

CITY OF PORTLAND, MAINE

PLANNING BOARD



Sean Dundon, Chair
Brandon Mazer, Vice Chair
Bob Dunfey
David Eaton
David Silk
Austin Smith
Maggie Stanley

AGENDA PORTLAND PLANNING BOARD MEETING

The Portland Planning Board will hold a meeting on April 23, 2019, Council Chambers, 2nd Floor, City Hall, 389 Congress Street. **Public comments will be taken for each item on the agenda during the estimated allotted time and written comments should be submitted to planningboard@portlandmaine.gov.**

WORKSHOP - 4:30 PM

- i. Waterfront Central Zone (WCZ) Text Amendments, City of Portland, Applicant. (estimated time 4:30 – 6:00) The Planning Board will hold a workshop on the proposed Waterfront Text Amendments, Division 18 of the Land Use Code. The amendments include, but are not limited to, revisions to the definitions of the Non-Marine Use Overlay Zone; changes to permitted, conditional uses and prohibited uses; changes to the dimensional requirements; elimination of contract and conditional zoning within the zone; and updates to performance standards. Proposed amendments are based upon feedback received over the course of numerous meetings of the Waterfront Working Group.

PUBLIC HEARING - 7:00 PM

1. ROLL CALL AND DECLARATION OF QUORUM

2. REPORT OF ATTENDANCE AT THE MEETING HELD ON APRIL 9, 2019

Workshop: No workshop

Public Hearing: Mazer, Dunfey, Eaton, Silk, Smith, and Stanley. Dundon absent. Smith recused from second public hearing item.

3. REPORTS OF DECISIONS AT THE MEETING HELD ON APRIL 9, 2019

- i. Hotel Inclusionary Zoning Conditional Use; 121 Middle Street; 123, LLC. Stanley moved and Eaton seconded a motion to approve the Hotel Inclusionary Zoning Conditional Use application for 121 Middle Street, with the financial contribution of \$41,866 for 11 hotel guest rooms. Vote: 6-0, Dundon absent

- ii. Level III Site Plan and Subdivision; 1006 Congress Street; 1006 Congress, LLC. Stanley moved and Eaton seconded a motion to waive the Technical Manual Standard (Section 1.7.1) for the minimum distance between driveways to allow a 10 foot separation. Vote: 5-0, Dundon absent and Smith recused. Stanley moved and Eaton seconded a motion to approve the subdivision plan with two (2) conditions of approval. Vote: 5-0, Dundon absent and Smith recused. Stanley moved and Eaton seconded a motion to approve the site plan application with three (3) conditions of approval. Vote: 5-0, Dundon absent and Smith recused.
- iii. Level II Site Plan and Conditional Use; 121 Cassidy Point Drive; 534 Danforth, LLC. Stanley moved and Eaton seconded a motion to waive the Technical Standard (Sec 1.7) for maximum driveway width to allow a driveway width up to 60 feet as shown on plan. Vote: 6-0, Dundon absent. Stanley moved and Eaton seconded a motion to waive the Technical Manual standards (Sec. 1.7.2.7) to allow a separation of less than 100 feet. Vote: 6-0, Dundon absent. Stanley moved and Eaton seconded a motion to waive the number of driveways (Sec 1.7.2.7) to allow 4 driveways that serve separate contiguous areas that cannot be combined. Vote: 6-0, Dundon absent. Stanley moved and Eaton seconded a motion to waive the technical standard for sidewalks along the on the lower portion of Cassidy Point Drive as shown on site plan. Vote: 6-0, Dundon absent. Stanley moved and Eaton seconded a motion to waive the curbing requirement along the lower portion of Cassidy Point Road, with the condition that the applicant submit the cost details. Vote: 6-0, Dundon absent. Stanley moved and Eaton seconded a motion to approve the conditional use application. Vote: 6-0, Dundon absent. Stanley moved and Eaton seconded a motion to approve the site plan application with 5 conditions of approval and condition #1 amended. Vote: 6-0, Dundon absent.
- iv. Level III Site Plan, Subdivision and Conditional Use; 10 Hammond Street; Hammond House, LLC. Stanley moved and Eaton seconded a motion to waive the Technical Standard (Sec 1.7) for driveway width to allow an eighteen (18) foot wide driveway. Vote: 6-0, Dundon absent. Stanley moved and Eaton seconded a motion to waive the Technical Standard (Sec 1.7.2.7) for driveway separation to allow a separation of less than 100 feet. Vote: 6-0, Dundon absent. Stanley moved and Eaton seconded a motion to approved the IZ Conditional Use application with a financial contribution of \$169,744. Vote: 6-0, Dundon absent. Stanley moved and Eaton seconded a motion to approve the site plan application with 10 conditions of approval and with condition #1 amended to state public streets and to add condition 9 regarding the Construction Management Plan. Vote: 5-1, Silk opposed and Dundon absent.

4. NEW BUSINESS

- i. Level III Site Plan and Conditional Use Application; 175 Auburn Street; Portland Public Schools, Applicant. (estimated time 7:00- 8:00 p.m.) The Planning Board will hold a public hearing on a proposal for a 11,045 sf gym/library/ expansion to be located between the two wings of the existing building. A 3,431 sf addition is also proposed for administrative offices at the front entry. Site improvements are also being proposed. Zoning for the site is R-2, R-3 and ROS (Recreation Open Space) and is subject to review under Portland's site plan and conditional use standards.

- ii. Level II Site and Conditional Use Application; 87 Spring Street, Portland Museum of Art, Applicant. (estimated time 8:00 p.m.) The Planning Board will hold a public hearing on the Portland Museum of Art's Level 2 site plan application for the expansion of a parking lot at 87 Spring Street. The proposal is to expand the impervious area from 15,000 sf to 22,396 sf and to accommodate 69 vehicle parking spaces. The application is subject to review by the Planning Board under the site plan standards and the conditional use standards for a surface parking lot in the Downtown Business B-3 zone.



Memorandum
Planning and Urban Development Department
Planning Division

To: Sean Dundon, Chair, and Members of the Portland Planning Board
From: Matthew Grooms, Planner
Date: April 19, 2019
Re: WCZ Text Amendment – Prohibit Contract and Conditional Rezoning
Meeting Date: April 23, 2019

I. INTRODUCTION

In December, 2018, the Portland City Council enacted a six-month moratorium on non-marine development within the Waterfront Central Zone (WCZ). The impetus for this moratorium was a proposed referendum on non-marine development within the zone, that if passed, would result in a five-year pause on such development, giving time for stakeholders to develop new thematic plans, financing strategies and regulations to protect the viability of water-dependent and marine uses along Portland's waterfront. Since the moratorium went into effect, the City has engaged with stakeholders to better understand and address perceived issues. This process is being undertaken through a series of bi-weekly meetings (meeting weekly since March 21st) between City officials, representatives of Portland's working waterfront, and members of the public, who compose the Waterfront Working Group (WWG), (see the link for more information <https://www.portlandmaine.gov/2411/Waterfront-Working-Group>).



Figure 1: WCZ Zone Boundaries in Context

The draft amendments being proposed are based upon an intensive, months-long discussion and analysis of the WCZ zoning standards, and translate as general recommendations from the WWG. Where complete consensus was not possible, amendments were based upon the group's majority position (discussed in greater detail under Section IV of this memo). The goal of this process has been to identify and facilitate the appropriate balance between marine and non-marine uses, accounting for their respective operational needs so that they may successfully coexist and contribute to Portland's working waterfront.

Notice of this workshop appeared in the Portland Press Herald on April 12th and 15th 2019, and notices were distributed electronically to the interested citizen list. At the time of the writing of this memo, one public comment was received.

II. BACKGROUND

The Waterfront Central Zone (WCZ), perhaps the most iconic area of Portland's working waterfront, was created to protect and nurture water-dependent and marine-related uses while leveraging certain compatible non-marine uses for necessary investment of marine infrastructure. This hierarchy, implemented through a variety of land-use control measures, translates into a highly unique mixture of complementary though disparate uses within a small geographic area, transitioning from predominantly commercial and marine-related uses along the norther edge (landward side) of the zone, to predominantly water-dependent uses along the southern edge (seaward side), with some exceptions. Extending from Deake's Wharf in the west to just past Maine Wharf in the east, the zone consists of 13 separate, mostly privately-owned wharves, with an extensive array of uses including; retail and restaurants, marine-related tourism, residential, marine and non-marine offices, institutional, berthing for both recreational and commercial fishing and lobstering vessels and seafood processing. While not an exhaustive list, these uses demonstrate the unique challenges faced by users of this zone, in that all such uses are competing for adequate water access (either direct or visual) and vying for limited real-estate opportunities. This challenge is exacerbated by the different market realities for these industries, especially so as tourism in Portland continues to grow and with it, demand for recreational waterfront access.

A. Description of Existing Zoning

As currently written, the WCZ establishes a regulatory balance between such uses through an array of development standards including performance and more specific non-marine use standards. Performance standards, which apply to all uses, are intended to limit nuisance/negative externalities among uses, and range from general performance standards such as lighting, odor and noise, to more marine-specific standards, such as filling in of berthing areas and utility of piers. In all, the WCZ contains seventeen (17) performance standards, listed under Section 14-311(d).

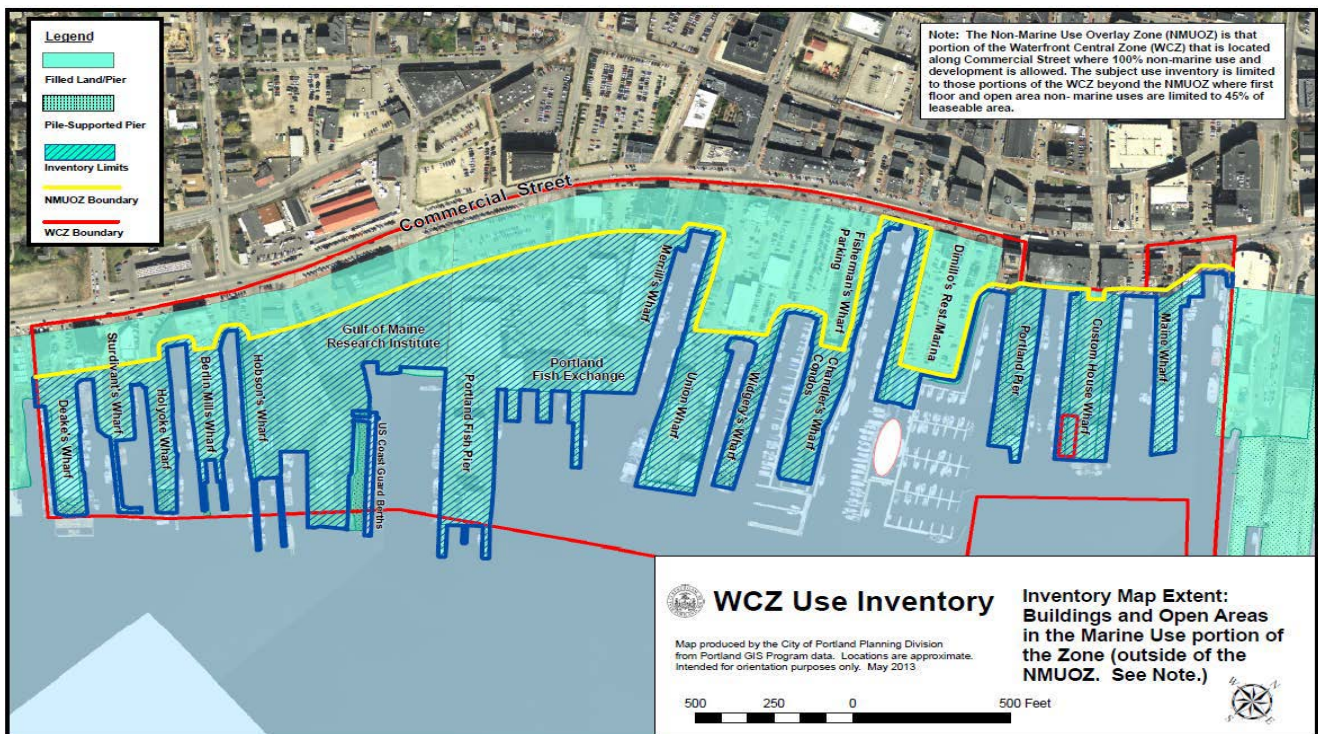


Figure 2: Zone boundaries, with NMUOZ shown on landward side of yellow line.

Non-Marine use standards, as their name would suggest, only apply to non-marine uses (identified as such in the permitted use section, 14-307(b)) and are dependent upon the location of that use within the zone. Regarding non-marine uses, the zone is geographically split into two parts, the first, being the Non-Marine Use Overlay Zone (NMUOZ), which spans the width of the zone and occupies the landward side of the zone along Commercial Street, as well as some larger surface parking areas extending into Union Wharf, Widgery Wharf, Chandler's Wharf and Dimillo's Pier. Generally, the NMUOZ extends one hundred fifty (150) feet south of the Commercial Street right-of-way though no closer than twenty-five (25) feet from the average high tide line. Between Union Wharf and Dimillo's Pier, the zone extends five hundred (500) feet south of the Commercial Street right-of-way. When the zone was amended in 2010, it was well-understood that the Old Port district (which consists largely of retail and restaurants popular among tourists) extended across Commercial Street and occupied significant real-estate within the northern edge of the zone. To reconcile this fact, and leverage the investment potential of such users, the City adopted the NMUOZ as part of the 2010 zoning amendment, which includes three standards aimed at facilitating an effective transition from non-marine to marine use within the zone.

Development Standards: Non-Marine Use Overlay Zone (NMUOZ)		
Vessel Access	Development Disposition	Marine Infrastructure Investment
Non-marine uses not to disrupt or block access to vessel berthing	- Lots with 75 feet of frontage or more along Commercial Street: Front façade of building must be no more than 35 feet from ROW, and front façade and pedestrian entrance oriented towards Commercial Street - Exemptions: - Frontage less than 75 feet - Change of use within existing building - Building addition of less than 5,000 square feet.	- Non-marine development valued at > \$250,000 required to provide marine investment totaling no less than 5% of total project cost. - Improvement may be direct, meaning; dredging, pile replacement, replacement decking, etc... - Financial contribution to City's Waterfront Loan and Investment Fund

Non-marine uses proposed outside of the NMUOZ are subject to a separate set of standards, targeted towards maintaining a majority of the available ground-floor leasable space and undeveloped land area for marine uses, with a minimum requirement of 55% marine. This section of the ordinance also requires that property owners prioritize the leasing of vacant ground-floor space for marine users while reserving property immediate adjacent to piers and bulkheads for marine uses.

Unusual within the City of Portland's zoning code, the WCZ contains a list of standards to be met for development proposals in order to be considered eligible for a contract or conditional rezoning. Across Portland, property owners are entitled to seek either a map amendment for their property (changing their property from one established zone to another), a text amendment to a particular zone (to alter regulations governing a zone) or a contract/conditional rezoning agreement, which is an individualized agreement between the City and property owner, wherein a new zone is created with its own list of regulations and geographic boundary. At present, more than 60 such zones are in existence.

Contract or conditional rezonings are not typically regulated via the base zoning district, meaning that were a

property owner in the R-3 Residential zone for example to seek a conditional or contract rezoning for their property, they would not in any way be impeded by language found within the R-3 zone. In the WCZ however, a property owner seeking a contract or conditional rezoning must first demonstrate compliance with the contract or conditional rezoning standards. In essence, these standards represent an additional obstacle not typically seen in other zones.

This section contains nine (9) standards geared specifically towards proposals deviating from the dimensional standards for the zone, listed under Section 14-310, and/or permitted uses list, Section 14-307 and 14-308. These standards share many similarities with the non-marine and performance standards, and are largely concerned with maintaining water access for water-dependent users, ensuring that requisite marine investment by non-marine users is not avoided, and ensuring contextuality of a proposed project with permitted uses as it relates to traffic impacts and protection of water-dependent uses.

Difference Between Contract/Conditional Rezonings and Conditional Uses	
Contract/Conditional Rezoning	Conditional Use
• Time intensive negotiation process wherein a new 'site specific' zoning district is agreed to between Property Owner and City • WCZ is unique in that it provides an extra step in the process, a requirement that certain standards be met before a proposal is considered eligible • City Council must find the proposed contract/conditional rezoning to be consistent with the Comprehensive Plan	• A conditional use is a use that is permitted by-right so long as zone-specific and general conditional use standards are being met. • A conditional use is reviewed by either the Planning Board or ZBA and is not considered by City Council.

B. Waterfront Working Group

Just prior to imposition of the moratorium on non-marine development within the WCZ, the City Manager convened the Waterfront Working Group (WWG), a focus group consisting of ten (10) waterfront stakeholders was convened by the City Manager to discuss critical issues related to waterfront development and concerns of fishing interests in Portland Harbor. As of the April 23rd Planning Board workshop, the group has met nine (9) times and has provided feedback on the following topic areas:

- WCZ Marine Use Inventory Update
- Effectiveness of the WCZ Zoning
- Recommendation on prioritization of short-term Waterfront TIF funding allocations.
- Ongoing Commercial Street Operations and Master Plan process.
- Berthing and marine access conditions.

This process has been highly informative for City staff in understanding the needs of our working waterfront, and feedback from this group has served as the basis for the proposed text amendments now before the Planning Board. For more information on this process, please see the attached memo from the City's Economic Development Office (Attachment 1).

III. PLANNING BOARD WORKSHOP – JAN. 22, 2019

On January 22, 2019, the Planning Board held a workshop to consider a limited set of text amendments that would prohibit contract and conditional rezonings within the WCZ. The WWG had articulated a concern that this section

of the ordinance effectively permitted uses to locate within the zone that were expressly prohibited. For example, the Fisherman's Wharf hotel project was proposed as a conditional rezoning. As a response to this concern, the staff suggested prohibiting contract and conditional rezonings, and drafted language to that effect based upon the Comprehensive Plan.

At the workshop, members of the public were generally opposed to the elimination of contract and conditional rezonings, and instead recommended that the contract and conditional rezoning prohibited uses list be broadened to include other incompatible uses such as hotels. The Board recommended that staff continue to work with the WWG to resolve this issue, and further asked that staff complete the zoning discussion with the WWG and draft a comprehensive set of amendments based upon that discussion before holding a second workshop with the Planning Board.

IV. PROPOSED TEXT AMENDMENTS

As seen in the table below, a broad range of amendments are being proposed, although many are very minor in nature. The most substantive changes include reducing the area of the Non-Marine Use Overlay Zone (now proposed as the Commercial Street Overlay Zone (CSOZ)), eliminating certain non-marine uses such as restaurants and retail establishments from areas outside the CSOZ, increasing the pier edge setback from five (5) feet to ten (10) feet, eliminating contract and conditional rezonings and both streamlining and strengthening the performance standards to ensure compatibility between marine and non-marine uses. The full text is attached to this report (Attachment 2).

Waterfront Central Zone – Summary of Proposed Text Amendments	
Zoning Ordinance Sec.	Changes to be Drafted for April 23, 2019 Planning Board Workshop
<i>Purpose (14-305)</i>	No changes proposed
<i>Definitions (14-306)</i>	- Change 'Non-Marine Use Overlay Zone' to 'Commercial Street Overlay Zone'. - Reduce overlay dimensions from 150' to 125' feet, and 500' to 300' feet for Long Wharf only, with language to describe where line cuts through or around existing buildings (see map).
<i>Permitted Uses (14-307)</i>	- Create new sub-category of uses permitted only within Commercial Street Overlay District (restaurants, retail, museums, galleries, banking, street vendors, medical offices and personal services) - Add new use titled "Commercial Parking for Water Dependent Uses" (defined under 14-47) - Add Commercial Kitchen - Eliminate laundry as permitted use.
<i>Conditional Uses (14-308)</i>	Eliminate residential use for Marine Business Owner
<i>Prohibited Uses (14-309)</i>	- Prohibit laundry and dry-cleaning - Expand hotel prohibition to include additional forms and short-term rentals
<i>Dimensional Standards (14-310)</i>	- Prohibit non-marine off-street parking within pier setback requirement and better define pier edge. - Increase pier setback requirement from 5 feet to 10 feet at first floor level

<i>Standards for Non-Marine Uses Outside Commercial St. Overlay (14-311(a))</i>	• Marketing Requirement – Change from 60 days to 180 days similar to PAD requirements and strengthen language for ‘targeted media’. • Remove inventory requirement from zoning, with goal of having Council mandate through Council Order “State of the Marine Economy” Report and annual report of significant waterfront development.
<i>Commercial Street Overlay Standards (14-311(b))</i>	No changes proposed
<i>Contract and Conditional Rezoning (14-311(c))</i>	• Prohibit contract and conditional rezoning.
<i>Performance Standards (14-311(d))</i>	• Condense Parking, non-marine compatibility and functional utility of piers performance standards into new ‘Operations and Access Management Plan’ standard, with specific parameters for locating parking, structures, equipment, access-ways and sidewalks, so that access to berthed vessels and marine uses is accounted for. • Remove redundant standards: Shoreland Zone, Signs, State and Federal Environmental Regs.

A. Discussion of Draft Text

The broad aim of the proposed amendments is to reaffirm the WCZ’s purpose statement, which is to protect and nurture marine development within the zone, and better define where and under what circumstances non-marine development is appropriate and harmonious. The WWG, with select representation from the fishing industry, pier proprietors, waterfront business owners and invested members of the waterfront community has provided insight on various concerns related to pier access and management, parking and traffic conditions, compatibility of uses and the effectiveness of existing marketing requirements. Based upon that feedback, staff developed a set of suggested approaches that were further refined through discussions with the WWG, with finalized approaches serving as the basis for the draft amendments now before the Board.

B. Commercial Street Overlay Zone (CSOZ)

a. Non-Marine Use Overlay to Commercial Street Overlay

Staff suggest changing the name of the ‘Non-Marine Use Overlay Zone’ to the ‘Commercial Street Overlay Zone’ as a way of better defining the purpose of this geography. The east side of Commercial Street has more limited value for water-dependent uses given its lack of direct waterfront access and traditionally, has been a mixed-use environment with not only restaurant and non-marine retail establishments (tied closely with the Old Port Commercial District), but also a variety of marine uses, for example the Gulf of Maine Research Institute, Maine Marine Supply Company, as well as several seafood markets and processing centers. The suggested name change deemphasizes non-marine uses and instead reflects the broader range of uses being promoted within the overlay zone.

b. Change to Zone Extent

Under this proposal, the extent of the overlay zone would be reduced considerably, as can be seen in the map above. For context, the dimensions of the overlay zone were expanded in 2010 as a means of encouraging additional development (from 35 feet to 150 feet, and up to 500 feet in certain locations). Members of the fishing industry articulated that this increase was too significant, given that traditional commercial development along Commercial Street did not extend to that depth, and that at 150 feet from

Commercial Street, there are opportunities for direct water access.

The concern was that the overlay zone, as currently established, would permit large-scale, incompatible non-marine uses that would generate significant vehicle and pedestrian traffic along the wharves that would effectively impede access and operations of marine uses. To compensate, members of the fishing industry suggested eliminating the overlay zone altogether. This proposal was met with limited support from the pier owners, given that they rely upon investments required of non-marine users within the overlay zone to maintain their wharves. The proposed reduction represents a compromise between these two groups, and while the majority of WWG members support this recommended change, there is not complete consensus.

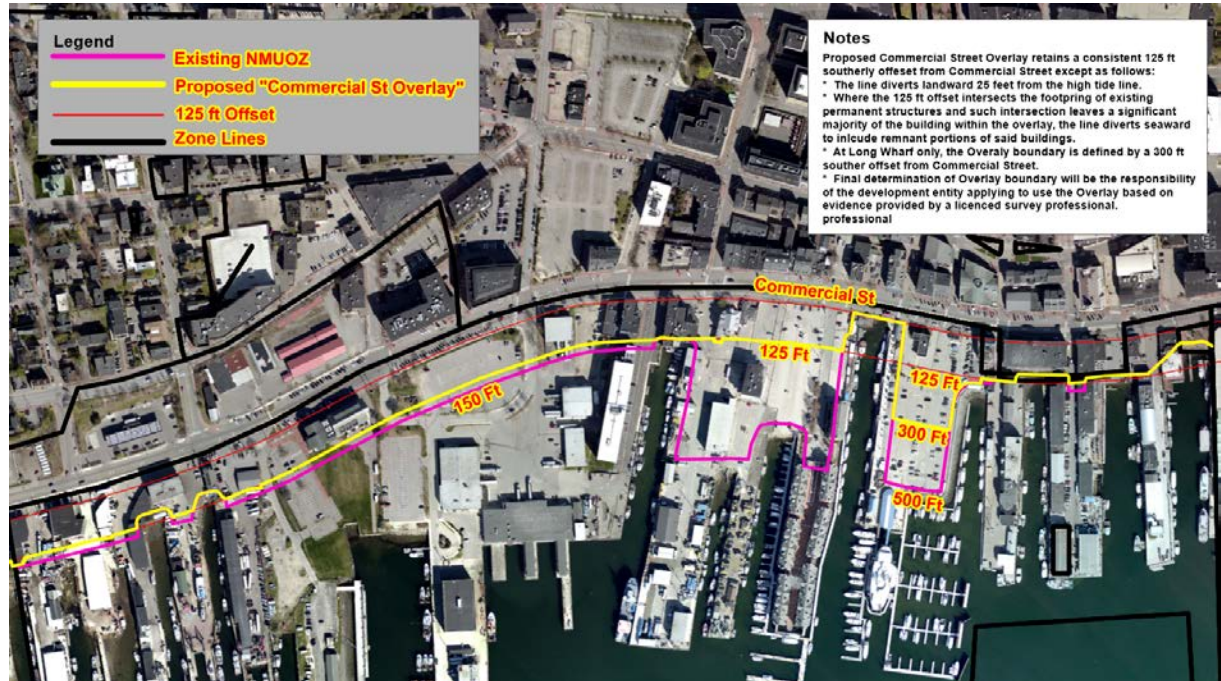


Figure 3: Proposed shift in CSOZ boundary

C. Permitted Uses

a. Permitted Uses for Commercial Street Overlay Zone

Under the permitted uses section, staff recommend adding a new category of permitted uses, 'Uses permitted only within the Commercial Street Overlay Zone (CSOZ)', and eliminating high traffic generating uses such as restaurants and retail establishments from elsewhere within the zone. Members of the WWG have consistently raised the concern that such uses are incompatible with water-dependent uses and that there would be conflict related to traffic, noise and hours of operation. Many of the wharves in their existing condition cannot accommodate significantly more vehicle or pedestrian traffic. The idea behind this amendment is to shift all such high impact, non-marine uses towards Commercial Street, so that they are more easily accessed by patrons not as familiar with the wharves and their operations.

b. New Permitted Uses

Commercial parking for water-dependent uses and commercial kitchens are proposed as permitted uses.

Parking has repeatedly been raised as a concern, as many feel that there is not sufficient parking available for water-dependent uses. Meanwhile, non-conforming parking lots within the zone provide significant parking supply for visitors to the area, which adds to the area-wide traffic impacts. By permitting commercial-use parking for water-dependent uses, the City would provide an avenue by which non-conforming uses could become conforming, and also alleviate parking constraints for marine uses.

Regarding commercial kitchens, members of the WWG raised the use as a compatible non-marine use with limited impacts that is currently not listed, and that would benefit from proximity to seafood processors.

D. Conditional Uses

a. Eliminate Residential Uses – Marine Business Owner

At present, the zone permits marine business owners to live above their place of business, provided that the unit be of a certain size, that there is a compelling reason for living on-site, and that the unit be for year-round use. Given that no business owners are currently taking advantage of this allowance, and that there is a general interest in eliminating residential uses from the central waterfront, staff suggest eliminating this conditional use.

E. Prohibited Uses

Based upon feedback from the WWG, staff are recommending that laundry and dry-cleaning uses be eliminated, and that the prohibition on hotels be expanded and strengthened to include other categories of hotel, including bed and breakfasts, hostels, short-term rentals, etc. Medical offices are also to be prohibited, based upon the fact that they are generally a higher parking generator than other types of office uses.

F. Dimensional Requirements

a. Pier Edge Setback Increase

Vessel operators have indicated that the existing setback requirement does not provide sufficient space for maneuvering and/or the loading and unloading of goods from vessels. In response, staff suggest increasing the pier edge setback from five (5) feet to ten (10) feet at the first-floor level. Due to the first-floor ceiling height requirement of fifteen (15) feet, this would provide operators with approximately fifteen (15) of clear overhead space. As part of this amendment, staff are also strengthening the definition of the pier edge, stating that floats, rafts and barges not structurally integral to the pier are not counted as part of that requirement.

G. Standards for Non-Marine Uses Outside of the Commercial Street Overlay Zone

a. Marketing Requirement

Initially staff had suggested removing the marketing requirement from the zone, having not identified an example where it was successful in securing a lease for a marine use. Members of the WWG universally supported the marketing requirement and asked that the noticing period be lengthened, and that the media requirement be strengthened. Based upon that feedback, staff are suggesting that the marketing period be increased from 60 days to 180 days (same as is required within the Pedestrian Activities District (PAD)) and have provided additional guidance on appropriate forms of media within which to advertise.

b. Waterfront Inventory Requirement

The WCZ requires that an inventory of all uses within the zone be carried out on an annual basis, and that

that inventory identify whether or not the marine/non-marine land use requirements (where the maximum first-floor and exterior area permitted for use by non-marine uses is 45% per pier outside of the NMUOZ) are being met.

In discussions with the group, staff indicated that the report was not particularly useful for users of the zone and that it was time and energy intensive to produce. Instead, staff suggest that a less frequent 'state of the marine economy' report be drafted, that would highlight the competitiveness of the local marine economy and provide guidance on goals and objectives for improvement. Staff would also present to City Council an annual summary of major development within the zone.

H. Contract and Conditional Rezoning

Staff continue to support the elimination of the contract and conditional rezoning provisions for the WCZ, replacing it with a short excerpt from the Comprehensive Plan that identifies key goals related to Portland's working waterfront as justification for prohibition of this zoning tool within the zone. In initial discussions, staff had considered adding a larger subset of uses, including hotels, to the list of uses not eligible for a conditional or contract rezoning. This approach was determined to be ineffective for two main reasons. First, given the open-ended nature of contract and conditional rezoning, it provides less certainty as to what can happen in the future in the zone.

The second reason is that the WCZ, as currently written, is the product of a robust, decades long dialogue between highly disparate stakeholders, informed by industry best practices and numerous studies. As evidenced by the most recent WCZ waterfront inventory, released in early January 2019, the zone operates largely as it was intended, with a vast majority of available space (81%), either being occupied by or available to marine uses. Remaining non-marine uses subsidize vitally necessary infrastructure that is key to the success of Portland's working waterfront. This framework may require minor amendments as we move forward to accommodate changing needs, but it is important to recognize the fine balance that has been struck through such a lengthy and well-informed series of negotiations. A contract or conditional rezoning would undermine that framework, remove many key stakeholders from the negotiation process and create a new set of rules for a particular property that would still need to function cohesively with other properties and uses found within the WCZ. As Portland grows and its waterfront continues to experience changes, it is likely that new uses (perhaps not yet identified), may serve as catalysts to reopen this conversation as to how best balance the needs between marine and non-marine uses within the WCZ, and they could be considered as part of a public process for potential amendments if ever needed.

For these reasons, the staff support prohibition of contract and conditional rezoning within the WCZ, relying instead on the myriad of use and development standards that are consistent with facilitative of the goals found within the Comprehensive Plan. The proposed prohibition is generally supported by the WWG, though there is not complete consensus on this approach.

I. Performance Standards

a. Operations and Access Management Plan

In a letter provided by members of the fishing industry, staff were asked to assess whether or not the performance standards as written, guaranteed adequate access for the loading and unloading of goods and materials between land-bound vehicles and vessels, and whether it ensured effective compatibility between marine and non-marine users. This assessment found that several of the standards, notably the 'parking', 'compatibility of non-marine uses with marine uses', and 'functional utility of the piers' standards were

largely redundant and difficult to interpret. Staff's suggested approach is to maintain the intent of those standards, but streamline as one new standard that would be a requirement for a physical plan to be called an 'Access and Operations Management Plan'. For new development, including changes of use, a plan and accompanying narrative would need to be provided for review by the Planning Authority, that would clearly indicate the location of structures, activities, parking, circulation and loading facilities. This plan could then be used to confirm that non-marine uses are sited appropriately, and that no use impedes waterfront access by water-dependent uses.

b. Elimination of Redundant Standards

Staff suggest elimination of the 'shoreland zone', 'signs' and 'state and federal regulations' standards as these standards are not substantive. For example, the 'signs' standard, requires compliance with the City's sign ordinance, which is a requirement regardless of whether or not it is listed as a performance standard. The same concept applies to the other two standards listed.

V. COMPREHENSIVE PLAN

The City's ordinance states that any rezoning must be consistent with the City's Comprehensive Plan. In forming its recommendation to the City Council, the Board will need to make a finding on whether the proposal is consistent with the Comprehensive Plan. As seen below, the staff have identified below a number of the specific Comprehensive Plan goals and policies which are suggested as being relevant to the proposed text amendments to the WCZ.

The central vision of Portland's Plan 2030 is represented by the venn diagram demonstrating the integral interrelation of the community's core belief that Portland is equitable, sustainable, connected, dynamic, authentic and secure. The vision conveys the message of the City's need to balance many competing needs to assure the advance of the vision as a unified concept. In this instance, that the City's goals for maintaining a working waterfront and transforming Portland through orderly growth and development be balanced with needs for connectivity of residents and visitors to the waterfront, sustainability of marine-dependent infrastructure and the ability to maintain that infrastructure, and authentic as a defining characteristic Portland's image and economy.



As currently written, the WCZ promotes a mixture of marine and non-marine uses in accordance with the Waterfront Use Hierarchy pyramid. This pyramid acknowledges that water-dependent uses (ex. fishery berthing) cannot successfully exist or sustain maintenance of necessary infrastructure (ex. dredging, pier maintenance, fendering etc..) without investment by both marine-related industries (ex. marine product retail) and compatible non-marine uses (ex. offices or restaurants). The zoning provides mechanisms that both limit the total percentage of available land and floor area that may be occupied by a non-marine use, and exacts actual investment from non-marine users. Meanwhile the permitted, conditional and prohibited use list precludes many non-marine uses out right, notably residential, hotel and drinking establishment uses, which are considered incompatible. Those non-

marine uses that are permitted, are required to comply with numerous performance and specific non-marine development standards that ensure compatibility of non-marine uses with integral uses of the working waterfront.

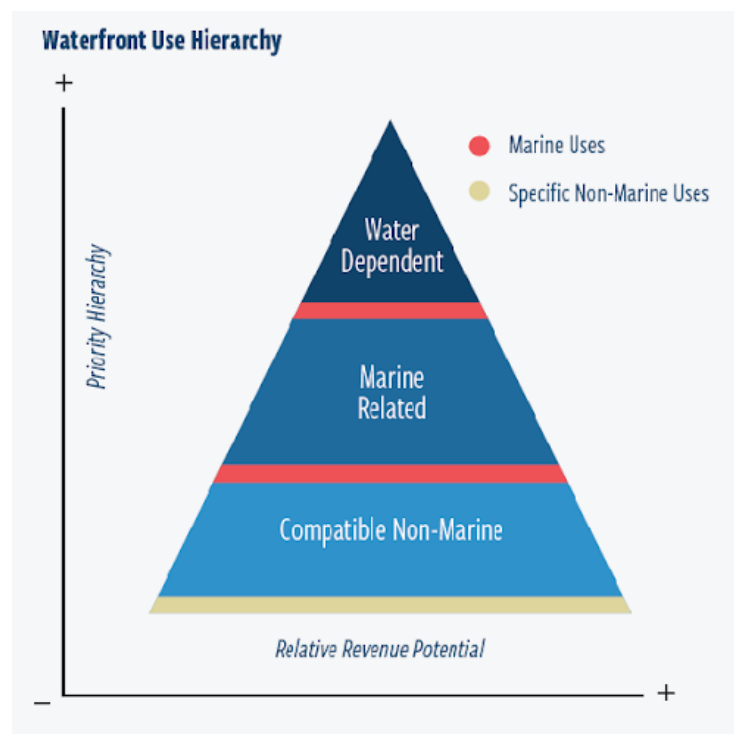
The City has engaged extensively with stakeholders of this zone in order to understand their concerns and operational needs. We are recommending a comprehensive suite of amendments that are in line with the goals of the City's Comprehensive Plan and that reprioritize the WCZ as a catalyst and incubator for a successful working waterfront

Development Goals:

- Prioritize and promote Portland's unique mix of water-dependent, marine-related and compatible non-marine uses.
- Recognize and reinforce the respective roles of the Eastern, Central, and Western Waterfronts.
- Celebrate, promote and protect Portland's lobster and fishing industry as a foundation of the region's economy and a feature of civic pride.
- Ensure the future of the marine economy through support for emerging marine industries and mitigation of market trends that could compromise the balance between marine industries and competing development.
- Recognize and reinforce waterborne transport of goods and people as foundational to our community.
- Develop effective public and private partnerships to promote the Port of Portland as an economic engine for the State of Maine.

The WCZ ordinance is the result of an iterative, decades long negotiation process that has been tested and revamped over the years to regulate and maintain the many nuances of this highly unique working waterfront, and has been shown, as seen in the Waterfront Inventory, to be largely effective in achieving that balance. The Comprehensive Plan identifies that policy shifts are critical to the success of Portland's working waterfront, and that we as a City need to be responsive to evolving and cyclical market conditions that place considerable development pressure on this zone.

The City of Portland values a strong working waterfront that prioritizes water-dependent and marine-related uses over compatible non-marine uses. That said, we understand that compatible non-marine uses are key to the success of our working waterfront, providing invaluable investment to marine infrastructure and in part, subsidizing other marine uses.



The proposed amendments represent the next step in that iterative process and are a direct response to today's market pressures, where non-marine businesses are competing for space deemed valuable to the marine economy.

The City favors an incremental approach as opposed to sweeping changes, where the general structure of the ordinance would remain as is. Within that framework, we suggest further restricting non-marine uses though still maintaining adequate opportunity for them where appropriate. This restriction provides increased opportunity for marine uses, which are further supported by the greater predictability achieved through removal of contract and conditional rezoning, and streamlining of the performance standards so as to be easier to interpret and administer.

VI. PUBLIC COMMENT

One written comment has been received by the Planning Office in advance of this workshop. This comment requests that the Planning Board not permit non-marine uses in the zone to further encroach upon marine uses.

VII. NEXT STEPS

The staff are looking for feedback from the Planning Board on the proposed suggestions, and based on that feedback, will coordinate with members of the WWG to draft final text. The goal is to hold a public hearing on the proposed amendments to this zone on Tuesday May 14, 2019, so that amendments may be considered by the City Council before the moratorium expires on Saturday, June 15, 2019.

VIII. ATTACHMENTS

1. Needelman Memo on WWG Process, Economic Development Office
2. Division 18, Draft Amendments to WCZ
3. 2018 WCZ Marine Inventory
4. Public Comment
 - a. Joel Richardson (4.17.19)



CITY OF PORTLAND
Economic Development
Gregory A. Mitchell, Director

MEMORANDUM

TO: Chair Dundon and Members of the Planning Board

FROM: Bill Needelman, Waterfront Coordinator

DATE: April 11, 2019

SUBJECT: Review of Zoning Amendments to the Waterfront Central Zone and results of the City Manager's Waterfront Working Group

CC: Jon P. Jennings, City Manager
Greg Mitchell, Economic Development Director
Jeff Levine, Planning and Urban Development Director
Christine Grimando, Planning Director
Matt Grooms, Planner
John Peverada, Parking Manager
Jennifer Thompson, Associate Corporation Counsel

Background

Beginning in January of 2019, the City Manager convened a Waterfront Working Group (WWG) to discuss critical issues related to waterfront development and concerns of fishing interests in Portland Harbor. The process was prompted by recent activism by the fishing community responding to development pressures on the waterfront. Recognizing these concerns, the City Council has imposed a 180-day moratorium, Order 119-18/19, restricting non-marine development in the WCZ. The moratorium provided an alternative to a citizen referendum that would have potentially imposed highly restrictive zoning over the entire waterfront.

The WWG began their work just prior to the City Council's passage of the moratorium and the group and has met nine times since January.

Membership of the working group includes:

Willis Spear, Lobsterman, F/V Providence
Keith Lane, Lobsterman, F/V Kestrel

Bill Coppersmith, Lobsterman, MLU Vice President,
Charlie Poole, Proprietors of Union Wharf, Custom Float
Steve DiMillo, Proprietors of Long Wharf, DiMillo's Restaurant and Marina
Mike Alfiero, Proprietors of Holyoke Wharf, Harbor Fish Market
Togue Brawn, Downeast Dayboat Scallops
Rebecca Rand, Becky's Diner
Cyrus Hagge, Community Member
Dory Waxman, Community Member

Invited directly by the City Manager, the WWG has acted as a focus group to inform staff on issues of concern and to provide feedback on approaches to address problems. The WWG has been supported by Economic Development and Planning staff and has been chaired by the City Manager. Additional support has been supplied by Corporation Counsel and the City Parking Manager.

Staff has relied heavily on the combined experience and expertise of the group in crafting zoning amendments provided for the Board's consideration. To date, the WWG has spent the majority of their efforts on zoning issues and made significant progress. Most significantly, the exchange generated between members has provided an invaluable insight into the function of the WCZ, the complexity of the working waterfront, and potential improvements to the zone. The group was not asked to draft language for the Board's consideration but Planning and Economic Development staffs have relied heavily on the conversations to date and the language developed is a good faith attempt to reflect what's been learned from feedback received from the WWG.

Most of the zoning issues addressed, and translated into amendments, reflect a general consensus of the WWG. Where consensus was not achieved, staff has used our best judgement to forward recommendations that will most effectively address the issues identified. Staff will inform the Board on issues of disagreement within the process and individual WWG members have been encouraged to contribute to the Board's public comments to have their ideas on the staff-recommended amendments considered in the Planning Board's review process.

In addition to land use regulations, the WWG held productive sessions discussing priorities for use of Waterfront TIF funds and waterfront parking issues. Some parking issues are reflected in the resulting zoning recommendations.

City Staff and the entire community owe a tremendous debt of gratitude to the WWG members for their contribution and commitment to the Portland waterfront.

The WWG process has been well documented on the City's website at <https://www.portlandmaine.gov/2411/Waterfront-Working-Group>

Planning Board members are encouraged to review the process to-date to better understand the context of the recommended amendments.

Issues Under Discussion

The WWG agreed to limit their discussions geographically to the Waterfront Central Zone and to concentrate on the following issues:

- Evaluate the current physical, functional, and business conditions, including the 2018 WCZ Marine Use Inventory Update.
- Provide recommendations on zoning.
- Make recommendations on prioritization of short-term Waterfront TIF funding allocations.
- Provide feedback on the ongoing Commercial Street Operations and Master Plan process.
- Evaluate berthing and marine access conditions.

WWG Zoning Discussion

Waterfront zoning, and the Waterfront Central Zone (WCZ) in particular, is notoriously complex. The WCZ prioritizes and protects water-dependent and marine uses, such as fishing, but allows limited non-marine development to provide needed revenues to pier owners. The longstanding goal, recently restated and adopted in the [Portland's Plan 2030](#), promotes *balance* between potentially competing uses. Marine uses are given space and protections, while the pier owner is given sufficient opportunity to generate revenues for maintenance and a return on investment.

Within the context of the moratorium and the potential citizen's initiative referendum, the WWG has spent considerable time rethinking the *balance* of uses. Looking toward an April submission to the Planning Board, the WWG has discussed the following:

- Contract and Conditional Rezoning: *Should this tool be available within the WCZ?*

Staff is recommending eliminating the contract and conditional rezoning tool for the WCZ. The WWG did not achieve consensus on this issue, with some members voicing support for the flexibility offered. However, most members, with Staff agreement, believe that the zone is specifically and carefully crafted to address the complex policies of the Comprehensive Plan for the Central Waterfront. The potential for contract and conditional rezoning in the WCZ has generated uncertainty, speculative development pressure, and unpredictability within the zone. In addition, eliminating site specific rezoning essentially shuts the door on applications for hotel use within the zone – a primary cause of concern leading to this process.

- Non-Marine Use Overlay Zone (the area where marine use is not required): *Should the overlay be eliminated, contracted, or left in its current location?*

The recommended amendments suggest shrinking the extent of the overlay zone and renaming it the Commercial Street Overlay Zone. The recommended amendment is marginally smaller (125 feet deep from 150 feet currently) in most areas and significantly smaller in the areas nearest the Old Port (from 500 feet deep to 125 feet except Long Wharf, which would shrink to 300 feet deep.)

As with contract and conditional rezoning, the WWG did not achieve complete consensus on reducing the size of the overlay. While most members saw the reduction as a reasonable compromise to limit the extent and impact of non-marine development, some members did not see a compelling case for the reduction.

A review of the map (see staff memo) shows that there is only a marginal impact to the potential use of existing buildings with the reduction, but the fishing community expressed a desire to reduce the overall scale of non-marine development and to concentrate such development toward Commercial Street. Staff is in agreement that a smaller overlay is a reasonable compromise consistent with the Comprehensive Plan.

- Percentage of space required for marine use, outside of the Overlay: *Should more space be allocated to marine use?*

After significant discussion, there was no strong support for changing the percentage of space allocated for marine use outside of the overlay. This apparent consensus relied on the reduction in the mapped extent of the overlay described above, and the *Marketing* and *Permitted Use* amendments described below.

Marketing requirement for marine use: *Should space be required to be marketed to marine use prior to seeking a non-marine tenant (outside of the overlay)?*

The marketing requirement for marine use is comparable to similar provisions for pedestrian oriented uses in the Pedestrian Activities Districts (PAD) of the Downtown B-3 zone. Currently the provision requires a 60 day marketing period for marine use prior to offering space to a non-marine use. The WWG provided strong support for extending the marketing period to 180 days, consistent with the B-3 PAD requirements. Other clarifying language has been added.

- Marine Use Inventory: *What is the best way to track and monitor the success of the Zone and state of marine economy?*

Staff has recommended, and the WWG agrees (though without apparent enthusiasm) to remove the inventory requirement from zoning. Staff recommends a standalone City Council order to replace the existing requirement with an annual report of significant waterfront development. The City should also commit to conduct a periodic assessment of the state of the Marine Economy for the entire waterfront as a better measure of the waterfront's health than provided by the extremely limited inventory currently described in the WCZ.

- Permitted Uses: *Should uses allowed in the overlay, such as restaurants, be allowed outside of the overlay?*

With strong support from the WWG, staff is recommending that non-marine retail, all restaurants (except as accessory uses) and other retail-like uses should be limited to the Commercial Street Overlay Zone. The expansion of such uses was seen as an erosion of marine use potential, as creating undue pressure on pier parking, and as generating too much traffic and potential conflict with higher priority marine uses. Staff agrees that the Comprehensive Plan is better implemented by concentrating high parking and traffic generating uses toward Commercial Street.

- Performance Standards: *Are the current development standards adequately protecting marine use access and ability to function efficiently?*

Staff recommends, with the general agreement of the WWG, streamlining

redundancies within the current WCZ performance standards. Existing protections are retained or strengthened; while language and submission requirements are clarified.

The above bullets are a summary of the most important recommended changes. Please refer to the Planning memo for the complete narrative, policy review, and the redline amendment for text.

Summary

The Planning Board is requested to hold a workshop on the above amendments with the hope of moving directly to Public Hearing in May. City staff asks that the Board refer to the materials provided at the WWG website to understand the depth and extent of background work that has led to these recommendations. Rarely do zoning issues benefit from such an extensive discussion by such an informed and committed group. As stated in the introduction, the WWG has met nine times. Zoning has been a primary topic at eight of these meetings. The discussions have generated significant mutual learning between parties and fostered a far better understanding of tradeoffs by all parties. That learning is reflected in these recommended amendments to the WCZ. Based on the excellent and thorough input by the WWG, staff has sufficient feedback to provide the Planning Board and City Council with a set of recommended zoning amendments that are informed, reasonable, and consistent with the Comprehensive Plan.

In addition to the quality of the feedback provided, the Board is asked to recognize the time constraints created by the current non-marine development moratorium. By completing this important work within the limits of the moratorium, development interests for both marine and non-marine investments will have ability and certainty needed to move forward. It is our strong hope to conclude the current process within the timeframe described.

DRAFT AMENDMENTS TO DIV. 18, WATERFRONT CENTRAL ZONE

DIVISION 18. WATERFRONT CENTRAL ZONE – DRAFT AMENDMENTS*

*Editor's note—Ord. No. 168-93, § 2, adopted Jan. 4, 1993, repealed former Divs. 18, 18.5 and 18.7, §§ 14-306–14-320.2, which pertained to waterfront zones, and enacted new provisions as Divs. 18, 18.5 and 18.7 to read as herein set out. Formerly, such provisions derived from Ord. No. 426-83, § 1, adopted Apr. 25, 1983; Ord. No. 427-83, § 1, adopted Apr. 25, 1983; Ord. No. 355-85, § 1, adopted Jan. 7, 1985; Ord. No. 438-86, § 1, adopted Apr. 7, 1986; Ord. No. 189-87, § 3, adopted Feb. 7, 1987; Ord. No. 174-87, 's; 1, 2, adopted Mar. 4, 1987; Ref. of May 5, 1987; Ord. No. 385-87, adopted Apr. 6, 1987; Ord. No. 36-89, §§ 1, 2, adopted June 28, 1989; and Ord. No. 15-92, §§ 22, 23, adopted June 15, 1992.

Order 184-14/15 repealed Division 18.7 on 6-1-2015.

Sec. 14-305. Purpose.

The waterfront central zone was created to protect and nurture water-dependent and marine-related support uses so that they may grow and prosper in an environment and area dedicated to this purpose. The following priority of uses is recognized:

- (a) The first priority of this zone is to protect and nurture existing and potential water-dependent uses in a setting that enforces their continued economic viability;
- (b) The second priority is to encourage other marine and marine-related support uses so long as they do not interfere with water-dependent uses, either directly by displacement or indirectly by placing incompatible demands on the zone's infrastructure;
- (c) Non-marine uses are encouraged provided that they do not interfere with and are not incompatible with first and second priority uses. Non-marine uses are beneficial to the waterfront economy because they provide the financial return to property owners necessary for the maintenance and improvement of the marine infrastructure.

Water-dependent and marine-related support uses by their nature have activities and operational needs that are

unique to this area and are not shared by other commercial and industrial uses in the city. These first and second priority uses and related activities may result in noise, odor, dust, hours of operation, parking and traffic patterns and traffic control needs that are necessary for the convenient and successful conduct of such uses. Other uses may not be compatible with these types of effects. Other specified uses are permitted in the waterfront central zone, provided that they do not significantly interfere with the activities and operation of water-dependent and marine-related support uses. Such uses must be, and are assumed to be, aware of the impacts associated with marine uses and therefore must accept and be tolerant of them. Other specified uses in the zone shall accommodate to those patterns and needs of the higher priority uses so long as those higher priority uses are not detrimental to public health and safety and the higher priority activities are conducted in accordance with sound practices or practices customary in the trade.

Commercial Street is recognized as an important economic center for the city and region. Marine compatible uses are encouraged to locate and grow along Commercial Street while higher priority marine uses are protected on the waterfront.

(Ord. No. 168-93, § 2, 1-4-93; Ord. No. 193-05/06, 4-19-06; Ord.No. 103-10/11, 12-20-10)

***Editor's Note**—Pursuant to Council Order 103-10/11 passed on 12/20/10 Section 14-306 *No adverse impact on marine uses* was repealed in it's entirety and remaining sections were re-numbered accordingly.

Sec. 14-306. Definitions.

For the purposes of the waterfront central zone only the following terms shall have the following definitions:

Common circulation drives: private driveways, roadways and circulation areas accessible to all on-site tenants and/or occupants of a lot within the waterfront central zone providing access from/to the public street network.

Lot: any abutting property under common ownership.

Commercial Street Non-Marine Use Overlay Zone (~~CSOZ NMUOZ~~): The

Commercial Street non-marine Overlay Zone (CSOZ NMUOZ) is a portion of the waterfront central zone, as described below, where new and existing development may be occupied with 100% non-marine use tenants listed under 14-307(b), subject to the standards and use limitations provided in section 14-311(b).

The geographic limits of the CSOZ NMUOZ are defined by parcels of land and piers within the waterfront central zone located on the landward side of a line established one hundred twenty-five fifty (12550) feet southerly of the southerly sideline of Commercial Street and modified as follows: the seaward limit of the CSOZ NMUOZ extends to a line three hundred (3500) feet southerly of from the southerly sideline of Commercial Street in the area between the easterly and westerly sideline of Long Wharf to the westerly sideline of Union Wharf. Additionally, all areas subject to this provision are set back landward at least twenty-five (25) feet from the average high tide line of Portland Harbor and associated coastal wetlands. Where the one hundred twenty-five (125) foot offset intersects with the footprint of an existing building and such intersection leaves 75% or more of the building within the CSOZ, the entire building shall be considered included in the CSOZ. All offset distances are measured horizontally.

All applicants for development within the CSOZ NMUOZ are responsible for demonstrating their location within the CSOZ NMUOZ according to the findings of a site-specific land survey conducted by a professional land surveyor licensed by the State of Maine. The limits of the CSOZ NMUOZ shall be shown on all site plans and subdivision plats for proposed development within the CSOZ NMUOZ. A map showing the presumed boundaries of the CSOZ NMUOZ is on file with the Department of Planning and Urban Development. Said map is for illustrative purposes only and shall not be relied upon in determining whether a proposed development is located within the CSOZ.

On-Site shall mean that portion of any lot included within or directly impacted by a proposed development.
(Ord. No. 193-05/06, 4-19-06; Ord. No. 103-10/11, 12-20-10)

Sec. 14-307. Permitted uses.

Subject to a determination that the proposed use meets the standards of section 14-311, as applicable, the following uses are permitted in the waterfront central zone:

(a) Marine:

1. Marine products wholesaling~~r~~ distribution and retailing;
2. Marine repair services and machine shops;
3. Tugboat, fireboat, pilot boat and similar services;
4. Harbor and marine supplies and services, chandleries, and ship supply such as fueling and bunkering of vessels;
5. Marine industrial welding and fabricating;
6. Shipbuilding and facilities for construction, maintenance and repair of vessels;
7. Commercial marine transport and excursion services, including ferries, captained charter services, sport fishing and water taxis;
8. Cargo handling facilities, including docking, loading and related storage;
9. Boat repair yards;
10. Boat storage facilities, excluding rack storage facilities; (Boat rack storage facilities are included in conditional use, section 14-308(b)(3) below);
11. Seafood processing and retailing;
12. Seafood packing and packaging;
13. Seafood loading and seafood distribution;
14. Fabrication, storage and repair of fishing equipment;

15. Ice-making services;
16. Facilities for marine construction and salvage;
17. Facilities for marine pollution control, oil spill cleanup, and servicing of marine sanitation devices;
18. Fabrication of marine-related goods;
19. Fishing and commercial vessel berthing;
20. Non-commercial berthing of a maximum of fifty (50) linear feet per pier. A non-commercial berth may not displace a commercial berth.

Parking for any non-commercial berthing is subject to the provisions of section 14-311(d)8.

21. Marine office, including but not limited to offices of owners of wharves or their agents, and naval architects, and seafood brokers;
22. Public landings;
23. Marine research, education, and laboratory facilities;
24. Bait sales and processing;
25. Harbor security and emergency response services including but not limited to Harbor Master, Marine Patrol and Coast Guard.

26. Commercial parking for water-dependent uses.

- (b) Non-marine commercial and industrial uses: Non-marine uses permitted by this section are subject to the standards listed in section 14-311.

1. Professional, business, government, and general offices;
- ~~2. Retail and service establishments, including craft and specialty shops. Convenience stores with gas pumps shall be permitted under this section;~~

~~3. Restaurants provided that full course meal food service and consumption shall be the primary function of the restaurant, and full course meal service shall be continued up until the hours of closing;~~

~~4. Banking services without drive up services~~

~~5. Laundry and dry cleaning services;~~

2. Cabinet and carpentry shops, studios for artists and crafts people;

3. Intermodal transportation facilities;

4. Cold storage facilities;

~~5. Museums and art galleries; and Commercial kitchens; and,~~

6. Outside accessory activities.

(c) Public:

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

(d) Other:

1. Accessory uses:

a. Interior accessory uses customarily incidental and subordinate to the location, function and operation of permitted uses. Food service establishments, newsstands and other similar retail and service support uses shall only be permitted as accessory uses if they are part of and located within the lot lines of a use set forth in section 14-307(a)(1), (a)(7), ~~(a)(11)~~, or (a)(22); that such uses do not exceed two-thousand (2,000) square feet in total floor area of the building, or twenty-five percent (25%) of the total floor area of the building, whichever is less, and that each individual accessory use

does not exceed one-thousand (1,000) square feet in total floor area of the building; and further provided that such accessory uses provide goods or services that are supportive of the principal use and its clientele. Exterior accessory uses shall be otherwise subject to the provision of 14-311(a); and

- b. Interior meeting or classroom space accessory to uses permitted in section 14-307(a)(23) (marine research, education, and laboratory facilities) may be rented out for meeting use by marine-related or non-marine related groups or organizations, or the general public, and such accessory uses shall not be subject to the limitations contained in paragraph b, but shall only be permitted as accessory uses if the total of all support uses, including interior meeting or classroom space, does not exceed three-thousand (3,000) square feet in total floor area per building, or fifteen percent (15%) of the total floor area per building, whichever is less.

2. ~~Street vendors licensed pursuant to Chapter 19.~~
3. Wind energy systems, as defined and allowed in Article X, Alternative Energy.

(e) Uses permitted only within the Commercial Street Overlay Zone. Uses permitted by this section are subject to the standards listed in section 14-311(b).

1. Retail and service establishments, including craft and specialty shops;
2. Restaurants provided that full course meal food service and consumption shall be the primary function of the restaurant, and full course meal service shall be continued up until the hours of closing;
3. Banking services without drive-up services;
4. Museums and art galleries;

5. Street vendors licensed pursuant to chapter 19.
6. Offices of health care practitioners or health care clinics.
7. Personal service establishments.

(Ord. No. 168-93, § 2, 1-4-93; Ord. No. 131-01/02, § 1, 1-23-02; Ord. No. 309-01/02, § 1, 7-15-02; Ord. No. 38-02/03, § 1, 9-4-02; Ord. No. 193-05/06, 4-19-06; Ord. No. 103-10/11, 12-20-10; Ord. No. 33-11/12, 1-18-12)

Sec. 14-308. Conditional use.

The uses listed herein shall be permitted as conditional uses in the waterfront central zone, provided that, notwithstanding section 14-471 and section 14-474(a), or any other provision of this code, the planning board shall be substituted for the board of appeals as the reviewing authority, and further provided that in addition to the provisions of section 14-474(c)(2), they shall also meet the applicable waterfront central zone development standards in section 14-311:

(a) Commercial marine conditional uses:

1. Fish by-products processing, provided that:
 - a. Any fish by-products processing facility has a valid rendering facility license under chapter 12;
 - b. Any existing fish by-products facility shall employ current and appropriate odor control technology (and any new fish by-product use shall employ current, available odor control technology) to eliminate or minimize detectable odors from such a process, and in no case shall odors exceed the odor limitation performance standards of the I-M zone; and
 - c. The processing of other material wastes or by-products shall not be deemed a lawful accessory use under any other provision of this article.
2. Boat rack storage facilities, provided that:

- a. Parking shall be provided for one-hundred percent (100%) of the demand generated by the use (notwithstanding 14-311(d)8, performance standard for parking), and such parking shall be provided off-site, in another zone permitting such use.
- b. Boat rack structures shall not exceed ten thousand (10,000) square feet of building footprint.

~~(b) Residential: The primary owner of a marine business listed under section 14-307(a) located on the same site may occupy upper floor space with a residential use, provided the following conditions are met:~~

- ~~1. The applicant demonstrates a compelling business related need for living on-site that cannot otherwise be accomplished;~~
- ~~2. The residential living space shall not exceed one thousand (1,000) square feet, inclusive of all exterior porches and decks;~~
- ~~3. The occupancy of said space shall be limited to the primary owner of the marine related business. The residential use is not transferable to friends, family or anyone other than the primary business owner. No such residential space shall be leased out by or allowed to be used for occupancy by other than the primary owner of the marine related business;~~
- ~~4. The residential use shall be limited to one unit per wharf;~~
- ~~5. The residential use shall be year round use only, and shall not be used on a seasonal basis; and~~
- ~~6. Upon the vacancy in excess of three (3) months of the residential living space by the primary owner of the marine related business, the residential use shall automatically terminate and shall not be continued without new conditional use approval under this subsection.~~

~~For purposes of this subsection, "primary owner of the~~

~~marine related business" shall mean a person who legally owns fifty percent (50%) or more of the marine business listed under section 14-307(a), permitted marine uses.~~

- (b) Utility substations: Public utility substations, including but not limited to electrical transformers, sewage and stormwater pumps, and telecommunication switching stations, are permitted under the following conditions:
 - 1. The facility is located more than one-hundred (100) feet from the water's edge;
 - 2. The facility occupies no more than fifty (50) square feet of structure above ground;
 - 3. The facility provides no dedicated on-site parking and all subsurface elements of the facility are installed and operated such that land occupied by the facility is otherwise usable and made available for marine uses, including but not limited to parking, travel ways, and/or storage; and
 - 4. The facility shall be sized, sited and screened to minimize visual impact and prominence from public ways.
- (c) Temporary wind anemometer towers, as defined in Sec 14-47, are permitted provided the following standards are met in addition to Sec 14-430:
 - 1. Towers may be installed for the purpose of wind data collection for no more than two (2) years after the issuance of a Certificate of Occupancy for the tower. At the conclusion of the aforementioned two (2) years, the tower must be dismantled and removed from the site within sixty (60) days; and
 - 2. Towers shall be constructed according to plans and specifications stamped by a licensed professional engineer, which shall be provided to the Board of Appeals with the application; and
 - 3. Towers shall be set back from habitable buildings by a distance equal to 1.1 times the tower height; and

4. The applicant shall provide a safety report prepared and stamped by a licensed professional engineer to the Board of Appeals with their application for conditional use, which demonstrates how the proposed temporary wind anemometer tower is safe in terms of strength, stability, security, grounding, icing impacts and maintenance; and
5. The applicant shall provide evidence of commercial general liability insurance, such insurance to be satisfactory to Corporation Counsel and cover damage or injury resulting from construction, operation or dismantling of any part of the temporary wind anemometer tower; and
6. Towers and associated guy wires shall be sited to minimize their prominence from and impacts on public ways (including pedestrian ways); and
7. Towers shall be used for installing anemometers and similar devices at a range of heights from the ground to measure wind characteristics (speed, direction, frequency) and related meteorological data, but shall not be used for any other purpose; and
8. A performance guarantee shall be required for the cost of removal of the tower, guy wires and anchors. This requirement may be satisfied by surety bond, letter of credit, escrow account or by evidence, acceptable to the City, or the financial and technical ability and commitment of the applicant or its agents to remove the facility at the end of the use period.

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

(Ord. No. 168-93, § 2, 1-4-93; Substitute Ord. No. 00-42, 8-7-00; Ord. No. 73-01/02, § 1, 10-15-01, Ord. No. 131-01/02, § 2, 1-23-02; Ord. No. 193-05/06, 4-19-06; Ord. No. 29-09/10, 8-3-09, emergency passage; Ord. No. 240-09/10, 6-21-10; Ord. No. 278-09/10, 7-19-10; Ord. No. 103-10/11, 12-20-10; Ord. No. 33-11/12, 1-18-12)

Section 14-309. Prohibited uses.

Uses which are not enumerated in either section 14-307 or 14-308 as permitted or conditional uses are prohibited. Uses enumerated

in section 14-307(e) shall be considered prohibited uses outside of the CSOZ boundary. Those uses that are prohibited shall include, without limitation:

- (a) Residential Uses ~~Except as provided in section 14-308, residential uses (not in existence on May 5, 1987);~~
- (b) Hotels, motels, hostels, bed and breakfasts, inns, lodging houses, tourist homes, short-term rentals or boatels;
- (c) Auditoriums, civic centers, convention centers, or other meeting facilities not accessory to an otherwise permitted use;
- (d) Drinking establishments, private clubs, or non-profit social and recreational facilities;
- (e) Ground mounted telecommunication towers, antennas, and/or disks; and
- (f) Drive-up services for any use other than a permitted use listed under 14-307(a) or 14-308(a)(1).
- (g) Major and minor auto service stations.
- (h) Laundry and dry-cleaning services.
- (i) Convenience stores with gas pumps

(Ord. No. 168-93, § 2, 1-4-93; Ord. No. 73-01/02 § 2, 10-15-01; Ord. No. 193-05/06, 4-19-06; Ord. No. 103-10/11, 12-20-10)

Sec. 14-310. Dimensional requirements.

In addition to the provisions of division 25 of this article, lots in the waterfront central zone shall be subject to the following requirements:

- (a) Minimum lot size: None.
- (b) Minimum frontage along Commercial Street: Seventy-five (75) feet.
- (c) Minimum lot width within the NMUOZ: Fifty (50) feet measured parallel with Commercial Street and such lot width shall be continuous for the full depth of the lot

located within the NUMUOZ.

(d) Minimum yard dimensions:

1. Front setback: None.
2. Side setback: None
3. Rear setback: None.
4. Setback from pier edge: Notwithstanding the above requirements, a minimum first-floor setback of ten five(105)feet from the edge of any pier, wharf or bulkhead shall be required for any structure, and shall include parking for non-marine uses. The edge of any pier, wharf or bulkhead shall include any attached apron(s). Floats, rafts, and or barges not structurally integral to the pier, wharf or bulkhead may not be used to satisfy this requirement.

(e) Maximum lot coverage: One-hundred (100) percent.

(f) Maximum building height: Fifty (50) feet. Except as provided in (h) below, a structure in the waterfront central zone shall provide no more than three habitable floors; however, typical rooftop appurtenances and/or enclosed or open mechanical installations shall be allowed over the third floor.

(g) Minimum ground floor clearance: Any new building proposed to be larger than three-hundred (300) square feet, and located more than 35 feet from the southerly sideline of Commercial Street, shall provide no less than fifteen (15) feet of first floor to ceiling vertical clearance to promote marine industrial use potential. New buildings less than three-hundred (300) square feet or additions to existing multistory buildings are exempt from this provision but shall provide the maximum ground floor clearance practicable.

(h) New non-marine use building exception for usable floors and minimum ground floor clearance: Notwithstanding provisions (f) and (g) above, for new non-marine use buildings permitted within the NMUOZ, four (4) usable floors are allowed and ground floor clearance minimums do not apply.

(Ord. No. 168-93, §2, 1-4-93; Ord. No. 309-01/02, § 2, 7-15-02; Ord. No. 193-05/06, 4-19-06, Ord. No. 103-10/11, 12-20-10)

Sec. 14-311. Development standards.

(a) Standards for non-marine uses located outside of the ~~CSOZ NMUOZ~~: Non-marine uses listed above in Sec. 14-307(b) and 14-308(b) that are located outside of the ~~CSOZ NMUOZ~~ shall be subject to the performance standards listed in 14-311(d) as well as the following standards:

1. 55% marine use required on ground floors: At least 55% of the ground floor of all of the buildings on the lot (defined in 14-306 above), when calculated using the aggregate of all the leaseable area of such ground floors, shall be occupied by marine uses, as listed under 14-307(a) or 14-308(a)(1).
2. 55% marine use required for all open areas: After subtracting areas used for common circulation drives (defined in 14-306 above), at least 55% of un-built area (meaning area not occupied by a building) on the lot, when calculated using the aggregate of all such un-built areas, shall be occupied by marine uses, as listed under 14-307(a) or 14-308 (a)1.
3. Ground floor vacancies and change of occupancy offered to water dependent/marine uses: Ground floor vacant space and areas proposed for a change of occupant outside of the ~~CSOZ NMUOZ~~ shall not be filled with any non-marine use without adequate opportunity for marine uses to occupy the space.
 - a. *Ground floor vacancy and change of occupant outside of the ~~CSOZ NMUOZ~~ advertised to marine users:* In any lot or portion of lot outside of the ~~CSOZ NMUOZ~~, each time a ground floor occupant departs or gives notice to depart from the lot, the space must be made available to new marine occupants.

Prior to renting to a non-marine user the property owner shall advertise for a new marine occupant for not less than a one hundred eighty(180~~60~~) day period in targeted media and by other means reasonably calculated to reach

marine users (e.g. local marine trade publications, marine trade websites, waterfront bulletins .) Should one or more marine users apply, the property owner shall make the space available to a marine occupant, in accordance with terms and rates generally consistent with comparable space in the 55% marine use portion of the zone(outside of the CSOZ NMUOZ.)The property owner may stop advertising sooner than the end of the 18060 - day period if a lease is signed with a marine user. Should no marine user apply by the end of the 18060-day period, the owner may fill the space with a non-marine user provided that the new non-marine occupant will not cause the lot to exceed the non-marine use occupancy maximum of 45% of the ground floor area or open area.

- b. Uses inventoried: To demonstrate adherence to the 55% marine use requirement, the applicant shall submit to the planning authority, upon request, an inventory which lists each occupant (tenant or otherwise), as well as a map which depicts the location of each occupant. The map shall show all ground level space, including buildings, parking, open areas and submerged lands associated with the subject lot. For each occupant, the property owner must indicate the square footage of area occupied and whether the occupant is a marine use as defined herein. For vacant space, the last previous occupant shall be listed, along with the date of departure.
- c. Applicants for site plan review or a change of use permit outside of the NMUOZ shall provide the planning authority with proof of compliance with the requirements of this section as a condition of approval.
- ~~d. The city planning authority shall compile and report inventories of ground level uses, as reported under (b) above, into an annual report of ground level uses and investment in the Central Waterfront. The report shall include an aggregated assessment of ground floor marine and non-marine use occupancy and a catalogue~~

~~of marine infrastructure investment for the reporting period. The report shall be submitted to the City Council as a communication not less than once every calendar year.~~

4. Pier or bulkhead edge reserved for marine uses: Notwithstanding ~~anything contained in 14-311(c) Contract or conditional rezoning, or any other~~ any provision of this ordinance to the contrary, excepting only the portion of any pier which might be used for non-commercial berthing pursuant to 14-307(a)(20), all berthing and/or dockage space and associated floats plus the entire linear edge of that portion of every pier or bulkhead which is adjacent to greater than zero feet of water depth at mean low water, to a minimum setback line of at least ~~tenfive~~ (10) feet from the edge of the pier, bulkhead, or engineered shoreline may only be used or occupied by one or more marine uses as defined in 14-307(a)) or 14-308(b). Said edge shall be the seaward extent of any engineered shoreline or working deck of any pier or wharf.
- (b) ~~CS0Z NMU0Z~~ standards: Non-marine uses listed under 14-307(b), 14-307(e) and 14-308 located within the ~~CS0Z NMU0Z~~, as defined in 14-306, shall be subject to the performance standards listed in 14-311(d) as well as the following standards:
1. Vessel access: Non-marine uses allowed under this provision shall not disrupt or block access to vessel berthing and shall otherwise adhere to the performance standards of this zone described in Sec. 14-311(d).
 2. *Maximum setback for new development on lots with seventy-five (75) or more feet of Commercial Street frontage:* Any new non-marine development constructed subject to this provision which is located on a lot with seventy-five (75) or more feet of frontage along the Commercial Street right of way shall be located with its front façade no further than thirty-five feet (35) from the southerly sideline of the Commercial Street right of way. Furthermore, any such development shall orient its front façade and its primary pedestrian

entrance toward Commercial Street and no vehicular circulation or parking may occupy the land or pier area between the front façade of the building and Commercial Street.

Non-marine development subject to this provision on lots with fewer than seventy-five (75) feet of frontage along the Commercial Street right-of-way, changes of use within existing buildings, and/or building additions of less than 5,000 square feet of new development to existing buildings are exempt from the maximum setback provisions established herein.

