTALLATION REQUIREMENTS. PROVIDE PIPING, CONNECTIONS, FITTINGS, VALVES, OFFSETS, ETC. AND ALL MATERIALS NECESSARY FOR A COMPLETE SYSTEM.

E. ALL WORK SHALL COMPLY WITH STATE AND LOCAL CODE REQUIREMENTS AS APPROVED AND AMENDED BY THE GOVERNING CITY AND THE AUTHORITY HAVING JURISDICTION. PURCHASE ALL PERMITS ASSOCIATED WITH THE WORK. OBTAIN ALL INSPECTIONS REQUIRED BY CODE.

F. PROVIDE WATER HAMMER ARRESTERS THROUGHOUT WATER SYSTEMS PER MANUFACTURER'S REQUIREMENTS.

G. PROVIDE BACKFLOW PREVENTION DEVICES IN WATER LINES FEEDING PLUMBING FIXTURES AND/OR EQUIPMENT, AS SHOWN ON PLANS AND ELSEWHERE AS REQUIRED BY AUTHORITY HAVING JURISDICTION.

H. CONTRACTOR SHALL VERIFY WATER PRESSURE PRIOR TO CONSTRUCTION. IF PRESSURE AT BUILDING ENTRY PRIOR TO ALL LOCALLY REQUIRED DEVICES IS LESS THAN 65 PSIG STATIC, CONTACT CONSTRUCTION MANAGER. IF PRESSURE EXCEEDS 80 PSIG STATIC, PROVIDE PRESSURE REDUCING VALVE.

I. SUSPEND HORIZONTAL SERVICE PIPING FROM UNDERSIDE OF CEILING STRUCTURE, UNLESS OTHERWISE INDICATED. PIPING AND EQUIPMENT SHALL NOT BE SUPPORTED OR ATTACHED TO ROOFING DECK. INSTALL PIPING ABOVE THE BOTTOM CHORD OF JOIST IN AREAS OPEN TO STRUCTURE. INSTALL WATER PIPING ABOVE CEILING. COORDINATE EXACT ROUTING WITH ALL CONSTRUCTION TRADES PRIOR TO INSTALLATION. ALL SHUT-OFF VALVES SHALL BE INSTALLED @ 12" MAXIMUM IN CEILING SPACE TO BE ACCESSIBLE FOR MAINTENANCE PURPOSES. EXTEND PIPING DOWN IN WALLS, PARTITIONS, AND CHASES TO SERVE FIXTURES AND EQUIPMENT. UNLESS NOTED OTHERWISE ALL VERTICAL PIPING DROPS/RISERS TO FIXTURE FAUCETS SHALL BE CONCEALED IN THE WALLS, CASEWORK, ETC.

J. ALL WATER LINES SHALL BE PROVIDED WITH SHUT-OFF VALVES. PLACE VALVES IN ALL MAIN RISERS, HORIZONTAL BRANCHES TO GROUPS OF TWO OR MORE FIXTURES, TO EACH APPLIANCE/EQUIPMENT AND SILLCOCK (HOSE BIBB) AS INDICATED ON PLUMBING DRAWINGS AND REQUIRED.

K. USE OF COMBUSTIBLE MATERIALS IS NOT ALLOWED IN THE RETURN AIR PLENUM. MATERIALS USED IN THE PLENUM SHALL HAVE FLAME SPREAD RATING NOT TO EXCEED 25, AND SMOKE DEVELOPED RATING NOT TO EXCEED 50 WHEN TESTED IN ACCORDANCE WITH ASTM E84. ALL EXPOSED WIRING IN THE PLENUM SHALL BE PLENUM RATED. FIELD VERIFY EXISTING CONDITIONS MEET THIS CRITERIA.

L. ATTENTION IS CALLED TO ROUGH-IN REQUIREMENTS FOR FIXTURES INSTALLED IN CASEWORK FURNISHED BY GC. THE CONTRACTOR SHALL PROVIDE ROUGH-INS OUT OF WALL/FLOOR WITH ENOUGH LENGTH TO ALLOW FOR SUPPLY STOPS AND WASTE TO HAVE ESCUTCHEONS AT THE REAR BACKING OF THE CASEWORK AND NOT AT THE WALL ACCESSIBLE THROUGH FIELD CUT HOLES IN THE CASE WORK BACKING.

M. WHERE A FLOOR DRAIN/SINK IS INSTALLED ADJACENT TO EQUIPMENT FOR DRAINING PURPOSES, THE EXACT LOCATION OF THE FLOOR DRAIN/SINK SHALL BE COORDINATED IN THE FIELD WITH INSTALLED PIECE OF EQUIPMENT. EXACT ELEVATION OF FLOOR DRAINS/SINKS SHALL BE COORDINATED IN THE FIELD WITH FINISHED FLOOR LEVELS AND SLOPES.

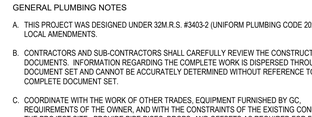
N. ALL INVERT ELEVATIONS NOTED ARE FROM TOP OF THE SLAB. MINIMUM STARTING SANITARY INVERT FOR ANY LATERAL BRANCH DRAIN SHALL BE MINIMUM -(1'-6") BELOW TOP OF THE SLAB.

O. ALL INDIRECT DRAINS SHALL HAVE 45 DEGREE CHAMFER CUT AT OUTLET.

P. ALL SHUT-OFF VALVES, BALANCING VALVES, WATER HAMMER ARRESTERS, TRAP PRIMER VALVE SHALL BE ACCESSIBLE.

Q. SLEEVE AND SEAL ALL PIPE PENETRATION OF WALLS AND FLOORS. APPLY INTUMESCENT FIRE SAFING COMPOUND AT PENETRATIONS OF FIRE-RATED WALLS AND FLOORS, MAINTAINING INTEGRITY AND RATING OF FIRE SEPARATION. SLEEVES THROUGH FLOORS SHALL EXTEND 2" ABOVE FLOOR, BE GROUTED INTO PLACE AND WATERPROOFED. PIPING THROUGH EXTERIOR WALLS SHALL BE SLEEVED AND SEALED WEATHER TIGHT WITH SILICONE CAULK.

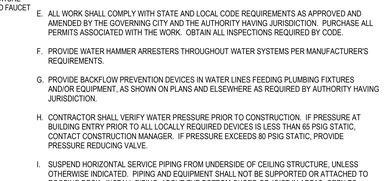
R. PROVIDE ALL RELATED SIGNAGE PRIOR TO COMPLETION OF THE PROJECT.



BV-1 FLOW DESIGN INC. MODEL ICSS050FF IN LINE AUTOMATIC FLOW CONTROLLER, 1/2" SIZE.
SHUT-OFF VALVE, BALANCING VALVE, AND CHECK VALVE SHALL BE INSTALLED 12"+/- ABOVE LAY-IN CEILING AND TO BE ACCESSIBLE.
REFER TO PLUMBING PLAN FOR BALANCING VALVE LOCATIONS.

8 BV-1 BALANCING VALVE DETAIL

SCALE: 12" = 1'-0"



LOCATE AT BUILDING EXIT, AT ENDS OF RUNS, AT TURNS OF PIPE GREATER THAN 45 DEGREES, AT 100' INTERVALS ON STRAIGHT RUNS, AND WHERE SHOWN ON PLANS. PROVIDE BACKFILL PER ARCHITECTURAL SPECIFICATIONS. LOCATE CLEANOUTS WHERE THERE IS 18" CLEAR AROUND. CONSULT LOCAL CODES FOR OTHER FCO REQUIREMENTS.

9 FLOOR CLEANOUT

SCALE: 12" = 1'-0"

PLUMBING FIXTURE CONNECTION SCHEDULE

MARK	FIXTURE	MANUFACTURER	MODEL	CONNECTIONS				DESCRIPTION
				CW	HW	DRAIN / TRAP	VENT	
WC-1 ADA	WATER CLOSET	AMERICAN STANDARD	CADET PRO 215AA.004	1/2"	-	4"	2"	WHITE, VITREOUS CHINA, ELONGATED BOWL, POWERWASH. 1.6 GPF. FLOOR MOUNTED, METAL TRIP LEVER ON LEFT SIDE, EVERCLEAN SURFACE, 16-1/2" RIM HEIGHT, 12" ROUGH-IN, 5 YEAR WARRANTY. AM. STD #4188A.005 TANK WITH TRIP LEVER ON RIGHT SIDE. BEMIS #3155SSCT WHITE. EXTRA HEAVY DUTY PLASTIC, OPEN FRONT SEAT LESS COVER. NOTE: TRIP LEVER TO BE LOCATED ON WIDE SIDE OF TOILET STALL
LAV-1/MV-1 ADA	LAVATORY	AMERICAN STANDARD	LUCERNE 0355.012	1/2"	1/2"	1-1/2"/1 1/4"	1 1/2"	VITREOUS CHINA, 20"x18" WALL HUNG LAVATORY BACK DRILLED FOR CONCEALED ARMCHAIR CARRIER, AM. STD. MONTERREY # 6114120.002 CAST BRASS BODY, DECK MOUNTED SINGLE LEVER FAUCET, 0.5 GPM, LESS POP-UP DRAIN, ROD, AND HOLE. METAL 17 GA OFFSET GRID DRAIN, TAILPIECE, AND "P" TRAP. METAL SUPPLIES WITH STOPS. INSULATE ALL EXPOSED WASTE AND WATER SUPPLY PIPING UNDER LAVATORY WITH SAFETY COVERS ADA REQUIREMENTS AS MANUFACTURED BY PLUMBEREX, MCQUIRE, OR TRUBRO. LEONARD MODEL ECO-MIX #270-LF-CP MIXING VALVE (ASSE-1070), SET AT 110°F. LAVATORY SHALL BE INSTALLED AT ADA HEIGHT.
EWC-1 ADA	BOTTLE FILLING STATION WITH BI-LEVEL COOLER	ELKAY	BOTTLE FILLER STATION #EZH2O COOLER: LZSTL8WSLP CANE APRON: LKAPREZL	1/2"	-	1-1/2"/11-1/4"	1 1/2"	ADA, ELECTRIC WATER COOLER WITH CANE APRON (MODEL LKAPREZL) INSTALLED UNDER UPPER UNIT, REFRIGERATED, FILTERED, WALL HUNG, BI-LEVEL, LIGHT GRAY GRANITE FINISH, NON-SPLASH BASIN, STREAM PROJECTORS WITH PROTECTIVE HOODS, EASY-TOUCH FRONT AND SIDE PUSHBAR CONTROLS, WATERSENTRY PLUS FILTRATION SYSTEM, AUTOMATIC FILTER STATUS RESET WITH EACH FILTER CHANGE, 115/60/1, 5 FULL LOAD AMPS, 8 GPH CAPACITY BASED ON 80°F INLET WATER, 90°F AMBIENT AIR TEMP FOR 50°F CHILLED DRINKING WATER, PVC "P" TRAP. FLOOR MOUNTED CARRIER. BOTTLE FILLER STATION, QUICK FILL RATE 1.1 GPM, UNIT MOUNTED, SS CONSTRUCTION, INTEGRAL DRAIN, SENSOR OPERATED WITH AUTOMATIC SHUT-OFF, REPLACEABLE WATER FILTER BOTTLE COUNTER, FILTER REPLACEMENT INDICATOR. ORIFICE SHALL BE OF 36" (MAXIMUM) AFF ON LOWER UNIT, 40" AFF ON UPPER UNIT, BOTTOM OF APRON SHALL BE 27" AFF. REFER TO ARCH. DRAWINGS FOR ADA INSTALLATION DETAIL
MB-1	MOP BASIN	FIAT	MSB-2424	1/2"	1/2"	3"	1 1/2"	MOLDED STONE BASIN, 24x24"x10"(H) SIZE. TILING FLANGES, STAINLESS STEEL SPLASH PANELS, MOP HANGER, HOSE WITH WALL HOOK, 3" DRAIN WITH DOME STRAINER AND LINT BASKET, CHICAGO #897-CP FAUCET WITH VACUUM BREAKER SPOUT, ADJUSTABLE WALL BRACE, PAIL HOOK AND 3/4" HOSE THREAD OUTLET.
HB-1	WALL HYDRANT	J.R. SMITH	5509QT	3/4"	-	-	-	CONCEALED, CHROME PLATED QUARTER TURN NON-FREEZE HYDRANT WITH 3/4" HOSE CONNECTION, BACKER PLATE, VACUUM BREAKER, "T" HANDLE KEY.
FD-1	FLOOR DRAIN	J.R. SMITH	2005Y-A-NB-B-P	-	-	SEE PLANS	SEE PLANS	DUCO CAST IRON BODY WITH FLASHING COLLAR AND ADJUSTABLE 6" ROUND NICKEL BRONZE STRAINER HEAD WITH TRAP PRIME CONNECTION AND SEDIMENT BUCKET
FD-2	FLOOR DRAIN	J.R. SMITH	2005Y-F37-NB-B-P	-	-	SEE PLANS	SEE PLANS	DUCO CAST IRON BODY WITH FLASHING COLLAR , 7" NICKEL BRONZE ROUND TOP ANTI-FLOOD RIM WITH TRAP PRIMER CONNECTION AND SEDIMENT BUCKET.
TPV-1	TRAP PRIMER VALVE	PRECISION PLUMBING	NO. 1	-	-	SEE PLANS	SEE PLANS	PROVIDE DISTRIBUTION UNIT FOR MULTIPLE DRAIN CONNECTIONS.
FCO-1	CLEANOUT	J.R. SMITH	4023S	-	-	SEE PLANS	SEE PLANS	DUCO CAST IRON CLEANOUT WITH ROUND ADJUSTABLE SCORIATED SECURED NICKEL BRONZE TOP AND BRONZE PLUG
GCO	GRADE CLEANOUT	ZURN	#ZN-1474-N	-	-	4"	-	GRADE CLEANOUT, HEAVY DUTY HOUSING, POLISHED NICKEL BRONZE TOP, AND ZURN #Z1440 INTERNAL CLEANOUT AND BRONZE PLUG, TWO-WAY
SK-1	SINK	ELKAY LUSTERTONE	LRADQ291865	1/2"	1/2"	1 1/2"	1 1/2"	ADA, STAINLESS STEEL SINK, 29"x18"x6-1/2"(D) SIZE, DOUBLE BOWL, DROP IN, QUICK-CLIP, CENTER DRAIN, TWO HOLES ON 4" CENTER, LK-35 DRAIN, TAILPIECE, 17 GA "P" TRAP, SUPPLIES WITH STOPS. FAUCET: ELKA08LGMSTF – ADA, BRASS, 4" CENTERSET, EXPOSED DECK LAMINAR FLOW , 1.5 GPM, 5" GOOSENECK SPOUT, 4" WRISTBLADE HANDLES, CHROME FINISH.
WCO	WALL CLEANOUT	ZURN	#Z-1441	-	-	-	-	CAST IRON BODY, GAS AND WATER TIGHT, THREADED BRONZE PLUG, ROUND VINYL, PAINTABLE ACCESS COVER, EXTENDED MACHINE SCREWS.
OD-1	OVERFLOW ROOF DRAIN	ZURN	#ZC 100-C-EA-R-W2	-	-	-	-	15" OVERFLOW DRAIN, CAST IRON BODY, CAST IRON DOME, UNDERDECK CLAMP, ADJUSTABLE EXTENSION, SUMP RECEIVER, 2" CAST IRON INTERNAL WATER DAM, 6" DIA. PIPE SIZE
RD-1	ROOF DRAIN	ZURN	#ZC 100-C-EA-R	-	-	-	-	15" ROOF DRAIN, CAST IRON BODY, CAST IRON DOME, UNDERDECK CLAMP, ADJUSTABLE EXTENSION, SUMP RECEIVER, 6" DIA. PIPE SIZE

NOTES:
1. REFER TO SPECIFICATIONS FOR ACCEPTABLE EQUIVALENT MANUFACTURERS.
2. PROVIDE ALL HARDWARE AND APPURTENANCES FOR COMPLETE PLUMBING FIXTURES /EQUIPMENT INSTALLATION PER MANUFACTURER'S AND CODES REQUIREMENTS.
3. EXPOSED P-TRAPS TO BE 17 GA. CHROME PLATE WITH CLEANOUT AND ESCUTCHEON PLATE.
4. STOPS TO BE CHROME PLATED 1/2" ANGLE VALVE WITH CHROME PLATED 12" LONG, 1/2" O.D. FLEXIBLE RISER AND ESCUTCHEON PLATE.

RECIRCULATING PUMP SCHEDULE

MARK	MANUFACTURER	MODEL	MATERIAL	TYPE	SIZE	GPM	TOTAL HEAD (FT)	WATTS	RPM	ELECT, 60 Hz		OPERATING WEIGHT (LBS)	NOTES
										VOLT	PHASE		
RP-1	BELL & GOSSETT	NBF8SI/LW	BRONZE	IN-LINE	1/2" SWEAT CONN.	1	8	39	2800	115	1	9.0	150 PSI WORKING PRESSURE

NOTES:
1. APPROVED MANUFACTURERS: ARMSTRONG, GRUNDFOS, AND TACO.
2. COORDINATE PUMP INSTALLATION WITH ELECTRICAL CONTRACTOR.INSTALLATION WITH ELECTRICAL CONTRACTOR.

WATER HEATER & EXPANSION TANK SCHEDULE

MARK	LOCATION	MAKE	MODEL	TANK SIZE	FUEL	INPUT (NON-SIMULTANEOUS)	RECOVERY	OPERATING TEMP.	ELECTRIC	REMARKS
EWH-1	SHELF MOUNTED	A.O SMITH	DEL-30	30 GAL.	ELECT.	3000/3000 W	15 PH @ 80°F	120°F	208/60/3, 14.4 AMPS	T&P RELIEF VALVE WATTS NO. 100XL-4-125
ET-1	AT WATER HEATER	AMTROL	THERM-X-TROL ST-5	2.0	-	-	-	-	-	

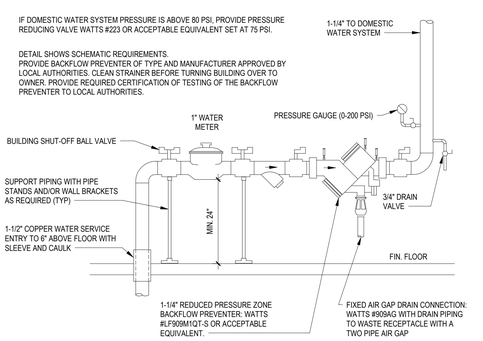
NOTES:
1. COORDINATE INSTALLATION WITH ELECTRICAL CONTRACTOR

ELEVATOR SUMP PUMP SCHEDULE

Mark	DESCRIPTION	COMMENTS
SP-1	ZOELLER #D188	SUMP PUMP. SUBMERSIBLE, NON-CLOGGING VORTEX, #10-035 PIGGYBACK FLOAT SWITCH, AUTOMATIC, NEMA 6, #10-0623 HIGH WATER ALARM FLOAT, 230/60/1, 1.5 HP MOTOR, 14 AMPS, 100 GPM @ 40 FT TDH, 2" DISCHARGE PIPING, COPPER TYPE "L", BRONZE SHUT-OFF VALVE AND CHECK VALVE. REFER TO STRUCTURAL DRAWING FOR CONCRETE PIT. PROVIDE METAL GRATE.

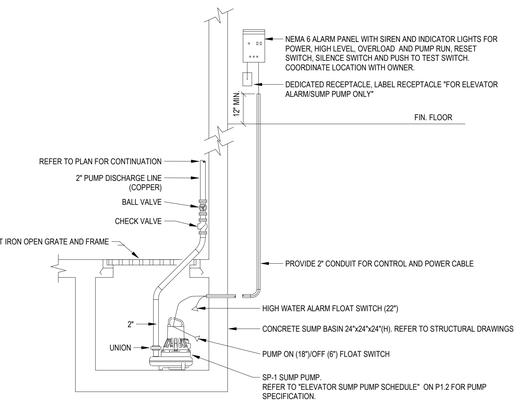
MARK	DESCRIPTION	COUNT	FIXTURE WSFU (CW)	WSFU (CW)	FIXTURE DFU	DFU
WC-1	WATER CLOSET	2	10.0	20.0	4	8
LAV-1/MV-1	LAVATORY	2	1.0	2.0	1	2
SK-1	BREAKROOM SINK	1	1.5	1.5	2	2
BF-1	BOTTLE FILLER	1	0.5	0.5	0.5	0.5
MB-1	MOP BASIN	1	3	3	3	3
FD-1	FLOOR DRAIN (EMERGENCY)	2	-	-	0	0
FD-2	FLOOR DRAIN	1	-	-	6	6
SP-1	ELEVATOR SUMP PUMP	1	-	-	6	6
			TOTAL	27		27.5

NOTE:
DOMESTIC SERVICE ESTIMATED DEMAND: 27 WSFU - 22 GPM



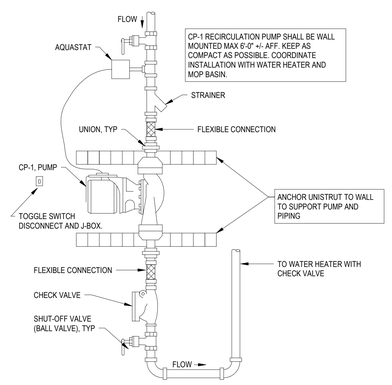
10 DOMESTIC WATER SERVICE

SCALE: 12" = 1'-0"



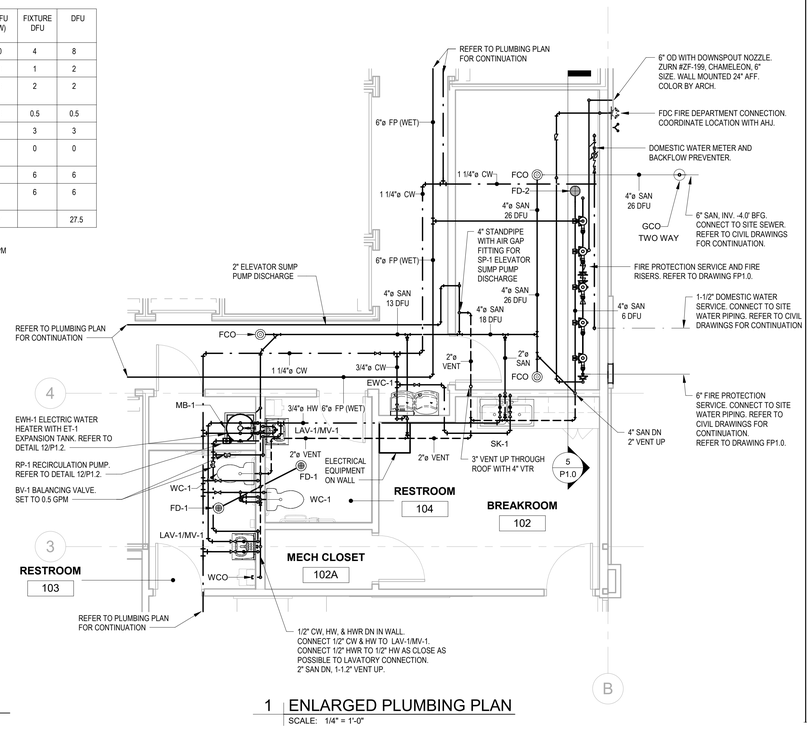
11 SP-1 ELEVATOR SUMP PUMP DETAIL

SCALE: 6" = 1'-0"



12 RP-1 RECIRCULATION PUMP

SCALE: 12" = 1'-0"



1 ENLARGED PLUMBING PLAN

SCALE: 1/4" = 1'-0"

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STORAGE FACILITY

97 WARREN AVENUE
PORTLAND, MAINE 04103

Project No.: 25.0991
Drawn By: IEU
Date: 03-30-2026
Issue: BID & PERMIT

P1.2

ENLARGED PLUMBING PLAN, DETAILS AND SCHEDULES

SEISMIC DATA

DESIGN OF FIRE PROTECTION SPRINKLER PIPING RESTRAINT SYSTEMS FOR WIND/SEISMIC FORCES SPECIFIC FOR THIS PROJECT LOCATION SHALL BE PROVIDED PER NFPA 13, CAPABLE MANUFACTURER, AND AS REQUIRED FOR ALL APPLICABLE CODES.

SEISMIC DESIGN CATEGORY - B
RISK CATEGORY - II
SEISMIC IMPORTANCE FACTOR FOR FIRE PROTECTION SPRINKLER SYSTEM IS Ip=1.5
PER ASCE 7-16 SECTION 13.1.3
ULTIMATE DESIGN WIND SPEED (V ult) = 110 MPH

NON-STRUCTURAL COMPONENTS IN RISK CATEGORY II BUILDINGS IN SEISMIC DESIGN CATEGORY B ARE EXEMPT FROM THE DESIGN REQUIREMENTS OF ASCE 7-16 CHAPTER 13.

DEFERRED SUBMITTAL NOTE
THE CONTRACTOR SHALL PROVIDE TWO COPIES OF SPRINKLER SHOP DRAWINGS TO AHJ FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.

FIRE HYDRANT FLOW TEST DATA

PRIOR TO ANY WORK THE CONTRACTOR SHALL PROVIDE CURRENT FLOW TEST.

WATER FLOW INFORMATION:
HYDRANT POD-HYD01616
DATE: 2020-04-29
HYDRANT LOCATION: WARREN AVENUE
RESIDUAL PRESSURE: 88 PSI
STATIC PRESSURE 90 PSI
GPM: 1298
FLOW AT 20 PSI - 8855 GPM

OCCUPANCY HAZARD LEGEND

NO HATCH	ORDINARY GROUP 2
	LIGHT HAZARD

FIRE SPRINKLER USAGE SCHEDULE

AREA TYPE (NOTE 1 & 2)	SPRINKLER			TEMPERATURE RATING	MANUFACTURER & MODEL	NOTES
	SPRINKLER TYPE	RESPONSE CATEGORY	FINISH			
SPACE WITHOUT CEILING	UPRIGHT	QUICK/STANDARD	ROUGH BRASS	155°F	VIKING, RELIABLE, TYCO, VICTAULIC	NOTE 1,2,3
SPACE WITH CEILING	SEMI-RECESSED (1/2" INCH)	QUICK/STANDARD	CHROME	175°F	VIKING, RELIABLE, TYCO, VICTAULIC	NOTE 1,2,3
STAIR	UPRIGHT	QUICK/STANDARD	ROUGH BRASS	155°F	VIKING, RELIABLE, TYCO, VICTAULIC	NOTE 1,2,3
ELEVATOR	-	-	-	-	-	NOTE 4

NOTES:
1. SEE FLOOR PLAN FOR ZONING REQUIREMENTS.
2. ALL SPRINKLERS SHALL BE UL AND FM LISTED.
3. CONTRACTOR TO VERIFY SPRINKLER REQUIREMENTS BASED ON ACTUAL INSTALLATION, USAGE, ARCHITECTURAL CEILING PLAN AND NFPA 13 REQUIREMENTS.
4. SPRINKLER COVERAGE FOR ELEVATORS SHALL BE CONFIRMED BY SPRINKLER CONTRACTOR.

GENERAL FIRE PROTECTION NOTES

1. FIRE PROTECTION SERVICE SIZE AND LOCATION SHALL BE COORDINATED WITH CIVIL DRAWINGS AND SPRINKLER SHOP DRAWINGS.
2. CONTRACTOR TO BE RESPONSIBLE TO PROVIDE ALL MATERIALS REQUIRED FOR FULLY OPERATIONAL SPRINKLER SYSTEM.
3. WET-PIPE SPRINKLER SYSTEM WITH STANDPIPES SHALL ACCOMMODATE SPACE FLOOR/CEILING LAYOUT (FULLY SPRINKLERED 4-STORY BUILDING).
4. PIPING AND EQUIPMENT SHALL NOT BE SUPPORTED OR ATTACHED TO ROOFING DECK. ALL CONNECTIONS SHALL BE MADE TO STRUCTURE OR THE CONTRACTOR TO PROVIDE SUPPORTS.
5. CENTER SPRINKLERS IN TWO DIRECTIONS IN CEILING TILES AND PROVIDE OFFSETS AS REQUIRED.
6. THE CONTRACTOR SHALL DESIGN AND INSTALL SPRINKLER SYSTEM WITH STANDPIPES IN ACCORDANCE WITH NFPA 13, NFPA 14, AND BUILDING CODE, BASED ON CONTRACTOR-FURNISHED HYDRAULIC CALCULATIONS, PERFORMED BY A CERTIFIED DESIGNER. SPRINKLER SYSTEM SHALL SATISFY THE FLOW REQUIREMENTS OF THE HYDRAULICALLY MOST REMOTE DESIGN AREA BASED ON THE APPROPRIATE SPRINKLER FLOW DENSITY AVAILABLE WATER PRESSURE, AND SAFETY MARGIN FOR SATISFACTORY SPRINKLER PERFORMANCE. A STANDPIPE HYDRAULIC CALCULATIONS SHALL BE DEMONSTRATING THAT NFPA 14 REQUIRED FLOW RATE OF 500 GPM AT MINIMUM RESIDUAL PRESSURE OF 100 PSI CAN BE OBTAIN AT THE MOST REMOTE HOSE VALVE WITH A FLAT SUPPLY PRESSURE OF 150 PSI AT THE FIRE DEPARTMENT CONNECTION.
7. SUBMIT SHOP DRAWINGS AND CALCULATIONS TO THE BUILDING DEPARTMENT FOR FINAL APPROVAL BY AHJ.
8. ALL RELATED SIGNAGE SHALL BE PROVIDED PRIOR TO COMPLETION OF THE PROJECT PER NFPA 13. THE INSTALLING CONTRACTOR SHALL PROVIDE A GENERAL INFORMATION SIGN USED TO DETERMINE SYSTEM DESIGN BASIS AND INFORMATION RELEVANT TO THE INSPECTION, TESTING, AND MAINTENANCE REQUIREMENTS REQUIRED BY NFPA 25.
9. ALL TESTS SHALL BE WITNESSED BY THE FIRE CHIEF OR AHJ.
10. THE CONTRACTOR SHALL BE STATE FIRE MARSHALL CERTIFIED.
11. THE FIRE PROTECTION HAZARD CLASS SHOWN SHALL BE REVISED, IF REQUIREMENTS OF INSURANCE CARRIER ARE DIFFERENT THAN SHOWN.
12. PROVISIONS FOR BUILDING FIRE PROTECTION DURING CONSTRUCTION NEED TO BE APPROVED BY FIRE CHIEF OR AHJ.
13. REFER TO DIVISION 21 FIRE SUPPRESSION SPECIFICATIONS FOR ADDITIONAL INFORMATION.

SPRINKLER PIPING

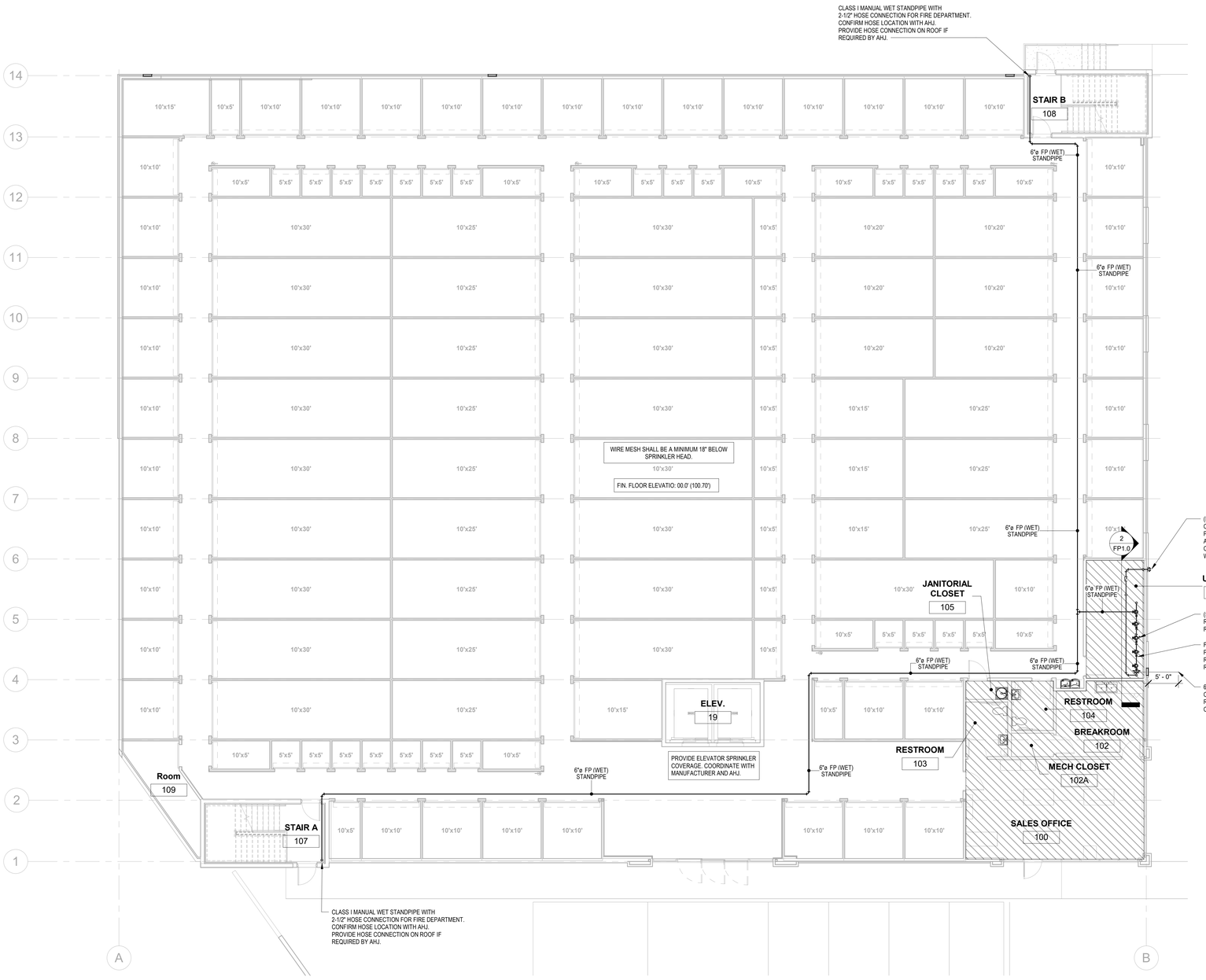
PIPE SIZES 1" TO 1-1/2"
USE THREADED PIPE
MATERIAL: SCHEDULE 40 BLACK STEEL
FITTINGS: MALLEABLE DUCTILE IRON THREADED FITTINGS

PIPE SIZES 2" TO 6"
USE GROOVED PIPE
MATERIAL: SCHEDULE 10 BLACK STEEL
FITTINGS: WELDED OUTLETS (FOR BRANCH CONNECTIONS)
GROOVED CAST IRON FITTINGS AND COUPLINGS

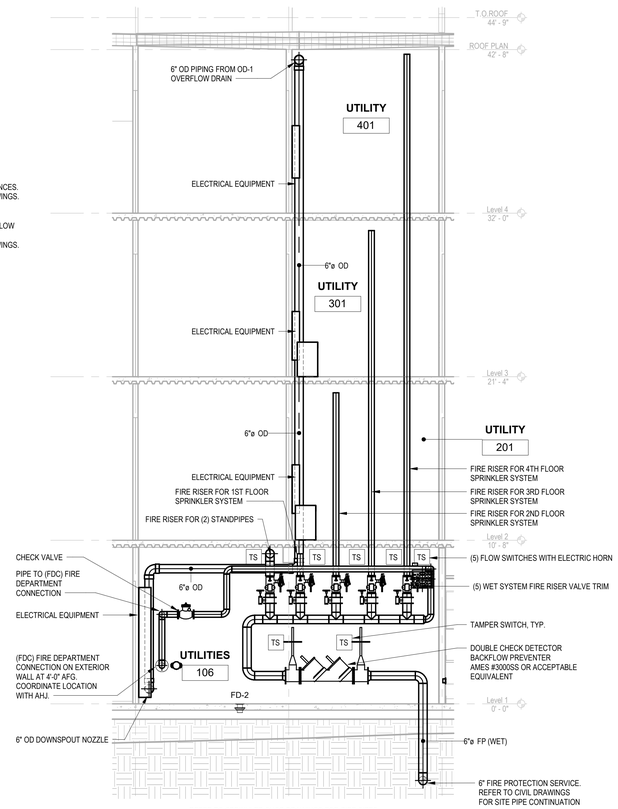
FIRE PROTECTION SYMBOLS

FP	FIRE PROTECTION/SPRINKLER PIPING
D	SPRINKLER DRAIN LINE
	DOMESTIC HOT WATER RETURN (HWR)
	PIPE TURNING UP/DOWN
	BALL VALVE
	BACKFLOW PREVENTER (BFP)
	DIRECTION OF FLOW IN PIPE
AFF/BFF	ABOVE/BELOW FINISHED FLOOR
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
CFH	CUBIC FEET PER HOUR
CO	CLEANOUT
DN	DOWN
DWV	DRAIN WASTE AND VENT
EA	EACH
ETC	ETCETERA
F	FAHRENHEIT
FD	FLOOR DRAIN
FCO	FLOOR CLEANOUT
GCO	GRADE CLEANOUT (TWO WAY)
GALV	GALVANIZED
GPF	GALLONS PER FLUSH
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
HVAC	HEATING, VENTILATION AND AIR CONDITIONING
HP	HORSEPOWER
HZ	HERTZ
ID	INSIDE DIAMETER
MAX	MAXIMUM
MIN	MINIMUM
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NPT	NOMINAL PIPE THREAD
NRS	NON RISING STEM
OD	OVERFLOW DRAIN
OS&Y	OPEN STEM AND YOKE
PSI	POUNDS PER SQUARE INCH
PVC	POLYVINYL CHLORIDE
REQ'D	REQUIRED
RD	ROOF DRAIN
RPM	REVOLUTIONS PER MINUTE
RTU	ROOFTOP UNIT
SPEC'S	SPECIFICATION
SF	SQUARE FEET
TYP	TYPICAL
T&P	TEMPERATURE AND PRESSURE
UH	UNIT HEATER
VTR	VENT THROUGH ROOF

NOTE: THIS PROJECT MAY NOT USE EVERY SYMBOL, ABBREVIATION OR DEVICE APPEARING ON THIS LEGEND.



1 FIRST FLOOR FIRE PROTECTION PLAN (SIMILAR 2nd AND 3rd FLOORS)
SCALE: 1/8" = 1'-0"



REFER TO SPRINKLER SHOP DRAWINGS FOR PIPE SIZES.

2 FIRE PROTECTION SERVICE DETAIL
SCALE: 1/4" = 1'-0"

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STORAGE FACILITY

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FIRE PROTECTION PLAN

ELECTRICAL SYMBOL LEGEND

SYMBOL	DESCRIPTION	MTG. HGT. (U.N.O.)
$	LIGHT SWITCH	48"
⏚ / ⏚ / ⏚	SINGLE / DUPLEX / DOUBLE DUPLEX RECEPTACLE	18"
GFI / GFI / GFI	RECEPTACLE WITH GROUND FAULT PROTECTION	18"
WP / WP / WP	WEATHER RESISTANT RECEPTACLE WITH WEATHERPROOF IN-USE COVER	18"
WR / WR / WR	WEATHER RESISTANT RECEPTACLE	18"
J	JUNCTION BOX	
T	THERMOSTAT LOCATION, PROVIDE BOX WITH 1/2" CONDUIT TO CEILING SPACE	60"
▼	TELEPHONE JACK, PROVIDE BOX WITH 1/2" CONDUIT TO CEILING SPACE	18"
▽	DATA JACK, PROVIDE BOX WITH 3/4" CONDUIT TO CEILING SPACE	18"
◉	BUTTON	48"
B	BELL/BUZZER	
	PANELBOARD	
	MOTOR	
	NON-FUSED DISCONNECT	
F	PULL STATION	
V CD	STROBE (CD = CANDELA RATING)	
H CD	HORN/STROBE (CD = CANDELA RATING)	
SD	DUCT SMOKE DETECTOR	
SD	SMOKE DETECTOR	
RTS	REMOTE TEST SWITCH	
FACP	FIRE ALARM CONTROL PANEL	

ABBREVIATION LEGEND

ABBREVIATION	DESCRIPTION
A	AMPERES
AFF	ABOVE FINISH FLOOR
AFG	ABOVE FINISH GRADE
AHJ	AUTHORITY HAVING JURISDICTION
AHU	AIR HANDLING UNIT
AIC	AMPERE INTERRUPTING CAPACITY
AL	ALUMINUM
AWG	AMERICAN WIRE GAUGE
C	CONDUIT
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CL	CENTERLINE
CLF	CURRENT LIMITING FUSE
CU	COPPER
DWG	DRAWING
EC	ELECTRICAL CONTRACTOR
EF	EXHAUST FAN
EM	INDICATES EMERGENCY CIRCUIT
EMT	ELECTRICAL METALLIC TUBING
EWC	ELECTRIC WATER COOLER
FU	FUSE
FA	FIRE ALARM
FACP	FIRE ALARM CONTROL PANEL
FAAP	FIRE ALARM ANNUNCIATOR PANEL
FAEP	FIRE ALARM EXTENDER PANEL
FLA	FULL LOAD AMPERES
GND,G	GROUND OR GROUNDING
GRMC	GALVANIZED RIGID METALLIC CONDUIT
HOA	HAND, OFF, AUTOMATIC SWITCH
IMC	INTERMEDIATE METAL CONDUIT
KCMIL	THOUSAND CIRCULAR MILS
KVA	KILOVOLT AMPERES
KW	KILOWATTS
LTG	LIGHTING
MC	MECHANICAL CONTRACTOR
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MISC	MISCELLANEOUS
MLO	MAIN LUGS ONLY
NTS	NOT TO SCALE
P	POLE
PNL	PANEL
PVC	POLYVINYL CHLORIDE
PWR	POWER
QTY	QUANTITY
REQ'D	REQUIRED
RMC	RIGID METAL CONDUIT
RTU	ROOF TOP UNIT
TEL	TELEPHONE
UL	UNDERWRITERS LABORATORIES
V	VOLT
W	WIRE
WP	WEATHERPROOF

LIGHTING FIXTURE SCHEDULE

Type	Manufacturer	Model	Description	Lamp	Initial Color Temperature	Voltage	Wattage	Count
A	NATURALED	FXPNL40/2X2/8CCT3	2X2 LED FLAT PANEL	LED	4000 K	277 V	40	3
A2	NATURALED	FXPNL40/2X2/8CCT3 WITH ACCESSORIES NOTED IN DESCRIPTION	2X2 LED FLAT PANEL WITH MOUNTING BOX (P10588-MT-2x2 BOX) TO BE SUSPENDED FROM DECK.	LED	4000 K	277 V	40	18
A2E	NATURALED	FXPNL40/2X2/8CCT3 / K7338332 WITH ACCESSORIES NOTED IN DESCRIPTION	2X2 LED FLAT PANEL WITH MOUNTING BOX (P10588-MT-2x2 BOX) TO BE SUSPENDED FROM DECK.	LED	4000 K	277 V	40	2
AE	NATURALED	FXPNL40/2X2/8CCT3 / K7338332	2X2 LED FLAT PANEL	LED	4000 K	277 V	40	1
C	NATURALED	FXCSL44SW/48FR88CCT3/MV WITH ACCESSORIES NOTED IN DESCRIPTION	4' LINEAR LED STRIP WITH INTGRATED MOTION SENSOR (P10438-SEN-HBOOO1VCR-1) SET FOR 15 MINUTES	LED	5000 K	277 V	44	206
CE	NATURALED	FXCSL44SW/48FR88CCT3/MV//7334 BAEM15-48BC/MV-A	4' LED STRIP LIGHT W/ EMERGENCY BATTERY AND INTGRATED MOTION SENSOR (P10438-SEN-HBOOO1VCR-1) SET FOR 15 MINUTES	LED	5000 K	277 V	107	110
D	SATCO/NUVO	NUVO 62-1820	7" LED DISC LIGHT WITH MOTION SENSOR	LED	4000 K	120 V	16.5	127
E	NATURALED	LED-FXVTJ20/840/MV-WM	VAPOR TIGHT LED ELEVATOR PIT LIGHT	LED	4230 K	277 V		10
F	TRACE LITE	SSF-4-CP-BB-SC	4' LED STRIP LIGHT W/ INTEGRAL MOTION SENSOR AND BATTERY BACKUP	LED	4000 K	277 V	40	16
K	ELITE	HH6-LED-1500L-DIM10-MVOLT MD-30K-90-HH6-6501-CL-WH	6" LED DOWNLIGHT	LED	3500 K	120 V	20	4
M	ELITE	HH6-LED-1500L-DIM10-MVOLT MD-50K-90-HH6-6501-CL-WH	6" LED DOWNLIGHT	LED	5000 K	277 V	20	4
XR	LITHONIA	ELMRW-LP220-DDBTXD-T	LED REMOTE WP HEADS. CONNECT TO EXIT SIGN ON INTERIOR OF DOOR.	LED	3200 K	120 V	0	4
XS	Acuity Brands Lighting	LQM S W 3 R 120/277 EL N	LED EXIT SIGN, WHITE THERMOPLASTIC HOUSING, RED LETTERS, NI-CAD BATTERY, REFER TO DWGS FOR ARROWS, FACES & MOUNTING	LED	3200 K	<varies>	5	77

KEYNOTES - SITE PLAN

1. SEE CIVIL DRAWINGS FOR BUILDING MOUNTED LIGHTING. CONNECT TO CIRCUIT SHOWN.
2. SEE CIVIL DRAWINGS FOR POLE MOUNTED AREA LIGHTING. CONNECT TO CIRCUIT SHOWN.
3. JUNCTION BOX FOR SIGN CONNECTION. COORDINATE WITH SIGNAGE INSTALLER FOR NUMBER AND LOCATION OF NECESSARY BOXES.
4. JUNCTION BOX FOR CAR CHARGER CONNECTION. COORDIANTE WITH EQUIPMENT VENDOR FOR CONNECTION REQUIREMENTS.

1 SITE ELECTRICAL PLAN
SCALE: 1" = 10'-0"

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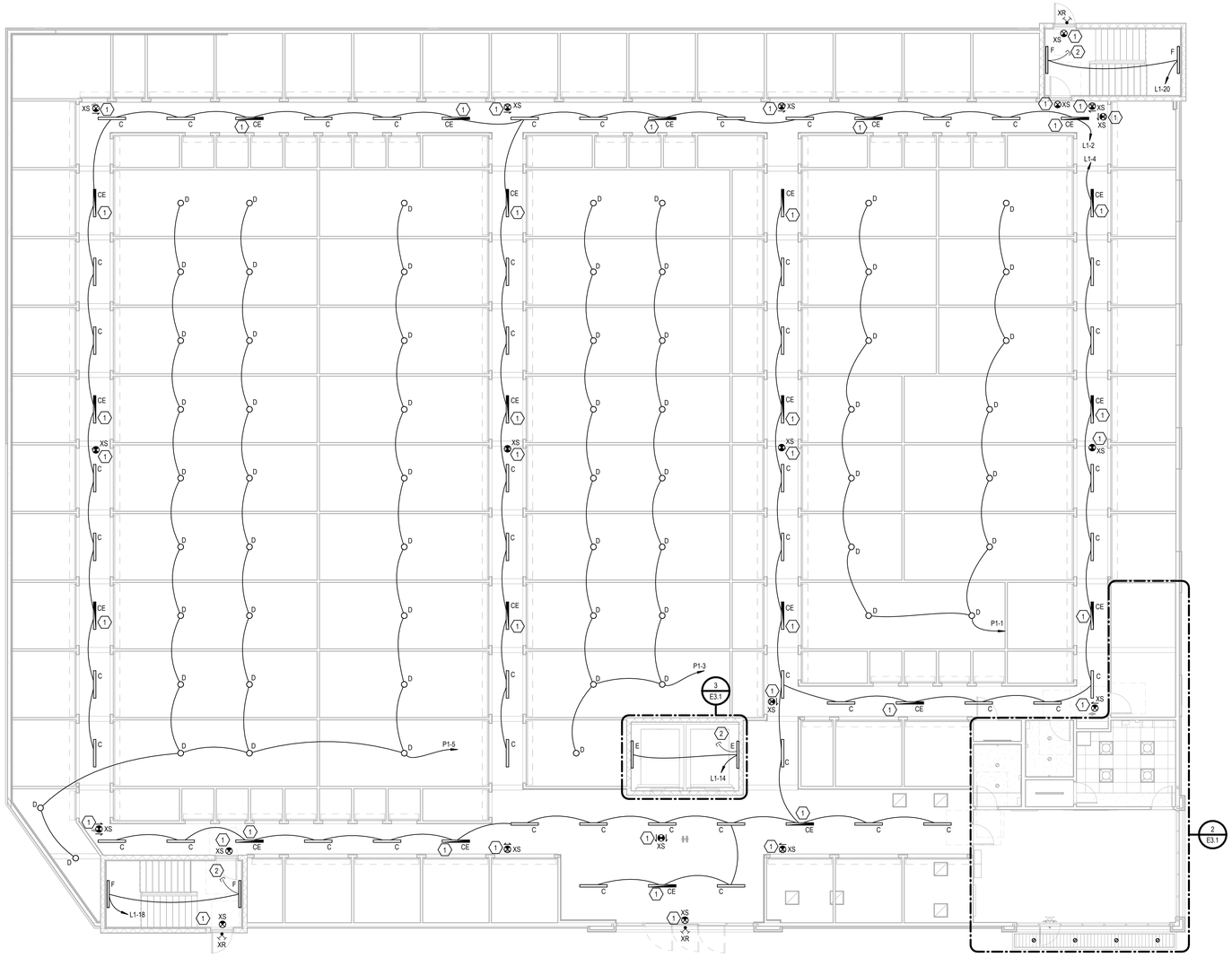
SITE ELECTRICAL PLAN



1 LIGHTING PLAN - LEVEL 1

1/8" = 1'-0"

SEE SHEET E0.1
FOR LIGHT FIXTURE
SCHEDULE

GENERAL NOTES

A. ALL DEVICES, EQUIPMENT, FIXTURES, ETC. MUST BE GROUNDED BY USE OF A PROPERLY SIZED GROUNDING CONDUCTOR. MECHANICAL/ELECTRICAL BONDS OF THE METALLIC RACEWAY SYSTEM SHALL ALSO BE MAINTAINED.

B. BRANCH CIRCUIT WIRE SIZES (AND CONDUITS) SHALL BE INCREASED FROM THOSE INDICATED ON THE PLANS TO PREVENT EXCESSIVE VOLTAGE DROP. BRANCH CIRCUITS SHALL BE INSTALLED WITH WIRES OF SUFFICIENT SIZE SO THAT VOLTAGE DROP BETWEEN THE PANEL AND THE LOADS DOES NOT EXCEED A LIMIT OF 3%.

C. CIRCUITS MAY BE COMBINED IN CONDUIT PROVIDED WIRE IS PROPERLY DERATED AND CONDUIT SIZED PER CODE. UNDER NO CIRCUMSTANCES SHALL MORE THAN NINE (9) CURRENT CARRYING CONDUCTORS BE RUN IN A SINGLE CONDUIT.

D. ALL CONDUITS SHALL CONTAIN A GROUND WIRE SIZED PER NEC TABLE #250-122. WHERE CIRCUIT CONDUCTORS ARE INCREASED IN SIZE FOR VOLTAGE DROP, THE GROUND WIRE SIZE SHALL BE INCREASED PROPORTIONATELY (ACCORDING TO CIRCULAR MIL AREA) FROM THE SIZE REQUIRED BY NEC TABLE #250-122.

E. EXPOSED CONDUITS, WHERE PERMITTED, SHALL BE RUN PARALLEL TO OR AT RIGHT ANGLES TO BUILDING STRUCTURAL MEMBERS.

F. ALL DEVICE COVER PLATES SHALL BE WHITE UNLESS NOTED OTHERWISE.

G. PROVIDE FUNCTIONAL TESTING FOR LIGHTING CONTROLS AND ALL REQUIRED REPORTING AND DOCUMENTATION PER ENERGY CODE REQUIREMENTS.

NOTE:
ALL PENETRATIONS PASSING THROUGH THERMAL ENVELOPE OF BUILDING TO BE SEALED PER NEC 300.7

KEYNOTES (X)

1. PROVIDE UNSWITCHED "HOT" LEG FOR CONNECTION TO EMERGENCY BATTERY/EXIT SIGN.
2. EXTEND WIRING TO ALL FIXTURES ABOVE AND BELOW IN STAIRWAY OR HOISTWAY.