3. *Investment in marine infrastructure:* All applicants for site plan review or a change of use permit for non-marine development in the NMUOZ are required to invest in marine infrastructure as a condition of development, provided that the total project costs exceed \$250,000. The value of the investment shall be not less than five percent (5%) of total project costs over \$250,000 for constructing non-marine space and associated site improvements in the NMUOZ.

Required investment may occur by one or both the following methods:

- a. *Direct investment in marine infrastructure* located on the same lot: Investment shall be for the benefit of marine uses listed in 14-307(a) within the same lot as the proposed non-marine development. Investment may include dredging, pile replacement, new or replaced structural decking (but not pavement resurfacing), new or replaced fendering systems, new or replaced floats, pier expansions, permanent conversions of recreational berthing to commercial berthing, bulkhead or seawall repair or improvements, or any combination of similar improvements. Plans for the marine infrastructure investment shall be submitted to the planning authority with the application for site plan review or change of use permit and shall include details and a commitment as to how the marine infrastructure will be utilized by marine users. The marine

infrastructure improvements shall be completed prior to the issuance of a certificate of occupancy for the non-marine development project.

- b. *Financial contribution: If direct investment in marine infrastructure is not made, the developer shall make a financial contribution to the city's waterfront loan and investment fund.*

(c) No Contract or Conditional Rezoning Permitted

1. Purpose: This section is intended to accomplish goals from Portland's Plan 2030. Specifically, these changes will:
 - a. Prioritize and promote Portland's unique mix of water-dependent, marine-related uses and compatible non-marine uses;
 - b. Recognize and reinforce the respective roles of the Eastern, Central and Western Waterfronts; and
 - c. Celebrate, promote and protect Portland's lobster and fishing industry as a foundation of the region's economy and a feature of civic pride.
2. In light of this purpose and the significance of the central waterfront to the City's future, no contract or conditional rezoning applications may be approved in the Waterfront Central Zone.

~~(c) Contract or conditional rezoning standards: Applications for proposals deviating from any dimensional requirements under section 14-310 and/or including uses not listed under sections 14-307 and 14-308 may only be considered if the reviewing body finds the applicant has met the performance standards listed under 14-311(d) and the following standards:~~

- ~~1. Conditional or contract rezoning located outside of the NMUOZ: The ground level floor area of any building, existing or proposed, on the subject lot and the un-built area of the subject lot and the~~

~~un-built area of the subject lot shall be subject to and meet the requirements of section 14-311(a) of this code.~~

- ~~2. Conditional or contract rezoning located within the NMUOZ: Conditional or contract rezoning applications located within the NMUOZ are subject to the provisions of 14-311(b)(3) (Investment in marine infrastructure).~~
- ~~3. Residential dwellings are prohibited.~~
- ~~4. The development is consistent with the comprehensive plan and without the development the site could not otherwise support an economically viable water-dependent use.~~
- ~~5. Any physical or legal impediments which preclude or impede functional access from the site of the development to any portion of the water's edge are not the result of action taken by the current owner, the applicant for rezoning, or any prior owner after January 4, 1993.~~
- ~~6. The project's public benefits outweigh its potential negative impacts, taking into consideration as public benefits: protection of existing water-dependent uses, preservation of future water-dependent use development opportunities, contribution to the development of and/or on-going maintenance of the marine infrastructure for commercial vessels, and visual and physical access to the waterfront for the general public.~~
- ~~7. The development responds to any unique physical conditions and development opportunities along the shoreline in a manner that is consistent with section 14-305 (purpose).~~
- ~~8. The non-marine portion of the proposed development will not adversely affect the efficient operation of marine uses, such as producing less efficient traffic, parking or circulation patterns. Parking for the non-marine portion of the proposed development shall be subject to review under section 14-311(d)(8).~~

~~9. The rezoning contains adequate provisions and/or conditions to ensure that any associated water-dependent infrastructure remains occupied by any commercial marine use as listed in 14-307(a) and that said use is not abandoned after the project is developed.~~

(d) Performance standards: All uses in the waterfront central zone shall comply with the following standards. ~~Standards 8, 10, 13, 14, 15, 16, and 17 below shall be reviewed by the planning authority:~~

1. Outdoor storage of materials: Outdoor storage of commodities and materials accessory to normal conduct of business, except pilings and/or cranes, shall be permitted to a maximum height of forty-five (45) feet, and such materials shall be entirely contained, including runoff contaminants and residual material, within a designated area within the lot boundaries.
2. Noise: The level of sound, measured by a sound level meter with frequency weighting network (manufactured according to standards prescribed by the American National Standards Institute, Inc.), inherently and recurrently generated within the waterfront central zone shall not exceed seventy-five (75) decibels on the A scale at the boundaries of any lot, except for sound from construction activities, sound from traffic on public streets, sound from temporary activities such as festivals, and sound created as a result of, or relating to, an emergency, including sound from emergency warning signal devices. In measuring sound levels under this section, sounds with a continuous duration of less than sixty (60) seconds shall be measured by the maximum reading on a sound level meter set to the A weighted scale and the fast meter response (L maxfast). Sounds with a continuous duration of sixty (60) seconds or more shall be measured on the basis of the energy average sound level over a period of sixty (60) seconds (LEQ1).
3. Vibration: Vibration inherently and recurrently generated shall be imperceptible without

instruments at lot boundaries. This shall not apply to vibration resulting from activities aboard a vessel or from railroad vehicle activities, or from activities on a pile supported pier.

~~4. Federal and state environmental regulations: All uses shall comply with federal and state environmental statutes and regulations regarding emissions into the air, except where provisions of this Code are more stringent.~~

4. Discharges into harbor areas: No discharge into harbor water areas shall be permitted, unless permitted by the Maine Department of Environmental Protection under a waste discharge license and as approved by the department of public works in accordance with chapter 24, article III of this code. All private sewage disposal or private wastewater treatment facilities shall comply with the provisions of chapter 24, article II of this code and federal and state environmental statutes and regulations regarding wastewater discharges.

5. Storage of vehicles: Storage of any unregistered automotive vehicle on the premises for more than sixty (60) days shall not be permitted.

6. Landfill of docking and berthing areas: Landfill of docking and berthing areas shall be governed by 38 M.R.S.A. sections 480-A through 480-HH, and permitted only if the landfill does not reduce the amount of linear berthing areas or space, or berthing capacity. If approved, construction shall be undertaken using methods approved by the department of public works and shall be accomplished in accordance with the provisions of division 25 of this article and in a manner so as to ensure that a stable and impermeable wall of acceptable materials will completely contain the fill material and will not permit any fill material to leach into docking areas or navigable waters.

7. Off-street parking and loading: Division 20 (off-street parking) and division 21 (off-street loading) of this article shall not apply.

~~The planning authority shall review applications~~

~~for non-marine use parking against the following standards:~~

- ~~a. Applicants for non-marine parking in the waterfront central zone shall submit a parking and traffic circulation plan showing the location of all existing and proposed structures, travel ways and parking on the subject lot.~~
- ~~b. Outside of the NMUOZ, non-marine use parking is subject to the limitations described in 14-311(a) ("55% rule").~~
- ~~c. Non-marine use parking shall only be located on a lot where, based on the parking and traffic circulation plan and a parking analysis to be submitted for planning authority review, the marine use parking supply is reasonably sufficient to serve marine use space located on the subject lot.~~
- ~~d. Water-dependent use parking spaces shall be located as close as reasonably possible to associated vessels and/or ground floor lease areas.~~

~~8. Shoreland and flood plain management regulations: Any lot or portion of a lot located in a shoreland zone as identified on the city shoreland zoning map or in a flood hazard zone shall be subject to the requirements of division 26 and/or division 26.5 of this article.~~

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

~~9. Signs: Signs shall be permitted as set forth in division 22 of this article.~~

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

10. Urban design: Construction of new structures located within thirty-five (35) feet of the southerly edge of Commercial Street between Maine Wharf and the easterly property line of the city fish pier shall conform to the guidelines set forth in the downtown urban design guidelines, unless such structures are also located within one-hundred (100) feet of the water. Such structures that are also located within one-hundred (100) feet of the water shall conform to the extent practicable to the downtown urban design guidelines.
11. Pier and wharf expansions: In addition to meeting Harbor Commission and Coast Guard requirements for navigation, any expansion or extension of a pier and or wharf in the waterfront central zone shall demonstrate its compatibility with fixed route ferry service and emergency vessel operations.
- ~~12. Compatibility of non-marine uses with marine uses: Non-marine uses, structures and activities, including but not limited to access, circulation, parking, dumpsters, exterior storage and loading facilities or other structures shall neither interfere with the existence or operation of marine uses nor impede access to vessel berthing or other access to the water by existing or potential marine uses. Siting of a use not set forth in section 14-307(a) shall not substantially reduce or inhibit existing public access to marine or tidal waters.~~
- ~~13. Functional utility of piers and access to the water's edge: All new development, whether for marine or non-marine uses, should anticipate current and future functional and operational needs of water dependent pier tenants to access the water's edge for the transfer of goods and materials between berthed vessels and land bound vehicles, and shall demonstrate adherence to the following provisions:~~
- ~~a. Provisions for the storage and movement of goods and materials must be designed into all waterside development and internal circulation routes must be maintained or~~

~~otherwise provided as an element of any development. The siting, design, and circulation of non-marine uses, particularly those allowed on first floors, shall adjust if needed to accommodate reasonable access for pedestrians, vehicles, and freight transfer to and from berthed vessels.~~

- ~~b. Any development that proposes to site a building within ten (10) feet of a pier edge (thus precluding vehicle use of the pier edge) should provide openings and circulation through or around the building to allow the transfer of goods and materials to trucks and circulation routes within the interior of the pier.~~
- ~~c. With the exception of non-commercial berthing allowed under section 14-307(a)(20), there is to be no other non-commercial berthing.~~
- ~~d. Except for common circulation drives as defined in 14-306, access ways, parking and loading areas designated for marine uses shall be exclusively for marine uses and shall not be shared with non-marine uses.~~

12. Public view protection: Any new development in the waterfront central zone shall perform a public view impact analysis for review and approval by the planning board or planning authority as a condition of site plan approval. The analysis shall: (a) demonstrate the project's adherence to the Portland View Corridor Protection Plan (City of Portland Comprehensive Plan, 2002) to the extent practicable; and (b) promote the public's visual access to the water through sensitive building placement.

The planning board or planning authority shall find at a minimum that the proposed development (a) retains street corridor views as extended across Commercial Street from the Portland peninsula; (b) retains panoramic views of the water from Commercial Street to the extent practicable; and (c) where loss of existing public views to the water is shown to be necessary for

the reasonable development of the site, the developer provides alternative public views to the water through newly established view corridors or publicly accessible pedestrian ways. Such pedestrian ways shall not interfere with existing or potential water-dependent uses, nor shall they endanger the public through uncontrolled proximity to industrial activity.

13. Operations and Access Management Plan: Any new development, including changes of use, in the waterfront central zone shall submit a scaled plan and accompanying narrative for review by the Planning Authority that demonstrates adequate waterfront access and logistical accommodation for water-dependent users. In accordance with Portland's Plan 2030, the plan shall demonstrate consistency with the hierarchy of waterfront uses pyramid, with non-marine and marine-related uses being subordinate in placement and disposition to water-dependent uses. The plan shall, at a minimum, incorporate the following information and restrictions:

- a. Location of all existing and proposed structures, rights-of-way, common circulation drives as defined in Sec. 14-306, access-ways, sidewalks, pier edges, floats and docks within one hundred feet of the project's limit of work boundary.
- b. Buildings located within ten (10) feet of the pier edge shall account for the transfer of goods between berthed vessels and land-bound vehicles, providing openings and circulation routes through or around buildings as necessary to accommodate water-dependent uses.
- c. Proposed off-street parking, labeled with associated uses and subject to limitations as described in Sec. 14-311(a) ("55% Rule"). Off-street parking spaces intended for use by water-dependent uses shall be sited as close as practicable to associated vessels and/or ground-floor lease area. Proposals for new non-marine parking shall require submission

of a parking analysis justifying the number of spaces based upon the proposed use.

- d. Facilities for the loading and unloading of goods and materials. Facility design shall account for frequency of use and vehicle type and, to the extent possible, minimize impacts to pedestrian and vehicle circulation patterns.
- e. Non-marine uses outside of the CSOZ shall identify a dedicated pedestrian route between the proposed use and Commercial Street, and shall seek to minimize conflict with vehicle traffic.
- f. Regularly occurring exterior activities including but not limited to the storage of material, equipment and vehicles, yard area, outdoor seating and on-site waste management.
- g. Off-street parking, loading facilities and access ways intended for use by water-dependent users shall be exclusive to water-dependent uses only. All properties providing commercial berthing shall demonstrate reasonable opportunities to load and unload vessels from the subject lot.

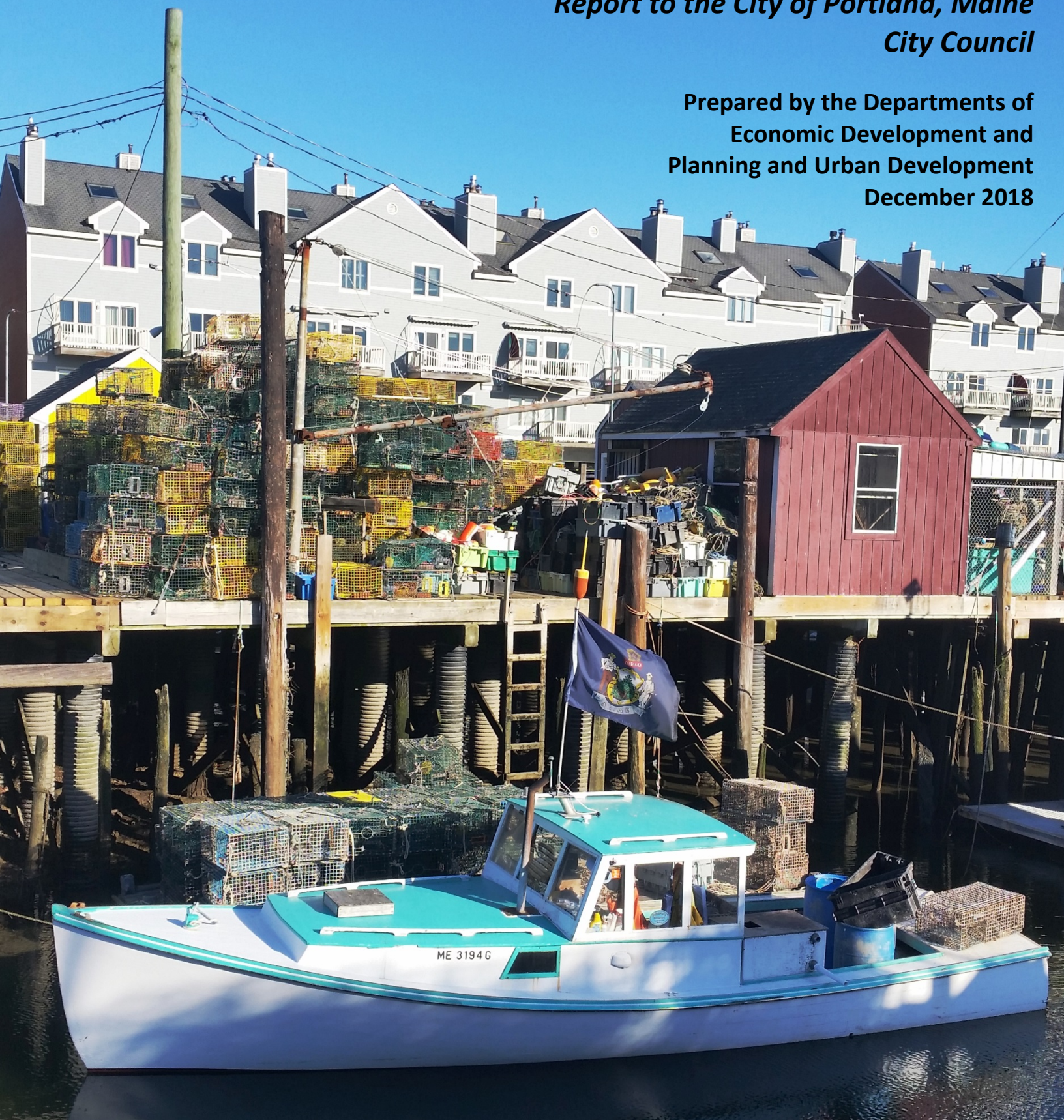
Ord. No. 103-10/11, 12-20-10; Ord. 108-15/16, 11-16-2015)

Waterfront Central Zone 2018 Marine Use Inventory



*Report to the City of Portland, Maine
City Council*

**Prepared by the Departments of
Economic Development and
Planning and Urban Development
December 2018**



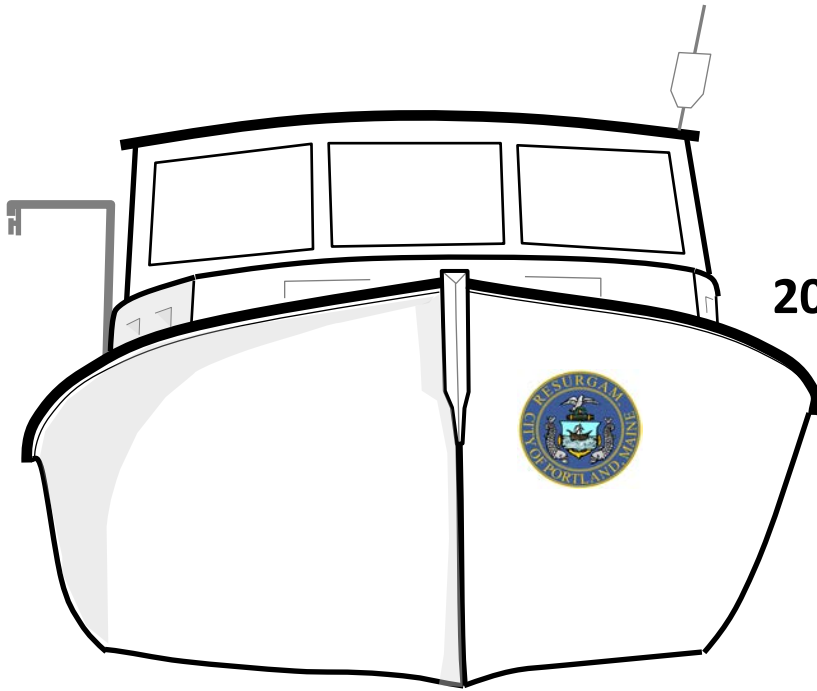
Waterfront Central Zone 2018

Marine Use Inventory:

Credits:

- Jon P. Jennings, City Manager
- Greg Mitchell, Economic Development Director
- Bill Needelman, Waterfront Coordinator, primary author
- Jeff Levine, Planning and Urban Development Director
- Tuck O'Brien, Planning Director
- James Dealaman, Administrative Officer, Planning and Urban Development
- Marguerite Fleming, Intern

Thanks to the owners and managers of piers and wharfs in the Central Waterfront who shared time and information in the generation of this report. December 2018



Waterfront Central Zone 2018 Marine Use Inventory December 2018

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Waterfront Central Zone 2018 Marine Use Inventory: Executive Summary

On December 20, 2010, the Portland City Council passed significant changes to the text of the Waterfront Central Zone (WCZ) allowing expanded non-marine use and development on Portland's Waterfront. When passing the 2010 zoning, the City Council required that the City conduct a periodic inventory of uses to understand the new regulation's impacts on marine industry and investment on the piers. Understanding the trends in marine use is important. This information helps the community understand: 1. The footprint of marine industry in the WCZ; 2. The extent of vacancies; and, 3. The growth of non-marine activity. Data is separated for first floor **buildings** and **open space** outside of the "Non-Marine Use Overlay Zone."

Building Results

As reported in 2012, the ground floors of buildings are still predominantly available to marine uses.

The percentage of space available to marine use (Active MU + Vacant) is down from +/-75% of space in 2012 to +/-67% in 2018. ***The percentage shift results mostly from conversion of vacant space to non-marine*** space with the largest change found on Maine Wharf (Scales.) The overall reported area of ***marine use building space has decreased marginally (less than 3%)*** from 2012 to 2018, with a corresponding dip in the percentage of first floor building space available to marine use.

Open Space Results

Like with the first floor building space above, open space in the inventory area has remained strongly dedicated to marine use in the WCZ. ***Marine Use on open areas has reduced by +/-60,000 sq ft (+/-8%)*** with a large portion of this reduction ***resulting from the recent vacancy of Berlin Mills Wharf***. Additional incremental loss of open space to non-marine parking is found throughout the easterly portion of the zone, some of which likely results from better reporting with this inventory.

Non-Marine use open area has increased by almost 24,000 sq ft. This reported increase is found imbedded in many properties, including:

- Better reporting of open space data – including parking allocations;
- Incremental increase in non-marine parking; and,
- Expansion of outside restaurant seating on Maine Wharf and Portland Pier.

Concluding Remarks:

As found in 2012, Waterfront Central Zone remains a center for marine industry, but continues to evolve as allowed under the WCZ text. The first floor **Building Space** results above demonstrate the zone policies working as they were intended. Vacant space has been filled with non-marine use (only after having been advertised to marine use as a condition of zoning.) **Open Space** results offer a more complicated picture than interior space – showing both an increase in vacancy and simultaneous increase in non-marine use. Parking uses, both marine and non-marine, have had a significant influence on the results herein.

Forward.

The City of Portland Departments of Economic Development and Planning and Urban Development are pleased to provide the City Council with the 2018 Waterfront Central Zone (WCZ) Marine Use inventory. This third version of the inventory has been a long time coming and we, as the responsible staff, apologize for the delay. Portland's waterfront has been a busy place for the past few years, and while we never took our eyes off the waterfront and its goings on, it does not excuse our failure in bringing important information to the Council in a timely manner.

Since the last presentation of a WCZ Inventory in 2013, the Portland Waterfront has experienced changes comparable to other parts of our community during this historic development cycle. International ferry service between Nova Scotia and Maine has restarted – twice –and is again in transition. The City of Portland and the Portland Harbor Commission continue to explore solutions for the vexing problem of pier and berthing dredging. Regular container freight service between Portland and northern Europe has started, grown, and fostered deepening business, cultural, and educational connections between Maine and the north Atlantic. Portland Yacht Services has transitioned from a modest recreational boating facility on the Eastern Waterfront to a robust full service shipyard on the Western Waterfront. The Maine Yacht Center in East Deering has grown, thrived and expanded. Portland has hosted the western Atlantic's premier professional ocean sailing race, the Atlantic Cup, twice. Cruise ship landings have grown, surpassing expectations for success, and cementing the cruise industry as an indispensable component of the working waterfront. The City Council passed sweeping and balanced zoning amendments for the Western Waterfront, re-committing our community as a port city into the 21st century. Over 7500 linear feet of new berthing is under construction on the Eastern Waterfront at the Portland Company. We members of City staff who have worked with public and private entities to contribute toward the above achievements, and many others, are proud of these accomplishments.

The WCZ inventory is an important contribution to the above list. The inventory is not, however, the total picture. As directed by City code, the inventory answers the question of: *How do current uses compare with the 55% marine use requirement of the zone?* The geographic extent of the inventory is further limited to only those portions of the Central Waterfront away from Commercial Street and outside of the "Non-Marine Use Overlay Zone" where the 55% requirement applies. Current concerns raised by the fishing community may warrant a broader evaluation of needs of the marine economy that lies beyond the scope of this effort.

Even with the limitations of the scope, this is valuable and useful information. What did we learn? We confirmed that the Central Waterfront remains a center of marine industry and

employment, consistent with the purpose of the zone and the policies of the Comprehensive Plan. The following data points stand out:

- 67% of first floor interior space is occupied by a marine use, or vacant and available to marine use.
- 5% of interior first floor space is vacant, down from 10% in 2012, showing a tightening of use within the zone
- 81% of open space (land and pier deck not covered by a building or common drive) is used or available to marine use.
- Many of the non-marine uses that are expanding, consistent with current rules, are tightly aligned with marine industries (seafood restaurants, Sea Bags, ...)
- Parking uses have increased, taking space and placing pressure on fishing and other uses in the zone.

These results do not answer the question of whether 55% is *sufficient* for marine industries. That policy discussion was well explored prior to passage of the 2010 WCZ amendments. Given the passage of time and the current building vacancy rate of +/-5%, the amount of building space *needed* for marine use may warrant further discussion in the near future. Open space for gear storage, gear maintenance, and crew parking is clearly a need now. Whether these needs are growing, stable, or contracting is unclear. However, industries such as aquaculture are expanding, landings at the Portland Fish Exchange appear to have reached their nadir and will hopefully begin to rise, and lobster remains the vital backbone of the waterfront. While the working waterfront continues to occupy a majority of buildings and pier space in the Central Waterfront, anecdotes from marine industry representatives make clear that many are feeling a squeeze and worry about their future access to the piers.

The City of Portland hears the concerns of fishermen and marine industry. The ongoing work by the City and the Greater Portland Council of Governments on a *Commercial Street Operations and Master Plan* is a timely commitment to address the functional access concerns expressed by many.

Transportation studies alone will not address the genuine concerns of fishermen. Likewise, abandonment of non-marine use will not benefit piers that require ongoing maintenance to provide fisheries access. Other issues, including dredging and climate change adaption, remain as ongoing efforts and calls to action. Committed to support traditional marine industries and their growth in Portland Harbor, the City stands ready to engage with all community members to discover the appropriate, fair, and functional balance for preservation of our treasured working waterfront.

We all have work to do.

**Vision Statement for the Central
Waterfront**

Commercial marine use is the highest and best use of waterfront land in the Central Waterfront. Preserving the waterfront for these uses should be a top priority and guiding principle for the City.

Development in the Central Waterfront will achieve a balance where non-marine economic development benefits the piers, Commercial Street, the Waterfront and the City by sustaining marine infrastructure, protecting opportunity for commercial marine activity, and promoting appropriate access by the public to views and activities in Portland Harbor.

WCZ Policy Statement, 2010

Order #101-10/11, passed as amended 12-20-10.

1. Introduction:

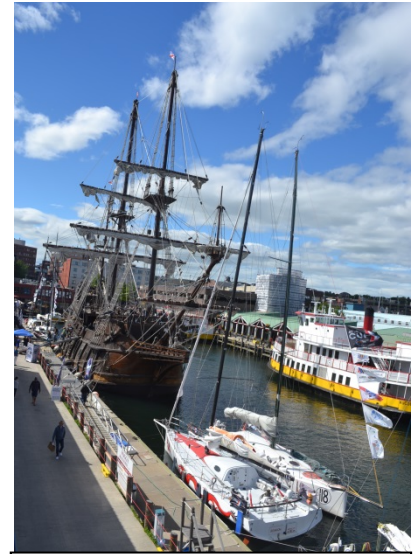
On December 20, 2010, the Portland City Council passed significant changes to the text of the Waterfront Central Zone (WCZ) allowing expanded non-marine use and development on Portland's Waterfront. When passing the 2010 zoning, the City Council required that the City conduct a periodic inventory of uses to understand the new regulation's impacts on marine industry and investment on the piers. In 2011, Planning staff submitted the baseline inventory report as a communication to the City Council. In 2013, the report was updated with improved data and updated to reflect 2012 development activity.

This report documents information collected from 2013 to November 2018 and provides the year-to-year comparison of data from 2012. In addition to the use inventory, the Planning staff provides a compilation of building permit and site plan projects for the same time period to document significant improvements and development activity within the impacted portions of the zone. The Economic Development staff and Planning staff submit this report in compliance with the Council's requirements (City Code, Chapter 14, Land Use Ordinance, Section 14-311.)



2. Background

The WCZ text regulates land use on Portland's waterfront in the areas located between but not including the Maine State Pier and the International Marine Terminal. The WCZ is home to the Portland Fish Pier, 14 private piers, the Gulf of Maine Research Institute, the majority of the city's commercial fishing fleet, fish processing and sales, lobster bait distributors, lobster buyers, tourist excursion vessels, and multiple marine and non-marine businesses. The condition of private property ownership distinguishes the Central Waterfront from many urban harbors and underlays the policies implicit in the zoning text. Prior to the 2010 changes, zoning limited *new development* almost entirely to marine uses. Non-marine uses were restricted to certain *existing buildings*, concentrating such uses in upper floors and buildings located near Commercial Street. The 2010 zoning broadened the amount and types of non-marine uses allowed in *new or existing space* on the piers of Portland Harbor.



El Galeon de Andalucia and the Atlantic Cup, hosted by Maine Wharf. June 2016

The 2010 WCZ amendments included two significant components that impact the form and content of this inventory, including:

- The creation of a Non-marine Use Overlay Zone adjacent to Commercial Street; and,
- Allowance for 45% first floor non-marine use outside of the overlay.

At the time of the 2010 WCZ amendments adoption, City Councilors recognized the need for non-marine use revenues to support pier maintenance. Likewise, Councilors heard the concerns of the fishing industry representatives worried about loss of needed space to support industrial use. The requirement for an inventory of marine use outside of the overlay was drafted at the time of adoption to ensure that policy makers could understand the impacts of the amendments moving forward.

The 2011 WCZ inventory and additional background and the text of the new zoning are found at:
<http://www.portlandmaine.gov/DocumentCenter/View/3422/WCZ-Inventory-7-18-11?bidId=>

The 2012 WCZ inventory is found at:

<http://www.portlandmaine.gov/DocumentCenter/View/3423/WCZ-Inventory-June-2013?bidId=>

Background information on the 2010 WCZ rezoning process is at:

<http://www.portlandmaine.gov/DocumentCenter/View/3425/WCZ-Process-Summary-Presentation-from-CC-Workshop?bidId=>

A complete record of the 2010 approval process and extensive narrative was provided to the State of Maine DEP for approval under Shoreland Zoning. The DEP request document is at:

<http://www.portlandmaine.gov/DocumentCenter/View/3421/Maine-DEP-Request-for-Zone-Amendment-Approval?bidId=>

3. Intent of the Inventory:

The intent of the inventory is to document use trends as allowed under the 2010 WCZ regulations.

One of the key requirements of the 2010 WCZ text is that at least 55% of ground floor space (both interior and exterior) must be reserved for marine use for that portion of the zone located outside of the “Non-Marine Use Overlay Zone” (NMUOZ.) The NMUOZ is located along Commercial Street and permits 100% occupancy by specified non-marine use and development. The 55% marine use requirement applies to the balance of the zone, on the seaward side of the NMUOZ boundary. The intention of the 55% marine use requirement is to ensure that marine uses are retained and protected in the portions of the zone best suited to serve marine industry needs.

Land Use Code Section 14-311(a) requires that any non-marine use application must demonstrate adherence to the 55% marine use requirement by submitting an inventory of ground level uses to the Planning Authority. The Code further requires that the Planning Authority must compile and aggregate use inventories within the zone for reporting to the City Council. The specific text requiring use inventories is excerpted below:

14-311(a) 3.b. Uses inventoried: To demonstrate adherence to the 55% marine use requirement, the applicant shall submit to the planning authority, upon request, an inventory which lists each occupant (tenant or otherwise), as well as a map which depicts the location of each occupant. The map shall show all ground level space, including buildings, parking, open areas and submerged lands associated with the subject lot. For each occupant, the property owner must indicate the square footage of area occupied and whether the occupant is a marine use as defined herein. For vacant space, the last previous occupant shall be listed, along with the date of departure.

c. Applicants for site plan review or a change of use permit outside of the NMUOZ shall provide the planning authority with proof of compliance with the requirements of this section as a condition of approval.

d. The city planning authority shall compile and report inventories of ground level uses, as reported under (b) above, into an annual report of ground level uses and investment in the Central Waterfront. The report shall include an aggregated assessment of ground floor marine and non-marine use occupancy and a catalogue of marine infrastructure investment for the reporting period. The report shall be submitted to the City Council as a communication not less than once every calendar year.



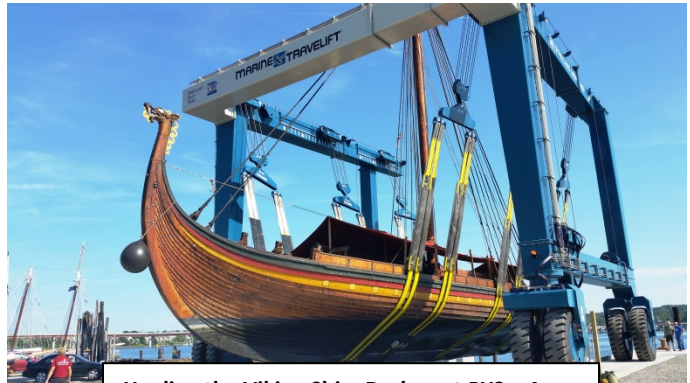
Development of the “Scales” building on Maine Wharf, 2014. Subject to the 55% rule

The above ordinance provisions apply only to those portions of the zone where first floor marine use is a requirement. Given that the NMUOZ is not restricted to a minimum percentage of marine use area, the properties within NMUOZ are not included within this inventory.

Readers should note that this document is not intended as a regulatory compliance tool. Applicants for new non-marine uses in the WCZ will need to map the NMUOZ boundary on their pier to show compliance with the 55% marine use requirement outside the NMUOZ, or for application of the 100% non-marine use allowance within the NMUOZ. Each applicant for change of use is expected to demonstrate compliance with the provisions of the WCZ, and City departments are not assuming that responsibility with this inventory.

In addition to excluding the NMUOZ, this inventory does not cover marine or non-marine activity under the following conditions:

- ***Floating facilities.*** Only Dimillo's floating restaurant is included as a counted element in the data below (the floating restaurant functions as a *building*.) Work floats, vessels, ramps, and other floating structures are not included.
- ***Marine activity outside of the WCZ.*** Marine activity and expansions in the Western Waterfront and Eastern Waterfront are not included. Over the timeframe covered in this inventory, significant expansion of marine industrial capacity and infrastructure has occurred on the Western Waterfront and further expansions are planned for the Eastern Waterfront. Changes within the WCZ should be considered within the context of the entire waterfront.



Hauling the Viking Ship, Draken at PYS. Aug. 2018. Western Waterfront expansions are not included within the WCZ inventory

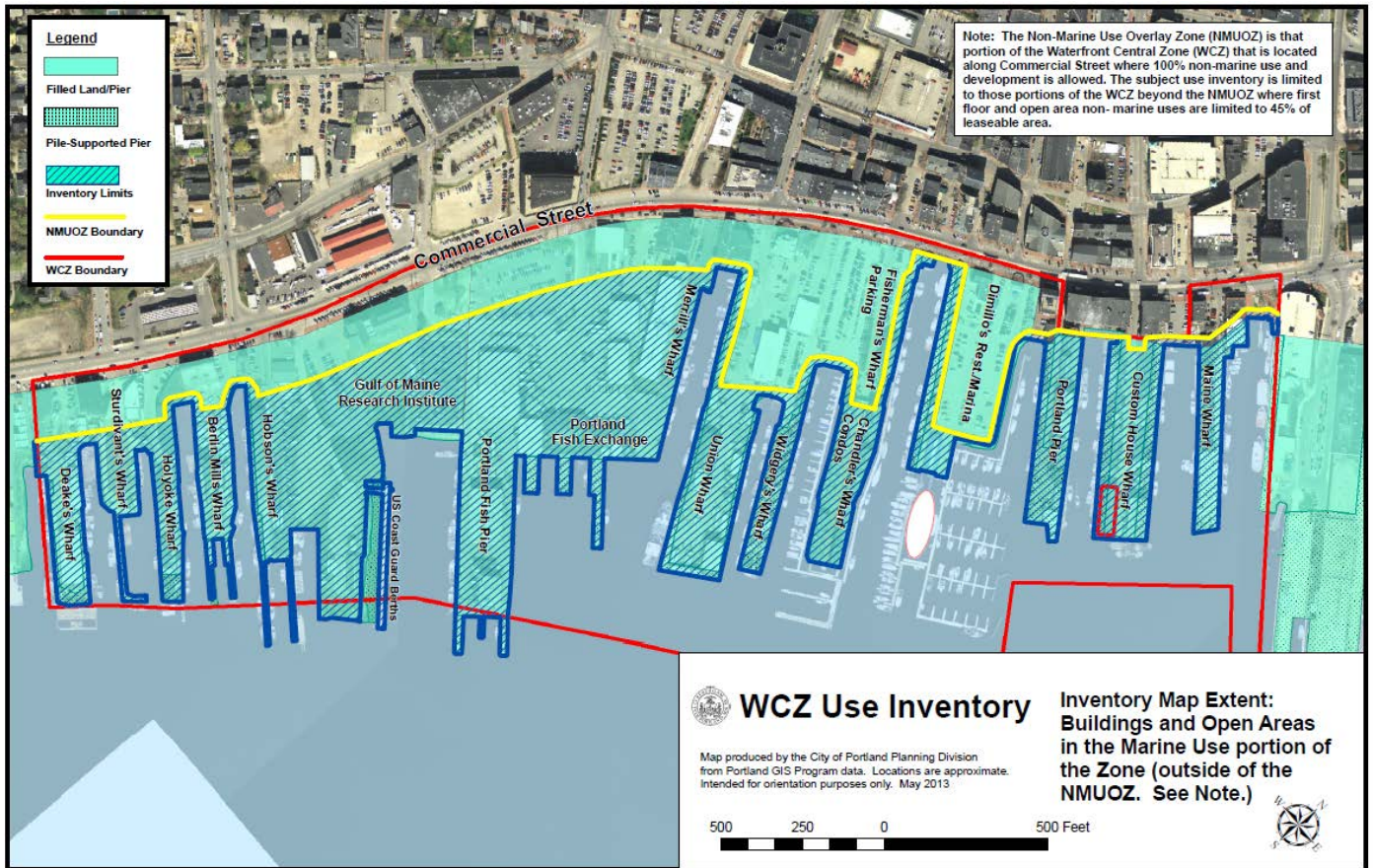


Improved floats, such as these recently installed at Portland Pier, increase marine use access, but are not accounted for in this inventory

4. Inventory Extent:

The inventory includes every building and property, or portions thereof, which are located within the WCZ and outside of the Non-Marine Use Overlay Zone (NMUOZ). Only ground level uses were mapped and counted, including buildings, pier deck, paved areas, and open space on filled land and pile supported piers.

The inventory only includes piers and filled land located outside of the Non-Marine Use Overlay Zone.



5. Methodology:

The current WCZ inventory reflects a snapshot in time concluding in November 2018.

Using the 2011 and 2012 inventories as a framework, the current inventory relies on three sources of information: direct observation by the Economic Development staff, pier owner and tenant inquiries, and City GIS program data (including 2018 aerial photography, *pictometry*.) Most pier inventories employed multiple data sources. A significant amount of judgement and estimation is needed to produce and compile these data. The estimates herein are reliable for the purpose of the inventory - identification of use distribution *trends* – and are best used in aggregate. As noted above, pier-by-pier regulatory compliance requires survey quality evaluation and is the responsibility of the property owner.

Mapping:

The first step in the process was to locate the NMUOZ boundary as the northerly extent of the inventory area. Section 14-306 of the WCZ text defines the NMUOZ boundary as:

“...parcels of land and piers within the waterfront central zone located on the landward side of a line established one hundred fifty (150) feet southerly from the southerly sideline of Commercial Street and modified as follows: the seaward limit of the NMUOZ extends to a line 500 feet southerly from the southerly sideline of Commercial Street in the area between the easterly sideline of Long Wharf to the westerly sideline of Union Wharf. Additionally, all areas subject to this provision are set back landward at least twenty-five (25) feet from the average high tide line of Portland Harbor...”

Essentially, the NMUOZ is located 150 feet south of Commercial Street, except between Union Wharf and Long Wharf, where the boundary is 500 feet south of Commercial Street. The line, however, does not extend over the water and is set back from high tide by 25 feet in all areas.

The NMUOZ boundary was mapped as a best estimate based on GIS Program data on the Commercial Street right of way and a previously mapped “filled land” boundary. When drawing the NMUOZ boundary, Economic Development staff estimated the 25-foot high water setback by measuring from visible landmarks such as seawall bulk heads, or used the previously mapped “filled land” boundary. A certain amount of approximation was needed as the “filled land” boundary is itself an estimate based on aerial photography and limited field observation.

Secondly, the seaward boundary of the inventory area was established from the edges of working piers, seawall bulkheads, and by property ownership. As with the NMUOZ, estimation was needed and errors are assumed.

Finally, every pier and property was separated individually with the results of each combined into an aggregate for the



zone. The “filled land” and “pile supported piers” layers from the City GIS Program were combined with City taxation parcel information to identify individual piers. Economic Development staff amended the pier perimeters as appropriate based on aerial photos and field observations. Slight variations in area calculations between 2012 and 2018 occurred with updated 2018 aerial “pictometry” providing more details informing the estimated pier boundary polygons.

Individual building polygons were taken from GIS program data, edited to subtract out building space within the NMUOZ, and corrected for errors observed from updated 2018 aerial pictometry.

Measurement Precision: Staff adjusted the filled land boundary as necessary to reflect conditions evident from aerial photos, corroborated with field observations. While the inventory spread sheets report observed results to the nearest whole square foot, individual parcel results are best rounded to the nearest 1000 square feet for land and 100 square feet for each building.

Occupancy and Use:

In updating the Inventory from 2012 to 2018, Economic Development staff conducted multiple walks within the zone using the 2012 inventory results used as a guide. Each building was observed for visual change or obvious signs of vacancy (boarded up, “For Lease” signs...) While this method may have missed some vacant space, staff is confident that significant changes were observed and captured for this inventory. Emailed inquiries to individual pier property owners helped to fine tune field observations.

Reporting Results:

The resulting inventory is essentially a series of individual pier maps with an accompanying spreadsheet of tabled square footage data. Properties, separated by ownership, are shown with bold lines and each parcel is numbered with a black numeral. Likewise, each building or applicable portion of building is shown as a red polygon. Buildings are numbered on the map in red and yellow. Where a building is bisected by the NMUOZ boundary, only that portion of the building outside of the NMUOZ is counted. Such buildings are noted with a “p” for “partial.”)



Use of floats due to lack of yard space on
Merrill's Wharf, 2013

The inventory spreadsheet is keyed to each building and parcel by number. The spreadsheet groups buildings and parcels by pier. Certain piers have more than one parcel and the inventory is additionally separated by ownership as far as it is known. For quality control, each pier owner was provided a copy of their specific results in the form of an individual pier map with its specific tabled information excerpted.

Building spaces were compiled according to the following categories.

Building Footprint Area	Building Footprint Area -Pier totals	Active Marine Use Building Area	Vacant Building Area, Avail to marine use	Building Area Avail to Marine use (Active Marine plus Vacant)	Active Non-marine use Building Area	% Building Area Avail to Marine Use (Active marine use plus vacant)
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“Marine Uses” in this inventory are the permitted uses listed under WCZ section 14-307(a) and conditional uses listed under 14-308(a).

Building vacancies were tallied where reported by pier owners or observed, but it is assumed that some of the areas designated as “Active Marine Use Building Area” may be vacant. Given that the WCZ text requires that vacant space is offered to marine tenants as a priority (with a 60 day marketing period,) the “Building Area Avail to Marine use” is calculated as an important indicator for tracking.

The percentage of space available to marine uses is the regulated figure stipulated in the code and is calculated by the following formula:

$$\begin{array}{c}
 \text{Active marine use building area + vacant building area} \\
 \hline
 \text{Total building footprint area} \\
 \times \\
 100 \\
 = \\
 \text{\%building area available to marine use}
 \end{array}$$

Note: Un-leaseable common space was subtracted from the basis for the Merrills Wharf (Pierce Atwood) building. Merrills Wharf from Union Wharf. 2014



Open spaces were treated similarly to building space.

Land Pier Area	Common Circulation Drive Area	Open Area - net (Land Pier area minus Com Drive - Building footprint)	Active Marine Use Open Area	Vacant Open Area, Avail to Marine use	Open Area Avail to Marine use (Active Marine plus Vacant)	Active Non-Marine Use Open Area	% Open Area Avail to Marine use (Active marine use plus vacant)
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When calculating the amount of land/pier area, the zone text requires that “common circulation drives” are subtracted from the total open space prior to calculating use percentages. Such driveways, as defined in the WCZ, were estimated from aerial photos and direct observation, and were mapped for subtraction from the total open space.

The percentage of open area available to marine use was calculated by the formula below. For the purpose of this calculation, “pier area” includes filled land and pile supported pier capable of lease for active use.

$$\begin{array}{c}
 \text{Active marine use area + vacant pier area} \\
 \hline
 \text{Total pier area - common circulation drive areas - building footprint area} \\
 \times \\
 100 \\
 = \\
 \text{\% open area available to marine use}
 \end{array}$$

Un-leasable open space, which was not a common circulation driveway, was combined with the adjacent use with which it was most closely related. For example, landscaping adjacent to a non-marine use parking lot was counted as non-marine use open space. Likewise, open area serving as circulation to only marine uses was counted as marine use space.

Note: Un-leaseable drainage areas were subtracted from the basis for the Merrills Wharf (Pierce Atwood) property.

A certain amount of approximation was necessary to create this inventory – both in the mapped features and in the use assumptions for certain buildings and open areas. For example, it was easier to identify non-marine uses than to differentiate between active marine use and vacant space. Casual storage of marine gear and refuse could be either a leased “active” use, or a “vacant” un-leased space currently filled with transient materials. There is greater reliability in the numbers reported as areas “Available to Marine Use” than in the split between vacancies and active marine uses.

When assigning uses to areas such as common circulation drives in particular, Economic Development staff employed a common sense, best judgment, approach given that the “drives” are more use patterns than constructed features on certain piers.

6. Notes on Year-to-Year Comparisons:

The 2012 aerial photography was updated using more detailed 2018 pictometry. The base maps of certain piers and the footprints of some buildings were adjusted to reflect the newer, improved imagery.

7. Building Results

As reported in 2012, after separating the NMUOZ portions of the zone the remaining ground floors of buildings are still predominantly available to marine uses.

There are approximately **381,000 sq ft total of ground floor building space** in the WCZ outside of the NMUOZ. This number is marginally more than the +/-371,000 sq ft reported in 2012, with the difference attributed to:

- rebuilding of space on Custom House Wharf now occupied by Seabags,
- better reporting of shed space on GMRI/Coast Guard site,
- adding a small portion of Becky's Diner located within 25' of high tide,
- better reporting of Merrills Wharf interior space with data provided by the owner,
- the addition of permanent sheds and bar areas at Portland Lobster Company, and
- minor deviations from 2012 likely resulting from new aerial imagery.

The above additions of space were partially offset by marginal reductions of shed space on Widgery Wharf and minor deviations resulting from new aerial imagery throughout the zone.

Total active marine use of interior space is estimated at 236,000 sq ft, which is a decrease of approximately 6000 sq ft from 2012.

Increases in marine use interior space include:

- the conversion of the former Lilly Law Office building to a Dimillo's Yacht sales use accounted for 3400sq ft of net increase,



- conversion on Sturdivant Wharf of +/-11,000 sq ft of reported vacant space to active marine use, and
- Additional marine use office space on Merrills Wharf.

These gains were offset by:

- new vacancy of space on Berlin Mills Wharf,
- better reporting of +/-3000 sq ft of non-marine office on Union Wharf, and
- better reporting of vacancy at the Marine Trade Center on the Portland Fish Pier (subtracted from marine use reported in 2012.)
- Conversion of +/- 9500 sq ft of vacant space on Maine Wharf to non-marine use in the Scales building



The 2014 Scales building on Maine Wharf replaced a vacant structure which had been condemned for structural failure. November 2018

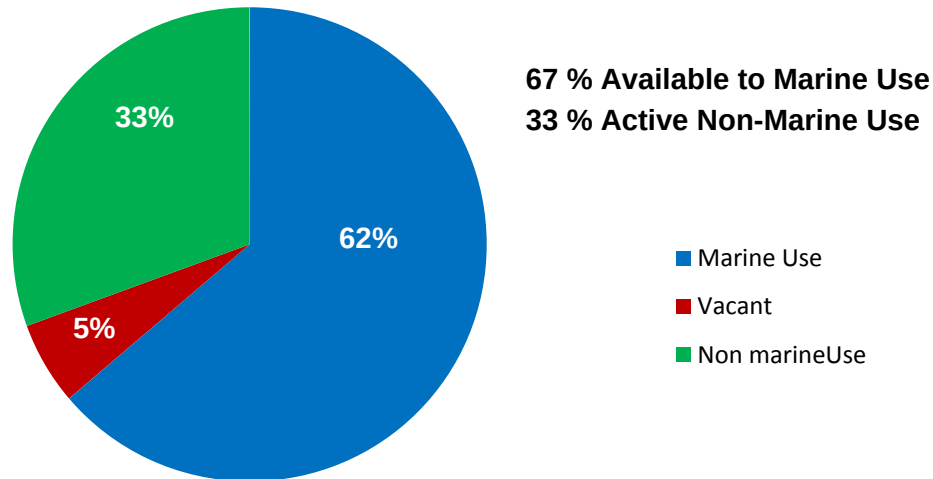
Total vacancy of interior space is down +/-15,000 sq ft from 2012 to approximately 5% of total interior space. Reduced vacancy is mostly due to:

- reporting of occupancy of space on Sturdivants Wharf noted above,
- Construction of the Scales building on Maine Wharf which replaced a similarly sized vacant structure (vacant due to structural failure and condemnation,)
- Incremental vacancies on Deakes, Holyoke, Berlin Mills, and Merrill's Wharfs, and
- +/-8200 sq ft of vacancy at the Marine Trade Center on the Portland Fish Pier.

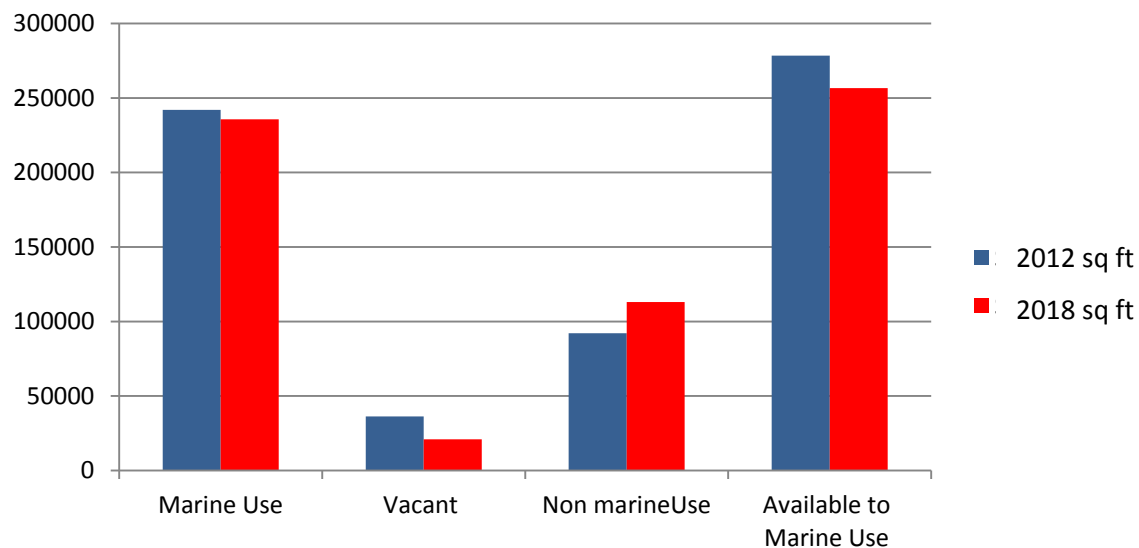
As noted in previous WCZ inventory reports, space that is apparently used by marine industry for casual storage may in fact be "vacant" from a tenancy perspective.

The percentage of space available to marine use (Active MU + Vacant) is down from +/-75% of space in 2012 to +/-67% in 2018.

Buildings	Marine Use	Vacant	Non marine-Use	Available to Marine Use	% Building Area Available to Marine Use
2012	242058	36314	92088	278372	75%
2018	235698	20926	113086	256624	67%



2018 BUILDING USE TOTALS



2012 to 2018 1st FLOOR BUILDING SPACE TOTALS

The overall reported area of marine use building space has decreased marginally, with a corresponding dip in the percentage of first floor building space available to marine use. The percentage shift results mostly from conversion of vacant space to non-marine space with the largest change found on Maine Wharf (Scales.) Conversion of marine use to non-marine use is seen to a lesser extent on Portland Pier (the restaurant portion of Luke's Lobster, under construction) and on Custom House Wharf (with the expansion of Sea Bags,) and small office conversions (Union Wharf, Holyoke Wharf.) Other non-marine uses expanded into new sheds or seasonal structures (Portland Lobster Company.) The balance of expansion of non-marine use is comprised of better reporting (Holyoke Wharf) and small scaled conversions from marine to non-marine (Union Wharf.)

It is an interesting side note that much of the expansion of non-marine use in the above list (Scales, Luke's, Seabags) are all tightly aligned with and dependent on marine industry.

Readers should note that the +/-33% non-marine ground floor space result is highly influenced by the large footprints of 1980's condominium complexes on Chandler's Wharf and Portland Pier. When the area of offices and condominiums of Portland Pier (buildings 52, 53, and 54p) are added to the area of Chandler's Wharf condominiums (building complex 42p) the resulting 55,000 sq ft of area represents nearly half of the total active non-marine use building space in the inventoried space. In short, the largest scale encroachment of non-marine uses in the zone occurred prior to the non-marine development moratorium referendum in 1987.

As in 2012, there continues to be a geographic concentration of non-marine space in the eastern portion of the zone adjacent to the Old Port.

8. Open Space

Like with the first floor building space above, open space in the inventory area has remained strongly dedicated to marine use in the WCZ.

The total net open area (piers and filled land available after subtracting out building footprints and common areas) is slightly smaller (by +/-3000 sq ft) in the current reporting. The current **total net open area inventoried is +/-963,000 sq ft (+/-22 acres.)** While mapping variability noted above may account for some of this loss, there was a comparable portion of Custom House Wharf subtracted from the total land/pier area adjacent to Building 59 due to loss/demolition. Given the condition of the wharf in this area, this portion of pier has been unused for many years and should have been reported as vacant in previous inventories.

Marine Use on open areas has reduced by +/-60,000 sq ft. A large portion of this reduction came from the recent vacancy of Berlin Mills Wharf. Additional incremental loss of open space to non-marine parking is found throughout the easterly portion of the zone, some of which likely results from better reporting with this inventory.

Vacancy has increased by over 27,000 sq ft, which is largely if not entirely due to Portland Yacht Service's move from Berlin Mills Wharf (formerly Gowen Marine) to the Western Waterfront. Berlin Mills wharf is for sale as of the writing of this report. Two "vacant" lots on the Portland Fish Pier are located within the NMUOZ and not included in this inventory.



The boat yard activity on Berlin Mills Wharf shown on this early 2018 image has recently moved to the PYS facility on the Western Waterfront. The vacancy of Berlin Mills Wharf is a significant influence on the Open Space results

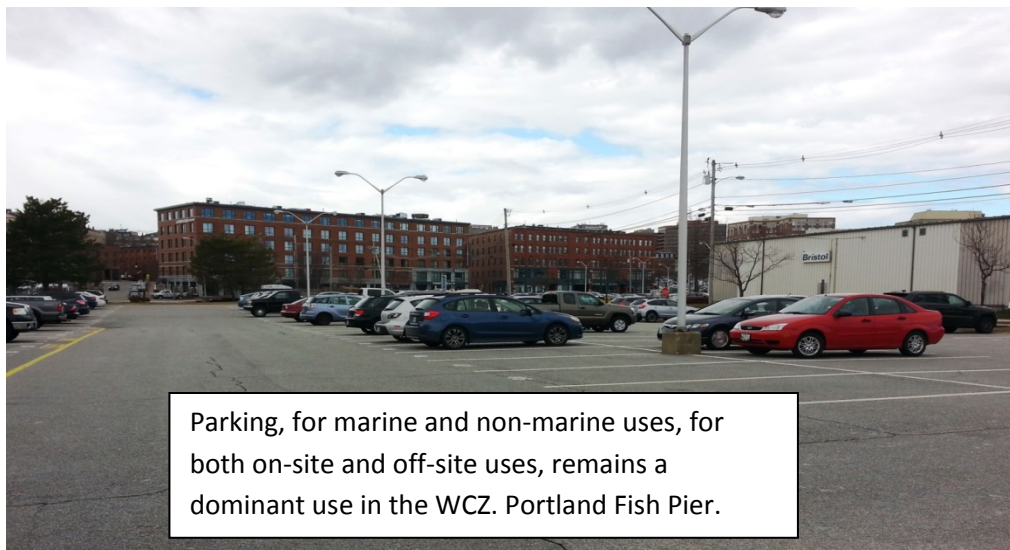
Non-Marine use open area has increased by almost 24,000 sq ft. This reported increase is found imbedded in many properties, including:

- Better reporting of land area on the Portland Fish Pier.
- Better reporting of non-marine parking on Berlin Mills Wharf (400 Commercial St.)
- Incremental increase in non-marine parking on Merrill's Wharf, Widgery Wharf.
- A more complete reporting of non-marine use space along the perimeter of the Long Wharf (Dimillo's) parking lot, and
- Expansion of outside restaurant seating on Maine Wharf and Portland Pier.

In aggregate, the **net open area available to marine use has decreased from +/- 813,000 sq ft to less than 781,000 sq ft** or from 84% to 81% of total respectively (a reduction of +/- 33,000 sq ft or approximately three fourths of an acre.) 10% of this decrease is seen in an actual reduction of the basis land/pier area within the inventory, including the demolished/abandoned section of pier noted above on Custom House Wharf. Better reporting and actual increases in **non-marine parking** across the zone appear to have combined with modest expansion of outside restaurant seating at Scales (Maine Wharf) and Luke's Lobster (Portland Pier) to explain the reduction in space available to marine use.



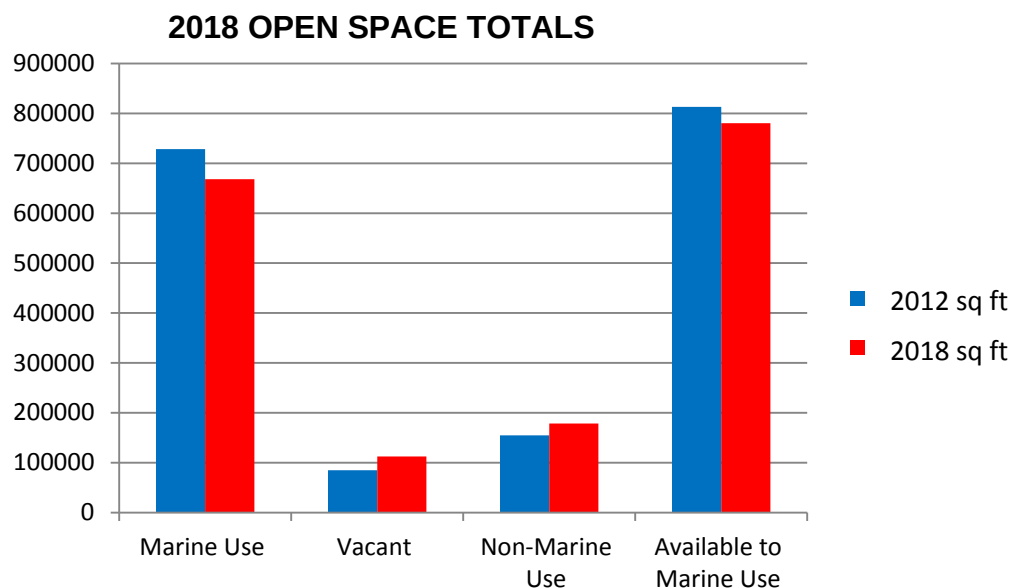
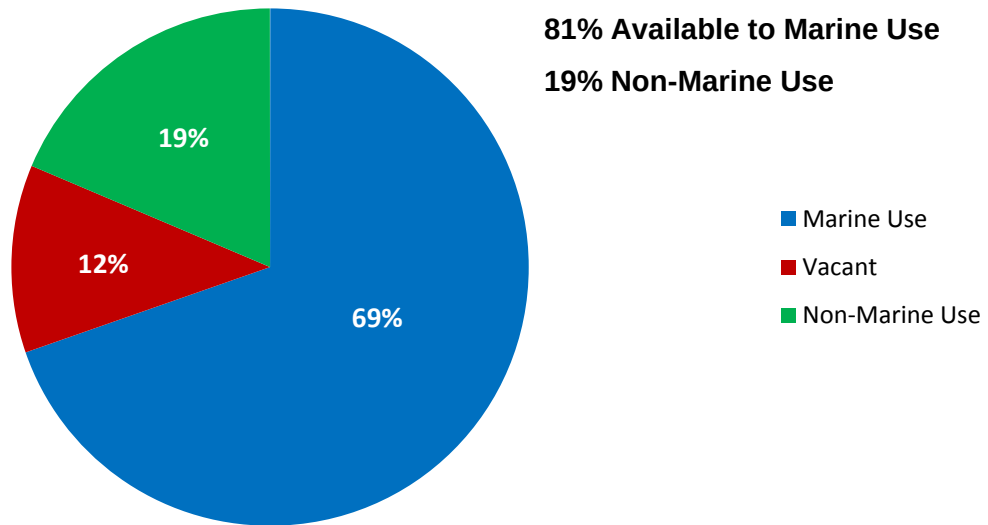
Restaurant seating, such as at Scales on Maine Wharf, appear to have had less impact than parking expansions on the amount of open space available. November 2018



Parking, for marine and non-marine uses, for both on-site and off-site uses, remains a dominant use in the WCZ. Portland Fish Pier.

The 81% total open area available to marine use is well within the 55% per pier minimum established within the WCZ zoning text.

Land/Piers Open space	Marine Use	Vacant	Non-Marine Use	Available to Marine Use	% Open area available to Marine Use
2012	728310	84905	154789	813215	84%
2018	668165	112362	178578	780527	81%



2012 to 2018 1st OPEN SPACE TOTALS

8. Concluding Remarks:

As found in 2012, Waterfront Central Zone remains a center for marine industry, but will continue to evolve as allowed under the WCZ text.

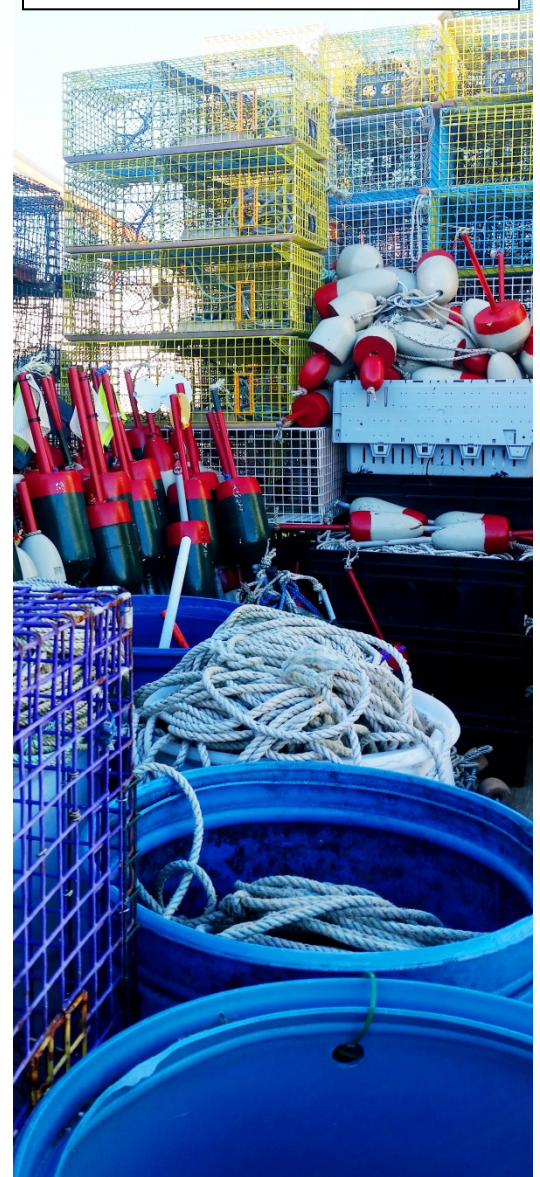
The first floor **Building Space** results above demonstrate the zone policies working as they were intended. Vacant space has been filled with non-marine use (only after having been advertised to marine use as a condition of zoning.) The shift **from** vacant to non-marine use influences the percentage of space available to marine use, but has not decreased the actual amount of marine use to percentages below the 55% requirement of the WCZ text.

Open Space results offer a more complicated picture than interior space – showing both an increase in vacancy and simultaneous increase in non-marine use. Meanwhile, marine use has dropped more significantly than interior building space (in square footage measure, recognizing that *the larger basis results in a smaller percentage decrease* in open space available for marine use.)

Clearly parking uses, both marine and non-marine, have had a significant influence on the results herein. Observations by staff while conducting this inventory suggest that commercial parking (both available to the public, and for off-site monthly non-marine uses) appears to have increased recently. Who is using this parking? That is difficult to discern. Distinguishing off-site parkers from on-site parkers is not possible from casual observation, nor is separating grandfathered legal spaces from more recent expansions that are inconsistent with current zoning. Further exploration of parking use and potential enforcement action may be warranted.

The loss of casual storage and yard space appears to be the victim of increases in parking supply. It is beyond the scope of this inventory to discover if the loss of casual storage and yard space has resulted from a filling of vacancy, or a displacement of active marine use. Regardless, anecdotes provided by fish harvesters would indicate a general tightening of space available. Recent

Lobster storage on Union Wharf. Union Wharf has more space for marine gear than most properties in the WCZ. Dec. 2018



applications to the Portland Board of Harbor Commissioners to permit free floating service rafts, not attached to wharfs, for fishing gear would indicate a near desperate need for space to stage and maintain fishing gear adjacent to the water.

Readers should note that the aggregated Open Space results here are significantly influenced by the recent vacancy of Berlin Mills Wharf. One might reasonably lament the loss of the full service boat yard use on Berlin Mills Wharf if viewed in isolation; however, this use has not been lost to the harbor. The long-standing boat yard use on the wharf has relocated to the Western Waterfront at the larger and more robust Portland Shipyard/Yacht Services facility. It is also worth noting, that in the 5 years since this inventory was updated, vessel repair and boat yard services have also increased at the Maine Yacht Center in East Deering.

The raw percentage of interior space available is likely not as important to marine users as the type of space provided. Proximity to vessel loading, parking availability, access for truck and fork lift loading, utility access, and a myriad of other use-specific issues all influence marine use siting decisions. Above all, price per square foot and compatibility between tenant and land lord are paramount – issues outside the control of municipal land use control.

These results do not answer the question of whether 55% is **sufficient** for marine industries. That policy discussion was well explored prior to passage of the 2010 WCZ amendments. Given the passage of time and the current building vacancy rate of +/-5%, the amount of building space **needed** for marine use may warrant further discussion in the near future. Open space for gear storage, gear maintenance, and crew parking is clearly a need now. Whether these needs are growing, stable, or contracting is unclear. However, industries such as aquaculture are expanding, landings at the Portland Fish Exchange appear to have reached their nadir and will hopefully begin to rise, and lobster remains the vital backbone of the waterfront. The City of Portland remains committed to support these industries and their growth in Portland Harbor.

Attachments:

1. Development Activity Summary
2. Summary Table of Results
3. Master Inventory Map of the Waterfront Central Zone



TO: Portland City Council

FROM: James Dealaman, Administrative Officer, Planning and Urban Development

DATE: December 6, 2018

SUBJECT: Development Activity Summary: WCZ Marine Use Inventory (December 2018)

Summary: As provided in chapter 14-311(d), the city planning authority is tasked with cataloguing marine infrastructure investment. In order to provide the most accurate snapshot of growth in the Waterfront Central Zone (WCZ) specific to Marine infrastructure investment, staff have compiled the most recent Permitting and Assessing data in the WCZ outside of the Non-Marine Use Overlay Zone (NMUOZ) to reflect trends over a five-year period.

- 1) Valuation Data** – To show investment in the WCZ, issued permit data from 2013 – November 2018 was used across a variety of permit types when sufficiently available and grouped or renamed as appropriate. The permitting data is based solely upon the reported cost of work provided at the time each permit application is submitted. The following groups will be provided to indicate the amount in dollars invested:

Commercial and Residential Construction (*e.g. repair, building maintenance, installation, change of use renovations, alterations, additions, etc.*)

Pier Infrastructure (*e.g. installation or replacement of pilings/floats or piles, pile caps, deck, fender system, etc.*)

Building Upgrades (*e.g. Installation or replacement of HVAC, hood systems, tank, etc.*)

Fire Suppression (*e.g. Installation or replacement of sprinkler system, fire alarms, etc.*)

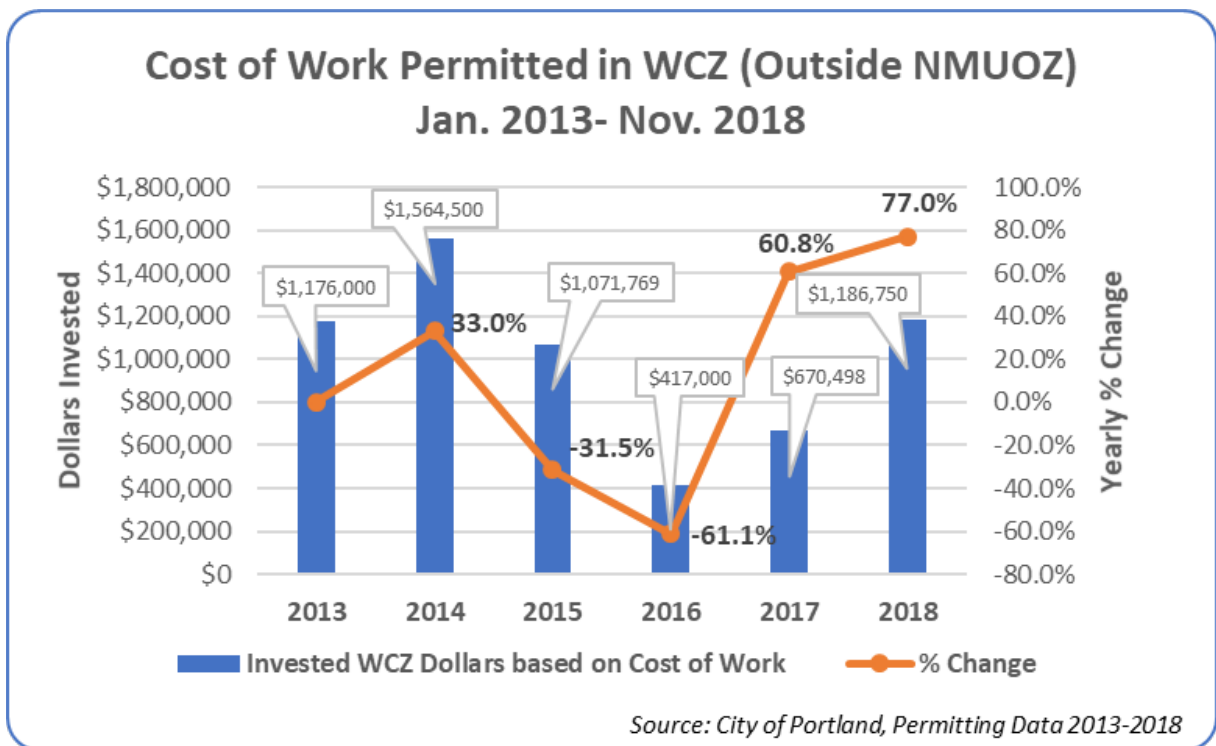
[Please note: permits types for exclusively electrical work, plumbing, outdoor seating and signage were not included due to insufficient valuation data available.]

Selected Permit Types Cost of Work (Outside the NMUOZ) 2013-18		
Permit Group	Total Valuation	% of Total
Commercial Construction	\$3,910,689	64.3%
Residential Construction	\$238,000	3.9%
Pier Infrastructure	\$700,000	11.5%
Building Upgrades	\$993,528	16.3%
Fire Suppression	\$244,300	4.0%
Total	\$6,086,517	
<i>(City of Portland Permitting Data 2013-18)</i>		

The largest share of investment (64.3%) being observed is found in the Commercial Construction types of permits which generally a focus on updating buildings either by repair, change of use renovations, alterations or additions, in an area where the average building was built around 1964, according to parcel data.