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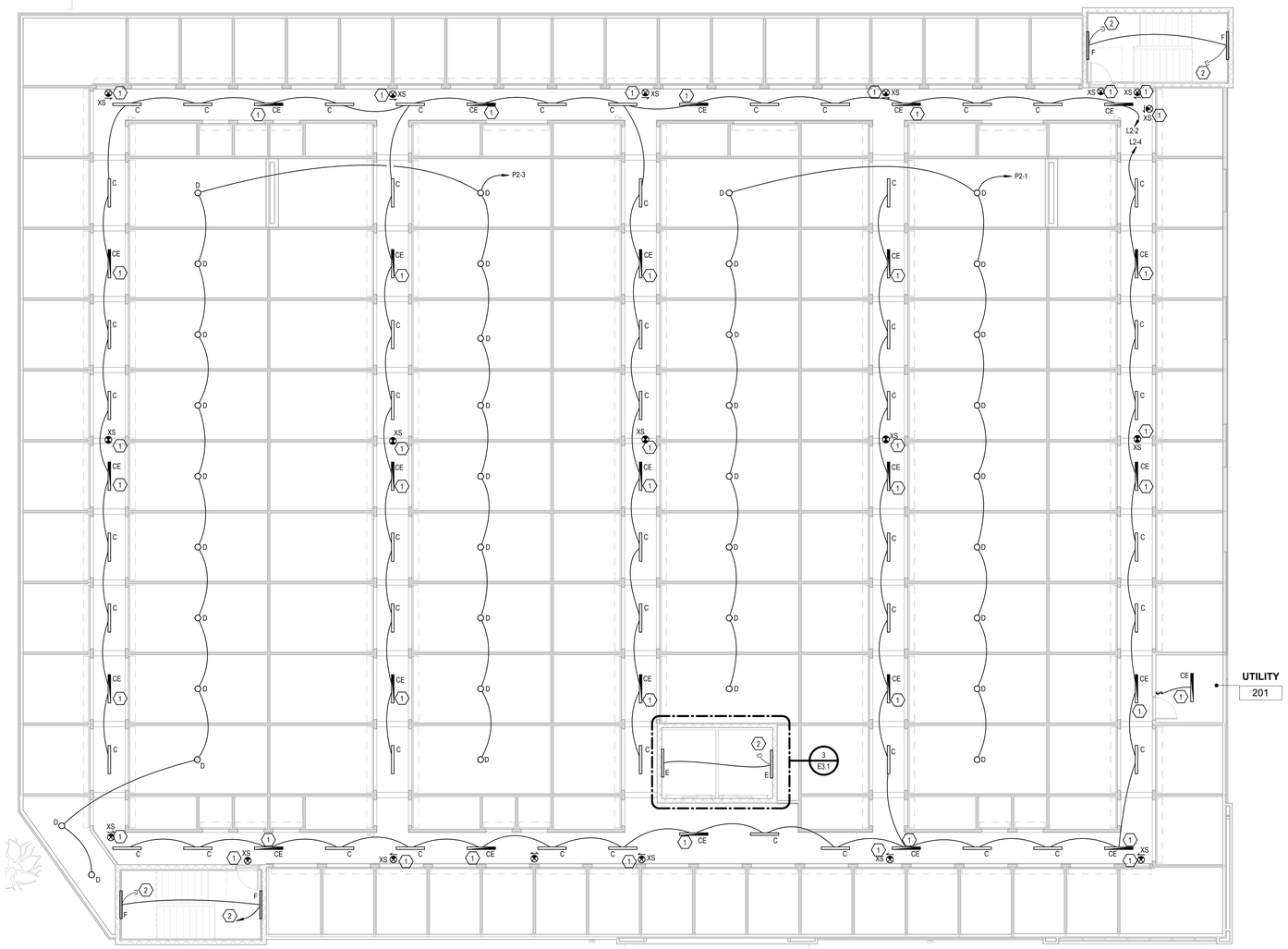
LIGHTING PLAN - LEVEL 1



1 LIGHTING PLAN - LEVEL 2
SCALE: 1/8" = 1'-0"

SEE SHEET E0.1
FOR LIGHT FIXTURE
SCHEDULE

GENERAL NOTES

A. ALL DEVICES, EQUIPMENT, FIXTURES, ETC. MUST BE GROUNDED BY USE OF A PROPERLY SIZED GROUNDING CONDUCTOR. MECHANICAL/ELECTRICAL BONDS OF THE METALLIC RACEWAY SYSTEM SHALL ALSO BE MAINTAINED.

B. BRANCH CIRCUIT WIRE SIZES (AND CONDUITS) SHALL BE INCREASED FROM THOSE INDICATED ON THE PLANS TO PREVENT EXCESSIVE VOLTAGE DROP. BRANCH CIRCUITS SHALL BE INSTALLED WITH WIRES OF SUFFICIENT SIZE SO THAT VOLTAGE DROP BETWEEN THE PANEL AND THE LOADS DOES NOT EXCEED A LIMIT OF 3%.

C. CIRCUITS MAY BE COMBINED IN CONDUIT PROVIDED WIRE IS PROPERLY DERATED AND CONDUIT SIZED PER CODE. UNDER NO CIRCUMSTANCES SHALL MORE THAN NINE (9) CURRENT CARRYING CONDUCTORS BE RUN IN A SINGLE CONDUIT.

D. ALL CONDUITS SHALL CONTAIN A GROUND WIRE SIZED PER NEC TABLE #250-122. WHERE CIRCUIT CONDUCTORS ARE INCREASED IN SIZE FOR VOLTAGE DROP, THE GROUND WIRE SIZE SHALL BE INCREASED PROPORTIONATELY (ACCORDING TO CIRCULAR MIL AREA) FROM THE SIZE REQUIRED BY NEC TABLE #250-122.

E. EXPOSED CONDUITS, WHERE PERMITTED, SHALL BE RUN PARALLEL TO OR AT RIGHT ANGLES TO BUILDING STRUCTURAL MEMBERS.

F. ALL DEVICE COVER PLATES SHALL BE WHITE UNLESS NOTED OTHERWISE.

G. PROVIDE FUNCTIONAL TESTING FOR LIGHTING CONTROLS AND ALL REQUIRED REPORTING AND DOCUMENTATION PER ENERGY CODE REQUIREMENTS.

NOTE:
ALL PENETRATIONS PASSING THROUGH THERMAL ENVELOPE OF BUILDING TO BE SEALED PER NEC 300.7

KEYNOTES (X)

1. PROVIDE UNSWITCHED "HOT" LEG FOR CONNECTION TO EMERGENCY BATTERY/EXIT SIGN.
2. EXTEND WIRING TO ALL FIXTURES ABOVE AND BELOW IN STAIRWAY OR HOISTWAY.

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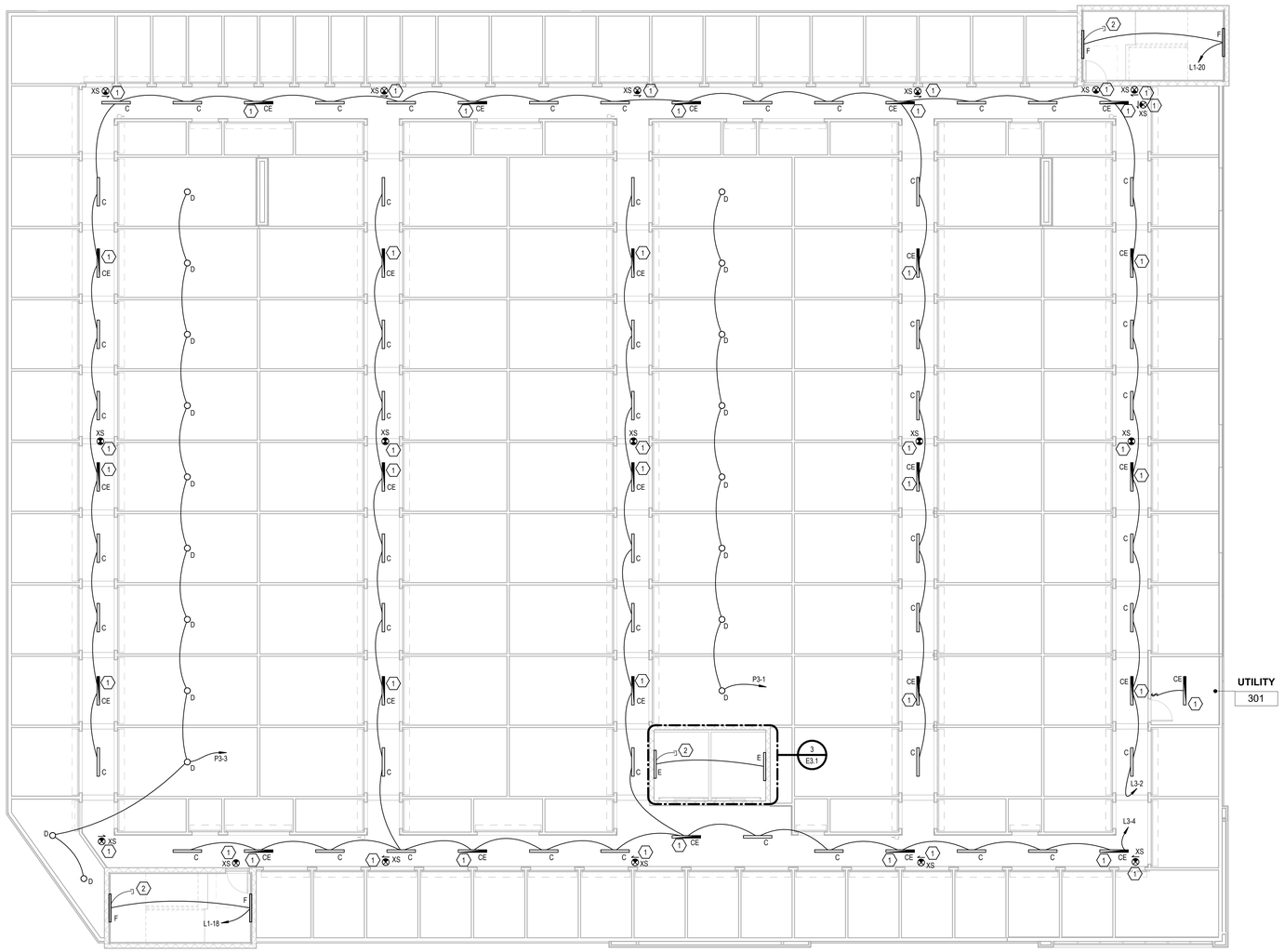
LIGHTING PLAN - LEVEL 2



1 LIGHTING PLAN - LEVEL 3
SCALE: 1/8" = 1'-0"

SEE SHEET E0.1
FOR LIGHT FIXTURE
SCHEDULE

GENERAL NOTES

A. ALL DEVICES, EQUIPMENT, FIXTURES, ETC. MUST BE GROUNDED BY USE OF A PROPERLY SIZED GROUNDING CONDUCTOR. MECHANICAL/ELECTRICAL BONDS OF THE METALLIC RACEWAY SYSTEM SHALL ALSO BE MAINTAINED.

B. BRANCH CIRCUIT WIRE SIZES (AND CONDUITS) SHALL BE INCREASED FROM THOSE INDICATED ON THE PLANS TO PREVENT EXCESSIVE VOLTAGE DROP. BRANCH CIRCUITS SHALL BE INSTALLED WITH WIRES OF SUFFICIENT SIZE SO THAT VOLTAGE DROP BETWEEN THE PANEL AND THE LOADS DOES NOT EXCEED A LIMIT OF 3%.

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F. ALL DEVICE COVER PLATES SHALL BE WHITE UNLESS NOTED OTHERWISE.

G. PROVIDE FUNCTIONAL TESTING FOR LIGHTING CONTROLS AND ALL REQUIRED REPORTING AND DOCUMENTATION PER ENERGY CODE REQUIREMENTS.

NOTE:
ALL PENETRATIONS PASSING THROUGH THERMAL ENVELOPE OF BUILDING TO BE SEALED PER NEC 300.7

KEYNOTES ⟨1⟩

1. PROVIDE UNSWITCHED "HOT" LEG FOR CONNECTION TO EMERGENCY BATTERY/EXIT SIGN.

2. EXTEND WIRING TO ALL FIXTURES ABOVE AND BELOW IN STAIRWAY OR HOISTWAY.

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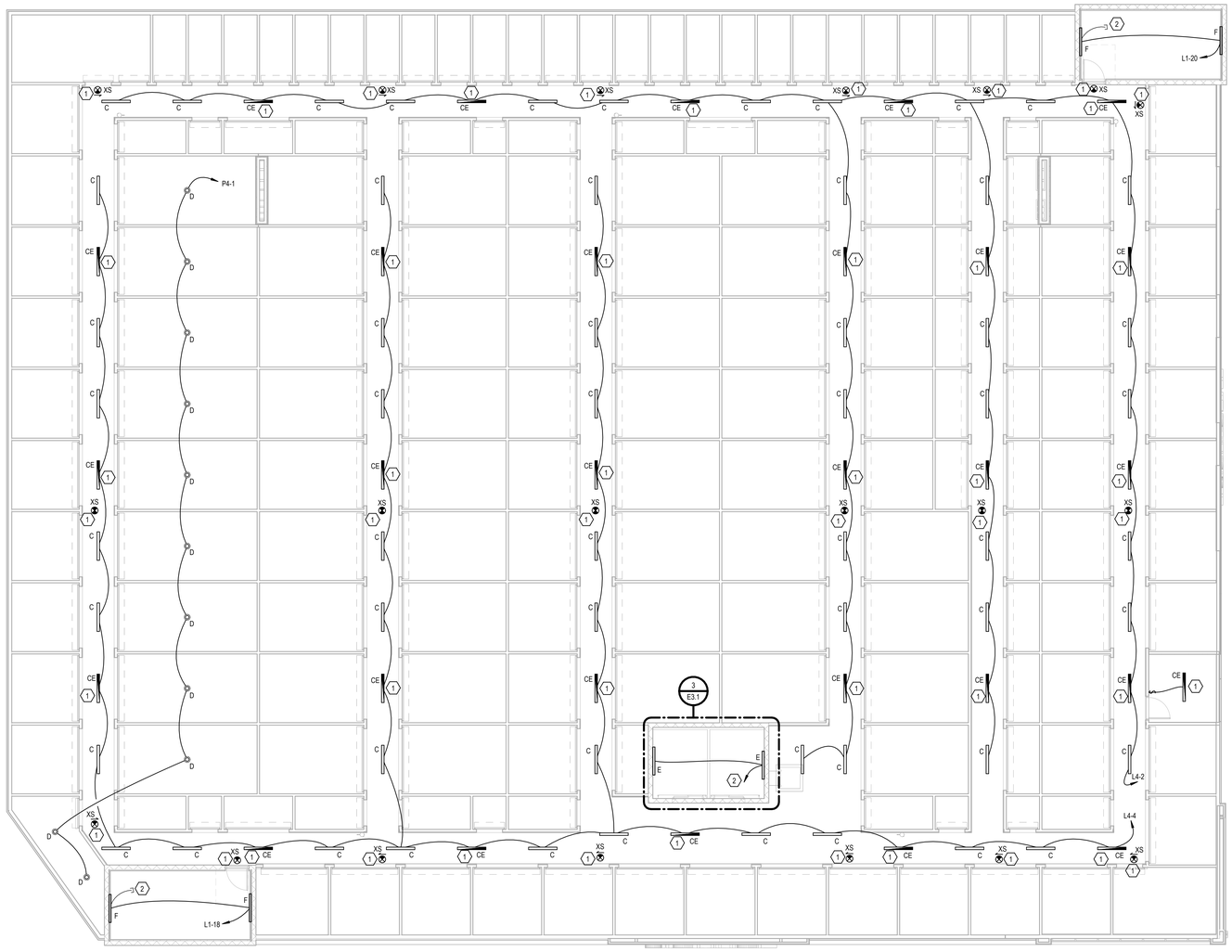
STORAGE FACILITY
97 WARREN AVENUE
PORTLAND, MAINE 04103

Project No.:	25.0991
Drawn By:	EAH
Date	Issue
03-30-2026	BID & PERMIT

E1.3

LIGHTING PLAN - LEVEL 3



1 LIGHTING PLAN - LEVEL 4
SCALE: 1/8" = 1'-0"

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SEE SHEET E0.1
FOR LIGHT FIXTURE
SCHEDULE

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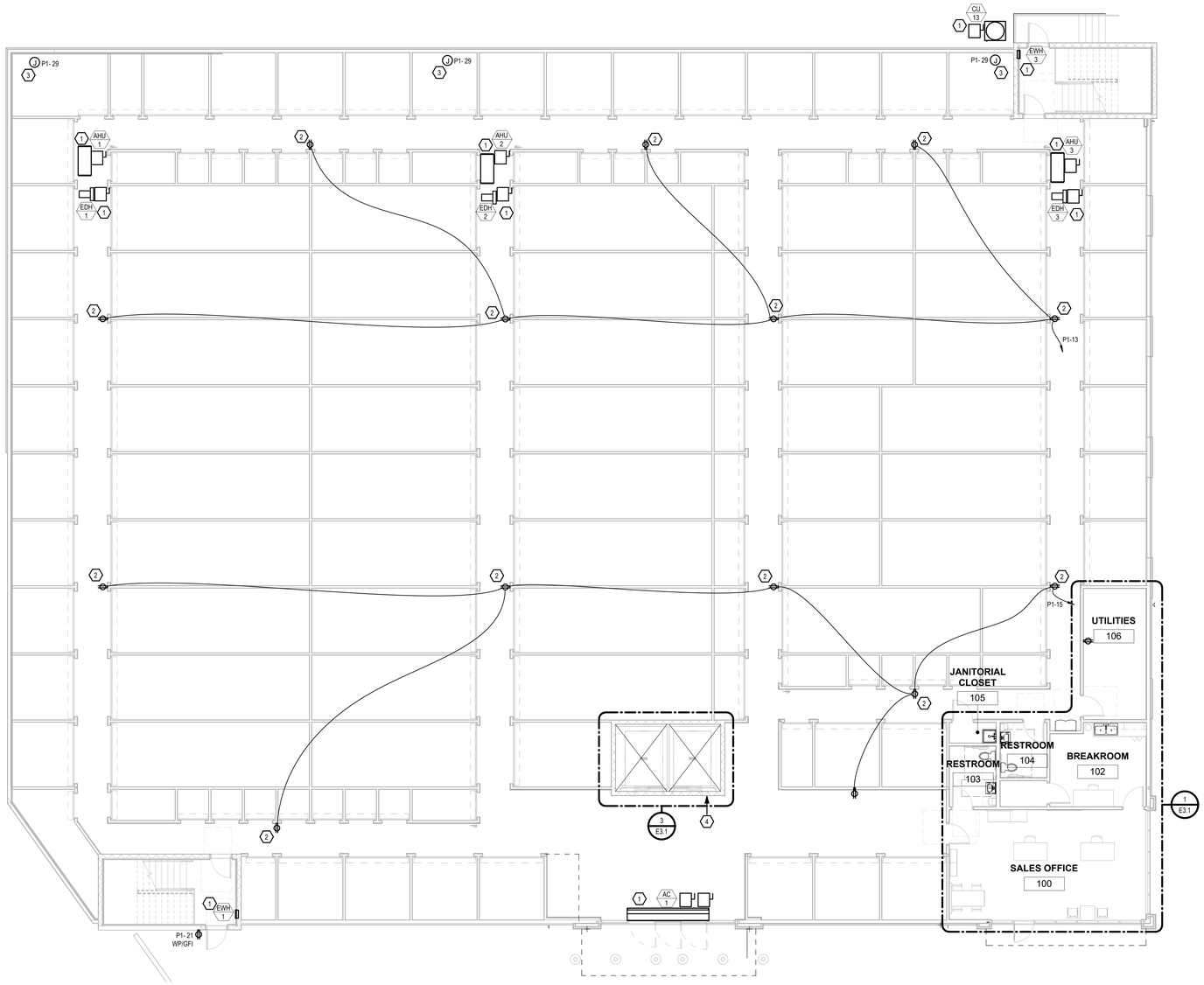
E1.4

LIGHTING PLAN - LEVEL 4



1 POWER PLAN - LEVEL 1

SCALE: 1/8" = 1'-0"

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KEYNOTES

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3. PROVIDE JUNCTON BOX WITH SAFETY SWITCH FOR MOTORIZED DAMPER.
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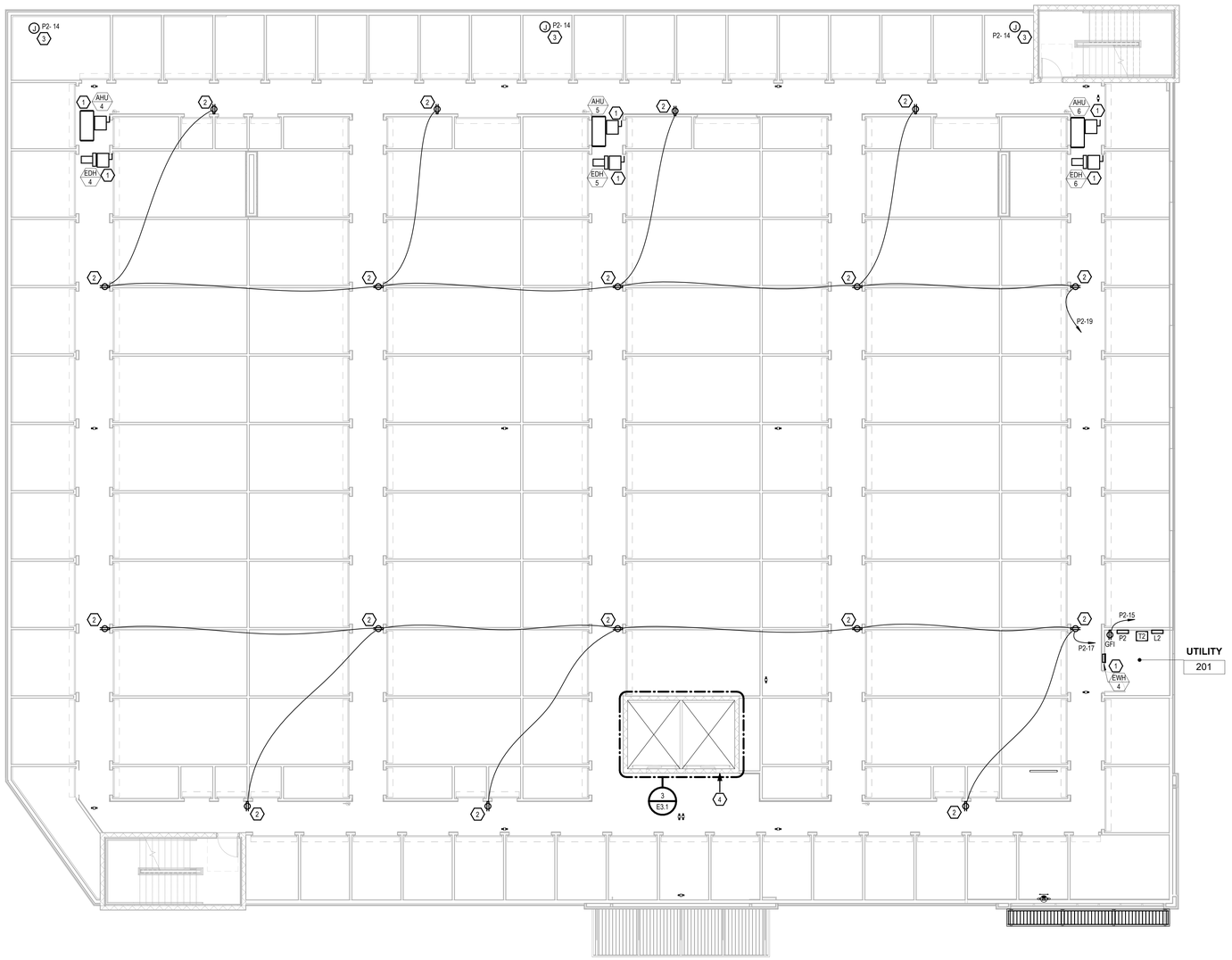
E2.1

POWER PLAN - LEVEL 1



1 POWER PLAN - LEVEL 2

SCALE: 1/8" = 1'-0"

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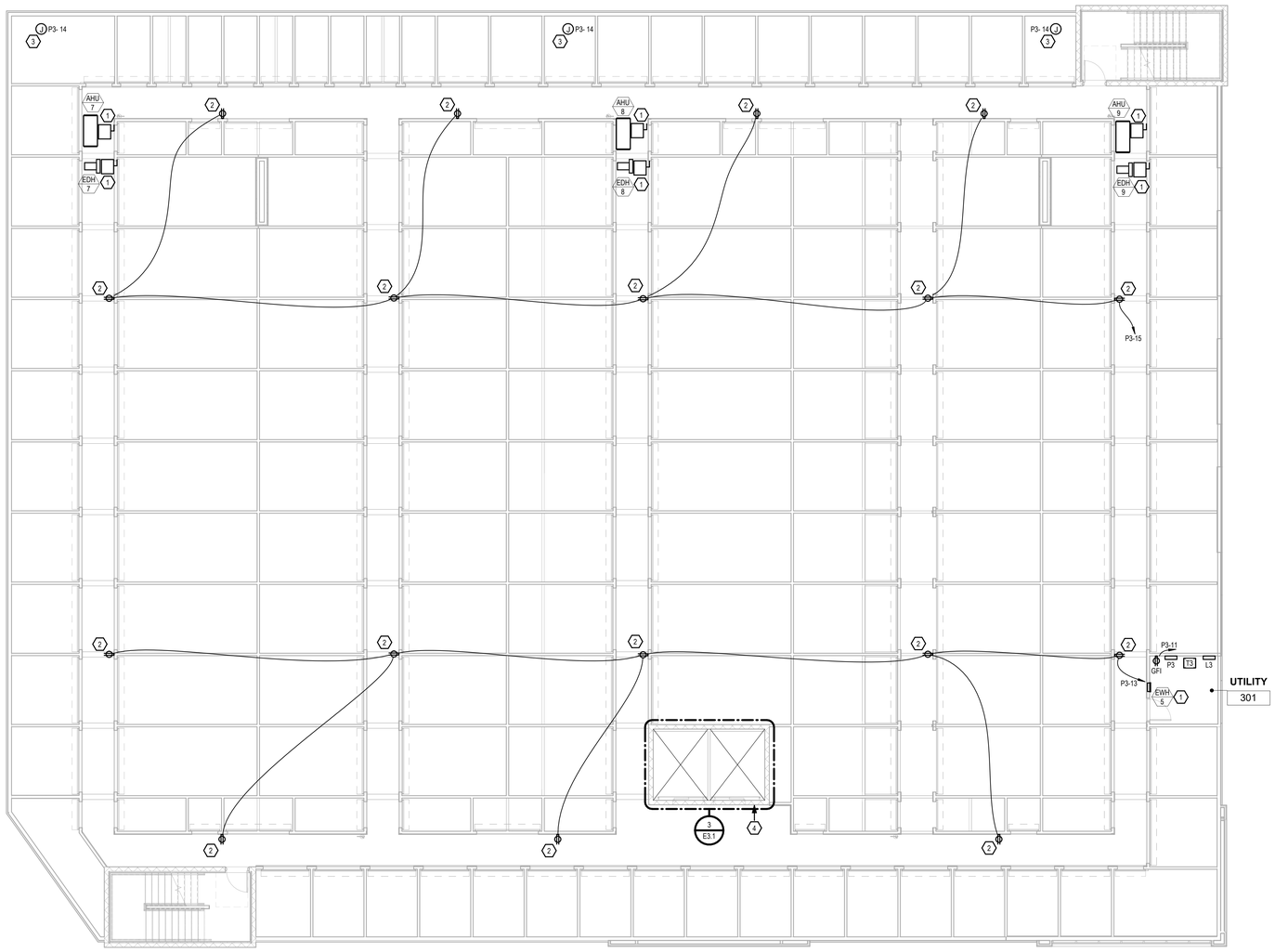
E2.2

POWER PLAN - LEVEL 2



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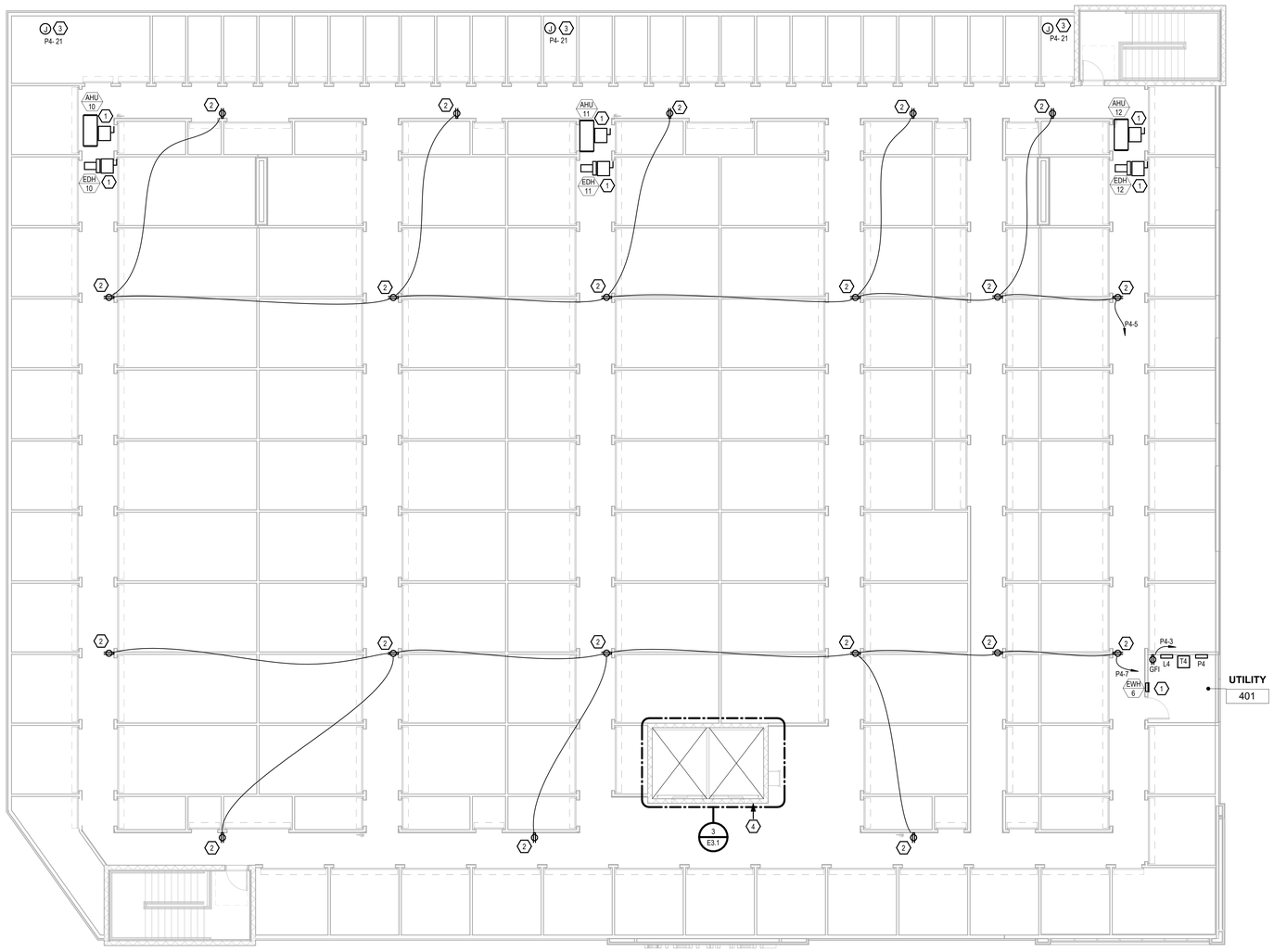
E2.3

POWER PLAN - LEVEL 3



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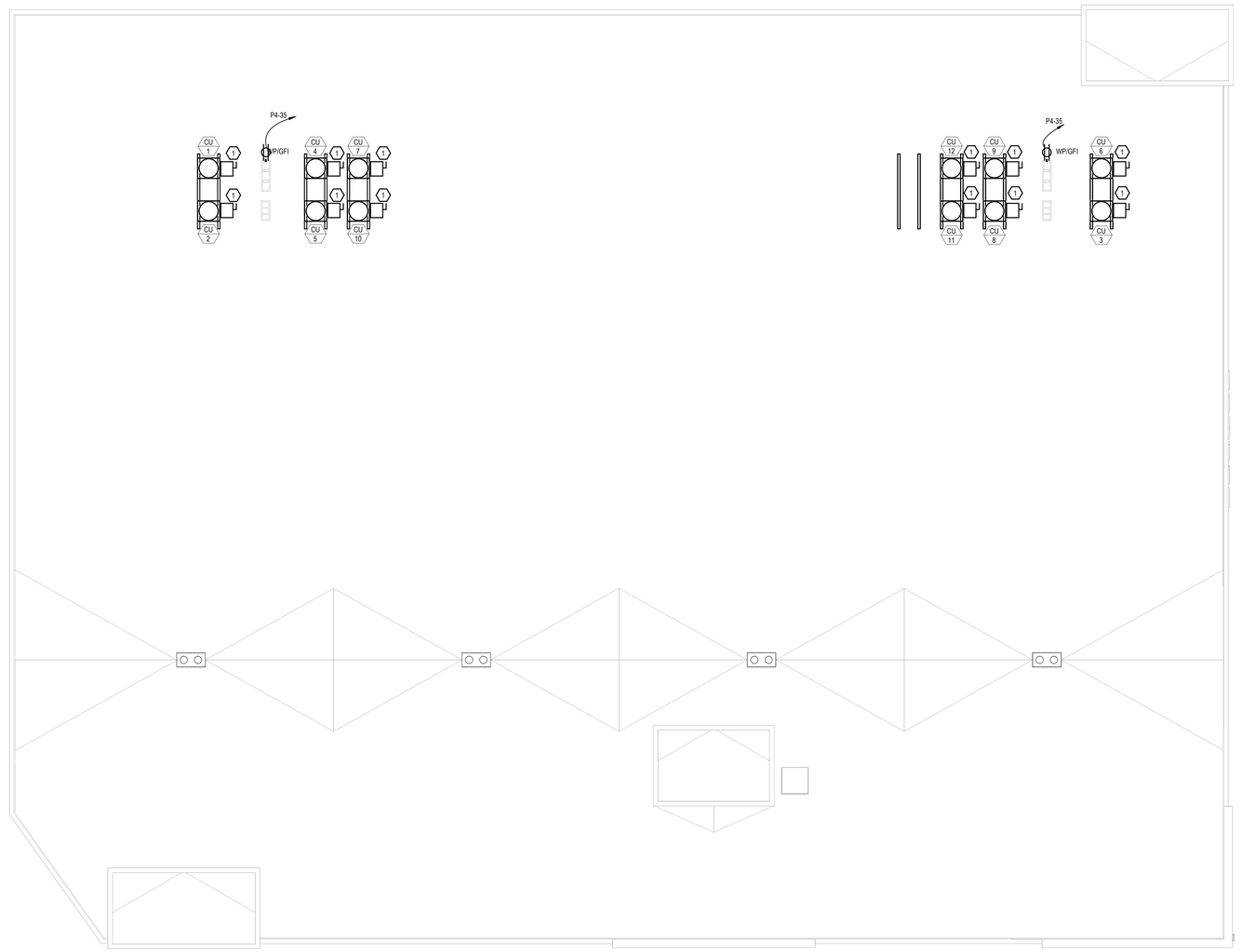
E2.4

POWER PLAN - LEVEL 4



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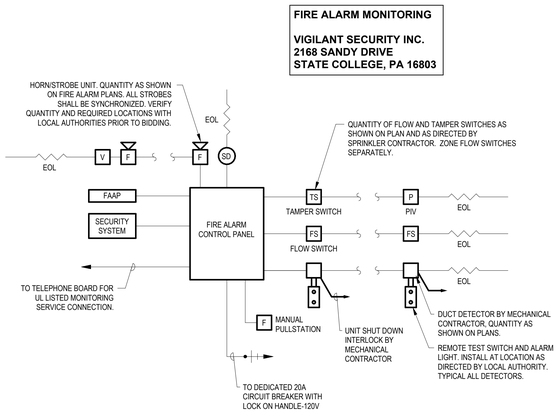
E2.5

POWER PLAN - ROOF



5 | TYPICAL FIRE ALARM WIRING DIAGRAM

SCALE: 12" = 1'-0"

FIRE ALARM SYSTEM NOTES:

A. SUBMIT ALL INFORMATION REQUIRED FOR PLAN REVIEW AND PERMITTING INCLUDING: FLOOR PLANS, EQUIPMENT CUT SHEETS, RISER DIAGRAMS, BATTERY CALCULATIONS, AND A DESCRIPTION OF OPERATION ETC. DESIGNER QUALIFICATIONS: NICET LEVEL 3 OR 4 CERTIFIED FIRE ALARM TECHNICIAN OR REGISTERED FIRE PROTECTION ENGINEER WITH EXPERIENCE DESIGNING FIRE ALARM SYSTEMS IN THE JURISDICTIONAL AREA OF THE AUTHORITIES HAVING JURISDICTION. FURNISH AND INSTALL A COMPLETE, FULLY OPERATIONAL AND FULLY CODE COMPLIANT, ELECTRICALLY SUPERVISED, CLOSED CIRCUIT FIRE ALARM SYSTEM INCLUDING CONDUIT, WIRES, BOXES, CONTROL PANEL, SMOKE DETECTORS, DUCT SMOKE DETECTORS, FIRE ALARM ANNUNCIATOR WITH REMOTE KEYPAD, HEAT DETECTORS, MANUAL PULL STATIONS, AUDIO/VISUAL SIGNAL DEVICES, AND SPRINKLER WATER FLOW AND SUPERVISORY SWITCHES AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION AND LOCAL FIRE CODES.

B. ALL EQUIPMENT COMPRISING THE FIRE ALARM SYSTEM SHALL BE LISTED, LABELED OR APPROVED BY UNDERWRITERS LABORATORIES, INC. FOR USE AS FIRE ALARM EQUIPMENT.

C. INDICATION DEVICE SHALL BE COMBINATION HORN/ STROBE, FIELD ADJUSTABLE, 15 cd TO 110 cd. ALL STROBES SHALL SYNCHRONIZE.

D. DUCT SMOKE DETECTORS ARE TO BE PHOTOELECTRIC TYPE, INSTALLED PER MANUFACTURERS INSTALLATION REQUIREMENTS AND NFPA 72E. PROVIDE SAMPLING TUBE SIZED TO ACCOMMODATE DUCTWORK. PROVIDE REMOTE TEST SWITCH IF REQUIRED BY LOCAL AUTHORITY.

E. PROVIDE END-OF-LINE POWER SUPERVISION RELAY FOR EACH ZONE OF SMOKE DETECTORS.

F. CONCEAL ALL WIRING EXCEPT IN AREA WHERE OTHER CONDUIT AND PIPING ARE EXPOSED.

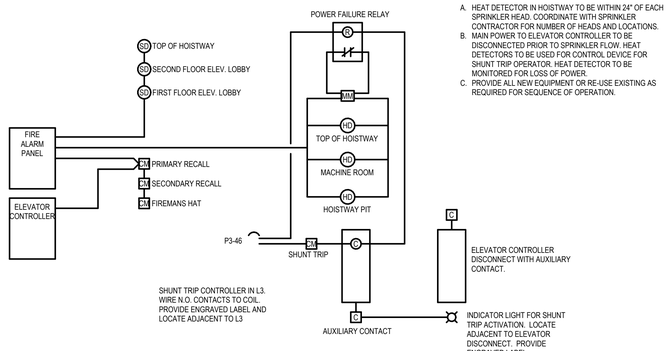
G. CODE AND IDENTIFY ALL CONDUCTORS APPROPRIATELY AND PERMANENTLY BY NUMBER AND COLOR FOR THE PURPOSE OF IDENTIFICATION AND SERVICING OF THE SYSTEM WITHIN THE CONTROL PANEL AND AT EACH POINT OF TERMINATION OUTSIDE OF THE CONTROL PANEL.

H. THE FIRE ALARM CONTROL PANEL IS TO BE MOUNTED WHERE SHOWN IN THE APPROVED FINAL PLANS.

I. THE REMOTE KEYPAD/ANNUNCIATOR IS TO BE MOUNTED ON THE FIRE ALARM CONTROL PANEL UNLESS REQUIRED TO BE MOUNTED ELSEWHERE BY LOCAL CODE AND AUTHORITY HAVING JURISDICTION.

J. THE FIRE ALARM SYSTEM SUPPLIER-INSTALLER IS TO PRE-PROGRAM THE CONTROL PANEL AS A FULLY OPERATIONAL LOCAL SYSTEM AND MUST LEAVE IN A SLEEVED BINDER ATTACHED TO THE PANEL ALL PROGRAMMING KEYS, CODES MANUALS AND OTHER DEVICES NECESSARY FOR FUTURE RE-PROGRAMMING TOGETHER WITH SUPPLIER-INSTALLER'S CONTACT NAME AND PHONE NUMBER. NO EXCEPTIONS.

K. THE ENTIRE SYSTEM SHALL COMPLY WITH ALL APPLICABLE CODES AND LISTINGS, INCLUDING THE NFPA 72, U.L., FM AND THE STATE AND LOCAL FIRE MARSHALL. CONTACT LOCAL FIRE DEPARTMENT FOR COORDINATION AND COMPLIANCE WITH LOCAL JURISDICTION.

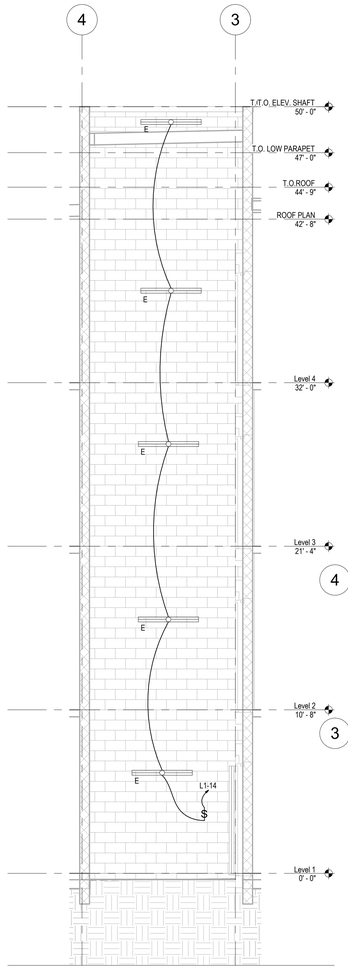


6 | ELEVATOR FIRE ALARM SCHEMATIC

SCALE: 12" = 1'-0"

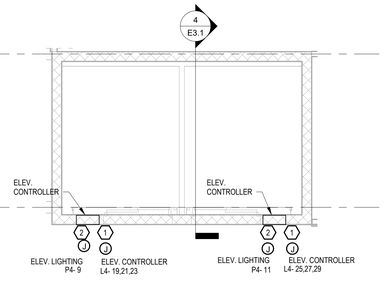
GENERAL NOTES

A. HEAT DETECTOR IN HOISTWAY TO BE WITHIN 24" OF EACH SPRINKLER HEAD. COORDINATE WITH SPRINKLER CONTRACTOR FOR NUMBER OF HEADS AND LOCATIONS.
B. MAIN POWER TO ELEVATOR CONTROLLER TO BE DISCONNECTED PRIOR TO SPRINKLER FLOW. HEAT DETECTORS TO BE USED FOR CONTROL DEVICE FOR SHUNT TRIP OPERATOR. HEAT DETECTOR TO BE MONITORED FOR LOSS OF POWER.
C. PROVIDE ALL NEW EQUIPMENT OR RE-USE EXISTING AS REQUIRED FOR SEQUENCE OF OPERATION.



3 | ENLARGED ELEVATOR PLAN

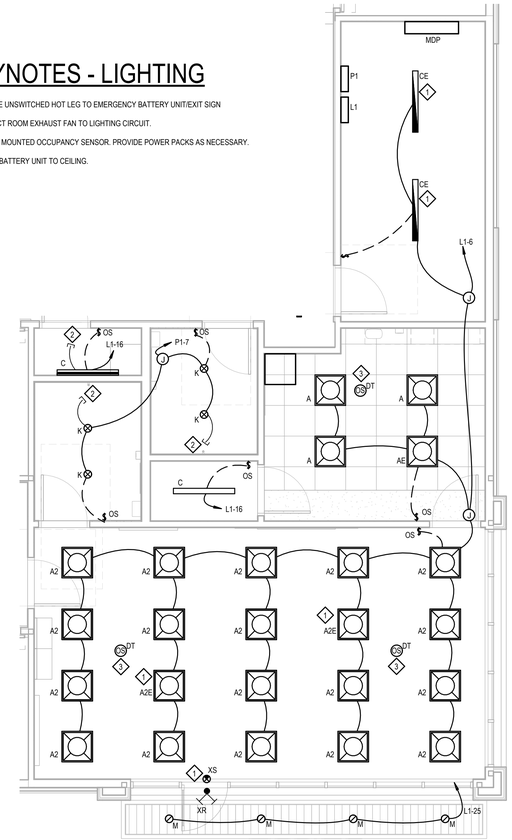
1/4" = 1'-0"



FOURTH FLOOR LANDING

KEYNOTES - LIGHTING

1. PROVIDE UNSWITCHED HOT LEG TO EMERGENCY BATTERY UNIT/EXIT SIGN
2. CONNECT ROOM EXHAUST FAN TO LIGHTING CIRCUIT.
3. CEILING MOUNTED OCCUPANCY SENSOR. PROVIDE POWER PACKS AS NECESSARY.
4. MOUNT BATTERY UNIT TO CEILING.

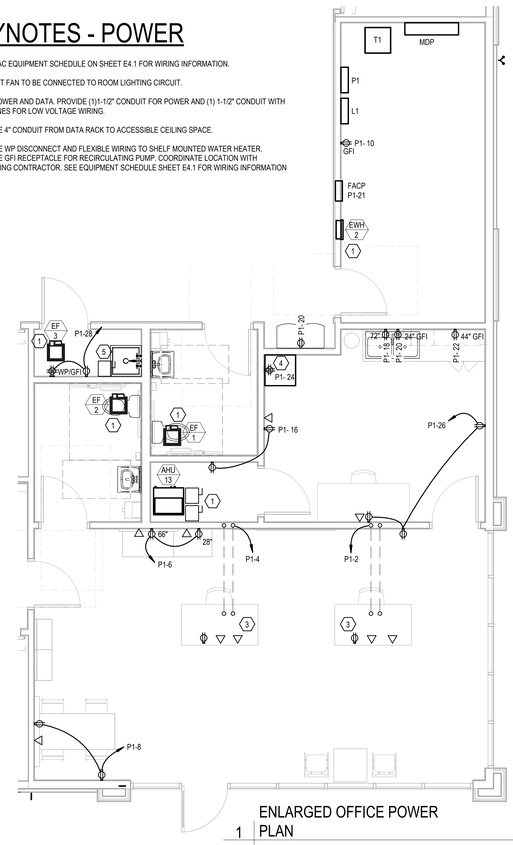


2 | ENLARGED OFFICE LIGHTING PLAN

1/4" = 1'-0"

KEYNOTES - POWER

1. SEE HVAC EQUIPMENT SCHEDULE ON SHEET E4.1 FOR WIRING INFORMATION.
2. EXHAUST FAN TO BE CONNECTED TO ROOM LIGHTING CIRCUIT.
3. DESK POWER AND DATA. PROVIDE (1)1-1/2" CONDUIT FOR POWER AND (1) 1-1/2" CONDUIT WITH PULL LINES FOR LOW VOLTAGE WIRING.
4. PROVIDE 4" CONDUIT FROM DATA RACK TO ACCESSIBLE CEILING SPACE.
5. PROVIDE WP DISCONNECT AND FLEXIBLE WIRING TO SHELF MOUNTED WATER HEATER. PROVIDE GFI RECEPTACLE FOR RECIRCULATING PUMP. COORDINATE LOCATION WITH INSTALLING CONTRACTOR. SEE EQUIPMENT SCHEDULE SHEET E4.1 FOR WIRING INFORMATION



1 | ENLARGED OFFICE POWER PLAN

1/4" = 1'-0"

DONALD W. ALEXANDER ARCHITECT
2501 Emery Road, Suite 400
Cleveland, Ohio 44128
216.223.3200 onyxcreative.com

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STORAGE FACILITY

97 WARREN AVENUE
PORTLAND, MAINE 04103

Project No.:	25.0991
Drawn By:	EAH
Date	Issue
03-30-2026	BID & PERMIT

E3.1

ELECTRICAL DETAILS

Branch Panel: L1

Location: STORAGE 100 | **Volts:** 480/277 Wye | **A.I.C. Rating:** 42,000
Supply From: MDP | **Phases:** 3 | **Mains Type:** MLO
Mounting: Surface | **Wires:** 4 | **Mains Rating:** 125 A
Enclosure: Type 1

Notes	CKT	Circuit Description	Rating	Poles	A		B		C		Poles	Rating	Circuit Description	CKT	Notes
	1				8.0	1.4					1	20 A	LTG. FIRST FLOOR AISLES	2	L
	3	DH-1: DUCT HEATER	35 A	3			8.0	1.6			1	20 A	LTG. FIRST FLOOR AISLES	4	L
	5								8.0	1.0	1	20 A	LTG. OFFICE/BREAKROOM	6	L
	7				8.0	0.0					1	20 A	SPARE	8	
	9	DH-2: DUCT HEATER	35 A	3			8.0	0.0			1	20 A	SPARE	10	
	11								8.0	0.0	1	20 A	SPARE	12	
	13				8.0	0.3					1	20 A	ELEVATOR SHAFT LTG.	14	L
	15	DH-3: DUCT HEATER	35 A	3			8.0	0.1			1	20 A	LTG. SUPPORT ROOMS	16	L
	17								8.0	0.3	1	20 A	LTG. STAIRWAY	18	L
	19	EWH-1: WALL HEATER	20 A	1	4.8	0.3					1	20 A	LTG. STAIRWAY	20	L
	21	EWH-2: WALL HEATER	20 A	1			4.8	0.0			1	20 A	SPARE	22	
	23	EWH-3: WALL HEATER	20 A	1					4.8	0.0	1	20 A	SPARE	24	
	25	CANOPY LIGHTING	20 A	1	0.1	--					1	--	SPACE	26	
	27	LTG. WALL PACKS	20 A	1			0.0	0.5			1	20 A	BLDG SIGNAGE	28	
	29	SITE LIGHTING	20 A	1					0.0	0.5	1	20 A	BLDG SIGNAGE	30	
				Total Load:	30.9 kVA		31.0 kVA		30.7 kVA						
				Total Amps:	112 A		112 A		111 A						

LEGEND:

L = HANDLE LOCK, GFCI = 5mA GFCI, GFPE = 30mA GFCI, AFI = ARC FAULT INTERRUPTING, CD = CONTINUOUS DUTY, H = HACR RATED

Branch Panel: P1

Location: UTILITIES 106 | **Volts:** 120/208 Wye | **A.I.C. Rating:** 10,000
Supply From: T1 | **Phases:** 3 | **Mains Type:** MCB
Mounting: Surface | **Wires:** 4 | **Mains Rating:** 225 A
Enclosure: Type 1 | | **MCB Rating:** 225 A

Notes	CKT	Circuit Description	Rating	Poles	A		B		C		Poles	Rating	Circuit Description	CKT	Notes
	1	LTG. UNIT LIGHTING	20 A	1	0.2	0.2					1	20 A	RCPT. SERVICE DESK	2	
	3	LTG. UNIT LIGHTING	20 A	1			0.3	0.2			1	20 A	RCPT. SERVICE DESK	4	
	5	LTG. UNIT LIGHTING	20 A	1					0.5	0.4	1	20 A	RCPT. OFFICE REAR WALL	6	
	7	LTG. RESTROOMS	20 A	1	0.1	0.4					1	20 A	RCPT. OFFICE GENERAL	8	
	9	SPARE	20 A	1			0.0	0.2			1	20 A	RCPT. UTILITY ROOM	10	
	11	SPARE	20 A	1					0.0	0.0	1	20 A	SPARE	12	
	13	RCPT. AISLES	20 A	1	0.2	0.0					1	20 A	SPARE	14	
	15	RCPT. AISLES	20 A	1			0.2	0.4			1	20 A	RCPT. BREAKROOM DESK	16	
	17	SPARE	20 A	1					0.0	0.2	1	20 A	RCPT. MICROWAVE	18	
L	19	FIRE ALARM PANEL	20 A	1	0.5	0.4					1	20 A	RCPT. WATER COOLER	20	GFCI
	21	RCPT. EXTERIOR	20 A	1			0.2	0.2			1	20 A	RCPT. BREAKROOM COUNTER	22	
	23	SPARE	20 A	1					0.0	0.4	1	20 A	RCPT. DATA RACK	24	
	25	SPARE	20 A	1	0.0	0.5					1	20 A	RCPT. OFFICE GENERAL	26	
	27	SPARE	20 A	1			0.0	0.5			1	20 A	RCPT. JANITORIAL	28	
	29	MOTORIZIED DAMPERS	20 A	1					1.5	2.0				30	
	31	AH-1: AIR HANDLER	15 A	2	0.5	2.0					3	20 A	WATER HEATER	32	
	33						0.5	2.0						34	
	35	AH-2: AIR HANDLER	15 A	2					0.5	1.3	2	20 A	AC-1: AIR CURTIAN (CKT #1)	36	
	37				0.5	1.3								38	
	39	AH-3: AIR HANDLER	15 A	2			0.5	3.6			2	40 A	EV CHARGING STATION	40	
	41								0.5	3.6				42	
	43	AH-13: AIR HANDLER	20 A	2	2.3	0.0					1	20 A	SPARE	44	
	45						2.3	0.0			1	20 A	SPARE	46	
	47	AH-13: AIR HANDLER(HEATER)	60 A	2					5.4	0.0	1	20 A	SPARE	48	
	49				5.4	2.5								50	
	51	SPARE	20 A	1			0.0	2.5			3	35 A	CU-13: CONDENSING UNIT	52	
	53	SPARE	20 A	1					0.0	2.5				54	
				Total Load:	17.0 kVA		13.5 kVA		18.8 kVA						
				Total Amps:	146 A		113 A		161 A						