Similarly, the second largest area of investment is found in Building Upgrades, with HVAC installation representing just over 63 percent, hood installation with 23 percent, and tank replacement at nearly 14 percent of all Building Upgrades.

The total estimated cost of work reported in the WCZ (outside of the NMUOZ) is in the ballpark of more than \$6 million dollars since 2013.



- 2) **Square Footage Data** – In order to best show square footage trends over a five-year period, Assessor's data was selected from the 2012 and 2017 tax rolls in order to overcome the challenges of tracking square footage changes found in building

renovations, additions, and change of use scenarios. Additionally, the Assessor's IAS system will attach a "Land Use Type" to the specific parcel where building/s are situated for general classification. Please note that a Land Use Type assigned to a specific parcel does not necessarily indicate every existing use as there may or may not be multiple buildings on a parcel, or various uses within the same building. However, building square footages located in the WCZ outside of the NMUOZ should be reported in this data snapshot.

The Land Use Type for residential uses is limited to just Condominiums, and there were no square footage changes between 2012 to 2017. Therefore only a breakdown of commercial square footage by use is provided. Below are the seven commercial land use types present in the WCZ zone (outside of the NMUOZ).

Commercial Land Uses:

Wholesale	Multi-Use Commercial
Office Business	Retail Services
Commercial Condos	Governmental
	Manufacturing

Building Square Footage Change in WCZ (Outside the NMUOZ) 2012 & 2017			
Land Use Type	2012	2017	Change
Commercial Uses	486,118	503,779	17,661
Residential Use (Condominiums)	149,530	149,530	0
Total	635,648	653,309	
(City of Portland Assessor's Office Tax Rolls Data, 2012 & 2017)			

Based on the most recent tax rolls from 2017, residential building square footage located within the WCZ target area makes up nearly 23 percent of all building square footage, with commercial uses representing the lion's share at around 77 percent.

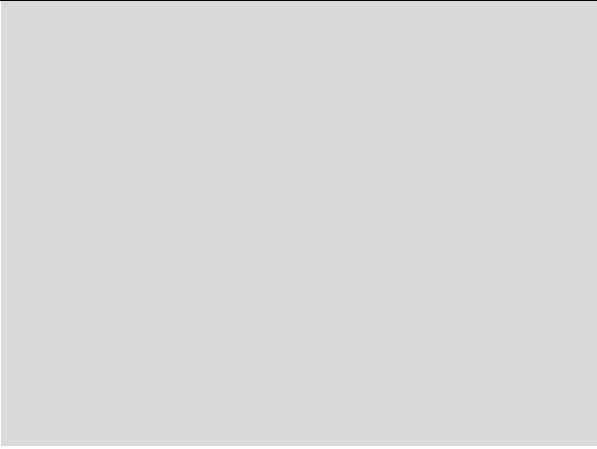
Att. 1. Development Activity Summary

Commercial Building Square Footage by Use Change in WCZ (Outside NMUOZ) 2012 & 2017				
Commercial Uses	2012	2017	SF Change	Change in %
Wholesale	123,726	128,435	4,709	3.8%
Office Business	179,960	192,912	12,952	7.2%
Commercial Condos	14,615	14,615	0	0.0%
Multi-Use Commercial	3,678	3,678	0	0.0%
Retail Services	7,122	7,122	0	0.0%
Governmental	43,856	43,856	0	0.0%
Manufacturing	66,415	66,415	0	0.0%
TOTAL	439,372	457,033	17,661	4.0%
<i>(City of Portland Assessor's Office Tax Rolls Data, 2012 & 2017)</i>				

Wholesale and Office Business were the only uses that saw any square footage increase over the five-year period. For Wholesale, the only change that occurred was on the parcel making up 86 Commercial Street (i.e. Harbor Fish Market) which saw an overall increase of 4,709 SF. The largest change in square footage occurred at 68 Commercial which is attributed to a slight decrease in SF in one of the two buildings, combined with added square footage from the new building where Scales Restaurant is located (formerly the Science Museum was demolished in 2015).

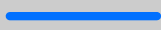
2018 Waterfront Central Zone Ground Floor Marine Use Inventory: Marine Use Area (Outside of the Non-Marine Use Overlay)																							November 2018		
Pier/Property Name	BLDG #	Object ID	Business Occupying Building	Buidling Footprint Area	Buidling Footprint Area-Pier Totals	Active Marine Use Building Area	Active MU, Pier totals	Vacant Building Area Available to Marine Use	Vacant building area, Pier Totals	Buidling Area Available to Marine Use (Active Marine Plus Vacant)Pier Total	Active Non-Marine Use Building Area	Active NonMU, Pier Totals	Percent Building Area Available to Marine Use (active marine use plus vacant divided by building footprint area pier totals)	Parcel ID Number	CBL Number	Property Owner	Land Pier Area	Common Circulation Drive Area	Open Area-net (land pier area minus Com Drive minus Building footprint area-pier total)	Active Marine Use Open Area	Vacant Open Area, Available to Marine Use	Open Area Available to Maine Use (Active Marine plus Vacant)	Active Non-Marine Use Open Area	Percent Open Area Available to Marine Use (Active Marine Use Plus Vacant divided by Open Area)	Notes: Vacancies are likely under reported within the percentage totals. Where casual storage, or no information was available, building area and open area is assumed to be available to marine use.
Deake's Wharf	1	38984		11056		9265		1800			0		100%												
	2	36868		4764		4764		0			0		100%												
	4p	38797		457		457		0			0		100%												
pier total				16277	16277	14486	14486	1800	1800	16286	0	0	100%	1	043 H001001	Gen Mar Con.	57527	5929	35321	35321	0	35321	0	100%	
Sturdivant's Wharf	6	38749		11104	11104	11104	11104	0	0	11104	0	0	100%	2	042 G001001	Sturdivants Wharf LLC	38737	1790	25843	25843	0	25843		100%	
Holyoke Wharf										0									0						
Alfiero	8p	38415	Seafood/Maine Marine	5960	5960	1500	1500	3960	3960	5460	500	500	92%	3	042 F003001	Harbor Fish Market	11518	1269	4289	4289	0	4289		100%	
Hale	9	38657		4109		4109																			
	10	38828		6919		5017		1849											0						
Hale pier total					11028	9179	9179	1849	1849	11028	0	0	100%	4	042 F002001	Gen Mar Con.	34324	4350	18946	18946	0	18946		100%	
Berlin Mills Wharf	12	36299	Portland Yacht Services	3156						0									0						
	12b	38420		708						0									0						
pier total					3864	0	0	3864	3864	3864	0	0	100%	5	042 E001001	Schmader	52034	0	48170	0	46362	46362	1808	96%	Recent vacancy due to departure of PYS. Pier for sale. NM open area is parking for 400 Comm st
Hobson's Pier	15	38554	ISF Trading/Maine Lobster Pound	16293		16293		0			0														
	15b	38608		857						0															
pier total					17150	17150	17150	0	0	17150	0	0	100%	6	042 D002001	Hobson's Pier Inc	67478	10812	39516	39516	0	39516	0	100%	
Becky's Parcel Remnant	16			375	375	0	0	0	0	0	375	375	0%	6b	042 D004001	Becky's	894	0	519	0	0	0	519	0%	
GMRI/Coast Guard (Wright's)	17	37489		3894						0				7	042 C003001										
I	17a	38577		500						0															
pier total					4394	4394	4394	0	0	4394	0	0	100%			GMRI	205990	19658	181938	115938	66000	181938	0	100%	
Portland Fish Pier	18	54072	Bristol Seafood	23298		23298		0																	
	19	38382	MTC	14911		14911		8200																	
	20	38466	Vessel Services	5152		5152		0																	
	21	38074	PFX	39245		39245		0																	
	22	37819	Douty Brothers	7240		7240		0																	
	23	37990	IFS	8338		8338		0																	
bait cooler (new in 2013)	24a	61253	Dropping Springs	1538		1538		0																	
pier total				99722	99722	99722	91522		8200	99722		0	100%	8	multiple Parcels	Fish Pier complex	458356	41466	317168	265111	0	265111	52057	84%	Non-marine open space is located in front parking lot, MTC parking, MTC visitor parking
Merrill's/Cumberland	26p	37870	Waterfront Maine	20247	14306	6615	6615	1253	1253	7868	6438	6438	55%	9	041 A018001	Waterfront Maine	47463	12205	15011	8940	0	8940	6071	60%	

Pier/Property Name	BLDG #	Object ID	Business Occupying Building	Building Footprint Area	Buidling Footprint Area-Pier Totals	Active Marine Use Building Area	Active MU, Pier totals	Vacant Building Area Available to Marine Use	Vacant building area, Pier Totals	Buidling Area Available to Marine Use (Active Marine Plus Vacant)	Active Non-Marine Use Building Area	Active NonMU, Pier Totals	Area Available to Marine Use (active marine use plus vacant divided by building footprint area pier totals)	Parcel ID Number	CBL Number	Property Owner	Land Pier Area	Common Circulation Drive Area	(land pier area minus Com Drive minus Building footprint area-pier total)	Active Marine Use Open Area	Vacant Open Area, Available to Marine Use	Open Area Available to Maine Use (Active Marine plus Vacant)	Active Non-Marine Use Open Area	Area Available to Marine Use (Active Marine Use Plus Vacant divided by Open Area)	Notes
Union Wharf	27p	37716		763						763															
	28p	36649		2850		2850																			
	29p			950						950															
	30	37982		1729		1729																			
	31	37802	Maine Lobster Direct	6963		5763				1200															
	32	38009	Maine Lobster Direct	1702		1702																			
	33	61243	Demoloished																						
	34	38075	Cozy Harbor	4963		4963																			
	35	37453	CBS Lobster	1943		1943																			
	36	38053	Demoloished																						
	36a		Replaced33 and 36	2722																					12 parking spaces, estimated
pier total					24585	21672	21672	0	0	21672	2913	2913	88%	10	031 L035001	Proprietors of Union Wharf	118533	14685	79263	73824	0		5439	93%	
Widgery Wharf,multiple, mobile buildings	41	multiple mobile buildings																				0			
	A			132		132																			
	B			76		76																			
	C			243		243																			
	D			208		208																			
	E			177		177																			
	F			216		216																			
	G			233		233																			
	H			215		215																			
	I			136		136																			
	J			211		211																			
	K			297		297																			
	L			177		177																			
	M			326		326																			
	N			261		261																			
	O			137		137																			
	P			1620		1620																			
	Q			776		776																			
	R			136		136																			
	S			159		159																			
	T			102		102																			
	U			120		120																			35-45 non-marine use parking spaces, some tandem layout. May have marine mixed in.
pier total				5958	5958	5958	5958	0	0	5958	0	0	100%	11	031 K008001	Kelly Family	45061	7318	31785	22019	0	22019	9766	69%	
Chandler's Wharf, multiple	42p	37926		7235						7235				12	031 J002577										
		37794		6389						6389															
		37751		4755						4755															
		36656		6700						6700															
		37891		6338						6338															
		37977		6436						6436															
				1298						1298												0			
pier total				39151	39151	0	0	0	0	0	39151	39151	0%				67748	0	28597	0	0	0	28597	0%	



Pier/Property Name	BLDG #	Object ID	Business Occupying Building	Buidling Footprint Area	Buidling Footprint Area-Pier Totals	Active Marine Use Building Area	Active MU, Pier totals	Vacant Building Area Available to Marine Use	Vacant building area, Pier Totals	Buidling Area Available to Marine Use (Active Marine Plus Vacant)	Active Non-Marine Use Building Area	Active NonMU, Pier Totals	Percent Building Area Available to Marine Use (active marine use plus vacant divided by building footprint area pier totals)	Parcel ID Number	CBL Number	Property Owner	Land Pier Area	Common Circulation Drive Area	Open Area-net (land pier area minus Com Drive minus Building footprint area-pier total)	Active Marine Use Open Area	Vacant Open Area, Available to Marine Use	Open Area Available to Mainie Use (Active Marine plus Vacant)	Active Non-Marine Use Open Area	Percent Open Area Available to Marine Use (Active Marine Use Plus Vacant divided by Open Area)	NOTES
Fishermen's/Port Lobster	43	37349	Portland Lobster	1140							1140														
		167291	Building replaced																						
Portland Lobster Co buildngs are a collection of tents, sheds and storage units with seasonal use		167292	Building replaced																						
	partial		partial, Portland Lobster	893							893														
	43B		Portland Lobster	672							672														
	43C		Portland Lobster	268							268														
	43D		Portland Lobster	342							342														
	43E		Harbor tours/Water taxi	252		252																			
				0																					
pier total				3567	3567	252	252	0	0	252	2175	2175	7%	13	031 J030001		10459	0	6892	345	0	345	6547	5%	
ishermen's parking remnant							0		0	0		0		14	031 J032001		2375	0	2375	0	0	0	0	0%	
Long Wharf/Dimillo's	44	37304		917		917																0			
																						0			
Multiple	45	37695		4934							4934														
	45a	54080		1098		1098																			
personal prop in assessment	46			13162		0																0			
pier total				20111	20111	2015	2015	0	0	2015	13162	13162	10%	15	030 H001001		47149		40200	12050	0	12050	28150	30%	Marina is considered non-comerical marine
Portland Pier						0				0												0			
Port Pier, J's Oyster	49p	37269		845	845	0	0	0	0	0	845	845	0%	16	030 H018001		2576	0	1731	0	0	0	1731	0%	
11 Port Pier, Law parking														17	030 H013001		1881	0	1881	0	0	0	1881	0%	
12 Port Pier, Law Offices	53	36856		1969			0		0	0							2439		1594			0			
Law offices	54p	33641	Formerly Lilley law offices	1637	3606	0	0	0	0	0	3606	3606	0%	18	030 B002001		11397	1117	6674	0	0	0	6674	0%	
ort Pier, Dimillos yacht sales	50	37386		1731	1731	1731	1731	0	0	1731	0	0	100%	19	030 H008001		4972	0	3241	1620	0	1620	1620	50%	Parking use % unclear
40 Port Pier Com Condos	52	37299								0					030 B001020							0			
50 Port Pier Res Condos	52			12564	12564	0	0	0	0	0	12564	12564	0%	20	030 B007		14555	0	1991	1405	0	1405	586	71%	
60 Portland Pier	51	37574	Lukes	4121		1902																0			
Bait Shack	51b	52 in GIS		1340		1208		0			132											0			Area calcs based on pending development plans
60 Port Pier total					5461	3110	3110	0	0	3110	2219	2219	57%	21	030 B004001		19947	5055	9431	5797	0	5797	3634	61%	spaces, 1 HC parking space, and 2000 sf exterior
Custom House Wharf																									
	55	53945	Harbor Fish	8473		8473										McGowen						0			
	56	53944	Seabags	4941		0					4941											0			
	56a	54081	various tenants	3582		3582																0			
	57	37384	Coastal Bait	8331		8331																0			
	58	53946	Coastal Bait	7552		7552																0			
	59		Lobster pound	4775		4775																			Extent of vacancies uncertain. Not apparent from land/pier total
	60	37251	Port Hole	2417		0					2417											0			
	61p	37170	Boones, Port Hole	7737		0					7737											0			
pier total				47808	47808	32713	32713		0	32713	15095	15095	68%	22	030 A001001		102161	10845	43508	25743		25743	17765	59%	assigned as non marine open space. Subject to
Maine Wharf																									
Goodrich	63	37092	Scales Bangs, Upstream, Nanuq	9501		0																0			
	64	37175		12297		12297					9501											0			Assumed 10 Non Marine parking spaces - variable
pier total					21798	12297	12297		0	12297		9501	56%	23			45023	8523	14702	11458		11458	3244	78%	
Flatbread/RiRa	65p	37020		4542	4542	0	0	0	0	0	4542	4542	0%	24	030 D001001		7303	272	2489	0	0	0	2489	0%	
TOTALS					381627		235698		20926	256624		113086	67%				1477900	145294	963075	668165	112362	780527	178578	81%	Discrepancies between totals due to rounding errors and subtracting common area from buildings causes inconsistent numbers between Land Pier and Buiding Area Available to Marine Use basis

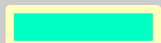
Legend



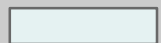
Non-Marine Use Overlay



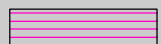
WCZ building



WCZ Parcel



Common Drive



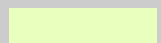
Active Non-marine Use
Open Area



Active Marine Use
in dominantly non-
marine property



Vacant Open Area



Pier area lost to
demolition/damage

#100

Building Number

#100

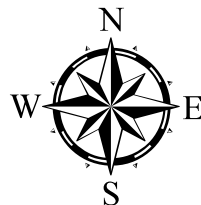
Parcel Number

Waterfront Central Zone Marine Use Inventory: Key Map



600 300 0 600 Feet

Map produced by the City of Portland Department of Economic Development from City of Portland 2018 pictometry, GIS parcel data, field observations, pier management interviews, and on-site interviews. December 2018





Matthew Grooms <mgrooms@portlandmaine.gov>

Fwd: Waterfront

jmy <jmy@portlandmaine.gov>

Wed, Apr 17, 2019 at 12:11 PM

To: Matthew Grooms <mgrooms@portlandmaine.gov>

Matt, I am going to ask you to save this to your WCZ folder as a public comment because I am unable to locate it. Can you let me know where you are keeping the pc for WCZ? Thanks.

On Tuesday, April 16, 2019 at 3:25:36 PM UTC-4, Joel Richardson wrote:

Please do not allow non marine related business to encroach on our gem of a waterfront. You will be responsible for loosing our charm and tourism business only to increase the tax base a tiny bit. Not worth it.

Joel Richardson



PLANNING BOARD REPORT PORTLAND, MAINE

Lyseth Elementary School Building Additions and related site work

175 Auburn Street

Level III Site Plan and Conditional Use

Project # PL000481-2019 and #CU000496-2019 CBL: 334 B012001

Portland Public Schools, Applicant

Submitted to Portland Planning Board: Public Hearing Date: April 23, 2019	Prepared by: Jean Fraser Date: April 19, 2019
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I. INTRODUCTION

The Portland Public Schools has requested final approval to the Level III site plan and conditional use applications for the proposed two small building additions to the Lyseth Elementary School at the rear of the Lyman Moore/Lyseth schools campus. The additions are the focus of the current review and include some minor amendments to the previously approved access improvements near the additions (within the thick red outline on plan below).

The construction of the additions will also include the implementation of the western part of the previously approved stormwater and access improvements shown by the thin red outline at left of aerial). The previous approval and a summary of the permitting and implementation history is attached (*Attachments 6 and 7*).

The proposals were considered at a PB Workshop on March 12, 2019 and the proposals have incorporated minor revisions to address the Planning Board and staff comments.

There are two proposed building additions that total 14,476 sq ft, the smaller one for offices/reception along the front, and one "infill" addition on the north side for a library and gym. The additions are not associated with any increase in students nor generate any additional traffic/parking, although some parking has been added where possible.

The site is located primarily in the R2 zone, with a corner within the ROS zone that abuts the schools. The institutional use as a school is a conditional use in the R2 zone, so there are both site plan and conditional use applications.

Applicant: Portland Public Schools (Steven Stilphen)
Consultants: Harriman (Frank Crabtree, PE)



Required reviews: Site Plan and Conditional Use (No waivers are required)

Applicant's Proposal	Applicable Standards
Building and site work of over 4 acres in the vicinity of the Lyseth Elementary School.	SITE PLAN - 14-523 Site Plan Required Approval and Applicability Level III Site Plan and 14-526 Site Plan Standards
Expansion of the Lyseth School footprint by 14,476 sq ft to provide a library, gym and improved office/reception space.	CONDITIONAL USE - 14-78 (b)1 Allows an elementary school use only upon the issuance of a conditional use permit as reviewed by the Planning Board and subject to the provisions of 14-474.

II. PROJECT DATA

SUBJECT	DATA
Existing Zoning	R2 (small part ROS)
Existing Use	Elementary School
Proposed Use	Elementary School with larger footprint
Parcel Size	25.12 acres
Impervious Surface Area	
--Existing	414,213 sq ft
--Proposed	432,323 sq ft
--Net Change	18,110 sq ft
Total Disturbed Area	4 acres
Building Footprint (single story building)	
-Existing	141,500 sq ft
-Proposed	155,976 sq ft
-Net change	14,476 sq ft (3,431 offices at front; 11,045 gym/library, exp
Parking Spaces	
-Existing	33 along the south side of Lyseth School
-Proposed	39 along the south side of Lyseth School
-Net change	+6
Bicycle parking Spaces	
-Existing	27
-Proposed	27
-Net change	0

III. BACKGROUND and PHASING

Background

The Lyseth School site has been affected by several site plan approvals in 2017/2018 for extensive new stormwater infrastructure and rationalization of vehicle and pedestrian circulation on the wider campus.

The southern part of the overall stormwater, walking trail and parking improvements were implemented in the summer of 2017, covering the athletic fields and the small parking area immediately south of the area of the current review. The northern section of the campus was approved in 2018 for modified circulation to better separate buses, vehicles and pedestrians, stormwater detention and treatment, and revised parking. A small part of the parking improvements at the rear of the Lyman Moore School were implemented in 2018. A copy of the Planning Board approval letter for this northern area is attached in *Attachment 6*, and a Summary of the Permitting and Implementation history is included in *Attachment 7*.

Phasing

The implementation of the permitted improvements to the campus were phased over several years, as necessitated by the need for summer working to avoid construction during the school year.

The improvements to the southern part of the campus have been completed (see table showing status in *Attachment 7*). The proposed Lyseth building addition project, subject of this review, also includes implementation of most of the previously permitted stormwater and site improvements for the northern part of the campus.

When the school building additions (in orange and dark gray on plan to right - also see below) are constructed the campus renovations will be largely complete as illustrated to right (also in [Plan P15](#)).

One further phase is envisaged that would renovate (surface only) the central parking lot and associated drive and parking aisles.

IV EXISTING CONDITONS

Lyseth Elementary School is part of a school campus that also includes the Lyman Moore Middle School and athletic fields that are zoned ROS. The campus is located on the east side of Auburn Street just north of the Northgate Shopping Plaza, and surrounded by residential and wooded backland.

Lyseth Elementary School is located at the eastern end of the access drive and parking areas, immediately north of extensive athletic fields that serve both the schools and neighborhood.

The main vehicle access is from Auburn Street at signals, but the site can also be accessed by vehicles via Bartley Avenue and Junior Street to the north. There are additional points where pedestrian/bicycle access to the campus is possible.



View east from central "loop" drive towards Lyseth School

V. PROPOSED DEVELOPMENT

The proposals are for a total of 14,476 sq ft of new additions to the Lyseth school building to include:

- A single story school reception/office addition of 3,431 sq ft located at the front of the existing building; and
- A 30.75 feet high gym/library complex of 11,045 sq ft. These are indicated in orange on the plan below.

The project will also include extensive stormwater treatment infrastructure that integrate with those recently implemented to the south.

The project includes planted areas around the new additions (see landscape Plans in [Plan P9](#)). The proposals include a clematis trellis on the gym wall and possible additional planting on private property along the north boundary near the gym (*Attachment U, Plan P19, Plan P20*).

The paved areas around the Lyseth School are proposed to be modified to provide improved access and safety, along with the creation of pedestrian and bicycle “by ways” to and through the site (see below).

The dark gray areas represent the areas of reconstruction that include:

(Site Plan ([Plan P3](#)) illustrates these in detail)

- Revised lane design with new paving and striping, ADA drop off, and amended intersection at corner of the athletic fields
- Revised parking along the south side of Lyseth School, with 6 additional parking spaces
- Reconstructed play area to rear of the school
- New/widened and relocated pedestrian and bicycle paths (see *Site Plan Plan P3* and *Attachment 5 Campus Connections Plan*, and section IX C1 below)

The proposals incorporate minor site work amendments (to the elements approved previously) to integrate the school additions, and the applicant has summarized the changes as compared to the approved plans in [Plan P17](#). The 2018 Approved Site Plan is included in [Attachment 7](#).

Diagrammatic Site Plan extracted from Site Phasing Plan



VI. PLANNING BOARD WORKSHOP March 12, 2019

The Planning Board identified a number of issues where they requested further detail:

- Clarify safety improvements in Junior Street connection area
- Confirm delivery arrangements
- Ensure paths address desire lines
- Clarify how parking will be prevented in the fire lanes
- Possible charging stations for electric vehicles
- Provide details and info regarding the green trellis on gym wall
- Provide details of existing conditions, and proposals for buffer planting/fencing, along the north boundary where the fire land is near residences
- Gate to north fire lane- clarify how it will work to confirm it would not impede bike path/trail when closed and open

All of these points have been addressed in the April 2, 2019 Comment Response letter (*Attachment U*). Staff do not have any further comments except in respect of the gym wall and fire lane area along the north boundary where staff have offered additional recommendations and suggested conditions.

VII. PUBLIC COMMENT

There was one public comment at the PB workshop from Jaime Parker of Portland Trails. He welcomed the willingness of the applicant to widen the pathways to 8 feet in width, but was concerned about the fire lane gate and how walkers and cyclists would get around it when open. The applicant addressed this concern (see *Attachment U*) by proposing a 16 foot wide double gate with two parts that open from the center.

This Hearing was noticed to 189 neighbors and interested parties, and the public notice appeared in the *Portland Press-Herald* on April 12th and 15th, 2019. The Planning Division has not received any public comments as of the completion of this Report.

The applicant held a Neighborhood Meeting on February 28, 2019 at the Lyseth School which was attended by five neighbors; notes are included in Attachment Q.

VIII. RIGHT, TITLE AND INTEREST AND FINANCIAL/TECHNICAL CAPACITY

The applicant has provided a number of deeds that confirm right, title and interest in the subject property (*Attachment D*). The applicant has engaged Harrimans, an architectural and engineering consultancy with experience of school design, to develop the proposals; their credentials are included in *Attachment H*.

IX. STAFF REVIEW

A. ZONING

Elementary Schools are classified as an institutional use in the R2 zone, and institutional uses are permitted as conditional uses. A conditional use must meet specified standards listed under the R2 zone as well as the general conditional use standards of Section 14-474 (see below for this review).

The applicant has submitted a Zoning Assessment Table (Attachment F) that confirms the proposals meet the dimensional standards of the R2 zone. The parking requirements are based on 1 parking space for each classroom with a requirement of 27, and this has been met.

B. CONDITIONAL USE REVIEW

Section 14-78 (b) 1

- a. Any new institutional use shall demonstrate that it has a lot size of sufficient area to accommodate all proposed and foreseeable future activities and programs, including parking, and to absorb the impacts and growth needs of the institution. Such new use established after April 19, 2012 shall not be eligible for expansion under the provisions of paragraph b below;*

Staff comments: The proposed additions to Lyseth School do not represent growth but aim to provide upgraded indoor support facilities. The school was constructed in the 1950's/60's and requires renovation to address current best practice.

- b. In the case of expansion of existing such uses onto land other than the lot on which the principal use is located, it shall be demonstrated that the proposed use cannot reasonably be accommodated on the existing site through more efficient utilization of land or buildings, and will not cause significant physical encroachment into established residential area; and*

Staff comments: The proposals do not involve any expansion outside of the existing school lot.

- c. The proposed use will not cause significant displacement or conversion of residential uses existing as of June 1, 1983, or thereafter; and*

Staff comments: The proposals do not displace or convert any residential uses.

- d. In the case of a use or use expansion which constitutes a combination of the above-listed uses with capacity for concurrent operations, the applicable minimum lot sizes shall be cumulative; and*

- e. Article V (site plan) sections 14-522 and 14-523 notwithstanding, in the case of places of assembly (including places of religious assembly, community halls and private club or fraternal organizations) and college, university, trade school, the proposed use shall be subject to the requirements of article V (site plan) of this chapter; and

Staff comments: These provisions to not apply to the subject proposal.

Section 14-474:

The following standards 14-474 apply to all conditional uses:

2. Standards. The Board shall, after review of required materials, authorize issuance of a conditional use permit, upon a showing that the proposed use, at the size and intensity contemplated at the proposed location, will not have substantially greater negative impacts than would normally occur from surrounding uses or other allowable uses in the same zoning district. The Board shall find that this standard is satisfied if it finds that:
- a. The volume and type of vehicle traffic to be generated, hours of operation, expanse of pavement, and the number of parking spaces required are not substantially greater than would normally occur at surrounding uses or other allowable uses in the same zone; and

Staff comments: The proposals are not expected to generate additional traffic as no additional students or staff are anticipated (see *Attachment I*). No unusual vehicles are anticipated to need access to the site as a result of the proposals, and the parking supply is being increased by 6 parking spaces.

At the PB Workshop the Board raised a concern about the control of parking within the fire lane to the north, as this could potentially introduce noise and other impacts for neighbors. The applicant has added two additional “No Parking- Fire Lane” signs on either side of the gated drive (other similar signs also noted on the plan (*Attachment U and Plan X*)). Staff recommend that a condition of approval be included to highlight the importance of controlling parking in relation to the expansion of the institutional use.

- b. The proposed use will not create unsanitary or harmful conditions by reason of noise, glare, dust, sewage disposal, emissions to the air, odor, lighting, or litter; and

Staff comments:: The applicants Conditional Use analysis (*Attachment B*) provides details regarding these potential impacts and the proposal would not create harmful conditions.

- c. The design and operation of the proposed use, including but not limited to landscaping, screening, signs, loading, deliveries, trash or waste generation, arrangement of structures, and materials storage will not have a substantially greater effect/impact on surrounding properties than those associated with surrounding uses or other allowable uses in the zone.

Staff comments: The design and operation of the proposed use is anticipated to have the generally the same effects/impacts as the existing elementary school use, as well as the surrounding uses. At the Workshop both staff and the Board highlighted three aspects that needed further consideration:

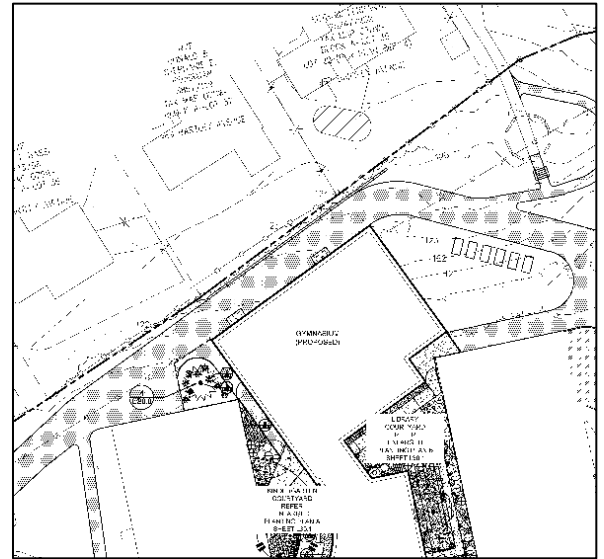
- The potential for the gym use to “spill” out onto the fire lane;
- The visual aspects of the scale of the 95’X31” northfacing wall of the gym;
- The scope for screening of the fire lane and gym façade from neighbors to the north.

The potential for the gym use to “spill” out onto the fire lane;

At the PB Workshop staff drew attention to the fact that the proposed gym wall facing the fire lane and abutting properties on Bartley Street (see plan right) had two external doors that opened directly onto the 17 foot wide access drive/fire lane/pathway.

The applicant has confirmed that the doors are for emergency use only and there would be no increase in effects/impacts on the abutting neighbors as a result of the proximity of the external doors (*Attachment U*). The proposed lighting is low key wall mounted and appropriate given the anticipated use of the fire lane as a trail/bikepath.

Site Plan extract, gym in center:



The visual aspects of the scale of the extensive north-facing wall of the gym

The wall of the gym is 95 feet long and 30'9" high and the initial proposals included a 14'X19' trellis to soften the scale of the wall.

Staff consider that this rectangular trellis would not be an effective visual mitigation, as it is relatively small and there are limited non-poisonous evergreen vines available, and it would be difficult to maintain in this location.

The architect has indicated that they could revise the brick veneer patterning to further mitigate the scale of the wall, and would be willing to remove the trellis (*Attachment V*).



Gym elevation facing residential properties on Bartley Avenue

The scope for screening of the fire lane and gym façade from neighbors to the north.

The consideration of this standard and its reference to landscape and screening resulted in the Planning Board requesting more information regarding the existing and proposed conditions in the area where the gym is closest to the property boundary, and about the scope for increased planting along the paved lane nearest to the boundary.

The applicant has submitted a photograph of the existing conditions (right, and in *Attachment U*) and a section showing the relationship between the gym building and the abutting neighbor to the north (below and on the Site Plan, top left corner of *Plan P3*).



The Comment Response letter (*Attachment U*) explains that given the limited space between the paved fire lane and the boundary, and the need for a drainage strip, the applicant intends to contact neighbors to see if they would like to have additional planting or fencing on their property to screen the gym addition. Staff welcome this approach, but as this is open-ended Jeff Tarling, City Arborist, has recommended the planting of Clethre shrubs along the retaining wall in this vicinity as they are shade tolerant and grow to 12 in height (*Attachment 4*).

Staff recommend the following condition of approval to address the several aspects of this conditional use standard:

Potential impacts: That the applicant shall finalize the Site, Landscape and Building Plans, for review and approval by the Planning Authority, to clarify the proposed measures to screen and minimize the potential impacts of the gym and relocated fire lane, including:

- a. *Omission of the trellis as proposed, and adding brick patterning and other articulation to break up the scale of the wall.*
- b. *Incorporation of the recommendations of the City Arborist dated April 17, 2019 for shrub planting along the north side of the northern fire lane in the vicinity of the proposed gym.*

C. SITE PLAN STANDARDS

The application is very thorough and the provides details as to how the project meets the site plan standards. Most of the site plan standards appear to be generally addressed. Key standards that apply to this project are outlined below, and there are several issues where further discussion is recommended:

1. Transportation Standards

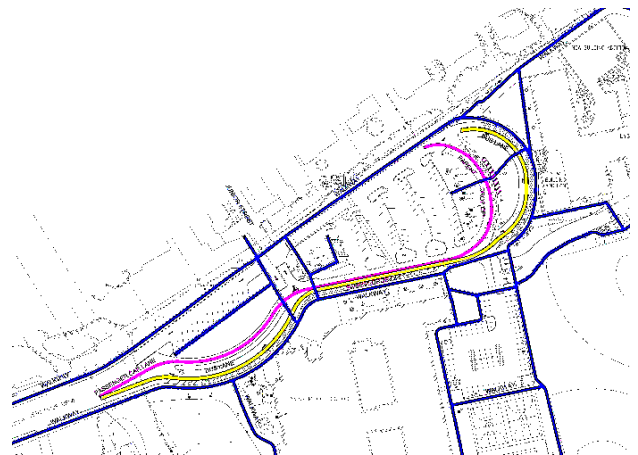
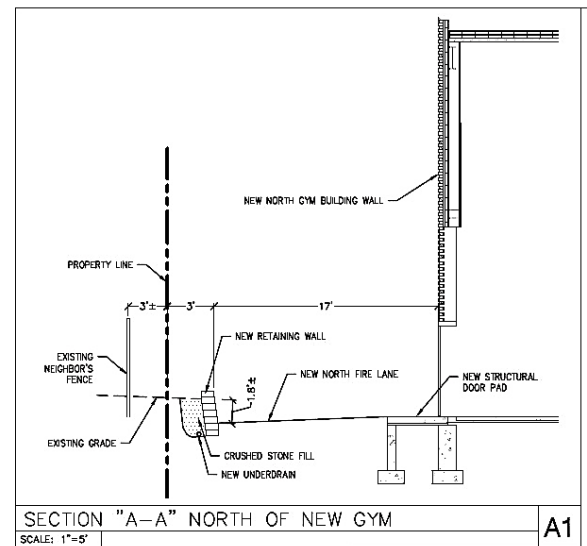
Traffic Generation and Circulation: The proposals would not generate additional traffic and therefore do not impact the surrounding street network. Circulation within the campus is illustrated below ([Plan P16](#)). The pedestrian/bicycle circulation is also linked into the wider trail network as discussed below.

Circulation Plan at right:

- yellow is buses
- pink is passenger cars
- blue is pedestrian/bicycle routes

The proposal maintains the measures that were approved as part of the earlier project to separate pedestrians and vehicles as far as possible and clarify which lanes and areas were intended for particular types of vehicles (eg buses, cars dropping off students). The current project completes the original approved circulation pattern, including signage and crosswalks at Junior Street, though the central parking area and lanes will be a future phase as explained in Section III above.

The key area of review has been the design of the **Multi way intersection** between the two schools and rear parking areas where 6 vehicle driveways come together near the south east corner of Lyseth School. This was the subject of

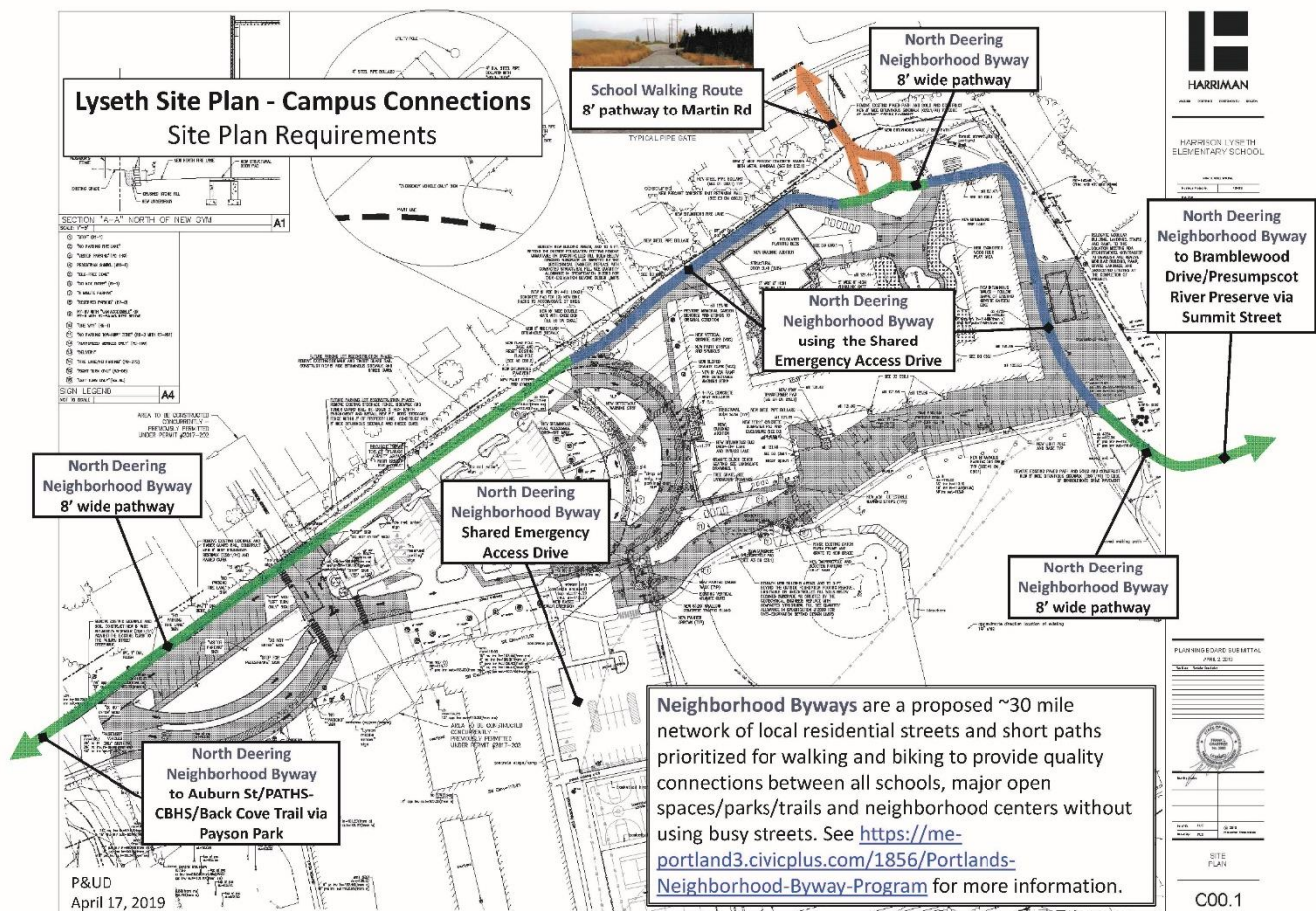


considerable discussion during the previous review as to how to reduce the expanse of pavement and narrow drive lanes and reduce the length of the pedestrian crossings.

The proposals include an amendment to the previous layout of this area, which staff consider to be an improvement. At the PB Workshop the DPW Engineer raised a concern regarding the area just west of the intersection, where there would be passenger vehicle right turns across the bus lane. This issue has been reviewed further and the final layout, as shown on the Site Plan in *Plan P3*) is considered to be acceptable (*Attachment 1*).

Bike and trail connections: At the PB Workshop the applicant confirmed a willingness to upgrade the existing pedestrian and bike paths to and within the site to encourage students to access the school by alternative modes, and also to form part of the Neighborhood Byway project (see note at bottom of the plan) and Portland Trail networks. The Planning Division worked with the School Department, the City Arborist and Portland Trails to recommend specific upgrades and connections as shown on the annotated plan below (and attached as *Attachment 5*). These allow for a portion of the proposed *North Deering Neighborhood Byway* to pass through and connect to the Lyseth-Moore Campus, as well as an enhanced school walking route connection to Martin Road.

The applicant has incorporated these recommendations in the submitted final Site Plan (*Plan P3*), and described in *Attachment U*) and the project is considered to meet the site plan requirements for site accessibility and circulation (*Attachment 5*).



2. Environmental Quality Standards

Site Landscaping/Screening: the proposals include intensive planting in the courtyard area, new trees near the new entrance and a trellis on the gym wall (see *Plans P9, P19, and P20*). As noted in the conditional use review, staff recommend additional shrub planting along the boundary and omission of the trellis.

Stormwater Management: The previously approved project included a new stormwater system comprising an underdrained grassed soil filter in the westernmost “island”, and a series of catchbasins and additional roofdrains to

direct stormwater to this system. The current proposals will implement this system and also add a new subsurface underdrained chamber sand filter bed near the larger school addition.

The proposed building additions add 15,800 sq ft of impervious surface to the campus and the Stormwater Report (*Attachment M*) considered at the Workshop was considered adequate to meet City and MDEP standards.

Since the Workshop the applicant has widened the pathways to meet staff recommendations (see *Attachment 5*) and this adds a further 2,310 sq ft of impervious surface. This additional impervious surface does not have a measureable effect on the original stormwater calculations or on the Urban Impaired Stream assessment, as the original design included extra treatment (*Attachment U*). The Peer Engineer has reviewed the revised calculations that take account of the widened pathways, and confirms that the proposed stormwater system is adequate to address the City and State requirements (*Attachment 2*).

3. Public Infrastructure and Community Safety Standards

Fire Access: The proposals include fire lanes around the entire Lyseth School but they cannot be connected at the rear of the school. Therefore access for large fire appliances is required to both sides of the building. The amended layout of the “multi-way intersection” (*Plan P3*) has been designed to include a mountable island that allows fire access while also being better for pedestrians.

The access to the northern fire lane has been designed, at the Fire Department’s request (*Attachment 3*), to be feasible from either the bus lane or the drop off lane. This requires that the two corners to be designed so that the fire appliance can maneuver around the corners ie with no obstruction. The notes on the Plan SK-1A (*Attachment R*) meet the fire Department requirements as confirmed in *Attachment 3*; these notes need to be added to the final Site Plan.

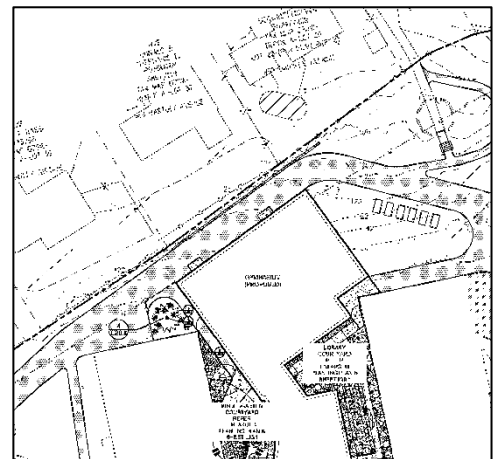


TYPICAL PIPE GATE

The gate for the northern fire lane has been confirmed (*Attachment U*) to be a double gate as shown right, 16 feet in width. This design addresses the concern about it impeding the pathway along the north side of the gate.

CPTED: At the Workshop staff were concerned that the parking areas and pedestrian routes may not benefit from sufficient lighting and requested that further consideration be given to this issue. The final plan incorporates new pole lights along the south and many wall lights on the school buildings which together address this concern (these are reviewed in detail below).

Since the Workshop the *Neighborhood Byway* and *Portland Trail* routes have been confirmed and staff have considered the routes in the context of the CPTED principles outlined in the Site Plan ordinance. While the majority of the pedestrian/bicycle routes on the site are either visible from streets or windows, the section along the 95-foot-long north facing gym wall does not benefit from natural surveillance. The gym has been intentionally designed to present a “quiet” use/elevation given the proximity to neighbors (see discussion under the Conditional Use Review on page 7).



One of the Site Plan ordinance CPTED principles (for incorporation into the design of public and private spaces to reduce the potential for crime) is “*Territorial reinforcement that promotes a sense of ownership and responsibility through environmental design*”. Staff suggest that the omission of the trellis would allow for the introduction of a combination of low cost elements could be introduced here to activate the space so that it is seen as a positive public space and not a “back alley”. Such elements could include: mural and /or painted pavement; information board, map of the area, and other “designed” wall features such as a sign/logo saying “Lyseth Elementary School”; wall mounted sculptural elements; low level lighting; banners; etc.

The applicant's architect has indicated that they agree with staff that this area needs to be “positively” designed and offered similar suggestions for further consideration (*Attachment V.*). Staff suggest that any lighting proposals be considered as part of the overall lighting plan (see below), and suggest the following CPTED condition of approval to be met prior to the issuance of a Certificate of Occupancy:

CPTED issues: That in the area between the gym wall and the north boundary, the applicant shall introduce pavement coloring, along with low wall mounted features (such as mural, sign of a permanent material, information board, map of the area etc) in order to create a positive "welcome" and identity to the area and activate the lower part of the gym elevation.

4. Site Design Standards

Lighting: At the Workshop staff noted that the original proposals included wall mounted lighting but there were no proposals to enhance the lighting levels for the employee parking at the side of the building (abutting the athletic fields) nor the path between the new ADA drop off and the entrance.

The final submittal includes an updated Photometric Plan (*Plan P18*) which clarifies the location of 5 new pole lights in the above-mentioned areas, the location of the wall lights, and all specifications. These proposals generally meet the recently adopted Site Lighting standards, subject to the following:

- The Correlated Color Temperature (CCT) of the pole lights is specified at 4000K and the city's current standards require these to be a maximum of 3000K; and
- The site Plan indicates the removal of an existing light that provides lighting for the crosswalk over the entrance to the south fire lane and adjacent parking lot; if that is the case, then a 6th new pole light should be added at this location to ensure pedestrians can be seen on the crosswalk.

The proposals include wall lighting on the gym wall. In light of the recommendations for that wall outlined elsewhere in this report, staff suggest the overall lighting plan should be revised to include final proposals for lighting on or near the gym wall.

HVAC and Mechanical Equipment: The applicant has confirmed (*Attachment B*) that the proposals include two small air-conditioning condensing units on the building roof, which will be screened from the nearest property line by the adjacent higher wall of the building and be very quiet. Staff recommend a condition of approval that requires the further review and approval of any modification to this proposal, as often the HVAC is revised as construction plans are developed.

XI. STAFF RECOMMENDATION

Subject to the proposed motions and conditions of approval listed below, Planning Division staff recommends that the Planning Board approve the proposed development.

XII. PLANNING BOARD MOTIONS

A. CONDITIONAL USE APPROVAL

On the basis of the application, plans, reports and other information submitted by the applicant; findings and recommendations contained in the Planning Board report for the public hearing on April 23, 2019 for application #CU000496-2019 (175 Auburn Street; Lyseth School) relevant to Portland's Zoning ordinance section 14-78 (b) 1 and the testimony presented at the Planning Board hearing:

The Planning Board finds that the plan **is/is not** in conformance with the conditional use standards of the Land use Code, subject to the following conditions of approval:

Prior to applying for a Building Permit

1. *Potential impacts:* That the applicant shall finalize the Site, Landscape and Building Plans, for review and approval by the Planning Authority, to clarify the proposed measures to screen and minimize the potential impacts of the gym and relocated fire lane, including:
 - a. Omission of the trellis as proposed, and adding brick patterning and other articulation to break up the scale of the wall.
 - b. Incorporation of the recommendations of the City Arborist dated April 17, 2019 for shrub planting along the north side of the northern fire lane in the vicinity of the proposed gym.

Ongoing

2. *Parking in Fire Lane:* That the applicant will take all reasonable steps to ensure that there is no parking within the northern fire lane.

B. SITE PLAN

On the basis of the application, plans, reports, and other information submitted by the applicant, findings and recommendations contained in Planning Board Report for the public hearing on April 23, 2019 for application # PL000481-2019 (175 Auburn Street; Lyseth School), relevant to the Site Plan Ordinance, and other regulations, as well as the Planning Board deliberations and the testimony presented at the Planning Board hearing:

The Planning Board finds the plan **[is /is not]** in conformance with the site plan standards and all other applicable provisions of the land use code, subject to the following conditions to be met as noted:

Prior to applying for a Building Permit

1. That the applicant shall add the notes on Plan SK-1A (*Attachment R*) to the Site Plan, as relevant to document the Fire Department requirements for access to the north Fire Lane, for submission to the Planning Authority.

Prior to the issuance of the Building Permit

2. *Site Lighting:* That the applicant shall revise the Photometric Plan and associated fixture specifications, for review and approval by the Planning Authority, to:
 - a. Revise the specifications to comply with the recently adopted Site Lighting Technical Standards which specify a maximum of 3000K CCT;
 - b. Show that adequate lighting is included in the proposal for the sidewalk/pedestrian crossing of the access to the parking area and southern fire lane; and
 - c. Revise the lighting in the vicinity of the north facing gym wall to provide a mix of wall and/or bollard lighting that will help address CPTED objectives while avoiding impacts to neighbors.
3. *Stormwater:* The developer/contractor/subcontractor must comply with conditions of the construction stormwater management plan and sediment and erosion control plan prepared by Harriman Associates and dated January 2019 and based on City standards and state guidelines. The owner/operator of the approved stormwater management system, and all assigns. shall comply with the conditions of Chapter 32 Stormwater including Article III, Post Construction Stormwater Management, which specifies the annual inspections and reporting requirements. A updated formal stormwater maintenance agreement, that clarifies future responsibilities for operation and maintenance of the proposals, in coordination with the existing stormwater systems, shall be submitted to the Planning Division.

Prior to the Issuance of a Certificate of Occupancy

4. *CPTED issues:* That in the area between the gym wall and the north boundary, the applicant shall introduce pavement coloring, along with low wall mounted features (such as mural, sign of a permanent material, information board, map of the area etc) in order to create a positive "welcome" and identity to the area and activate the lower part of the gym elevation.

5. **HVAC:** That any modifications to the approved HVAC (two small condensers screened from the property line) shall be submitted for further review and approval by the Planning Authority.

ATTACHMENTS:

Attachments to Report

1. DPW Engineer Final Review comments 4.18.2019
2. Peer Engineer Final Review comments 4.19.2019
3. Fire Department Final Comments 4.10.2019
4. City Arborist final comments 4.17.2019
5. Transportation Program Man. comments & Campus Connections Plan
6. Background - Previous Site Plan approvals
7. PB Jan 2018 Approved Site Plan (for reference)

Public Comments (none received at time Report was completed)

Applicant's Submittal

- A. Site Plan Application docs.pdf
- B. Conditional Use Analysis & Checklist.pdf
- C. Project Summary.pdf
- D. Right, Title & Interest and Easements.pdf
- E. State or Federal permits.pdf
- F. Zoning Assessment.pdf
- G. Financial Capability Letter.pdf
- H. Technical Capability.pdf
- I. Traffic, Circulation & Servicing.pdf
- J. Sidewalks and Public Transit.pdf
- K. Parking and Bicycle Parking.pdf
- L. Landscape.pdf
- M. Water Quality, Stormwater, Erosion Control.pdf
- N. Utilities updated & Snow Storage.pdf
- O. Site Design.pdf
- P. Construction Management Plan Lyseth.pdf
- Q. Neighborhood Meeting Certificate.pdf
- R. Public Safety & Fire Prev updated.pdf
- S. Lightng Specs.pdf
- T. Stormwater - update to Att. M to add in for trails.pdf
- U. Comment Reponse 4.2.19.pdf
- V. Additional suggestions gym wall 4.19.2019.pdf

Plans

- P1 EXISTING-SITE-CONDITIONS-PLAN.pdf
- P2 EXISTING-SITE-DEMOLITION-PLAN.pdf
- P3 SITE-PLAN.pdf
- P4 SITE-NOTES.pdf
- P5 SITE-GRADING-&-EROSION-CONTROL-PLAN.pdf
- P6 SITE-UTILITY-PLAN.pdf
- P7 EROSION-CONTROL-NOTES.pdf
- P8 SITE & MATERIAL DETAILS.pdf
- P9 PLANTING PLANS.pdf
- P10 PLANTING DETAILS.pdf
- P11 PRE & POST DRAINAGE PLANS.pdf
- P12 FLOOR PLANS.pdf
- P13 GYM ELEVATIONS.pdf
- P14 FRONT EXTERIOR-ELEVATIONS.pdf
- P15 SITE PHASING PLAN.pdf
- P16 CIRCULATION PLAN ADDITIONS PHASE.pdf
- P17 KEY CHANGES FROM APPROVED PLANS.pdf
- P18 PHOTOMETRIC PLAN.pdf
- P19 GYM ELEVATION WITH TRELLIS.pdf
- P20 GYM WALL TRELLIS PLANTING LEGEND.pdf

Lyseth School - DPW final comments

1 message

Mike Tremblay <mtremblay@portlandmaine.gov>
To: Jean Fraser <jf@portlandmaine.gov>

Thu, Apr 18, 2019 at 8:17 AM

Jean,

DPW accepts the site plan for the Lyseth School as shown in the 4/2/2019 submission. The applicant has adequately addressed our concerns. If and when the applicant goes forward with Phase 2 of this project, special consideration should be taken regarding passenger vehicle and bus traffic approaching the drop-off area, especially as it pertains to passenger vehicles crossing the bus lane to enter the southerly and easterly parking lot.

Please let me know if you need any additional information, and if you need me at the hearing next week.

-Mike

Mike Tremblay, P.E.
Senior Engineer
Engineering Division
Department of Public Works
City of Portland, ME
mtremblay@portlandmaine.gov
P. 207.874.8881 F. 207.874.8852



175 Auburn St - Lyseth School

1 message

Mike Tremblay <mtremblay@portlandmaine.gov>

Wed, Mar 6, 2019 at 2:04 PM

To: Jean Fraser <jf@portlandmaine.gov>

Cc: Jeremiah Bartlett <jbartlett@portlandmaine.gov>, Bruce Hyman <bhyman@portlandmaine.gov>

Jean,

As we discussed this morning, I am generally OK with the proposed changes at the Lyseth School. I'd like to put additional thought into the location where the bus lane intersects with the entrance/exit to the two parking lots, especially as it pertains to passenger vehicle right-turns across the busway. These movements may create a similar risks as a "right hook" crash, which is typical of right turns across a bicycle lane, but applicable whenever there's a right-turn movement across a through lane.

We can discuss more at a later date, but it may make sense for right-turning vehicles to merge in with the busway, similar to this diagram. Thru buses and right-turning vehicles would share the right lane. At times when bus traffic is low, this will function as a simple right-turn lane. When there is bus traffic, cars would just merge into the bus lane.

Aside from this topic, I am OK with the plan as altered to allow for fire access to the north side of the site, and widening the north-side sidewalk to 8' minimum to allow for a neighborhood byway.

Mike Tremblay, P.E.

Senior Engineer

Engineering Division

Department of Public Works

City of Portland, ME

mtremblay@portlandmaine.gov

P. 207.874.8881 F. 207.874.8852





Jean Fraser <jf@portlandmaine.gov>

Fwd: Lyseth School

1 message

Jean Fraser <jf@portlandmaine.gov>
To: "Fraser, Jean" <jf@portlandmaine.gov>

Fri, Apr 19, 2019 at 9:50 AM

PEER ENGINEER FINAL COMMENTS

From: **Lauren Swett** <lszett@woodardcurran.com>
Date: Fri, Apr 19, 2019 at 7:45 AM
Subject: RE: Lyseth School
To: Jean Fraser <jf@portlandmaine.gov>

Hi Jean,

I have reviewed the provided information, and have no additional comments. Their stormwater management plan will accommodate the additional impervious area provided by the trail.

If you need any additional information, let me know.

Thanks,

Lauren

(WOODARD & CURRAN)

Fwd: Lyseth School

1 message

Jean Fraser <jf@portlandmaine.gov>
To: "Fraser, Jean" <jf@portlandmaine.gov>

Fri, Mar 8, 2019 at 11:15 AM

PEER ENGINEER PRELIMINARY COMMENTS

----- Forwarded message -----

From: **Lauren Swett** <lszett@woodardcurran.com>
Date: Thu, Mar 7, 2019 at 10:22 AM
Subject: RE: Lyseth School
To: Jean Fraser <jf@portlandmaine.gov>
Cc: Doug Roncarati <dar@portlandmaine.gov>

Hi Jean,

I've reviewed the stormwater approach, and what they are proposing, in combination with the previous approved system, will adequately address stormwater management on the site.

We need to do a more comprehensive HydroCAD model review, and that won't be done for the PB workshop, but honestly, based on my high-level review, I don't anticipate anything more than maybe small comments that won't impact the end result.

They will be reducing the total flow of stormwater to the gravel wetland by a small amount, so their proposal will help to improve the operation of the gravel wetland. They are proposing a subsurface sand filter – it will treat and it will provide flow mitigation which will help manage flow.

If there are any questions, let me know. Thanks,

Lauren



PLAN CORRECTIONS REPORT PL-000481-2019 FOR CITY OF PORTLAND

PLAN ADDRESS:	175 Auburn St Portland, ME 04103	PARCEL:	374 B012001
APPLICATION DATE:	01/25/2019	SQUARE FEET:	0.00
EXPIRATION DATE:		VALUATION:	\$0.00
		DESCRIPTION:	Lyseth Elementary School Additions and Renovations

CONTACTS	Name	Company	Address
Agent/Representative	Douglas Sherwood	City of Portland (Portland Public Schools)	353 Cumberland Avenue Portland, ME 04101

Comments & Corrections Required

City Arborist Jeff Tarling

Civil Engineering - Third Party Reviewer Lauren Swett

DPW Engineering Keith Gray

DPW Water Resources Compliance Benjamin Pearson

DPW Water Resources Engineering Brad Roland

Comment(s)/ Recommendation(s):
Wastewater Capacity Authorization issued 2019-03-04

Fire Robert Thompson

Comment(s)/ Recommendation(s):
2/6/19 The developer has agreed to reduce the island to a 1.5" brushed concrete island, which is acceptable to the Fire Department.
The raised island on the right side of the building, leading to the parking lot and playing fields, will impede emergency apparatus access.
2/6/19 The developer has agreed to create a solid surface, at the left side of the building, to facilitate easier access for emergency apparatus. This is an improvement to existing conditions, and the Fire Department finds this acceptable.
The road on the left side of the building is not suitable for emergency vehicle access. No inside turning radius shall be less than twenty-five (25') feet. Not outside turning radius shall be less than one hundred (100') feet.
4/10/2019 The Fire Department is satisfied with emergency access as depicted in C40-1-Site Utility Plan pdf V2

Planning Jean Fraser

Traffic - Third Party Reviewer Tom Errico

Transportation/Planning Bruce Hyman

Zoning Jean Fraser

Conditions Required



Jean Fraser <jf@portlandmaine.gov>

Lyseth Project

1 message

Jeff Tarling <jst@portlandmaine.gov>
To: Jean Fraser <jf@portlandmaine.gov>

Wed, Apr 17, 2019 at 4:26 PM

Jean -

I was off on Tuesday and needed to work on tree requests Wednesday,

Talked to Doug Sherwood at the office a short time ago and if there is still time to input would offer the following:

Lyseth School Landscape

Recommend considering planting of Clethra shrubs along the retaining wall in the vicinity of the new gym. This plant can tolerate shade and grows 6-12' in height. Spacing would be 6' on center using either #3 or #2 size plants.

Thanks

Jeff

Jeff Tarling
City Arborist - City of Portland Maine
Parks, Recreation & Facilities Department
Forestry & Horticulture
212 Canco Road
Portland, ME. 04103
(207) 808-5446
jst@portlandmaine.gov

Re: Lyseth Site Plan - Campus Site Plan Connections

1 message

Bruce Hyman <bhyman@portlandmaine.gov>

Thu, Apr 18, 2019 at 11:02 AM

To: Jean Fraser <jf@portlandmaine.gov>

Cc: Jeff Tarling <jst@portlandmaine.gov>, Jaime Parker <jaime@trails.org>, Michael Tremblay <mtremblay@portlandmaine.gov>

Good morning, Jean,

Attached is graphic you requested that illustrates the Lyseth-Moore Campus connections recommended as part of the site plan approval for the Lyseth Elementary School project, PL481-2019.

The Planning Department worked with the School Department, the City Arborist and Portland Trails to outline these recommendations. The recommendations include a portion of the proposed *North Deering Neighborhood Byway* that passes through and connects to the Lyseth-Moore Campus as well as an enhanced school walking route connection to Martin Rd.

Per their incorporation of the recommended byway and neighborhood connections, I have no further comments on the project and feel it meets the site plan requirements for site accessibility and circulation.

Please don't hesitate to contact me if you have any questions.

Best regards,

Bruce

--

Bruce Hyman
Transportation Program Manager

Department of Planning & Urban Development
389 Congress Street
Portland, Maine 04101
(207) 874-8717 phone

bhyman@portlandmaine.gov
<http://www.portlandmaine.gov/1363/Transportation-Division>
<http://www.portlandmaine.gov>

Yes! Transportation's Good Here



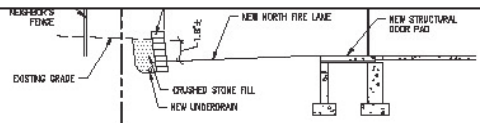
--
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Lyseth Site Plan - Campus Connections Site Plan Requirements



SECTION "A-A" NORTH OF NEW GYM
SCALE: 1"=5' A1

- 1. "STOP" (R1-1)
- 2. "NO PARKING FIRE LANE" (R2-1)
- 3. "VISITOR PARKING" (P8-140)
- 4. PEDESTRIAN SYMBOL (M1-1)
- 5. "NO PARKING ZONE" (R2-1)
- 6. "NO NOT ENTER" (R2-1)
- 7. "NO WALKING PARKING" (R2-1)
- 8. "RESERVED PARKING" (R2-1)
- 9. R2-1V WITH "NO ACCESSIBLE" OF R2-1 WITH R2-1A MOUNTED BELOW
- 10. "ONE WAY" (R2-1)
- 11. "NO PARKING TOW-AWAY ZONE" (R2-1 WITH R2-1V)
- 12. "AUTHORIZED VEHICLES ONLY" (P8-140)
- 13. "NO PARKING" (R2-1)
- 14. "FIRE LANE/NO PARKING" (R2-1)
- 15. "RIGHT TURN ONLY" (R2-1)
- 16. "LEFT TURN ONLY" (R2-1)

SIGN LEGEND
NOT TO SCALE A4

AREA TO BE CONSTRUCTED CONCURRENTLY - PREVIOUSLY PERMITTED UNDER PERMIT #2017-202

North Deering Neighborhood Byway 8' wide pathway

North Deering Neighborhood Byway Shared Emergency Access Drive

North Deering Neighborhood Byway to Auburn St/PATHS-CBHS/Back Cove Trail via Payson Park

School Walking Route 8' pathway to Martin Rd

North Deering Neighborhood Byway 8' wide pathway

North Deering Neighborhood Byway using the Shared Emergency Access Drive

North Deering Neighborhood Byway 8' wide pathway

North Deering Neighborhood Byway to Bramblewood Drive/Presumpscot River Preserve via Summit Street

Neighborhood Byways are a proposed ~30 mile network of local residential streets and short paths prioritized for walking and biking to provide quality connections between all schools, major open spaces/parks/trails and neighborhood centers without using busy streets. See <https://me-portland3.civicplus.com/1856/Portlands-Neighborhood-Byway-Program> for more information.



HARRISON LYSETH
ELEMENTARY SCHOOL

PROJECT NAME: HARRISON LYSETH ELEMENTARY SCHOOL
PROJECT NO: 19003

PLANNING BOARD SUBMITTAL
APRIL 2, 2019

DATE: 4/2/2019

PROJECT NO: 19003

PROJECT NAME: HARRISON LYSETH ELEMENTARY SCHOOL

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PROJECT NO: 19003

P&UD
April 17, 2019

C00.1

Summary Of The Permitting And Implementation History

The 2017-2018 proposals to improve the circulation and stormwater systems at this campus were developed and subject to site plan reviews.

The Table below summarizes the previous approvals, current status and the areas they relate to (see key to right):

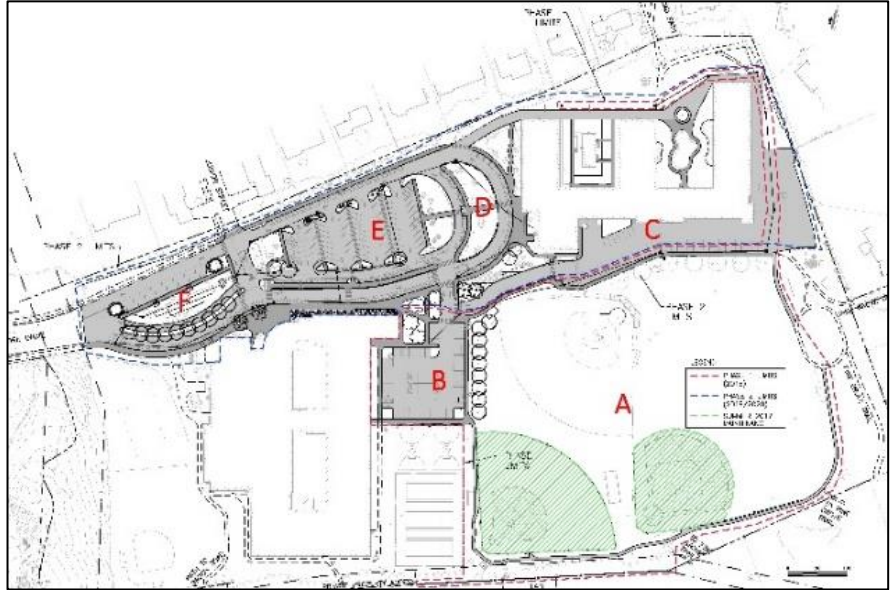
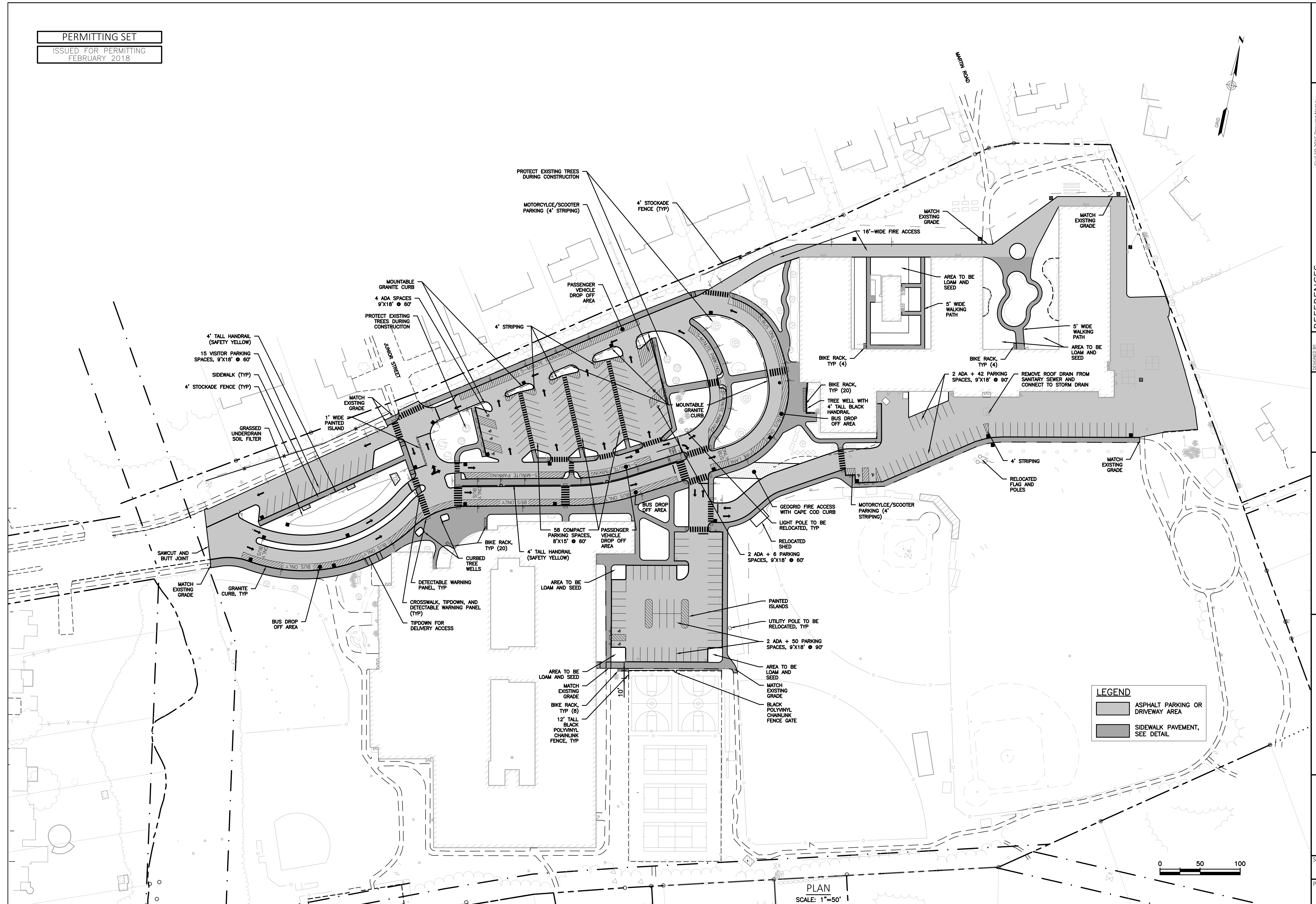


Table 1: Previous reviews and contracts

<i>Previous SP Approval</i>	<i>Description</i>	<i>Implementation Status</i>	<i>Current Proposals</i>
Level II Approval June 2017 for stormwater improvements, new trail and playing field upgrades	A - Athletic fields	Implemented Summer 2018	N/A
Level III Campus Access, Parking and Stormwater Improvements - approved by PB Jan 2018 Included stormwater retention and treatment, layout/lane design and pedestrian facility improvements (Approved Site Plan included in <u>Att. 6</u>)	B - Parking lot (largely for employees) at rear of Lyman Moore School)	Implemented as approved in summer of 2018, except for intersection	Completes the connection to Lyseth School drives, including pedestrian improvements and fire access (with minor amendments to approved layout)
	C - Access, parking and drainage for Lyseth School	Not implemented except for new drainage just south of Lyseth School	Includes reconstruction of paved drives, parking and play areas around Lyseth School; completes the approved drainage system to north of Lyseth School, with minor amendments
	D - Bus only lane for Lyseth School	Not implemented	Reconstructs Bus lane as approved but amended; adds ADA drop off
	E - Parking lot	Not implemented	Not included in the current phase
	F - Western landscaped island near Lyman Moore School	Not implemented	Implements approved stormwater improvements and adds treatment area to provide stormwater management for the new impervious areas; also separate buses and passenger cars.





LEVEL II and LEVEL III APPLICATION SUBMISSION CHECKLIST

Please submit each document as a separate PDF file.

Please confirm by electronically checking the boxes to the left

General Application Documents

Checklist	Items to be Provided
Yes ☒ NA ☐ Plan ☐ ☒ ☐ ☐	PROJECT DESCRIPTION Cover Letter with detailed project description
Yes ☒ NA ☐ Plan ☐ ☒ ☐ ☐	COMPLETED CHECKLIST – LEVEL III APPLICATION
Yes ☒ NA ☐ Plan ☐ ☒ ☐ ☐	RIGHT, TITLE AND INTEREST Deeds, leases, or purchase and sales agreements
Yes ☒ NA ☐ Plan ☐ ☒ ☐ ☐	EVIDENCE OF STATE OR FEDERAL APPROVALS , if applicable Permits or letters of non-jurisdiction, if applicable
Yes ☒ NA ☐ Plan ☐ ☒ ☐ ☐	ZONING ASSESSMENT Table listing required and proposed uses and dimensional standards Zoning Assessment Table
Yes ☒ NA ☐ Plan ☐ ☒ ☐ ☐	EXISTING &/OR PROPOSED EASEMENTS OR COVENANTS , if applicable Evidence of existing easements and any proposed easements
Yes ☒ NA ☐ Plan ☐ ☒ ☐ ☐	WAIVER REQUESTS Written request for waiver describing request and reason. Waiver Table
Yes ☒ NA ☐ Plan ☐ ☒ ☐ ☐	FINANCIAL CAPABILITY Letter or evidence from a financial institution or third party verifying financial capacity to undertake project
Yes ☒ NA ☐ Plan ☐ ☒ ☐ ☐	TECHNICAL CAPABILITY Evidence of technical capability of applicant and consultants – resumes and/or examples of past projects

LEVEL II AND LEVEL III 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

Check list	Assess/Provide/Document:
Yes NA Plan ☒ ☐ ☐	Transportation Analysis- Traffic Impact (14-526 (a) 1) - Provisions for pedestrian, bicycle, vehicle, and loading circulation and incremental volume of traffic impacts - Traffic Impact Study (Technical Manual, Section 1) if applicable
Yes NA Plan ☒ ☐ ☐	Access and Circulation (14-526 (a) 2 a) - Access and internal circulation, addressing ADA access - Access and egress impacts on traffic flows - Description and use of drive-up features, if applicable
Yes NA Plan ☒ ☐ ☐	Loading and Servicing (14-526 (a) 2 b) - Loading and servicing needs, route and travel way geometrics for deliveries - Turning templates for delivery vehicles, if applicable
Yes NA Plan ☒ ☐ ☐	Sidewalks (14-526 (a) 2 c) - Sidewalks and condition along street frontages and internal walkways - Engineered details for ADA ramps and public sidewalk details meeting sidewalk materials policy and ADA ramp construction details as applicable (Technical Manual, Section 1)
Yes NA Plan ☒ ☐ ☐	Public Transit (14-526 (a) 3), if applicable - Existing available transit services - Proposed site plan design details, such as easement, pad base, and shelter
Yes NA Plan ☒ ☐ ☐	Off-Street Parking: Vehicle & Motorcycle/Scooter) (14-526 (a) 4 a and c) - Expected parking demand, proposed parking supply, ADA parking, and applicable Zoning Requirements - Address Technical Manual standards (Section 1) for curb cut separation and parking lot layout and locate on site plan
Yes NA Plan ☒ ☐ ☐	Bicycle Parking (14-526 (a) 4 b) - Address bicycle parking requirements and identify locations on-site - Construction details for bike racks (Technical Manual, Section 1)
Yes NA Plan ☒ ☐ ☐	Snow Storage (14-526 (a) 4 d) Management plan for snow removal and locate snow storage areas on plan
Yes NA Plan ☐ ☒ ☐	Traffic Demand Management (TDM) (14-526 (a) 5), if applicable Develop TDM with Trip Reduction Targets and Strategies

ENVIRONMENTAL AND LANDSCAPE FEATURES			
Check list			Assess/Provide/Document:
Yes	NA	Plan	Preservation of Significant Natural Features (14-526 (b) 1), if applicable - Trees, plants, habitats listed on State or Federal list of endangered or threatened - High and moderate value waterfowl and wading habitat - Aquifers on Casco Bay Islands - Waterbodies (including wetlands, watercourses, significant vernal pools and floodplains) - Proposed preservation areas and protection measures - Documentation from environmental consultants, determinations from applicable state agencies
Yes	NA	Plan	Landscaping and Landscape Preservation (14-526 (b) 2 a) - Preservation of trees and preservation within required zoning setbacks (Technical Manual, Section 4) - Protection measures of existing vegetation during construction - Protection measures within Shoreland Zone, if applicable
Yes	NA	Plan	Site Landscaping (14-526 (b) 2 b) - Screening and buffering of service areas and between non-residential and residential uses - Planting plans with plant schedule and sizes (Technical Manual, Section 4)
Yes	NA	Plan	Parking Lot Landscaping (14-526 (b) 2 b ii), if applicable Landscaped islands within parking areas (Technical Manual, Section 4)
Yes	NA	Plan	Street Trees (14-526 (b) 2 b iii) - Existing Heritage or Feature Trees on site and measures to preserve - Identify street trees on the plan meeting the site plan and Technical Manual standards (Section 4) or identify alternative measures, if applicable
ENVIRONMENTAL AND STORMWATER			
Check list			Assess/Provide/Document:
Yes	NA	Plan	Water Quality, Stormwater Management and Erosion Control (14-526 (b) 3 a) - Stormwater report in compliance with Section 5 of Technical Manual and DEP Chapter 500 stormwater for basic, general and flooding standards, as applicable - Erosion control plan and measures - Evidence of compliance with Urban Impaired Stream Standards pursuant to DEP Chapter 500 stormwater, as applicable - Subsurface sanitary sewage disposal and groundwater protection

PUBLIC INFRASTRUCTURE AND SAFETY			
Check list		Assess/Provide/Document:	
Yes	NA	Plan	Consistency with City Master Plans (14-526 (c) 1) - Identify consistency with master plans - Proposed easements, rights and improvements to connect or continue off-premises public infrastructure, as applicable
☒	☐	☐	
Yes	NA	Plan	Public Safety and Fire Prevention (14-526 (c)) - Address Crime Prevention through Environmental Design (CPTED) (Technical Manual, Section 3) - Emergency vehicle access - Address consistency with public safety standards (Technical Manual, Section 3) - Submit a code summary referring NFPA 1 and all Fire Department standards (Technical Manual, Section 3) – Fire Checklist
☒	☐	☐	
Yes	NA	Plan	Availability and Adequacy of Public Utilities (14-526 (c) 3) (Technical Manual, Sections 2 & 9) - Electrical services, including providing underground services - Identify existing and proposed connections for public utilities and required public utility upgrades - Sewer line connections are required, if there is a main within 200 feet - Proposed solid waste management facilities on-site and management for the site - Written evidence of the ability to serve from utility companies, as applicable
☒	☐	☐	
SITE DESIGN			
Check list		Assess/Provide/Document:	
Yes	NA	Plan	Massing, Ventilations and Wind Impact (14-526 (d) 1) - Wind and ventilation impacts on adjoining structures and/or adjacent public spaces. Wind study, if applicable - Bulk, location or height impacts on adjoining structures - Identify and locate HVAC equipment and venting away from public spaces and residential properties - Identify screening and manufacturing specifications for noise, if applicable
☒	☐	☐	
Yes	NA	Plan	Shadows (14-526 (d) 2), if applicable Shadow analysis of impacts on publicly accessible open space (Technical Manual, Section 11)
☐	☒	☐	
Yes	NA	Plan	Snow and Ice Loading (14-526 (d) 3) Building design to prevent snow and ice from loading or falling onto adjacent properties or public ways
☒	☐	☐	
Yes	NA	Plan	View Corridors (14-526 (d) 4), if applicable Protection of designated view corridors (Portland Design Manual, Appendix 1)
☐	☒	☐	

Yes NA Plan ☐ ☒ ☐	Historic Resources (14-526 (d) 5), if applicable - Identify developments within Historic Districts or affecting Designated Landmarks - Certificate of Appropriateness or other evidence - Identify Developments within 100 feet of Historic Districts or affecting Designated Landmarks. Advisory HP review may be required - Address preservation and documentation of Archaeological Resources
Yes NA Plan ☒ ☐ ☐	Exterior Lighting (14-526 (d) 6) - Cut sheets of on-site light fixtures and any architectural or specialty lights (Technical Manual, Section 12) - Engineered details for any lights proposed in street right-of-way (Technical Manual, Section 10)
Yes NA Plan ☒ ☐ ☐	Noise and Vibration (14-526 (d) 7) Evidence of noise levels for equipment, such as equipment specifications, to demonstrate consistency with zoning requirements
Yes NA Plan ☒ ☐ ☐	Signage and Wayfinding (14-526 (d) 8), if applicable - Signage plan showing the location, dimensions, height and setback of all existing and proposed signs. Signs in Historic Districts are reviewed by Historic Preservation staff - Proposed commercial and directional signage on site
Yes NA Plan ☐ ☒ ☐	Zone Related Design Standards (14-526 (d) 5) - Address Historic Preservation Design Review, if applicable - Address any applicable design review standards by zone - Address submission requirements from Design Manual, page 1, addressing neighborhood context - Description of exterior materials, color, finish, and samples
Construction Management Plan	
Yes NA Plan ☒ ☐ ☐	Construction Management Plan Construction Management Document and Plan

Level II and Level III Site Plan Checklist Please upload the following drawings with the listed details into e-Plan as separate pdfs.	
☒ RECENT BOUNDARY SURVEY (stamped by Maine Licensed Surveyor)	
Must be in compliance with Technical Manual, Section 13	
SITE PLAN(s) (stamped by Maine Licensed Engineer) including:	
☒ Existing Conditions • Approximate location of structures on abutting property • Topography • Locate water courses • Delineate wetlands • Zone lines ☒ Proposed Site Plan • Ground floor area, and grade elevations for all buildings ☒ Access, Circulation, and Parking • Streets and intersections adjacent to site , any proposed geometric modifications • Location, dimensions and materials of all existing and 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 • Existing and proposed transit infrastructure with dimensions/ engineering specifications • Location of vehicle and bicycle parking with dimensions and engineering specifications ☒ Site Considerations • Identify snow storage areas • Location of fire hydrants • Location of solid waste management facilities	
☒ UTILITY PLAN including:	
• Existing utilities on site and within public streets • Location, sizing, and directional flows of all existing and proposed utilities • Location and dimensions of off-premises public or publicly accessible infrastructure adjacent to site • Electric utility infrastructure	

☒	GRADING and DRAINAGE PLAN including:
	- Existing grades and drainage - Proposed grades - Proposed stormwater management meeting Technical Manual (Section 5) standards - Location and proposed alteration of a water course - Preservation or alteration of wetlands
☒	EROSION CONTROL
	Must be in compliance with Technical Manual, Section 5
☒	LANDSCAPE PLAN including:
	- Existing vegetation to be preserved and preservation measures - Proposed landscaping and buffers - Planting schedule
☐	RECORDING PLAT , if applicable
	IF SUBDIVISION: Must be in compliance with requirements of Section 14-496 (b)
☒	ARCHITECTURAL PLANS & RENDERINGS including:
	- Exterior building elevations, color renderings, illustrations of all sides - Location and dimensions of all existing & proposed HVAC & mechanical equipment, all proposed screening - Provide context drawings, if applicable (Design Manual, page 1) - Floor plans



**HARRISON LYSETH ELEMENTARY SCHOOL
ADDITIONS AND RENOVATIONS**

**175 Auburn Street
Lewiston, Maine**

CITY OF PORTLAND PLANNING BOARD

**SITE PLAN REVIEW LEVEL III AND
CONDITIONAL USE APPLICATION**

January 25, 2019

Owner:
Portland Public Schools

Architect/Engineer:
Harriman

**HARRISON LYSETH ELEMENTARY SCHOOL
ADDITIONS AND RENOVATIONS
SITE PLAN LEVEL III REVIEW AND CONDITIONAL USE**

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24. CONDITIONAL USE

Conditional Use Standards – (14-474)

- **Traffic:** The Harrison Lyseth Elementary School building additions and renovations will provide a new gym and library, and will enhance the administrative spaces and the front entry to the school. No additional students or staff are anticipated. Therefore, no additional traffic is anticipated to be generated by this building project. Parking will remain mostly unchanged, however six additional spaces will be striped along the south side of the school, in an area where parking frequently occurs. No increase in pavement will occur.
- **Environmental Impacts:** The building additions and site renovations at the existing elementary school will not cause harmful conditions to the students, staff, or surrounding neighborhood.
 1. Noise: Only two small air-conditioning condensing units will be located outdoors on the building roof. These units will be screened from the nearest property line by the adjacent higher wall of the building. the sound level measured at the property line 150' away will be approximately 25 decibels, which is a minimal background noise level. See attachment 21.
 2. Glare: No new pole-mounted site lights will be added. The building-mounted site/security lighting will be shielded cut-off fixtures that will not produce glare at streets or property lines.
 3. Dust: During construction the contractor will control dust as specified on drawing C00.3. The completed reconstructed paved and grass surfaces will not produce dust.
 4. Sewage Disposal: The existing sanitary sewer will be used for the new school building additions. No on-site sewage disposal will occur.
 5. Air Emissions: The existing Lyseth Elementary School receives its heat through a buried steam pipe line from the Moore Middle School boiler room, and has no fuel-burning equipment on or around the elementary school. Therefore, there are no air emissions being generated at the Lyseth site.
 6. Odor: There are no activities or equipment at this renovated existing elementary school that will produce offensive odors.

7. Lighting: No new site lighting poles are proposed for this Lyseth School building addition project. The school doorways will be lit with wall-mounted lights or canopy-mounted lights.
 8. Litter: None of the building additions or renovations will contribute litter to the project site. The relocated outside trash dumpster will be placed in a fenced enclosure with privacy screening.
- **Design and Operation:** The building additions and site renovation to the elementary school will operate the same as the existing school, and will not have substantially greater impact on surrounding properties. The Site Plan Level III attachments explain in detail how the proposed modifications have negligible impact to the neighborhood, and are consistent with the typical school development.
 - **Zone Specific Criteria:** Residential Zone R2. Section 14-78b 1, Elementary Schools are noted as an institutional conditional use.



CONDITIONAL USE APPLICATION FOR PLANNING BOARD REVIEW

Please submit each document as a separate PDF file.

Please confirm by electronically checking the boxes to the left

Conditional uses are listed in the Zoning Ordinance for each zone and these proposed uses must address the criteria contained in Section 14-474 in the written application. In addition to the criteria in Section 14-474, each application must address any applicable conditional use standards contained in the applicable zone for the proposed use.

CONDITIONAL USE AND SUPPLEMENTAL DOCUMENTATION, AS APPLICABLE

GENERAL APPLICATION DOCUMENTS

Checklist	Items to be Provided
Yes NA Plan ☒ ☐ ☐	PROJECT DESCRIPTION Cover Letter with detailed project description
Yes NA Plan ☒ ☐ ☐	COMPLETED CHECKLIST - CONDITIONAL USE
Yes NA Plan ☐ ☐ ☐	RIGHT, TITLE AND INTEREST Deeds, leases, or purchase and sales agreements

CONDITIONAL USE STANDARDS AND CRITERIA

Checklist	Items to be Provided
Yes NA Plan ☐ ☐ ☐	TRAFFIC Address volume and type of vehicle traffic to be generated, hours of operation, expanse of pavement, and number of parking spaces required are not substantially greater than would normally occur at surrounding uses or other allowable uses in the zone
Yes NA Plan ☒ ☐ ☐	ENVIRONMENTAL IMPACTS Address use will not create unsanitary or harmful conditions by reason of noise, glare, dust, sewage disposal, emissions to the air, odor, lighting, or litter.
Yes NA Plan ☒ ☐ ☐	DESIGN AND OPERATION Address the design and operation of the proposed use, including but not limited to landscaping, screening, signs, loading, deliveries, trash or waste generations, arrangement of structures, and materials storage will not have a substantially greater effect; impact on surrounding properties than those associated with surrounding uses or other allowable uses in the zone.
Yes NA Plan ☐ ☐ ☐	ZONE SPECIFIC CRITERIA Cite and address zone specific conditional use standards for the proposed use.



PROJECT SUMMARY

HARRISON LYSETH ELEMENTARY SCHOOL ADDITIONS AND RENOVATIONS SITE PLAN LEVEL III REVIEW AND CONDITIONAL USE

January 2019

The Harrison Lyseth Elementary School, at 171 Auburn Street in Portland, is proposed to have two building additions and major renovations, to enhance the available facilities for the current student population. No additional students or staff are anticipated, due to these improvements. The building additions include a Gym/Library addition, of approximately 11,045 sq.ft. ground area, placed between two existing building wings. An Administration addition, of approximately 3,431 sq.ft. ground area, will also be added to the front entry area of the existing building.

Paved drives, parking, and play areas surrounding the existing school are in very poor condition. These areas will be fully reconstructed with new gravel base and bituminous pavement. The current 33 parking spaces along the side of the Lyseth School will be reconstructed, and an additional 6 spaces will be striped, for a total of 39 parking spaces, including 2 ADA-accessible spaces. The fire lane drive around the north side of the building will be relocated northerly to avoid the new Gym/Library addition. The pavements around the building will be raised to make the doors ADA-accessible and to improve drainage. The existing paved bus-loop drive to the west side of the main entry will be slightly relocated to avoid the new Administration addition.

Storm drainage system renovations were recently implemented as part of Phase 1 of the City of Portland LLM Campus Improvements Circulation Project, which was approved by the City Planning Board on January 23, 2018. Four new catch basins in the newly paved areas around the south side of the Harrison Lyseth School were installed; together with four new catch basins in the grass playfield areas. The proposed school additions and site renovation are not anticipated to impact these storm system components. Drainage around the north side of the school, including the two courtyards, is very poor, with badly deteriorated pavements. There are three existing catch basins along the north side of the building, and one on the east side, that were scheduled to be replaced in the Phase 1 reconstruction project, but were not completed in 2018. The drainage system of catch basins and pipes has been redesigned with the new building addition, to provide improved drainage of the site around the outside of the building, and inside the courtyards.



2a. RIGHT, TITLE, & INTEREST

Deeds for the Harrison Lyseth Elementary School and Lyman Moore Middle School campus property are attached.

427

2037

427

City

deed, before me,

Edward M. Whitaker Notary Public Notarial Seal

My commission expires March 23, 1956

Received March 29, 1951, at 9h A.M., and recorded according to the original

STATE OF MAINE
BUREAU OF TAXATION

CERTIFICATE OF DISCHARGE OF INHERITANCE TAX LIEN

Estate of Elizabeth J. MacCammond

Late of Darien, Connecticut

Date of Death April 11, 1950

Testate -----

Docket No. Cumb. 7713

State of

Maine

To

MacCam-

mond

Est.

Disch.

I, the State Tax Assessor, hereby certify that the real property described below has been and hereby is discharged of any lien for any inheritance and estate tax, with any interest thereon, due because of the death of the above named decedent. This certificate is to be recorded in the Registry of Deeds as provided by Section 17, Chapter 142, R.S. 1944, as amended.

One half interest undivided and in common in and to three certain lots or parcels of land with the camp buildings thereon, situated in Sebago, in the County of Cumberland and State of Maine, and being the same conveyed by Nellie F. Sanborn to Elizabeth J. MacCammond and Marian T. Smith as tenants in common by Warranty Deed dated July 9, 1935, recorded in Cumberland County Registry of Deeds in Book 1555, Page 344.

Date signed Mar 27 1951

Ernest H. Johnson

State Tax Assessor

State of Maine

Kennebec, SS.

Augusta, Mar 27 1951

Personally appeared the above named Ernest H. Johnson and acknowledged the above instrument to be his free act and deed in his said capacity.

Albert L. Huot Notary Public Notarial Seal

Received March 29, 1951, at 10h 55m A.M., and recorded according to the original

WARRANTY DEED

Willey &

To

KNOW ALL MEN BY THESE PRESENTS,

Portland

THAT Maurice E. Willey and Ada E. Willey, both of Portland, County of Cumberland, State of Maine, in consideration of Five Thousand Eight Hundred and Fifty Dollars (\$5,850.00) paid by the City of Portland, a municipal corporation and body politic organized under the laws of the State of Maine, situated in the County of Cumberland and State of Maine, the receipt whereof we do hereby acknowledge, do

City of

War.

hereby give, grant, bargain, sell and convey unto the said City of Portland, its successors and assigns forever, a certain lot or parcel of land together with all buildings, structures and improvements thereon situated in the rear of other land on the easterly side of Auburn Street in said Portland, and bounded and described as follows:

BEGINNING at an iron in the northerly division line of land now or formerly of James C. Oliver and land of Maurice E. Willey and Ada E. Willey; said iron being distant easterly along the said northerly division line 246.31 feet from the easterly street line of Auburn Street; thence easterly along the said northerly division line and following a wire fence and making an included angle with the westerly direction of the last described course of $178^{\circ} 44\frac{1}{2}'$ through the north a distance of 355.32 feet to an iron; thence easterly and following a stone wall wire fence and making an included angle through the north with the westerly direction of the last described course of $181^{\circ} 18\frac{1}{2}'$ a distance of 109.38 feet to an iron in the said stone wall and wire fence; thence southeasterly and following the said stone wall and wire fence and making an included angle through the north with the westerly direction of the last described course of $185^{\circ} 19\frac{1}{2}'$ a distance of 114.15 feet to an iron in said stone wall and wire fence; thence southeasterly and following the said stone wall and wire fence and making an included angle through the north with the westerly direction of the last described course of $180^{\circ} 57'$ a distance of 466.12 feet to an iron set in the westerly line of land now or formerly of Sidney E. Dee et al; thence in a northerly direction and along said line of Dee land and following a fence and stone wall, and making an included angle through the west with the westerly direction of the last described course of $94^{\circ} 22'$ a distance of 188.62 feet to an iron set in said line of said Dee's land; thence westerly along the southerly line of land now or formerly of Maurice E. Willey and making an included angle through the south with the southerly direction of the last described course of $78^{\circ} 20'$ a distance of 1061.55 feet, more or less, to an iron; thence southerly and making an included angle through the southeast with the easterly direction of the last described course of $102^{\circ} 26'$ a distance of 24.61 feet to an iron, said iron being distant 100.00 feet northerly from the first mentioned bound; thence westerly and making an included angle through the northwest with the northerly direction of the last described course of $102^{\circ} 26'$ a distance of 12.0 feet, more or less, to the center of Fall Brook; thence southerly following the course of the center of Fall Brook a distance of 102 feet more or less, to a point in the center of said Brook and land of James C. Oliver; thence easterly

along the northerly line of land of said James C. Oliver a distance of 21.4 feet, more or less, to an iron and the point of beginning. This being a portion (the part situated to the East of the center of Fall Brook) of the premises conveyed by Fred E. Lovejoy to the grantors by deed dated August 2, 1938 and recorded in Cumberland County Registry of Deeds in Book 1556, Page 394.

ALSO a certain lot or parcel of land together with all buildings, structures and improvements thereon, situated in the rear of other land on the easterly side of Auburn Street in said Portland and bounded and described as follows:

BEGINNING at the northeasterly corner of land conveyed by Fred E. Lovejoy to Maurice E. Willey, by deed dated August 2, 1938, recorded in Cumberland County Registry of Deeds, in Book 1556, Page 394, at a point in the line of land now or formerly of Herbert N. Maxfield; thence northerly along the line of said Maxfield to an iron stake which is at a point one hundred sixty-four (164) feet northerly from the northerly line of said land conveyed to said Maurice E. Willey and said line extended easterly in the same direction measured at right angles thereto; thence southwesterly parallel to said northerly line of said land of said Willey and maintaining the distance of one hundred sixty-four feet therefrom measured at right angles thereto to an iron pipe driven in the center line of Fall Brook; thence southerly by the center line of said Fall Brook one hundred ninety (190) feet, more or less, to the northerly line of said land conveyed to said Willey; thence northeasterly by the northerly line of said land of said Willey eight (8) feet, more or less, to an angle in said line; thence northerly by said land of said Willey, twenty-four and sixty-one hundredths (24.61) feet to an iron hub driven at another angle in said line; and thence easterly, making an angle with the last named course of one hundred two degrees twenty-six minutes (102° 26') and along the northerly line of land of said Willey, one thousand sixty-one and fifty-five hundredths (1061.55) feet, more or less, to said land of said Maxfield and the point of beginning; containing four (4) acres, more or less. These premises are the same which were conveyed to the grantors by Joseph E. Willey by deed dated June 18, 1948 and recorded in Cumberland County Registry of Deeds, in Book 1918, Page 211.

ALSO a certain lot or parcel of land together with all buildings, structures and improvements thereon, situated in the rear of other land on the easterly side of Auburn Street in said Portland and bounded and described as follows:

BEGINNING at an iron pipe in the southerly side of land conveyed to Augusta J. Hazlett, et al by said Suburban Homes, Inc., by deed dated April 9, 1942, and recorded in Cumberland County Registry of Deeds, Book 1672, Page 347, which iron pipe is also driven in the center of Fall Brook and is two hundred forty-one and five-tenths (241.5) feet, more or less, from the easterly line of said Auburn Street measured

along said southerly line of said land conveyed to said Augusta J. Hazlett, et al; thence running easterly along the southerly line of said land conveyed to said Augusta J. Hazlett, et al eleven hundred twenty-five (1125) feet, more or less, to a stake in the line of land now or formerly of Herbert N. Maxfield; thence running southerly along the line of land of said Maxfield four hundred (400) feet, more or less, to the northeasterly corner of land conveyed to Joseph E. Willey by said Suburban Homes, Inc., by deed dated April 9, 1942, and recorded in said Registry of Deeds, in Book 1677, Page 313; thence running westerly by the line of said land conveyed to said Joseph E. Willey, one thousand fifty (1050) feet, more or less, to the center line of Fall Brook and the northwesterly corner of said land conveyed to said Joseph E. Willey by said Suburban Homes, Inc.; and thence running northerly by the center line of said Fall Brook, one hundred fifty (150) feet more or less, to the point of beginning; containing six and seven-tenths (6.7) acres of land, more or less. These premises are the same which were conveyed to the grantors by Suburban Homes, Inc., by deed dated December 13, 1943 and recorded in Cumberland County Registry of Deeds in Book 1737, Page 10.

U.S.I.R.
\$6.60
M.E.W.
3/27/51

TO HAVE AND TO HOLD the aforegranted and bargained premises with all the privileges and appurtenances thereof, to the said City of Portland, its successors and assigns, to its and their use and behoof forever.

AND we do COVENANT with the said Grantee, its successors and assigns, that we are lawfully seized in fee of the premises, that they are free of all incumbrances; that we have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that we and our heirs shall and will WARRANT AND DEFEND the same to the said Grantee, its successors and assigns forever, against the lawful claims and demands of all persons.

IN WITNESS WHEREOF, we the said Maurice E. Willey and Ada E. Willey, husband and wife, have hereunto set our hands and seals this twenty-seventh day of March in the year of our Lord one thousand nine hundred and fifty-one.

Signed, Sealed and Delivered

in presence of

Adelbert L. Miles

Maurice E. Willey Seal

to both

Ada E. Willey Seal

STATE OF MAINE CUMBERLAND, SS.

March 27th, 1951.

Personally appeared the above named Maurice E. Willey and acknowledged the foregoing instrument to be his free act and deed.

Before me, Adelbert L. Miles Notary Public Notarial Seal

Received March 29, 1951, at 11h 5m A.M., and recorded according to the original

2

Know all Men by these Presents, That

1556

394

I, Fred E. Lovejoy of New Smyrna in the County of Volusia and State of Florida, formerly of Portland in the County of Cumberland and State of Maine,

in consideration of one (\$1.00) dollar and other good and valuable consideration paid by Maurice E. Willey and Ada E. Willey, both of said Portland, as joint tenants and not as tenants in common,

the receipt whereof I do hereby acknowledge, do hereby give, grant, bargain, sell and convey unto the said Maurice E. Willey and Ada E. Willey, to them and their heirs and the survivor of them and the heirs and assigns of the survivor of them forever, a certain lot or parcel of land, situated in Portland on the easterly side of Auburn Street and more particularly bounded and described as follows:

Commencing at an iron set in the easterly side of said Auburn Street at the northwesterly corner of land now or formerly of Mary S. Burnham; thence at an angle of one hundred two degrees twenty six minutes (102°26') to Auburn Street and in an easterly direction, along the northerly line of land of said Mary S. Burnham, seven hundred eleven and five hundredths feet (711.05') more or less to a stake; thence at a deflection to the right of six degrees, twenty-one minutes (6°21') five hundred eighty and five hundredths feet (580.05') more or less along the line of land now or formerly of Lyneous J. Smith to an iron set in the westerly line of land now or formerly of Herbert N. Maxfield; thence in a northerly direction and along said line of said Maxfield's land and following a fence and stone wall, one hundred eighty-eight and sixty-two hundredths feet (188.62') to an iron set in said line of said Maxfield's land; thence westerly and at an angle of seventy-eight degrees, twenty minutes (78°20') to said Maxfield land and along the southerly line of land of this grantor, one thousand, sixty-one and fifty-five hundredths feet (1061.55') to an iron; thence southerly and at an angle of one hundred two degrees and twenty-six minutes (102°26') to said last bound, twenty-four and sixty-one hundredths feet (24.61') to an iron, one hundred feet (100') distant from the first mentioned bound; thence westerly and parallel to and one hundred feet (100') from said first mentioned bound, two hundred thirty-three feet (233') to an iron set in the easterly side of Auburn Street; thence southerly by said Auburn Street, one hundred feet (100') to the point of beginning and containing four (4) acres.

into Willey

See
Book 3960
Page 217

U.S.I.R.
\$1.00
G.M.L.
8/9/38

To Have and to Hold the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said Maurice E. Willey and Ada E. Willey as joint tenants and not as tenants in common to them and their heirs and assigns and the survivor of them and the heirs and assigns of the survivor of them forever, and I do hereby covenant with the said Grantees, their heirs and assigns and the survivor of them and the heirs and assigns of the survivor of them forever, that I am lawfully seized in fee of the premises; that they are free of all incumbrances;

that I have good right to sell and convey the same to the said Grantees to hold as aforesaid; and that I and my heirs, shall and will warrant and defend the same to the said Grantees, their heirs and assigns and the survivor of them and the heirs and assigns of the survivor of them forever, against the lawful claims and demands of all persons.

In Witness Whereof, I, the said Fred E. Lovejoy and Elizabeth E. Lovejoy, wife of the said Fred E. Lovejoy, joining in this deed as grantor and relinquishing and conveying my right by descent and all other rights in the above described premises

our hand and seal this 2nd day of August in the year of our Lord one thousand nine hundred and thirty-eight.

Signed, Sealed and Delivered in presence of

Herbert F. Fuller

Fred E. Lovejoy

Seal

Elizabeth Webb

Elizabeth E. Lovejoy

Seal

State of Florida, Volusia ss

~~State of Maine, Cumberland, ss-~~

August 2, 1938

Personally appeared

the above named

Fred E. Lovejoy

and acknowledged the foregoing instrument to be his free act and deed. Before me Herbert F. Fuller, Notary Public, Notarial Seal Notary Public, State of Florida at
Before me, Large My commission expired Feb. 24, 1940

Received August 10, 1938, at 2 o'clock 25 m. P. M., and recorded according to the original.

Know all Men by these Presents, That

125
125

2040
125

We, Augusta J. Hazlett of Portland, County of Cumberland, State of Maine and Paul S. Hazlett of Oakfield, County of Aroostock, State of Maine, mother and son

in consideration of Six Hundred and no/100 Dollars (\$600.00) paid by City of Portland, a municipal corporation and body politic organized under the laws of the State of Maine, situated in the County of Cumberland and State of Maine

the receipt whereof we do hereby acknowledge, do hereby, give, grant, bargain, sell and convey unto the said City of Portland, its successors and assigns, forever, a certain lot or parcel of land together with all buildings, structures and improvements thereon, situated in the rear of other land on the easterly side of Auburn Street in said Portland, and bounded and described as follows:

Beginning at an iron pipe in the center of Fall Brook and the northerly line of land now or formerly of Maurice E. Willey et al, said iron being distant easterly from the easterly street line of Auburn Street, 241.5 feet, more or less; thence making a slight angle to the left and continuing northeasterly on the division line of land between Augusta J. Hazlett et al and now or formerly of Maurice E. Willey et al, a distance of 1125.0 feet, more or less, to a point in the line of land now or formerly of Sidney E. Dee, et al; thence northerly by the division line of land between said Hazlett and said Dee a distance of 165.0 feet to an iron pipe in a stone wall at the northeasterly corner of the land of said Hazlett; thence southwesterly by the division line of land of said Hazlett and land now or formerly of C. Edward Phair and making an included angle through the southwest with southerly direction of the last described course of 77° 53' a distance of 32.26 feet to an iron pipe in a stone wall; thence southwesterly and following the said stone wall and making an included angle through the south with the northeasterly direction of the last described course of 166° 04½' a distance of 199.02 feet to an iron pipe in the said stone wall; thence southwesterly and following the said stone wall and wire fence and making an included angle through the south with the northeasterly direction of the last described course of 183° 05' a distance of 267.34 feet to a stake; thence southwesterly and following a wire fence and making an included angle through the south with the northeasterly direction of the last described course of 178° 03½' a distance of 299.01 feet to a 30 inch maple tree; thence southwesterly and following the said wire fence and making an included angle through the south with the northeasterly direction of the last described course of 183° 11½' a distance of 403.11 feet to an iron in the center of Fall Brook; thence southeasterly following the course of the center of said Fall Brook a distance of 180.0 feet, more or less, to an iron in the center of Fall Brook and the point of beginning.

This being a portion (the part situated to the East of the center of Fall Brook) of the premises conveyed to the grantors herein by warranty deed from Suburban Homes, Inc., dated April 9, 1942 and recorded April 21, 1942 in Cumberland County Registry of Deeds, Book 1672, Page 347. ✓

On Have and in Hold the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said City of Portland, its successors and assigns, to its and

U.S.I.R.
\$1.10
A.J.H.
3/27/51

their use and behoof forever. And we do covenant with the said Grantee, its successors and assigns,

~~heirs and assigns~~ that we are lawfully seized in fee of the premises; that they are free of all incumbrances;

that we have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that we and our heirs, shall and will warrant and defend the same to the said

Grantee, its successors ~~heirs and assigns~~ forever, against the lawful claims and demands of all persons.

In Witness Whereof, we the said Augusta J. Hazlett, a widow, Paul S. Hazlett and Mary E. Hazlett wife of the said Paul S. Hazlett joining in this deed as Grantor, and relinquishing and conveying all right by descent and all other rights in the above described premises,

our hand s and seal s this twenty-seventh day of March have hereunto set one thousand nine hundred and fifty-one. in the year of our Lord

Signed, Sealed and Delivered in presence of
Paul S. Hazlett to A.J.H.
Vera D. Moseley to P.S.H.
Clair L. Allen

Augusta J. Hazlett Seal
Paul S. Hazlett Seal
Mary E. Hazlett Seal

State of Maine, CUMBERLAND, SS. March 27th 1951. Personally appeared
the above named Paul S. Hazlett

and acknowledged the foregoing instrument to be his free act and deed.

Before me, Vera D. Moseley Notary Public Notarial Seal

Received April 6, 19 51, at 10 o'clock 31 m. A. M., and recorded according to the original.

pany, by Albert E. Libby, Trust Officer, have hereunto set our hands and seals this seventeenth day of April A. D. 1942.

Signed, Sealed and Delivered in Presence of

Audrey Osgood—to both

Richard S. Chapman

Seal

CASCO BANK & TRUST COMPANY CORPORATE
SEAL

By Albert E. Libby

Its Trust Officer

Executors of the Will of

Annah F. Chapman

into
Hazlett

State of Maine. Cumberland, ss.

April 17, 1942.

Then personally appeared the above named Richard S. Chapman and acknowledged the foregoing instrument to be his free act and deed. -----

Before me, Caspar F. Cowan Justice of the Peace
Received April 21, 1942, at 3h 20m P. M., and recorded according to the original

For and in consideration of the sum of One dollar to me paid by the New England Telephone and Telegraph Company, a corporation duly organized under the laws of the State of New York, and the Cumberland County Power and Light Company, a corporation duly organized under the laws of the State of Maine, receipt of which is hereby acknowledged, I hereby grant unto said Companies, their respective successors and assigns, the right to place and maintain a distributing pole with the wires and/or cables thereon with the necessary guys, anchors, fixtures, and supports, for the purpose of furnishing telephone and electric company services, upon and over my premises situated on the easterly side of Ocean House Road, so-called, in the Town of Cape Elizabeth, County of Cumberland and State of Maine.
with permission to enter upon my property for all the above purposes.

Hanna-
ford
to
New Eng.
T. & T.
Co. &
Permit

WITNESS my hand and seal this 13th day of March 1942.

Witnesses:

H. Eugene Rideout

Howard C. Hannaford
(Land Owner)

Seal

State of Maine. Cumberland, ss.

March 13, 1942

Then personally appeared the above named Howard C. Hannaford and acknowledged the foregoing instrument to be his free act and deed.

Before me, H. Eugene Rideout Notary Public, Notarial Seal

My Commission expires 1/27/44

Received April 21, 1942, at 3h 30m P. M., and recorded according to the original

KNOW ALL MEN BY THESE PRESENTS, That Suburban Homes, Inc., a Corporation organized and existing under the laws of the State of Maine and located at Portland, in the County of Cumberland and State of Maine, in consideration of one dollar and other valuable consideration, paid by Augusta J. Hazlett and Paul S. Hazlett, mother and son, both of Portland, in the County of Cumberland and State of Maine, the re-

Suburban
Homes,
Inc.
to
Hazlett
&
War,

ceipt whereof it does hereby acknowledge, does hereby give, grant, bargain, sell and convey, unto the said Augusta J. Hazlett and Paul S. Hazlett, as joint tenants and not as tenants in common, and their heirs and assigns, and the survivor of them and the heirs and assigns of the survivor of them, forever,

A certain lot or parcel of land situated on the easterly side of Auburn Street, in said Portland, and bounded and described as follows, namely:

Beginning on the easterly line of said Street at the southwesterly corner of the lot of land conveyed to Alexander A. McIntyre by Fred E. Lovejoy, by deed dated September 16, 1940, recorded in Cumberland County Registry of Deeds, in Book 1619, Page 12; thence southerly by said line of said Auburn Street sixty-five (65) feet to an iron pipe; thence easterly on a line parallel to the southerly line of said land conveyed to Alexander A. McIntyre by Fred E. Lovejoy, two hundred forty-one and five-tenths (241.5) feet, more or less, to an iron pipe driven in the center of Fall Brook; thence turning a slight angle to the left and continuing northeasterly eleven hundred twenty-five (1125) feet, more or less, to a stake in the line of land now or formerly of Herbert N. Maxfield, which stake is at a point one hundred sixty-five (165) feet, measured along the line of land of said Herbert N. Maxfield, southerly from the northeasterly corner of the certain lot or parcel of land conveyed by Fred E. Lovejoy to said Suburban Homes, Inc., by deed dated May 12, 1941, and recorded in said Registry of Deeds, in Book 1639, Page 274; thence northerly along the line of said Maxfield, one hundred sixty-five (165) feet to the northeasterly corner of said land conveyed by said Fred E. Lovejoy to said Suburban Homes, Inc.; thence southwesterly along the line of land formerly of William Jackson and land of one Moody, twelve hundred forty-eight (1248) feet, more or less, to an iron pipe driven in the center of said Fall Brook and the northeasterly corner of said land conveyed by said Fred E. Lovejoy to Alexander A. McIntyre; thence southeasterly following the course of the center of said Brook and the line of said land conveyed to said McIntyre, one hundred ten (110) feet, more or less, to an iron pipe at the southeasterly corner of said land of said McIntyre; and thence westerly along the southerly line of said land of said McIntyre, two hundred (200) feet, more or less, to said Auburn Street and the point of beginning.

Being a portion of the premises conveyed to said Suburban Homes, Inc., by Fred E. Lovejoy by deed dated May 12, 1941 and recorded in said Registry of Deeds, in Book 1639, Page 274.

The portion of said premises lying between said Fall Brook and said Auburn Street is hereby conveyed subject to the following restrictions and limitations, which shall continue in full force and effect for the term of ten years from the first day of April, 1942, namely:-

1. Only one residence shall be erected or maintained on said portion of said premises, which shall cost not less than the sum of twenty-five hundred dollars in addition to the cost of the land.

2. No building or part of building shall be constructed nearer than fifteen

feet to said line of said Auburn Street.

3. No structure for commercial or industrial purposes, and no apartment or flat house, so called, shall be erected or maintained on said portion of said premises.

4. Plans for any structure to be erected or placed on said portion of said premises shall be submitted to said Suburban Homes, Inc., or its architect.

The foregoing restrictions and limitations shall run and enure to the benefit of the grantor, its successors and assigns, and the grantor, its successors or assigns, shall be under no obligation to enforce or to enjoin or restrain any violation thereof.

Said premises are hereby conveyed subject to taxes to the City of Portland for the year 1942, and said Grantees hereby assume and agree to pay said taxes as part of the consideration for this conveyance.

TO HAVE AND TO HOLD the aforegranted and bargained premises with all the privileges and appurtenances thereof, to the said Augusta J. Hazlett and Paul S. Hazlett, as joint tenants and not as tenants in common, and their heirs and assigns and the survivor of them and the heirs and assigns of the survivor of them, to their use and behoof forever.

U.S.I.R.
\$1.10
S.H.
4/9/42

AND the said Grantor Corporation does hereby covenant with the said Grantees, their heirs and assigns, and the survivor of them, and the heirs and assigns of the survivor of them, that it is lawfully seized in fee of the premises, that they are free of all incumbrances; except as aforesaid; that it has good right to sell and convey the same to the said Grantees to hold as aforesaid; and that it and its successors, shall and will warrant and defend the same to the said Grantees, and their heirs and assigns, and the survivor of them and the heirs and assigns of the survivor of them forever, against the lawful claims and demands of all persons, except as aforesaid.

IN WITNESS WHEREOF, the said Suburban Homes, Inc. has caused this instrument to be sealed with its corporate seal and signed in its corporate name by Fred M. Wheelock, its Treasurer, thereunto duly authorized, this ninth day of April, in the year one thousand nine hundred and forty-two.

Signed, Sealed and Delivered in Presence of

SUBURBAN HOMES, INC. CORPORATE
SEAL

Clark D. Chapman

By Fred M. Wheelock
Its Treasurer

State of Maine. Cumberland, ss.

April 9, 1942.

Personally appeared the above named Fred M. Wheelock, Treasurer of said Grantor Corporation as aforesaid, and acknowledged the foregoing instrument to be his free act and deed in his said capacity, and the free act and deed of said corporation.

Before me, Clark D. Chapman Justice of the Peace

Received April 21, 1942, at 3h 50m P. M., and recorded according to the original

208
208

Know all Men by these Presents, That

I, Joseph A. Lucariello of Portland, County of Cumberland, State of Maine

2040
208

in consideration of Eight Hundred Fifty and no/100 Dollars (\$850.00) paid by City of Portland, a municipal corporation and body politic organized under the laws of the State of Maine, situated in the County of Cumberland and State of Maine the receipt whereof I do hereby acknowledge, do hereby, give, grant, bargain, sell and convey unto the said

City of Portland, its successors and assigns forever, a certain lot or parcel of land situated on the easterly side of Auburn Street, in said City of Portland, bounded and described as follows:

to City

Beginning at the southeasterly corner of a lot of land conveyed by Cecil C. Davis, et al to Joseph A. Lucariello by deed dated March 6, 1946 and recorded in Cumberland County Registry of Deeds, Book 1808, Page 479; thence westerly along the southerly side line of said lot two hundred seven and eight tenths (207.8) feet to the easterly side line of said Auburn Street; thence northerly along the easterly side line of said Auburn Street eighty-five and eighty-three hundredths (85.83) feet to a point; thence in an easterly direction in a line parallel with the first mentioned course one hundred sixty (160) feet, more or less, to Fall Brook; thence in a southerly direction, following the course of said Fall Brook, to the point of beginning.

Being the southerly portion of the premises conveyed to the Grantor herein by Cecil C. Davis, et al by Warranty Deed dated March 6, 1946 and recorded in Cumberland County Registry of Deeds, Book 1808, page 479. ✓

U.S.I.R.
\$1.10
J.A.L.
4/11/51

On this and in full the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said City of Portland, its successors and assigns, to its and

their use and behoof forever. And I do covenant with the said Grantee, its successors and assigns,

heirs and assigns that I am lawfully seized in fee of the premises; that they are free of all incumbrances;

that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and my heirs, shall and will warrant and defend the same to the said

Grantee, its successors heirs and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, we the said Joseph A. Lucariello and Olive I. Lucariello wife of the said Joseph A. Lucariello joining in this deed as Grantor, and relinquishing and conveying all our right by descent and all other rights in the above described premises,

our hands and seals this thirtieth day of March have hereunto set in the year of our Lord one thousand nine hundred and fifty-one.

Signed, Sealed and Delivered in presence of

F. Burley Smith

Joseph A. Lucariello Seal

to both

Olive I. Lucariello Seal

State of Maine, CUMBERLAND, SS. March 30th 1951. Personally appeared the above named Joseph A. Lucariello, and acknowledged the foregoing instrument to be his free act and deed.

Before me, F. Burley Smith Notary Public Notarial Seal.

Received April 13, 1951, at 12 o'clock 1 m. P. M., and recorded according to the original.

1a

WARRANTY DEED**Maine Statutory Short Form**29085
114**KNOW ALL PERSONS BY THESE PRESENTS, That****John C. Charette and Katye E. Thatcher Charette**

of 183 Auburn Street, Portland, ME 04103

for consideration paid, grant to **Jason M. MacLeod**

of 91 Wellman Road, Augusta, ME 04330

with **warranty covenants**, as joint tenants the land in City of Portland, County of Cumberland, and State of Maine, described on the attached **EXHIBIT A**.e'ly side of
Auburn St.
n'ly of
entrance to
School**WITNESS** our/my hand(s) and seal(s) this 28th day of October, 2011.*Signed, Sealed and Delivered in
presence of: fo both*
John C. Charette
Katye E. Thatcher Charette

MAINE REAL ESTATE TAX PAID

STATE OF MAINE

October 28, 2011

COUNTY OF Cumberland

Then personally appeared the above named John C. Charette and Katye E. Thatcher Charette and acknowledged the foregoing instrument to be his/her/their free act and deed.

Before me,



Notary Public

Printed Name:

KELLY A. PECK

NOTARY PUBLIC MAINE

My Commission Expires: MY COMMISSION EXPIRES APRIL 2, 2016

Exhibit A

A certain lot or parcel of land, with the buildings thereon, situated on the easterly side of Auburn Street, in the City of Portland, County of Cumberland and State of Maine, bounded and described as follows:

Beginning on said easterly side of Auburn Street, at the northwesterly corner of land conveyed by Joseph A. Lucariello to the City of Portland; thence northerly by said Auburn Street, a distance of eighty-eight and 17/100 (88.17) feet, more or less, to a stake at the northwesterly corner of land conveyed to Joseph A. Lucariello by Cecil C. Davis, et al, by deed dated March 6, 1946, recorded in the Cumberland County Registry of Deeds in Book 1808, Page 479; thence easterly at right angles with the easterly line of Auburn Street to Fall Brook; thence southeasterly by the center line of said Brook to said City land; thence westerly by said City land a distance of one hundred sixty (160) feet, more or less, to said Auburn Street at the point of beginning.

Reference is hereby made to a Warranty Deed from Jonathan R. Doyle and Kathleen M. FitzGerald to John C. Charette and Katye E. Thatcher, nka Katye E. Thatcher Charette, dated June 12, 2003, and recorded June 18, 2003, in Book 19587, Page 139 in the Cumberland County Registry of Deeds.

Received
Recorded Register of Deeds
Nov 01, 2011 01:40:34P
Cumberland County
Pamela E. Lovley

92²

Know all Men by these Presents, That

I, Joseph A. Lucariello, of Portland, in the County of Cumberland and State of Maine

2103
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in consideration of One Dollar and other valuable considerations paid by Stanley P. Johnson and Lillian E. Johnson of said Portland

the receipt whereof I do hereby acknowledge, do hereby, give, grant, bargain, sell and convey unto the said

Stanley P. Johnson and Lillian E. Johnson as joint tenants and to the survivor of them, their heirs and assigns and the heirs and assigns of the survivor of them forever, the following described property:

A certain lot or parcel of land, with the buildings thereon, situated on the easterly side of Auburn Street, in said City of Portland, bounded and described as follows: Beginning on said easterly side of Auburn Street at the northwesterly corner of land conveyed by Joseph A. Lucariello to The City of Portland; thence northerly by said Auburn Street eighty-eight and seventeen hundredths (88.17) feet, more or less, to a stake at the northwesterly corner of land conveyed to Joseph A. Lucariello by Cecil C. Davis, et al. by deed dated March 6, 1946 and recorded in Cumberland County Registry of Deeds, Book 1808, Page 479; thence easterly at right angles with the easterly line of Auburn Street to Fall Brook; thence southeasterly by the center line of said Brook to said City land; thence westerly by said City land one hundred sixty (160) feet, more or less, to said Auburn Street at the point of beginning.

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Auburn
Street
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entrance to
school

Being the northerly part of the premises conveyed to me by Cecil C. Davis, et al, as aforesaid.

The above described property is conveyed subject to the taxes for the year 1952 which the Grantees herein assume and agree to pay.

U.S.I.R.
\$7.70
J.A.L.
9/22/52

On Have and in Find the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said Stanley P. Johnson and Lillian E. Johnson, and the survivor of them, their heirs and assigns and the heirs and assigns of the survivor of them, to them and their use and behoof forever. And I do covenant with the said Grantees, and the survivor of them, their Heirs and Assigns, and the heirs and assigns of the survivor of them heirs and assigns, that I am lawfully seized in fee of the premises; that they are free of all incumbrances; except as aforesaid,

that I have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that I and my heirs, shall and will warrant and defend the same to the said

Grantees, and the survivor of them their Heirs and Assigns and the heirs and assigns of the survivor of them heirs and assigns forever, against the lawful claims and demands of all persons. except as aforesaid.

In witness whereof, I the said Joseph A. Lucariello and Olive I. Lucariello wife of the said Joseph A. Lucariello joining in this deed as Grantor, and relinquishing and conveying her rights by descent and all other rights in the above described premises,

our hands and seals this twenty-second day of September have hereunto set one thousand nine hundred and fifty-two. in the year of our Lord

Signed, Sealed and Delivered in presence of

D. W. Philbrick

Joseph A. Lucariello Seal

S. W. Hughes

Olive I. Lucariello Seal

State of Maine, CUMBERLAND, ss.

September 22, 1952.

Personally appeared

the above named Joseph A. Lucariello

and acknowledged the above instrument to be his free act and deed.

Before me, Donald W. Philbrick Justice of the Peace.

Received September 22

1952, at 1 o'clock 20 m. P.M., and recorded according to the original.

a,

Know all Men by these Presents, That

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1808

472

We, Cecil C. Davis and Alice R. Davis, both of Portland, in the County of Cumberland and State of Maine,

in consideration of one dollar and other valuable considerations paid by Joseph A. Lucariello, of said Portland,

the receipt whereof we do hereby acknowledge, do hereby, give, grant, bargain, sell and convey unto the said Joseph A. Lucariello, his heirs and assigns forever, the following described property:

A certain lot or parcel of land with the buildings thereon, situated on the easterly side of Auburn Street in said City of Portland, bounded and described as follows: Beginning on said easterly side of Auburn Street at the northwesterly corner of land conveyed by Fred E. Lovejoy to Suburban Homes, Inc., and later of one Hazlett; thence northerly by said line of Auburn Street one hundred seventy-four (174) feet to a stake; thence easterly at right angles with said line of Auburn Street to Fall Brook; thence southeasterly by the center line of said Brook to said Hazlett land; thence westerly by said Hazlett land two hundred (200) feet, more or less, to said Auburn Street at the point of beginning.

Being the same premises conveyed to us by Alexander A. McIntyre et al by deed dated May 13, 1943 and recorded in Cumberland County Registry of Deeds, Book 1715, Page 41.

into
Lucariello

On this and in full the aforegranted and bargained premises, with all the privileges and appurtenances thereof, to the said Joseph A. Lucariello his heirs and assigns, to his and

U.S.I.R.
\$4.40
C.C.D.
3/6/46

their use and behoof forever. And we do covenant with the said Grantee, his heirs and assigns, that we are lawfully seized in fee of the premises; that they are free of all incumbrances;

that we have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that we and our heirs, shall and will warrant and defend the same to the said Grantee, his heirs and assigns forever, against the lawful claims and demands of all persons.

In Witness Whereof, we, the said Cecil C. Davis and Alice R. Davis, being husband and wife, each joining in this deed as Grantor, and each relinquishing and conveying our respective rights by descent and all other rights in the above described premises,

our hands and seals this sixth day of March have hereunto set in the year of our Lord one thousand nine hundred and forty-six.

Signed, Sealed and Delivered in presence of

D. W. Philbrick

Alice R. Davis

Seal

to both

Cecil C. Davis

Seal

State of Maine, CUMBERLAND, ss.

March 6, 1946

Personally appeared

the above named Cecil C. Davis and Alice R. Davis

and acknowledged the above instrument to be their free act and deed.

Before me, Donald W. Philbrick Justice of the Peace

Received March 6,

1946, at 11 o'clock 50 m. A.M., and recorded according to the original.

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City

his said capacity and the free act and deed of said Bank.

Before me, F. Burley Smith

Notary Public Notarial Seal

Received April 6, 1951, at 10h 30m A. M., and recorded according to the original

KNOW ALL MEN BY THESE PRESENTS, That We, Sidney E. Dee and Esther M. Dee, both Dee & of Portland, in the County of Cumberland and State of Maine in consideration of to One Dollar and other valuable considerations paid by CITY OF PORTLAND, a municipal Portland corporation and body politic organized under the laws of the State of Maine and City of having its principal offices in said Portland the receipt whereof we do hereby ac- War. knowledge, do hereby give, grant, bargain, sell and convey, unto the said CITY OF PORTLAND, its Successors and Assigns forever, the following described property:

A certain lot or parcel of land, situated in said City of Portland, bounded and described as follows: Beginning at an iron in a stone wall in the division line between land of Sidney E. Dee, et al. and land now or formerly of Elizabeth B. Smith, said point being distant northwesterly along said division line seven hundred thirty-six and ninety-four hundredths (736.94) feet from its intersection with the northwesterly side line of Allen Avenue; thence northwesterly by the stone wall and by land now or formerly of Thomas R. Perham, et al. a distance of one hundred thirty-two and thirty hundredths (132.30) feet to an iron; thence northwesterly by the stone wall and wire fence and by land now or formerly of Charles E. Phair, et al and making an included angle through the West of 179° 56' with the southerly direction of the last described course a distance of six hundred thirty-three and forty-one hundredths (633.41) feet to an iron in a stone wall; thence northwesterly and making an included angle through the West of 110° 42' with the southerly direction of the last described course a distance of one hundred twenty-one and seventy-six hundredths (121.76) feet to an iron; thence southwesterly and making an included angle through the East of 90° 33' and by land now or formerly of Augusta J. Hazlett, et al. and land now or formerly of Maurice E. Willey a distance of nine hundred two and fifty-two hundredths (902.52) feet to an iron in a stone wall and to other land of Sidney E. Dee, et al.; thence northeasterly by land of Sidney E. Dee, et al. and making an included angle through the North of 64° 30' a distance of four hundred forty-two (442) feet, more or less, to the point of beginning.

Again beginning at the first mentioned point in the division line between land of Sidney E. Dee, et al. and land now or formerly of Elizabeth B. Smith; thence southeasterly by said division line a distance of seven hundred thirty-six and ninety-four hundredths (736.94) feet to its intersection with the northwesterly side line of Allen Avenue; thence southwesterly by the said northwesterly side line of Allen Avenue a distance of seventy-three and sixty-one hundredths (73.61) feet to a point; thence northwesterly on a line parallel with and seventy (70) feet distant at right angles with the said division line between land of Sidney E. Dee, et al. and

land now or formerly of Elizabeth B. Smith a distance of seven hundred fifty-four and forty-three hundredths (754.43) feet, more or less, to a point in the most southerly boundary line of the first described parcel; thence easterly by the said southerly boundary line of the first described parcel seventy and twenty hundredths (70.20) feet, more or less, to the point of beginning.

Meaning and intending hereby to convey the northerly portion, containing about five (5) acres, of the land conveyed by Mace B. Lufkin, et al. to Sidney E. Dee, et al. August 17, 1945 and recorded in Cumberland County Registry of Deeds, in Book 1789, Page 286, together with a strip of land seventy (70) feet wide extending from Allen Avenue to the first parcel mentioned.

This conveyance is made subject to taxes for 1951 which the Grantee assumes and agrees to pay.

U.S.I.R.
\$1.65
S.E.D. &
3-30-51

TO HAVE AND TO HOLD the aforegranted and bargained premises, with all privileges and appurtenances thereof to the said CITY OF PORTLAND, its Successors and Assigns, to its and their use and behoof forever.

AND we do covenant with the said Grantee, its Successors and Assigns, that we are lawfully seized in fee of the premises; that they are free of all incumbrances; except as aforesaid; that we have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that we and our heirs, shall and will warrant and defend the same to the said Grantee, its Successors and Assigns forever, against the lawful claims and demands of all persons, except as aforesaid.

IN WITNESS WHEREOF, we, the said Sidney E. Dee and Esther M. Dee, being husband and wife, joining in this deed as Grantors, and relinquishing and conveying our rights by descent and all other rights in the above described premises, have hereunto set our hands and seals this 30th day of March in the year of our Lord one thousand and nine hundred and fifty-one.

Signed, Sealed and Delivered in Presence of

Patricia E. Meally

Sidney E. Dee

Seal

to both

Esther M. Dee

Seal

STATE OF MAINE

Cumberland, ss.

Mar. 30, 1951.

Personally appeared the above named Sidney E. Dee and acknowledged the above instrument to be his free act and deed.

Before me, Patricia E. Meally

Notary Public Notarial Seal

Received April 6, 1951, at 10h 31m A. M., and recorded according to the original

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Know all Men by these Presents, That

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City of Portland a public municipal Corporation organized and existing under the laws of the State of Maine and located at Portland in the County of Cumberland and State of Maine

in consideration of One Dollar (\$1.00) and other valuable considerations paid by Portland Water District, a corporation duly organized and existing under the laws of the State of Maine and located at Portland in the County of Cumberland and State of Maine the receipt whereof it does hereby acknowledge, does hereby remise, release, bargain, sell and convey, and forever quit-claim unto the said Portland Water District, its successors and assigns forever, The right perpetually to enter at any and all times upon a strip of land situated in said Portland being part of the land conveyed to the grantor by Sidney E. Dee, et al., by deed dated March 30, 1951 and recorded in Cumberland County Registry of Deeds in Book 2041, Page 57, to which deed reference is hereby made for a more particular description of said land, said strip being twenty-five (25) feet in width and bounded and described as follows:
Beginning at a point in the dividing line between said land conveyed to the grantor by Sidney E. Dee, et al., and other land of the said Sidney E. Dee, et al., said point being distant northerly along said dividing line eighty-three and 09/100ths (83.09) feet from the northerly sideline of Allen Avenue; thence S. 49° 15'E., eighty-two and 25/100ths (82.25) feet, more or less, to said Allen Avenue; thence easterly by said Allen Avenue, twenty-five and 08/100ths (25.08) feet, more or less, to land now or formerly of one Smith; thence northerly by said Smith's land one and 6/10ths (1.6) feet, more or less, to a point; thence N. 49° 15' W. parallel to and distant twenty-five (25) feet from said first described course one hundred twenty-four and 75/100ths (124.75) feet, more or less, to said other land of Sidney E. Dee, et al.; thence Southerly by said Dee's land forty-four and 55/100ths (44.55) feet, more or less, to the point of beginning.
The above described courses are magnetic and as the year 1950.
And to construct and perpetually maintain through and under said strip conduits or pipe lines for conveying water and to lay, relay, repair, maintain and remove water pipe or pipes through or under said strip with all necessary fixtures and appurtenances, together with the right at all times to make connections with said conduits or pipe lines to land adjoining said strip by means of pipes or services, and to enter upon said strip at any and all times for any of the foregoing purposes; reserving to the grantor, its successors and assigns, the full use and enjoyment of said strip for such purposes as will in no way interfere with the perpetual use thereof by the grantee, its successors and assigns for the purposes above mentioned, provided that no building or any kind of permanent structure shall be erected on said strip by the grantor, its successors and assigns, and that the grantor, its successors and assigns, shall not remove earth from said strip or place fill thereon without the written permission of the grantee.

On Have and to Hold the same, together with all the privileges and appurtenances thereunto belonging, to it the said Portland Water District, its successors and assigns, and Assigns forever.

Corporation does
And the said Grantor covenant with the said Portland Water District, its successors and assigns, that it will warrant and Forever defend the premises to it the said Grantee, its successors and assigns, forever
heirs and assigns that will warrant and defend the premises to the said
heirs and assigns forever, against the lawful claims and demands of all persons claiming by, through or under it.

In Witness Whereof, the said City of Portland has caused this instrument to be sealed with its corporate seal and signed in its corporate name by Leon W. Kelber its Treasurer thereunto duly authorized,

have hereunto set hand and seal this 5th day of February in the year of our Lord one thousand nine hundred and fifty-four.
Signed, Sealed and Delivered in presence of

Barnett I. Shur

CITY OF PORTLAND
CORPORATE SEAL
By Leon W. Kelber
City Treasurer

State of Maine, CUMBERLAND, ss. February 5th, 1954. Personally appeared the above named Leon W. Kelber, Treasurer of said Grantor Corporation as aforesaid,

and acknowledged the foregoing instrument to be his free act and deed, in his said capacity, and the free act and deed of said corporation. Before me, Barnett I. Shur Justice of the Peace.
Received February 11 1954, at 11 o'clock 15 m. A. M., and recorded according to the original.

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Willey &

To
Portland
Water
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KNOW ALL MEN BY THESE PRESENTS, THAT We, MAURICE E. WILLEY and ADA E. WILLEY, both of Portland in the County of Cumberland and State of Maine in consideration of One Dollar (\$1.00) and other valuable considerations paid by PORTLAND WATER DISTRICT, a corporation duly organized and existing under the laws of the State of Maine and located at Portland in the County of Cumberland and State of Maine the receipt whereof we do hereby acknowledge, do hereby give, grant, bargain, sell and convey, unto the said PORTLAND WATER DISTRICT, its successors and Assigns forever, the right perpetually to enter at any and all times upon a strip of land situated on the Easterly side of Auburn Street in said Portland, being a part of the land conveyed to the grantors by Fred E. Lovejoy by deed dated August 2, 1938, recorded in Cumberland County Registry of Deeds in Book 1556, Page 394, to which deed reference is hereby made for a more particular description of said land, said strip being twenty-five (25) feet in width and more particularly bounded and described as follows, viz.: Beginning in the Easterly side line of said Auburn Street at the Southwest-erly corner of said land conveyed to the grantors by Fred E. Lovejoy; thence in an Easterly direction along the dividing line between said grantors' land and land of James C. Oliver, two hundred twenty-four and nine tenths (224.9) feet, more or less, to land conveyed by the grantors to the City of Portland by deed dated March 27, 1951, recorded in said Cumberland County Registry of Deeds in Book 2037, Page 429; thence in a Northerly direction along the dividing line between said land of the grantors and said land of the City of Portland twenty-five (25) feet to a point; thence in a Westerly direction parallel to and twenty-five (25) feet distant from said first described course, two hundred twenty-four and nine tenths (224.9) feet, more or less, to said Easterly side line of Auburn Street; thence in a Southerly direction along said Easterly side line of Auburn Street, twenty-five (25) feet to the point of beginning.

And to construct and perpetually maintain through and across said strip conduits or pipe lines for conveying water and to lay, relay, repair, maintain and remove water pipe or pipes upon or under said strip with all necessary fixtures and appurtenances together with the right at all times to made connections with said conduits or pipe lines to land adjoining said strip by means of pipes or services; to trim, cut down and remove bushes and trees and to remove grass and crops growing on said strip to such extent as in the judgment of the grantee is necessary for any of the above purposes and to enter upon said strip at any and all times for any of the foregoing purposes; reserving to the grantors, their heirs and assigns, the use and enjoyment of said strip for such purposes only as will in no way interfere with the perpetual use thereof by the grantee, its successors and assigns, for the purposes above mentioned, provided that no building or any kind of permanent structure shall be erected on said strip by the grantors, their heirs and assigns, and that the grantors,

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their heirs and assigns, shall not remove earth from said strip or place fill thereon without the written permission of the grantee.

Together with the right, insofar as the grantors have the right to convey the same, perpetually to enter at any and all times for any of the foregoing purposes upon that portion of said Auburn Street adjacent to the above-described premises.

TO HAVE AND TO HOLD the aforegranted and bargained premises, with all privileges and appurtenances thereof to the said PORTLAND WATER DISTRICT, its successors and Assigns, to its and their use and behoof forever. U.S.I.R. \$0.55 M.E.W.

AND we do COVENANT with the said Grantee, its successors and Assigns, that we are lawfully seized in fee of the premises; that they are free of all incumbrances; that we have good right to sell and convey the same to the said Grantee to hold as aforesaid; and that we and our Heirs, shall and will WARRANT AND DEFEND the same to the said Grantee, its successors and Assigns forever, against the lawful claims and demands of all persons. 12/2/53

IN WITNESS WHEREOF, We the said MAURICE E. WILLEY and ADA E. WILLEY, being husband and wife, each joining in this deed as grantor and each relinquishing and conveying our respective rights by descent and all other rights in the above described premises, have hereunto set our hands and seals this 2nd day of December in the year of our Lord one thousand nine hundred and fifty-three.

SIGNED, SEALED AND DELIVERED
IN PRESENCE OF

Edward J. Norris

Ada E. Willey Seal

to both

Maurice E. Willey Seal

STATE OF MAINE

Cumberland ss. December 2, 1953.

Personally appeared the above named Maurice E. Willey and acknowledged the above instrument to be his free act and deed.

Before me, Edward J. Norris Justice of the Peace Notary Public
Notarial Seal My Commission Expires June 29, 1960

a Received December 21, 1953 at 2h. 50m. P.M. and recorded according to the original
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KNOW ALL MEN BY THESE PRESENTS THAT FEDERAL LOAN AND BUILDING ASSOCIATION a Corporation organized and existing under the laws of the State of Maine and located at Portland in the County of Cumberland and State of Maine in consideration of One Dollar (\$1.00) and other valuable considerations paid by PORTLAND WATER DISTRICT, a corporation duly organized and existing under the laws of the State of Maine and located at Portland in the County of Cumberland and State of Maine the receipt whereof it does hereby acknowledge, does hereby remise, release, bargain, sell and convey, and forever Fed Ln & Bldg Assn To Portland Water Distr Q C

Florence H. Bailey	Seal
Dorothy H. Hutchins	Seal
Hazen A. Stuart	Seal
Phillis D. Stuart	Seal

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P.W.D.

State of Maine,)
Cumberland) ss.

December 21, 1953.

Personally appeared the above named Clyde E. Bailey and acknowledged the above instrument to be his free act and deed.

Before me, Edward J. Norris Notary Public Notarial Seal My Commission Expires June 29, 1960.

Received January 25, 1954 at 3h.20m. P.M., and recorded according to the original. m

Dee &
to
Portland
Water
District
War.

KNOW ALL MEN BY THESE PRESENTS, THAT We, Sidney E. Dee and Esther M. Dee, both of Portland, in the County of Cumberland and State of Maine in consideration of One Dollar (\$1.00) and other valuable considerations paid by PORTLAND WATER DISTRICT, a corporation duly organized and existing under the laws of the State of Maine and located at Portland, in the County of Cumberland and State of Maine the receipt whereof we do hereby acknowledge, do hereby give, grant, bargain, sell and convey, unto the said PORTLAND WATER DISTRICT, its successors and Assigns forever, The right perpetually to enter at any and all times upon two certain strips of land situated in said Portland, being part of the land conveyed to the Grantors by Mace B. Lufkin, et al. by deed dated August 17, 1945 and recorded in Cumberland County Registry of Deeds in Book 1789, Page 286, to which deed reference is hereby made for a more particular description of said land, the first of said strips being thirty (30) feet in width and lying equally on either side of the following described center line, namely, fifteen (15) feet in width on either side of said center line and its projection at both ends:

Beginning at a point in the dividing line between land of the Grantors and land of the City of Portland, said point being twenty-two and ninety-three hundredths (22.93) feet North 52° 28' East along said dividing line from the Northwesterly corner of said land of the Grantors; thence North 89° 47' East three hundred ninety-eight and ninety-six hundredths (398.96) feet, more or less, to a stake set in the ground at a point distant ten (10) feet Southwesterly from the dividing line between said land of the Grantors and other land of said City of Portland;

And the second of said strips being fifteen (15) feet in width and lying ten (10) feet on the Northeasterly side and five (5) feet on the Southwesterly side of the following described center line and its projection at both ends:

Beginning at the above-described stake distant ten (10) feet Southwesterly from the dividing line between land of the Grantors and land of the City of Portland; thence South 33° 12' East parallel to and distant ten (10) feet from said dividing line between land of the Grantors and land of the City of Portland four hundred (400)

at, more or less, to a point: thence South 67° 20' East seventeen and eighty-five hundredths (17.85) feet, more or less, to a point in said dividing line between land of the Grantors and land of the City of Portland, said point being ninety-two and fifty-two hundredths (92.52) feet Northwesterly along said dividing line from the Northwesterly side line of Allen Avenue.

The above-described courses are true courses and are referred to the true meridian. And to construct and perpetually maintain through and across said strips conduits or pipe lines for conveying water and to lay, relay, repair, maintain and remove water pipe or pipes upon or under said strips with all necessary fixtures and appurtenances together with the right at all times to make connections with said conduits or pipe lines to land adjoining said strips by means of pipes or services: to trim, cut down and remove bushes and trees and to remove grass and crops growing on said strips to such extent as in the judgment of the Grantee is necessary for any of the above purposes and to enter upon said strips at any and all times for any of the foregoing purposes; reserving to the Grantors, their heirs and assigns, the use and enjoyment of said strips for such purposes only as will in no way interfere with the perpetual use thereof by the Grantee, its successors and assigns for the purposes above mentioned, provided that no building or any kind of permanent structure shall be erected on said strips by the Grantors, their heirs and assigns, and that the Grantors, their heirs and assigns, shall not remove earth from said strips or place fill thereon without the written permission of the Grantee.

TO HAVE AND TO HOLD the aforegranted and bargained premises, with all privileges and appurtenances thereof to the said PORTLAND WATER DISTRICT, its successors and Assigns, to its and their use and behoof forever.

U.S.I.P.
\$1.10
S.E.D.
1-15-54

AND we do COVENANT with the said Grantee, its successors and Assigns, that we are lawfully seized in fee of the premises: that they are free of all incumbrances; that we have good right to sell and convey the same to the said Grantee to hold as aforesaid: and that we and our Heirs, shall and will WARRANT AND DEFEND the same to the said Grantee, its successors and Assigns forever, against the lawful claims and demands of all persons.

IN WITNESS WHEREOF, we, the said Sidney E. Dee and Esther M. Dee, being husband and wife, joining in this deed as Grantors, and relinquishing and conveying our rights by descent and all other rights in the above described premises, have hereto set our hands and seals this 15th day of January in the year of our Lord one thousand nine hundred and fifty-four.

Signed, Sealed and Delivered

in presence of

Edward J. Norris

Sidney E. Dee

Seal

to both

Esther M. Dee

Seal

State of Maine, Cumberland ss.