LEGEND:

L = HANDLE LOCK, GFCI = 5mA GFCI, GFPE = 30mA GFCI, AFI = ARC FAULT INTERRUPTING, CD = CONTINUOUS DUTY, H = HACR RATED

Branch Panel: MDP

Location: UTILITIES 106 | **Volts:** 480/277 Wye | **A.I.C. Rating:** 65,000
Supply From: | **Phases:** 3 | **Mains Type:** MCB
Mounting: Surface | **Wires:** 4 | **Mains Rating:** 800 A
Enclosure: Type 1

Notes	CKT	Circuit Description	Rating	Poles	A		B		C		Poles	Rating	Circuit Description	CKT	Notes
	1				30.9	6.0								2	
	3	PANEL L1	125 A	3			31.0	6.0			3	30 A	AC-1: AIR CURTIAN (CKT #2)	4	
	5								30.7	6.0				6	
	7				28.8	--					1	--	SPACE	8	
	9	PANEL L2	125 A	3			26.9	--			1	--	SPACE	10	
	11								31.3	--	1	--	SPACE	12	
	13				29.9	--					1	--	SPACE	14	
	15	PANEL L3	125 A	3			26.7	--			1	--	SPACE	16	
	17								30.0	--	1	--	SPACE	18	
	19				71.4	--					1	--	SPACE	20	
	21	PANEL L4	400 A	3			71.7	--			1	--	SPACE	22	
	23								73.6	--	1	--	SPACE	24	
	25	SPACE	--	1	--	--					1	--	SPACE	26	
	27	SPACE	--	1			--	--			1	--	SPACE	28	
	29	SPACE	--	1					--	--	1	--	SPACE	30	
	31	SPACE	--	1	--	--					1	--	SPACE	32	
	33	SPACE	--	1			--	--			1	--	SPACE	34	
	35	SPACE	--	1					--	--	1	--	SPACE	36	
	37	SPACE	--	1	--	17.0								38	
	39	SPACE	--	1			--	13.5			3	125 A	T1/PANEL P1	40	
	41	SPACE	--	1					--	18.8				42	
				Total Load:	183.9 kVA		175.9 kVA		190.4 kVA						
				Total Amps:	668.4 A		634.9 A		691.8 A						

LEGEND:

L = HANDLE LOCK, GFCI = 5mA GFCI, GFPE = 30mA GFCI, AFI = ARC FAULT INTERRUPTING, CD = CONTINUOUS DUTY, H = HACR RATED

SERVICE SUMMARY

Load Classification	Connected Load	Demand Factor	Estimated Demand	Totals	
HVAC	469614 VA	100.00%	469614 VA		
Lighting - Exterior	56 VA	125.00%	70 VA	**Total Conn. Load:**	549.7 kVA
Other	0 VA	0.00%	0 VA	**Total Est. Demand:**	549.6 kVA
Receptacle	10260 VA	98.73%	10130 VA	**Total Conn.:**	661.1 A
Power	52700 VA	100.00%	52700 VA	**Total Est. Demand:**	661.0 A
Lighting	17040 VA	100.00%	17040 VA	**Service Size:**	800 A

Branch Panel: L2

Location: | **Volts:** 480/277 Wye | **A.I.C. Rating:** 42000
Supply From: MDP | **Phases:** 3 | **Mains Type:** MLO
Mounting: Surface | **Wires:** 4 | **Mains Rating:** 125 A
Enclosure: Type 1

Notes	CKT	Circuit Description	Rating	Poles	A		B		C		Poles	Rating	Circuit Description	CKT	Notes
	1				8.0	1.8					1	20 A	LTG. SECOND FLOOR AISLES	2	L
	3	DH-4: DUCT HEATER	35 A	3			8.0	1.4			1	20 A	LTG. SECOND FLOOR AISLES	4	L
	5								8.0	0.0	1	20 A	SPARE	6	
	7				8.0	0.0					1	20 A	SPARE	8	
	9	DH-5:DUCT HEATER	35 A	3			8.0	0.0			1	20 A	SPARE	10	
	11								8.0	0.0	1	20 A	SPARE	12	
	13				8.0	--					1	--	SPACE	14	
	15	DH-6: DUCT HEATER	35 A	3			8.0	--			1	--	SPACE	16	
	17								8.0	--	1	--	SPACE	18	
	19	SPACE	--	1	--	--					1	--	SPACE	20	
	21	SPACE	--	1			--	--			1	--	SPACE	22	
	23	SPACE	--	1					--	4.8	1	20 A	EWH-4: WALL HEATER	24	
	25	SPACE	--	1	--	3.0								26	
	27	SPACE	--	1			--	1.6			3	50 A	T2/PANEL P2	28	
	29	SPACE	--	1					--	2.5				30	
				Total Load:	28.8 kVA		26.9 kVA		31.3 kVA						
				Total Amps:	105 A		97 A		114 A						

LEGEND:

L = HANDLE LOCK, GFCI = 5mA GFCI, GFPE = 30mA GFCI, AFI = ARC FAULT INTERRUPTING, CD = CONTINUOUS DUTY, H = HACR RATED

Branch Panel: P2

Location: UTILITY 201 | **Volts:** 120/208 Wye | **A.I.C. Rating:** 10,000
Supply From: T2 | **Phases:** 3 | **Mains Type:** MCB
Mounting: Surface | **Wires:** 4 | **Mains Rating:** 100 A
Enclosure: Type 1 | | **MCB Rating:** 100 A

Notes	CKT	Circuit Description	Rating	Poles	A		B		C		Poles	Rating	Circuit Description	CKT	Notes
	1	LTG. UNIT LIGHTING	20 A	1	0.3	0.5					2	15 A	AH-4: AIR HANDLER	2	
	3	LTG. UNIT LIGHTING	20 A	1			0.3	0.5						4	
	5	SPACE	--	1					--	0.5	2	15 A	AH-5: AIR HANDLER	6	
	7	SPARE	20 A	1	0	0.5								8	
	9	SPARE	20 A	1			0	0.5			2	15 A	AH-6: AIR HANDLER	10	
	11	SPARE	20 A	1					0	0.5				12	
	13	SPACE	--	1	--	1.5					1	20 A	MOTORIZIED DAMPERS	14	
	15	RCPT. UTILITY ROOM	20 A	1			0.2	--			1	--	SPACE	16	
	17	RCPT. AISLES	20 A	1					1.4	--	1	--	SPACE	18	
	19	RCPT. AISLES	20 A	1	0.2	0					1	20 A	SPARE	20	
	21	SPARE	20 A	1			0	0			1	20 A	SPARE	22	
	23	SPARE	20 A	1					0	0	1	20 A	SPARE	24	
	25	SPACE	--	1	--	--					1	--	SPACE	26	
	27	SPACE	--	1			--	--			1	--	SPACE	28	
	29	SPACE	--	1					--	--	1	--	SPACE	30	
				Total Load:	3.0 kVA		1.6 kVA		2.5 kVA						
				Total Amps:	26 A		13 A		22 A						

LEGEND:

L = HANDLE LOCK, GFCI = 5mA GFCI, GFPE = 30mA GFCI, AFI = ARC FAULT INTERRUPTING, CD = CONTINUOUS DUTY, H = HACR RATED

Branch Panel: L3

Location: | **Volts:** 480/277 Wye | **A.I.C. Rating:** 42000
Supply From: MDP | **Phases:** 3 | **Mains Type:** MLO
Mounting: Surface | **Wires:** 4 | **Mains Rating:** 125 A
Enclosure: Type 1

Notes	CKT	Circuit Description	Rating	Poles	A		B		C		Poles	Rating	Circuit Description	CKT	Notes
	1				8.0	1.8					1	20 A	LTG. THIRD FLOOR AISLES	2	L
	3	DH-7: DUCT HEATER	35 A	3			8.0	1.3			1	20 A	LTG. THIRD FLOOR AISLES	4	L
	5								8.0	0.0	1	20 A	SPARE	6	
	7				8.0	0.0					1	20 A	SPARE	8	
	9	DH-8: DUCT HEATER	35 A	3			8.0	0.0			1	20 A	SPARE	10	
	11								8.0	0.0	1	20 A	SPARE	12	
	13				8.0	0.0					1	20 A	SPARE	14	
	15	DH-9: DUCT HEATER	35 A	3			8.0	0.0			1	20 A	SPARE	16	
	17								8.0	--	1	--	SPACE	18	
	19	SPACE	--	1	--	--					1	--	SPACE	20	
	21	SPACE	--	1			--	--			1	--	SPACE	22	
	23	SPACE	--	1					--	4.8	1	20 A	EWH-5: WALL HEATER	24	
	25	SPACE	--	1	--	4.1								26	
	27	SPACE	--	1			--	1.4			3	50 A	T3/PANEL P3	28	
	29	SPACE	--	1					--	1.2				30	
				Total Load:	29.9 kVA		26.7 kVA		30.0 kVA						
				Total Amps:	110 A		97 A		110 A						

LEGEND:

L = HANDLE LOCK, GFCI = 5mA GFCI, GFPE = 30mA GFCI, AFI = ARC FAULT INTERRUPTING, CD = CONTINUOUS DUTY, H = HACR RATED

Branch Panel: P3

Location: UTILITY 301 | **Volts:** 120/208 Wye | **A.I.C. Rating:** 10,000
Supply From: T3 | **Phases:** 3 | **Mains Type:** MCB
Mounting: Surface | **Wires:** 4 | **Mains Rating:** 100 A
Enclosure: Type 1 | | **MCB Rating:** 100 A

Notes	CKT	Circuit Description	Rating	Poles	A		B		C		Poles	Rating	Circuit Description	CKT	Notes
L	1	LTG. UNIT LIGHTING	20 A	1	0.1	0.5					2	15 A	AH-7: AIR HANDLER	2	
L	3	LTG. UNIT LIGHTING	20 A	1			0.2	0.5						4	
	5	SPARE	20 A	1					0	0.5	2	15 A	AH-8: AIR HANDLER	6	
	7	SPARE	20 A	1	0	0.5								8	
	9	SPARE	20 A	1			0	0.5			2	15 A	AH-9: AIR HANDLER	10	
	11	RCPT. UTILITY ROOM	20 A	1					0.2	0.5				12	
	13	RCPT. AISLES	20 A	1	1.4	1.5					1	20 A	Power	14	
	15	RCPT. AISLES	20 A	1			0.2	0			1	20 A	SPARE	16	
	17	SPACE	--	1					--	0	1	20 A	SPARE	18	
	19	SPACE	--	1	--	--					1	--	SPACE	20	
	21	SPACE	--	1			--	--			1	--	SPACE	22	
	23	SPACE	--	1					--	--	1	--	SPACE	24	
	25	SPACE	--	1	--	--					1	--	SPACE	26	
	27	SPACE	--	1			--	--			1	--	SPACE	28	
	29	SPACE	--	1					--	--	1	--	SPACE	30	
				Total Load:	4.1 kVA		1.4 kVA		1.2 kVA						
				Total Amps:	34 A		12 A		10 A						

LEGEND:

L = HANDLE LOCK, GFCI = 5mA GFCI, GFPE = 30mA GFCI, AFI = ARC FAULT INTERRUPTING, CD = CONTINUOUS DUTY, H = HACR RATED

HVAC EQUIPMENT SCHEDULE

Equipment	Circuit	Rating	Wire Size	Voltage	Phase	Disconnect
AIR CURTIAN						
AC-1: AIR CURTIAN (CKT #1)	**P1-36,38**	**20 A**	**2-#10, 1-#10, 1-#10**	**208 V**	**1**	**30A NF**
AC-1: AIR CURTIAN (CKT #2)	**MDP-2,4,6**	**30 A**	**3-#10, 1-#10, 1-#10**	**480 V**	**3**	**30A NF**
AIR HANDLER						
AH-1: AIR HANDLER	**P1-31,33**	**15 A**	**2-#10, 1-#10, 1-#10**	**208 V**	**1**	**30A NF**
AH-2: AIR HANDLER	**P1-35,37**	**15 A**	**2-#12, 1-#12, 1-#12**	**208 V**	**1**	**30A NF**
AH-3: AIR HANDLER	**P1-39,41**	**15 A**	**2-#12, 1-#12, 1-#12**	**208 V**	**1**	**30A NF**
AH-4: AIR HANDLER	**P2-2,4**	**15 A**	**2-#10, 1-#10, 1-#10**	**208 V**	**1**	**30A NF**
AH-5: AIR HANDLER	**P2-6,8**	**15 A**	**2-#12, 1-#12, 1-#12**	**208 V**	**1**	**30A NF**
AH-6: AIR HANDLER	**P2-10,12**	**15 A**	**2-#12, 1-#12, 1-#12**	**208 V**	**1**	**30A NF**
AH-7: AIR HANDLER	**P3-2,4**	**15 A**	**2-#10, 1-#10, 1-#10**	**208 V**	**1**	**30A NF**
AH-8: AIR HANDLER	**P3-6,8**	**15 A**	**2-#12, 1-#12, 1-#12**	**208 V**	**1**	**30A NF**
AH-9: AIR HANDLER	**P3-10,12**	**15 A**	**2-#12, 1-#12, 1-#12**	**208 V**	**1**	**30A NF**
AH-10: AIR HANDLER	**P4-23,25**	**15 A**	**2-#10, 1-#10, 1-#10**	**208 V**	**1**	**30A NF**
AH-11: AIR HANDLER	**P4-27,29**	**15 A**	**2-#12, 1-#12, 1-#12**	**208 V**	**1**	**30A NF**
AH-12: AIR HANDLER	**P4-31,33**	**15 A**	**2-#12, 1-#12, 1-#12**	**208 V**	**1**	**30A NF**
AH-13: AIR HANDLER	**P1-43,45**	**20 A**	**2-#10, 1-#10, 1-#10**	**208 V**	**1**	**30A NF**
AH-13: AIR HANDLER(HEATER)	**P1-47,49**	**60 A**	**2-#4, 1-#4, 1-#10**	**208 V**	**1**	**60A NF**
CONDENSING UNIT						
CU-1: CONDENSING UNIT	**P4-2,4,6**	**35 A**	**3-#26, 1-#26, 1-#10**	**208 V**	**3**	**60A WP/NF**
CU-2: CONDENSING UNIT	**P4-8,10,12**	**35 A**	**3-#26, 1-#26, 1-#10**	**208 V**	**3**	**60A WP/NF**
CU-3: CONDENSING UNIT	**P4-49,51,53**	**35 A**	**3-#8, 1-#8, 1-#10**	**208 V**	**3**	**60A WP/NF**
CU-4: CONDENSING UNIT	**P4-14,16,18**	**35 A**	**3-#26, 1-#26, 1-#10**	**208 V**	**3**	**60A WP/NF**
CU-5: CONDENSING UNIT	**P4-20,22,24**	**35 A**	**3-#26, 1-#26, 1-#10**	**208 V**	**3**	**60A WP/NF**
CU-6: CONDENSING UNIT	**P4-43,45,47**	**35 A**	**3-#8, 1-#8, 1-#10**	**208 V**	**3**	**60A WP/NF**
CU-7: CONDENSING UNIT	**P4-26,28,30**	**35 A**	**3-#26, 1-#26, 1-#10**	**208 V**	**3**	**60A WP/NF**
CU-8: CONDENSING UNIT	**P4-37,39,41**	**35 A**	**3-#8, 1-#8, 1-#10**	**208 V**	**3**	**60A WP/NF**
CU-9: CONDENSING UNIT	**P4-50,52,54**	**35 A**	**3-#8, 1-#8, 1-#10**	**208 V**	**3**	**60A WP/NF**
CU-10: CONDENSING UNIT	**P4-32,34,36**	**35 A**	**3-#26, 1-#26, 1-#10**	**208 V**	**3**	**60A WP/NF**
CU-11: CONDENSING UNIT	**P4-44,46,48**	**35 A**	**3-#8, 1-#8, 1-#10**	**208 V**	**3**	**60A WP/NF**
CU-12: CONDENSING UNIT	**P4-38,40,42**	**35 A**	**3-#8, 1-#8, 1-#10**	**208 V**	**3**	**60A WP/NF**
CU-13: CONDENSING UNIT	**P1-50,52,54**	**35 A**	**3-#8, 1-#8, 1-#10**	**208 V**	**3**	**60A WP/NF**
DUCT HEATER						
DH-1: DUCT HEATER	**L1-1,3,5**	**35 A**	**3-#8, 1-#8, 1-#10**	**480 V**	**3**	**60 NF**
DH-2: DUCT HEATER	**L1-7,9,11**	**35 A**	**3-#8, 1-#8, 1-#10**	**480 V**	**3**	**60 NF**
DH-3: DUCT HEATER	**L1-13,15,17**	**35 A**	**3-#8, 1-#8, 1-#10**	**480 V**	**3**	**60 NF**
DH-4: DUCT HEATER	**L2-1,3,5**	**35 A**	**3-#8, 1-#8, 1-#10**	**480 V**	**3**	**60 NF**
DH-5:DUCT HEATER	**L2-7,9,11**	**35 A**	**3-#8, 1-#8, 1-#10**	**480 V**	**3**	**60 NF**
DH-6: DUCT HEATER	**L2-13,15,17**	**35 A**	**3-#8, 1-#8, 1-#10**	**480 V**	**3**	**60 NF**
DH-7: DUCT HEATER	**L3-1,3,5**	**35 A**	**3-#8, 1-#8, 1-#10**	**480 V**	**3**	**60 NF**
DH-8: DUCT HEATER	**L3-7,9,11**	**35 A**	**3-#8, 1-#8, 1-#10**	**480 V**	**3**	**60 NF**
DH-9: DUCT HEATER	**L3-13,15,17**	**35 A**	**3-#8, 1-#8, 1-#10**	**480 V**	**3**	**60 NF**
DH-10: DUCT HEATER	**L4-1,3,5**	**35 A**	**3-#8, 1-#8, 1-#10**	**480 V**	**3**	**60 NF**
DH-11: DUCT HEATER	**L4-7,9,11**	**35 A**	**3-#8, 1-#8, 1-#10**	**480 V**	**3**	**60 NF**
DH-12: DUCT HEATER	**L4-13,15,17**	**35 A**	**3-#8, 1-#8, 1-#10**	**480 V**	**3**	**60 NF**
ELECTRIC WALL HEATER						
EWH-1: WALL HEATER	**L1-19**	**20 A**	**1-#6, 1-#6, 1-#6**	**277 V**	**1**	**30A NF**
EWH-2: WALL HEATER	**L1-21**	**20 A**	**1-#12, 1-#12, 1-#12**	**277 V**	**1**	**30A NF**
EWH-3: WALL HEATER	**L1-23**	**20 A**	**1-#10, 1-#10, 1-#10**	**277 V**	**1**	**30A NF**
EWH-4: WALL HEATER	**L2-24**	**20 A**	**1-#12, 1-#12, 1-#12**	**277 V**	**1**	**30A NF**
EWH-5: WALL HEATER	**L3-24**	**20 A**	**1-#12, 1-#12, 1-#12**	**277 V**	**1**	**30A NF**
EWH-6: WALL HEATER	**L4-24**	**20 A**	**1-#12, 1-#12, 1-#12**	**277 V**	**1**	**30A NF**
WATER HEATER						
WATER HEATER	**P1-30,32,34**	**20 A**	**3-#12, 1-#12, 1-#12**	**208 V**	**3**	**30A NF**

Branch Panel: L4

Location: UTILITY 401 | **Volts:** 480/277 Wye | **A.I.C. Rating:**
Supply From: MDP | **Phases:** 3 | **Mains Type:**
Mounting: Surface | **Wires:** 4 | **Mains Rating:** 400 A
Enclosure: Type 1

Notes	CKT	Circuit Description	Rating	Poles	A		B		C		Poles	Rating	Circuit Description	CKT	Notes
	1				8.0	1.8					1	20 A	LTG. FOURTH FLOOR AISLE	2	
	3	DH-10: DUCT HEATER	35 A	3			8.0	1.8			1	20 A	LTG. FOURTH FLOOR AISLE	4	
	5								8.0	0.0	1	20 A	SPARE	6	
	7				8.0	0.0					1	20 A	SPARE	8	
	9	DH-11: DUCT HEATER	35 A	3			8.0	0.0			1	20 A	SPARE	10	
	11								8.0	0.0	1	20 A	SPARE	12	
	13				8.0	--					1	--	SPACE	14	
	15	DH-12: DUCT HEATER	35 A	3			8.0	--			1	--	SPACE	16	
	17								8.0	--	1	--	SPACE	18	
	19				6.3	--					1	--	SPACE	20	
	21	ELEVATOR CONTROLLER	25 A	3			6.3	--			1	--	SPACE	22	
	23								6.3	4.8	1	20 A	EWH-6: WALL HEATER	24	
	25				6.3	33.1								26	
	27	ELEVATOR CONTROLLER	25 A	3			6.3	33.5			3	175 A	T4/PANEL P4	28	
	29								6.3	32.3				30	
				Total Load:	71.4 kVA		71.7 kVA		73.6 kVA						
				Total Amps:	258 A		259 A		266 A						

LEGEND:

L = HANDLE LOCK, GFCI = 5mA GFCI, GFPE = 30mA GFCI, AFI = ARC FAULT INTERRUPTING, CD = CONTINUOUS DUTY, H = HACR RATED

Branch Panel: P4

Location: UTILITY 401 | **Volts:** 120/208 Wye | **A.I.C. Rating:**
Supply From: T4 | **Phases:** 3 | **Mains Type:** MCB
Mounting: Surface | **Wires:** 4 | **Mains Rating:** 400 A
Enclosure: Type 1

Notes	CKT	Circuit Description	Rating	Poles	A		B		C		Poles	Rating	Circuit Description	CKT	Notes
	1	LTG. UNIT LIGHTING	20 A	1	0.2	2.5								2	
	3	RCPT - UTILITY ROOM	20 A	1			0.2	2.5			3	35 A	CU-1: CONDENSING UNIT	4	
	5	RCPT. AISLES	20 A	1					0.2	2.5				6	
	7	RCPT. AISLES	20 A	1	1.6	2.5								8	
	9	ELEVATOR CAB LIGHTING	20 A	1			0.5	2.5			3	35 A	CU-2: CONDENSING UNIT	10	
	11	ELEVATOR CAB LIGHTING	20 A	1					0.5	2.5				12	
	13	SPARE	20 A	1	0.0	2.5								14	
	15	SPARE	20 A	1			0.0	2.5			3	35 A	CU-4: CONDENSING UNIT	16	
	17	SPARE	20 A	1					0.0	2.5				18	
	19	SPARE	20 A	1	0.0	2.5								20	
	21	MOTORIZIED DAMPERS	20 A	1			1.5	2.5			3	35 A	CU-5: CONDENSING UNIT	22	
	23	AH-10: AIR HANDLER	15 A	2					0.5	2.5				24	
	25				0.5	2.5								26	
	27	AH-11: AIR HANDLER	15 A	2			0.5	2.5			3	35 A	CU-7: CONDENSING UNIT	28	
	29								0.5	2.5				30	
	31	AH-12: AIR HANDLER	15 A	2	0.5	2.5								32	
	33						0.5	2.5			3	35 A	CU-10: CONDENSING UNIT	34	
	35	RCPT. ROOF	20 A	1					0.4	2.5				36	
	37				2.5	2.5								38	
	39	CU-8: CONDENSING UNIT	35 A	3			2.5	2.5			3	35 A	CU-12: CONDENSING UNIT	40	
	41								2.5	2.5				42	
	43				2.5	2.5								44	
	45	CU-6: CONDENSING UNIT	35 A	3			2.5	2.5			3	35 A	CU-11: CONDENSING UNIT	46	
	47								2.5	2.5				48	
	49				2.5	2.5								50	
	51	CU-3: CONDENSING UNIT	35 A	3			2.5	2.5			3	35 A	CU-9: CONDENSING UNIT	52	
	53								2.5	2.5				54	
				Total Load:	33.1 kVA		33.5 kVA		32.3 kVA						
				Total Amps:	277 A		280 A		269 A						

LEGEND:

L = HANDLE LOCK, GFCI = 5mA GFCI, GFPE = 30mA GFCI, AFI = ARC FAULT INTERRUPTING, CD = CONTINUOUS DUTY, H = HACR RATED

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STORAGE FACILITY

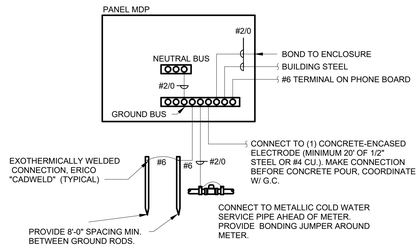
97 WARREN AVENUE
PORTLAND, MAINE 04103

Project No.: 25.0991
Drawn By: EAH

Date	Issue
03-30-2026	BID & PERMIT

E4.1

PANEL SCHEDULES



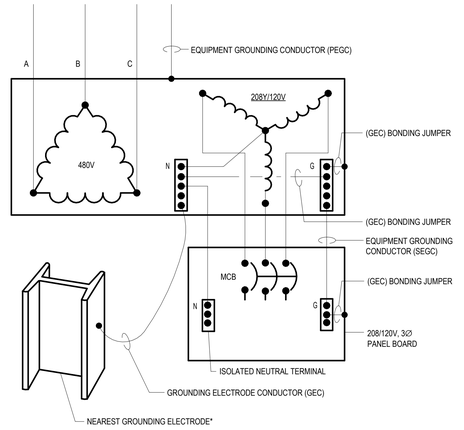
2 SERVICE GROUND DETAIL

12" = 1'-0"

EQUIPMENT SCHEDULE			
TRANS. KVA	(PEGC) PRIMARY EQ. GROUND	(GEC) ELECTRODE CONDUCTOR	(SEGC) SECONDARY EQ. GROUND
15	#10	#8	#8
30	#10	#6	#6
45	#8	#6	#6
75	#6	#2	#2
112.5	#6	#1/0	#1/0
150	#4	#2/0	#2/0

NOTES:

* - GROUNDING ELECTRODE AS DEFINED IN NEC ARTICLE 250.52:
1. METAL UNDERGROUND WATER PIPE
2. METAL FRAME OF BLDG. OR STRUCTURE.
3. CONCRETE ENCASED ELECTRODE.
4. GROUND RING.
5. ROD AND PIPE ELECTRODES.



3 TRANSFORMER GROUNDING DETAIL

12" = 1'-0"

GENERAL NOTES:

A. COORDINATE ALL WORK WITH POWER COMPANY REQUIREMENTS PRIOR TO BIDDING & INCLUDE THE COST OF ALL ASSOCIATED LABOR, MATERIALS, & CHARGES IN BID.

B. VERIFY THE AVAILABLE FAULT CURRENT WITH THE UTILITY COMPANY PRIOR TO BIDDING AND PROVIDE EQUIPMENT RATED ACCORDINGLY. SUBMIT FAULT CURRENT CALCULATIONS WITH SHOP DRAWING SUBMITTAL.

C. PROVIDE FULL LENGTH VERTICAL BUSSING IN ALL SWITCHBOARDS, DISTRIBUTION PANELS & PANELBOARDS.

D. PROVIDE FULL SIZE HORIZONTAL BUSSING IN ALL SWITCHBOARDS.

E. ALL CIRCUIT BREAKERS SHALL BE BOLT-ON TYPE.

F. ALL INTERIOR WALL-MOUNTED EQUIPMENT SHALL BE MOUNTED ON 3/4" FIRE RATED BACKBOARD.

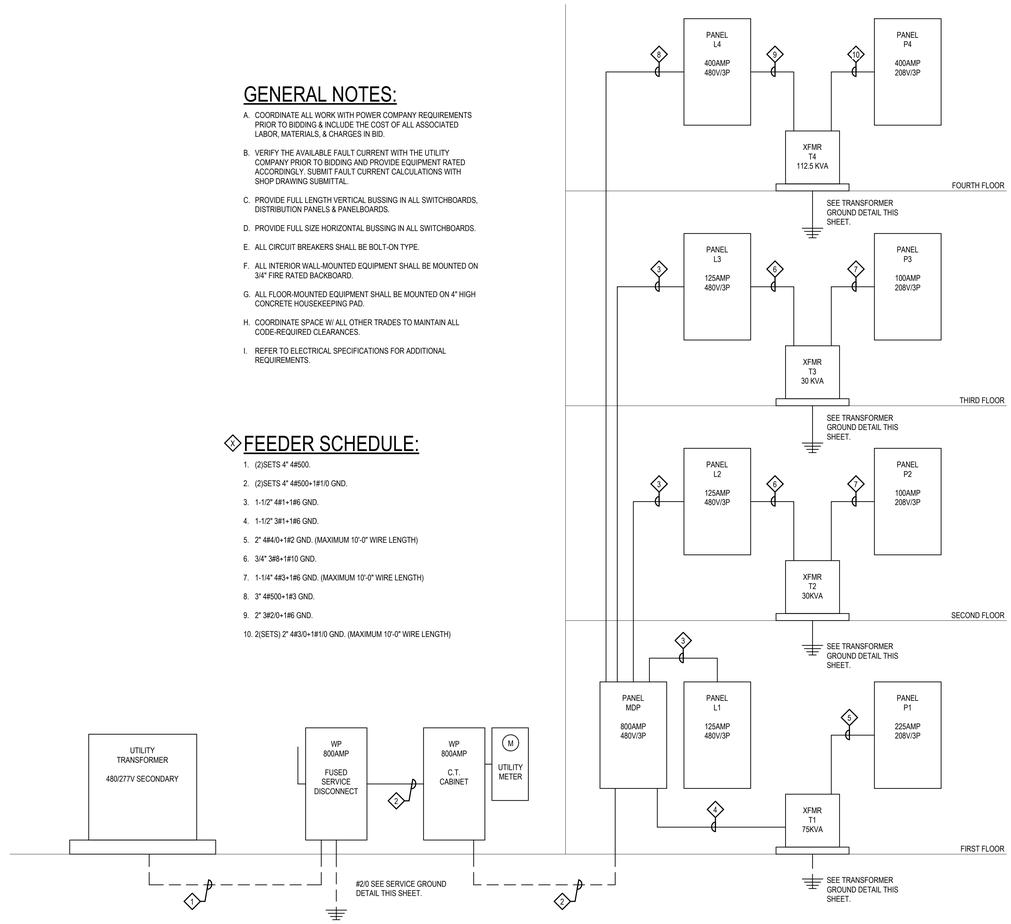
G. ALL FLOOR-MOUNTED EQUIPMENT SHALL BE MOUNTED ON 4" HIGH CONCRETE HOUSEKEEPING PAD.

H. COORDINATE SPACE W/ ALL OTHER TRADES TO MAINTAIN ALL CODE-REQUIRED CLEARANCES.

I. REFER TO ELECTRICAL SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

◇1 FEEDER SCHEDULE:

1. (2)SETS 4" 4#500.
2. (2)SETS 4" 4#500+1#1/0 GND.
3. 1-1/2" 4#1+1#6 GND.
4. 1-1/2" 3#1+1#6 GND.
5. 2" 4#4/0+1#2 GND. (MAXIMUM 10'-0" WIRE LENGTH)
6. 3/4" 3#8+1#10 GND.
7. 1-1/4" 4#3+1#6 GND. (MAXIMUM 10'-0" WIRE LENGTH)
8. 3" 4#500+1#3 GND.
9. 2" 3#2/0+1#6 GND.
10. 2(SETS) 2" 4#3/0+1#1/0 GND. (MAXIMUM 10'-0" WIRE LENGTH)



1 ONE-LINE DIAGRAM

12" = 1'-0"

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STORAGE FACILITY

97 WARREN AVENUE
PORTLAND, MAINE 04103

Project No.:	25.0991
Drawn By:	EAH
Date	Issue
03-30-2026	BID & PERMIT

E4.2

ONE-LINE DIAGRAM AND DETAILS

SECTION 26 0505
SELECTIVE DEMOLITION FOR ELECTRICAL
PART 1 EXECUTION
1.01 EXAMINATION
A. Verify that wiring and equipment to be removed serve only areas of demolition, or make provisions to maintain portions of systems serving areas outside of scope of demolition.
B. Demolition drawings are based on casual field observation and existing record documents.
C. Beginning of demolition means installer accepts existing conditions.
1.02 PREPARATION
A. Disconnect electrical systems in walls, floors, and ceilings to be removed.
B. Coordinate utility service outages with utility company.
C. Provide temporary wiring and connections to maintain existing systems in service during construction. When work must be performed on energized equipment or circuits, use personnel experienced in such operations.
D. Existing Electrical Service: Maintain existing system in service until new system is complete and ready for service. Disable system only to make switchovers and connections. Minimize outage duration.
E. Existing Fire Alarm System: Maintain existing system in service until new system is accepted. Disable system only to make switchovers and connections. Minimize outage duration.
1. Notify Owner before partially or completely disabling system.
2. Notify local fire service.
3. Make notifications at least 24 hours in advance.
4. Make temporary connections to maintain service in areas adjacent to work area.
1.03 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK
A. Remove, relocate, and extend existing installations to accommodate new construction.
B. Remove abandoned wiring to source of supply.
C. Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors, and patch surfaces.
D. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit servicing them is abandoned and removed. Provide blank cover for abandoned outlets that are not removed.
E. Disconnect and remove abandoned panelboards and distribution equipment.
F. Disconnect and remove electrical devices and equipment serving utilization equipment that has been removed.
G. Disconnect and remove abandoned luminaires. Remove brackets, stems, hangers, and other accessories.
H. Repair adjacent construction and finishes damaged during demolition and extension work.
I. Maintain access to existing electrical installations that remain active. Modify installation or provide access panel as appropriate.
1.04 CLEANING AND REPAIR
A. Clean and repair existing materials and equipment that remain or that are to be reused.
B. Panelboards: Clean exposed surfaces and check tightness of electrical connections. Replace damaged circuit breakers and provide closure plates for vacant positions. Provide typed circuit directory showing revised circuiting arrangement.
C. Luminaires: Remove existing luminaires for cleaning. Use mild detergent to clean all exterior and interior surfaces; rinse with clean water and wipe dry. Replace lamps, ballasts and broken electrical parts.

SECTION 26 0519
LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES
PART 1 GENERAL
1.01 ADMINISTRATIVE REQUIREMENTS
A. Coordination:
1. Coordinate sizes of raceways, boxes, and equipment enclosures installed under other sections with the actual conductors to be installed, including adjustments for conductor sizes increased for voltage drop.
2. Coordinate with electrical equipment installed under other sections to provide terminations suitable for use with the conductors to be installed.
PART 2 PRODUCTS
2.01 CONDUCTOR AND CABLE GENERAL REQUIREMENTS
A. Provide products that comply with requirements of NFPA 70.
B. Provide products listed, classified, and labeled as suitable for the purpose intended.
C. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, etc. as required for a complete operating system.
D. Conductor Material:
1. Provide copper conductors except where aluminum conductors are specifically indicated or permitted for substitution. Conductor sizes indicated are based on copper unless specifically indicated as aluminum. Conductors designated with the abbreviation "AL" indicate aluminum.
a. Substitution of aluminum conductors for copper is permitted, when approved by Owner and authority having jurisdiction, only for the following:
1) Services: Copper conductors size 1/0 AWG and larger.
b. Where aluminum conductors are substituted for copper, comply with the following:
1) Size aluminum conductors to provide, when compared to copper sizes indicated, equivalent or greater ampacity and equivalent or less voltage drop.
2) Increase size of raceways, boxes, wiring gutters, enclosures, etc. as required to accommodate aluminum conductors.
3) Provide aluminum equipment grounding conductor sized according to NFPA 70.
4) Equip electrical distribution equipment with compression lugs for terminating aluminum conductors.
2. Copper Conductors: Soft drawn annealed, 98 percent conductivity, uncoated copper conductors complying with ASTM B3, ASTM B8, or ASTM B787/B787M unless otherwise indicated.
3. Tinned Copper Conductors: Comply with ASTM B33.
E. Minimum Conductor Size:
1. Branch Circuits: 12 AWG.
a. Exceptions:
1) 20 A, 120 V circuits longer than 75 feet: 10 AWG, for voltage drop.
2) 20 A, 120 V circuits longer than 150 feet: 8 AWG, for voltage drop.
3) 20 A, 277 V circuits longer than 150 feet: 10 AWG, for voltage drop.
2. Control Circuits: 14 AWG.
F. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
G. Conductor Color Coding:
1. Color code conductors as called for within the NEC or otherwise required by the authority having jurisdiction. Maintain consistent color coding throughout project.
PART 3 EXECUTION
3.01 EXAMINATION
A. Verify that raceways, boxes, and equipment enclosures are installed and are properly sized to accommodate conductors and cables in accordance with NFPA 70.
3.02 INSTALLATION
A. Circuiting Requirements:
1. Unless dimensioned, circuit routing indicated is diagrammatic.
2. When circuit destination is indicated without specific routing, determine exact routing required.
3. Arrange circuiting to minimize splices.
4. Maintain separation of Class 1, Class 2, and Class 3 remote-control, signaling, and power-limited circuits in accordance with NFPA 70.
5. Maintain separation of wiring for emergency systems in accordance with NFPA 70.
6. Common Neutrals: Unless otherwise indicated, sharing of neutral/grounded conductors among up to three single phase branch circuits of different phases installed in the same raceway is not permitted. Provide dedicated neutral/grounded conductor for each individual branch circuit.
B. Installation in Raceway:
1. Tape ends of conductors and cables to prevent infiltration of moisture and other contaminants.
2. Pull all conductors and cables together into raceway at same time.
3. Do not damage conductors and cables or exceed manufacturer's recommended maximum pulling tension and sidewall pressure.
4. Use suitable wire pulling lubricant where necessary, except when lubricant is not recommended by the manufacturer.
C. Paralleled Conductors: Install conductors of the same length and terminate in the same manner.
D. Secure and support conductors and cables in accordance with NFPA 70 using suitable supports and methods approved by the authority having jurisdiction. Provide independent support from building structure. Do not provide support from raceways, piping, ductwork, or other systems.
1. Installation Above Suspended Ceilings: Do not provide support from ceiling support system. Do not provide support from ceiling grid or allow conductors and cables to lay on ceiling tiles.
2. Installation in Vertical Raceways: Provide supports where vertical rise exceeds permissible limits.
E. Install conductors with a minimum of 12 inches of slack at each outlet.
F. Where conductors are installed in enclosures for future termination by others, provide a minimum of 5 feet of slack.
G. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 8400.
H. Unless specifically indicated to be excluded, provide final connections to all equipment and devices, including those furnished by others, as required for a complete operating system.

SECTION 26 0521 MANUFACTURED WIRING ASSEMBLIES
PART 2 PRODUCTS
1.01 MATERIALS
A. Manufactured Wiring Assemblies - General: Factory assembled cable assemblies with appropriate connector on each end.
1. Lengths and circuit configurations as indicated.
2. Voltage: 120 volts.
B. Accessories: Furnish manufacturer's standard accessories, including cable extenders, distribution tees, and switching assemblies.

SECTION 26 0526
GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS
PART 1 PRODUCTS
1.01 GROUNDING AND BONDING REQUIREMENTS
A. Unless specifically indicated to be excluded, provide all required components, conductors, connectors, conduit, boxes, fittings, supports, accessories, etc. as necessary for a complete grounding and bonding system.
B. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
C. Grounding Electrode System:
1. Provide connection to required and supplemental grounding electrodes indicated to form grounding electrode system.
2. Metal Underground Water Pipe(s):
3. Metal In-Ground Support Structure:
a. Provide connection to metal in-ground support structure that is in direct contact with earth in accordance with NFPA 70.
4. Concrete-Encased Electrode:
5. Ground Ring:
6. Ground Rod Electrode(s):
a. Space electrodes not less than 10 feet from each other and any other ground electrode.
7. Ground Bar: Provide ground bar, separate from service equipment enclosure, for common connection point of grounding electrode system bonding jumpers as permitted in NFPA 70. Connect grounding electrode conductor provided for service-supplied system grounding to this ground bar.
D. Separately Derived System Grounding:
1. Separately derived systems include, but are not limited to:
a. Transformers (except autotransformers such as buck-boost transformers).
b. Uninterruptible power supplies (UPS), when configured as separately derived systems.
c. Generators, when neutral is switched in the transfer switch.
2. Provide grounding electrode conductor to connect derived system grounded conductor to nearest effectively grounded metal building frame. Unless otherwise indicated, make connection at neutral (grounded) bus in source enclosure.
3. Provide bonding jumper to connect derived system grounded conductor to nearest metal building frame and nearest metal water piping in the area served by the derived system, where not already used as a grounding electrode for the derived system. Make connection at same location as grounding electrode conductor connection.
4. Provide system bonding jumper to connect system grounded conductor to equipment ground bus. Make connection at same location as grounding electrode conductor connection. Do not make any other connections between neutral (grounded) conductors and ground on load side of separately derived system disconnect.
5. Where the source and first disconnecting means are in separate enclosures, provide supply-side bonding jumper between source and first disconnecting means.
E. Bonding and Equipment Grounding:
1. Provide bonding for equipment grounding conductors, equipment ground busses, metallic equipment enclosures, metallic raceways and boxes, device grounding terminals, and other normally non-current-carrying conductive materials enclosing electrical conductors/equipment or likely to become energized as indicated and in accordance with NFPA 70.
2. Provide insulated equipment grounding conductor in each feeder and branch circuit raceway. Do not use raceways as sole equipment grounding conductor.
3. Where circuit conductor sizes are increased for voltage drop, increase size of equipment grounding conductor proportionally in accordance with NFPA 70.
4. Provide bonding for interior metal piping systems in accordance with NFPA 70. This includes, but is not limited to:
a. Metal water piping where not already effectively bonded to metal underground water pipe used as grounding electrode.
b. Metal gas piping.
F. Isolated Ground System:
1. Where isolated ground receptacles or other isolated ground connections are indicated, provide separate isolated/insulated equipment grounding conductors.
G. Communications Systems Grounding and Bonding:
1. Provide intersystem bonding termination at service equipment or metering equipment enclosure and at disconnecting means for any additional buildings or structures in accordance with NFPA 70.
1.02 GROUNDING AND BONDING COMPONENTS
A. General Requirements:
1. Provide products listed, classified, and labeled as suitable for the purpose intended.
2. Provide products listed and labeled as complying with UL 467 where applicable.
B. Connectors for Grounding and Bonding:
1. Description: Connectors appropriate for the application and suitable for the conductors and items to be connected; listed and labeled as complying with UL 467.
2. Unless otherwise indicated, use exothermic welded connections for underground, concealed and other inaccessible connections.
C. Unless otherwise indicated, use mechanical connectors, compression connectors, or exothermic welded connections for accessible connections.

SECTION 26 0529
HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS
PART 1 PRODUCTS
1.01 SUPPORT AND ATTACHMENT COMPONENTS
A. General Requirements:
1. Provide all required hangers, supports, anchors, fasteners, fittings, accessories, and hardware as necessary for the complete installation of electrical work.
2. Where support and attachment component types and sizes are not indicated, select in accordance with manufacturer's application criteria as required for the load to be supported. Include consideration for vibration, equipment operation, and shock loads where applicable.
B. Conduit and Cable Supports: Straps, clamps, etc. suitable for the conduit or cable to be supported.
C. Outlet Box Supports: Hangers, brackets, etc. suitable for the boxes to be supported.
D. Metal Channel (Strut) Framing Systems: Factory-fabricated continuous-slot metal channel (strut) and associated fittings, accessories, and hardware required for field-assembly of supports.
E. Hanger Rods: Threaded zinc-plated steel unless otherwise indicated.
F. Anchors and Fasteners:
1. Unless otherwise indicated and where not otherwise restricted, use the anchor and fastener types indicated for the specified applications.
PART 2 EXECUTION
2.01 INSTALLATION
A. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.
B. Unless specifically indicated or approved by Architect, do not provide support from suspended ceiling support system or ceiling grid.
C. Unless specifically indicated or approved by Architect, do not provide support from roof deck.
D. Do not penetrate or otherwise notch or cut structural members without approval of Structural Engineer.

SECTION 26 0533.13
CONDUIT FOR ELECTRICAL SYSTEMS
PART 2 PRODUCTS
1.01 CONDUIT APPLICATIONS
A. Do not use conduit and associated fittings for applications other than as permitted by NFPA 70 and product listing.
B. Unless otherwise indicated and where not otherwise restricted, use the conduit types indicated for the specified applications. Where more than one listed application applies, comply with the most restrictive requirements. Where conduit type for a particular application is not specified, use galvanized steel rigid metal conduit.
C. Underground:
1. Use galvanized steel rigid metal conduit, PVC-coated galvanized steel rigid metal conduit, or rigid PVC conduit.
D. Concealed: Use galvanized steel rigid metal conduit, intermediate metal conduit (IMC), or electrical metallic tubing (EMT).
E. Exposed, Interior, Not Subject to Physical Damage: Use galvanized steel rigid metal conduit, intermediate metal conduit (IMC), or electrical metallic tubing (EMT).
F. Exposed, Exterior: Use galvanized steel rigid metal conduit or intermediate metal conduit (IMC).
G. Connections to Luminaires Above Accessible Ceilings: Use flexible metal conduit.
1. Maximum Length: 6 feet.
H. Connections to Vibrating Equipment:
1. Dry Locations: Use flexible metal conduit.
2. Damp, Wet, or Corrosive Locations: Use liquidtight flexible metal conduit.
3. Maximum Length: 6 feet unless otherwise indicated.
1.02 CONDUIT REQUIREMENTS
A. Existing Work: Where existing conduits are indicated to be reused, they may be reused only where they comply with specified requirements, are free from corrosion, and integrity is verified by pulling a mandrel through them.
B. Provide all conduit, fittings, supports, and accessories required for a complete raceway system.
C. Provide products listed, classified, and labeled as suitable for the purpose intended.
D. Where conduit size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
PART 2 EXECUTION
2.01 INSTALLATION
A. Conduit Routing:
1. Conceal all conduits unless specifically indicated to be exposed.
2. Conduits in the following areas may be exposed, unless otherwise indicated:
a. Electrical rooms.
b. Mechanical equipment rooms.
c. Within joists in areas with no ceiling.
3. Conduits installed underground or embedded in concrete may be routed in the shortest possible manner unless otherwise indicated. Route all other conduits parallel or perpendicular to building structure and surfaces, following surface contours where practical.
B. Conduit Support:
1. Secure and support conduits in accordance with NFPA 70 and Section 26 0529 using suitable supports and methods approved by the authority having jurisdiction.
2. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.
C. Connections and Terminations:
1. Use suitable adapters where required to transition from one type of conduit to another.
2. Provide insulating bushings or insulated throats at all conduit terminations to protect conductors.
3. Secure joints and connections to provide maximum mechanical strength and electrical continuity.
D. Penetrations:
1. Seal interior of conduits entering the building from underground at first accessible point to prevent entry of moisture and gases.
2. Where conduits penetrate waterproof membrane, seal as required to maintain integrity of membrane.
3. Make penetrations for roof-mounted equipment within associated equipment openings and curbs where possible to minimize roofing system penetrations. Where penetrations are necessary, seal as indicated or as required to preserve integrity of roofing system and maintain roof warranty. Include proposed locations of penetrations and methods for sealing with submittals.
4. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 8400.
E. Condensation Prevention: Where conduits cross barriers between areas of potential substantial temperature differential, provide sealing fitting or approved sealing compound at an accessible point near the penetration to prevent condensation.
F. Provide grounding and bonding in accordance with Section 26 0526.

SECTION 26 0533.16
BOXES FOR ELECTRICAL SYSTEMS
PART 2 PRODUCTS
1.01 BOXES
A. General Requirements:
1. Do not use boxes and associated accessories for applications other than as permitted by NFPA 70 and product listing.
2. Provide all boxes, fittings, supports, and accessories required for a complete raceway system and to accommodate devices and equipment to be installed.
3. Provide products listed, classified, and labeled as suitable for the purpose intended.
4. Where box size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
5. Provide grounding terminals within boxes where equipment grounding conductors terminate.
B. Outlet and Device Boxes Up to 100 cubic inches, Including Those Used as Junction and Pull Boxes:
1. Use raised covers suitable for the type of wall construction and device configuration where required.
2. Use shallow boxes where required by the type of wall construction.
3. Boxes for Supporting Luminaires and Ceiling Fans: Listed as suitable for the type and weight of load to be supported; furnished with fixture stud to accommodate mounting of luminaire where required.
4. Boxes for Ganged Devices: Use multigang boxes of single-piece construction. Do not use field-connected gangable boxes unless specifically indicated or permitted.
5. Minimum Box Size, Unless Otherwise Indicated:
a. Wiring Devices (Other Than Communications Systems Outlets): 4 inch square by 1-1/2 inch deep (100 by 38 mm) trade size.
C. Cabinets and Enclosures, Including Junction and Pull Boxes Larger Than 100 cubic inches:
1. Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E, or UL 508A.
2. NEMA 250 Environment Type, Unless Otherwise Indicated:
3. Junction and Pull Boxes Larger Than 100 cubic inches:
a. Provide screw-cover or hinged-cover enclosures unless otherwise indicated.
D. Floor Boxes:
1. Description: Floor boxes compatible with floor box service fittings provided in accordance with Section 26 2726; with partitions to separate multiple services; furnished with all components, adapters, and trims required for complete installation.
PART 1 EXECUTION
2.01 INSTALLATION
A. Box Locations:
1. Locate boxes to be accessible. Provide access panels in accordance with Section 08 3100 as required where approved by the Architect.
2. Do not install flush-mounted boxes on opposite sides of walls back-to-back. Provide minimum 6 inches horizontal separation unless otherwise indicated.
3. Fire Resistance Rated Walls: Install flush-mounted boxes such that the required fire resistance will not be reduced.
B. Install boxes plumb and level.
C. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 8400.
D. Close unused box openings.
E. Install blank wall plates on junction boxes and on outlet boxes with no devices or equipment installed or designated for future use.

SECTION 26 0553
IDENTIFICATION FOR ELECTRICAL SYSTEMS
PART 1 PRODUCTS
1.01 IDENTIFICATION REQUIREMENTS
A. Identification for Equipment:
1. Use identification nameplate to identify each piece of electrical distribution and control equipment and associated sections, compartments, and components.
2. Service Equipment:
a. Use identification nameplate to identify each service disconnecting means.
b. For buildings or structures supplied by more than one service, or any combination of branch circuits, feeders, and services, use identification nameplate or means of identification acceptable to authority having jurisdiction at each service disconnecting means to identify all other services, feeders, and branch circuits supplying that building or structure. Verify format and descriptions with authority having jurisdiction.
3. Available Fault Current Documentation: Use identification label to identify the available fault current and date calculations were performed at locations requiring documentation by NFPA 70 including but not limited to the following.
a. Service equipment.
b. Industrial control panels.
c. Motor control centers.
d. Elevator control panels.
e. Industrial machinery.
B. Identification for Conductors and Cables:
1. Color Coding for Power Conductors 600 V and Less: Comply with Section 26 0519.
1.02 IDENTIFICATION NAMEPLATES AND LABELS
A. Identification Labels:
1. Materials: Use self-adhesive laminated plastic labels; UV, chemical, water, heat, and abrasion resistant.
2. Text: Use factory pre-printed or machine-printed text. Do not use handwritten text unless otherwise indicated.
1.03 UNDERGROUND WARNING TAPE
A. Materials: Use non-detectable type polyethylene tape suitable for direct burial, unless otherwise indicated.
B. Exception: Use foil-backed detectable type tape where required by serving utility or where directed by Owner.
SECTION 26 0583
WIRING CONNECTIONS
PART 1 PRODUCTS
1.01 MATERIALS
A. Cords and Caps: NEMA WD 6; match receptacle configuration at outlet provided for equipment.
1. Colors: Comply with NEMA WD 1.
2. Cord Construction: NFPA 70, Type SJO, multiconductor flexible cord with identified equipment grounding conductor, suitable for use in damp locations.
3. Size: Suitable for connected load of equipment, length of cord, and rating of branch circuit overcurrent protection.
1.02 EQUIPMENT CONNECTIONS
A. As indicated in equipment schedules on drawings or as indicated on plans.:
PART 2 EXECUTION
2.01 ELECTRICAL CONNECTIONS
A. Make conduit connections to equipment using flexible conduit. Use liquidtight flexible conduit with watertight connectors in damp or wet locations.
B. Connect heat producing equipment using wire and cable with insulation suitable for temperatures encountered.
C. Provide receptacle outlet to accommodate connection with attachment plug.
D. Provide cord and cap where field-supplied attachment plug is required.
E. Install suitable strain-relief clamps and fittings for cord connections at outlet boxes and equipment connection boxes.
F. Install disconnect switches, controllers, control stations, and control devices to complete equipment wiring requirements.
G. Install interconnecting conduit and wiring between devices and equipment to complete equipment wiring requirements.
H. Coolers and Freezers: Cut and seal conduit openings in freezer and cooler walls, floor, and ceilings.

SECTION 26 0919
ENCLOSED CONTACTORS
PART 2 PRODUCTS
1.01 GENERAL PURPOSE CONTACTORS
A. Description: NEMA ICS 2, AC general purpose magnetic contactor.
1.02 LIGHTING CONTACTORS
A. Description: NEMA ICS 2, magnetic lighting contactor.
B. Configuration: Electrically held.
C. Coil operating voltage: 120 volts, 60 Hertz.
D. Poles: As required to match circuit configuration and control function.
E. Contact Rating: Match branch circuit overcurrent protection, considering derating for continuous loads.
F. Enclosure: NEMA ICS 6, Type 1.