January 15, 1954

Personally appeared the above named Sidney E. Dee and Esther M. Dee and acknowl-

edged the above instrument to be their free act and deed.

Before me, Edward J. Norris Notary Public Notarial Seal. My Commission Expires June 29, 1960.

Received January 25, 1954 at 3h.20m. P.M., and recorded according to the original.

Pg. 3

P W D
cont.

Cole &
to
Portland
Water
District
War.

KNOW ALL MEN BY THESE PRESENTS, THAT We, Clarence S. Cole and Mildred H. Cole, both of Falmouth in the County of Cumberland and State of Maine in consideration of One Dollar (\$1.00) and other valuable considerations paid by PORTLAND WATER DISTRICT, a corporation duly organized and existing under the laws of the State of Maine and located at Portland in the County of Cumberland and State of Maine the receipt whereof we do hereby acknowledge, do hereby give, grant, bargain, sell and convey, unto the said PORTLAND WATER DISTRICT, its successors and Assigns forever, The right perpetually to enter at any and all times upon a strip of land situated in said Falmouth on the Northwesterly side of the Middle Road, so-called, being part of the land conveyed to the grantors by Morris H. Dickinson by deed dated March 26, 1953, and recorded in Cumberland County Registry of Deeds in Book 2123, Page 270, to which deed reference is hereby made for a more particular description of said land, said strip being bounded and described as follows:

Beginning on the Northwesterly side of said Middle Road at the Easterly corner of said land of the grantors and the Southerly corner of land of Belle B. Whipple; thence N. 73° 38' W. by said Whipple land, two hundred ninety-eight (298) feet, more or less, to the Southwesterly corner of said Whipple land; thence continuing on the same course N. 73° 38' W., one hundred sixty-seven and 15/100ths (167.15) feet, more or less, to a stake set in the ground; thence S. 48° 04' W., two hundred thirty-nine (239) feet, more or less, to the brook and land of Herbert F. Pillsbury; thence Southeasterly along said brook and by said Pillsbury land, thirty (30) feet, more or less, to a point; thence N. 48° 04' E. parallel to and distant thirty (30) feet from the aforesaid course of S. 48° 04' W. one hundred ninety-nine (199) feet, more or less, to a stake; thence S. 73° 38' E. parallel to and distant fifty (50) feet from the aforesaid course of N. 73° 38' W. four hundred forty-four (444) feet, more or less, to said Middle Road; thence Northeasterly by said Middle Road, fifty-two and 6/10ths (52.6) feet, more or less, to the point of beginning. Containing 29,300 square feet, more or less.

The above described courses are true courses and are referred to the true meridian. And to construct and perpetually maintain through and across said strip conduits or pipe lines for conveying water and to lay, relay, repair, maintain and remove water pipe or pipes upon or under said strip with all necessary fixtures and appurtenances together with the right at all times to make connections with said conduits or pipe lines to land adjoining said strip by means of pipes or services; to trim, cut down and remove bushes and trees and to remove grass and crops growing on said strip to such extent as in the judgment of the grantee is necessary for any of the above pur-

STATE OF MAINE

ANDROSCOGGIN, SS.

Lewiston, Maine

February 5, 1954

Personally appeared the above named CARL L. CURTIS, and acknowledged the foregoing instrument to be his free act and deed.

Before me, Anne E. Daunis Notary Public Notarial Seal

STATE OF MAINE

ANDROSCOGGIN, SS.

Lewiston, Maine

February 5, 1954

Personally appeared the above named GEORGE A. FOGG, President of said Truck Leasing Corporation, and acknowledged the foregoing instrument to be his free act and deed, and the free act and deed of said Corporation.

Before me, Anne E. Daunis Notary Public Notarial Seal

Received February 8, 1954 at 4h. 55m. P.M. and recorded according to the original

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Portland
City of
To
Portland
Water
Distr

Q C

KNOW ALL MEN BY THESE PRESENTS THAT City of Portland, a public municipal corporation organized and existing under the laws of the State of Maine and located at Portland in the County of Cumberland and State of Maine in consideration of One Dollar and other valuable considerations paid by Portland Water District, a corporation duly organized and existing under the laws of the State of Maine, and located at Portland, in the County of Cumberland and State of Maine the receipt whereof it does hereby acknowledge, does hereby remise, release, bargain, sell and convey, and forever quit-claim unto the said PORTLAND WATER DISTRICT, its successors and assigns forever, the right perpetually to enter at any and all times upon a certain strip of land situated in said Portland, being part of the land conveyed to the Grantor by Maurice E. Willey, et al., by deed dated March 27, 1951 and recorded in Cumberland County Registry of Deeds, in Book 2037, Page 429, to which deed reference is hereby made for a more particular description of said land, said strip being twenty-five (25) feet in width and bounded and described as follows:

Beginning at the southwesterly corner of said land conveyed to the Grantor by Maurice E. Willey, et al.; thence along the southerly line of said land conveyed to the Grantor by Maurice E. Willey, et al., on the following courses: North 85° 22 1/2' East twenty-one and four tenths (21.4) feet, more or less, to an iron pipe, thence North 84° 07' East three hundred fifty-five and thirty-two hundredths (355.32) feet, more or less, to an iron pipe, thence North 85° 25 1/2' East one hundred nine and thirty-eight hundredths (109.38) feet, more or less, to an iron pipe, thence South 89° 15' East one hundred fourteen and fifteen hundredths (114.15) feet, more or less, to an iron pipe, thence South 88° 18' East four hundred sixty-six and twelve hundredths (466.12)

2167
358

P W D

feet, more or less, to an iron pipe and land of Sidney E. Dee, et al.; thence by said Dee's land North 70° 34' East sixty-nine and twenty-nine hundredths (69.29) feet, more or less, to a point; thence in a westerly direction, parallel to and distant twenty-five (25) feet from the aforesaid southerly line of said land conveyed by Maurice E. Willey, et al. to the Grantor, and its projection at both ends, on various courses to a stake set in the westerly line of said land conveyed to the Grantor by Maurice E. Willey, et al.; thence in a southerly direction by other land of said Willey twenty-five (25) feet, more or less, to the point of beginning.

The above-described courses are magnetic and as of the year 1950.

And to construct and perpetually maintain through and under said strip, conduits or pipe lines for conveying water and to lay, relay, repair, maintain and remove water pipe or pipes through or under said strip, with all necessary fixtures and appurtenances, together with the right at all times to make connections with said conduits or pipe lines to land adjoining said strip by means of pipes or services, and to enter upon said strip at any and all times for any of the foregoing purposes; reserving to the Grantor, its successors and assigns, the full use and enjoyment of said strip for such purposes as will in no way interfere with the perpetual use thereof by the Grantee, its successors and assigns, for the purposes above mentioned, provided that no building or any kind of permanent structure shall be erected on said strip by the Grantor, its successors or assigns, and that the Grantor, its successors and assigns, shall not remove earth from said strip or place fill thereon without the written permission of the Grantee.

TO HAVE AND TO HOLD the same, together with all the privileges and appurtenances thereunto belonging, to the said PORTLAND WATER DISTRICT, its successors and Assigns forever. AND the said Grantor Corporation does COVENANT with the said PORTLAND WATER DISTRICT, its successors and Assigns, that it will WARRANT and FOREVER DEFEND the premises to the said Grantee, its successors and Assigns forever, against the lawful claims and demands of all persons claiming by, through, or under it.

IN WITNESS WHEREOF, the said City of Portland, has caused this instrument to be sealed with its corporate seal and signed in its corporate name by Leon W. Kelber, its Treasurer thereunto duly authorized, this 5th day of February in the year one thousand nine hundred and fifty-four.

SIGNED, SEALED AND DELIVERED
IN PRESENCE OF

Barnett I. Shur

CITY OF PORTLAND CORPORATE SEAL
By Leon W. Kelber
City Treasurer

State of Maine,)
Cumberland) ss.

February 5th, 1954

Personally appeared the above named Leon W. Kelber Treasurer of said Grantor Corporation as aforesaid, and acknowledged the foregoing instrument to be his free act and

deed in his said capacity, and the free act and deed of said corporation.

Before me, Barnett I. Shur Justice of the Peace.

Received February 11, 1954 at 11h. 15m. A.M. and recorded according to the original

a

Pine
State
Ln & Bldg
Assn

KNOW ALL MEN BY THESE PRESENTS, THAT PINE STATE LOAN AND BUILDING

ASSOCIATION, a corporation organized and existing according to law and having its place of business at Portland, County of Cumberland and State of Maine, mortgagee & owner of a

To

certain mortgage given by Hilda E. Peterson of Westbrook, County of Cumberland and State of Maine, to PINE STATE LOAN AND BUILDING ASSOCIATION dated March 16, A. D. 1949, and

Peterson

recorded in Cumberland County Registry of Deeds, Book 1948, Page 58, does hereby acknowledge that it has received full payment and satisfaction of the same and of the debt thereby secured, and in consideration thereof it does hereby cancel and discharge said mortgage, and release unto the said Hilda E. Peterson, her heirs and assigns forever the premises therein described.

Disch

IN WITNESS WHEREOF, the said PINE STATE LOAN AND BUILDING ASSOCIATION has caused this instrument to be signed in its corporate name and sealed with its corporate seal by Edward B. Perry, its Treasurer, thereunto duly authorized this eleventh day of February in the year one thousand nine hundred and fifty-four.

SIGNED, SEALED AND DELIVERED

IN PRESENCE OF

PINE STATE LOAN AND BUILDING ASSOCIATION
CORPORATE SEAL

Martha E. Downs

By Edward B. Perry
Treasurer

State of Maine

Cumberland ss

February 11, 1954.

Personally appeared the above named Edward B. Perry, Treasurer of said Corporation aforesaid, and acknowledged the foregoing instrument to be his free act and deed, in his said capacity, and the free act and deed of said Corporation.

Before me, Martha E. Downs Notary Public Notarial Seal

Received February 11, 1954 at 4h. 10m. P.M. and recorded according to the original

a

Bruns
Sav Instn

Brunswick, Maine
Date: Feb. 15, 1954

To

The debt secured by the within mortgage having been paid in full, this mortgage is hereby discharged, and the real estate therein described is released to the within mortgagor, he (his) heirs and assigns forever.

Pearce &
Disch

IN WITNESS WHEREOF, the said BRUNSWICK SAVINGS INSTITUTION has caused this instrument to be signed in its corporate name and its corporate seal to be hereto attached by F. Burton Whitman, Jr. its Assistant Treasurer, thereunto duly authorized, the day and year first above written.

IN THE PRESENCE OF:
Elizabeth S. Powers
Cumberland, ss.

BRUNSWICK SAVINGS INSTITUTION CORPORATE SEAL
By: F. Burton Whitman Jr. Ass't. Treas.
STATE OF MAINE Dated: Feb. 15, 1954

Personally appeared the above named F. Burton Whitman, Jr. as Assistant Treasurer of said BRUNSWICK SAVINGS INSTITUTION, and acknowledged the foregoing instrument to be the free act and deed of said corporation and his free act and deed in his said capacity.

Before me, Elizabeth S. Powers Notary Public Notarial Seal

Received February 17, 1954 at 9h. A.M. and recorded according to the original

Endorsed on Mortgage Deed as recorded in Book 2082, Page 131.

a



2b. EASEMENTS

Existing easements are shown on the enclosed Boundary Plan, drawing C-2, by Wright-Pierce. The written description of the Portland Water District easement shown along the southerly property line is attached.

STATE OF MAINE

ANDROSCOGGIN, SS.

Lewiston, Maine

February 5, 1954

Personally appeared the above named CARL L. CURTIS, and acknowledged the foregoing instrument to be his free act and deed.

Before me, Anne E. Daunis Notary Public Notarial Seal

STATE OF MAINE

ANDROSCOGGIN, SS.

Lewiston, Maine

February 5, 1954

Personally appeared the above named GEORGE A. FOGG, President of said Truck Leasing Corporation, and acknowledged the foregoing instrument to be his free act and deed, and the free act and deed of said Corporation.

Before me, Anne E. Daunis Notary Public Notarial Seal

Received February 8, 1954 at 4h. 55m. P.M. and recorded according to the original

a
c

Portland
City of
To
Portland
Water
Distr

Q C

KNOW ALL MEN BY THESE PRESENTS THAT City of Portland, a public municipal corporation organized and existing under the laws of the State of Maine and located at Portland in the County of Cumberland and State of Maine in consideration of One Dollar and other valuable considerations paid by Portland Water District, a corporation duly organized and existing under the laws of the State of Maine, and located at Portland, in the County of Cumberland and State of Maine the receipt whereof it does hereby acknowledge, does hereby remise, release, bargain, sell and convey, and forever quit-claim unto the said PORTLAND WATER DISTRICT, its successors and assigns forever, the right perpetually to enter at any and all times upon a certain strip of land situated in said Portland, being part of the land conveyed to the Grantor by Maurice E. Willey, et al., by deed dated March 27, 1951 and recorded in Cumberland County Registry of Deeds, in Book 2037, Page 429, to which deed reference is hereby made for a more particular description of said land, said strip being twenty-five (25) feet in width and bounded and described as follows:

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feet, more or less, to an iron pipe and land of Sidney E. Dee, et al.; thence by said Dee's land North 70° 34' East sixty-nine and twenty-nine hundredths (69.29) feet, more or less, to a point; thence in a westerly direction, parallel to and distant twenty-five (25) feet from the aforesaid southerly line of said land conveyed by Maurice E. Willey, et al. to the Grantor, and its projection at both ends, on various courses to a stake set in the westerly line of said land conveyed to the Grantor by Maurice E. Willey, et al.; thence in a southerly direction by other land of said Willey twenty-five (25) feet, more or less, to the point of beginning.

The above-described courses are magnetic and as of the year 1950.

And to construct and perpetually maintain through and under said strip, conduits or pipe lines for conveying water and to lay, relay, repair, maintain and remove water pipe or pipes through or under said strip, with all necessary fixtures and appurtenances, together with the right at all times to make connections with said conduits or pipe lines to land adjoining said strip by means of pipes or services, and to enter upon said strip at any and all times for any of the foregoing purposes; reserving to the Grantor, its successors and assigns, the full use and enjoyment of said strip for such purposes as will in no way interfere with the perpetual use thereof by the Grantee, its successors and assigns, for the purposes above mentioned, provided that no building or any kind of permanent structure shall be erected on said strip by the Grantor, its successors or assigns, and that the Grantor, its successors and assigns, shall not remove earth from said strip or place fill thereon without the written permission of the Grantee.

TO HAVE AND TO HOLD the same, together with all the privileges and appurtenances thereunto belonging, to the said PORTLAND WATER DISTRICT, its successors and Assigns forever. AND the said Grantor Corporation does COVENANT with the said PORTLAND WATER DISTRICT, its successors and Assigns, that it will WARRANT and FOREVER DEFEND the premises to the said Grantee, its successors and Assigns forever, against the lawful claims and demands of all persons claiming by, through, or under it.

IN WITNESS WHEREOF, the said City of Portland, has caused this instrument to be sealed with its corporate seal and signed in its corporate name by Leon W. Kelber, its Treasurer thereunto duly authorized, this 5th day of February in the year one thousand nine hundred and fifty-four.

SIGNED, SEALED AND DELIVERED
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By Leon W. Kelber
City Treasurer

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Cumberland) ss.

February 5th, 1954

Personally appeared the above named Leon W. Kelber Treasurer of said Grantor Corporation as aforesaid, and acknowledged the foregoing instrument to be his free act and

deed in his said capacity, and the free act and deed of said corporation.

Before me, Barnett I. Shur Justice of the Peace.

Received February 11, 1954 at 11h. 15m. A.M. and recorded according to the original

Pine
State
Ln & Bldg
Assn

KNOW ALL MEN BY THESE PRESENTS, THAT PINE STATE LOAN AND BUILDING

ASSOCIATION, a corporation organized and existing according to law and having its place of business at Portland, County of Cumberland and State of Maine, mortgagee & owner of a

To

Peterson

Disch

certain mortgage given by Hilda E. Peterson of Westbrook, County of Cumberland and State of Maine, to PINE STATE LOAN AND BUILDING ASSOCIATION dated March 16, A. D. 1949, and recorded in Cumberland County Registry of Deeds, Book 1948, Page 58, does hereby acknowledge that it has received full payment and satisfaction of the same and of the debt thereby secured, and in consideration thereof it does hereby cancel and discharge said mortgage, and release unto the said Hilda E. Peterson, her heirs and assigns forever the premises therein described.

IN WITNESS WHEREOF, the said PINE STATE LOAN AND BUILDING ASSOCIATION has caused this instrument to be signed in its corporate name and sealed with its corporate seal by Edward B. Perry, its Treasurer, thereunto duly authorized this eleventh day of February in the year one thousand nine hundred and fifty-four.

SIGNED, SEALED AND DELIVERED

IN PRESENCE OF

PINE STATE LOAN AND BUILDING ASSOCIATION
CORPORATE SEAL

Martha E. Downs

By Edward B. Perry
Treasurer

State of Maine

Cumberland ss

February 11, 1954.

Personally appeared the above named Edward B. Perry, Treasurer of said Corporation aforesaid, and acknowledged the foregoing instrument to be his free act and deed, in his said capacity, and the free act and deed of said Corporation.

Before me, Martha E. Downs Notary Public Notarial Seal

Received February 11, 1954 at 4h. 10m. P.M. and recorded according to the original

Brunswick
Sav Instn

Brunswick, Maine
Date: Feb. 15, 1954

To

Pearce &
Disch

The debt secured by the within mortgage having been paid in full, this mortgage is hereby discharged, and the real estate therein described is released to the within mortgagor, he (his) heirs and assigns forever.

IN WITNESS WHEREOF, the said BRUNSWICK SAVINGS INSTITUTION has caused this instrument to be signed in its corporate name and its corporate seal to be hereto attached by F. Burton Whitman, Jr. its Assistant Treasurer, thereunto duly authorized, the day and year first above written.

IN THE PRESENCE OF:
Elizabeth S. Powers
Cumberland, ss.

BRUNSWICK SAVINGS INSTITUTION CORPORATE SEAL
By: F. Burton Whitman Jr. Ass't. Treas.
STATE OF MAINE Dated: Feb. 15, 1954

Personally appeared the above named F. Burton Whitman, Jr. as Assistant Treasurer of said BRUNSWICK SAVINGS INSTITUTION, and acknowledged the foregoing instrument to be the free act and deed of said corporation and his free act and deed in his said capacity.

Before me, Elizabeth S. Powers Notary Public Notarial Seal

Received February 17, 1954 at 9h. A.M. and recorded according to the original

Endorsed on Mortgage Deed as recorded in Book 2082, Page 131.



3. STATE OR FEDERAL PERMITS

- The site disturbance of building additions, pavements reconstructed, and lawn areas will equal approximately 4 acres, which is above the threshold for a Maine DEP Stormwater Permit. The basic standards of erosion and sedimentation control must be met. The increased impervious area of the proposed Lyseth School additions and site redevelopment is approximately 15,800 sq.ft., which is below the threshold of 1-acre for the Maine DEP general standards. However, the City of Portland requires this development to adhere to the MDEP Chapter 500 standards. The City of Portland has delegated review authority for the MDEP Stormwater Permit, so a separate permit application should not be required directly to the MDEP.
- Since the site disturbance is greater than one acre, the Maine Construction General Permit(MCGP) is required to be submitted at least 14-days prior to construction start. Portland Public Schools has prepared the attached Notice of Intent to Comply with Maine Construction General Permit. The attached USGS sheet shows the project vicinity. Enclosed drawings C00.1 Site Plan, and C30.1 Site Grading and Erosion Control Plan will be submitted to Maine DEP along with the attached form, prior to construction.

NOTICE OF INTENT TO COMPLY WITH MAINE CONSTRUCTION GENERAL PERMIT

PLEASE TYPE OR PRINT IN **BLACK INK ONLY**

Name of Applicant (Owner):		City of Portland, ME Contact: Steven Stilphen		Applicant Mailing Address:		Portland Public Schools 353 Cumberland Avenue	
Town/City:		Portland		State:		Maine	
Daytime phone: (with area code)		(207) 842-5315		Email if available:		stilps@portlandschools.org	
Project Location: (Town/City):		Harrison Lyseth School 175 Auburn Street Portland, ME Map #378		UTM Northing: (if known)		UTM Easting: (if known)	
Map #:		Portland, ME Map 378		Lot #:		A005	
Creating a common plan of development or sale?		Yes		No X		Part of a larger project?	
						Yes X No	
Name of waterbody(ies) to which the disturbed area drains, or name municipality if drains to an MS4:				Fall Brook and Back Cove in Portland			
Does site drain to an Impaired Waterbody (C)? If so, give name:				Yes. Fall Brook			
Detailed directions to site, including address if available:				Maine Turnpike Exit 53, take Rt.26 south 1.8 miles, Lyseth School drive is on the left.			
Description of project and its purpose:							
Building additions for Gym, Library, and Administration; and site reconstruction for renovation and improvements to drainage, circulation, and parking.							

I am filing notice of my intent to carry out work which meets the requirements of the Construction General Permit (effective 3/10/03). I have a copy of the Construction General Permit. I have read and will comply with all of the standards. I have attached all the required submittals. *Notification forms cannot be accepted without the necessary attachments.*

☒ ALL: A check (non-refundable) made payable to: "Treasurer, State of Maine." **See DEP fee schedule for correct fee.** You must know # of acres being permitted to determine the fee.

☒ ALL: A U.S.G.S. topo map or Maine Atlas & Gazetteer map with the project site clearly marked.

☒ ALL: Drawing of the proposed activity (site plan).

☒ ALL: An ESC plan.

☐ IF this form is not being signed by the landowner or lessee of the property, attach documentation showing authorization to sign.

☐ IF any construction activity will occur in essential habitat, attach written approval from the Dept. of Inland Fisheries & Wildlife.

I authorize staff of the Departments of Environmental Protection to access the project site for the purpose of determining compliance with the general permit. I also understand that **this permit is not valid until approved by the Department or 14 days after receipt by the Department, whichever is less.**

Signature of Applicant:		Date:	1-23-19
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Keep the bottom copy as a record of permit. Send the form with attachments via certified mail to the Maine Dept. of Environmental Protection **at the appropriate regional office.** The DEP will send a copy to the Town Office as evidence of the DEP's receipt of notification. No further authorization by DEP will be issued after receipt of notice. Check with DEP Staff to determine the expiration date on this permit. **Work carried out in violation of any standard is subject to enforcement action.**

OFFICE USE ONLY	Ck.#	Date	Staff	Staff	
NOI #	FP		Acc. Date	Def. Date	After Photos



4. ZONING ASSESSMENT

The Harrison Lyseth Elementary School is in the R2 Zone. On the school campus is also an ROS Zone for the athletic fields. A Stream Protection Overlay Zone exists along Fall Brook to the west side of the property.

Schools are a Conditional Use in the R2 residential zone. All construction work will take place in the vicinity of the elementary school in the northeast corner of the parcel, and no work will affect the athletic fields or the Fall Brook protection zone.

The Zoning Analysis Table is attached.



ZONING ANALYSIS Relevant Zone(s) R2, ROS

All Projects:

	Required	Proposed
Lot Size	School 2 acres	25.12 acres
Area Per Dwelling Unit	NA	
Minimum Street Frontage	50 ft.	85 ft.
Front Yard Minimum	25 ft.	1000 ft.
Front Yard Maximum	NA	
Rear Yard	25 ft.	25 ft.
Yard Right	12 ft.	470 ft.
Yard Left	14 ft.	20 ft.
Side Street Setback	NA	
Step Back	NA	
Maximum Lot Coverage	20%	13.6%
Minimum Lot Coverage	NA	
Maximum Height	35 ft.	32 ft.
Open Space	NA	
Maximum Impervious Area	NA	
Pavement Setback	NA	
Floor Area Ratio	NA	
Off Street Parking Spaces	27	39
Loading Bays	NA	
Other 1		
Other 2		
Other 3		

Planned Residential Unit Developments (PRUD) Requirements

	Required	Proposed
Minimum Lot Size	NA	
Minimum Lot Area per Dwelling	NA	
Maximum # Units per Building	NA	
Maximum Building Length	NA	
Maximum Accessory Building Length	NA	
Minimum Setbacks	NA	
Minimum Building Separation	NA	
Minimum Open Space	NA	

Affordable Housing Density Bonuses (if applicable)

	Bonus Increase or Decrease	Maximum Allowable With Bonus	Proposed
Density	NA		
Height	NA		
Setback Reduction	NA		
Recreation Space	NA		
Maximum Accessory Building Length	NA		
Minimum Setbacks	NA		
Minimum Building Separation	NA		
Minimum Open Space	NA		
Explanatory Text 1 (optional):			
Explanatory Text 2 (optional):			
Explanatory Text 3 (optional):			



6. FINANCIAL CAPABILITY

Portland Public Schools has furnished the attached Statement of Financial Capacity for the Harrison Lyseth Elementary School Renovation Project.



PORTLAND PUBLIC SCHOOLS
prepared & empowered

Alicia Gardiner
Portland Public Schools
Executive Director of Budget & Finance
353 Cumberland Avenue
Portland, Maine 04101
January 18, 2019

Jean Fraser
Planner – The City of Portland Planning and Transportation Division
City of Portland, Maine
389 Congress Street
Portland, Maine 04101

Statement of Financial Capacity: The City of Portland, Portland Public Schools, and the Harrison Lyseth School Renovation Project has available the sum of \$15,250,380 as of this date. We confirm that these funds are entirely free of any liens, debts and/or encumbrances and are available in the form of City of Portland General Obligation Bonds. Should you require verification of the above-mentioned funds, please contact me at your convenience.

Respectfully,

Alicia Gardiner
Portland Public Schools
Executive Director of Budget & Finance



7. TECHNICAL CAPABILITY

Portland Public Schools are managed by experienced staff who currently care for the physical and financial needs of the Harrison Lyseth Elementary School, together with many other schools throughout the City of Portland.

Portland Public Schools engaged Harriman Architects and Engineers of Portland and Auburn, Maine, to design the building and site improvements to the Harrison Lyseth Elementary School. Harriman is a full-service architectural/engineering firm with a 140-year history of successful consulting services. All architectural and engineering is being provided by Harriman employees.

Key personnel of Harriman include:

Mark Lee, AIA – Principle-in-Charge; Lisa Sawin, AIA – Project Manager/Lead Architect; Howard Snyder, ASLA – Landscape Architect; and Frank Crabtree, PE – Civil Engineer.

Key personnel resume's are attached.



EDUCATION

Boston Architectural College
Master of Architecture

Drexel University
Bachelor of Science in Civil Engineering
Bachelor of Science in
Architectural Engineering

REGISTRATIONS

ME, NH, MA, CT, NY
NCARB IDP Certification
EI

ACCREDITATIONS

Leadership in Energy and Environmental
Design Accredited Professional (LEED AP)

Massachusetts Certified Public Purchasing Official
(MCPPO)

AFFILIATIONS

American Institute of Steel Construction Member
American Society of Civil Engineers, Member
Association of College & University
Housing Officers International, Member
U.S. Green Building Council
Society of College and University Planning

PRESENTATIONS

2010 - EACUBO Annual Meeting
"Attainable Goals: Breaking Down a
Long-Term Master Plan Can Help
Streamline Short-Term Decision Making"

2009 - ERAPPA Annual Conference "Attainable Goals:
Breaking Down a Master Plan"

2009 - Museum L-A Lecture Series, "Lewiston
Transforms: Adaptive Reuse of Architectural
Landmarks,"

2009 - Tri-State ASBO Conference, "How to Promote
and Organize A Successful School Construction
Project,"

2006 - Maine Library Association Annual Conference,
"Fryeburg Academy Library: A Collaborative Story,"

MARK D. LEE, AIA, LEED AP, MCPPO

PRINCIPAL, ARCHITECT

Mark D. Lee has experience in both structural engineering and architectural design, encompassing over 20 years and providing him a truly multidisciplinary perspective on building design.

Over the years, Mark has gained significant educational design experience on a variety of projects for public and private K-12 schools. Projects have included new construction, additions and renovations to existing facilities, as well as master plans and space/programming studies.

Before joining Harriman as an architectural designer, Mark was a structural engineering designer in Philadelphia and New York. In addition to working on projects with the Greater Philadelphia Transportation Authority, he has also worked on projects built in Indonesia and China. Mark has bachelor's degrees in both civil engineering and architectural engineering, as well as a master's degree in architecture.

RELEVANT EXPERIENCE:

Portland Public Schools – Portland, Maine

Lyseth Elementary School Addition and Renovations

Auburn School Department – Auburn, Maine

Planning, Design and Construction for new Edward Little High School

Beatrice Rafferty Elementary School – Perry, Maine

New Elementary School

South Portland School Department – South Portland, Maine

South Portland High School Addition and Renovations I Master Plan I
Secondary School Study

Camden Hills Regional High School – Rockport, Maine

New 800-Student School and 800-Seat Performing Arts Center

Biddeford High School – Biddeford, Maine

Addition and Renovations

Biddeford Middle School – Biddeford, Maine

New 780-Student School and 900-Seat Performing Arts Center

Maine Academy of Natural Science at Good Will-Hinckley – Hinckley, Maine

Moody School Historic Study, Addition and Renovation

Lewiston School Department – Lewiston, Maine

Master Plan I Geiger Elementary School, New 624-Student School I Lewiston
Regional Technical Center, The Green Ladle Culinary Arts Center

Mount Desert Island High School – Mount Desert, Maine

Addition and Renovations

Cheverus High School – Portland, Maine

Gymnasium Addition I Addition and Renovations I Master Plan

St. Dominic Regional High School – Auburn, Maine

New 450-Student School

MARK D. LEE, AIA, LEED AP, MCPPO

PUBLICATIONS

Building Design + Construction: Lighting Technology
"It's Still the Wild West Out There," April 2017

High Profile Focus: Institution & Schools
featuring SCUP North Atlantic Region, "The University
Library is the Hub of Student Collaboration and
Learning," March 2017

School Planning & Management "Acoustical
Considerations for 21st-Century K-12 Learning
Environments," June 2017

High Profile: New England Facilities Development
News, "Innovation on Campus: Five Trends in Higher
Education," August 2016

Kennebunk Elementary School – Kennebunk, Maine
New 600-Student School

Bridgton Academy – Bridgton, Maine
New Athletic Center | Master Plan

Fryeburg Academy – Fryeburg, Maine
Leura Hill Eastman Performing Arts Center | Master Plan | Harvey Dow Gibson
Athletic Center | Bion R. Cram Library | Athletic Fields | Hastings Dorm Masters
House

Bath School Department – Bath, Maine
Master Plan and Renovations

Hebron Academy – Hebron, Maine
Master Plan

Sacopee Valley High School – Hiram, Maine
ADA Upgrades

Buxton Elementary – Buxton, Maine
New 850-Student School

Westbrook Middle School – Westbrook, Maine
New 600-Student School

Nashua School District – Nashua, New Hampshire
Broad Street Elementary School Renovation | Sunset Heights Elementary
School Renovation | Mount Pleasant School Study | Elm Street School Study

Dover School District – Dover, New Hampshire
Garrison Elementary School Facilities Study | Garrison Elementary School,
Renovations

Hopkinton School District – Contoocook, New Hampshire
Facilities Planning Study

Exeter High School – Exeter, New Hampshire
New 2,000-Student School and 1,000-Seat Performing Arts Center



LISA D. SAWIN, AIA, NCARB, LEED AP BD+C, MCPPO SENIOR ASSOCIATE, SENIOR ARCHITECT

Lisa Sawin, a licensed architect, brings nearly 15 years of professional experience in architectural design for a variety of K-12 and Higher Educational clients. Prior to joining Harriman, Lisa served as Project Manager and Project Architect providing design, detailing, marketing and project delivery skill-set.

Passionate about developing learning environments that support educators and students alike, Lisa is a hands-on project leader, working directly with school leadership, administration, and facilities personnel to provide meaningful solutions to operational and functional challenges.

EDUCATION

Norwich University
Masters in Architecture

Norwich University
Bachelor of Science in
Architectural Studies

REGISTRATIONS

ME, MA, VT

National Council of Architectural Registration Boards
(NCARB)

ACCREDITATIONS

Leadership in Energy and Environmental Design
Accredited Professional
(LEED AP BD+C)

Massachusetts Certified Public Purchasing Official
(MCPPO)

AFFILIATIONS

American Institute of Architects

U.S. Green Building Council, Maine
Chapter Member

RELEVANT EXPERIENCE:

RSU 21 – Kennebunk, Kennebunkport, and Arundel, Maine

Facilities and Educational Planning for all District Schools

Mildred L. Day Elementary School (RSU 21) – Arundel, Maine

Addition and Renovations

Kennebunk High School (RSU 21) – Kennebunk, Maine

Addition and Renovations

Auburn School Department – Auburn, Maine

Planning, Design and Construction for new Edward Little High School

Portland Public Schools – Portland, Maine

Lyseth Elementary School Addition and Renovations

Westbrook School Department – Westbrook, Maine

Saccarappa Elementary School Additions and Renovations

Sanford School Department – Sanford, Maine

K-8 Restructuring Study | Margaret Chase Smith Elementary School, Addition and Renovations | Converted Elementary School from former Middle School | Converted Middle School from former High School

Scarborough School Department – Scarborough, Maine

Long Range Facility Planning

Town of Wellesley – Wellesley, Massachusetts

Middle School Building Study

Twin Rivers School District* – McClellan, California

25-Year Master Plan of 63 Campuses | Professional Learning Community Center (P.L.C.C.)

Fresno United School District* – Fresno, California

Addicott Modernization | Turner Elementary School Classroom and Administration Building | Hoover High School Addition

Merced Unifed School District* – Merced, California

Merced S.T.E.A.M. Center

Madera School District* – Madera, California

Madera Elementary School

**Experience prior to joining Harriman.*



EDUCATION

University of Maine
Bachelor of Science Civil Engineering

REGISTRATIONS

ME, MA, NH, VT, CT, RI

ACCREDITATIONS

Leadership in Energy and Environmental
Design Accredited Professional
(LEED AP BD+C)

Maine Department of Transportation Local Project
Administration (LPA)

AFFILIATIONS

American Society of Civil Engineers

U.S. Green Building Council
Maine Chapter Member

FRANK L. CRABTREE, P.E., LEED AP BD+C

ASSOCIATE, SENIOR CIVIL ENGINEER
USGBC - LEED PROJECT ADMINISTRATOR

Frank L. Crabtree's 40 years of experience includes a wide range of civil, environmental and site engineering for large and small sites for many governmental and educational clients. He has extensive experience in environmental storm water management and in managing the permitting and approval process required by state, federal, and municipal agencies.

Frank also coordinates Harriman's sustainability processing for the office and for our clients. Beginning with the certification of Maine's first LEED Certified university building, Frank has managed the process for many public and private sustainable projects over the past 15 years. He has extensive experience managing the team of designers, owner, and contractor through the various stages of the sustainability planning, designing, constructing, and certifying. Frank's work has been primarily with the US Green Building Council (USGBC) LEED Certification process, which is the benchmark standard in the U.S.

RELEVANT EXPERIENCE:

Portland Public Schools – Portland, Maine

Lyseth Elementary School Addition and Renovations

Auburn School Department – Auburn, Maine

Planning, Design and Construction for new Edward Little High School

Beatrice Rafferty Elementary School – Perry, Maine

New Elementary School

Lewiston Public Schools – Lewiston, Maine

Robert V. Connors, New 900± Student Elementary School, State and City Permitting | McMahon Elementary School, Site Design, Roadway Expansion, Natural-gas Extension, and State/City Permits | Raymond A. Geiger Elementary School, Site Selection, Stormwater, and Permitting | Lewiston High School Regional Technical Center, Site Design, Parking Expansion, Stormwater Treatment, Utilities for Constrained Site, City Permitting

RSU #21 – Kennebunk, Maine

Kennebunk High School Addition | Mildred L. Day Elementary School Addition and Renovation

York School Department – York, Maine

750-Seat Community Auditorium and Main Entry Addition, Site Design, Parking, Town of York Permitting

Noble High School – North Berwick, Maine

New Site Master Plan and Development | 11 Sports Fields | Six Parking Lots | State/Town Permits

Scarborough School Department – Scarborough, Maine

Wentworth Intermediate School, New 800-Student School | Scarborough High School Addition and Renovations

Scarborough Schools and Community Park – Scarborough, Maine

Reconstruction of High School and Town Park, New Pond/Fountain | Play Fields | Pedestrian Walks | Stormwater Treatment | State/Town Permits

FRANK L. CRABTREE, P.E., LEED AP BD+C

PRESENTATIONS

2013 – U.S. Green Building Council Maine Chapter,
“Rainwater Management: Rooftop to Pavement”

2010 – American Society of Professional Estimators,
“LEED Changes”

2009 – U.S. Green Building Council Maine Chapter,
“Site Design for LEED and DEP Standards”

2008 – Society for College and University Planning,
North Atlantic Region Symposium, Sustainability as
an Economic Driver: “Pathways to Success, “Pathways
to Green”

2007 – Northern New England Chapter of the
American Planning Association “LEED Certified
Construction”

Buxton Center Elementary School – Buxton, Maine
New 850-Student School

Cheverus High School – Portland, Maine
New Urban Sports Field and Tennis Court Complex | Parking Lots | Permitting

South Portland School Department – South Portland, Maine
Site Renovation | Relocate Sports Fields and Tennis Courts | New Parking Lots

St. Dominic Academy – Auburn, Maine
New 450-Student School

Westbrook Middle School – Westbrook, Maine
New 600-Student School, Traffic and Pedestrian Circulation | New Planning
and Site Development | Three Sports Fields | Stormwater Management | State/
Town Permits

Durham Community School – Durham, Maine
New 505-Student School

Biddeford High School - Biddeford, Maine
Addition and Renovations

Biddeford Middle School – Biddeford, Maine
New 780-Student School and 900-Seat Performing Arts Center

Bridgton Academy – Bridgton, Maine
Master Plan New Sports Fields | Fundraising Images

Fryeburg Academy – Fryeburg, Maine
New Sports Field Facility, Sports Fields | Leura Hill Eastman Performing Arts
Center | Site Parking/Utilities | Stormwater Treatment | State/Town Permits

Pemetic Elementary School – Southwest Harbor, Maine
Addition and Renovations

Broad Street School – Nashua, New Hampshire
Reconstructed Drives, Parking, Storm Drainage, Playground, and City/State
Permits

Idlehurst Elementary School – Somersworth, New Hampshire
New 530-Student School - NECHPS Sustainability Certification Management



HOWARD A. SNYDER, ASLA, CLARB

LANDSCAPE ARCHITECT

Howard Snyder, ASLA, CLARB is a landscape architect and planner with nearly twenty years of experience. He has worked on a range of project types considering civic, institutional, landscape planning, residential, resort, urban and public space developments in the United States and abroad. His work allows for an ability to synthesize a project's design process from the appropriate perspective and an ability to work with a staff of professionals from a variety of disciplines to provide outstanding design and service to clients. Prior to rejoining Harriman in early 2016, Howard served as Town Planner of Georgetown, Massachusetts.

EDUCATION

Master of Urban Planning and Public Policy
New York University, Robert F. Wagner Graduate School
of Public Service

Bachelor of Landscape Architecture
State University of New York, College of Environmental
Science & Forestry

REGISTRATIONS

MA, ME, CT

AFFILIATIONS

American Society of Landscape Architects

Boston Society of Landscape Architects

American Planning Association

RELEVANT EXPERIENCE:

Jewish Community Alliance – Portland, Maine

Landscape Architecture for a Community Center

City of Augusta – Augusta, Maine

Site Layout and Landscape Design for Adaptive Reuse of Mill Park Brick
Building

Town of Kennebunk – Kennebunk, Maine

Streetscape Master Plan in the Lower Village District

University of Maine System – Maine

Campus Master Planning for Seven Campuses

University of New England – Biddeford, Maine

Campus Master Plan

Maplewood Avenue - Complete Streets – Portsmouth, New Hampshire

Streetscape Design

City of Rochester – Rochester, New Hampshire

Downtown Master Plan and Comprehensive Rezoning

Town of Raymond – Raymond, New Hampshire

Site Layout and Design for Police Facility

Atlantic Wharf – Boston, Massachusetts

Urban Design and Planning for Redevelopment of Atlantic Wharf

Beverly Farms Improvement Society – Beverly, Massachusetts

Facade and Streetscape Improvement Plan

Beverly Farms Improvement Society – Beverly, Massachusetts

Parking Strategy for Beverly Farms Business District

Bridgeport and Port Jefferson Steamship Authority – Bridgeport, Connecticut

Bridgeport Barnum Landing Ferry Terminal Site Design

Canaveral Port Authority – Port Canaveral, Florida

Port Canaveral Land Use and Development Plan

Canaveral Port Authority – Port Canaveral, Florida

On-call Services | Land Planning, Urban Design, and Market Analysis for Port
Canaveral

City of Boston – Boston, Massachusetts

Cleveland Circle Streetscape Plan

City of Brockton – Brockton, Massachusetts

Comprehensive Master Plan

City of Haverhill – Haverhill, Massachusetts

Park Concept Design for Riverside Park

City of Newburyport – Newburyport, Massachusetts

Landscape Restoration for Bartlet Mall

City of Norwalk – Norwalk, Connecticut

Wall Street Area Master Plan

Department of Conservation and Recreation – Boston, Massachusetts

Landscape Design for Lederman Memorial

Duxbury Bay Maritime School – Duxbury, Massachusetts

Site Planning for Three Marine Based Facilities

Falmouth Yacht Club – Falmouth, Massachusetts

Renovation, Expansion and Landscape Architecture

Hingham Shipyard – Hingham, Massachusetts

Landscape Design and Signage Programming

Lawrence Mills – Lowell, Massachusetts

Urban Design, Site Design, and Landscape Architecture for Redevelopment

Malden Mills – Lawrence, Massachusetts

Schematic Designs for Reuse and Redevelopment Options

Steamship Authority – Oak Bluffs and Woods Hole, Massachusetts

Site Layout and Design for Ferry Terminals

Town of Burlington – Burlington, Massachusetts

Comprehensive Master Plan

Town of Nahant – Nahant, Massachusetts

Nahant Gateway Park and War Memorial

Town of Randolph – Randolph, Massachusetts

Comprehensive Master Plan

Town of Shutesbury – Shutesbury, Massachusetts

Community Visioning

Town of Truro – Truro, Massachusetts

Landscape Design for Civic Center and Residential Development

Village at Bailey's Pond – Amesbury, Massachusetts

Permitting and Landscape Design for Residential Development

Village of Newtonville – Newton, Massachusetts

Streetscape Design



8a. TRAFFIC

Transportation Analysis – (14-526 (a)1)

- The proposed Harrison Lyseth Elementary School building additions and site renovations will not impact vehicular or pedestrian circulation on the adjacent streets. The site modifications will be occurring near the school building and will not affect the driveways, parking lots, or sidewalks between the school and Auburn Street. The current school design is following the prior LLM Campus Improvements Circulation Project, approved by the City as permit #2017-202. The current design of driveways, bus and parent drop-off loops, parking, and sidewalks will comply with that approved layout.
- Since there is no student or staff population increase anticipated from this building project, there will be no significant change in traffic generation, and no need for a traffic study.



8b. ACCESS AND CIRCULATION

Access and Circulation – (14-526 (a) 2a)

- Currently many of the school building doorways have steps at the exterior that cause them to not meet the ADA accessibility guidelines. The pavements around the building will be reconstructed to meet the ADA standards at all of the required egress doorways. The ADA standards will also be met at all of the walkways and curb ramps. A new paved sidewalk to the Martin Road walking path north of the school will be created at the ADA accessible grade of 5%, which is currently not accessible.
- The site renovations around the Lyseth school will maintain all of the current vehicular and pedestrian traffic flows. The bus and parent drop-off loop drives are staying in the same locations. The access drive to the staff parking along the south side of the school will be improved at the intersection of the Lyman Moore Middle School staff parking lot, by widening the drive for fire truck access and using a low mountable island for traffic control. Also, an extension of the raised curbed sidewalk from the Moore School to the Lyseth School will better direct pedestrian, vehicular, and emergency traffic. Emergency vehicle access around all sides of the building will be maintained by the renovated fire lane drives.
- No 'drive-up' features are incorporated into this elementary school.



8c. LOADING AND SERVICING

Loading and Servicing – (14-526 (a) 2b)

- No changes are anticipated for the loading and servicing vehicular access to the building. The current layout of driveways near the school will remain virtually unchanged. The south driveway into the wide staff parking area to the south side of the building will continue to carry all the service vehicles.
- No turning templates for service vehicles are needed since the driveway configurations will not significantly change. A fire truck turning template is enclosed for the reconfigured southerly driveway/fire lane.



10. PUBLIC TRANSIT

Public Transit – (14-526 (a) 3)

- Greater Portland Metro Bus lines routes 9A and B stop at the Harrison Lyseth Elementary School driveway on Auburn Street several times a day, for service to the school.
- The current public school bus access drive will be slightly relocated at the front drop-off walk of the Lyseth school, to avoid the new Administration area building addition. The re-aligned bus drive is shown on the site plan drawings.



9. SIDEWALKS

Sidewalks – (14-526 (a) 2c)

- No sidewalks along public streets will be affected by this school project. Sidewalks near the school building will be reconstructed in virtually the same locations. The walkway to the northeast corner of the site that connects to a walk from Martin Road will be relocated to provide both pedestrian and bicycle access to the school. This walk has historically been quite steep, but will now be graded at 5% to meet ADA accessibility standards.
- Engineered details of the sidewalks and curb ramps, which meet the City Standards in the Technical Manual, are included in the drawings.



11a. OFF-STREET PARKING

Off-Street Parking – (14-526 (a) 4a and c)

- The parking demand will remain unchanged, since no additional staff are anticipated for this school. However, the number of parking spaces around the south side of the school will increase from 33 to 40 spaces. Two of those spaces will be designated for ADA parking, with the appropriate drop-off aisle between.
- The existing drive and parking layout is being mostly maintained, and no new curb cuts are being developed.



11b. BICYCLE PARKING

Bicycle Parking – (14-526 (a) 4b)

- The required bicycle parking for non-residential buildings is 2 spaces for every 10 vehicle parking spaces, up to the first 100 vehicle spaces. The Lyseth Elementary School will have 40 parking spaces along the south side lot, and would reasonably be allocated half of the large central 70-space lot. Therefore, 15 bike parking slots would be required [$2 \times (40 + 35) / 10 = 15$].
- Three existing nine-bike racks are located in the courtyard area, which will be removed by the construction of the new Gym/Library addition. Similar new bike racks of 27-bike capacity will be placed along the front entry sidewalk on a concrete pad. This location will be close to the front entry of the renovated school, for better access for students, staff, and visitors.
- Bike racks will consist of 'Wave' or 'Ribbon'-style on a concrete pad, meeting the City Technical Standards.



13. SIGNIFICANT NATURAL FEATURES

Preservation of Significant Natural Features – (14-526 (b) 1)

- There are no significant natural features in the vicinity of the reconstruction activities on this developed Lyseth School site. The attached Wetland Report by Jones Associates, dated September 2016, locates the wetlands in the vicinity of Fall Brook. No vernal pools were observed by the study.

JONES ASSOCIATES

Foresters, Surveyors and
Environmental Consultants



WETLAND REPORT

Lyseth Elementary School

Lyman Moore Middle School

Portland, Maine

Prepared for:

Wright-Pierce

75 Washington Avenue Suite 202
Portland, ME 04101

Prepared by:

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Auburn, Maine 04210
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JAI#16-069PD
September 2016

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INTRODUCTION

Jones Associates, Inc. was contracted to provide wetland delineation, potential vernal pool identification, and stream bank locations for the Lyseth Elementary School and Lyman-Moore Middle School properties owned by the City of Portland and located in Portland, Maine. The focal area, according to parcel data obtained through the Maine Office of GIS consists of a 23+/- acres. All are located within the City of Portland, Cumberland County, in southern coastal Maine. The following report summarizes site conditions observed during site visits in September of 2016.

Wetland/upland boundaries were identified and delineated according to *U.S. Army Corps of Engineers (ACOE) Wetlands Delineation Manual (Environmental Laboratory 1987)* and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, January 2012*. Wetlands were identified based on the presence of hydric soil (inundated or saturated soil conditions resulting from permanent or periodic inundation by ground water or surface water), hydrology (movement and distribution of water), and predominance of hydrophytic species (Hydrophytes: vegetation typically adapted for life in saturated soil conditions).

Wetland delineation consists of transecting the property, examining periodic soil samples, observing any evidence of hydrology, and assessing each stratum of vegetation for its percentage of hydrophytic species. If all three factors were evident, the study plot was considered wetland habitat. Transitions between upland and wetland were clearly marked with blue sub-zero flagging every 30-40 feet, and labeled with alphanumeric codes to identify individual systems (A1, A2, A3....).

Wetland flags were located using Trimble Global Positioning System (GPS) technology with expected average accuracy of sub-meter. This method is recognized by both state and federal agencies. This being stated, Jones Associates, Inc. recommends that the wetland boundary be surveyed using a more precise method of location if any fill or regulated activities are to be performed within 20 feet of the GPS locations.

River, Stream, and Brook delineation is based on identification of physical indicators and follows definitions from MSRA Title 38 § 480-B. Stream banks were clearly marked with orange sub-zero flagging every 30-40 feet or at abrupt flow path changes and labeled with alphanumeric codes to identify individual systems with the prefix "S"(S A1, S A2, S A3....).

GENERAL EXISTING CONDITIONS

The site contains the Lyseth Elementary School, Lyman-Moore Middle School, paved parking areas, concrete sidewalks, athletic fields, basketball courts, tennis courts, storm water management systems, and associated buildings. Private residential lots surround the majority of the observed area with vehicular access from Jr Street to the north and Washington Avenue to the west. Established dirt paths provide non-vehicular access to the observed area from several directions. The existing land use area is highly impacted by development and urbanization.

The observed area is <10% forested with pole sized to mature timber creating 80-100% canopy closure. Natural canopy openings were not observed while field investigations were

being conducted. Manmade openings within the site are developed and maintained. Wetlands found on the property primarily occur in association with the drainage area along the western edge of the existing land use area.

SOILS

According to U.S. Department of Agriculture, Natural Resources Conservation Service, the primary soils series typed on the parcel are Buxton Silt Loam (20%); Deerfield Loamy Sand (45%), Hollis Fine Sand (15%), Scantic Silt Loam (<1%), and Windsor Loamy Sand (5%) characteristics of each series are described in the soil report according to: Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture, Official Soil Series Descriptions, <https://soilseries.sc.egov.usda.gov/osdname.asp>

The Buxton series consists of very deep, moderately well drained soils that formed in glaciolacustrine or glaciomarine deposits on coastal lowlands and river valleys. Slope ranges from 3 to 50 percent. Permeability is moderate or moderately slow in the surface horizon, moderately slow or slow in the upper part of the subsoil, and slow or very slow in the lower part of the subsoil and in the substratum. Mean annual temperature is about 7 degrees C, and mean annual precipitation is about 1118 mm at the type location. **GEOGRAPHIC SETTING:** Buxton soils are on coastal lowlands and river valleys. Slope ranges from 3 to 50 percent. The soils formed in medium, moderately fine, and fine textured glaciolacustrine or glaciomarine deposits. The climate is humid and cool temperate. Mean annual precipitation ranges from 860 to 1220 mm, and mean annual temperature ranges from 6 to 8 degrees C. The frost-free season ranges from 90 to 160 days. Elevation ranges from 2 to 274 meters above mean sea level. **DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY:** Moderately well drained. Surface runoff is medium or rapid depending on slope. Saturated Hydraulic Conductivity is moderately high in the surface horizon and the upper part of the subsoil, and low to moderately low in the lower part of the subsoil and in the substratum. **USE AND VEGETATION:** Cleared areas are used mainly for hay, forage crops, or pasture. Some areas are used for silage corn or vegetables. The remaining areas are forested. Common tree species include eastern white pine, balsam fir, paper birch, white spruce, eastern hemlock, and northern red oak.

The Deerfield series consists of very deep, moderately well drained soils formed in glaciofluvial deposits. They are nearly level to strongly sloping soils on terraces, deltas, and outwash plains. Slope ranges from 0 to 15 percent. Saturated hydraulic conductivity is high or very high. Mean annual temperature is about 49 degrees F. and mean annual precipitation is about 47 inches. **GEOGRAPHIC SETTING:** Deerfield soils are level to strongly sloping soils on terraces, deltas, and outwash plains. Slope gradients are commonly 0 to 3 percent, but range to 15 percent. The soils formed in thick deposits of sand derived mainly from granite, gneiss and quartzite, but in places containing materials from schist and sandstone. The sand is poorly graded; medium sand is generally dominant and typically contains little or no gravel. Mean annual temperature ranges from 45 to 52 degrees F. and the mean annual precipitation typically ranges from 38 to 55 inches but the range includes as low as 26 inches in some places east of Adirondack Mountains in the Champlain Valley of New York. The mean growing season ranges from 120 to 200 days.

The Hollis series consists of well drained and somewhat excessively drained soils formed in a thin mantle of till. They are shallow to bedrock. They are nearly level to very steep upland

soils on bedrock-controlled hills and ridges. Slope ranges from 0 through 60 percent. Saturated hydraulic conductivity is moderately high or high. Depth to hard bedrock ranges from 25 to 50 cm. Mean annual temperature is about 9 degrees C, and mean annual precipitation is about 1205 mm. GEOGRAPHIC SETTING: Hollis soils are nearly level to very steep soils on bedrock controlled hills, modified by glacial processes. Slope ranges from 0 to 60 percent. The soils formed in a thin mantle of till derived from local bedrock of schist, granite, and gneiss. Mean annual temperature ranges from 7 to 13 degrees C and mean annual precipitation ranges from 910 to 1295 mm, but the range includes as low as 660 mm in some places east of Adirondack Mountains in the Champlain Valley of New York. The growing season ranges from 115 through 185 days. DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY: Well drained and somewhat excessively drained. Surface runoff is negligible to very high. Saturated hydraulic conductivity is moderately high or high. USE AND VEGETATION: Mostly forested. Small areas with few rock outcrops are cleared of stones and used for cultivated crops, but most cleared areas are in hay or pasture. Scattered areas are used for community development. Common trees are northern red, white, black, and chestnut oak, hickory, eastern white pine, eastern hemlock, and gray and black birch.

The Scantic series consists of very deep, poorly drained soils formed in glaciomarine or glaciolacustrine deposits on coastal lowlands and river valleys. Slope ranges from 0 to 8 percent. Saturated hydraulic conductivity of the surface and subsurface horizons is moderately high or high and low or moderately slow in the subsoil and substratum. Mean annual temperature is about 7 degrees C, and mean annual precipitation is about 1168 mm inches at the type location. GEOGRAPHIC SETTING: Scantic soils are on coastal lowlands and river valleys. Slope ranges from 0 to 8 percent. The soils formed in medium, moderately fine and fine textured glaciomarine or glaciolacustrine deposits. The climate is humid and cool temperate. Mean annual temperature ranges from about 6 to almost 8 degrees C, and mean annual precipitation ranges from 863 to 1219 mm. The frost-free season ranges from 90 to 160 days. Elevation ranges from about 2 to 275 m above mean sea level. DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY: Poorly drained. Surface runoff is slow. Saturated hydraulic conductivity of the surface and subsurface horizons is moderately high or high and low or moderately slow in the subsoil and substratum. USE AND VEGETATION: Mostly idle or woodland, some areas are used for growing hay and pasture. Common tree species include red maple, elm, gray birch, white ash, balsam fir, red and white spruce, tamarack, and some eastern white pine.

The Windsor series consists of very deep, excessively drained soils formed in sandy outwash or eolian deposits. They are nearly level through very steep soils on glaciofluvial landforms. Slope ranges from 0 through 60 percent. Saturated hydraulic conductivity is high or very high. Mean annual temperature is about 10 degrees C and mean annual precipitation is about 1092 mm. GEOGRAPHIC SETTING: Windsor soils are nearly level through very steep soils typically on glaciofluvial landforms but include late-Wisconsin-aged dunes. The steeper slopes are typically on terrace escarpments. Slope ranges from 0 to 60 percent. The soils formed in outwash or eolian deposits of poorly graded sands and loamy sands derived mainly from crystalline rocks. Mean annual temperature ranges from 7 to 12 degrees C, and the mean annual precipitation typically ranges from 965 to 1270 mm, but the range includes as low as 660 mm in some places east of Adirondack Mountains in the Champlain Valley of New York. The growing season ranges from 120 to 190 days. DRAINAGE AND SATURATED HYDRAULIC CONDUCTIVITY: Excessively drained. Surface runoff is negligible to medium. Saturated

hydraulic conductivity is high or very high. **USE AND VEGETATION:** Most areas are forested or in low growing brushy vegetation. Some areas are used for silage corn, hay, and pasture. Small areas, mostly irrigated, are used for shade tobacco, vegetables and nursery stock. Some areas are in community development. Common trees are white, black, and northern red oak, eastern white pine, pitch pine, gray birch, poplar, red maple, and sugar maple.

WETLAND CHARACTERISTICS

The term "wetlands" means those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

--Corps of Engineers Wetlands Delineation Manual (U.S. Army Corps of Engineers 1987)

All wetlands were identified using the Cowardin classification system (Cowardin et al. 1979). Wetlands within the Focal Area includes classification Palustrine; meaning all inland, nontidal wetlands characterized by the presence of trees, shrubs, and emergent vegetation. Observed within the Focal Area are considered PFO (Palustrine forested), with micro classifications of PSS (Palustrine scrub/shrub) within a forested setting.

Forested wetlands are located in the low lying areas directly associated with Fall Brook and its watershed. At a landscape scale the portion of the Focal Area containing Fall Brook and the associated wetlands can be classified as a broad swale within an urban setting. Topography in this area can be classified as flat to sloping, typical of urban impaired streams. Microtopography within the area ranges from pit and mound, to broader concave depressions. Drainage patterns were observed throughout and are created by the movement of surface water from up gradient areas as well as from several drainage pipes outlets. Drift deposits were observed adjacent to the stream channel along with sediment deposits which was also found within the stream channel. Small scrub shrub wetlands can be found within the forested wetlands and due to their size have been lumped into the forested wetland classification.

Hydrology for the wetlands is typically supplied from the surrounding uplands and stormwater run-off. Predominantly, delineated wetlands are PFO (palustrine forested); dominated by Norway maple (*Acer platanoides*); the scrub-shrub layer is largely made up of American red raspberry (*Rubus idaeus*), and Smilax spp. Due to the high erodibility of the soils surface layer much of the wetlands are lacking a heavily vegetated scrub shrub layer. Herbaceous species found within the wetland are a mix of annuals and vegetative reproducing perennials. This includes sensitive fern (*Onoclea sensibilis*), cinnamon fern (*Osmundastrum cinnamomeum*), *Carex* spp. and *Scirpus* spp. The soils observed have instances of mucky modified sand, saturation, and cracked surfaces. Many of the facultative trees within the wetland boundary have grown with hydromorphic adaptations.

Fall Brook flows from north to south along the western edge of the focal area and is identified as an Urban Impaired Stream. Maine DEP Chapter 502 defines an Urban Impaired Stream as "A stream is considered impaired if it fails to meet water quality standards because of

effects of stormwater runoff from developed land. Additional stormwater treatment controls are necessary in urban watersheds of impaired streams because proposed stormwater sources in urban and urbanizing areas contribute to the further degradation of stream water quality. Impaired streams are listed in Appendix B of this rule and include all streams listed under Category 4-A or Category 5-A in the 2004 Integrated Water Quality Monitoring and Assessment Report that have urban non-point source (NPS) indicated as a potential source.” During field investigations Fall Brook was not running water and appeared to not have any significant running water for a period of several months.

VERNAL POOLS

As defined by Maine’s Department of Environmental Protection (MDEP): A vernal pool, also referred to as a seasonal forest pool, is a natural, temporary to semi-permanent body of water occurring in a shallow depression that typically fills during the spring or fall and may dry during the summer. Vernal pools have no permanent inlet and no viable populations of predatory fish. A vernal pool may provide the primary breeding habitat for wood frogs (*Rana sylvatica*), spotted salamanders (*Ambystoma maculatum*), blue-spotted salamanders (*Ambystoma laterale*), and fairy shrimp (*Eubrachipus spp.*), as well as valuable habitat for other plants and wildlife, including several rare, threatened, and endangered species. A vernal pool intentionally created for the purposes of compensatory mitigation is included in this definition.

As of September 1, 2007, “Significant Vernal Pools” are defined by MDEP as “Significant Wildlife Habitat.” As read in MDEP’s Chapter 335 -- Significant Wildlife Habitat Rules, “Whether a vernal pool is a significant vernal pool is determined by the number and type of pool-breeding amphibian egg masses in a pool, or the presence of fairy shrimp, or use by threatened or endangered species as specified in Section 9(B). Significant vernal pool habitat consists of a vernal pool depression and a portion of the critical terrestrial habitat within a 250 foot radius of the spring or fall high water mark of the depression. An activity that takes place in, on, over, or adjacent to a significant vernal pool habitat must meet the standards of this chapter.”

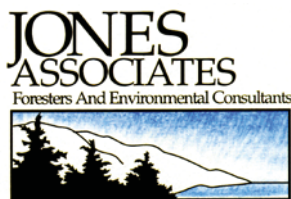
Species and abundance criteria required for Significant Vernal Pools.

Species	Abundance Criteria
Fairy shrimp	Presence in any life stage.
Blue spotted salamanders	Presence of 10 or more egg masses.
Spotted salamanders	Presence of 20 or more egg masses.
Wood frogs	Presence of 40 or more egg masses.

No areas were identified during field investigations as potential vernal pools.

RARE OR UNUSUAL FEATURES

During our investigations of the above site, Jones Associates, Inc. did not observe any rare or unusual plant or animal species within the mapped wetland area. Portions of the area described in this report had been previously altered through development, clearing, and excavation activities. Southern Maine where the site is located is in a severe drought, causing water tables lower than average.



WETLAND DELINEATION CHECKLIST

Job #:	16-069PD
Client:	Wright Pierce
Site Address:	171 Auburn Street, Portland Maine 04103

Wetland Scientist:	Garin Peck
Date of Office Review:	9/15/2016
Date(s) of Field Delineation:	9/8/2016

Wetlands of Special Significance

Yes	No	
	X	Does the on site or immediately adjacent wetland contain a mapped and numbered DWA?
	X	Does the on site or immediately adjacent wetland contain an Inland Waterfowl Wading Bird Habitat?
	X	Does the on site or immediately adjacent wetland contain a potential significant vernal pool?
	X	Does the recent aerial photos of the on site or immediately adjacent wetland show or are there any open water or emergent wetlands with areas greater than 20,000 sq. ft.?
X		Does the on site or immediately adjacent wetland contain a 100 year flood plain?
	X	Does the on site or immediately adjacent wetland contain a S1 or S2 community?
X		Does the on site or immediately adjacent wetland contain a significant wildlife habitat?
	X	Is the on site wetland within 250' of a coastal wetland?
	X	Is the on site wetland within 250' of a great pond?
X		Does the site contain peatlands?

Stormwater Qualifications

X		Is the site in the watershed of a Great Pond or Impaired stream?
	X	Is the site in a lake watershed?
	X	Is the site in a watershed most at risk?

FEMA flood zone FIRM: Panel 2300510002C

Watershed:

HUC 8: 01060001	Presumpscot River
HUC 10: 0106000106	Casco Bay
HUC 10: 0106000103	Presumpscot River
HUC 12: 010600010602	Casco Bay Frontal Drainages
HUC 12: 010600010306	Highland Lake-Lower Presumpscot River



14a. LANDSCAPING AND LANDSCAPE PRESERVATION

Landscaping and Landscape Preservation – (14-526 (b) 2a)

- The building additions will necessitate removal of a few trees within the proximity of the elementary school. The Gym/Library addition will cause the paved fire lane around the north side of the site to be moved to within a few feet of the northerly property line, which is within the required setback area. A low 1' to 3' tall block-style retaining wall will be placed near the property line. No existing trees in this area can remain. There are nine 10" diameter(DBH) or larger trees in this area that must be removed to provide the necessary paved fire lane around the building addition. The new Administration addition and relocated paved bus loop drive will cause the removal of several mature trees on the west side of the building. These trees are not within a zoning setback line. New trees will be planted around the site as shown on the Planting Plan L10.0.
- Along the north property line in the vicinity of the Lyseth School there are at least 15 trees of 10" diameter(DBH) or greater within the required building setback limit. Therefore, by removing only 9 trees, the current building addition project will preserve more than 30% of the 10" diameter trees.
- During construction, trees and landscaping that is not scheduled to be removed will be protected by measures consistent with Technical Manual, Section 4.



14b. SITE LANDSCAPING

Site Landscaping – (14-526 (b) 2b)

- The site around the renovated school building will be landscaped as shown on the Planting Plan L10.0, including plant species and sizes. There are no new service areas constructed with this renovation. Relocated dumpsters within the existing service area will be enclosed with chain-link fencing with privacy screening. Plantings are proposed consistent with Technical Manual, Section 4.



HARRIMAN

15. WATER QUALITY, STORMWATER, EROSION CONTROL

Water Quality, Stormwater Management and Erosion Control – (14-526 (b) 3a)

- Stormwater Management Report is attached, in compliance with the MDEP Chapter 500 standards and the City Technical Manual. Hydrocad and other calculations are also included. The NRCS soil map and the R.W. Gillespie Geotechnical Report are also attached.
- Erosion control is described and shown on drawings C00.3, C30.1, and details on C50.2.
- Urban Impaired Stream standards are met as described in the attached Stormwater Management Report.
- A Post-Construction Stormwater Management Plan for the Lyseth School has been prepared and is attached.
- No subsurface sanitary disposal is proposed.



STORMWATER MANAGEMENT REPORT

STORMWATER MANAGEMENT:

The Harrison Lyseth Elementary School is proposed to have two building additions and major renovations, to enhance the available facilities for the current student population. The building additions include a Gym/Library addition, of approximately 11,045 sq.ft. ground area, placed between two existing building wings. An Administration addition, of approximately 3,431 sq.ft. ground area, will also be added to the front entry area of the existing building.

Paved drives, parking, and play areas surrounding the existing school are in very poor condition. These areas will be fully reconstructed with new gravel base and bituminous pavement. The fire lane drive around the north side of the building will be relocated northerly to avoid the new Gym/Library addition. The pavements around the building will be raised to make the doors ADA-accessible and to improve drainage. The existing paved bus-loop drive to the west side of the main entry will be slightly relocated to avoid the new Administration addition.

Storm drainage system renovations were recently implemented as part of Phase 1 of the City of Portland LLM Campus Improvements Circulation Project, which was approved by the City Planning Board on January 23, 2018. A copy of the Stormwater Management Plan, dated September 2017, by Wright-Pierce Engineering, is attached for reference. Four new catch basins in the newly paved areas around the south side of the Harrison Lyseth School were installed; together with four new catch basins in the grass playfield areas. The proposed school additions and site renovation are not anticipated to impact these storm system components.

Drainage around the north side of the school, including the two courtyards, is very poor, with badly deteriorated pavements. There are three existing catch basins along the north side of the building, and one on the east side, that were scheduled to be replaced in the Phase 1 reconstruction project, but were not completed in 2018. To accommodate the building additions, the uncompleted drainage system of catch basins and pipes has been redesigned, to provide improved drainage of the site around the outside of the building, and inside the courtyards.

City Regulatory Standards

The Harrison Lyseth Elementary School building additions and site renovations are included in this permit application, separate from the prior City of Portland LLM Campus Improvements Circulation Project previously approved, even though they deal with the same parcel. In a Pre-application meeting,

held on December 19, 2018, the City planning staff and School Department staff decided to permit the building additions separate from the overall campus circulation improvements; and to not simply amend the prior permit. The Post-developed condition of stormwater systems and impervious areas from the 2018 campus improvement permit is used in this current Harrison Lyseth permit as the “Pre-development” condition. And for consistency, the calculations of stormwater quality, quantity, and urban impaired stream standards account for the entire campus area.

Continuing with the process that was established for this school campus, the same City of Portland regulatory standards will be used. Stormwater will be designed to meet the Maine Department of Environmental Protection(MDEP) Chapter 500 rules. Basic Standards, General Standards, Flooding Standards, and Urban Impaired Stream Standards will be met. The MDEP Phosphorus Standards are only applicable to watersheds of lakes most at risk, identified in Chapter 502; and thus, are not applicable. Basic standards include erosion and sedimentation control, inspection and maintenance, and general housekeeping. These are detailed on drawings C00.3 Site Erosion Control Notes, C30.1 Site Grading and Erosion Control Plan, and C50.1 Site Details. The attached written Site Maintenance Plan describes maintenance and housekeeping procedures for the school site.

General Standards require that new impervious and developed areas are treated for both stormwater quality and quantity. The majority of surface runoff flows from the eastern side of the property at the Lyseth School, generally in a westerly direction, conveyed through drainage pipes into an existing gravel wetland west of the Moore School, and then ultimately into Fall Brook. These surface flows then ultimately discharge into the Atlantic Ocean at Back Cove in Portland.

Campus wide soils mapping was obtained from the Medium Intensity Soil Survey for Cumberland County. As indicted on the attached soils map the primary hydrological soils groups(HSG) covering the site are Windsor loamy sand(HSG-A), Deerfield loamy sand(HSG-B), or Hollis fine sandy loam(HSG-D). Soil test borings and test pits were recently completed in December 2018 in the immediate vicinity of the Lyseth School. These explorations were done by R.W. Gillespie & Associates, Inc., and show that the predominant underlying soil in the area of the Lyseth School is silty clay. Therefore, the grassed areas around the Lyseth School in the Hydrocad model use a compromise HSG-C, rather than the less conservative Windsor or Deerfield prescribed HSG-A or B.

To aid in evaluating the campus stormwater, the localized watershed ‘Subcatchments’ are shown on the attached Pre-Development Drainage Plan, C11.1, and the Post-Development Drainage Plan, C12.1. This campus was evaluated in 2017 in the LLM Campus Improvements Circulation Project, and was permitted by the City as #2017-202. That prior Post Development Drainage Plan, Fig-3, dated 11-21-17, is being used for this current Lyseth School’s Pre-Development Drainage Plan, in order to build upon that approved work. Any areas slightly modified during the 2018 Phase 1 construction, which are now existing, have been added to that plan to present an accurate Pre-Development plan. The current Post-Development Drainage Plan is only modifying the area in the immediate vicinity of the Lyseth School, and not the Phase 1 construction south of the school. Avoiding conflict with the upcoming development of the school, the proposed storm drainage work to the north, east, and west sides of the Lyseth School was removed from the Phase 1 construction contract in 2018. That surrounding drainage system reconstruction has been included in this Lyseth School project, together with two building additions, and pavement modifications.

Stormwater Quality

The previous LLM Campus Improvements Circulation Project made two revisions to the campus that affected the stormwater quality. The first was a storm and sanitary separation of a major portion of the Lyseth School roof drainage(Watershed Subcatchment S3), which has historically been connected to the sanitary sewer on-site. The roof drain carrying runoff from 33,157 sq.ft. of roof area will be disconnected from the sanitary sewer and connected to a new storm drain line on the west side of the Lyseth School at the bus loop drive. Since this flow will be added into the existing gravel wetland(Pond P1), water quality treatment must take place prior to the wetland. Secondly to accomplish this, and to treat some expanded parking in the vicinity of the Moore School, a new Grassed Underdrained Soil Filter(Pond P2) was designed. This soil filter captures and filters the runoff from the 2,800 sq.ft. new paved roadway and parking, together with 33,716 sq.ft. of existing paved parking and drives in lieu of the Lyseth School roof runoff. This is contained in Watershed Subcatchment S4.

The current Lyseth School renovation project will add two building additions, along with associated site pavement reconstruction. The largest is the 11,045 sq.ft. Gym/Library addition between two existing building wings on the north side of the site. The front Administrative addition will be approximately 3,431 sq.ft. added to the west side of the building. Since these areas of the school campus have been developed with building and pavements for many decades, the reconstruction of these new building additions and pavement reconstruction will result in a net increase in impervious surfaces of 15,800 sq.ft. The storm runoff from both of these building and pavement additions will enter existing storm drain systems, which outlet into the gravel wetland. The Gym/Library area(Watershed Subcatchment S5) will flow through new and existing storm drains southwesterly around the south end of the Moore School into the gravel wetland. The Administrative area(Watershed Subcatchment S6) will flow westerly through new and existing storm drains beneath the large parking lot into the gravel wetland. The stormwater runoff from the net increase in impervious surface needs to have water quality treatment complying with MDEP Chapter 500 standards, prior to discharging into the gravel wetland.

New Lyseth School Impervious Summary

- Gym/Library Addition	11,045 sq.ft. Floor Area	=	7,450 sq.ft. Net New Impervious
- Administration Addition	3,431 sq.ft. Floor Area	=	1,450 sq.ft. Net New Impervious
- Pavement reconstruction		=	<u>6,900 sq.ft.</u> Net New Impervious
	Total	=	<u>15,800 sq.ft.</u>

Water quality treatment for the Lyseth School net impervious increase is proposed to be provided by a new subsurface underdrained chamber sand filter bed 'A'(Pond P3) , to the west side of the building addition. This is the best location for a storm filter around the fully-developed Lyseth School. The roof drain from the 11,045 sq.ft. Gym/Library wing will discharge to the treatment bed through a new storm drain pipe. Sheet runoff from the surrounding 5,215 sq.ft. of new and existing paved areas will also be treated in the filter bed, along with 4,640 sq.ft. of grass area runoff. The water quality volume of approximately 1,519 cubic feet will be contained in the subsurface chambers and crushed stone. The attached Stormwater Quality Summary shows the treated impervious area of 16,260 sq.ft. exceeds the

net new impervious surfaces of 15,800 sq.ft. for a treatment ratio of 103%. This exceeds both the 95% impervious treatment ratio and the 80% developed treatment ratio. No new grassed 'developed' areas will be created by this project.

Urban Impaired Stream Standards

The proposed project is located within the Fall Brook watershed and is subject to the Urban Impaired Stream Standard by virtue of creating new impervious surfaces within the watershed. The previous LLM Campus Improvements Circulation Project, permitted by the City as #2017-202, created 2,800 sq.ft. of new impervious drives and parking. In addition, 33,157 sq.ft. of rooftop area at the Lyseth School was to be relocated from the sanitary sewer into the storm drains tributary to the Fall Brook watershed. These are the first two items in the following table.

The current Lyseth School building additions and pavement reconstruction will add a net increase of 8,900 sq.ft. of building roof runoff and 6,900 sq.ft. of pavement runoff into the existing storm drain system that discharges in the Fall Brook watershed.

In order to meet the Urban Impaired Stream Standard, the proposed project must provide additional stormwater treatment to offset the amount of developed surfaces created. The values utilized in the tables below are from MaineDEP Chapter 501, which establishes standards for applicants paying a compensation fee or undertaking mitigation to meet the requirements of the Stormwater Management Law, 38 M.R.S. §420-D(11) and Department rules.

<u>Proposed New Impervious Areas</u>				
Location	Total Impervious (sf)	Total Impervious (acre)	Credits Per Acre	Credits Required
Lyseth Roof Area from Prior 2017 Permit	33,157	0.76	0.20	0.152
Added Impervious from Prior 2017 Permit	2,800	0.06	0.50	0.032
Lyseth Building Additions Net Roof Area	8,900	0.2	0.20	0.04
Lyseth Net New Pavements	6,900	0.16	0.50	0.08
Total Credits Required =				0.292

Total Treated Amount								
System ID	Total Area drains to system		Credits Per Acre			Impervious Credits	Landscape Credits	TOTAL CREDITS PROVIDED
	Treated Impervious (ac)	Treated Landscaped (ac)	Impervious Parking Treated	Impervious Roof Treated	Landscaped Treated			
UGSF-1 from prior 2017 permit	0.838	0.238	1.2	0	0.3	0.838	0.071	0.909
Sub. Filter Bed 'A'	0.252 Roof 0.121 Paved	0.11	1.2	0.6	0.3	0.296	0.033	0.329

Total Treated Amount = 1.238

As indicated above, the credits accrued from the treatment in both the previously permitted grassed underdrained soil filter #1(GUSF-1) and the new vegetated underdrained soil filter 'A' account for a Total Treated Amount of 1.238. The required credits to meet the water quality standards yield a Total Credits Required of 0.292. Since the proposed parking lot, pavement additions, and proposed roof connections require only 0.292 credits, the proposed stormwater treatment measures provide 0.946 additional credits beyond that required for the new development. Since the stormwater treatment measures provide an additional treatment of more than 3 times the required amount, we believe this satisfies the intent of the urban impaired stream standard.

Stormwater Quantity(Flooding)

The site has been analyzed for pre-development and post-development runoff corresponding to the 2, 10, and 25 year storms. The Soil Conservation Service (SCS) TR-20 methodology was selected to determine the flow rates for this hydrologic analysis, and the HydroCAD (release 10.00) computer modeling software was utilized to perform the computations. This method relies heavily upon detailed watershed characteristics and historical rainfall data to model estimated peak discharges at selected recurrence intervals. Printed results of the HydroCAD modeling and hydrologic computations for the 2, 10 and 25-year recurrence interval are attached to the end of this report.

The Natural Resources Conservation Service (formerly SCS) has partnered with Cornell University and the Northeast Regional Climate Center(NRCC) to prepare updated statistical rainfall information (see www.precip.net). The NRCC has published a new statistical analysis of rainfall information in the northeast. The NRCC 24-hour duration rainfall data specific to Portland for various recurrences intervals has been used in these calculations. Site specific watershed details, including drainage area, land use cover, and time of concentration have been calculated. One Study Point has been chosen to determine where stormwater exits the property for this entire campus in both the pre- and post-developed conditions. The former Post-Development Hydrocad model from the previous permit for 2017 LLM Campus Improvements Circulation Project is being used by this current Lyseth School development as the Pre-Development condition. The current Post-Development condition reflects the new Lyseth

School building additions and pavement reconstruction. The results for runoff exiting the site at this Study Point SP-1 is summarized in the table below:

Stormwater Quantity Flow Summary

Watershed Study Point	Pre-Development	Post-Development	Peak Flow Change
Reach SP-1 at Gravel Wetland	25 Year = 43.26 cfs 10 Year = 29.94 2 Year = 7.44	25 Year = 42.63 cfs 10 Year = 29.06 2 Year = 6.88	-0.63 cfs -0.88 -0.56

In summary, the stormwater flow rates at the gravel wetland study point and, therefore, the flow rate leaving the property following construction will be slightly less than the Pre-Development flows. Construction of the new building additions and pavements will therefore have no measurable impact to abutters or the Fall Brook system.

STORMWATER QUALITY SUMMARY - DEP CHAPTER 500

Project: Harrison Lyseth Elementary School
Portland, Maine

1/22/2019

Project No. 18483

Watershed Subcatchments - Quality Treatment:

Subcatch Number	Net New Impervious on Exist. Vegetated Sq. Ft.	New Impervious Area Treated Sq. Ft.	Existing Impervious Area Treated Sq. Ft.	Treated by:
S2	3390			
S3	Included in Prior permit -	LLM Campus #2017-202		
S4	Included in Prior permit -	LLM Campus #2017-202		
S5	10960	10960	5300	New Soil Filter 'A'
S6	1450			
Totals =	15800	10960	5300	

Treated Treated

NOTES

1. The total amount of Impervious area receiving treatment is 16,260 sq.ft.(10960 + 5300)
Net New Impervious area requiring treatment on the site is 15,800 sq.ft.
The Impervious Treatment Ratio is 103%, (16260/15800), which exceeds the 95% General Standard.
2. Total New Developed area is equivalent to the impervious area and exceeds the 80% General Standard.

STORMWATER QUALITY - TREATMENT SIZING

Project: Harrison Lyseth Elementary School Renovations
Portland, Maine
Project No. 18483

Date 1/22/2019

Underdrain Subsurface Soil Filter

Subcatch 5 (Gym/Library Area)

IMPERVIOUS AREAS CAPTURED: (proposed) = 16,260 sf

GRASS AREAS CAPTURED: (proposed) = 4,640 sf

MIN. FILTER BED SIZE:

(1"/12") 16260 + (0.4"/12") 4640 = 1,510 cf min. bed Water Quality Vol. (WQV)

5% 16,260 + 2% 4,640 = 906 sf minimum bed area

Actual Bed Volume Proposed @ Water Quality Volume Depth = 1,519

Actual Bed Area Proposed = 1,275

Use StormTech SC 310

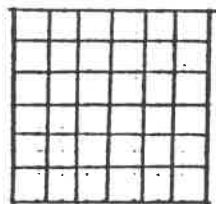
Each chamber 7.1' x 3.3' = 31 CF storage with 6" crushed stone base (23.5 sf/chamber)

7 Rows of 7 Chambers = 49 Chambers at 31 CF = 1519 CF

Bed size = 25' x 51' = 1275 sf

CATCH BASIN GRATE

SQUARE w/ 36 SQ. OPENINGS
 OF 6.25 SI. = 225 SI. TOTAL



***** RECTANGULAR ORIFICE RATING INPUT *****

ORIFICE WIDTH (FT) W=? .21 IF 36 individual
 ORIFICE HEIGHT (IN) H=? 2.5 2.5" sq. orifices.
 CREST TO MAX. WATER SUR. EL. (FT) HM=? 1

***** RECTANGULAR ORIFICE RATING TABLE *****

HEAD ON CL OF ORIFICE (FT)	DISCHARGE (CFS)
0	0
1	<u>.2</u> X 36 openings = <u>7.2</u> CFS

WANT ANOTHER RECTANGULAR ORIFICE RATING TABLE Y/N :?

LANDOWNER _____ ADDRESS _____

PROJECT _____ BY _____ DATE ____/____/____

***** RECTANGULAR ORIFICE RATING INPUT *****

ORIFICE WIDTH (FT) W=? 1.25 IF one 15" sq.
 ORIFICE HEIGHT (IN) H=? 15 orifice.
 CREST TO MAX. WATER SUR. EL. (FT) HM=? 1 Or one 17" Round

***** RECTANGULAR ORIFICE RATING TABLE *****

HEAD ON CL OF ORIFICE (FT)	DISCHARGE (CFS)
0	0
1	<u>7.5</u>

OK. WILL PASS MORE THAN
 THE REQUIRED CFS.

City of Portland, ME
Harrison Lyseth Elementary School Additions/Renovations
STORM DRAIN SYSTEM DESIGN

Based on the 25 year peak 24 hour storm rates and
on Mannings Formula-Non-pressure pipe flow

By: FLC
Date: 1-30-19

From:	To:	Drainage Area:	25-yr Peak Flow (cfs)	Pipe Dia (in)	Invert In: (ft)	Invert Out: (ft)	Length (ft)	Pipe Slope (ft/ft)	n:	Pipe Vel. (fps)	Pipe Capacity (cfs)	Velocity?	Capacity?
ncb#28	ncb#27	2% S2	0.8	12	116.5	116.2	80	0.004	0.01	3.6	2.8	OK	OK
ncb#27	ncb#26	2% S2	0.8	15	116.2	115.8	90	0.004	0.01	4.6	5.6	OK	OK
ncb#26	ncb#25	3% S2	1.2	15	115.8	115.5	80	0.004	0.01	4.2	5.2	OK	OK
ncb#25	ncb#24	4% S2	1.6	15	115.5	115.2	68	0.004	0.01	4.6	5.6	OK	OK
ncb#24	ncb#24a	4% S2	1.6	15	115.2	114.96	64	0.004	0.01	4.2	5.2	OK	OK
ncb#24a	cb4722	5% S2	2	15	114.96	114.64	98	0.003	0.01	3.9	4.8	OK	OK
ndmh#1	ncb#32	S3 + S6	4.2	12	113.9	112.9	108	0.009	0.01	5.7	4.5	OK	OK
ncb#32	cb 934	P3+S3+S6+1%S2	4.6	15	112.9	112.47	55	0.008	0.01	6.1	7.4	OK	OK
cb 934	cb 5093	P3+S3+S6+2%S2	5.3	12	112.43	108.98	260	0.013	0.01	6.8	5.3	OK	OK
cb 5093	cb 5092	P3+S3+S6+2%S2	5.3	18	108.87	105.33	284	0.012	0.01	8.6	15.3	OK	OK

**POST-CONSTRUCTION STORM WATER MANAGEMENT PLAN
&
SITE MAINTENANCE PLAN**

FOR

HARRISON LYSETH ELEMENTARY SCHOOL

**171 AUBURN STREET
PORTLAND, MAINE**

January 2019

Site Description

The site as referenced in this document refers to the Harrison Lyseth Elementary School on the two-school campus parcel at 171 Auburn Street in Portland, ME. Refer to the site plans prepared by Harriman Architects and Engineers dated January 2019 for referenced site locations. The stormwater treatment system as referenced within this document refers to the system of catch basins, storm drain pipes, and subsurface chamber sand filter toward the northeast side of the property, designed to collect, convey, and treat stormwater runoff from the site.

Facility Contacts

Facility:	Harrison Lyseth Elementary School Additions and Renovations 171 Auburn Street Portland, ME
Owner:	Portland Public Schools 353 Cumberland Avenue Portland, ME 04101 Telephone: 207- 842-5315
Maintenance Responsibility:	Steven Stilphen, Director of Facilities Telephone: 207-842-5315 (stilps@portlandschools.org)
Consultant/Designer:	Harriman Architects and Engineers 46 Harriman Drive Auburn, ME 04210 Telephone: 207-784-5100 Frank L. Crabtree, P.E. (fcrabtree@harriman.com)

Overview and Objectives

The Site Maintenance Plan (SMP) is an important component of the overall stormwater management system for the site. The SMP addresses various maintenance activities that should occur after construction and site stabilization. Proper implementation of the SMP can minimize pollutant generation and transport and maintain the stormwater treatment system to ensure proper operation. This SMP includes three primary components:

1. Site Management Practices
2. Inspections

3. Routine Maintenance and Corrective Actions

1. Site Management Practices

Site management practices are aimed at reducing pollutants by minimizing use of certain materials, using alternative materials, or removing pollutants prior to discharge to the stormwater treatment system. These practices shall include:

- a. Use slow release sulfur or plastic coated ureaform fertilizers (e.g., Nutralene).
- b. Do not fertilize vegetated swales or detention areas once vegetation is established.
- c. Minimize use of pesticides by using a sound integrated pest management (IPM) approach to monitor and control the actual pests present.
- d. Collect and remove autumn leaves to minimize transport to the stormwater treatment system.
- e. Minimize use of de-icing materials and sand.
- f. Routine sweeping of parking areas and driveways.
- g. Fertilizers, pesticides and other hazardous materials should be stored in enclosed areas to avoid exposure to precipitation. Material handling should be conducted to minimize risk of spillage and release to the storm water treatment system.

2. Inspections

A series of routine inspections shall be completed to allow for the early identification of potential problems, and to guide routine maintenance activities. Inspections shall be carried out in accordance with the Site Inspection Schedule (Table 1). Dates and observations shall be recorded for each inspection on the attached 'Inspection Log'.

3. Routine Maintenance and Corrective Actions

Routine maintenance activities are designed to ensure proper function of the stormwater management system and minimize pollutant transport from the site. Routine maintenance activities must be completed according to the schedule (Table 1) provided in this plan. This schedule is the minimum amount of maintenance required, and more frequent maintenance may be needed when indicated by the inspections. Corrective actions (supplemental maintenance activities or repairs) should be completed within 7 days of the inspection identifying the problem. Each maintenance activity will be recorded on the attached 'Maintenance and Repair Log'.

During construction, the Sitework Contractor, (not yet selected by Bid process) shall be responsible for cleaning and maintaining stormwater components on the schedule outlined in Table 2.

Following completion of construction, Portland staff will be responsible for cleaning and maintaining stormwater components on the schedule outlined in Table 1.

The following describes specific stormwater facilities maintenance requirements and minimum schedule of inspection and maintenance.

1. Vegetated drainage areas should be mowed at least once during the growing season. Larger brush or trees must not be allowed to become established in the channel. Any areas where the vegetation fails will be subject to erosion and should be repaired and revegetated.
2. If sediment in culverts or piped drainage systems exceeds 20% of the diameter of the pipe, it should be removed. This may be accomplished by hydraulic flushing or other mechanical means; however, care should be taken to not flush the sediments into the filter basins, or retention/detention pond as it will reduce the pond's capacity and hasten the time when it must be cleaned. Storm pipes should be inspected on an annual basis.
3. Catch basin sumps and the outlet control structures shall be cleaned of debris and sediment at least annually to minimize clogging and transportation of sediment during rainfall events.
4. Paved surfaces shall be swept or vacuumed at least annually in the spring to remove winter sand and periodically during the year on an as-needed basis to minimize the transportation of sediment during rainfall events.
5. Underdrained Subsurface Sand Filter shall be inspected semi-annually and following major storm events. The system should be inspected after every major storm in the first few months to ensure proper function. Thereafter the filter should be inspected at least once every six months to ensure that it is draining within 24 hours to 36 hours. Cleaning of the pre-treatment device shall be done as needed. When the average depth of sediment throughout the length of the Isolator Row exceeds 3 inches, clean-out must be performed.

Table 1 HARRISON LYSETH ELEMENTARY SCHOOL Long-Term Inspection & Maintenance Plan				
	Spring	Fall or Yearly	After a Major	Every 2- 5 Years
Vegetated Areas				
Inspect all slopes and embankments	X		X	
Replant bare areas or areas with sparse growth	X		X	
Armor areas with rill erosion with an appropriate lining or divert the erosive flows to on-site areas able to withstand concentrated flows.	X		X	
Stormwater Channels				
Inspect ditches, swales and other open stormwater channels	X	X	X	
Remove any obstructions and accumulated sediments or debris	X	X		
Control vegetated growth and woody vegetation		X		
Repair any erosion of the ditch lining		X		
Mow vegetated ditches		X		
Remove woody vegetation growing through riprap		X		
Repair any slumping side slopes		X		
Replace riprap where underlying filter fabric or underdrain gravel is showing or where stones have dislodged		X		
Culverts				
Remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit	X	X	X	
Repair any erosion damage at the culvert's inlet and outlet	X	X	X	
Catch Basin Systems				
Remove and legally dispose of accumulated sediments and debris from the bottom of the basin, inlet grates, inflow channels to the basin, and pipes between basins	X	X		
Remove floating debris and floating oils (using oil absorptive pads) from any trap designed for such, and dispose in a legal manner	X	X		
Roadways and Paved Surfaces				
Clear accumulated winter sand in parking lots and along roadways	X			
Sweep pavement to remove sediment	X			
Grade road shoulders and remove excess sand either manually or by front-end loader	X			

Table 1 HARRISON LYSETH ELEMENTARY SCHOOL Long-Term Inspection & Maintenance Plan				
	Spring	Fall or Yearly	After a Major	Every 2- 5 Years
Ensure that stormwater is not impeded by accumulations of material or false ditches in the shoulder	X			
Subsurface Sand Filter – Isolator Rows				
Inspect isolator rows at each manhole and inspection port to see if collected sediment is 3" or deeper.	X	X		
Clean sediment out of sediment chamber with Jet-Vacuum equipment. If sediment is not at least 3" deep, the cleanout can be postponed until sediment build-up is at this level.		X		
Remove accumulated floating oils and trash. Use absorbent pads to remove oils, if sediment removal by vacuum truck is not concurrent.		X		
Inspect drainage rate to verify the system drains between 24 to 36 hours.	X	X		

The maintenance needs for most vegetative and stabilization measures may be found in the Maine Erosion and Sediment Control BMPs manual, latest published date.

HARRISON LYSETH ELEMENTARY SCHOOL

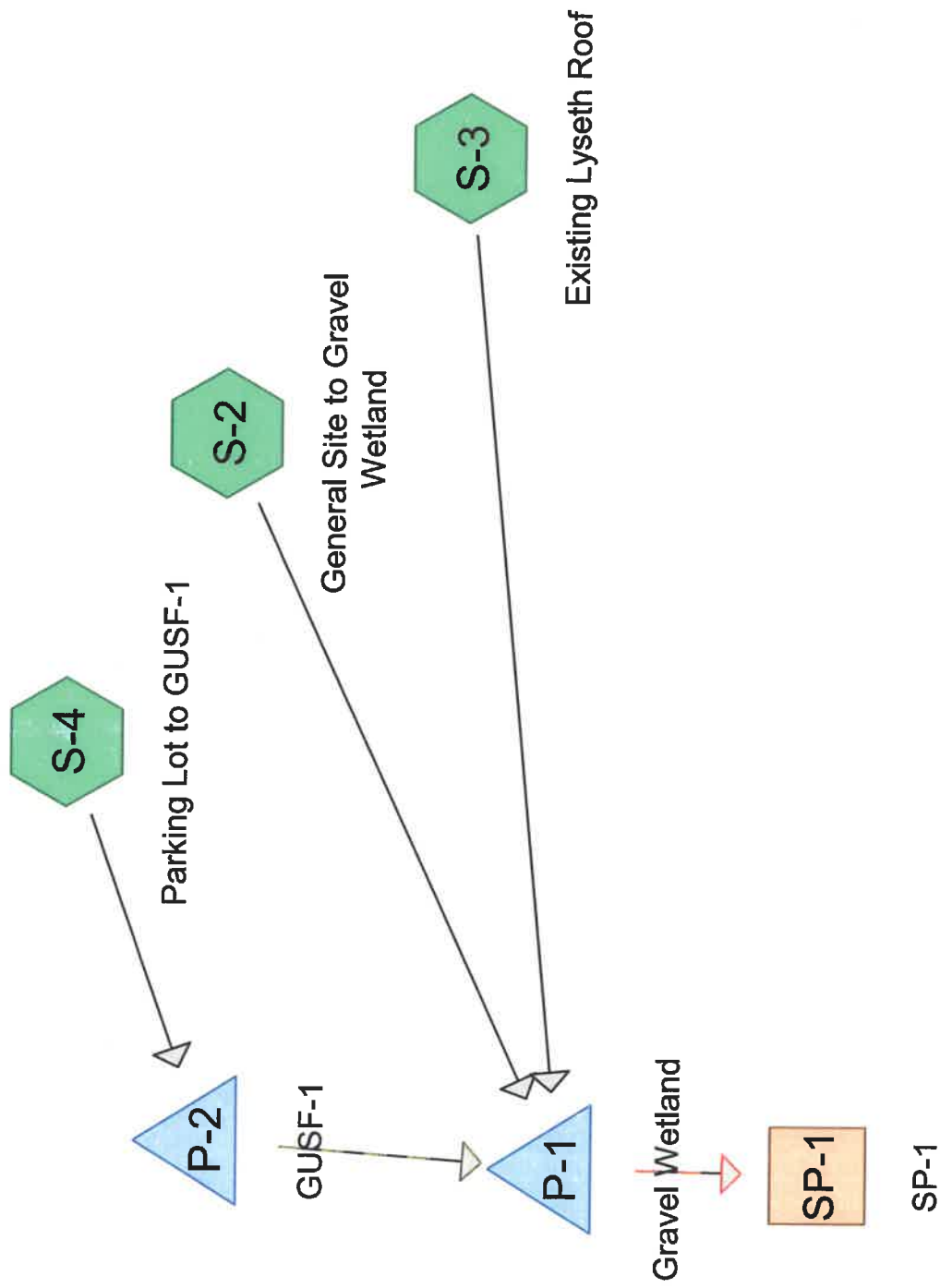
INSPECTION LOG

[illegible]

HARRISON LYSETH ELEMENTARY SCHOOL

MAINTENANCE LOG

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Lyseth-Moore Campus - Pre-Development*Portland_ME 24-hr SOP 2-yr Rainfall=3.17"*

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Time span=1.00-48.00 hrs, dt=0.02 hrs, 2351 points x 3

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

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment S-2: General Site to Gravel Runoff Area=749,173 sf 45.99% Impervious Runoff Depth=1.73"
Flow Length=1,612' Tc=29.3 min CN=85 Runoff=18.02 cfs 2.482 af

Subcatchment S-3: Existing Lyseth Roof Runoff Area=33,157 sf 100.00% Impervious Runoff Depth>2.94"
Flow Length=665' Tc=7.0 min CN=98 Runoff=2.28 cfs 0.186 af

Subcatchment S-4: Parking Lot to GUSF-1 Runoff Area=46,872 sf 77.91% Impervious Runoff Depth=2.42"
Tc=7.0 min CN=93 Runoff=2.86 cfs 0.217 af

Reach SP-1: SP-1 Avg. Flow Depth=0.47' Max Vel=2.44 fps Inflow=7.44 cfs 2.886 af
n=0.035 L=250.0' S=0.0120 '/' Capacity=908.60 cfs Outflow=7.43 cfs 2.886 af

Pond P-1: Gravel Wetland Peak Elev=106.52' Storage=43,579 cf Inflow=18.67 cfs 2.885 af
Primary=0.09 cfs 0.001 af Secondary=7.36 cfs 2.885 af Outflow=7.44 cfs 2.886 af

Pond P-2: GUSF-1 Peak Elev=110.59' Storage=3,280 cf Inflow=2.86 cfs 0.217 af
Primary=0.20 cfs 0.217 af Secondary=0.00 cfs 0.000 af Tertiary=0.00 cfs 0.000 af Outflow=0.20 cfs 0.217 af

Lyseth-Moore Campus - Pre-Development

Portland_ME 24-hr S0P 2-yr Rainfall=3.17"

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Summary for Subcatchment S-2: General Site to Gravel Wetland

Runoff = 18.02 cfs @ 12.35 hrs, Volume= 2.482 af, Depth= 1.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.02 hrs
Portland_ME 24-hr S0P 2-yr Rainfall=3.17"

Area (sf)	CN	Description
344,540	98	Paved parking & roofs
404,633	74	>75% Grass cover, Good, HSG C
749,173	85	Weighted Average
404,633		54.01% Pervious Area
344,540		45.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.0	285	0.0150	0.20		Sheet Flow, Grass: Short n= 0.150 P2= 3.60"
5.3	1,327	0.0050	4.20	7.43	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
29.3	1,612	Total			

Summary for Subcatchment S-3: Existing Lyseth Roof

Runoff = 2.28 cfs @ 12.05 hrs, Volume= 0.186 af, Depth> 2.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.02 hrs
Portland_ME 24-hr S0P 2-yr Rainfall=3.17"

Area (sf)	CN	Description
33,157	98	Unconnected roofs, HSG A
33,157		100.00% Impervious Area
33,157		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	150	0.0200	1.58		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.60"
0.0	15	0.0100	5.26	6.46	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
1.4	500	0.0100	5.94	10.50	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
4.0					Direct Entry, Min TC 7
7.0	665	Total			

Summary for Subcatchment S-4: Parking Lot to GUSF-1

Runoff = 2.86 cfs @ 12.05 hrs, Volume= 0.217 af, Depth= 2.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.02 hrs
Portland_ME 24-hr S0P 2-yr Rainfall=3.17"

	Area (sf)	CN	Description
*	36,516	98	
*	10,356	75	
	46,872	93	Weighted Average
	10,356		22.09% Pervious Area
	36,516		77.91% Impervious Area

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

Summary for Reach SP-1: SP-1

Inflow Area = 19.036 ac, 49.95% Impervious, Inflow Depth > 1.82" for 2-yr event
Inflow = 7.44 cfs @ 12.82 hrs, Volume= 2.886 af
Outflow = 7.43 cfs @ 12.84 hrs, Volume= 2.886 af, Atten= 0%, Lag= 1.3 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.02 hrs / 3
Max. Velocity= 2.44 fps, Min. Travel Time= 1.7 min
Avg. Velocity= 1.06 fps, Avg. Travel Time= 3.9 min

Peak Storage= 760 cf @ 12.84 hrs
Average Depth at Peak Storage= 0.47'
Bank-Full Depth= 5.00' Flow Area= 100.0 sf, Capacity= 908.60 cfs

5.00' x 5.00' deep channel, n= 0.035 High grass
Side Slope Z-value= 3.0 ' Top Width= 35.00'
Length= 250.0' Slope= 0.0120 '
Inlet Invert= 91.00', Outlet Invert= 88.00'



Summary for Pond P-1: Gravel Wetland

Inflow Area = 19.036 ac, 49.95% Impervious, Inflow Depth = 1.82" for 2-yr event
Inflow = 18.67 cfs @ 12.35 hrs, Volume= 2.885 af
Outflow = 7.44 cfs @ 12.82 hrs, Volume= 2.886 af, Atten= 60%, Lag= 28.2 min
Primary = 0.09 cfs @ 12.82 hrs, Volume= 0.001 af
Secondary = 7.36 cfs @ 12.82 hrs, Volume= 2.885 af

Lyseth-Moore Campus - Pre-Development

Portland_ME 24-hr SOP 2-yr Rainfall=3.17"

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Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.02 hrs / 3

Peak Elev= 106.52' @ 12.82 hrs Surf.Area= 15,909 sf Storage= 43,579 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 344.2 min (1,217.9 - 873.7)

Volume	Invert	Avail.Storage	Storage Description
#1	102.00'	70,788 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
102.00	3,572	549.0	0	0	3,572
103.00	6,200	771.0	4,826	4,826	26,901
104.00	9,020	829.0	7,566	12,392	34,329
105.00	11,611	872.0	10,288	22,680	40,211
106.00	14,502	904.0	13,030	35,710	44,820
107.00	17,279	924.0	15,870	51,580	47,870
108.00	21,203	764.0	19,208	70,788	69,378

Device	Routing	Invert	Outlet Devices
#1	Primary	106.50'	15.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	107.00'	32.0' 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
#3	Secondary	101.67'	12.0" Round Culvert L= 37.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.67' / 100.00' S= 0.0451 ' / Cc= 0.900 n= 0.011, Flow Area= 0.79 sf
#4	Device 3	101.67'	4.0" Vert. Orifice/Grate C= 0.600
#5	Device 3	106.00'	6.0' long x 0.7' 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 Coef. (English) 2.76 2.82 2.93 3.09 3.18 3.22 3.27 3.30 3.32 3.31 3.32

Primary OutFlow Max=0.09 cfs @ 12.82 hrs HW=106.52' TW=91.47' (Dynamic Tailwater)

1=Broad-Crested Rectangular Weir (Weir Controls 0.09 cfs @ 0.33 fps)

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

Secondary OutFlow Max=7.35 cfs @ 12.82 hrs HW=106.52' TW=91.47' (Dynamic Tailwater)

3=Culvert (Passes 7.35 cfs of 7.89 cfs potential flow)

4=Orifice/Grate (Orifice Controls 0.91 cfs @ 10.42 fps)

5=Broad-Crested Rectangular Weir (Weir Controls 6.45 cfs @ 2.08 fps)

Lyseth-Moore Campus - Pre-Development

Portland_ME 24-hr S0P 2-yr Rainfall=3.17"

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Summary for Pond P-2: GUSF-1

Inflow Area = 1.076 ac, 77.91% Impervious, Inflow Depth = 2.42" for 2-yr event
 Inflow = 2.86 cfs @ 12.05 hrs, Volume= 0.217 af
 Outflow = 0.20 cfs @ 13.47 hrs, Volume= 0.217 af, Atten= 93%, Lag= 85.1 min
 Primary = 0.20 cfs @ 13.47 hrs, Volume= 0.217 af
 Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af
 Tertiary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.02 hrs / 3
 Peak Elev= 110.59' @ 13.47 hrs Surf.Area= 3,551 sf Storage= 3,280 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 144.7 min (953.2 - 808.5)

Volume	Invert	Avail.Storage	Storage Description
#1	109.50'	11,839 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
109.50	2,471	0	0
112.00	4,950	9,276	9,276
112.50	5,300	2,563	11,839

Device	Routing	Invert	Outlet Devices
#1	Secondary	106.00'	15.0" Round Culvert L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 106.00' / 105.50' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	111.00'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Primary	109.50'	2.410 in/hr Exfiltration over Surface area
#4	Tertiary	112.00'	250.0' long x 4.0' 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) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.20 cfs @ 13.47 hrs HW=110.59' TW=106.36' (Dynamic Tailwater)
 ↑ **3=Exfiltration** (Exfiltration Controls 0.20 cfs)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=109.50' TW=102.00' (Dynamic Tailwater)
 ↑ **1=Culvert** (Passes 0.00 cfs of 7.91 cfs potential flow)
 ↑ **2=Orifice/Grate** (Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 1.00 hrs HW=109.50' TW=102.00' (Dynamic Tailwater)
 ↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Lyseth-Moore Campus - Pre-Development

Portland_ME 24-hr S0P 10-yr Rainfall=4.71"

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Time span=1.00-48.00 hrs, dt=0.02 hrs, 2351 points x 3

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

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment S-2: General Site to Gravel Runoff Area=749,173 sf 45.99% Impervious Runoff Depth=3.10"
Flow Length=1,612' Tc=29.3 min CN=85 Runoff=31.27 cfs 4.445 af

Subcatchment S-3: Existing Lyseth Roof Runoff Area=33,157 sf 100.00% Impervious Runoff Depth=4.47"
Flow Length=665' Tc=7.0 min CN=98 Runoff=3.20 cfs 0.284 af

Subcatchment S-4: Parking Lot to GUSF-1 Runoff Area=46,872 sf 77.91% Impervious Runoff Depth=3.91"
Tc=7.0 min CN=93 Runoff=4.23 cfs 0.351 af

Reach SP-1: SP-1 Avg. Flow Depth=1.01' Max Vel=3.70 fps Inflow=29.94 cfs 5.079 af
n=0.035 L=250.0' S=0.0120 '/' Capacity=908.60 cfs Outflow=29.86 cfs 5.079 af

Pond P-1: Gravel Wetland Peak Elev=107.10' Storage=53,394 cf Inflow=32.91 cfs 5.079 af
Primary=21.54 cfs 0.888 af Secondary=8.40 cfs 4.191 af Outflow=29.94 cfs 5.079 af

Pond P-2: GUSF-1 Peak Elev=111.09' Storage=5,182 cf Inflow=4.23 cfs 0.351 af
Primary=0.23 cfs 0.311 af Secondary=0.71 cfs 0.040 af Tertiary=0.00 cfs 0.000 af Outflow=0.93 cfs 0.351 af

Lyseth-Moore Campus - Pre-Development

Portland_ME 24-hr S0P 10-yr Rainfall=4.71"

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Summary for Subcatchment S-2: General Site to Gravel Wetland

Runoff = 31.27 cfs @ 12.35 hrs, Volume= 4.445 af, Depth= 3.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.02 hrs
Portland_ME 24-hr S0P 10-yr Rainfall=4.71"

Area (sf)	CN	Description
344,540	98	Paved parking & roofs
404,633	74	>75% Grass cover, Good, HSG C
749,173	85	Weighted Average
404,633		54.01% Pervious Area
344,540		45.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.0	285	0.0150	0.20		Sheet Flow, Grass: Short n= 0.150 P2= 3.60"
5.3	1,327	0.0050	4.20	7.43	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
29.3	1,612	Total			

Summary for Subcatchment S-3: Existing Lyseth Roof

Runoff = 3.20 cfs @ 12.05 hrs, Volume= 0.284 af, Depth> 4.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.02 hrs
Portland_ME 24-hr S0P 10-yr Rainfall=4.71"

Area (sf)	CN	Description
33,157	98	Unconnected roofs, HSG A
33,157		100.00% Impervious Area
33,157		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	150	0.0200	1.58		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.60"
0.0	15	0.0100	5.26	6.46	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
1.4	500	0.0100	5.94	10.50	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
4.0					Direct Entry, Min TC 7
7.0	665	Total			

Lyseth-Moore Campus - Pre-Development

Portland_ME 24-hr S0P 10-yr Rainfall=4.71"

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Summary for Subcatchment S-4: Parking Lot to GUSF-1

Runoff = 4.23 cfs @ 12.05 hrs, Volume= 0.351 af, Depth= 3.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.02 hrs
Portland_ME 24-hr S0P 10-yr Rainfall=4.71"

	Area (sf)	CN	Description
*	36,516	98	
*	10,356	75	
	46,872	93	Weighted Average
	10,356		22.09% Pervious Area
	36,516		77.91% Impervious Area

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

Summary for Reach SP-1: SP-1

Inflow Area = 19.036 ac, 49.95% Impervious, Inflow Depth > 3.20" for 10-yr event
 Inflow = 29.94 cfs @ 12.46 hrs, Volume= 5.079 af
 Outflow = 29.86 cfs @ 12.47 hrs, Volume= 5.079 af, Atten= 0%, Lag= 0.9 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.02 hrs / 3
 Max. Velocity= 3.70 fps, Min. Travel Time= 1.1 min
 Avg. Velocity = 1.18 fps, Avg. Travel Time= 3.5 min

Peak Storage= 2,016 cf @ 12.47 hrs
 Average Depth at Peak Storage= 1.01'
 Bank-Full Depth= 5.00' Flow Area= 100.0 sf, Capacity= 908.60 cfs

5.00' x 5.00' deep channel, n= 0.035 High grass
 Side Slope Z-value= 3.0 ' Top Width= 35.00'
 Length= 250.0' Slope= 0.0120 '
 Inlet Invert= 91.00', Outlet Invert= 88.00'

**Summary for Pond P-1: Gravel Wetland**

Inflow Area = 19.036 ac, 49.95% Impervious, Inflow Depth > 3.20" for 10-yr event
 Inflow = 32.91 cfs @ 12.35 hrs, Volume= 5.079 af
 Outflow = 29.94 cfs @ 12.46 hrs, Volume= 5.079 af, Atten= 9%, Lag= 6.7 min
 Primary = 21.54 cfs @ 12.46 hrs, Volume= 0.888 af
 Secondary = 8.40 cfs @ 12.46 hrs, Volume= 4.191 af

Lyseth-Moore Campus - Pre-Development

Portland_ME 24-hr S0P 10-yr Rainfall=4.71"

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Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.02 hrs / 3

Peak Elev= 107.10' @ 12.46 hrs Surf.Area= 17,668 sf Storage= 53,394 cf

Plug-Flow detention time= 219.2 min calculated for 5.077 af (100% of inflow)

Center-of-Mass det. time= 219.5 min (1,072.2 - 852.7)

Volume	Invert	Avail.Storage	Storage Description		
#1	102.00'	70,788 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
102.00	3,572	549.0	0	0	3,572
103.00	6,200	771.0	4,826	4,826	26,901
104.00	9,020	829.0	7,566	12,392	34,329
105.00	11,611	872.0	10,288	22,680	40,211
106.00	14,502	904.0	13,030	35,710	44,820
107.00	17,279	924.0	15,870	51,580	47,870
108.00	21,203	764.0	19,208	70,788	69,378

Device	Routing	Invert	Outlet Devices
#1	Primary	106.50'	15.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	107.00'	32.0' 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
#3	Secondary	101.67'	12.0" Round Culvert L= 37.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.67' / 100.00' S= 0.0451 '/' Cc= 0.900 n= 0.011, Flow Area= 0.79 sf
#4	Device 3	101.67'	4.0" Vert. Orifice/Grate C= 0.600
#5	Device 3	106.00'	6.0' long x 0.7' 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 Coef. (English) 2.76 2.82 2.93 3.09 3.18 3.22 3.27 3.30 3.32 3.31 3.32

Primary OutFlow Max=21.52 cfs @ 12.46 hrs HW=107.10' TW=92.00' (Dynamic Tailwater)

1=Broad-Crested Rectangular Weir (Weir Controls 18.99 cfs @ 2.10 fps)

2=Broad-Crested Rectangular Weir (Weir Controls 2.53 cfs @ 0.76 fps)

Secondary OutFlow Max=8.40 cfs @ 12.46 hrs HW=107.10' TW=92.00' (Dynamic Tailwater)

3=Culvert (Inlet Controls 8.40 cfs @ 10.69 fps)

4=Orifice/Grate (Passes < 0.96 cfs potential flow)

5=Broad-Crested Rectangular Weir (Passes < 22.27 cfs potential flow)

Lyseth-Moore Campus - Pre-Development

Portland_ME 24-hr S0P 10-yr Rainfall=4.71"

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Summary for Pond P-2: GUSF-1

Inflow Area = 1.076 ac, 77.91% Impervious, Inflow Depth = 3.91" for 10-yr event
 Inflow = 4.23 cfs @ 12.05 hrs, Volume= 0.351 af
 Outflow = 0.93 cfs @ 12.36 hrs, Volume= 0.351 af, Atten= 78%, Lag= 18.6 min
 Primary = 0.23 cfs @ 12.36 hrs, Volume= 0.311 af
 Secondary = 0.71 cfs @ 12.36 hrs, Volume= 0.040 af
 Tertiary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.02 hrs / 3
 Peak Elev= 111.09' @ 12.36 hrs Surf.Area= 4,048 sf Storage= 5,182 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 192.0 min (981.5 - 789.6)

Volume	Invert	Avail.Storage	Storage Description
#1	109.50'	11,839 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
109.50	2,471	0	0
112.00	4,950	9,276	9,276
112.50	5,300	2,563	11,839

Device	Routing	Invert	Outlet Devices
#1	Secondary	106.00'	15.0" Round Culvert L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 106.00' / 105.50' S= 0.0100 ' /' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	111.00'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Primary	109.50'	2.410 in/hr Exfiltration over Surface area
#4	Tertiary	112.00'	250.0' long x 4.0' 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) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.23 cfs @ 12.36 hrs HW=111.09' TW=107.03' (Dynamic Tailwater)
 ↳ **3=Exfiltration** (Exfiltration Controls 0.23 cfs)

Secondary OutFlow Max=0.71 cfs @ 12.36 hrs HW=111.09' TW=107.03' (Dynamic Tailwater)
 ↳ **1=Culvert** (Passes 0.71 cfs of 9.40 cfs potential flow)
 ↳ **2=Orifice/Grate** (Weir Controls 0.71 cfs @ 0.98 fps)

Tertiary OutFlow Max=0.00 cfs @ 1.00 hrs HW=109.50' TW=102.00' (Dynamic Tailwater)
 ↳ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Lyseth-Moore Campus - Pre-Development*Portland_ME 24-hr S0P 25-yr Rainfall=5.92"*

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Time span=1.00-48.00 hrs, dt=0.02 hrs, 2351 points x 3

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

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment S-2: General Site to Gravel Runoff Area=749,173 sf 45.99% Impervious Runoff Depth=4.23"
Flow Length=1,612' Tc=29.3 min CN=85 Runoff=41.47 cfs 6.058 af

Subcatchment S-3: Existing Lyseth Roof Runoff Area=33,157 sf 100.00% Impervious Runoff Depth>5.68"
Flow Length=665' Tc=7.0 min CN=98 Runoff=3.83 cfs 0.360 af

Subcatchment S-4: Parking Lot to GUSF-1 Runoff Area=46,872 sf 77.91% Impervious Runoff Depth=5.10"
Tc=7.0 min CN=93 Runoff=5.18 cfs 0.458 af

Reach SP-1: SP-1 Avg. Flow Depth=1.22' Max Vel=4.10 fps Inflow=43.26 cfs 6.876 af
n=0.035 L=250.0' S=0.0120 '/' Capacity=908.60 cfs Outflow=43.20 cfs 6.876 af

Pond P-1: Gravel Wetland Peak Elev=107.24' Storage=55,836 cf Inflow=44.26 cfs 6.876 af
Primary=34.74 cfs 1.832 af Secondary=8.52 cfs 5.045 af Outflow=43.26 cfs 6.876 af

Pond P-2: GUSF-1 Peak Elev=111.23' Storage=5,751 cf Inflow=5.18 cfs 0.458 af
Primary=0.23 cfs 0.346 af Secondary=2.85 cfs 0.112 af Tertiary=0.00 cfs 0.000 af Outflow=3.08 cfs 0.458 af

Lyseth-Moore Campus - Pre-Development

Portland_ME 24-hr S0P 25-yr Rainfall=5.92"

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Summary for Subcatchment S-2: General Site to Gravel Wetland

Runoff = 41.47 cfs @ 12.35 hrs, Volume= 6.058 af, Depth= 4.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.02 hrs
Portland_ME 24-hr S0P 25-yr Rainfall=5.92"

Area (sf)	CN	Description
344,540	98	Paved parking & roofs
404,633	74	>75% Grass cover, Good, HSG C
749,173	85	Weighted Average
404,633		54.01% Pervious Area
344,540		45.99% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.0	285	0.0150	0.20		Sheet Flow, Grass: Short n= 0.150 P2= 3.60"
5.3	1,327	0.0050	4.20	7.43	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
29.3	1,612	Total			

Summary for Subcatchment S-3: Existing Lyseth Roof

Runoff = 3.83 cfs @ 12.05 hrs, Volume= 0.360 af, Depth> 5.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.02 hrs
Portland_ME 24-hr S0P 25-yr Rainfall=5.92"

Area (sf)	CN	Description
33,157	98	Unconnected roofs, HSG A
33,157		100.00% Impervious Area
33,157		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	150	0.0200	1.58		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.60"
0.0	15	0.0100	5.26	6.46	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
1.4	500	0.0100	5.94	10.50	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
4.0					Direct Entry, Min TC 7
7.0	665	Total			

Lyseth-Moore Campus - Pre-Development

Portland_ME 24-hr S0P 25-yr Rainfall=5.92"

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Summary for Subcatchment S-4: Parking Lot to GUSF-1

Runoff = 5.18 cfs @ 12.05 hrs, Volume= 0.458 af, Depth= 5.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.02 hrs
Portland_ME 24-hr S0P 25-yr Rainfall=5.92"

	Area (sf)	CN	Description
*	36,516	98	
*	10,356	75	
	46,872	93	Weighted Average
	10,356		22.09% Pervious Area
	36,516		77.91% Impervious Area

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

Summary for Reach SP-1: SP-1

Inflow Area = 19.036 ac, 49.95% Impervious, Inflow Depth > 4.33" for 25-yr event
 Inflow = 43.26 cfs @ 12.39 hrs, Volume= 6.876 af
 Outflow = 43.20 cfs @ 12.40 hrs, Volume= 6.876 af, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.02 hrs / 3
 Max. Velocity= 4.10 fps, Min. Travel Time= 1.0 min
 Avg. Velocity= 1.25 fps, Avg. Travel Time= 3.3 min

Peak Storage= 2,631 cf @ 12.40 hrs
 Average Depth at Peak Storage= 1.22'
 Bank-Full Depth= 5.00' Flow Area= 100.0 sf, Capacity= 908.60 cfs

5.00' x 5.00' deep channel, n= 0.035 High grass
 Side Slope Z-value= 3.0 ' Top Width= 35.00'
 Length= 250.0' Slope= 0.0120 '
 Inlet Invert= 91.00', Outlet Invert= 88.00'

**Summary for Pond P-1: Gravel Wetland**

Inflow Area = 19.036 ac, 49.95% Impervious, Inflow Depth > 4.33" for 25-yr event
 Inflow = 44.26 cfs @ 12.34 hrs, Volume= 6.876 af
 Outflow = 43.26 cfs @ 12.39 hrs, Volume= 6.876 af, Atten= 2%, Lag= 3.1 min
 Primary = 34.74 cfs @ 12.39 hrs, Volume= 1.832 af
 Secondary = 8.52 cfs @ 12.39 hrs, Volume= 5.045 af

Lyseth-Moore Campus - Pre-Development

Portland_ME 24-hr SOP 25-yr Rainfall=5.92"

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Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.02 hrs / 3
 Peak Elev= 107.24' @ 12.39 hrs Surf.Area= 18,184 sf Storage= 55,836 cf

Plug-Flow detention time= 173.3 min calculated for 6.873 af (100% of inflow)
 Center-of-Mass det. time= 173.6 min (1,012.8 - 839.2)

Volume	Invert	Avail.Storage	Storage Description
#1	102.00'	70,788 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
102.00	3,572	549.0	0	0	3,572
103.00	6,200	771.0	4,826	4,826	26,901
104.00	9,020	829.0	7,566	12,392	34,329
105.00	11,611	872.0	10,288	22,680	40,211
106.00	14,502	904.0	13,030	35,710	44,820
107.00	17,279	924.0	15,870	51,580	47,870
108.00	21,203	764.0	19,208	70,788	69,378

Device	Routing	Invert	Outlet Devices
#1	Primary	106.50'	15.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	107.00'	32.0' 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
#3	Secondary	101.67'	12.0" Round Culvert L= 37.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.67' / 100.00' S= 0.0451 ' / Cc= 0.900 n= 0.011, Flow Area= 0.79 sf
#4	Device 3	101.67'	4.0" Vert. Orifice/Grate C= 0.600
#5	Device 3	106.00'	6.0' long x 0.7' 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 Coef. (English) 2.76 2.82 2.93 3.09 3.18 3.22 3.27 3.30 3.32 3.31 3.32

Primary OutFlow Max=34.71 cfs @ 12.39 hrs HW=107.24' TW=92.22' (Dynamic Tailwater)

1=Broad-Crested Rectangular Weir (Weir Controls 25.70 cfs @ 2.32 fps)
 2=Broad-Crested Rectangular Weir (Weir Controls 9.01 cfs @ 1.17 fps)

Secondary OutFlow Max=8.51 cfs @ 12.39 hrs HW=107.24' TW=92.22' (Dynamic Tailwater)

3=Culvert (Inlet Controls 8.51 cfs @ 10.84 fps)
 4=Orifice/Grate (Passes < 0.98 cfs potential flow)
 5=Broad-Crested Rectangular Weir (Passes < 26.75 cfs potential flow)

Summary for Pond P-2: GUSF-1

Inflow Area = 1.076 ac, 77.91% Impervious, Inflow Depth = 5.10" for 25-yr event
 Inflow = 5.18 cfs @ 12.05 hrs, Volume= 0.458 af
 Outflow = 3.08 cfs @ 12.18 hrs, Volume= 0.458 af, Atten= 40%, Lag= 8.0 min
 Primary = 0.23 cfs @ 12.18 hrs, Volume= 0.346 af
 Secondary = 2.85 cfs @ 12.18 hrs, Volume= 0.112 af
 Tertiary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.02 hrs / 3
 Peak Elev= 111.23' @ 12.18 hrs Surf.Area= 4,185 sf Storage= 5,751 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 171.5 min (952.0 - 780.4)

Volume	Invert	Avail.Storage	Storage Description
#1	109.50'	11,839 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

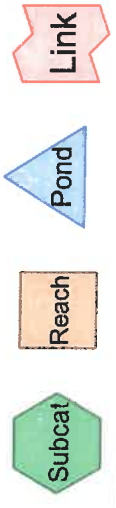
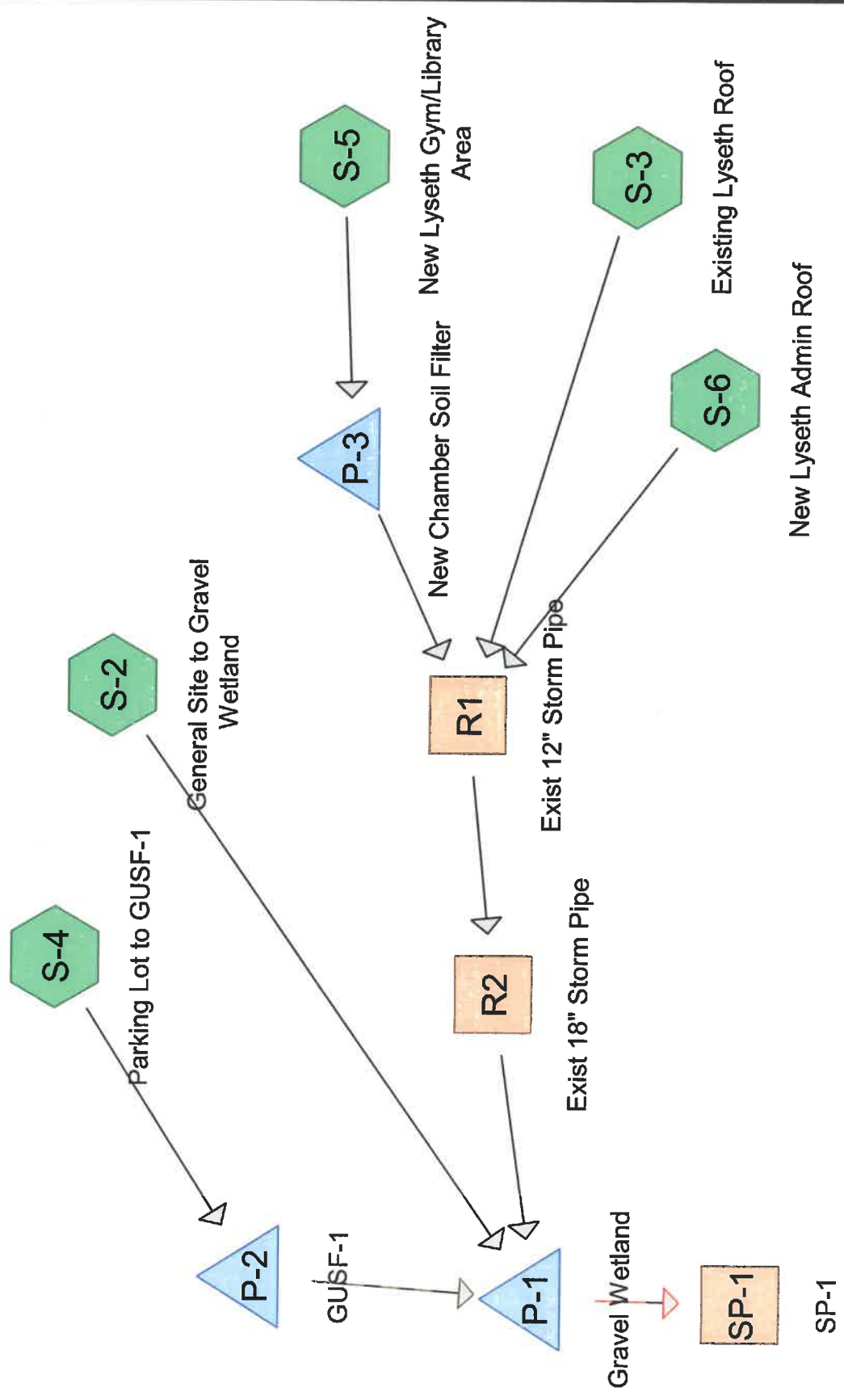
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
109.50	2,471	0	0
112.00	4,950	9,276	9,276
112.50	5,300	2,563	11,839

Device	Routing	Invert	Outlet Devices
#1	Secondary	106.00'	15.0" Round Culvert L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 106.00' / 105.50' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	111.00'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Primary	109.50'	2.410 in/hr Exfiltration over Surface area
#4	Tertiary	112.00'	250.0' long x 4.0' 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) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.23 cfs @ 12.18 hrs HW=111.23' TW=107.03' (Dynamic Tailwater)
 ↳ **3=Exfiltration** (Exfiltration Controls 0.23 cfs)

Secondary OutFlow Max=2.84 cfs @ 12.18 hrs HW=111.23' TW=107.03' (Dynamic Tailwater)
 ↳ **1=Culvert** (Passes 2.84 cfs of 9.56 cfs potential flow)
 ↳ **2=Orifice/Grate** (Weir Controls 2.84 cfs @ 1.56 fps)

Tertiary OutFlow Max=0.00 cfs @ 1.00 hrs HW=109.50' TW=102.00' (Dynamic Tailwater)
 ↳ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)



Routing Diagram for Lyseth-Moore Campus - Post-Development
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Lyseth-Moore Campus - Post-Development*Portland_ME 24-hr S0P 2-yr Rainfall=3.17"*

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Time span=1.00-48.00 hrs, dt=0.01 hrs, 4701 points x 3

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

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment S-2: General Site to Gravel Runoff Area=725,273 sf 44.85% Impervious Runoff Depth=1.73"
Flow Length=1,612' Tc=29.3 min CN=85 Runoff=17.45 cfs 2.403 af

Subcatchment S-3: Existing Lyseth Roof Runoff Area=33,157 sf 100.00% Impervious Runoff Depth>2.94"
Flow Length=665' Tc=7.0 min CN=98 Runoff=2.29 cfs 0.186 af

Subcatchment S-4: Parking Lot to GUSF-1 Runoff Area=46,872 sf 77.91% Impervious Runoff Depth=2.42"
Tc=7.0 min CN=93 Runoff=2.87 cfs 0.217 af

Subcatchment S-5: New Lyseth Runoff Area=20,900 sf 77.80% Impervious Runoff Depth=2.42"
Tc=7.0 min CN=93 Runoff=1.28 cfs 0.097 af

Subcatchment S-6: New Lyseth Admin Runoff Area=3,000 sf 100.00% Impervious Runoff Depth>2.94"
Tc=7.0 min CN=98 Runoff=0.21 cfs 0.017 af

Reach R1: Exist 12" Storm Pipe Avg. Flow Depth=0.48' Max Vel=6.60 fps Inflow=2.49 cfs 0.203 af
12.0" Round Pipe n=0.010 L=260.0' S=0.0129 '/' Capacity=5.27 cfs Outflow=2.48 cfs 0.203 af

Reach R2: Exist 18" Storm Pipe Avg. Flow Depth=0.41' Max Vel=6.34 fps Inflow=2.48 cfs 0.203 af
18.0" Round Pipe n=0.010 L=284.0' S=0.0125 '/' Capacity=15.25 cfs Outflow=2.46 cfs 0.203 af

Reach SP-1: SP-1 Avg. Flow Depth=0.45' Max Vel=2.38 fps Inflow=6.88 cfs 2.823 af
n=0.035 L=250.0' S=0.0120 '/' Capacity=908.60 cfs Outflow=6.87 cfs 2.823 af

Pond P-1: Gravel Wetland Peak Elev=106.49' Storage=43,198 cf Inflow=18.20 cfs 2.823 af
Primary=0.00 cfs 0.000 af Secondary=6.88 cfs 2.823 af Outflow=6.88 cfs 2.823 af

Pond P-2: GUSF-1 Peak Elev=110.59' Storage=3,280 cf Inflow=2.87 cfs 0.217 af
Primary=0.20 cfs 0.217 af Secondary=0.00 cfs 0.000 af Tertiary=0.00 cfs 0.000 af Outflow=0.20 cfs 0.217 af

Pond P-3: New Chamber Soil Filter Peak Elev=117.22' Storage=1,204 cf Inflow=1.28 cfs 0.097 af
Discarded=0.14 cfs 0.097 af Primary=0.00 cfs 0.000 af Outflow=0.14 cfs 0.097 af

Lyseth-Moore Campus - Post-Development

Portland_ME 24-hr S0P 2-yr Rainfall=3.17"

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Summary for Subcatchment S-2: General Site to Gravel Wetland

Runoff = 17.45 cfs @ 12.34 hrs, Volume= 2.403 af, Depth= 1.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
Portland_ME 24-hr S0P 2-yr Rainfall=3.17"

Area (sf)	CN	Description
325,280	98	Paved parking & roofs
399,993	74	>75% Grass cover, Good, HSG C
725,273	85	Weighted Average
399,993		55.15% Pervious Area
325,280		44.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.0	285	0.0150	0.20		Sheet Flow, Grass: Short n= 0.150 P2= 3.60"
5.3	1,327	0.0050	4.20	7.43	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
29.3	1,612	Total			

Summary for Subcatchment S-3: Existing Lyseth Roof

Runoff = 2.29 cfs @ 12.05 hrs, Volume= 0.186 af, Depth> 2.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
Portland_ME 24-hr S0P 2-yr Rainfall=3.17"

Area (sf)	CN	Description
33,157	98	Unconnected roofs, HSG A
33,157		100.00% Impervious Area
33,157		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	150	0.0200	1.58		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.60"
0.0	15	0.0100	5.26	6.46	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
1.4	500	0.0100	5.94	10.50	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
4.0					Direct Entry, Min TC 7
7.0	665	Total			

Lyseth-Moore Campus - Post-Development

Portland_ME 24-hr S0P 2-yr Rainfall=3.17"

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Summary for Subcatchment S-4: Parking Lot to GUSF-1

Runoff = 2.87 cfs @ 12.05 hrs, Volume= 0.217 af, Depth= 2.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
Portland_ME 24-hr S0P 2-yr Rainfall=3.17"

	Area (sf)	CN	Description
*	36,516	98	
*	10,356	75	
	46,872	93	Weighted Average
	10,356		22.09% Pervious Area
	36,516		77.91% Impervious Area

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

Summary for Subcatchment S-5: New Lyseth Gym/Library Area

Runoff = 1.28 cfs @ 12.05 hrs, Volume= 0.097 af, Depth= 2.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
Portland_ME 24-hr S0P 2-yr Rainfall=3.17"

	Area (sf)	CN	Description
*	11,000	98	Roof
*	5,260	98	Courtyd and fire lane paving
	4,640	74	>75% Grass cover, Good, HSG C
	20,900	93	Weighted Average
	4,640		22.20% Pervious Area
	16,260		77.80% Impervious Area

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

Summary for Subcatchment S-6: New Lyseth Admin Roof

Runoff = 0.21 cfs @ 12.05 hrs, Volume= 0.017 af, Depth> 2.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
Portland_ME 24-hr S0P 2-yr Rainfall=3.17"

	Area (sf)	CN	Description
*	3,000	98	Roof
	3,000		100.00% Impervious Area

Lyseth-Moore Campus - Post-Development

Portland_ME 24-hr SOP 2-yr Rainfall=3.17"

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

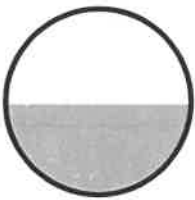
Summary for Reach R1: Exist 12" Storm Pipe

Inflow Area = 1.310 ac, 91.87% Impervious, Inflow Depth > 1.86" for 2-yr event
Inflow = 2.49 cfs @ 12.05 hrs, Volume= 0.203 af
Outflow = 2.48 cfs @ 12.06 hrs, Volume= 0.203 af, Atten= 1%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 6.60 fps, Min. Travel Time= 0.7 min
Avg. Velocity= 2.34 fps, Avg. Travel Time= 1.9 min

Peak Storage= 98 cf @ 12.06 hrs
Average Depth at Peak Storage= 0.48'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.27 cfs

12.0" Round Pipe
n= 0.010
Length= 260.0' Slope= 0.0129 '/'
Inlet Invert= 112.34', Outlet Invert= 108.98'

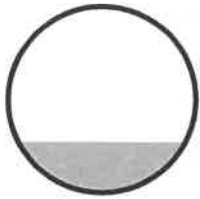
**Summary for Reach R2: Exist 18" Storm Pipe**

Inflow Area = 1.310 ac, 91.87% Impervious, Inflow Depth > 1.86" for 2-yr event
Inflow = 2.48 cfs @ 12.06 hrs, Volume= 0.203 af
Outflow = 2.46 cfs @ 12.07 hrs, Volume= 0.203 af, Atten= 1%, Lag= 0.6 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 6.34 fps, Min. Travel Time= 0.7 min
Avg. Velocity= 2.18 fps, Avg. Travel Time= 2.2 min

Peak Storage= 110 cf @ 12.07 hrs
Average Depth at Peak Storage= 0.41'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 15.25 cfs

18.0" Round Pipe
n= 0.010
Length= 284.0' Slope= 0.0125 '/'
Inlet Invert= 108.87', Outlet Invert= 105.33'



Summary for Reach SP-1: SP-1

Inflow Area = 19.036 ac, 49.95% Impervious, Inflow Depth = 1.78" for 2-yr event
 Inflow = 6.88 cfs @ 12.84 hrs, Volume= 2.823 af
 Outflow = 6.87 cfs @ 12.87 hrs, Volume= 2.823 af, Atten= 0%, Lag= 1.3 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 3
 Max. Velocity= 2.38 fps, Min. Travel Time= 1.7 min
 Avg. Velocity = 1.06 fps, Avg. Travel Time= 3.9 min

Peak Storage= 721 cf @ 12.87 hrs
 Average Depth at Peak Storage= 0.45'
 Bank-Full Depth= 5.00' Flow Area= 100.0 sf, Capacity= 908.60 cfs

5.00' x 5.00' deep channel, n= 0.035 High grass
 Side Slope Z-value= 3.0 '/' Top Width= 35.00'
 Length= 250.0' Slope= 0.0120 '/'
 Inlet Invert= 91.00', Outlet Invert= 88.00'



Summary for Pond P-1: Gravel Wetland

Inflow Area = 19.036 ac, 49.95% Impervious, Inflow Depth = 1.78" for 2-yr event
 Inflow = 18.20 cfs @ 12.34 hrs, Volume= 2.823 af
 Outflow = 6.88 cfs @ 12.84 hrs, Volume= 2.823 af, Atten= 62%, Lag= 30.1 min
 Primary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af
 Secondary = 6.88 cfs @ 12.84 hrs, Volume= 2.823 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 106.49' @ 12.84 hrs Surf.Area= 15,843 sf Storage= 43,198 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 350.7 min (1,223.8 - 873.2)

Volume	Invert	Avail.Storage	Storage Description
#1	102.00'	70,788 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Lyseth-Moore Campus - Post-Development

Portland_ME 24-hr S0P 2-yr Rainfall=3.17"

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Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
102.00	3,572	549.0	0	0	3,572
103.00	6,200	771.0	4,826	4,826	26,901
104.00	9,020	829.0	7,566	12,392	34,329
105.00	11,611	872.0	10,288	22,680	40,211
106.00	14,502	904.0	13,030	35,710	44,820
107.00	17,279	924.0	15,870	51,580	47,870
108.00	21,203	764.0	19,208	70,788	69,378

Device	Routing	Invert	Outlet Devices
#1	Primary	106.50'	15.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	107.00'	32.0' 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
#3	Secondary	101.67'	12.0" Round Culvert L= 37.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.67' / 100.00' S= 0.0451 ' / Cc= 0.900 n= 0.011, Flow Area= 0.79 sf
#4	Device 3	101.67'	4.0" Vert. Orifice/Grate C= 0.600
#5	Device 3	106.00'	6.0' long x 0.7' 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 Coef. (English) 2.76 2.82 2.93 3.09 3.18 3.22 3.27 3.30 3.32 3.31 3.32

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=102.00' TW=91.00' (Dynamic Tailwater)

└─1=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

└─2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Secondary OutFlow Max=6.88 cfs @ 12.84 hrs HW=106.49' TW=91.45' (Dynamic Tailwater)

└─3=Culvert (Passes 6.88 cfs of 7.86 cfs potential flow)

└─4=Orifice/Grate (Orifice Controls 0.91 cfs @ 10.39 fps)

└─5=Broad-Crested Rectangular Weir (Weir Controls 5.98 cfs @ 2.02 fps)

Summary for Pond P-2: GUSF-1

Inflow Area = 1.076 ac, 77.91% Impervious, Inflow Depth = 2.42" for 2-yr event
 Inflow = 2.87 cfs @ 12.05 hrs, Volume= 0.217 af
 Outflow = 0.20 cfs @ 13.47 hrs, Volume= 0.217 af, Atten= 93%, Lag= 85.1 min
 Primary = 0.20 cfs @ 13.47 hrs, Volume= 0.217 af
 Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af
 Tertiary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 110.59' @ 13.47 hrs Surf.Area= 3,551 sf Storage= 3,280 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

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Portland_ME 24-hr SOP 2-yr Rainfall=3.17"

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Center-of-Mass det. time= 144.8 min (953.3 - 808.5)

Volume	Invert	Avail.Storage	Storage Description
#1	109.50'	11,839 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
109.50	2,471	0	0
112.00	4,950	9,276	9,276
112.50	5,300	2,563	11,839

Device	Routing	Invert	Outlet Devices
#1	Secondary	106.00'	15.0" Round Culvert L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 106.00' / 105.50' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	111.00'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Primary	109.50'	2.410 in/hr Exfiltration over Surface area
#4	Tertiary	112.00'	250.0' long x 4.0' 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) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.20 cfs @ 13.47 hrs HW=110.59' TW=106.35' (Dynamic Tailwater)↑**3=Exfiltration** (Exfiltration Controls 0.20 cfs)**Secondary OutFlow** Max=0.00 cfs @ 1.00 hrs HW=109.50' TW=102.00' (Dynamic Tailwater)↑**1=Culvert** (Passes 0.00 cfs of 7.91 cfs potential flow)↑**2=Orifice/Grate** (Controls 0.00 cfs)**Tertiary OutFlow** Max=0.00 cfs @ 1.00 hrs HW=109.50' TW=102.00' (Dynamic Tailwater)↑**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond P-3: New Chamber Soil Filter**

Inflow Area = 0.480 ac, 77.80% Impervious, Inflow Depth = 2.42" for 2-yr event
 Inflow = 1.28 cfs @ 12.05 hrs, Volume= 0.097 af
 Outflow = 0.14 cfs @ 11.94 hrs, Volume= 0.097 af, Atten= 89%, Lag= 0.0 min
 Discarded = 0.14 cfs @ 11.94 hrs, Volume= 0.097 af
 Primary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 117.22' @ 12.68 hrs Surf.Area= 2,563 sf Storage= 1,204 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 56.6 min (865.1 - 808.5)

Lyseth-Moore Campus - Post-Development

Portland_ME 24-hr SOP 2-yr Rainfall=3.17"

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Volume	Invert	Avail.Storage	Storage Description
#1	115.80'	255 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 638 cf Overall x 40.0% Voids
#2	116.30'	1,357 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 1,696 cf Overall x 80.0% Voids
#3	117.63'	255 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 638 cf Overall x 40.0% Voids
#4	116.30'	196 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
		2,063 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
115.80	1,275	0	0
116.30	1,275	638	638

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
116.30	1,275	0	0
117.63	1,275	1,696	1,696

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
117.63	1,275	0	0
118.13	1,275	638	638

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
116.30	13	0	0
119.70	13	44	44
120.00	1,000	152	196

Device	Routing	Invert	Outlet Devices
#1	Discarded	115.80'	2.410 in/hr Exfiltration over Surface area
#2	Primary	117.90'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 0.5' Crest Height

Discarded OutFlow Max=0.14 cfs @ 11.94 hrs HW=116.31' (Free Discharge)↳ **1=Exfiltration** (Exfiltration Controls 0.14 cfs)**Primary OutFlow** Max=0.00 cfs @ 1.00 hrs HW=115.80' TW=112.34' (Dynamic Tailwater)↳ **2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

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Time span=1.00-48.00 hrs, dt=0.01 hrs, 4701 points x 3

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

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment S-2: General Site to Gravel Runoff Area=725,273 sf 44.85% Impervious Runoff Depth=3.10"
Flow Length=1,612' Tc=29.3 min CN=85 Runoff=30.28 cfs 4.303 af

Subcatchment S-3: Existing Lyseth Roof Runoff Area=33,157 sf 100.00% Impervious Runoff Depth>4.47"
Flow Length=665' Tc=7.0 min CN=98 Runoff=3.20 cfs 0.284 af

Subcatchment S-4: Parking Lot to GUSF-1 Runoff Area=46,872 sf 77.91% Impervious Runoff Depth=3.91"
Tc=7.0 min CN=93 Runoff=4.25 cfs 0.351 af

Subcatchment S-5: New Lyseth Runoff Area=20,900 sf 77.80% Impervious Runoff Depth=3.91"
Tc=7.0 min CN=93 Runoff=1.89 cfs 0.156 af

Subcatchment S-6: New Lyseth Admin Runoff Area=3,000 sf 100.00% Impervious Runoff Depth>4.47"
Tc=7.0 min CN=98 Runoff=0.29 cfs 0.026 af

Reach R1: Exist 12" Storm Pipe Avg. Flow Depth=0.59' Max Vel=7.16 fps Inflow=3.49 cfs 0.319 af
12.0" Round Pipe n=0.010 L=260.0' S=0.0129 '/' Capacity=5.27 cfs Outflow=3.47 cfs 0.319 af

Reach R2: Exist 18" Storm Pipe Avg. Flow Depth=0.49' Max Vel=6.97 fps Inflow=3.47 cfs 0.319 af
18.0" Round Pipe n=0.010 L=284.0' S=0.0125 '/' Capacity=15.25 cfs Outflow=3.45 cfs 0.319 af

Reach SP-1: SP-1 Avg. Flow Depth=0.99' Max Vel=3.67 fps Inflow=29.06 cfs 4.972 af
n=0.035 L=250.0' S=0.0120 '/' Capacity=908.60 cfs Outflow=28.97 cfs 4.972 af