SECTION 26 0923
LIGHTING CONTROL DEVICES
PART 1 PRODUCTS
1.01 LIGHTING CONTROL DEVICES - GENERAL REQUIREMENTS
A. Provide products listed, classified, and labeled as suitable for the purpose intended.
1.02 OCCUPANCY SENSORS
A. All Occupancy Sensors:
1. Description: Factory-assembled commercial specification grade devices for indoor use capable of sensing both major motion, such as walking, and minor motion, such as small-desktop level movements, according to published coverage areas, for automatic control of load indicated.
2. Sensor Technology:
a. Passive Infrared (PIR) Occupancy Sensors: Designed to detect occupancy by sensing movement of thermal energy between zones.
b. Ultrasonic Occupancy Sensors: Designed to detect occupancy by sensing frequency shifts in emitted and reflected inaudible sound waves.
c. Passive Infrared/Ultrasonic Dual Technology Occupancy Sensors: Designed to detect occupancy using a combination of both passive infrared and ultrasonic technologies.
d. Passive Infrared/Acoustic Dual Technology Occupancy Sensors: Designed to detect occupancy using a combination of both passive infrared and audible sound sensing technologies.
3. Provide LED to visually indicate motion detection with separate color LEDs for each sensor type in dual technology units.
4. Operation: Unless otherwise indicated, occupancy sensor to turn load on when occupant presence is detected and to turn load off when no occupant presence is detected during an adjustable turn-off delay time interval.
5. Compatibility (Non-Dimming Sensors): Suitable for controlling incandescent lighting, low-voltage lighting with electronic and magnetic transformers, fluorescent lighting with electronic and magnetic ballasts, and fractional motor loads, with no minimum load requirements.
B. Wall Switch Occupancy Sensors:
1. All Wall Switch Occupancy Sensors:
a. Description: Occupancy sensors designed for installation in standard wall box at standard wall switch mounting height with a field of view of 180 degrees, integrated manual control capability, and no leakage current to load in off mode.
b. Manual-On Override Control: When used to turn off load while in automatic-on mode, unit to revert back to automatic mode after no occupant presence is detected during the delayed-off time interval.
C. Ceiling Mounted Occupancy Sensors:
1. All Ceiling Mounted Occupancy Sensors:
a. Description: Low profile occupancy sensors designed for ceiling installation.
D. Directional Occupancy Sensors:
1. All Directional Occupancy Sensors: Designed for wall or ceiling mounting, with integral swivel for field adjustment of motion detection coverage.
E. Luminaire Mounted Occupancy Sensors: Designed for direct luminaire installation and control, suitable for use with specified luminaires.
1. High Bay Luminaire Mounted Occupancy Sensors: Passive infrared (PIR) type with a field of view of 360 degrees unless otherwise indicated.
F. Power Packs for Low Voltage Occupancy Sensors:
1. Description: Plenum rated, self-contained low voltage class 2 transformer and relay compatible with specified low voltage occupancy sensors for switching of line voltage loads.
2. Provide quantity and configuration of power and slave packs with all associated wiring and accessories as required to control the load indicated on drawings.
1.03 TIME SWITCHES
A. Digital Electronic Time Switches:
1. Description: Factory-assembled solid state programmable controller with LCD display, listed and labeled as complying with UL 916 or UL 917.
2. Schedule Capacity: Not less than 16 programmable on/off operations.
3. Provide automatic daylight savings time and leap year compensation.
4. Provide power outage backup to retain programming and maintain clock.
5. Manual override: Capable of overriding current schedule both permanently and temporarily until next scheduled event.
1.04 OUTDOOR PHOTO CONTROLS
A. Stem-Mounted Outdoor Photo Controls:
1. Description: Direct-wired photo control unit with threaded conduit mounting stem and field-adjustable swivel base, listed and labeled as complying with UL 773A.
B. Button Type Outdoor Photo Controls:
1. Description: Direct-wired photo control unit complying with ANSI C136.24 with weatherproof gasketed wall plate where required or indicated, listed and labeled as complying with UL 773A.
1.05 DAYLIGHTING CONTROLS
A. System Description: Control system consisting of photo sensors and compatible control modules and power packs, contactors, or relays as required for automatic control of load indicated according to available natural light; capable of integrating with occupancy sensors and manual override controls.
PART 2 EXECUTION
2.01 INSTALLATION
A. Coordinate locations of outlet boxes provided under Section 26 0533.16 as required for installation of lighting control devices provided under this section.
B. Install lighting control devices in accordance with manufacturer's instructions.
C. Outdoor Photo Control Locations:
1. Where possible, locate outdoor photo controls with photo sensor facing north. If north facing photo sensor is not possible, install with photo sensor facing east, west, or down.
2. Locate outdoor photo controls so that photo sensors do not face artificial light sources, including light sources controlled by the photo control itself.
2.02 FIELD QUALITY CONTROL
A. Test occupancy sensors to verify proper operation, including time delays and ambient light thresholds where applicable. Verify optimal coverage for entire room or area. Record test results in written report to be included with submittals.
B. Test time switches to verify proper operation.
C. Test outdoor photo controls to verify proper operation, including time delays where applicable.
D. Test daylighting controls to verify proper operation, including light level measurements and time delays where applicable. Record test results in written report to be included with submittals.
E. Correct wiring deficiencies and replace damaged or defective lighting control devices.
2.03 ADJUSTING
A. Adjust occupancy sensor settings to minimize undesired activations while optimizing energy savings, and to achieve desired function as indicated or as directed by Architect.
B. Adjust position of directional occupancy sensors and outdoor motion sensors to achieve optimal coverage as required.
C. Where indicated or as directed by Architect, install factory masking material or adjust integral blinders on passive infrared (PIR) and dual technology occupancy sensor lenses to block undesired motion detection.
D. Adjust time switch settings to achieve desired operation schedule as indicated or as directed by Architect. Record settings in written report to be included with submittals.
E. Adjust daylighting controls under optimum lighting conditions after all room finishes, furniture, and window treatments have been installed to achieve desired operation as indicated or as directed by Architect. Record settings in written report to be included with submittals. Readjust controls calibrated prior to installation of final room finishes, furniture, and window treatments that do not function properly as determined by Architect.

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Project No.: 25.0991
Drawn By: EAH
Date Issue
03-30-2026 BID & PERMIT

E5.1

ELECTRICAL SPECIFICATIONS

SECTION 26 2100
LOW-VOLTAGE ELECTRICAL SERVICE ENTRANCE
PART 1 PRODUCTS
1.01 ELECTRICAL SERVICE REQUIREMENTS
A. Provide new electrical service consisting of all required conduits, conductors, equipment, metering provisions, supports, accessories, etc. as necessary for connection between Utility Company point of supply and service entrance equipment.
a. Products Furnished by Contractor: Comply with Utility Company requirements.

SECTION 26 2200
LOW-VOLTAGE TRANSFORMERS
PART 1 PRODUCTS
1.01 MANUFACTURERS
A. ABB/GE: www.geindustrial.com/#sle.
B. Eaton Corporation; www.eaton.com.
C. Schneider Electric; Square D Products: www.schneider-electric.us/#sle.
D. Siemens Industry, Inc; www.usa.siemens.com/#sle.
1.02 TRANSFORMERS - GENERAL REQUIREMENTS
A. Description: Factory-assembled, dry type transformers for 60 Hz operation designed and manufactured in accordance with NEMA ST 20 and listed, classified, and labeled as suitable for the purpose intended.
B. Core: High grade, non-aging silicon steel with high magnetic permeability and low hysteresis and eddy current losses. Keep magnetic flux densities substantially below saturation point, even at 10 percent primary overvoltage. Tightly clamp core laminations to prevent plate movement and maintain consistent pressure throughout core length.
1.03 GENERAL PURPOSE TRANSFORMERS
A. Description: Self-cooled, two winding transformers listed and labeled as complying with UL 506 or UL 1561; ratings as indicated on the drawings.
B. Insulation System and Allowable Average Winding Temperature Rise:
1. Less than 15 kVA: Class 180 degrees C insulation system with 115 degrees C average winding temperature rise.
2. 15 kVA and Larger: Class 220 degrees C insulation system with 150 degrees C average winding temperature rise.
C. Coil Conductors: Continuous aluminum windings with terminations brazed or welded.
D. Winding Taps:
1. 3 kVA through 15 kVA: Two 5 percent full capacity primary taps below rated voltage.
2. 15 kVA through 300 kVA: Two 2.5 percent full capacity primary taps above and four 2.5 percent full capacity primary taps below rated voltage.
3. 500 kVA and Larger: Two 2.5 percent full capacity primary taps above and two 2.5 percent full capacity primary taps below rated voltage.
E. Energy Efficiency: Comply with 10 CFR 431, Subpart K.
F. Mounting Provisions:
1. Less than 15 kVA: Suitable for wall mounting.
2. 15 kVA through 75 kVA: Suitable for wall, floor, or trapeze mounting.
a. Larger than 75 kVA: Suitable for floor mounting.

SECTION 26 2416
PANELBOARDS
PART 1 PRODUCTS
1.01 MANUFACTURERS
A. ABB/GE; www.geindustrial.com/#sle.
B. Eaton Corporation; www.eaton.com/#sle.
C. Schneider Electric; Square D Products; www.schneider-electric.us/#sle.
D. Siemens Industry, Inc; www.usa.siemens.com/#sle.
1.02 PANELBOARDS - GENERAL REQUIREMENTS
A. Short Circuit Current Rating:
1. Provide panelboards with listed short circuit current rating as indicated on the drawings.
2. Listed series ratings are acceptable, except where not permitted by motor contribution according to NFPA 70.
3. Label equipment utilizing series ratings as required by NFPA 70.
B. Panelboards Used for Service Entrance: Listed and labeled as suitable for use as service equipment according to UL 869A.
C. Mains: Configure for top or bottom incoming feed as indicated or as required for the installation.
D. Bussing: Sized in accordance with UL 67 temperature rise requirements.
1. Provide solidly bonded equipment ground bus in each panelboard, with a suitable lug for each feeder and branch circuit equipment grounding conductor.
2. Provide separate isolated/insulated ground bus where indicated or where isolated grounding conductors are provided.
E. Conductor Terminations: Suitable for use with the conductors to be installed.
F. Enclosures: Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E.
1. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:
2. Boxes: Galvanized steel unless otherwise indicated.
a. Provide wiring gutters sized to accommodate the conductors to be installed.
3. Lockable Doors: All locks keyed alike unless otherwise indicated.
G. Future Provisions: Prepare all unused spaces for future installation of devices including bussing, connectors, mounting hardware and all other required provisions.
H. Multi-Section Panelboards: Provide enclosures of the same height, with feed-through lugs or sub-feed lugs and feeders as indicated or as required to interconnect sections.
I. Load centers are not acceptable.
J. Provide the following features and accessories where indicated or where required to complete installation:
1. Feed-through lugs.
2. Sub-feed lugs.
1.03 OVERCURRENT PROTECTIVE DEVICES
A. Molded Case Circuit Breakers:
1. Description: Quick-make, quick-break, over center toggle, trip-free, trip-indicating circuit breakers listed and labeled as complying with UL 489, and complying with FS W-C-375 where applicable; ratings, configurations, and features as indicated on the drawings.
2. Interrupting Capacity
a. Provide circuit breakers with interrupting capacity as required to provide the short circuit current rating indicated.
b. Fully Rated Systems: Provide circuit breakers with interrupting capacity not less than the short circuit current rating indicated.
3. Multi-Pole Circuit Breakers: Furnish with common trip for all poles.
4. Provide the following circuit breaker types where indicated:
a. Ground Fault Circuit Interrupter (GFCI) Circuit Breakers: Listed as complying with UL 943, class A for protection of personnel.
b. Ground Fault Equipment Protection Circuit Breakers: Designed to trip at 30 mA for protection of equipment.
c. Arc-Fault Circuit Interrupter (AFCI) Circuit Breakers: Combination type listed as complying with UL 1699.
d. 100 Percent Rated Circuit Breakers: Listed for application within the panelboard where installed at 100 percent of the continuous current rating.
e. Current Limiting Circuit Breakers: Without using fusible elements, designed to limit the let-through energy to a value less than the energy of a one-half cycle wave of the symmetrical prospective current when operating within its current limiting range.
5. Do not use tandem circuit breakers.
6. Do not use handle ties in lieu of multi-pole circuit breakers.
7. Provide multi-pole circuit breakers for multi-wire branch circuits as required by NFPA 70.
8. Provide the following features and accessories where indicated or where required to complete installation:
a. Shunt Trip: Provide coil voltage as required for connection to indicated trip actuator.
b. Handle Pad-Lock Provision: For locking circuit breaker handle in OFF position.
PART 2 EXECUTION
2.01 INSTALLATION
A. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
B. Mount panelboards such that the highest position of any operating handle for circuit breakers or switches does not exceed 79 inches above the floor or working platform.
C. Provide minimum of six spare 1 inch trade size conduits out of each flush-mounted panelboard stubbed into accessible space above ceiling and below floor.
D. Install all field-installed branch devices, components, and accessories.
E. Provide filler plates to cover unused spaces in panelboards.
F. Provide circuit breaker lock-on devices to prevent unauthorized personnel from de-energizing essential loads where indicated. Also provide for the following:
1. Emergency and night lighting circuits.
2. Fire detection and alarm circuits.
3. Communications equipment circuits.
4. Intrusion detection and access control system circuits.
c. Video surveillance system circuits.

SECTION 26 2723
INDOOR SERVICE POLES
PART 1 PRODUCTS
1.01 UTILITY COLUMN COMPONENTS
A. Main Body: Steel.
B. Cover Plates: Steel.
C. Convenience Receptacle Configuration: NEMA WD 6; Type 5-15. Furnish 4 per column.
D. Telephone Connector: Modular, 4-position 4-conductor jack. Furnish 2 per column.
E. Data Communications Connector: Modular, 8-position, 8-conductor jack. Furnish 1 per column.
F. Foot: Suitable for floor finish as indicated.
G. Provide concealed top clamp to fasten pole to inverted "T" grid ceiling suspension member.
1.02 ACCESSORIES
A. Trim plates for closing ceiling opening.
B. Flexible cable assembly with connector for branch circuit connections.
1.03 FABRICATION
A. Wire utility column with 12 AWG copper conductor to outlet box attached to top of pole. Allow 6 inch leads for connection to branch circuit.
B. Allow for installation of 25 pair telephone cable. Size for one cable(s) with connectors. Furnish knockouts for connectors.
C. Allow for installation of 25 pair communications data cable. Size for one cable(s) with connectors. Furnish knockouts for connectors.
D. Provide full-sized opening at top of pole.
E. Finish: Gray.
PART 2 EXECUTION
2.01 EXAMINATION
A. Verify that installation of ceiling suspension system is complete.
B. Verify that floor covering installation is complete.
C. Verify branch circuit wiring installation is completed, tested, in proper location, and ready for connection to indoor utility columns.
D. Verify telephone raceway installation is completed, in proper location, and ready for connection to indoor utility columns.
E. Verify data communication raceway installation is completed, in proper location, and ready for connection to indoor utility columns.
2.02 INSTALLATION
A. Install utility columns plumb and fasten supports to structure.
B. Make wiring connections to branch circuit outlets using flexible conduit under provisions of Section 26 0533.13.
C. Bond equipment grounding conductor and body of pole to branch circuit equipment grounding conductor.
D. Neatly cut openings in ceiling panels. Install trim plate.

SECTION 26 2726 WIRING DEVICES
PART 1 PRODUCTS
1.01 WIRING DEVICE APPLICATIONS
A. Provide wiring devices suitable for intended use and with ratings adequate for load served.
B. For single receptacles installed on an individual branch circuit, provide receptacle with ampere rating not less than that of the branch circuit.
C. Provide weather resistant GFCI receptacles with specified weatherproof covers for receptacles installed outdoors or in damp or wet locations.
D. Provide tamper resistant receptacles for receptacles installed in dwelling units.
E. Provide GFCI protection for receptacles installed within 6 feet of sinks.
F. Provide GFCI protection for receptacles installed in kitchens.
G. Provide GFCI protection for receptacles serving electric drinking fountains.
H. Provide isolated ground receptacles for receptacles serving computers and electronic cash registers.
1.02 WALL SWITCHES
A. Wall Switches - General Requirements: AC only, quiet operating, general-use snap switches with silver alloy contacts, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 20 and where applicable, FS W-S-896; types as indicated on the drawings.
1. Wiring Provisions: Terminal screws for side wiring and screw actuated binding clamp for back wiring with separate ground terminal screw.
B. Standard Wall Switches: Commercial specification grade, 20 A, 120/277 V with standard toggle type switch actuator and maintained contacts; single pole single throw, double pole single throw, three way, or four way as indicated on the drawings.
C. Momentary Contact Wall Switches: Commercial specification grade, 20 A, 120/277 V with toggle type three position switch actuator and momentary contacts; single pole double throw, off with switch actuator in center position.
1.03 WALL DIMMERS
A. Wall Dimmers - General Requirements: Solid-state with continuous full-range even control following square law dimming curve, integral radio frequency interference filtering, power failure preset memory, air gap switch accessible without removing wall plate, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 1472; types and ratings suitable for load controlled as indicated on the drawings.
B. Provide accessory wall switches to match dimmer appearance when installed adjacent to each other.
1.04 FAN SPEED CONTROLLERS
A. Description: 120 V AC, solid-state, full-range variable speed, slide control type with separate on/off switch, with integral radio frequency interference filtering, fan noise elimination circuitry, power failure preset memory, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 1917.
1.05 RECEPTACLES
A. Receptacles - General Requirements: Self-grounding, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 498, and where applicable, FS W-C-596; types as indicated on the drawings.
1. Wiring Provisions: Terminal screws for side wiring or screw actuated binding clamp for back wiring with separate ground terminal screw.
B. Convenience Receptacles:
1. Standard Convenience Receptacles: Commercial specification grade, 20A, 125V, NEMA 5-20R; single or duplex as indicated on the drawings.
2. Isolated Ground Convenience Receptacles: Commercial specification grade, 20A, 125V, NEMA 5-20R, with ground contacts isolated from mounting strap; isolated ground triangle mark on device face; single or duplex as indicated on the drawings.
3. Weather Resistant Convenience Receptacles: Commercial specification grade, 20A, 125V, NEMA 5-20R, listed and labeled as weather resistant type complying with UL 498 Supplement SE; suitable for installation in damp or wet locations; single or duplex as indicated on the drawings.
4. Tamper Resistant Convenience Receptacles: Commercial specification grade, 20A, 125V, NEMA 5-20R, listed and labeled as tamper resistant type; single or duplex as indicated on the drawings.
C. GFCI Receptacles:
1. GFCI Receptacles - General Requirements: Self-testing, with feed-through protection and light to indicate ground fault tripped condition and loss of protection; listed as complying with UL 943, class A.
1.06 WALL PLATES
A. Wall Plates: Comply with UL 514D.
1. Configuration: One piece cover as required for quantity and types of corresponding wiring devices.
B. Weatherproof Covers for Wet Locations: Gasketed, cast aluminum, with hinged lockable cover and corrosion-resistant screws; listed as suitable for use in wet locations while in use with attachment plugs connected and identified as extra-duty type.
1.07 FLOOR BOX SERVICE FITTINGS
A. Description: Service fittings compatible with floor boxes provided under Section 26 0533.16 with components, adapters, and trims required for complete installation.
1.08 POKE-THROUGH ASSEMBLIES
A. Description: Assembly comprising floor service fitting, poke-through component, fire stops and smoke barriers, and junction box for conduit termination; fire rating listed to match fire rating of floor and suitable for floor thickness where installed.
PART 2 EXECUTION
2.01 EXAMINATION
A. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate devices and conductors in accordance with NFPA 70.
2.02 PREPARATION
A. Provide extension rings to bring outlet boxes flush with finished surface.
2.03 INSTALLATION
A. Coordinate locations of outlet boxes provided under Section 26 0533.16 as required for installation of wiring devices provided under this section.
1. Where multiple receptacles, wall switches, or wall dimmers are installed at the same location and at the same mounting height, gang devices together under a common wall plate.
2. Locate wall switches on strike side of door with edge of wall plate 3 inches from edge of door frame. Where locations are indicated otherwise, notify Architect to obtain direction prior to proceeding with work.
B. Where required, connect wiring devices using pigtails not less than 6 inches long. Do not connect more than one conductor to wiring device terminals.
C. For isolated ground receptacles, connect wiring device grounding terminal only to identified branch circuit isolated equipment grounding conductor. Do not connect grounding terminal to outlet box or normal branch circuit equipment grounding conductor.
D. Provide GFCI receptacles with integral GFCI protection at each location indicated. Do not use feed-through wiring to protect downstream devices.
E. Do not share neutral conductor on branch circuits utilizing wall dimmers.
F. Install vertically mounted receptacles with grounding pole on top and horizontally mounted receptacles with grounding pole on left.
G. Install blank wall plates on junction boxes and on outlet boxes with no wiring devices installed or designated for future use.

SECTION 26 2813 FUSES
PART 1 PRODUCTS
1.01 APPLICATIONS
A. Service Entrance:
1. Fusible Switches up to 600 Amperes: Class RK1, time-delay.
2. Fusible Switches Larger Than 600 Amperes: Class L, time-delay.
B. Feeders:
1. Fusible Switches up to 600 Amperes: Class RK1, time-delay.
2. Fusible Switches Larger Than 600 Amperes: Class L, time-delay.
C. General Purpose Branch Circuits: Class RK1, time-delay.

SECTION 26 5100 INTERIOR LIGHTING
PART 1 GENERAL
1.01 ADMINISTRATIVE REQUIREMENTS
A. Coordination:
1. Coordinate the installation of luminaires with mounting surfaces installed under other sections or by others. Coordinate the work with placement of supports, anchors, etc. required for mounting. Coordinate compatibility of luminaires and associated trims with mounting surfaces at installed locations.
2. Coordinate the placement of luminaires with structural members, ductwork, piping, equipment, diffusers, fire suppression system components, and other potential conflicts installed under other sections or by others.
3. Coordinate the placement of exit signs with furniture, equipment, signage or other potential obstructions to visibility installed under other sections or by others.
4. Notify Architect of any conflicts or deviations from Contract Documents to obtain direction prior to proceeding with work.
1.02 SUBMITTALS
A. Shop Drawings:
1. Provide photometric calculations and comparative pricing where luminaires are proposed for substitution upon request.
B. Product Data: Provide manufacturer's standard catalog pages and data sheets including detailed information on luminaire construction, dimensions, ratings, finishes, mounting requirements, listings, service conditions, photometric performance, installed accessories, and ceiling compatibility; include model number nomenclature clearly marked with all proposed features.
PART 2 PRODUCTS
2.01 LUMINAIRE TYPES
A. Furnish products as indicated in luminaire schedule included on the drawings.
B. Substitutions: Equivalent products, except where individual luminaire types are designated with substitutions not permitted. Submit comparative pricing with all fixture substitutions..
2.02 LUMINAIRES
A. Manufacturers:
1. Acuity Brands, Inc: www.acuitybrands.com/#sle.
2. Cooper Lighting, a division of Cooper Industries: www.cooperindustries.com/#sle.
3. Hubbell Lighting, Inc: www.hubbelllighting.com/#sle.
4. Philips Lighting North America Corporation; www.lightingproducts.philips.com/#sle.
B. Provide products listed, classified, and labeled as suitable for the purpose intended.
C. Unless otherwise indicated, provide complete luminaires including lamp(s) and all sockets, ballasts, reflectors, lenses, housings and other components required to position, energize and protect the lamp and distribute the light.
D. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, hardware, supports, trims, accessories, etc. as necessary for a complete operating system.
E. Provide products suitable to withstand normal handling, installation, and service without any damage, distortion, corrosion, fading, discoloring, etc.
F. Hazardous (Classified) Location Luminaires: Listed and labeled as complying with UL 844 for the classification of the installed location.
G. LED Luminaires:
Tested in accordance with IES LM-79 and IES LM-80.
H. Track Lighting Systems: Provide track compatible with specified track heads, with all connectors, power feed fittings, dead ends, hangers and canopies as necessary to complete installation.
I. Luminaires Mounted in Continuous Rows: Provide quantity of units required for length indicated, with all accessories required for joining and aligning.
2.03 EMERGENCY LIGHTING UNITS
A. Manufacturers:
1. Acuity Brands, Inc: www.acuitybrands.com/#sle.
2. Cooper Lighting, a division of Cooper Industries; www.cooperindustries.com/#sle.
3. Hubbell Lighting, Inc: www.hubbelllighting.com/#sle.
4. Substitutions: See Section 01 6000 - Product Requirements.
B. Description: Emergency lighting units complying with NFPA 101 and all applicable state and local codes, and listed and labeled as complying with UL 924.
C. Operation: Upon interruption of normal power source or brownout condition exceeding 20 percent voltage drop from nominal, solid-state control automatically switches connected lamps to integral battery power for minimum of 90 minutes of rated emergency illumination, and automatically recharges battery upon restoration of normal power source.
D. Battery:
1. Sealed maintenance-free lead calcium unless otherwise indicated.
2. Size battery to supply all connected lamps, including emergency remote heads where indicated.
E. Diagnostics: Provide power status indicator light and accessible integral test switch to manually activate emergency operation.
F. Provide low-voltage disconnect to prevent battery damage from deep discharge.
G. Self-Diagnostics: Provide units that self-monitor functionality and automatically perform testing required by NFPA 101 where indicated; provide indicator light(s) to report test and diagnostic status.
2.04 EXIT SIGNS
A. Manufacturers - Powered and Self-Luminous Signs:
1. Acuity Brands, Inc: www.acuitybrands.com/#sle.
2. Cooper Lighting, a division of Cooper Industries; www.cooperindustries.com/#sle.
3. Hubbell Lighting, Inc; www.hubbelllighting.com/#sle.
B. Description: Internally illuminated exit signs with LEDs unless otherwise indicated; complying with NFPA 101 and all applicable state and local codes, and listed and labeled as complying with UL 924.
1. Number of Faces: Single or double as indicated or as required for the installed location.
2. Directional Arrows: As indicated or as required for the installed location.
C. Self-Powered Exit Signs:
1. Operation: Upon interruption of normal power source or brownout condition exceeding 20 percent voltage drop from nominal, solid-state control automatically switches connected lamps to integral battery power for minimum of 90 minutes of rated emergency illumination, and automatically recharges battery upon restoration of normal power source.
2. Battery: Sealed maintenance-free nickel cadmium unless otherwise indicated.
3. Diagnostics: Provide power status indicator light and accessible integral test switch to manually activate emergency operation.
4. Provide low-voltage disconnect to prevent battery damage from deep discharge.
5. Self-Diagnostics: Provide units that self-monitor functionality and automatically perform testing required by NFPA 101 where indicated; provide indicator light(s) to report test and diagnostic status.
D. Accessories:
1. Provide compatible accessory high impact polycarbonate vandal shields where indicated.
2. Provide compatible accessory wire guards where indicated.
2.05 BALLASTS AND DRIVERS
A. Manufacturers:
1. General Electric Company/GE Lighting: www.gelighting.com/#sle.
2. Lutron Electronics Company, Inc; www.lutron.com/#sle.
3. OSRAM Sylvania, Inc; www.osram.us/ds/#sle.
4. Philips Lighting North America Corporation; www.usa.lighting.philips.com/#sle.
5. Where a specific manufacturer or model is indicated elsewhere in the luminaire schedule or on the drawings, substitutions are not permitted unless explicitly indicated.
B. Ballasts/Drivers - General Requirements:
1. Provide ballasts containing no polychlorinated biphenyls (PCBs).
2. Minimum Efficiency/Efficacy: Provide ballasts complying with all current applicable federal and state ballast efficiency/efficacy standards.
C. Dimmable LED Drivers:
1. Dimming Range: Continuous dimming from 100 percent to five percent relative light output unless dimming capability to lower level is indicated, without flicker.
2. Control Compatibility: Fully compatible with the dimming controls to be installed.