Pond P-1: Gravel Wetland Peak Elev=107.09' Storage=53,215 cf Inflow=32.39 cfs 4.972 af
Primary=20.67 cfs 0.840 af Secondary=8.39 cfs 4.132 af Outflow=29.06 cfs 4.972 af

Pond P-2: GUSF-1 Peak Elev=111.09' Storage=5,182 cf Inflow=4.25 cfs 0.351 af
Primary=0.23 cfs 0.311 af Secondary=0.71 cfs 0.040 af Tertiary=0.00 cfs 0.000 af Outflow=0.93 cfs 0.351 af

Pond P-3: New Chamber Soil Filter Peak Elev=118.01' Storage=1,828 cf Inflow=1.89 cfs 0.156 af
Discarded=0.21 cfs 0.147 af Primary=0.62 cfs 0.009 af Outflow=0.83 cfs 0.156 af

Lyseth-Moore Campus - Post-Development

Portland_ME 24-hr S0P 10-yr Rainfall=4.71"

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Summary for Subcatchment S-2: General Site to Gravel Wetland

Runoff = 30.28 cfs @ 12.34 hrs, Volume= 4.303 af, Depth= 3.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
Portland_ME 24-hr S0P 10-yr Rainfall=4.71"

Area (sf)	CN	Description
325,280	98	Paved parking & roofs
399,993	74	>75% Grass cover, Good, HSG C
725,273	85	Weighted Average
399,993		55.15% Pervious Area
325,280		44.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.0	285	0.0150	0.20		Sheet Flow, Grass: Short n= 0.150 P2= 3.60"
5.3	1,327	0.0050	4.20	7.43	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
29.3	1,612	Total			

Summary for Subcatchment S-3: Existing Lyseth Roof

Runoff = 3.20 cfs @ 12.05 hrs, Volume= 0.284 af, Depth= 4.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
Portland_ME 24-hr S0P 10-yr Rainfall=4.71"

Area (sf)	CN	Description
33,157	98	Unconnected roofs, HSG A
33,157		100.00% Impervious Area
33,157		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	150	0.0200	1.58		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.60"
0.0	15	0.0100	5.26	6.46	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
1.4	500	0.0100	5.94	10.50	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
4.0					Direct Entry, Min TC 7
7.0	665	Total			

Lyseth-Moore Campus - Post-Development

Portland_ME 24-hr S0P 10-yr Rainfall=4.71"

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Summary for Subcatchment S-4: Parking Lot to GUSF-1

Runoff = 4.25 cfs @ 12.05 hrs, Volume= 0.351 af, Depth= 3.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
Portland_ME 24-hr S0P 10-yr Rainfall=4.71"

	Area (sf)	CN	Description
*	36,516	98	
*	10,356	75	
	46,872	93	Weighted Average
	10,356		22.09% Pervious Area
	36,516		77.91% Impervious Area

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

Summary for Subcatchment S-5: New Lyseth Gym/Library Area

Runoff = 1.89 cfs @ 12.05 hrs, Volume= 0.156 af, Depth= 3.91"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
Portland_ME 24-hr S0P 10-yr Rainfall=4.71"

	Area (sf)	CN	Description
*	11,000	98	Roof
*	5,260	98	Courtyd and fire lane paving
	4,640	74	>75% Grass cover, Good, HSG C
	20,900	93	Weighted Average
	4,640		22.20% Pervious Area
	16,260		77.80% Impervious Area

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

Summary for Subcatchment S-6: New Lyseth Admin Roof

Runoff = 0.29 cfs @ 12.05 hrs, Volume= 0.026 af, Depth> 4.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
Portland_ME 24-hr S0P 10-yr Rainfall=4.71"

	Area (sf)	CN	Description
*	3,000	98	Roof
	3,000		100.00% Impervious Area

Lyseth-Moore Campus - Post-Development

Portland_ME 24-hr SOP 10-yr Rainfall=4.71"

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

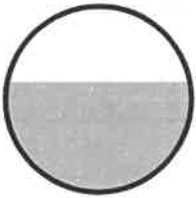
Summary for Reach R1: Exist 12" Storm Pipe

Inflow Area = 1.310 ac, 91.87% Impervious, Inflow Depth > 2.92" for 10-yr event
Inflow = 3.49 cfs @ 12.05 hrs, Volume= 0.319 af
Outflow = 3.47 cfs @ 12.06 hrs, Volume= 0.319 af, Atten= 1%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 7.16 fps, Min. Travel Time= 0.6 min
Avg. Velocity= 2.66 fps, Avg. Travel Time= 1.6 min

Peak Storage= 126 cf @ 12.06 hrs
Average Depth at Peak Storage= 0.59'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.27 cfs

12.0" Round Pipe
n= 0.010
Length= 260.0' Slope= 0.0129 '/'
Inlet Invert= 112.34', Outlet Invert= 108.98'

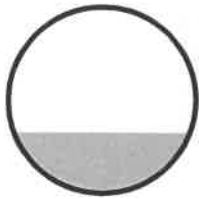
**Summary for Reach R2: Exist 18" Storm Pipe**

Inflow Area = 1.310 ac, 91.87% Impervious, Inflow Depth > 2.92" for 10-yr event
Inflow = 3.47 cfs @ 12.06 hrs, Volume= 0.319 af
Outflow = 3.45 cfs @ 12.07 hrs, Volume= 0.319 af, Atten= 1%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 6.97 fps, Min. Travel Time= 0.7 min
Avg. Velocity= 2.48 fps, Avg. Travel Time= 1.9 min

Peak Storage= 141 cf @ 12.07 hrs
Average Depth at Peak Storage= 0.49'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 15.25 cfs

18.0" Round Pipe
n= 0.010
Length= 284.0' Slope= 0.0125 '/'
Inlet Invert= 108.87', Outlet Invert= 105.33'



Summary for Reach SP-1: SP-1

Inflow Area = 19.036 ac, 49.95% Impervious, Inflow Depth = 3.13" for 10-yr event
 Inflow = 29.06 cfs @ 12.46 hrs, Volume= 4.972 af
 Outflow = 28.97 cfs @ 12.48 hrs, Volume= 4.972 af, Atten= 0%, Lag= 0.9 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 3
 Max. Velocity= 3.67 fps, Min. Travel Time= 1.1 min
 Avg. Velocity = 1.17 fps, Avg. Travel Time= 3.6 min

Peak Storage= 1,973 cf @ 12.48 hrs
 Average Depth at Peak Storage= 0.99'
 Bank-Full Depth= 5.00' Flow Area= 100.0 sf, Capacity= 908.60 cfs

5.00' x 5.00' deep channel, n= 0.035 High grass
 Side Slope Z-value= 3.0 '/' Top Width= 35.00'
 Length= 250.0' Slope= 0.0120 '/'
 Inlet Invert= 91.00', Outlet Invert= 88.00'



Summary for Pond P-1: Gravel Wetland

Inflow Area = 19.036 ac, 49.95% Impervious, Inflow Depth = 3.13" for 10-yr event
 Inflow = 32.39 cfs @ 12.34 hrs, Volume= 4.972 af
 Outflow = 29.06 cfs @ 12.46 hrs, Volume= 4.972 af, Atten= 10%, Lag= 7.2 min
 Primary = 20.67 cfs @ 12.46 hrs, Volume= 0.840 af
 Secondary = 8.39 cfs @ 12.46 hrs, Volume= 4.132 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 107.09' @ 12.46 hrs Surf.Area= 17,630 sf Storage= 53,215 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
 Center-of-Mass det. time= 223.5 min (1,075.8 - 852.2)

Volume	Invert	Avail.Storage	Storage Description
#1	102.00'	70,788 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Lyseth-Moore Campus - Post-Development

Portland_ME 24-hr S0P 10-yr Rainfall=4.71"

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Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
102.00	3,572	549.0	0	0	3,572
103.00	6,200	771.0	4,826	4,826	26,901
104.00	9,020	829.0	7,566	12,392	34,329
105.00	11,611	872.0	10,288	22,680	40,211
106.00	14,502	904.0	13,030	35,710	44,820
107.00	17,279	924.0	15,870	51,580	47,870
108.00	21,203	764.0	19,208	70,788	69,378

Device	Routing	Invert	Outlet Devices
#1	Primary	106.50'	15.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	107.00'	32.0' 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
#3	Secondary	101.67'	12.0" Round Culvert L= 37.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.67' / 100.00' S= 0.0451 ' / Cc= 0.900 n= 0.011, Flow Area= 0.79 sf
#4	Device 3	101.67'	4.0" Vert. Orifice/Grate C= 0.600
#5	Device 3	106.00'	6.0' long x 0.7' 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 Coef. (English) 2.76 2.82 2.93 3.09 3.18 3.22 3.27 3.30 3.32 3.31 3.32

Primary OutFlow Max=20.67 cfs @ 12.46 hrs HW=107.09' TW=91.99' (Dynamic Tailwater)

1=Broad-Crested Rectangular Weir (Weir Controls 18.49 cfs @ 2.08 fps)

2=Broad-Crested Rectangular Weir (Weir Controls 2.17 cfs @ 0.73 fps)

Secondary OutFlow Max=8.39 cfs @ 12.46 hrs HW=107.09' TW=91.99' (Dynamic Tailwater)

3=Culvert (Inlet Controls 8.39 cfs @ 10.68 fps)

4=Orifice/Grate (Passes < 0.96 cfs potential flow)

5=Broad-Crested Rectangular Weir (Passes < 21.95 cfs potential flow)

Summary for Pond P-2: GUSF-1

Inflow Area =	1.076 ac, 77.91% Impervious, Inflow Depth = 3.91" for 10-yr event
Inflow =	4.25 cfs @ 12.05 hrs, Volume= 0.351 af
Outflow =	0.93 cfs @ 12.36 hrs, Volume= 0.351 af, Atten= 78%, Lag= 18.6 min
Primary =	0.23 cfs @ 12.36 hrs, Volume= 0.311 af
Secondary =	0.71 cfs @ 12.36 hrs, Volume= 0.040 af
Tertiary =	0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 111.09' @ 12.36 hrs Surf.Area= 4,048 sf Storage= 5,182 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Lyseth-Moore Campus - Post-Development

Portland_ME 24-hr SOP 10-yr Rainfall=4.71"

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Center-of-Mass det. time= 191.8 min (981.4 - 789.6)

Volume	Invert	Avail.Storage	Storage Description
#1	109.50'	11,839 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
109.50	2,471	0	0
112.00	4,950	9,276	9,276
112.50	5,300	2,563	11,839

Device	Routing	Invert	Outlet Devices
#1	Secondary	106.00'	15.0" Round Culvert L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 106.00' / 105.50' S= 0.0100 ' / Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	111.00'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Primary	109.50'	2.410 in/hr Exfiltration over Surface area
#4	Tertiary	112.00'	250.0' long x 4.0' 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) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.23 cfs @ 12.36 hrs HW=111.09' TW=107.01' (Dynamic Tailwater)↑ **3=Exfiltration** (Exfiltration Controls 0.23 cfs)**Secondary OutFlow** Max=0.71 cfs @ 12.36 hrs HW=111.09' TW=107.01' (Dynamic Tailwater)↑ **1=Culvert** (Passes 0.71 cfs of 9.42 cfs potential flow)↑ **2=Orifice/Grate** (Weir Controls 0.71 cfs @ 0.98 fps)**Tertiary OutFlow** Max=0.00 cfs @ 1.00 hrs HW=109.50' TW=102.00' (Dynamic Tailwater)↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond P-3: New Chamber Soil Filter**

Inflow Area =	0.480 ac, 77.80% Impervious, Inflow Depth = 3.91" for 10-yr event
Inflow =	1.89 cfs @ 12.05 hrs, Volume= 0.156 af
Outflow =	0.83 cfs @ 12.22 hrs, Volume= 0.156 af, Atten= 56%, Lag= 10.3 min
Discarded =	0.21 cfs @ 12.14 hrs, Volume= 0.147 af
Primary =	0.62 cfs @ 12.22 hrs, Volume= 0.009 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 118.01' @ 12.22 hrs Surf.Area= 3,838 sf Storage= 1,828 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 78.7 min (868.3 - 789.6)

Lyseth-Moore Campus - Post-Development

Portland_ME 24-hr SOP 10-yr Rainfall=4.71"

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Volume	Invert	Avail.Storage	Storage Description
#1	115.80'	255 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 638 cf Overall x 40.0% Voids
#2	116.30'	1,357 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 1,696 cf Overall x 80.0% Voids
#3	117.63'	255 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 638 cf Overall x 40.0% Voids
#4	116.30'	196 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
		2,063 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
115.80	1,275	0	0
116.30	1,275	638	638

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
116.30	1,275	0	0
117.63	1,275	1,696	1,696

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
117.63	1,275	0	0
118.13	1,275	638	638

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
116.30	13	0	0
119.70	13	44	44
120.00	1,000	152	196

Device	Routing	Invert	Outlet Devices
#1	Discarded	115.80'	2.410 in/hr Exfiltration over Surface area
#2	Primary	117.90'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 0.5' Crest Height

Discarded OutFlow Max=0.21 cfs @ 12.14 hrs HW=117.64' (Free Discharge)

└─1=Exfiltration (Exfiltration Controls 0.21 cfs)

Primary OutFlow Max=0.62 cfs @ 12.22 hrs HW=118.01' TW=112.79' (Dynamic Tailwater)

└─2=Sharp-Crested Rectangular Weir (Weir Controls 0.62 cfs @ 1.12 fps)

Lyseth-Moore Campus - Post-Development

Portland_ME 24-hr S0P 25-yr Rainfall=5.92"

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Time span=1.00-48.00 hrs, dt=0.01 hrs, 4701 points x 3

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

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment S-2: General Site to Gravel Runoff Area=725,273 sf 44.85% Impervious Runoff Depth=4.23"
Flow Length=1,612' Tc=29.3 min CN=85 Runoff=40.17 cfs 5.865 af

Subcatchment S-3: Existing Lyseth Roof Runoff Area=33,157 sf 100.00% Impervious Runoff Depth>5.68"
Flow Length=665' Tc=7.0 min CN=98 Runoff=3.84 cfs 0.360 af

Subcatchment S-4: Parking Lot to GUSF-1 Runoff Area=46,872 sf 77.91% Impervious Runoff Depth=5.10"
Tc=7.0 min CN=93 Runoff=5.20 cfs 0.458 af

Subcatchment S-5: New Lyseth Runoff Area=20,900 sf 77.80% Impervious Runoff Depth=5.10"
Tc=7.0 min CN=93 Runoff=2.32 cfs 0.204 af

Subcatchment S-6: New Lyseth Admin Runoff Area=3,000 sf 100.00% Impervious Runoff Depth>5.68"
Tc=7.0 min CN=98 Runoff=0.35 cfs 0.033 af

Reach R1: Exist 12" Storm Pipe Avg. Flow Depth=0.83' Max Vel=7.64 fps Inflow=5.40 cfs 0.425 af
12.0" Round Pipe n=0.010 L=260.0' S=0.0129 ' Capacity=5.27 cfs Outflow=5.32 cfs 0.425 af

Reach R2: Exist 18" Storm Pipe Avg. Flow Depth=0.61' Max Vel=7.84 fps Inflow=5.32 cfs 0.425 af
18.0" Round Pipe n=0.010 L=284.0' S=0.0125 ' Capacity=15.25 cfs Outflow=5.28 cfs 0.425 af

Reach SP-1: SP-1 Avg. Flow Depth=1.21' Max Vel=4.09 fps Inflow=42.63 cfs 6.748 af
n=0.035 L=250.0' S=0.0120 ' Capacity=908.60 cfs Outflow=42.58 cfs 6.748 af

Pond P-1: Gravel Wetland Peak Elev=107.23' Storage=55,734 cf Inflow=43.63 cfs 6.748 af
Primary=34.12 cfs 1.782 af Secondary=8.51 cfs 4.966 af Outflow=42.63 cfs 6.748 af

Pond P-2: GUSF-1 Peak Elev=111.23' Storage=5,750 cf Inflow=5.20 cfs 0.458 af
Primary=0.23 cfs 0.346 af Secondary=2.85 cfs 0.112 af Tertiary=0.00 cfs 0.000 af Outflow=3.08 cfs 0.458 af

Pond P-3: New Chamber Soil Filter Peak Elev=118.12' Storage=1,885 cf Inflow=2.32 cfs 0.204 af
Discarded=0.21 cfs 0.172 af Primary=1.76 cfs 0.032 af Outflow=1.98 cfs 0.204 af

Lyseth-Moore Campus - Post-Development

Portland_ME 24-hr S0P 25-yr Rainfall=5.92"

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Summary for Subcatchment S-2: General Site to Gravel Wetland

Runoff = 40.17 cfs @ 12.34 hrs, Volume= 5.865 af, Depth= 4.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
Portland_ME 24-hr S0P 25-yr Rainfall=5.92"

Area (sf)	CN	Description
325,280	98	Paved parking & roofs
399,993	74	>75% Grass cover, Good, HSG C
725,273	85	Weighted Average
399,993		55.15% Pervious Area
325,280		44.85% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.0	285	0.0150	0.20		Sheet Flow, Grass: Short n= 0.150 P2= 3.60"
5.3	1,327	0.0050	4.20	7.43	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
29.3	1,612	Total			

Summary for Subcatchment S-3: Existing Lyseth Roof

Runoff = 3.84 cfs @ 12.05 hrs, Volume= 0.360 af, Depth= 5.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
Portland_ME 24-hr S0P 25-yr Rainfall=5.92"

Area (sf)	CN	Description
33,157	98	Unconnected roofs, HSG A
33,157		100.00% Impervious Area
33,157		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	150	0.0200	1.58		Sheet Flow, Smooth surfaces n= 0.011 P2= 3.60"
0.0	15	0.0100	5.26	6.46	Pipe Channel, 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.013
1.4	500	0.0100	5.94	10.50	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
4.0					Direct Entry, Min TC 7
7.0	665	Total			

Lyseth-Moore Campus - Post-Development

Portland_ME 24-hr S0P 25-yr Rainfall=5.92"

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Summary for Subcatchment S-4: Parking Lot to GUSF-1

Runoff = 5.20 cfs @ 12.05 hrs, Volume= 0.458 af, Depth= 5.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
Portland_ME 24-hr S0P 25-yr Rainfall=5.92"

	Area (sf)	CN	Description
*	36,516	98	
*	10,356	75	
	46,872	93	Weighted Average
	10,356		22.09% Pervious Area
	36,516		77.91% Impervious Area

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

Summary for Subcatchment S-5: New Lyseth Gym/Library Area

Runoff = 2.32 cfs @ 12.05 hrs, Volume= 0.204 af, Depth= 5.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
Portland_ME 24-hr S0P 25-yr Rainfall=5.92"

	Area (sf)	CN	Description
*	11,000	98	Roof
*	5,260	98	Courtyd and fire lane paving
	4,640	74	>75% Grass cover, Good, HSG C
	20,900	93	Weighted Average
	4,640		22.20% Pervious Area
	16,260		77.80% Impervious Area

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

Summary for Subcatchment S-6: New Lyseth Admin Roof

Runoff = 0.35 cfs @ 12.05 hrs, Volume= 0.033 af, Depth> 5.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
Portland_ME 24-hr S0P 25-yr Rainfall=5.92"

	Area (sf)	CN	Description
*	3,000	98	Roof
	3,000		100.00% Impervious Area

Lyseth-Moore Campus - Post-Development

Portland_ME 24-hr SOP 25-yr Rainfall=5.92"

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

Summary for Reach R1: Exist 12" Storm Pipe

Inflow Area = 1.310 ac, 91.87% Impervious, Inflow Depth > 3.89" for 25-yr event
Inflow = 5.40 cfs @ 12.10 hrs, Volume= 0.425 af
Outflow = 5.32 cfs @ 12.11 hrs, Volume= 0.425 af, Atten= 1%, Lag= 0.7 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 7.64 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 2.86 fps, Avg. Travel Time= 1.5 min

Peak Storage= 181 cf @ 12.11 hrs
Average Depth at Peak Storage= 0.83'
Bank-Full Depth= 1.00' Flow Area= 0.8 sf, Capacity= 5.27 cfs

12.0" Round Pipe
n= 0.010
Length= 260.0' Slope= 0.0129 '/'
Inlet Invert= 112.34', Outlet Invert= 108.98'

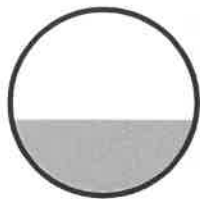
**Summary for Reach R2: Exist 18" Storm Pipe**

Inflow Area = 1.310 ac, 91.87% Impervious, Inflow Depth > 3.89" for 25-yr event
Inflow = 5.32 cfs @ 12.11 hrs, Volume= 0.425 af
Outflow = 5.28 cfs @ 12.12 hrs, Volume= 0.425 af, Atten= 1%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 3
Max. Velocity= 7.84 fps, Min. Travel Time= 0.6 min
Avg. Velocity = 2.68 fps, Avg. Travel Time= 1.8 min

Peak Storage= 191 cf @ 12.12 hrs
Average Depth at Peak Storage= 0.61'
Bank-Full Depth= 1.50' Flow Area= 1.8 sf, Capacity= 15.25 cfs

18.0" Round Pipe
n= 0.010
Length= 284.0' Slope= 0.0125 '/'
Inlet Invert= 108.87', Outlet Invert= 105.33'



Summary for Reach SP-1: SP-1

Inflow Area = 19.036 ac, 49.95% Impervious, Inflow Depth = 4.25" for 25-yr event
 Inflow = 42.63 cfs @ 12.39 hrs, Volume= 6.748 af
 Outflow = 42.58 cfs @ 12.40 hrs, Volume= 6.748 af, Atten= 0%, Lag= 0.8 min

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 3
 Max. Velocity= 4.09 fps, Min. Travel Time= 1.0 min
 Avg. Velocity = 1.24 fps, Avg. Travel Time= 3.3 min

Peak Storage= 2,604 cf @ 12.40 hrs
 Average Depth at Peak Storage= 1.21'
 Bank-Full Depth= 5.00' Flow Area= 100.0 sf, Capacity= 908.60 cfs

5.00' x 5.00' deep channel, n= 0.035 High grass
 Side Slope Z-value= 3.0 '/' Top Width= 35.00'
 Length= 250.0' Slope= 0.0120 '/'
 Inlet Invert= 91.00', Outlet Invert= 88.00'



Summary for Pond P-1: Gravel Wetland

Inflow Area = 19.036 ac, 49.95% Impervious, Inflow Depth = 4.25" for 25-yr event
 Inflow = 43.63 cfs @ 12.34 hrs, Volume= 6.748 af
 Outflow = 42.63 cfs @ 12.39 hrs, Volume= 6.748 af, Atten= 2%, Lag= 2.9 min
 Primary = 34.12 cfs @ 12.39 hrs, Volume= 1.782 af
 Secondary = 8.51 cfs @ 12.39 hrs, Volume= 4.966 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 107.23' @ 12.39 hrs Surf.Area= 18,163 sf Storage= 55,734 cf

Plug-Flow detention time= 176.1 min calculated for 6.746 af (100% of inflow)
 Center-of-Mass det. time= 176.2 min (1,014.7 - 838.5)

Volume	Invert	Avail.Storage	Storage Description
#1	102.00'	70,788 cf	Custom Stage Data (Irregular) Listed below (Recalc)

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Portland_ME 24-hr S0P 25-yr Rainfall=5.92"

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Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
102.00	3,572	549.0	0	0	3,572
103.00	6,200	771.0	4,826	4,826	26,901
104.00	9,020	829.0	7,566	12,392	34,329
105.00	11,611	872.0	10,288	22,680	40,211
106.00	14,502	904.0	13,030	35,710	44,820
107.00	17,279	924.0	15,870	51,580	47,870
108.00	21,203	764.0	19,208	70,788	69,378

Device	Routing	Invert	Outlet Devices
#1	Primary	106.50'	15.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	107.00'	32.0' 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
#3	Secondary	101.67'	12.0" Round Culvert L= 37.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.67' / 100.00' S= 0.0451 '/' Cc= 0.900 n= 0.011, Flow Area= 0.79 sf
#4	Device 3	101.67'	4.0" Vert. Orifice/Grate C= 0.600
#5	Device 3	106.00'	6.0' long x 0.7' 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 Coef. (English) 2.76 2.82 2.93 3.09 3.18 3.22 3.27 3.30 3.32 3.31 3.32

Primary OutFlow Max=34.12 cfs @ 12.39 hrs HW=107.23' TW=92.21' (Dynamic Tailwater)

1=Broad-Crested Rectangular Weir (Weir Controls 25.42 cfs @ 2.31 fps)

2=Broad-Crested Rectangular Weir (Weir Controls 8.69 cfs @ 1.16 fps)

Secondary OutFlow Max=8.51 cfs @ 12.39 hrs HW=107.23' TW=92.21' (Dynamic Tailwater)

3=Culvert (Inlet Controls 8.51 cfs @ 10.84 fps)

4=Orifice/Grate (Passes < 0.98 cfs potential flow)

5=Broad-Crested Rectangular Weir (Passes < 26.57 cfs potential flow)

Summary for Pond P-2: GUSF-1

Inflow Area =	1.076 ac, 77.91% Impervious, Inflow Depth = 5.10" for 25-yr event
Inflow =	5.20 cfs @ 12.05 hrs, Volume= 0.458 af
Outflow =	3.08 cfs @ 12.18 hrs, Volume= 0.458 af, Atten= 41%, Lag= 8.0 min
Primary =	0.23 cfs @ 12.18 hrs, Volume= 0.346 af
Secondary =	2.85 cfs @ 12.18 hrs, Volume= 0.112 af
Tertiary =	0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 111.23' @ 12.18 hrs Surf.Area= 4,185 sf Storage= 5,750 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Lyseth-Moore Campus - Post-Development

Portland_ME 24-hr S0P 25-yr Rainfall=5.92"

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Center-of-Mass det. time= 171.6 min (952.0 - 780.4)

Volume	Invert	Avail.Storage	Storage Description
#1	109.50'	11,839 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
109.50	2,471	0	0
112.00	4,950	9,276	9,276
112.50	5,300	2,563	11,839

Device	Routing	Invert	Outlet Devices
#1	Secondary	106.00'	15.0" Round Culvert L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 106.00' / 105.50' S= 0.0100 ' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	111.00'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Primary	109.50'	2.410 in/hr Exfiltration over Surface area
#4	Tertiary	112.00'	250.0' long x 4.0' 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) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.23 cfs @ 12.18 hrs HW=111.23' TW=107.03' (Dynamic Tailwater)└─**3=Exfiltration** (Exfiltration Controls 0.23 cfs)**Secondary OutFlow** Max=2.84 cfs @ 12.18 hrs HW=111.23' TW=107.03' (Dynamic Tailwater)└─**1=Culvert** (Passes 2.84 cfs of 9.56 cfs potential flow)└─**2=Orifice/Grate** (Weir Controls 2.84 cfs @ 1.56 fps)**Tertiary OutFlow** Max=0.00 cfs @ 1.00 hrs HW=109.50' TW=102.00' (Dynamic Tailwater)└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond P-3: New Chamber Soil Filter**

Inflow Area = 0.480 ac, 77.80% Impervious, Inflow Depth = 5.10" for 25-yr event
 Inflow = 2.32 cfs @ 12.05 hrs, Volume= 0.204 af
 Outflow = 1.98 cfs @ 12.11 hrs, Volume= 0.204 af, Atten= 15%, Lag= 3.5 min
 Discarded = 0.21 cfs @ 12.05 hrs, Volume= 0.172 af
 Primary = 1.76 cfs @ 12.11 hrs, Volume= 0.032 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 118.12' @ 12.11 hrs Surf.Area= 3,838 sf Storage= 1,885 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 74.7 min (855.1 - 780.4)

Lyseth-Moore Campus - Post-Development

Portland_ME 24-hr SOP 25-yr Rainfall=5.92"

Prepared by HARRIMAN

Printed 1/22/2019

HydroCAD® 10.00-24 s/n 00770 © 2018 HydroCAD Software Solutions LLC

Volume	Invert	Avail.Storage	Storage Description
#1	115.80'	255 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 638 cf Overall x 40.0% Voids
#2	116.30'	1,357 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 1,696 cf Overall x 80.0% Voids
#3	117.63'	255 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 638 cf Overall x 40.0% Voids
#4	116.30'	196 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
		2,063 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
115.80	1,275	0	0
116.30	1,275	638	638

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
116.30	1,275	0	0
117.63	1,275	1,696	1,696

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
117.63	1,275	0	0
118.13	1,275	638	638

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
116.30	13	0	0
119.70	13	44	44
120.00	1,000	152	196

Device	Routing	Invert	Outlet Devices
#1	Discarded	115.80'	2.410 in/hr Exfiltration over Surface area
#2	Primary	117.90'	5.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s) 0.5' Crest Height

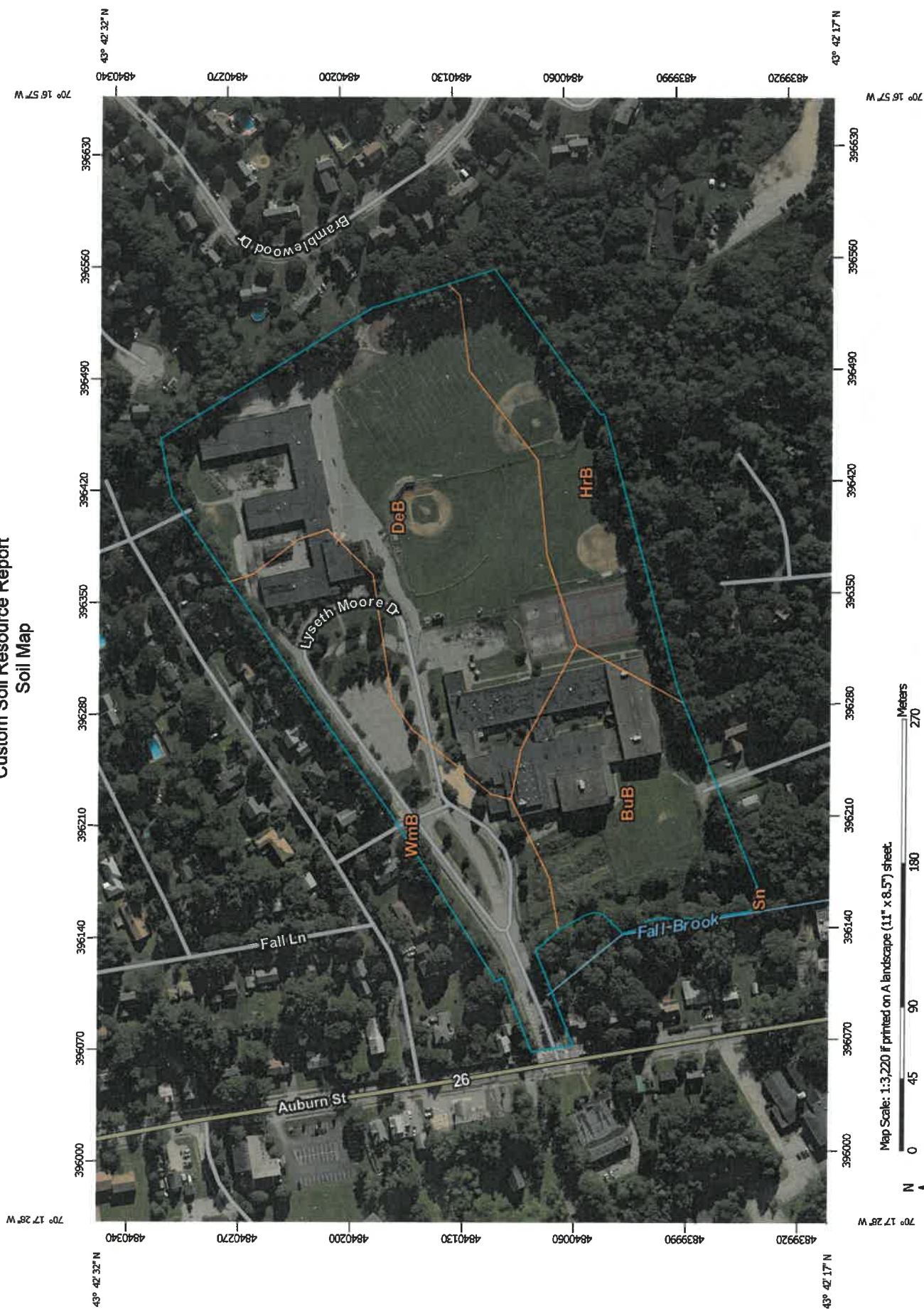
Discarded OutFlow Max=0.21 cfs @ 12.05 hrs HW=117.70' (Free Discharge)

└1=Exfiltration (Exfiltration Controls 0.21 cfs)

Primary OutFlow Max=1.76 cfs @ 12.11 hrs HW=118.12' TW=113.17' (Dynamic Tailwater)

└2=Sharp-Crested Rectangular Weir (Weir Controls 1.76 cfs @ 1.62 fps)

Custom Soil Resource Report Soil Map



MAP LEGEND

	Area of Interest (AOI)		Spill Area
	Area of Interest (AOI)		Stony Spot
	Soils		Very Stony Spot
	Soil Map Unit Polygons		Wet Spot
	Soil Map Unit Lines		Other
	Soil Map Unit Points		Special Line Features
	Special Point Features		
	Blowout		Water Features
	Borrow Pit		Streams and Canals
	Clay Spot		Transportation
	Closed Depression		Rails
	Gravel Pit		Interstate Highways
	Gravelly Spot		US Routes
	Landfill		Major Roads
	Lava Flow		Local Roads
	Marsh or swamp		Background
	Mine or Quarry		Aerial Photography
	Miscellaneous Water		
	Perennial Water		
	Rock Outcrop		
	Saline Spot		
	Sandy Spot		
	Severely Eroded Spot		
	Sinkhole		
	Slide or Slip		
	Sodic Spot		

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: <http://websoilsurvey.nrcs.usda.gov>
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 11, Sep 17, 2015

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jul 31, 2013—Aug 11, 2013

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

Cumberland County and Part of Oxford County, Maine (ME005)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BuB C	Buxton silt loam, 3 to 8 percent slopes	4.5	19.6%
DeB B	Deerfield loamy sand, 3 to 8 percent slopes	10.3	45.3%
HrB D	Hollis fine sandy loam, 3 to 8 percent slopes	3.3	14.5%
Sn C	Scantic silt loam, 0 to 3 percent slopes	0.0	0.0%
WmB A	Windsor loamy sand, 0 to 8 percent slopes	4.7	20.6%
Totals for Area of Interest		22.8	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.



R.W. Gillespie & Associates, Inc.

Geotechnical Engineering • Environmental Consulting • Materials Testing Services

11 December 2018

Steven J. Stilphen, Director of Facilities Management, Planning and Maintenance
City of Portland - Portland School Department
353 Cumberland Avenue
Portland, ME 04101

Subject: Report of Geotechnical Evaluation
Harrison Lyseth Elementary School – Additions and Renovations
175 Auburn Street
Portland, Maine
RWG&A Project No. 0557-025

Dear Mr. Stilphen:

R.W. Gillespie & Associates, Inc., (RWG&A) is pleased to present the results of the geotechnical evaluation for the proposed additions and renovations to the Harrison Lyseth Elementary School in Portland, Maine. This service was performed in general accordance with RWG&A Proposal No. P-9993GI dated 02 October 2018. The purpose of RWG&A's services was to obtain information regarding subsurface conditions on which to base recommendations about the geotechnical aspects of design and construction of addition foundations, ground floor slabs, and pavement sections. Recommendations to support the building on spread and/or continuous footings with a slab-on-grade floor are provided in the enclosed report.

RWG&A has enjoyed working with the Portland School Department and Harriman Architects + Engineers on this project. If you have any questions, or if we may be of further service, please contact us.

Sincerely,
R. W. GILLESPIE & ASSOCIATES, INC.


Serena N. Pape
Geotechnical Engineer


Erik J. Wilberg, P.E.
Chief Geotechnical Engineer

SNP/EJW:ks

In duplicate

Copy: James C. Fortin, P.E., Harriman Architects + Engineers (Adobe PDF copy by email)

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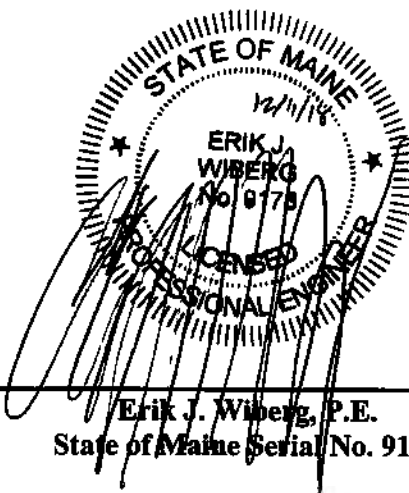
www.rwgillespie.com

R.W. Gillespie & Associates, Inc.

**Report
of
GEOTECHNICAL EVALUATION
for
HARRISON LYSETH ELEMENTARY SCHOOL
ADDITIONS AND RENOVATIONS
PORTLAND, MAINE**

**Prepared
for
PORTLAND SCHOOL DEPARTMENT
PORTLAND, MAINE**

**Prepared
by
R. W. GILLESPIE & ASSOCIATES, INC.
BIDDEFORD, MAINE**



**Erik J. Wiberg, P.E.
State of Maine Serial No. 9178**

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- Figure 2. Exploration Location Plan
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- Appendix A. Limitations
- Appendix B. Exploration Logs
- Appendix C. Laboratory Test Results

1.0 INTRODUCTION

1.01 Background

The Harrison Lyseth Elementary School is located at 175 Auburn Street in Portland, Maine, as illustrated on Figure 1, *Locus Map*. The proposed construction consists of a gymnasium and library addition at the north side of the school and a one-story administrative office addition at the southwest side. The planned addition layouts are shown on Figure 2, *Exploration Location Plan*. It is understood that the school building was constructed in 1959. The planned addition areas abut the original structure and partly overly land used for a portable classroom, paved areas, and landscaped areas. The current finished floor elevation is at about 121.5 feet. Finished ground floor level in the proposed additions will be at elevation 121.5 feet. R.W. Gillespie & Associates, Inc.'s (RWG&A's) understanding of the site and proposed construction is based on review of preliminary drawings provided by Harriman Architects+Engineers, Inc. (HARRIMAN).

1.02 Scope of Services

The primary purpose of this geotechnical evaluation was to obtain information regarding subsurface conditions on which to base recommendations about the geotechnical aspects of design and construction of the additions' foundations, ground floor slab, and pavement sections. The services were performed in accordance with RWG&A Proposal No. P-9993.GI dated 02 October 2018. Refer to Appendix A for limitations and use of this report. As performed, RWG&A's scope of services included the following items:

- Reviewed drawings illustrating planned additions and renovation area, and readily available subsurface information.
- Prepared a soil exploration program consisting of test borings and test pits to obtain information regarding subsurface soil and groundwater conditions, and current foundations. Exploration locations were based on the planned addition layouts available when RWG&A's services were authorized.
- Marked the boring and test pit locations in the field. Contacted DigSafe to verify planned boring locations were clear of utilities.
- Arranged to have the soil borings performed by a local drilling company as a subcontractor to RWG&A. Provided technical monitoring of exploration activities so that depths, locations, and sampling methods could be modified in response to the subsurface conditions encountered. Observed, logged, and sampled the explorations.
- Arranged to have the test pits excavated by a local excavation company as a subcontractor to RWG&A. Observed materials excavated and recorded foundation type, depths and dimensions.

- Performed laboratory tests on selected soil samples recovered from the subsurface explorations to aid in soil description and for estimation of engineering properties needed for foundation design.
- Conducted engineering evaluations of the geotechnical aspects of the proposed project. Emphasis was placed on foundation type, settlement, allowable foundation loads, ground floor slabs, lateral load resistance, seismic site class, perimeter foundation drainage, and excavations.
- Prepared this report presenting the findings, conclusions, and recommendations of the geotechnical evaluation.

RWG&A's services excluded an environmental site assessment. Any note of odors or possible contaminants is for informational purposes only.

Elevations used in this report were obtained or interpolated from the above Sheet C30.1, *Site Grading and Erosion Control Plan* dated 30 November 2018.

2.0 SUBSURFACE EXPLORATION

The subsurface exploration program consisted of twelve test borings and three test pits. The test borings designated B-1 through B-12 were drilled on 17 and 18 October 2018. Borings were drilled with a truck-mounted rig by New England Boring Contractors, Inc, of Hermon, Maine. Test pits TP-1, TP-2, and TP-3 were excavated 17 October 2018 by Chase Excavating, Inc.. Figure 2, *Exploration Location Plan*, shows the approximate exploration locations. Boring and test pit locations were selected by and marked by RWG&A by tape survey methods prior to excavating. Locations should be considered accurate only to the degree implied by the methodology used to determine them.

Borings were advanced with hollow-stem augers to depths ranging from 10 to 25 feet below local ground surface. Split-barrel sampling with standard penetration testing (*ASTM D1586, Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils*) was generally performed at about 5-foot intervals in the test borings. Borings B-4, B-10 and B-12 were sampled continuously to a depth of 12 feet followed by 5-foot sampling intervals. Refusal surfaces were encountered at depths of 13.5 to 21.8 feet. Rock coring was not performed to determine the nature of refusal surfaces. Refusal might have occurred on possible cobbles, boulders, or on bedrock.

Test pits TP-1 and TP-2 were advanced to about 4.5 feet below ground surface and TP-3 was dug to a depth of 6.3 feet. Top of spread footing foundations were encountered at depths of 3.2, 3.4, and 5.3 feet in TP-1, TP-2, and TP-3. The spread footing protruded from the wall about 3.5 inches and was about 10 inches thick in each test pit. Sketches of the exposed foundation walls and spread footings made are shown on Figures 3 and 4. See the test pit logs in Appendix B for additional information on the soil conditions encountered. A black coating against the foundation wall with a petroleum-like odor and oily sheen was observed at TP-1 and TP-2. Petroleum-like odors were also noted in the exposed excavation at TP-3.

Exploration activities were coordinated and monitored by RWG&A personnel who prepared the exploration logs. The soils were described in general accordance with *ASTM D2488, Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)*. Logs of the explorations are included in Appendix B. Stratification lines shown on the exploration logs represent the estimated boundaries between the different soil types encountered; the actual transitions will be more gradual and vary over short distances. Subsurface information should only be considered representative of subsurface conditions encountered within the vertical reach of the explorations on the date and at the locations the explorations were made.

3.0 LABORATORY TESTING

Laboratory testing was performed using soil samples recovered from the borings and test pits to assist in classification of the soils and estimation of engineering properties. The laboratory testing program included thirteen (13) natural moisture content determinations and four (4) particle-size distributions. Laboratory testing was performed in general conformance with:

- *ASTM D2216, Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass.*
- *ASTM D1140 – 17, Standard Test Methods for Determining the Amount of Material Finer than 75- μ m (No. 200) Sieve in Soils by Washing*
- *ASTM D6913/6913M – 17, Standard Test Methods for Particle-Size Distribution (Gradation) of Soils Using Sieve Analysis*

The natural moisture content test results are shown on the exploration logs and the results of other laboratory tests are provided in Appendix C. All tests were conducted at the RWG&A soil and materials testing laboratory in Biddeford, Maine, which is accredited by the American Association of State Highway and Transportation Officials (AASHTO) for the tests performed.

4.0 SUBSURFACE CONDITIONS

4.01 Subsurface Soils

In summary, the subsurface conditions in the building addition areas consisted of asphalt pavement or topsoil underlain by fill and varying silty clay, clayey silt, and silty sand. Generalized soil descriptions with ranges of thicknesses encountered in the explorations, are summarized below. Please refer to the exploration logs in Appendix B for detailed descriptions at specific locations and depths.

Unit	Encountered Thickness (feet)	Generalized Description
Topsoil or Asphaltic Pavement	0.2-0.4	Depending on local ground cover either topsoil, organic material, loam and roots, or asphaltic pavement.
Fill	0.3 to 5.2	Gravelly sand with varying amounts of silt to silty sand with gravel, damp, gray-brown to brown. Silty clay fill encountered adjacent to foundations exposed in test pits. Not encountered at B-1, B-5 and B-7.
Silty clay to Clayey Silt	3 to 12.5	Medium stiff to stiff, moist to wet, gray silty clay to loose to medium dense, moist to wet, clayey silt with sand, olive brown to blue-gray. Not encountered at B-8 and B-12.
Silty Sand	5 to 13.8	Loose to dense, moist to wet, sand with silt to silty sand, tan to gray. Not encountered at B-11.
Silty Sand with Gravel	7.8 to 12	Medium dense to very dense, wet, fine sand with varying amounts of gravel, gray. Encountered at B-1 and B-5.

4.02 Groundwater

Free water was observed in the borings at depths of about 6.3 to 12.6 feet below local ground surface. Water levels observed during the subsurface exploration program were influenced by the exploration methods and subsurface materials (e.g., slow groundwater response due to low soil permeability) and are not considered representative of stabilized groundwater levels. Groundwater levels at the site will fluctuate due to season, temperature, rainfall and construction activity in the area; therefore, water levels during and following construction will vary from those observed in the explorations. It is likely that groundwater perches in the fill and on the naturally deposited soils.

4.03 Refusal Surfaces

Practical refusal surfaces were encountered at depths of 13.5 to 21.8 feet below local ground surface. The refusal surfaces were interpreted to represent possible bedrock but might have been on cobbles or boulders.

5.0 EVALUATION OF GEOTECHNICAL DATA

5.01 General

Engineering evaluations for this project are based on the subsurface explorations, laboratory testing data, and the design information currently available to RWG&A. This report addresses geotechnical issues for the proposed additions and site layout as illustrated on Sheet C30.1, *Site Grading and Erosion Control Plan, Harrison Lyseth Elementary School*, dated 30 October 2018 prepared by HARRIMAN, marked "*Preliminary Not for Construction*". Evaluation of settlement is sensitive to changes in grades and structural loads. RWG&A should be advised if current or constructed ground surface elevations will vary from those depicted on the referenced plan other than the planned ground floor level of 121.5 feet. It is recommended foundation design and construction comply with the requirements of applicable ordinances, regulations, and codes.

5.02 Proposed Construction

The planned gymnasium addition is two-stories high and the library, corridor and administration office additions are one-story in height. No below grade spaces are planned within the additions. The planned addition areas overly land currently occupied by a portable classroom, paved areas, and landscaped areas. The current ground surface within the addition areas ranges from about elevation 120.3 feet to 121.4 feet. The planned finished ground floor elevation of the additions is 121.5 feet. A retaining wall having an exposed height of 3 to 5 feet is planned at the site boundary at the north side of the gymnasium addition.

5.03 Structural Loading and Tolerable Settlements

Structural column load design information for the proposed additions was provided as follows:

Location	Dead Load (kips)	Live and Snow Loads (kips)	Total Load (kips)
Gymnasium	1.6 - 22.0	2.7 - 45.5	5.3 - 65
Library and Corridor	1.0 - 9.0	2.4 - 27.0	3.2 - 36
Administrative Office	0.2 - 10.7	0.5 - 37.7	0.7 – 48.4

For purposes of foundation settlement analyses, RWG&A anticipated that new loads from renovations would not increase current design loads on the current building by more than 5 percent. RWG&A anticipates the following tolerable post-construction settlement criteria:

- Total: 1 inch
- Differential: 3/4 inch (over a distance of 35 feet)

It is understood HARRIMAN will design structural connections to reduce abrupt differential settlement at the proposed addition footings that abut foundations for the current building and additions.

5.04 Settlement Evaluation

In RWG&A's opinion, with proper site preparation, the naturally deposited soils are suitable for support of the additions on spread footing foundations and slab-on-grade ground floors. The clayey silt and silty clay deposits beneath the proposed additions will compress under the new spread footing loads and weight of new fills, and cause the ground and proposed additions to settle. Parts of the existing building near the proposed additions will also experience new settlements, though to lesser amounts. RWG&A estimates that 1/2-inch of new settlement of the current building and additions foundations might occur where new foundations for the proposed additions are near and/or connected to current foundations.

5.05 Construction Considerations

Site Preparation: Existing fills encountered in explorations varied by location and extended up to 6 feet deep. Preparation of the site prior to placement of the existing fill, the composition of the existing fill, and methods used to place and compact the fill are uncertain. For planning and budgeting purposes, it should be anticipated that existing fill within the proposed addition limits will need to be removed to naturally deposited inorganic soil and replaced with compacted structural fill.

The native soils are susceptible to disturbance by construction traffic where exposed at subgrade prior to fill placement or spread footing construction. Project specifications should require the Contractor to maintain the integrity of exposed subgrade soils for subsequent construction activities. Spread footing subgrades that become disturbed prior to foundation construction should be compacted, or removed and replaced with compacted structural fill.

Construction Dewatering: The on-site naturally deposited soils are sensitive to disturbance when wet. To reduce disturbance of subgrade soils, it will be important to divert runoff, provide positive grading to shed seepage and runoff from flat areas, and roll exposed soils to reduce rutting, ponding, and surface water infiltration. RWG&A anticipates that if groundwater is encountered during construction then groundwater control can be accomplished through the use of ditches, sumps, and open pumping.

Temporary Excavations: Removing fill and soil near existing foundation walls will result in unbalanced lateral earth pressure acting on the wall. Excessive lateral movement might cause loss of building support, and/or result in cracking and structural damage to parts of the current school that will remain as well as to the proposed additions. Removing soil from beneath footings and ground floors could lead to settlement and cracking of walls and floor slabs during and/or after construction is completed.

Existing and proposed foundation walls and footings should be restrained to prevent excessive lateral and vertical movement during construction. For planning purposes, the bottoms and sides of excavations for new construction should be located above a line pitched down and away at a slope of 1 unit horizontal to 1 unit vertical (1H:1V) from the bottom outside edge of nearby foundations and ground floor slabs.

Existing building foundations might need to be underpinned if temporary or permanent excavations extend below the 1H:1V line described above. Design and installation of temporary lateral and vertical foundation support should be performed by experienced specialty and site work contractors. The design and construction documents should include procedures to monitor the building and excavation support system for vertical and lateral movement both during and after construction.

Use of On-site Soils: It is anticipated that the topsoil will be stripped and either incorporated into proposed landscaped areas, where practicable, or hauled off-site. Topsoil and organic materials are considered unsuitable for use as common fill. Asphaltic pavement should be removed in its entirety from within the construction limits. Asphaltic pavement is not suitable for reuse as

compacted fill beneath the new additions, and should be disposed of in accordance with environmental regulations.

The subsurface soils from foundation and site work excavations will generally consist of gravely sand with silt fill and naturally deposited clayey silt and silty clay. The naturally deposited soils are moisture sensitive due to their high silt content, and will be difficult to place and compact when they are wet. Moisture-density relationships should be established during construction to provide guidance on appropriate working moisture contents. Working moisture content for moisture sensitive soils generally ranges from about minus three to plus one percent of optimum moisture content. Field observations indicate the naturally deposited soils are unsuitable for reuse as compacted structural fill.

Particle-size distribution test results indicate that gravely sand fills with additional blending and processing might locally be suitable for re-use as structural fill. If on-site soils are proposed for use other than common fill, the soil should be stockpiled separately and tested to determine if it meets specification requirements for its intended use. For planning and budgeting purposes it should be anticipated that all existing fill will need to be removed down to inorganic naturally deposited soil and replaced with imported structural fill.

Construction Vibrations: Vibrations from construction activities might have deleterious effects on nearby structures and vibration sensitive equipment such as: photocopiers, computers, laboratory testing apparatus, etc. The school administration and teachers should be advised that construction vibrations could damage fragile displays and cause wall hangings to fall. Where vibratory drum rollers are used for fill compaction, the Contractor might need to operate them at low vibration settings or statically. If compaction requirements cannot be met with this approach, then smaller sized and/or hand-operated compaction equipment with thinner fill lifts might be needed to reduce vibrations and achieve compaction requirements. It is possible that compaction and other activities might need to be scheduled so as to minimize disturbance to students, teachers, and staff.

6.0 RECOMMENDATIONS

The geotechnical recommendations provided below are considered suitable for design and construction of foundations and ground floor slabs for the proposed additions to the Harrison Lyseth Elementary School in Portland, Maine. RWG&A should be provided the opportunity to review final project design drawings and technical specifications to verify that geotechnical recommendations provided in this report have been interpreted in the manner they were intended. RWG&A recommends foundation design and construction comply with the requirements of all applicable ordinances, regulations, and codes. When this report was prepared, the applicable building code in Portland was the Maine State Building and Energy Code which adopts *2015 International Building Code®* by reference.

6.01 Site Preparation

1. Site preparation for the proposed additions will involve demolition and removal of all underground structures and utilities in conflict with the proposed work. Site grading around the proposed additions and existing school building should provide positive

drainage away from constructed facilities both during and after construction. All topsoil, organic material, debris, rubbish, frozen soils, muck, loose/soft or disturbed soils and other unsuitable materials should be removed from the area of new construction. Unsuitable materials include uncontrolled fills (i.e., fills placed without document systematic densification and moisture control to a specified percent compaction), asphaltic pavement, and deleterious substances.

Existing fill beneath the proposed additions should be excavated down to naturally deposited, inorganic soil and replaced with compacted structural fill. Fill removal should extend beyond building limits in a zone defined by a 1H:1V line sloping down and away from the outside edges of perimeter footings to the top of inorganic, naturally deposited soils, or a minimum of 5 feet outside the plan limits of the proposed additions, whichever is further. Excavations in naturally deposited soils should be made with equipment fitted with smooth-edged buckets.

2. Due to the previously developed nature of the site, the Contractor should be aware of the potential for encountering obstructions such as demolition debris, buried topsoil and grubbing's, cisterns, and underground tanks and utilities (note: active and abandoned). Where such items are encountered, they should be removed to their full extent, and replaced with compacted structural fill. Underground utilities located outside the footprints of the proposed additions and that will be abandoned in-place, should be filled with cementitious material to prevent erosion of soil and fill materials into the conduits and pipes.
3. Site grading should provide positive drainage away from constructed facilities both during and after construction. Surface runoff and infiltration of water should be controlled so that excavation, backfilling activities, and construction can proceed in-the-dry.
4. Construction dewatering might be needed depending on excavation depths, precipitation and season. Groundwater levels should be maintained a minimum of 1 foot below exposed subgrade during foundation construction and until perimeter foundation drains are installed. It should be practical to dewater excavations to about 1-foot below groundwater level at the time of construction, by open pumping methods. Excavations deeper than about 1-foot below groundwater will likely require pre-drainage with deep sumps and/or wells. Surface runoff and infiltration of groundwater should be controlled so that excavation, filling, and foundation construction can be completed in-the-dry. Temporary detention ponds, trenches, dewatering ditches, and sumps should not be made within areas to be filled
5. Excavations adjacent to the building and utilities to remain should be designed to limit movements of the existing structures to tolerable amounts as determined by the Structural Engineer and Civil Engineer. The Contractor's excavation procedures, and shoring and lateral support design, including lateral support for new construction, should be submitted for review by the Structural Engineer prior to construction.

6.02 Site Filling

6. Only compacted structural fill is recommended for use as fill beneath the proposed additions and as backfill for footings, piers, and foundation walls.
7. Structural fill should be a well-graded sand and gravel mixture free of roots, topsoil, loam, organic material, and any other deleterious materials, as well as clods of silt or clay, and meet the following gradation requirements:

Screen or Sieve Size	Percent Passing
6 inches	100
3 inches	70 - 100
No. 4	35-70
No. 40	5-35
No. 200	0-5

(Note: Maximum particle size should be limited to 3 inches within 2 feet of foundation walls, footings, and floor slabs.)

8. New parking and access drive areas should be constructed using materials and placement methods of the current Maine Department of Transportation requirements.
9. In open areas, fill should be placed in level, uniform lifts not exceeding 9 inches in uncompacted thickness. In confined areas, within 4 feet of foundation walls, and areas where self-propelled compaction equipment should not be used based on vibration considerations, fill should be placed in lifts not exceeding 6 inches in uncompacted thickness and be compacted with hand-operated compaction equipment. All fill placed for footing and slab support should be structural fill compacted to at least 95 percent of the maximum dry density as determined by *ASTM Standard D 1557 Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft³ (2,700 kN-m/m³))*.
10. Proctor testing of crushed stone is not technically practicable. The compactive effort needed for crushed stone should be determined using a test strip method. The test strip width should be no smaller than 3 times the compactor's width. The test strip method should consist of measuring the density of the compacted stone surface after each pass of the compaction equipment until increasing density no longer occurs. The measured density versus number of passes should be used to determine the number of passes needed to achieve maximum compaction. The number of passes thus determined should be used to determine the compactive effort needed in production fill placement and compaction. A compaction test strip should be conducted for each compaction equipment that will be used to compact crushed stone.

Crushed stone should be compacted using the same equipment as used in the test strip. The number of passes per lift should not be less than the number of passes determined by the test strip method.

11. Compaction equipment might cause perceivable shaking inside and near the existing building. The shaking might be disturbing to those within the building or to vibration sensitive equipment; wall hangings may be jarred loose and/or could fall. If needed, methods of reducing these vibrations include using smaller compaction equipment, and compacting with low vibratory energy or statically. Compacting with smaller compaction equipment, low vibratory energy or statically will probably require use of thinner lifts and more coverages to achieve the specified compaction.

6.03 Foundations

12. The proposed additions should be designed to withstand lateral, uplift, and overturning forces due to earthquakes. The in-place soils encountered in the explorations are not considered susceptible to liquefaction. In accordance with the *2015 International Building Code*[®], the site is classified as Site Class D.
13. The proposed additions may be supported on spread and/or continuous footings bearing on the naturally deposited soils, compacted structural fill, or compacted crushed stone. The footings should be proportioned for an allowable contact pressure of 1,500 pounds per square foot. Footings within one footing width of adjacent foundations based on the larger foundation's dimensions should be combined to reduce total settlement amounts and differential settlement amounts between adjacent footings. Total settlements of less than 1 inches and differential settlements of less than 3/4-inch over a distance of 35 feet should be expected. Minimum footing width should be in accordance with concrete design and building code requirements, and no less than 2 feet. For footings having a least lateral dimension less than 3 feet, the above allowable pressure should be taken as 1/3 of the above value times the least dimension in feet. The allowable bearing pressure and expected settlements are based on maintaining footing subgrades in an undisturbed condition prior to concrete placement.

A 1-foot thick overexcavation and replacement with compacted structural fill or compacted 3/4-inch crushed stone is recommended for all footings located on or below fine-grained naturally deposited soils (note: silty clay, clayey silt, and silt) to protect naturally deposited soil subgrade from excessive disturbance during construction. Crushed stone should be encapsulated with a geotextile fabric (Mirafi 180N or equivalent). Crushed stone or structural fill should extend one foot outside the limits of the foundation. The same should be done for footings located on bedrock.

14. Excavation of footing and ground floor slab bearing surfaces in soil or fill should be performed by earthwork equipment fitted with smooth-edged buckets. Final subgrade preparation should include compaction of fill or naturally deposited soil subgrades with hand-guided, vibratory compaction equipment; non-vibratory hand guided roller compaction equipment should be used over fine-grained soil surfaces. Following compaction and prior to placement of concrete, care should be taken to limit disturbance of

the bearing surfaces. Any loose, softened, or disturbed material due to construction traffic should be removed prior to placement of concrete, and backfilled with compacted structural fill.

15. It is recommended that design bottom of footing level for exterior footings bearing on naturally deposited soil be a minimum of 4.5 feet below lowest adjacent ground surface exposed to freezing temperatures. At heated interior locations, footings may be designed to bear a minimum of 18 inches below top of ground floor slab or adjacent ground surface whichever is lower. If exposure to freezing temperatures is anticipated, either during or following construction, then interior footings bearing on structural fill or naturally deposited soils should be lowered in accordance with the recommendations for exterior footings.
16. The integrity of natural soils and structural fill must be maintained during cold weather conditions. Footing and slab subgrades should not be allowed to freeze. The naturally deposited soils are considered moderately to highly frost susceptible. Freezing of subgrade soils beneath footings and floor slabs might result in heaving and post-construction settlement. The Contractor should make every effort to prevent freezing of subgrade soils. In the event frost penetration occurs, all frozen and previously frozen soils should be removed and replaced with compacted structural fill. At no time should frozen material be placed as fill.
17. Lateral loads from wind and earthquake may be resisted by friction between the bottoms of footings and supporting subgrades, and by passive earth pressures against the sides of the foundation. A friction coefficient of 0.35 and an equivalent fluid pressure of 150 pounds per cubic against sides of footings should be used in design of footings. The above equivalent fluid unit weight for compacted structural fill is based on a design wherein the walls are backfilled with structural fill and provisions to prevent the rise of water above the bottom of the foundation are included.

6.04 Ground Floor Slabs and Foundation Drainage

18. Interior floors may be slab-on-ground construction based on a subgrade modulus of 150 pounds per cubic inch. New slabs should be underlain by a minimum of 12 inches of compacted structural fill. At the minimum, a vapor retarder should be provided below the floor slab to reduce moisture infiltration. It is anticipated design and construction details of the floor slab, including concrete thickness, reinforcing, bedding, control joint depth and spacing, and the vapor retarder type or water proofing and thickness, will be provided by the project Structural Engineer and/or Architect with considerations for the moisture sensitivity of floor finishes.
19. Exterior slabs at entrances and at other locations where ground floor slabs might be exposed to freezing temperatures and frost heaving would be problematic should be underlain by a minimum of 4 feet of underdrain stone. Underdrain stone should consist of MaineDOT Section 703 – Aggregates, 703.22 Underdrain Backfill Material Type C. The surrounding area should be pitched to drain away in order to reduce available moisture for

ice and frost lense generation. The underdrain stone should be completely wrapped in a filter fabric to prevent the migration of fines from surrounding soils.

20. Walkways and exterior slabs at locations where some frost heaving would be tolerable should be underlain by a minimum of 24 inches of crushed stone wrapped in a filter fabric or pavement base and/or subbase to provide limited protection against frost heave. Surrounding grade should slope away from the structure to reduce available moisture for frost lens generation.

6.05 Foundation Drainage

21. Perimeter footing drains are recommended to prevent water from collecting beneath and near the proposed additions. Flow from the perimeter drains should be conveyed by gravity to surface drainage features or storm drains that will be free flowing at all times and under all conditions. Several outlets should be provided so as not to be dependent on a single flow path; more than two outlets are recommended for isolated individual drains. Outlet pipes should be solid and sized to convey the maximum combined flow of all drains connected to it. Flow from the new foundation drains should not be conveyed by existing foundation drains, if present, without first verifying their capacity and ability to provide free-draining conditions.

Roof drains should not be connected to footing drains. The use of footing drains to collect and convey roof runoff as part of a stormwater management roof dripline filtration system increases the risk of fugitive moisture entering the building. Foundation drains incorporated into roof dripline filtration systems should be sized to provide free-draining conditions for the maximum rate of roof runoff that could occur during the life of the structure.

22. Perimeter footing drains should be installed around the new additions. The perimeter drains should be installed at the exterior bottom of footing level or at least 18 inches below the adjacent finished floor level, whichever is lower. The drains should consist of 6-inch diameter perforated pipes bedded in 2 cubic feet of MaineDOT Section 703 – Aggregates, 703.22 Underdrain Backfill Material Type C per linear foot. The drainage stone should be completely wrapped in a filter fabric such as Mirafi 180N.

6.06 Earth Retaining Structures

23. The design of the modular block retaining walls should be prepared by a qualified Maine-licensed profession engineer engaged by the contractor or the contractor's retaining wall supplier. RWG&A should be provided the opportunity to review the geotechnical aspects of retaining wall shop drawings submitted during construction.
24. Recommended soil parameters for use in design of segmental block walls at the site are listed below. It is also recommended the designer review these recommendations for compliance with the project-specific block and geogrid manufacturer recommendations.

- Foundation Soil – Silty Clay to Clayey Silt

Unit Weight = 115 pounds per cubic foot

Undrained Shear Strength: 1,000 pounds per square foot

Drained Shear Strength: Friction Angle = 30 degrees

- Retained Fill

Unit Weight = 135 pounds per cubic foot

Friction Angle = 30 degrees

- Reinforced Wall Fill - MDOT 703.6 Type B Subbase (or approved alternate)

Unit Weight = 135 pounds per cubic foot

Friction Angle = 34 degrees

- Equipment/Traffic Surcharge

Live Load = 250 pounds per square foot

- Factor of Safety:

Geogrid Pullout = 1.5

Sliding = 1.5

Construction Uncertainties = 1.5 Overturning = 2.0

25. Existing soils the proposed retaining wall alignment are considered moderately to highly frost susceptible. Where frost heaving would be problematic, the bottom of the wall should be located a minimum of 4 feet below ground surfaces exposed to freezing temperatures. Alternatively, frost susceptible material should be removed within the depth and lateral extent of frost penetration below the wall (4 feet below finished grade at the toe of the wall) and be replaced with non-frost susceptible material.
26. Wall design should ignore passive resistance from soil in front of wall units.
27. Retaining wall backfill should extend a minimum of 4 feet from the back of the retaining wall or 70 percent the retaining wall height, whichever is greater. Mechanical reinforcement, if needed, should extend a minimum 70 percent of the wall height as measured from the front face of the wall unit, and should be uniform in length throughout the height of the wall.
28. Liquid-bearing utilities and other structures should be located entirely outside of the reinforced soil zone. Where it is not possible to locate liquid-bearing utilities outside of the reinforced soil zone, measures to prevent the utilities from adversely affecting wall performance, including but not necessarily limited to seepage barriers, drainage blankets, containment pipes, should be considered, and provided in the design, as needed.
29. Drains should be provided to prevent hydrostatic pressure buildup behind segmental block walls. The drains should be located at the base of the retaining wall and at the uphill limit of the reinforced backfill zone. Drains should be outletted by gravity to a surface drainage feature or storm drain that will be free flowing at all times and under all conditions.

6.07 Pavement Sections

30. It is recommended pavement section subgrades be compacted by several passes with a vibratory drum roller and a thorough evaluation of the paved area subgrade be undertaken. The evaluation should include proof-rolling with a loaded tandem axle dump truck

weighing not less than 15 tons to aid in identifying soft pockets and areas of excess yielding. Wet or saturated subgrades should not be proof-rolled. Wet or saturated subgrades, soft spots, unsatisfactory soils, areas of excessive pumping, or rutting in excess of one inch in depth should be removed and replaced with suitable compacted common fill. Prior to the start of paving and as described above for pavement section subgrade, the surface of the pavement section base course material should be proof-rolled.

31. Prior to the start of paving and as described above for pavement section subgrade, the surface of the pavement section base course material should be proof-rolled. Areas with any visually discernable pumping and/or rutting should be excavated and replaced with suitable compacted material. Prior to the start of paving and as described above for pavement section subgrade, the surface of the pavement section base course material should be proof-rolled.
32. Perimeter pavement underdrains or a free-draining ditch should be provided at the perimeter of paved areas. The invert of the drain or ditch should be a minimum of 1 foot below the pavement section. Underdrains spaced 40-feet on center should be provided below planned paved areas where pavement sections are in cuts.
33. Underdrains should consist of 2 cubic feet of MaineDOT Underdrain Backfill Material Type C per linear foot, wrapped in a filter fabric, and located a minimum of 1 foot beneath the pavement section. The trench above the geotextile wrapped underdrain stone should be backfilled with MaineDOT Underdrain Backfill Material Type B. The top of the underdrain trench backfill should be in direct contact with the pavement subbase.

Each pavement underdrain pipe should be provided with multiple outlet pipes so as not to be reliant upon a single flow path. Drains should be outletted by gravity to surface drainage features or storm drains that will be free flowing under all conditions.

34. Pavement sections are generally designed to support post-construction traffic loads. The sections are not designed to support construction traffic loading. Construction means and methods are the responsibility of the Contractor and the Contractor should anticipate the need to evaluate and employ methods to prevent subgrade softening, rutting, or impairment of overlaying fill materials as a result of construction traffic. Measures that should be considered by the Contractor include, but are not limited to, use of lower weight equipment, dispersion of construction traffic, constructing haul roads and construction traffic paths designed to support construction vehicles and equipment, and the use of geotextiles.

6.08 Temporary Excavations

35. Soils at this site, vary, fills encountered included marine clays and gravelly sands, naturally deposited soils consisted of silty clay, silt, and silty sand. We anticipate that foundation and utility excavations can be accomplished using sloped, open-cut techniques. It is also anticipated that dewatering can be accomplished using sumps and open pumping methods.

The Contractor should be aware that slope height, slope inclination, and excavation depths (including utility trench excavations) should in no case exceed those specified in local, state, or federal safety regulations (e.g., OSHA Health and Safety Standards for Excavations, 29 CFR Part 1926, or successor regulations). Such regulations are strictly enforced and, if they are not followed, the Owner, Contractor, and/or earthwork and utility subcontractors could be liable for substantial penalties.

As a safety measure, it is recommended all vehicles and spoil piles be kept a minimum lateral distance from the top of excavations equal to no less than 100 percent of the slope height. Exposed slope faces should be protected against the elements.

6.09 Geotechnical Observation

Geotechnical recommendations provided as the basis for design of this project were developed based on conceptual design information and limited numbers of excavations and laboratory tests. The Owner should be sensitive to the potential need for adjustment during final design and construction.

As part of the project's construction phase, it is recommended that the Owner retain RWG&A to observe geotechnical construction aspects of the project. If RWG&A is not retained to provide geotechnical observation and associated testing services, RWG&A would not have the opportunity to verify site work is completed in accordance with RWG&A's recommendations. Post-construction performance of the building and site work features would necessarily be based on the interpretations and judgement of others.

Construction services should include observing general compliance with the design concepts, specifications and recommendations, and assisting in development of design changes should subsurface conditions differ from those anticipated prior to the start of construction. Observation improves the likelihood that the design intent will be carried out during construction. For this project, geotechnical observation and testing of the following aspects is recommended:

- Review geotechnical aspects of the site work submittal.
- Observe site stripping, assess suitability of exposed subgrades, and observe proof rolling building additions and pavement section subgrade soils.
- Review the geotechnical aspects of the Contractors soil and foundation submittals, including temporary and/or permanent earth and/or foundation support systems, if needed.
- Observe subgrade preparation of spread footing and ground floor slab subgrade.