2.06 LAMPS
A. Manufacturers:
1. General Electric Company/GE Lighting; www.gelighting.com/#sle.
2. Osram Sylvania; www.sylvania.com/#sle.
3. Substitutions: See Section 01 6000 - Product Requirements.
4. Manufacturer Limitations: Where possible, provide lamps produced by a single manufacturer.
5. Where a specific manufacturer or model is indicated elsewhere in the luminaire schedule or on the drawings, substitutions are not permitted unless explicitly indicated.
B. Lamps - General Requirements:
1. Unless explicitly excluded, provide new, compatible, operable lamps in each luminaire.
2. Verify compatibility of specified lamps with luminaires to be installed. Where lamps are not specified, provide lamps per luminaire manufacturer's recommendations.
3. Minimum Efficiency: Provide lamps complying with all current applicable federal and state lamp efficiency standards.
4. Color Temperature Consistency: Unless otherwise indicated, for each type of lamp furnish products which are consistent in perceived color temperature. Replace lamps that are determined by the Architect to be inconsistent in perceived color temperature.

2.07 LED RETROFIT LUMINAIRE CONVERSION KITS
A. Description: Light-emitting diode (LED) retrofit luminaire conversion kits, including but not limited to LED lamps and arrays, control modules, drivers, power supplies, wiring, lampholders, brackets, wire connectors, reflectors, and diffusers, intended for replacement of existing light sources in existing luminaires; listed as complying with UL 1598C; suitable for installation in luminaire to be converted.
PART 3 EXECUTION
3.01 INSTALLATION
A. Coordinate locations of outlet boxes provided under Section 26 0533.16 as required for installation of luminaires provided under this section.
B. Install products in accordance with manufacturer's instructions.
C. Install luminaires securely, in a neat and workmanlike manner, as specified in NECA 500 (commercial lighting) and NECA 502 (industrial lighting).
D. Provide required support and attachment in accordance with Section 26 0529.
E. Install luminaires plumb and square and aligned with building lines and with adjacent luminaires.
F. Suspended Ceiling Mounted Luminaires:
1. Do not use ceiling tiles to bear weight of luminaires.
2. Do not use ceiling support system to bear weight of luminaires unless ceiling support system is certified as suitable to do so.
3. Secure lay-in luminaires to ceiling support channels using listed safety clips at four corners.
4. See appropriate Division 9 section where suspended grid ceiling is specified for additional requirements.
G. Recessed Luminaires:
1. Install trims tight to mounting surface with no visible light leakage.
2. Non-IC Rated Luminaires: Maintain required separation from insulation and combustible materials according to listing.
3. Luminaires Recessed in Fire-Rated Ceilings: Install using accessories and firestopping materials to meet regulatory requirements for fire rating.
H. Suspended Luminaires:
1. Unless otherwise indicated, specified mounting heights are to bottom of luminaire.
2. Install using the suspension method indicated, with support lengths and accessories as required for specified mounting height.
3. Provide minimum of two supports for each luminaire equal to or exceeding 4 feet nominal length, with no more than 4 feet between supports.
4. Install canopies tight to mounting surface.
5. Unless otherwise indicated, support pendants from swivel hangers.
I. Wall-Mounted Luminaires: Unless otherwise indicated, specified mounting heights are to center of luminaire.
J. Install accessories furnished with each luminaire.
K. Bond products and metal accessories to branch circuit equipment grounding conductor.
L. Emergency Lighting Units:
1. Unless otherwise indicated, connect unit to unswitched power from same circuit feeding normal lighting in same room or area. Bypass local switches, contactors, or other lighting controls.
2. Install lock-on device on branch circuit breaker serving units.
M. Exit Signs:
1. Unless otherwise indicated, connect unit to unswitched power from same circuit feeding normal lighting in same room or area. Bypass local switches, contactors, or other lighting controls.
2. Install lock-on device on branch circuit breaker serving units.
N. Remote Ballasts: Install in accessible location as indicated or as required to complete installation, using conductors per manufacturer's recommendations not exceeding manufacturer's recommended maximum conductor length to luminaire.
O. Identify luminaires connected to emergency power system in accordance with Section 26 0553.
P. Install lamps in each luminaire.

3.02 ADJUSTING
A. Aim and position adjustable luminaires to achieve desired illumination as indicated or as directed by Architect. Secure locking fittings in place.
B. Aim and position adjustable emergency lighting unit lamps to achieve optimum illumination of egress path as required or as directed by Architect or authority having jurisdiction.
C. Exit Signs with Field-Selectable Directional Arrows: Set as indicated or as required to properly designate egress path as directed by Architect or authority having jurisdiction.

SECTION 26 5600 EXTERIOR LIGHTING
PART 1 PRODUCTS
1.01 LUMINAIRE TYPES
A. Furnish products as indicated in luminaire schedule included on the drawings.
B. Substitutions: See Section 01 6000 - Product Requirements. Equivalent products, except where individual luminaire types are designated with substitutions not permitted. Submit comparative pricing with all fixture substitutions.
1.02 LUMINAIRES
A. Provide products that are listed and labeled as complying with UL 1598, where applicable.
B. Provide products listed, classified, and labeled as suitable for the purpose intended.
C. Unless otherwise indicated, provide complete luminaires including lamp(s) and all sockets, ballasts, reflectors, lenses, housings and other components required to position, energize and protect the lamp and distribute the light.
D. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, hardware, poles, foundations, supports, trims, accessories, etc. as necessary for a complete operating system.
E. Provide products suitable to withstand normal handling, installation, and service without any damage, distortion, corrosion, fading, discoloring, etc.
F. Provide luminaires listed and labeled as suitable for wet locations unless otherwise indicated.
G. LED Luminaires:
1. Components: UL 8750 recognized or listed as applicable.
2. Tested in accordance with IES LM-79 and IES LM-80.
3. LED Estimated Useful Life: Minimum of 50,000 hours at 70 percent lumen maintenance, calculated based on IES LM-80 test data.
H. Exposed Hardware: Stainless steel.
1.03 BALLASTS AND DRIVERS
A. Manufacturers:
1. General Electric Company/GE Lighting: www.gelighting.com/#sle.
2. OSRAM Sylvania, Inc; www.osram.us/ds/#sle.
B. Ballasts/Drivers - General Requirements:
1. Provide ballasts containing no polychlorinated biphenyls (PCBs).
2. Minimum Efficiency/Efficacy: Provide ballasts complying with all current applicable federal and state ballast efficiency/efficacy standards.
1.04 LAMPS
A. Manufacturers:
1. General Electric Company/GE Lighting: www.gelighting.com/#sle.
2. Osram Sylvania: www.sylvania.com/#sle.
3. Substitutions: See Section 01 6000 - Product Requirements.
4. Manufacturer Limitations: Where possible, provide lamps produced by a single manufacturer.
B. Lamps - General Requirements:
1. Unless explicitly excluded, provide new, compatible, operable lamps in each luminaire.
2. Verify compatibility of specified lamps with luminaires to be installed. Where lamps are not specified, provide lamps per luminaire manufacturer's recommendations.
3. Minimum Efficiency: Provide lamps complying with all current applicable federal and state lamp efficiency standards.
4. Color Temperature Consistency: Unless otherwise indicated, for each type of lamp furnish products which are consistent in perceived color temperature. Replace lamps that are determined by the Architect to be inconsistent in perceived color temperature.
1.05 POLES
A. All Poles:
1. Provide poles and associated support components suitable for the luminaire(s) and assoc

DONALD W. ALEXANDER | ARCHITECT
2501 Emery Road, Suite 400
Cleveland, Ohio 44128
216.223.3200 onyxcreative.com

Design and construction documents as instruments of service are given in confidence and remain the property of Donald W. Alexander, Architect. The use of these documents for purposes other than the specific project named herein is strictly prohibited without expressed written consent of Donald W. Alexander, Architect.

STORAGE FACILITY
97 WARREN AVENUE
PORTLAND, MAINE 04103

Project No.: 25.0991
Drawn By: EAH
Date Issue
03-30-2026 BID & PERMIT

E5.2

ELECTRICAL SPECIFICATIONS

PARCEL INFORMATION

MAP / LOT:	MAP 295, LOT F-1
LOT AREA (ACRES):	1.32
ZONE OR DISTRICT:	B-4
EXISTING USE:	VACANT
FLOOD ZONE:	N/A
WATER:	PUBLIC
SEWER:	PUBLIC
RECORD OWNER:	AMEENA SHIR

SITE DEVELOPMENT DATA

	SF	AC
EXISTING IMPERVIOUS (TO BE REMOVED):	96	0.00
NEW BUILDINGS	22189	0.51
NEW PAVEMENT	8989	0.21
NEW IMPERVIOUS:	31178	0.72
TOTAL IMPERVIOUS:	31178	0.72
TOTAL LANDSCAPED/OPEN SPACE:	26481	0.61

DESIGN STANDARDS

	REQ'D	PROVIDED
MINIMUM LOT AREA (SF)	10000	57659
MINIMUM ROAD FRONTAGE (FT)	60	314
MINIMUM SETBACK, FRONT YARD (FT)	0	0
MINIMUM SETBACK, SIDE YARDS (FT)	0	16
MINIMUM SETBACK, REAR YARD (FT)	20 (RESIDENTIAL)	20
MINIMUM BUILD-TO PERCENTAGE	50%	100%
LANDSCAPED OPEN SPACE RATIO	20%	46%
MAXIMUM BUILDING HEIGHT (FT)	65	50

PROJECT INFORMATION

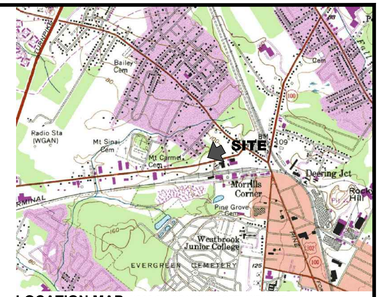
APPLICANT:	PEACHTREE ACQUISITIONS, LLC
	7119 31ST AVENUE N.
	MINNEAPOLIS, MINNESOTA 55427
ENGINEER:	HALEY WARD, INC.
	ATTN: JON WHITTEN, JR., P.E.
	12 MOUNTFORT STREET
	PORTLAND, MAINE 04101

THIS IS TO CERTIFY THAT AFTER REVIEWING THE SITE PLAN SUBMISSION INFORMATION FOR THE PROJECT SHOWN ON THIS PLAN AND CONSIDERING EACH OF THE CRITERIA SET FORTH IN THE CITY OF PORTLAND'S CODE OF ORDINANCES AND IN ACCORDANCE WITH THE APPLICATION REQUIREMENTS, THE UNDERSIGNED HAVE MADE FINDINGS OF FACT ESTABLISHING THAT THIS PLAN ALONG WITH ITS ADDITIONAL SUBMISSION INFORMATION (IF APPLICABLE) HAS MET ALL THE CRITERIA SET FORTH AND THEREFORE THE SITE PLAN IS APPROVED.

APPROVED BY THE CITY OF PORTLAND PLANNING BOARD ON:_____

CONDITIONS: _____

PLANNING BOARD SIGNED ON: _____



LOCATION MAP: USGS QUADRANGLE: PORTLAND WEST
MAPTECH® USGS TOPOGRAPHIC SERIES™,
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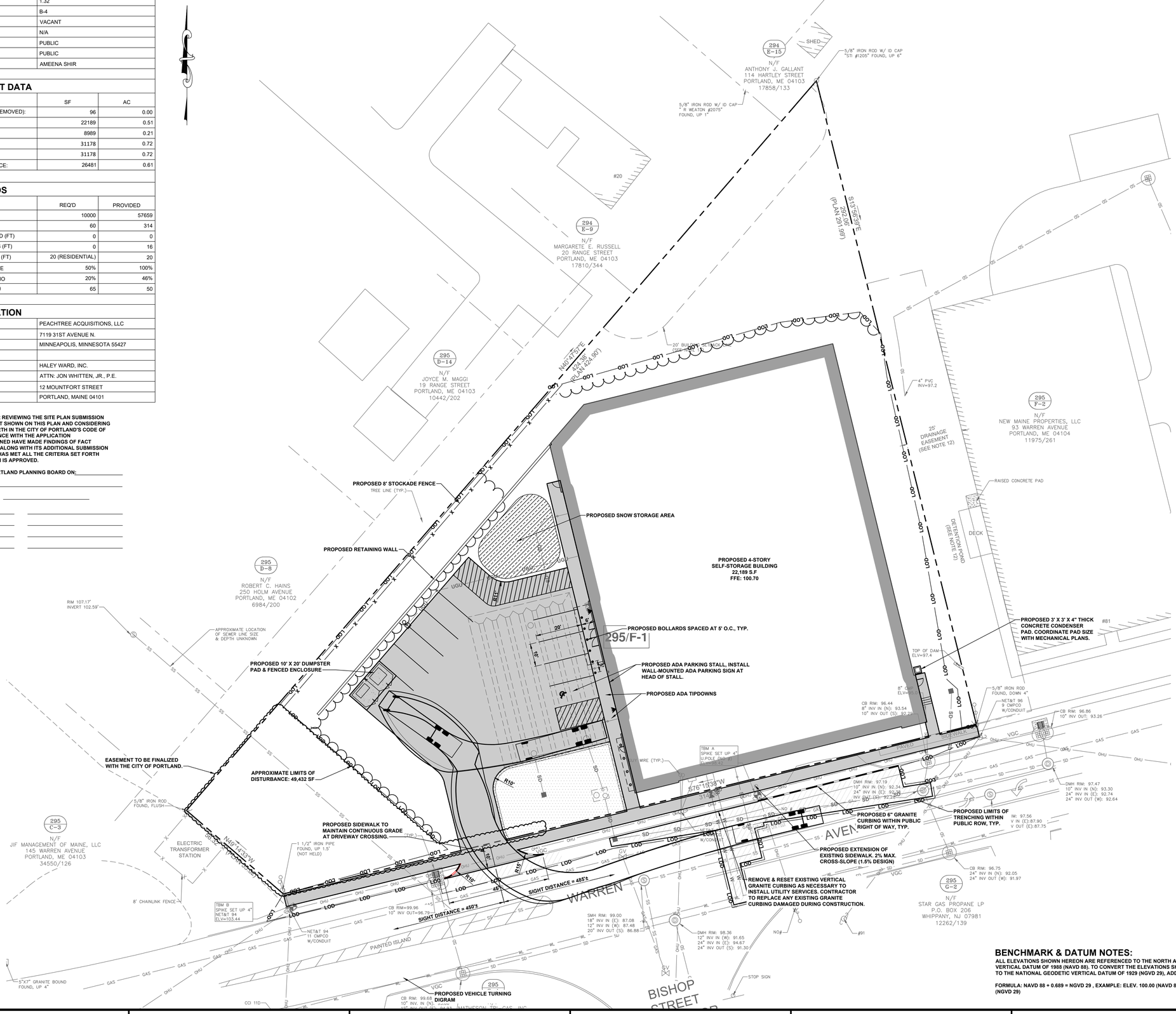
WWW.MAPTECH.COM/TOPO
SCALE: 1"=2000'



BENCHMARK & DATUM NOTES:

ALL ELEVATIONS SHOWN HEREON ARE REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88). TO CONVERT THE ELEVATIONS SHOWN HEREON TO THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29), ADD 0.689 FEET.

FORMULA: NAVD 88 + 0.689 = NGVD 29 , EXAMPLE: ELEV. 100.00 (NAVD 88) = ELEV. 100.689 (NGVD 29)

GRAPHIC SCALE

20 0 10 20 40 60

(IN FEET)
1 inch = 20 ft.

REV.	DATE	DESCRIPTION	BY	CHK.
2	2026.03.30	RESPONSE TO COMMENTS	PJM	JHW
1	2025.02.20	REVISED PER CITY COMMENTS, UPDATED SURVEY	PJM	JHW

DRAWING ISSUE STATUS

NOT FOR CONSTRUCTION

HALEY WARD
WWW.HALEYWARD.COM
One Merchants Plaza, Suite 701
Bangor, Maine 04401
207.989.4824

PROJECT

4-STORY SELF-STORAGE UNIT BUILDING
97 WARREN AVENUE, PORTLAND, MAINE
PEACHTREE AQUISITIONS, LLC

TITLE

PROPOSED SITE PLAN

DATE: 2025.11.14	SCALE: 1"=20'
DRAWN BY: PJM	DESIGNED BY: PJM/MK
CHECKED BY: JHW	
PROJECT No.: 15191.001	
DRAWING No.: C101	REV.: 2

FILE LOCATION: P:\ME\15191-ENGELSMA_CONSTRUCTION\00\197 WARREN AVE-JHW\02-CAD_FILES\CIVIL\15191.001-C-SP.DWG, 2026.04.22, 12:19 PM

PC1

Neha Sunil Pol <npol@portlandmaine.gov>

97 Warren Ave - Major Site Plan

Olga Graves <olgraves@gmail.com> Tue, Dec 9, 2025 at 10:32 PM
To: "npol@portlandmaine.gov" <npol@portlandmaine.gov>

Hi Neha,

My name is Olga Graves and I am an owner and resident of 9 Range St, Portland, ME 04103. I received the notice of the Major Site Plan for 97 Warren Ave and plan to stay engaged in the review process, as changes to the site will directly impact my property and day-to-day living experience.

I have a few questions to start and will likely have others as additional information becomes available:

1. When is the next Planning Board meeting regarding this site, and will materials be posted in advance for public review?

2. How much of the existing treeline is planned to be preserved? Will the City be identifying and marking trees that must remain in place prior to site clearing?

3. We have had a pair of hawks that nest in the trees on that lot each year. Has an environmental or wildlife survey been conducted to identify nests of protected species, and if so, are those findings publicly available?

Thank you in advance for your time. I appreciate your help in understanding the process, and I look forward to staying closely informed as the project progresses.

All the best,
Olga

Joseph Zamboni, Chair
Kelsey Robertson, Vice Chair
Austin Smith
Nicholas Messina
Beverly Uhlenhake
David Silk
Eric Din

April 28, 2026

Haley Ward, Inc.
120 Main St Unit: Suite 132
Saco, ME
04072

Project Address:	97 Warren Avenue	**Project ID:**	PL-003487-2025
Applicant:	Peachtree Acquisitions, LLC	**CBL(s):**	295 F001001
Applicant Representative:	Haley Ward, Inc.		
Planner:	Neha Sunil Pol		

Dear Applicant

On April 28, 2026, the Planning Board approved a Major Site Plan to facilitate the development of a four-story self-storage building at 97 Warren Avenue within the B-4 zone. The decision is based upon the application, documents and plans as submitted. The Planning Board reviewed the proposal for conformance with the standards of the Site Plan Ordinance, Chapter 13, Section 13.6

Based on the information provided to the Board in the application, plans, and reports, through testimony and other information submitted by the applicant, as well as the findings, conclusions and recommendations contained in the Planning Board Report for the public hearing held on April 28, 2026 which is attached hereto and incorporated herein by reference, the Planning Board found the application met all relevant standards and voted [X-X] to approve the application with the following conditions as presented below.

B. SITE PLAN REVIEW

Based on the information in the application, plans, reports, through testimony at the Planning Board hearing, and other information submitted by the applicant, the Planning Board adopts the findings, conclusions and recommendations contained in the Planning Board Report for the public hearing on April 28, 2026, for application PL-003487-2025 at 97 Warren Avenue relevant to the site plan regulations and

finds that the plan is in conformance with the site plan standards of the land use code, subject to the following conditions of approval:

PRIOR TO APPLYING FOR A BUILDING PERMIT

1. The applicant shall revise the utility plan to extend the existing Warren Avenue storm drain and connect the westerly private drain line to a new terminus manhole. Final design, sizing, and connection details shall be subject to review and approval by the Department of Public Works.

PRIOR TO ISSUANCE OF A CERTIFICATE OF OCCUPANCY

2. The applicant shall execute and record an access, construction, and maintenance easement in a location acceptable to the City within the southwest portion of the site.

The approval is based on the submitted plans and findings related to the site plan standards contained in the Planning Board report dated April 22, 2026 for application PL-003487-2025 which is attached.

Standard Procedures

Note: The following standard procedures and requirements apply to all approved site plans:

1. Site Plan Expiration
   The site plan approval shall expire three (3) years from the date of approval unless development has been undertaken in accordance with the approved site plan and site work or building construction is ongoing. Any lapse in construction for a period in excess of 12 months shall result in an expiration of the site plan.

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 Permitting and Inspections Department.

3. Performance Guarantee and Inspection Fees
   A performance guarantee covering the site improvements and an inspection fee payment of 2.0% of the guarantee amount and three (3) final sets of plans must be submitted to and approved by the Planning and Urban Development Department prior to the release of a building permit, street opening permit or certificate of occupancy for site plan.

4. Construction Management Plans
   The applicant, contractor and subcontractors are required to conform to the approved Construction Management Plan, and all conditions contained within the project's approval, for the entire duration of the project. Any amendments to the approved Construction Management Plan shall be reviewed and approved by the Department of

Public Works prior to the execution. The Planning Authority and the Department of Public Works have the right to seek revisions to an approved Construction Management Plan. The applicant shall coordinate the project's construction schedule with the timing of nearby construction activities to avoid cumulative impacts on a neighborhood and prevent unsafe vehicle and pedestrian movements. Accordingly, nearby construction activities could involve a delay in the commencement of construction.

5. Preconstruction Meeting

Prior to the release of a building permit and scheduling of a preconstruction meeting, a hard copy set of approved plans shall be submitted to the Development Review Coordinator. A pre-construction meeting shall be held at the project site with the contractor, Development Review Coordinator, Public Works 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 and the approved Construction Management Plan. The site/building contractor shall provide one (1) copy of a detailed construction schedule to the attending City representative. It shall be the contractor's responsibility to arrange a mutually agreeable time for the pre- construction meeting.

6. Department of Public Works Permits

If work or obstructions will occur within the public right- of-way, such as utilities, curb, sidewalk, driveway construction, site deliveries and equipment siting, a Street Opening and/or Occupancy Permits are required for your site. Please contact the Department of Public Works Permit Clerk at (207) 874-8300, ext. 8828. (Only excavators licensed by the City of Portland are eligible.)

7. 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. Any modifications of an approved site plan or alteration of a parcel, or of any approved exterior elevations, which were the subject of site plan approval after May 20, 1974, shall require the prior approval of an amended site plan by the Planning Board or Planning Authority pursuant to the terms of Chapter 13, Land Use, of the Portland City Code.

8. Stormwater Management

The owner/operator of an approved stormwater management system, and all assigns shall comply with the conditions of Chapter 32, Stormwater including Article Ill, Post Construction Stormwater Management, which specifies the annual inspections and reporting requirements. A maintenance agreement for the stormwater drainage system, as attached, or in substantially the same form, shall be submitted for review by Corporation Counsel. Once approved, the document shall be signed and recorded at the

Cumberland County Registry of Deeds. The following stormwater management documentation shall be submitted to the Water Resources Division of Public Works and the Planning and Urban Development Department prior to the issuance of a Certificate of Occupancy:

- Final executed and recorded stormwater maintenance agreement including the site's inspection and maintenance plan.
- Certification, based on initial comprehensive inspection from the project Engineer of Record, certifying that the approved stormwater systems were installed properly, are fully operational, and are functioning as intended.
- As-built drawings including grading and drainage and updated details for any stormwater systems on site.
- Department of Public Works Impervious Area Adjustment Form 5A
- Department of Public Works Stormwater Credit Application Form 3

Department of Public Works stormwater program forms can be found at the following link: https://www.portlandmaine.gov/1102/Credit-Manual-and-Applications

9. Third Party Inspections

For all sites with one acre or greater of disturbance, the applicant shall retain the services of a third-party inspector for the duration of construction until final site stabilization is in place. The inspection is required in order to ensure that all construction and stabilization activities comply with the approved drawings and specifications; that field decisions regarding erosion control implementation, stormwater system installation, and natural resource protection are based on sound engineering and environmental considerations; and that any changes to the development's erosion control plan, stormwater management plan, or final stabilization plan is communicated to the City of Portland for additional review and approval.

The inspector will submit weekly written reports to the Stormwater Coordinator(s) in the Water Resources Division of Public Works. Reports must include: project ID, project address, the date(s) and time(s) of inspection(s), site photographs of areas under construction, and the date(s) and approximate duration(s) of any rainfall events. The report will identify and describe any erosion problems or discharge of pollutants and what actions will be taken to address these issues and repair any damage to other properties or natural resources, actions to eliminate the erosion source, and actions to prevent future sediment discharges from the area.

10. Defect Guarantee

A defect guarantee, consisting of 10% of the performance guarantee, must be posted before the performance guarantee will be released.

11. As-Built Final Plans

Final sets of as-built plans shall be submitted digitally to the Planning and Urban Development Department as a PDF. Once the PDF version has been reviewed and accepted, a mylar and a AutoCAD format will need to be submitted to the Department of Public Works Engineering Archive, located at 212 Canco Road, Portland, Maine 04102.

12. Mylar Copies

Mylar copies of the as-built drawings for public streets and other public infrastructure in the subdivision must be submitted to Public Works prior to the issuance of a certificate of occupancy.

13. Impact Fees

New development or changes of use that result in net new residential dwelling units, non- residential building square footage, or water meters, are subject to the City of Portland's impact fee ordinance (Chapter 14, Article 15). Impact fees are calculated at the time of building permit and must be paid prior to the certificate of occupancy. For more information, visit https://www.portlandmaine.gov/2409/Impact-Fees

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 and Urban Development Department at drc@portlandmaine.gov or (207) 405-4799. 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 Neha Sunil Pol by phone at 207-874-8575 or email at npol@portlandmaine.gov

Sincerely,

Joseph Zamboni, Planning Board Chair
Insert signature here

Attachments:

- Planning Board Report
- Portland City Code: Chapter 32
- Sample Stormwater Maintenance Agreement
- Performance Guarantee Packet