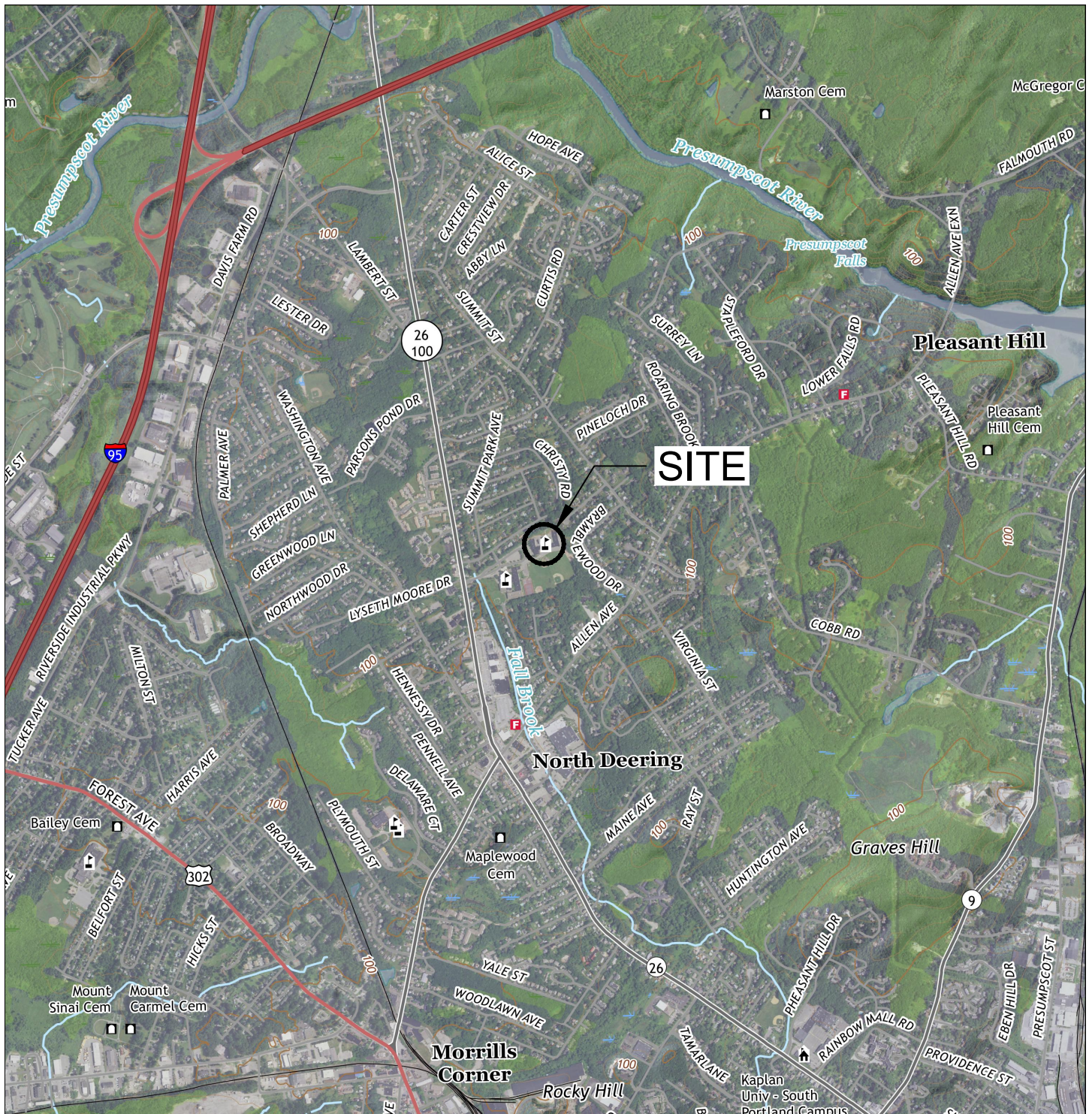
In addition to geotechnical observation, RWG&A can provide construction inspection and materials testing services. This would include soils, portland cement and asphaltic concrete, masonry, fire proofing, destructive and non-destructive testing, and special inspection services in fulfillment of building code requirements. Soil and materials testing would be performed at the

RWG&A's soil testing laboratory in Biddeford, Maine, which is a full-service laboratory accredited by the AASHTO for the testing of soils, concrete, masonry and asphalt.

7.0 CLOSURE

This report has been prepared for specific application for the proposed additions and renovations to the Harrison Lyseth Elementary School in Portland, Maine, for the exclusive use of the Portland School Department and HARRIMAN. This work has been completed in accordance with generally accepted soil and foundation engineering practices. No other warranty, expressed or implied, is made. In the event any changes are made in the nature, design, or location of the proposed construction, the conclusions and recommendations of this report should be reviewed by RWG&A.

The recommendations presented are based on the results of widely spaced explorations. The nature of variations between the explorations may not become evident until construction has begun. If variations are encountered, it will be necessary for RWG&A to re-evaluate the recommendations presented in this report. RWG&A requests an opportunity for a general review of the final design and specifications in order to determine that earthwork and foundation recommendations have been interpreted in the manner in which they were intended.



0 2000 3000 4000

SCALE, FEET

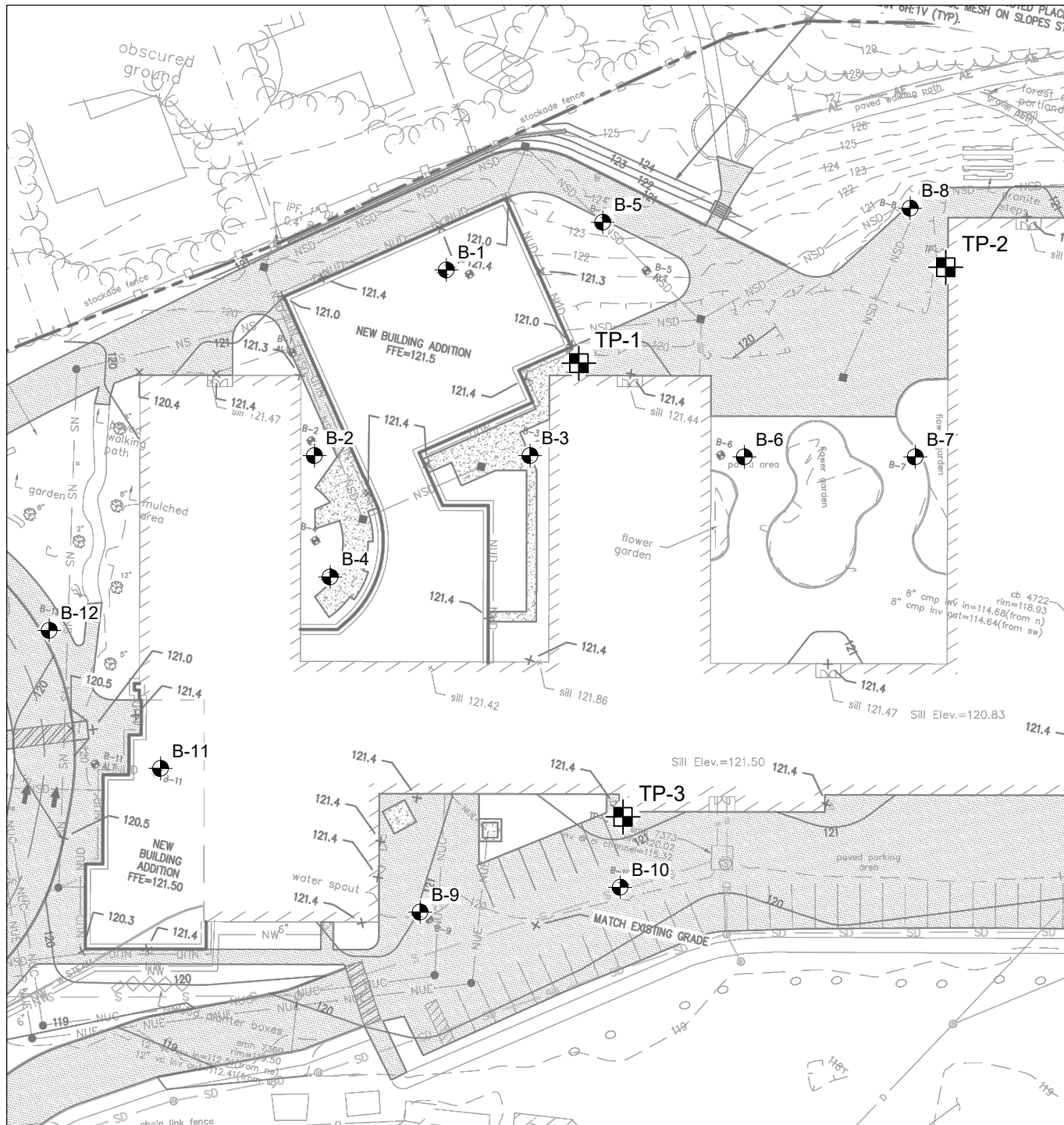
SOURCE:
USGS 7.5-MINUTE TOPOGRAPHIC QUADRANGLE OF
PORTLAND WEST, ME, DATED 2018.

FIGURE 1
LOCUS MAP
GEOTECHNICAL ENGINEERING SERVICES
HARRISON LYSETH ELEMENTARY SCHOOL -
ADDITIONS & RENOVATIONS
PORTLAND, MAINE

DECEMBER 2018

PROJECT NO. 0557-025





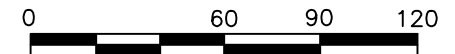
LEGEND:

B-1 SOIL BORING LOCATION.

TP-1 TEST PIT LOCATION.

SOURCE:

DRAWING NO. C30.1, TITLED "SITE EROSION, AND GRADING PLAN", PREPARED BY HARRIMAN, 30 NOVEMBER 2018, MARKED "PRELIMINARY NOT FOR CONSTRUCTION".



SCALE, FEET

FIGURE 2
EXPLORATION LOCATION PLAN
GEOTECHNICAL EVALUATION
HARRISON LYSETH ELEMENTARY SCHOOL
ADDITIONS AND RENOVATIONS
PORTLAND, MAINE

DECEMBER 2018

PROJECT NO. 0557-025

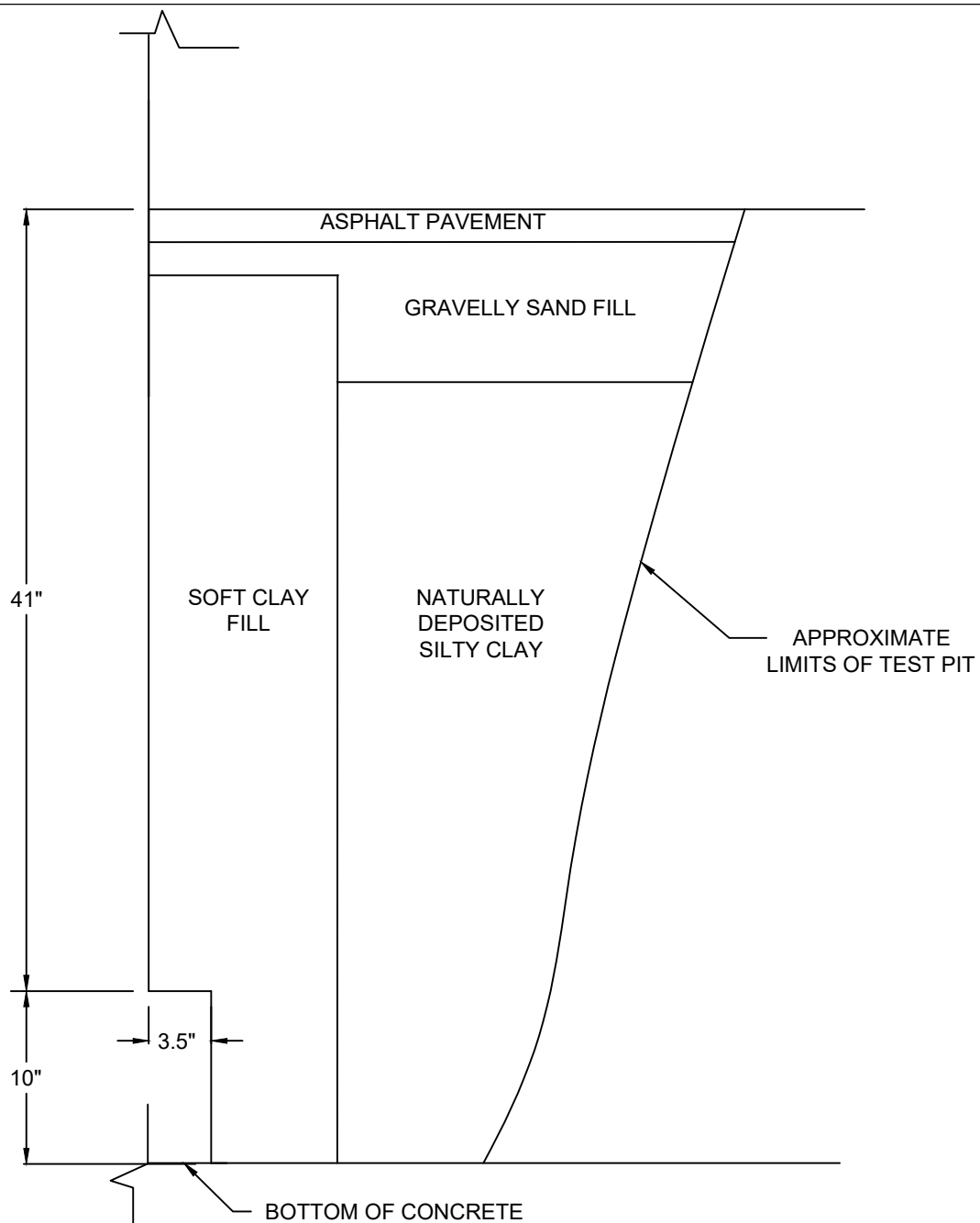
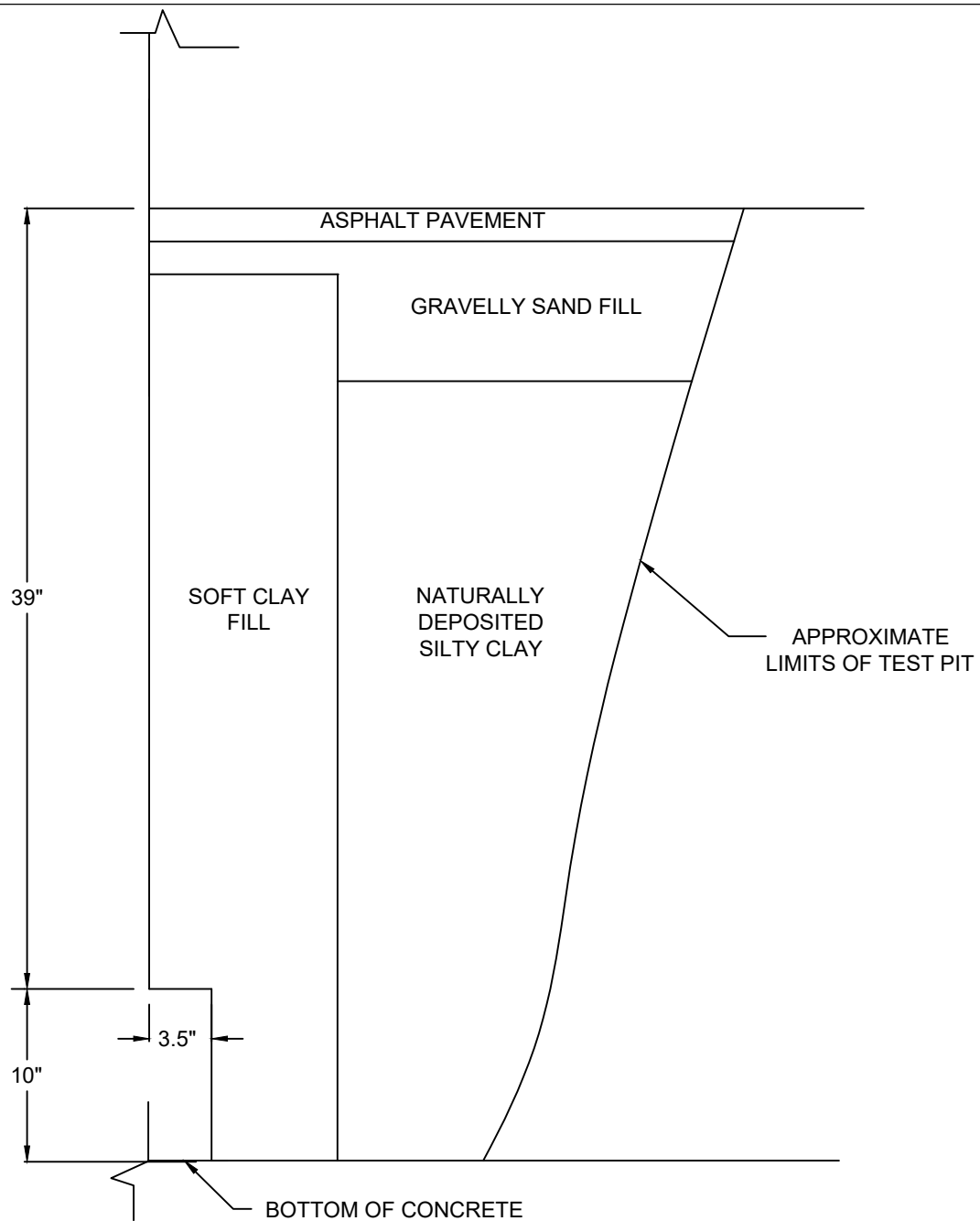


FIGURE 3
 EXPOSED FOUNDATION TP-1
 GEOTECHNICAL EVALUATION
 HARRISON LYSETH ELEMENTARY SCHOOL
 ADDITIONS AND RENOVATIONS
 PORTLAND, MAINE

NOT TO SCALE

DECEMBER 2018

PROJECT NO. 0557-025



NOT TO SCALE

FIGURE 4
EXPOSED FOUNDATION TP-2
GEOTECHNICAL EVALUATION
HARRISON LYSETH ELEMENTARY SCHOOL
ADDITIONS AND RENOVATIONS
PORTLAND, MAINE

DECEMBER 2018

PROJECT NO. 0557-025

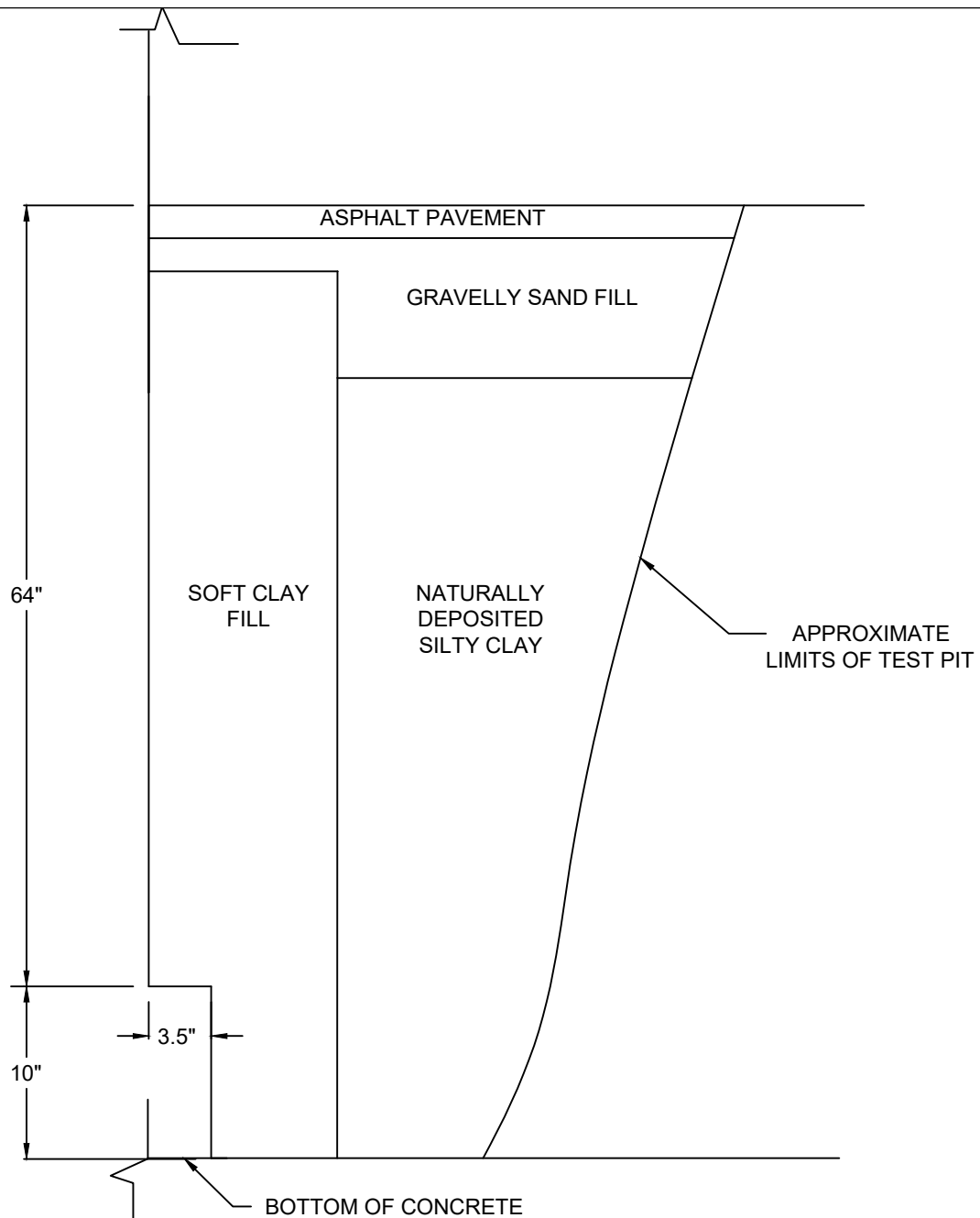


FIGURE 5
 EXPOSED FOUNDATION TP-3
 GEOTECHNICAL EVALUATION
 HARRISON LYSETH ELEMENTARY SCHOOL
 ADDITIONS AND RENOVATIONS
 PORTLAND, MAINE

NOT TO SCALE

DECEMBER 2018

PROJECT NO. 0557-025

APPENDIX A
LIMITATIONS

Geotechnical Evaluation
Harrison Lyseth Elementary School – Additions and Renovations
Portland, Maine

LIMITATIONS

This evaluation has been limited to consideration of the geotechnical aspects of the proposed additions and renovations to the Harrison Lyseth Elementary School in Portland, Maine. The purpose of the evaluation was to obtain information regarding subsurface conditions on which to base recommendations about the geotechnical aspects of design and construction of foundations, ground floor slabs, pavement sections, and seismic considerations. This report is not a technical specification nor is it intended to be used as a specification for bidding or building the project.

This geotechnical evaluation might also aid Contractors responsible for construction of the planned building. However, the recommendations and comments provided hereinafter are not intended to be instructions or directives to the project Contractors. The project Contractors must evaluate construction issues encountered in the work on the basis of their experience with similar projects taking in to account their own methods and procedures.

RWG&A has not considered the construction from a worker safety perspective. Construction safety is the responsibility of the project Contractor, who is also solely responsible for the means, methods, and sequencing of construction operations. RWG&A is providing this information as a service to Portland School Department. Under no circumstances should this information be interpreted to mean that RWG&A and/or the Portland School Department are assuming responsibility for construction site safety or the Contractor's activities; such responsibility is not being implied and should not be inferred.

RWG&A's services excluded an environmental site assessment relative to oil and hazardous materials or evidence of a potential release or threat of oil or hazardous materials on, below, or around the site. Any statement in this report, or on the exploration logs, regarding odors or unusual or suspicious conditions is for informational purposes only and is not intended to constitute an environmental assessment. Also excluded was any service to investigate or detect the presence of mold or other biological contaminants, or any service that was designed or intended to prevent or lower the risk of the occurrence of an infestation of mold or other biological contaminants (MOBC infestation).

APPENDIX B
EXPLORATION LOGS

Geotechnical Evaluation
Harrison Lyseth Elementary School – Additions and Renovations
Portland, Maine



**R.W. Gillespie
& Associates**

- Geotechnical Engineering
- Environmental Consulting
- Materials Testing Services

Boring Log: B-1

Total Depth (ft): 22

Sheet 1 of 1

Project Name: Harrison Lyseth Ele. School - Additions & Reno.
RWG&A Project No. 0557-025
Location: Portland, ME
Client: City of Portland - Portland School Department
RWG&A Representative: Serena Pape
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfill with cuttings
Observed Water Depth: 11.7'

Drilling Co.: N. E. Boring Contractors
Drill Rig: Mobile Drill
Driller Rep.: B. Enos
Date Started: 10/17/2018
Date Completed: 10/17/2018
Surface Elevation:
Drilling Method: 2-1/4" HSA
Casing Type:

DEPTH, FT.	SYMBOL	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT %	LAB TESTS
0		S-1	TOPSOIL AND ORGANIC MATERIAL (3 inches). CLAYEY SILT (ML); Loose, damp, silt, little clay, gray.	20	1 2 3 5	5		
5		S-2	SILTY SAND (SM); Medium dense, damp, fine sand, some silt.	21	8 13 10 10	23		
10		S-3	SILTY SAND WITH GRAVEL (SM); Medium dense to very dense, wet, medium to fine sand, some silt, few gravel, gray.	15	3 11 12 15	23		
15		S-4		20	23 44 50/3"	94+		
20		S-5		1	1 23 33 44	56		
25			Bottom of Exploration at 22', Not refusal.					
30								

Notes:



**R.W. Gillespie
& Associates**

- Geotechnical Engineering
- Environmental Consulting
- Materials Testing Services

Boring Log: B-2

Total Depth (ft): 15.2

Sheet 1 of 1

Project Name: Harrison Lyseth Ele. School - Additions & Reno.

RWG&A Project No. 0557-025

Location: Portland, ME

Client: City of Portland - Portland School Department

RWG&A Representative: Serena Pape

Boring Location: See Exploration Location Plan

Boring Abandonment Method: Backfill with cuttings

Observed Water Depth: 8'

Drilling Co.: N. E. Boring Contractors

Drill Rig: Mobile Drill

Driller Rep.: B. Enos

Date Started: 10/17/2018

Date Completed: 10/18/2018

Surface Elevation:

Drilling Method: 2-1/4" HSA

Casing Type:

DEPTH, FT.	SYMBOL	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT %	LAB TESTS
0		S-1	ASPHALTIC PAVEMENT (2 inches).	6	7	5		
			FILL; Gravelly sand with silt, brown.		3			
			CLAYEY SILT (ML); Loose, damp, silt, few to little clay, gray.		2			
					2			
5		S-2	Becomes some clay at 5'.	23	2	9		
					4			
					5			
					24			
10		S-3	SILTY SAND (SM); Very loose to very dense, wet, coarse to fine sand, some silt, few clay, trace fine gravel, gray.	19	1	4		
					2			
					2			
					9			
15		S-4	Bottom of Exploration at 15.2'; Auger refusal.	2	50/2"	50+		
20								
25								
30								

Notes:



**R.W. Gillespie
& Associates**

- Geotechnical Engineering
- Environmental Consulting
- Materials Testing Services

Boring Log: B-3

Total Depth (ft): 20

Sheet 1 of 1

Project Name: Harrison Lyseth Ele. School - Additions & Reno.
RWG&A Project No. 0557-025
Location: Portland, ME
Client: City of Portland - Portland School Department
RWG&A Representative: Serena Pape
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfill with cuttings
Observed Water Depth: 6.3'

Drilling Co.: N. E. Boring Contractors
Drill Rig: Mobile Drill
Driller Rep.: B. Enos
Date Started: 10/17/2018
Date Completed: 10/17/2018
Surface Elevation:
Drilling Method: 2-1/4" HSA
Casing Type:

DEPTH, FT.	SYMBOL	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT %	LAB TESTS
0		S-1	ASPHALTIC PAVEMENT (3 inches). FILL; Gravelly sand with silt, brown.	8	4 11 7 4	18		
5		S-2	SILT (ML); Medium dense, damp, silt, few gravel, trace sand, brown. SILTY CLAY (CL); Stiff, damp, clay, some silt, gray.	24	6 6 7 7	13		
10		S-3	SAND (SP); Medium dense to very dense, wet, coarse to fine sand few gravel, trace silt.	4	21 50/2"	50+		
15		S-4	Becomes medium dense.	7	6 8 11 7	19		
20			Bottom of Exploration at 20'; Not refusal.					
25								
30								

Notes:



**R.W. Gillespie
& Associates**

- Geotechnical Engineering
- Environmental Consulting
- Materials Testing Services

Boring Log: B-4

Total Depth (ft): 22

Sheet 1 of 1

Project Name: Harrison Lyseth Ele. School - Additions & Reno.
RWG&A Project No. 0557-025
Location: Portland, ME
Client: City of Portland - Portland School Department
RWG&A Representative: Serena Pape
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfill with cuttings
Observed Water Depth: 8.4'

Drilling Co.: N. E. Boring Contractors
Drill Rig: Mobile Drill
Driller Rep.: B. Enos
Date Started: 10/18/2018
Date Completed: 10/18/2018
Surface Elevation:
Drilling Method: 2-1/4" HSA
Casing Type:

DEPTH, FT.	SYMBOL	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT %	LAB TESTS
0		S-1	ASPHALTIC PAVEMENT (2 inches).	8	3	9		
			FILL; Silty sand with gravel, brown.		5			
		S-2	CLAYEY SILT (ML); Loose, silt, damp, some clay, dark gray.	8	4	6		
					3			
		S-3		18	4			
					3			
5		S-4	Becomes medium dense at 6'.	24	3	9		
					5			
		S-5		23	4			
					4			
					5	19		
					6			
					8			
		S-6	SILTY SAND (SM); Medium dense, wet, coarse to fine sand, some silt, gray. Becomes fine sand at 10'.	24	9	7		
10					10			
					1	13		
					2			
					5			
					7			
					3			
					5			
					8			
15		S-7		6	6	16		
					10			
					7			
					9			
					14			
20		S-8		19	1	20		
					8			
					12			
					15			
			Bottom of Exploration at 22'; Not refusal.					
25								
30								

Notes:



**R.W. Gillespie
& Associates**

- Geotechnical Engineering
- Environmental Consulting
- Materials Testing Services

Boring Log: B-5

Total Depth (ft): 21.8

Sheet 1 of 1

Project Name: Harrison Lyseth Ele. School - Additions & Reno.
RWG&A Project No. 0557-025
Location: Portland, ME
Client: City of Portland - Portland School Department
RWG&A Representative: Serena Pape
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfill with cuttings
Observed Water Depth: 12.6'

Drilling Co.: N. E. Boring Contractors
Drill Rig: Mobile Drill
Driller Rep.: B. Enos
Date Started: 10/17/2018
Date Completed: 10/17/2018
Surface Elevation:
Drilling Method: 2-1/4" HSA
Casing Type:

DEPTH, FT.	SYMBOL	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT %	LAB TESTS
0		S-1	TOPSOIL AND ORGANIC MATERIAL (2 inches). CLAYEY SILT (ML); Loose, damp, silt, little clay.	21	WOH 2 3 4	5		
5		S-2	Variable mix silt, sand and gravel.	20	6 12 16 12	28		
10		S-3	SAND WITH SILT (SP-SM); Medium dense, wet, medium to fine sand, few silt, tan.	21	8 11 12 12	23		
15		S-4	SILTY SAND (SM); Medium dense to very dense, medium to fine sand, little silt, few clay, gray.	16	8 11 10 11	21		
20		S-5	Bottom of Exploration at 21.8'. SPT refusal.	9	9 36 35 50/4"	71		
25								
30								

Notes:



**R.W. Gillespie
& Associates**

- Geotechnical Engineering
- Environmental Consulting
- Materials Testing Services

Boring Log: B-6

Total Depth (ft): 21.8

Sheet 1 of 1

Project Name: Harrison Lyseth Ele. School - Additions & Reno.
RWG&A Project No. 0557-025
Location: Portland, ME
Client: City of Portland - Portland School Department
RWG&A Representative: Serena Pape
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfill with cuttings
Observed Water Depth: 11.5'

Drilling Co.: N. E. Boring Contractors
Drill Rig: Mobile Drill
Driller Rep.: B. Enos
Date Started: 10/17/2018
Date Completed: 10/17/2018
Surface Elevation:
Drilling Method: 2-1/4" HSA
Casing Type:

DEPTH, FT.	SYMBOL	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT %	LAB TESTS
0		S-1	ASPHALTIC PAVEMENT (2 inches).	7	4	16		
			FILL; Damp, coarse to fine sand, little silt, little gravel, brown.		9			
			SILTY CLAY (CL); Very stiff to very soft, damp, some silt, dark gray.		7			
					5			
5		S-2		24	4	17	27.0	NM
					7			
					10			
					11			
			Becomes very soft at 8'.					
10		S-3		24	WOH	2	40.8	NM
					WOH			
					2			
					2			
			SILTY SAND (SM); Medium dense, wet, medium to fine sand, little silt, few clay, tan/gray.	20	1	14		
15		S-4			5			
					9			
					14			
20		S-5		16	8	20		
					10			
					10			
			Bottom of Exploration at 21.8'. SPT refusal.		50/4"			
25								
30								

Notes:



**R.W. Gillespie
& Associates**

- Geotechnical Engineering
- Environmental Consulting
- Materials Testing Services

Boring Log: B-7

Total Depth (ft): 16.3

Sheet 1 of 1

Project Name: Harrison Lyseth Ele. School - Additions & Reno.
RWG&A Project No. 0557-025
Location: Portland, ME
Client: City of Portland - Portland School Department
RWG&A Representative: Serena Pape
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfill with cuttings
Observed Water Depth: 11.5'

Drilling Co.: N. E. Boring Contractors
Drill Rig: Mobile Drill
Driller Rep.: B. Enos
Date Started: 10/17/2018
Date Completed: 10/17/2018
Surface Elevation:
Drilling Method: 2-1/4" HSA
Casing Type:

DEPTH, FT.	SYMBOL	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT %	LAB TESTS
0		S-1	ASPHALTIC PAVEMENT (2 inches).	12	4	6	20.7	NM
			SILTY CLAY (CL); Stiff to soft, damp, clay, some silt, dark gray.		3			
					3			
					8			
5		S-2		24	4	19	22.8	NM
					9			
					10			
			Becomes soft at 8'.		10			
10		S-3		24	WOH	4	24.9	NM
					1			
			SILTY SAND (SM); Loose to dense, wet, medium to fine sand, little silt, few clay.		3			
					4			
15		S-4		8	26	71+		
					21			
			Bottom of Exploration at 16.3'. SPT Refusal.		50/4"			
20								
25								
30								

Notes:



**R.W. Gillespie
& Associates**

- Geotechnical Engineering
- Environmental Consulting
- Materials Testing Services

Boring Log: B-8

Total Depth (ft): 17.6

Sheet 1 of 1

Project Name: Harrison Lyseth Ele. School - Additions & Reno.
RWG&A Project No. 0557-025
Location: Portland, ME
Client: City of Portland - Portland School Department
RWG&A Representative: Serena Pape
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfill with cuttings
Observed Water Depth: 9.1'

Drilling Co.: N. E. Boring Contractors
Drill Rig: Mobile Drill
Driller Rep.: B. Enos
Date Started: 10/17/2018
Date Completed: 10/17/2018
Surface Elevation:
Drilling Method: 2-1/4" HSA
Casing Type:

DEPTH, FT.	SYMBOL	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT %	LAB TESTS
0		S-1	ASPHALTIC PAVEMENT (3 inches). FILL; Gravelly sand with silt, tan/brown.	11	8 7 8 10	15		
5		S-2	SILTY SAND (SM); Medium dense, wet, medium to fine sand, little silt, tan/gray.	15	16 8 4 2	12		
10		S-3	Becomes medium dense.	17	13 12 12 16	24		
15		S-4	Few clay.	16	9 12 13 21	25		
20			Bottom of Exploration at 17.6'; Auger refusal.					
25								
30								

Notes:



**R.W. Gillespie
& Associates**

- Geotechnical Engineering
- Environmental Consulting
- Materials Testing Services

Boring Log: B-9

Total Depth (ft): 19.6

Sheet 1 of 1

Project Name: Harrison Lyseth Ele. School - Additions & Reno.
RWG&A Project No. 0557-025
Location: Portland, ME
Client: City of Portland - Portland School Department
RWG&A Representative: Serena Pape
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfill with cuttings
Observed Water Depth: 15.4'

Drilling Co.: N. E. Boring Contractors
Drill Rig: Mobile Drill
Driller Rep.: B. Enos
Date Started: 10/17/2018
Date Completed: 10/18/2018
Surface Elevation:
Drilling Method: 2-1/4" HSA
Casing Type:

DEPTH, FT.	SYMBOL	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT %	LAB TESTS
0		S-1	ASPHALTIC PAVEMENT (4 inches). FILL; Sandy gravel, brown.	15	17 16 15 13	31		
5		S-2	SILTY CLAY (CL); Medium stiff, damp, clay, little silt, few sand, dark gray.	9	2 5 7 10	12		
10		S-3		24	3 5 8 9	13		
15		S-4	SILTY SAND (SM); Loose, wet, medium to fine sand, some silt, few clay, gray.	16	7 3 2 17	5		
20			Bottom of Exploration at 19.6'; Auger refusal.					
25								
30								

Notes:



- Boring Log: B-10

Total Depth (ft): 20

Sheet 1 of 1

Observed Water Depth: 14.9'

Casing Type:

Notes:



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- Geotechnical Engineering
- Environmental Consulting
- Materials Testing Services

Boring Log: B-11

Total Depth (ft): 12

Sheet 1 of 1

Project Name: Harrison Lyseth Ele. School - Additions & Reno.
RWG&A Project No. 0557-025
Location: Portland, ME
Client: City of Portland - Portland School Department
RWG&A Representative: Serena Pape
Boring Location: See Exploration Location Plan
Boring Abandonment Method: Backfill with cuttings
Observed Water Depth: 8.4'

Drilling Co.: N. E. Boring Contractors
Drill Rig: Mobile Drill
Driller Rep.: B. Enos
Date Started: 10/17/2018
Date Completed: 10/18/2018
Surface Elevation:
Drilling Method: 2-1/4" HSA
Casing Type:

DEPTH, FT.	SYMBOL	SAMPLE NUMBER	DESCRIPTION OF MATERIAL	SAMPLE RECOVERY, IN.	BLOWS PER 6"	SPT-N BLOWS PER FT.	MOISTURE CONTENT %	LAB TESTS
0		S-1	ASPHALTIC PAVEMENT (3 inches).	4	2 3 2 5	5		
			FILL; Gravelly sand with silt, brown.					
5		S-2	SILT WITH SAND (ML); Dense to very dense, wet, silt, few fine sand, few gravel, gray-brown.	10	27 50/4"	50+		
10		S-3		18	11 23 10 9	33		
			Bottom of Exploration at 12'; Not refusal. Terminated due to angle of auger.					
15								
20								
25								
30								

Notes:



Sheet 1 of 1

Drilling Co.: N. E. Boring Contractors
Drill Rig: Mobile Drill
Driller Rep.: B. Enos
Date Started: 10/18/2018
Date Completed: 10/18/2018
Surface Elevation:
Drilling Method: 2-1/4" HSA
Casing Type:

Notes:



**R.W. Gillespie
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- Environmental Consulting
- Materials Testing Services

TEST PIT LOG

Test Pit No. TP-1

PROJECT	Harrison Lyseth Ele. School - Additions & Reno.	PROJECT NO.	0557-025
CLIENT	City of Portland - Portland School Department	DATE	10/17/2018
LOCATION	Portland	ELEV.	
EXCAVATION METHOD	Chase Excavating	LOGGER	S. Pape
EXCAVATION LOCATION	Harrison Lyseth Elementary School		
DEPTH TO - Water:	Not Obs.	When checked:	Caving:

DEPTH	SYMBOL	SAMPLES SAMPLE NUMBER	DESCRIPTION	MOISTURE %	LAB TESTS
0			ASPHALTIC PAVEMENT (2 inches) FILL; Gravelly sand fill.	6.0	GS NM
2			SILTY CLAY (CL); Stiff clay, some silt, brown		
4					
6					
8					
10					
12					

Notes: Foundation footing observed to be 3.4 feet below ground surface, protrudes 3-1/2 inches from wall, 10 inches thick.
Foundation backfill observed was very soft blue-gray clay.



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- Environmental Consulting
- Materials Testing Services

TEST PIT LOG

Test Pit No. TP-2

PROJECT	Harrison Lyseth Ele. School - Additions & Reno.	PROJECT NO.	0557-025
CLIENT	City of Portland - Portland School Department	DATE	10/17/2018
LOCATION	Portland	ELEV.	
EXCAVATION METHOD	Chase Excavating	LOGGER	S. Pape
EXCAVATION LOCATION	Harrison Lyseth Elementary School		
DEPTH TO - Water:	Not Obs.	When checked:	Caving:

DEPTH	SYMBOL	SAMPLES SAMPLE NUMBER	DESCRIPTION	MOISTURE %	LAB TESTS
0			ASPHALTIC PAVEMENT (3 inches) FILL; Gravelly sand.	7.8	GS NM
2			SILTY CLAY (CL); Stiff clay, some silt, brown.		
4					
6					
8					
10					
12					

Notes: Foundation footing observed to be 3.2 feet below ground surface, protrudes 3-1/2 inches from wall, 10 inches thick.
Foundation backfill observed was very soft blue-gray clay.



**R.W. Gillespie
& Associates**

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- Environmental Consulting
- Materials Testing Services

TEST PIT LOG

Test Pit No. TP-3

PROJECT	Harrison Lyseth Ele. School - Additions & Reno.	PROJECT NO.	0557-025
CLIENT	City of Portland - Portland School Department	DATE	10/17/2018
LOCATION	Portland	ELEV.	
EXCAVATION METHOD	Chase Excavating	LOGGER	S. Pape
EXCAVATION LOCATION	Harrison Lyseth Elementary School		
DEPTH TO - Water: 6.3'	When checked: at time of excavation	Caving:	

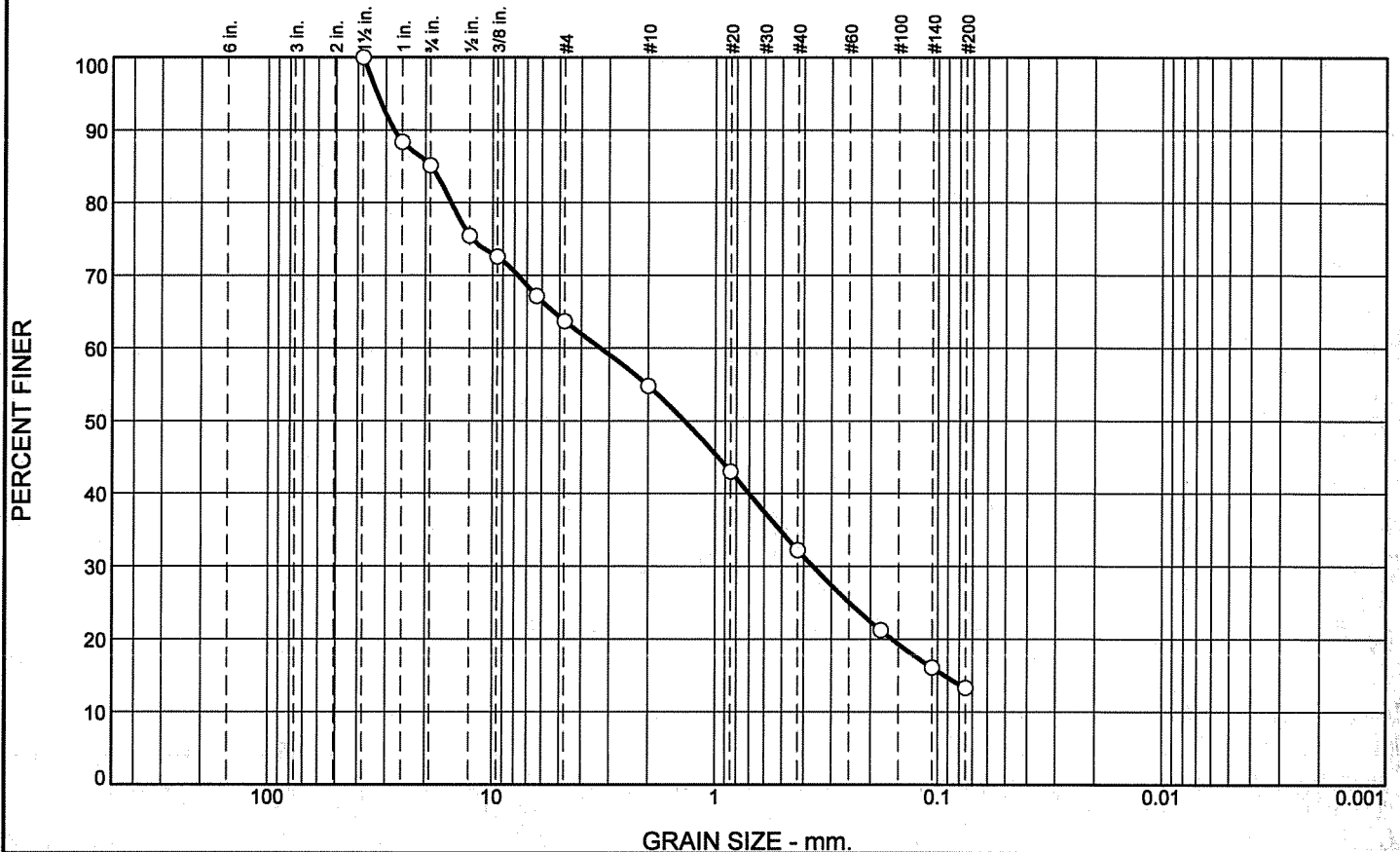
DEPTH	SYMBOL	SAMPLES SAMPLE NUMBER	DESCRIPTION	MOISTURE %	LAB TESTS
0			ASPHALTIC PAVEMENT (4 inches). FILL; Gravelly sand		
2			SILTY CLAY (CL); Stiff clay, some silt, brown.		
4					
6					
8					
10					
12					

Notes: Foundation footing observed to be 5.4 feet below ground surface, protrudes 3-1/2 inches from wall, 10 inches thick.
Foundation backfill observed was very soft blue-gray clay.

APPENDIX C
LABORATORY TEST RESULTS

Geotechnical Evaluation
Harrison Lyseth Elementary School – Additions and Renovations
Portland, Maine

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	14.9	21.4	8.9	22.6	18.9	13.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1 1/2"	100.0		
1"	88.3		
3/4"	85.1		
1/2"	75.4		
3/8"	72.6		
1/4"	67.2		
#4	63.7		
#10	54.8		
#20	43.0		
#40	32.2		
#80	21.2		
#140	16.1		
#200	13.3		

* (no specification provided)

Soil Description
Silty sand with gravel

Atterberg Limits
 PL= LL= PI=

Coefficients
 D₉₀= 27.6730 D₈₅= 18.9078 D₆₀= 3.2938
 D₅₀= 1.3700 D₃₀= 0.3638 D₁₅= 0.0928
 D₁₀= C_u= C_c=

Classification
 USCS= SM AASHTO= A-1-b

Remarks
 Moisture Content: 5.0%

Location: Boring B-10
Sample Number: S-1

Depth: 0'-2'

Date: 10/30/2018

**R.W. Gillespie
& Associates, Inc.
Biddeford, Maine**

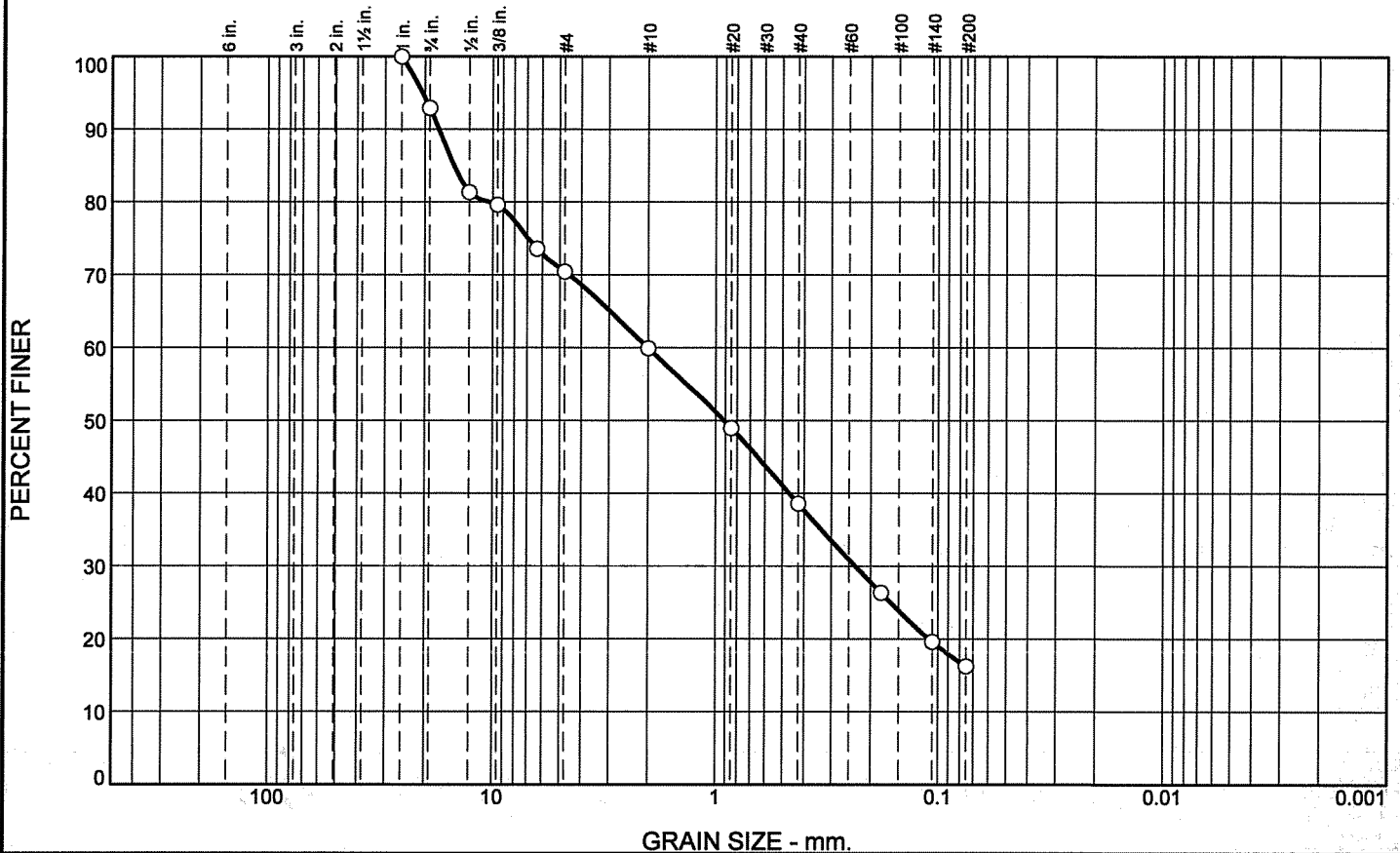
Client: City of Portland
Project: Harrison Lyseth Elementary School
Portland, ME
Project No: 0557-025

Lab No. 15291h

Tested By: AGS/JJB/MES

Checked By: SNP

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	7.1	22.5	10.5	21.3	22.3	16.3	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1"	100.0		
3/4"	92.9		
1/2"	81.3		
3/8"	79.6		
1/4"	73.6		
#4	70.4		
#10	59.9		
#20	49.0		
#40	38.6		
#80	26.4		
#140	19.6		
#200	16.3		

* (no specification provided)

Soil Description
Silty sand with gravel

Atterberg Limits
 PL= LL= PI=

Coefficients
 D₉₀= 17.3792 D₈₅= 14.8830 D₆₀= 2.0123
 D₅₀= 0.9172 D₃₀= 0.2341 D₁₅=
 D₁₀= C_u= C_c=

Classification
 USCS= SM AASHTO= A-1-b

Remarks
 Moisture Content: 6.6%

Location: Boring B-12
Sample Number: S-1

Depth: 0'-2'

Date: 10/30/2018

**R.W. Gillespie
& Associates, Inc.
Biddeford, Maine**

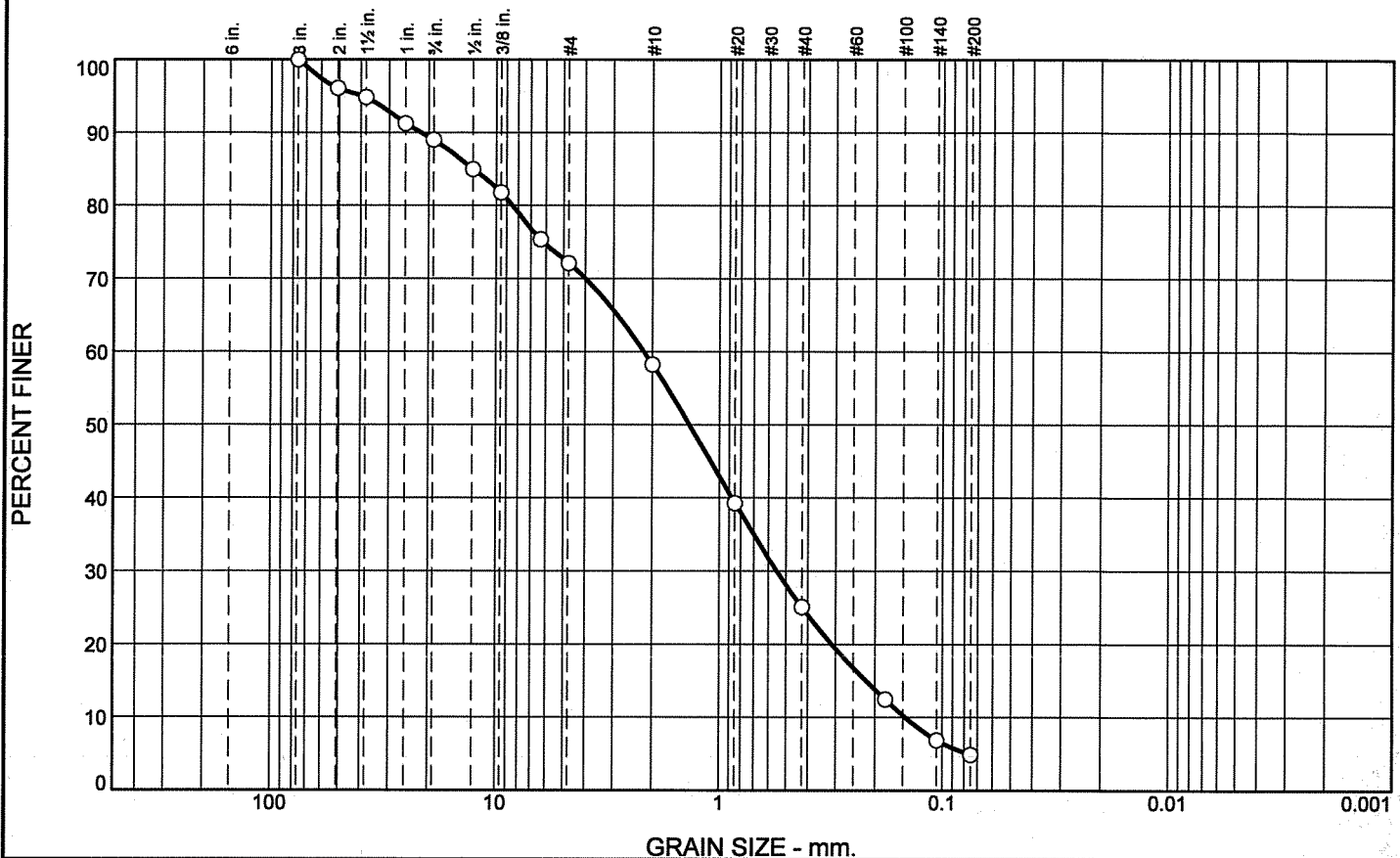
Client: City of Portland
Project: Harrison Lyseth Elementary School
Portland, ME
Project No: 0557-025

Lab No. 15291m

Tested By: AGS/JJB/MES

Checked By: SNP

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	11.0	16.9	13.9	33.1	20.2	4.9	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3"	100.0		
2"	96.1		
1 1/2"	94.8		
1"	91.2		
3/4"	89.0		
1/2"	85.0		
3/8"	81.8		
1/4"	75.4		
#4	72.1		
#10	58.2		
#20	39.3		
#40	25.1		
#80	12.5		
#140	6.9		
#200	4.9		

* (no specification provided)

<u>Soil Description</u>		
Poorly graded sand with gravel		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 21.6953	D ₈₅ = 12.7468	D ₆₀ = 2.1867
D ₅₀ = 1.3653	D ₃₀ = 0.5502	D ₁₅ = 0.2192
D ₁₀ = 0.1462	C _u = 14.95	C _c = 0.95
<u>Classification</u>		
USCS= SP	AASHTO= A-1-b	
<u>Remarks</u>		
Natural Moisture Moisture Content: 6.0%		

Location: TP-1

Sample Number: Bulk

Depth: 0.3'-0.9'

Date: 10/30/2018

**R.W. Gillespie
& Associates, Inc.
Biddeford, Maine**

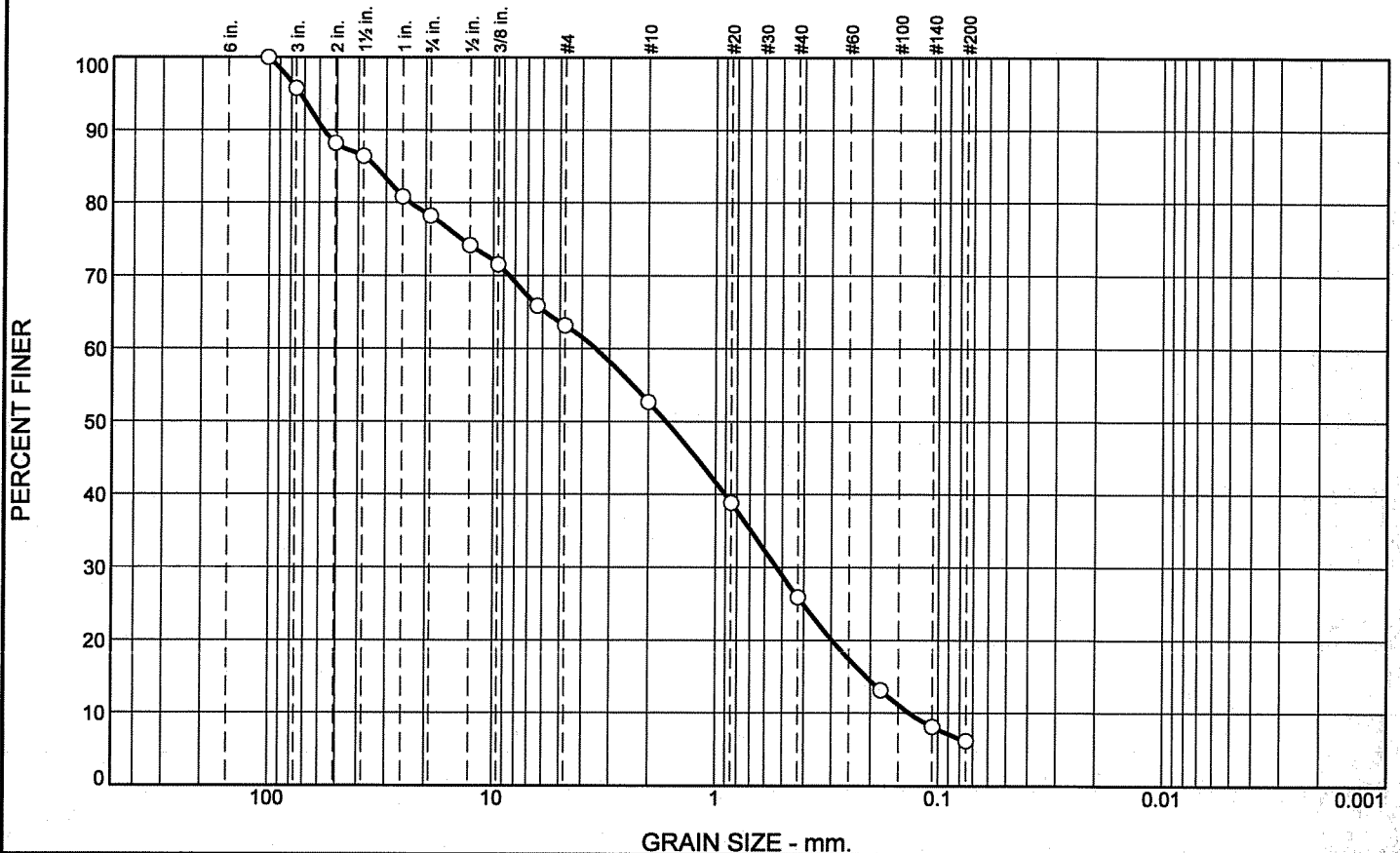
Client: City of Portland
Project: Harrison Lyseth Elementary School
Portland, ME
Project No: 0557-025

Lab No. 15291a

Tested By: AGS

Checked By: SNP

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
4.3	17.5	15.0	10.5	26.8	19.7	6.2	

SIEVE SIZE	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
4"	100.0		
3"	95.7		
2"	88.2		
1 1/2"	86.4		
1"	80.8		
3/4"	78.2		
1/2"	74.2		
3/8"	71.5		
1/4"	65.9		
#4	63.2		
#10	52.7		
#20	38.8		
#40	25.9		
#80	13.2		
#140	8.1		
#200	6.2		

* (no specification provided)

<u>Soil Description</u>		
Poorly graded sand with silt and gravel		
<u>Atterberg Limits</u>		
PL=	LL=	PI=
<u>Coefficients</u>		
D ₉₀ = 57.4586	D ₈₅ = 33.6195	D ₆₀ = 3.4687
D ₅₀ = 1.6686	D ₃₀ = 0.5310	D ₁₅ = 0.2090
D ₁₀ = 0.1336	C _u = 25.96	C _c = 0.61
<u>Classification</u>		
USCS= SP-SM	AASHTO= A-1-b	
<u>Remarks</u>		
Natural Moisture: 7.8%		

Location: TP-2

Sample Number: Bulk

Depth: 0.3'-1.5'

Date: 10/30/2018

**R.W. Gillespie
& Associates, Inc.
Biddeford, Maine**

Client: City of Portland

Project: Harrison Lyseth Elementary School
Portland, ME

Project No: 0557-025

Lab No. 15291b

Tested By: AGS

Checked By: SNP



16. CONSISTENCY WITH CITY MASTER PLANS

Consistency with City Master Plans – (14-526 (c) 1)

- Expanded development at the Lyseth School is accomplishing initiatives of 'Portland's Plan 2030' for educational enhancement. The 'Buildings for Our Future' report of 2013 contained recommendations for reconstruction and renovation of the City's elementary schools. The Lyseth Elementary School is one of several that will be accomplishing these goals.
- Prior to the recent City LLM Campus Improvements Circulation Project, Wright-Pierce Engineers had completed the Lyseth/Lyman-Moore Master Plan, which included suggestions for improved parking, circulation, and athletic fields. In 2018, some of these proposed improvements were accomplished in the Phase 1 construction documents by Wright-Pierce Engineers. In the immediate vicinity of the Lyseth School, these improvements consisted of a new paved sidewalk along the south paved parking lot, and sections of new storm drainage piping in that same area.
- This current proposed Lyseth School redevelopment project will continue reconstructing the vehicular and pedestrian circulation routes around the building, improve the storm drainage systems, increase the available parking spaces, and relocate two roof drains from the sanitary sewer to the storm drain system.
- No off-site infrastructure development is proposed.



18. PUBLIC UTILITIES AVAILABILITY

Availability and Adequacy of Public Utilities – (14-526 (c) 3)

- Electrical service to the renovated school will be relocated from the overhead and underground lines on the north side of the building, where the new Gym/Library addition is planned, to a new transformer located on the south side of the building. All the electrical lines being relocated will be underground.
- Existing and proposed utilities connections to the school building are shown on drawing C40.1. The two sanitary sewer connections will remain in-place, but the current building 'combined' roof drains will be disconnected and relocated into new storm drain lines connecting to on-site storm drain systems. One new sanitary sewer connection will be made to the new Gym/Library addition. The existing steam heating lines will remain in-place, but be routed through the new Administration addition. The domestic water line fed from the Moore School will remain in-place, but will be routed around the new Administration addition, and into the existing building. A new fire-suppression water line will be extended across the site from the main near the fire hydrant to the south side of the existing building. As noted above, electrical service will be relocated from the north side of the building to a new transformer located on the south side of the building. Communication lines will also be relocated, via underground ducts, to the south side of the building.
- Proposed sewer line connections are being made to the existing on-site sewer service line, and no new connections to sewer mains in the public way are proposed.
- Solid waste will be collected, stored, and disposed as it is currently. The trash dumpster located in the service yard on the south side of the school will be moved slightly to a new concrete pad and chain-link fence enclosure. The dumpster will be screened with privacy inserts in the chain-link fence. Access to the service yard and dumpster will be the same as existing.
- Communications with the public utility agencies are included. The enclosed letters of request have been sent to the Portland Water District and the City

Public Works Department for water and sewer coordination. The attached sketch furnished by the Water District shows the water service main and hydrant to the property. The attached e-mail and sketch from Central Maine Power Company(CMP) indicates the ongoing coordination between Harriman electrical designers and CMP personnel.



January 10, 2019

Heather Smith hsmith@pwd.org
MEANS Group
Portland Water District
225 Douglass Street
PO Box 3553
Portland, ME 04104-3553

Re: Harrison Lyseth Elementary School
Additions and Renovations
Project 18483
Capacity Letter Request

Dear Heather:

We are assisting the Portland School Department with design of additions and renovations of the Harrison Lyseth Elementary School at 175 Auburn Street. The additions will consist of an 11,000 sq.ft. Gym and Library single-story wing on the north side of the existing school; and a 3,000 sq.ft. Administrative single-story addition to the front entry(west side) of the school. These building additions will enhance the learning experience for the students, but will not increase the population of students or staff at the school.

Domestic water will continue to be served by the existing water line between the Lyman Moore and Harrison Lyseth schools. A new sprinkler line for the Lyseth school will connect to the water main on the site in front of the Moore school. The current building occupants are approximately 504 students and 74 staff. Table 4C, Design Flows, of the Maine Subsurface Wastewater Disposal Rules, latest edition, shows daily flow for elementary school students of 13 gallons/day for a school with a cafeteria; and staff of 12 gallons/day. The new gymnasium space has no shower facilities. The estimated daily water use for the renovated school is: $504(13 \text{ gpd}) + 74(12 \text{ gpd}) = 7440 \text{ GPD}$.

Please send me a letter stating the adequacy of the water system and wastewater system to continue supplying the needs of the school, to include in a Planning Board site application.

Thank you very much.

Sincerely,
Harriman

Frank L. Crabtree, P.E., LEED AP BD+C
Associate
fcrabtree@harriman.com

cc: Steven Stilphen (stilps@portlandschools.org)

AUBURN

BOSTON

PORTLAND

PORTSMOUTH



January 11, 2019

Chris Branch cbranch@portlandmaine.gov
Portland Public Works
212 Canco Road, Suite B
Portland, ME 04103

Re: Harrison Lyseth Elementary School
 Additions and Renovations
 Project No. 18483
 Capacity Letter Request

Dear Chris:

As you are aware, we are assisting the Portland Public Schools with the design of additions and renovations of the Harrison Lyseth Elementary School at 175 Auburn Street. The additions will consist of an 11,000 sq.ft. Gym and Library single-story wing on the north side of the existing school; and a 3,000 sq.ft. administrative single-story addition to the front entry (west side) of the school. These building additions will enhance the learning experience for the students, but will not increase the population of students or staff at the school.

Domestic water will continue to be served by the existing water line between the Lyman Moore and Harrison Lyseth schools. A new sprinkler line for the Harrison Lyseth school will connect to the water main on the site in front of the Lyman Moore school. The current building occupants are approximately 504 students and 74 staff. Table 4C, Design Flows, of the Maine Subsurface Wastewater Disposal Rules, latest edition, shows daily flow for elementary school students of 13 gallons/day for a school with a cafeteria; and staff of 12 gallons/day. The new gymnasium space has no shower facilities. The estimated daily water use for the renovated school is: $504 (13 \text{ gpd}) + 74 (12 \text{ gpd}) = 7,440 \text{ GPD}$.

Two existing 12" diameter sewer lines carry combined sanitary and roof runoff from different portions of the building, and combine in a 15" diameter sewer on the site. In compliance with the 2018 Site Plan Permit for the LLM Campus Improvements Circulation Project, #2017-202, we are planning to separate the roof drains that collect runoff from 30,419 sq.ft. of existing roof areas, and redirect the stormwater to the existing nearby storm drains. This will dramatically reduce the flow in the sanitary sewer line from the Lyseth school. None of the new building addition roof drains will connect to any sanitary sewer line, but will connect to the on-site storm drains.

For inclusion in the Planning Board site application, please send me a letter stating the adequacy of the wastewater system to continue supplying the needs of the school. Please let me know if you have other concerns or suggestions that we should know about.

Thank you very much.

AUBURN

BOSTON

PORTLAND

PORTSMOUTH



Sincerely,
Harriman

Frank L. Crabtree, P.E., LEED AP BD+C
Associate

fcrabtree@harriman.com

cc: Steven Stilphen (stilps@portlandschools.org)



CITY OF PORTLAND
Department of Public Works
Christopher C. Branch, P.E., Director

Date: March 4, 2019

Re: Wastewater Capacity Authorization

Address: 175 Auburn Street – Harrison Lyseth Elementary School

Applicant: Portland Public Schools – Doug Sherwood

Planner: Barbara Barhydt

Anticipated Wastewater Flow:

Estimate of Anticipated Design Flows				
Development	Unit Size	Number of Units	Gallons per Day per Unit	Total Gallons per Day
Existing flow to be removed				
School	# Students	504	13 GPD/Student W/ Cafeteria	-6552
School	# Staff	74	12 GPD/Employee	-888
Proposed flow				
School	# Students	504	13 GPD/Student W/ Cafeteria	6552
School	# Staff	74	12 GPD/Employee	888
Net Change				+ 0
*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.

If the City can be of further assistance, please contact me at all 874-8840 or brad@portlandmaine.gov

Sincerely,
CITY OF PORTLAND

Bradley A. Roland, P.E.
Senior Project Engineer

CENTRAL MAINE POWER CO.

From: Duperre, Paul <Paul.Duperre@cmpco.com>
Sent: Friday, November 30, 2018 10:43 AM
To: Jeremie M. Briggs
Subject: FW: Message from "PUSME0PORA0302"
Attachments: 20181130110514751.pdf

Hi Jeremie, please see my attached drawing for the Lyseth School facility.

Any questions please let me know.

paul

-----Original Message-----

From: PUSME0PORA0302@iberdrola.com [<mailto:PUSME0PORA0302@iberdrola.com>]
Sent: Friday, November 30, 2018 11:05 AM
To: Duperre, Paul
Subject: Message from "PUSME0PORA0302"

This E-mail was sent from "PUSME0PORA0302" (MP C4503).

Scan Date: 11.30.2018 11:05:14 (-0500)
Queries to: PUSME0PORA0302@iberdrola.com

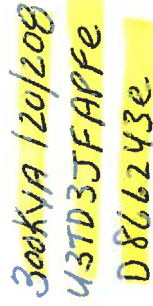
=====

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Lyseth School



9310-10262-4730-0513-VT00033

(3) 50's 120/208



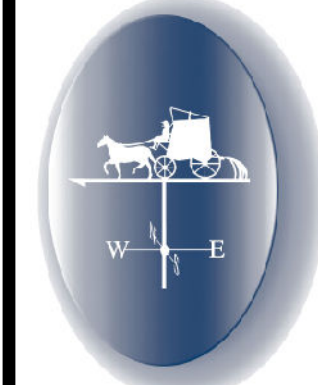
SR #: 271154

0100200400600800

Feet

1 inch = 100 feet

Pressure Zone: 267



PORTLAND WATER DISTRICT

225 Douglass Street

Portland, ME 04104

Asset Management and Planning Dept.

Legend

Air Valve

Blow Off

By Pass

Distribution

Transmission

Connection

Attribute Change

Reducer

Hydrant

Hydrant Control

Combined Service

Domestic Service

Fire Service

Private Hydrants

Meter Pits

Manhole

CSO

Gravity

Force

Contours

Hydrant Flow Testing Data

171 Auburn Street
Portland

N

E

S

W

This map depicts flow testing and static pressure data for the selected hydrants from PWD's asset management system. If the data is out of date or insufficient for your needs, please contact the MEANS group to request a hydrant flow test and we will work with you to get more complete data.

Drawn By: HAS

Scale: As Noted

Prepared For: Jeffrey Denis
Life Safety Fire Protection

Date: September 17, 2018



12. SNOW STORAGE

Snow Storage- (14-526 (a) 4d)

- Snow plowing and removal around the Lyseth school will continue in the same manner as it has been, with storage located as shown on the attached Snow Plan SP-1. When snow is greater than the available storage space, the snow will be loaded into trucks and removed from the site.

HARRIMAN

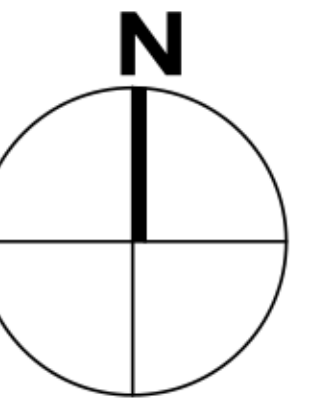
BURN PORTLAND PORTSMOUTH BOSTON

HARRISON LYSETH
ELEMENTARY SCHOOL

PORTLAND, MAINE

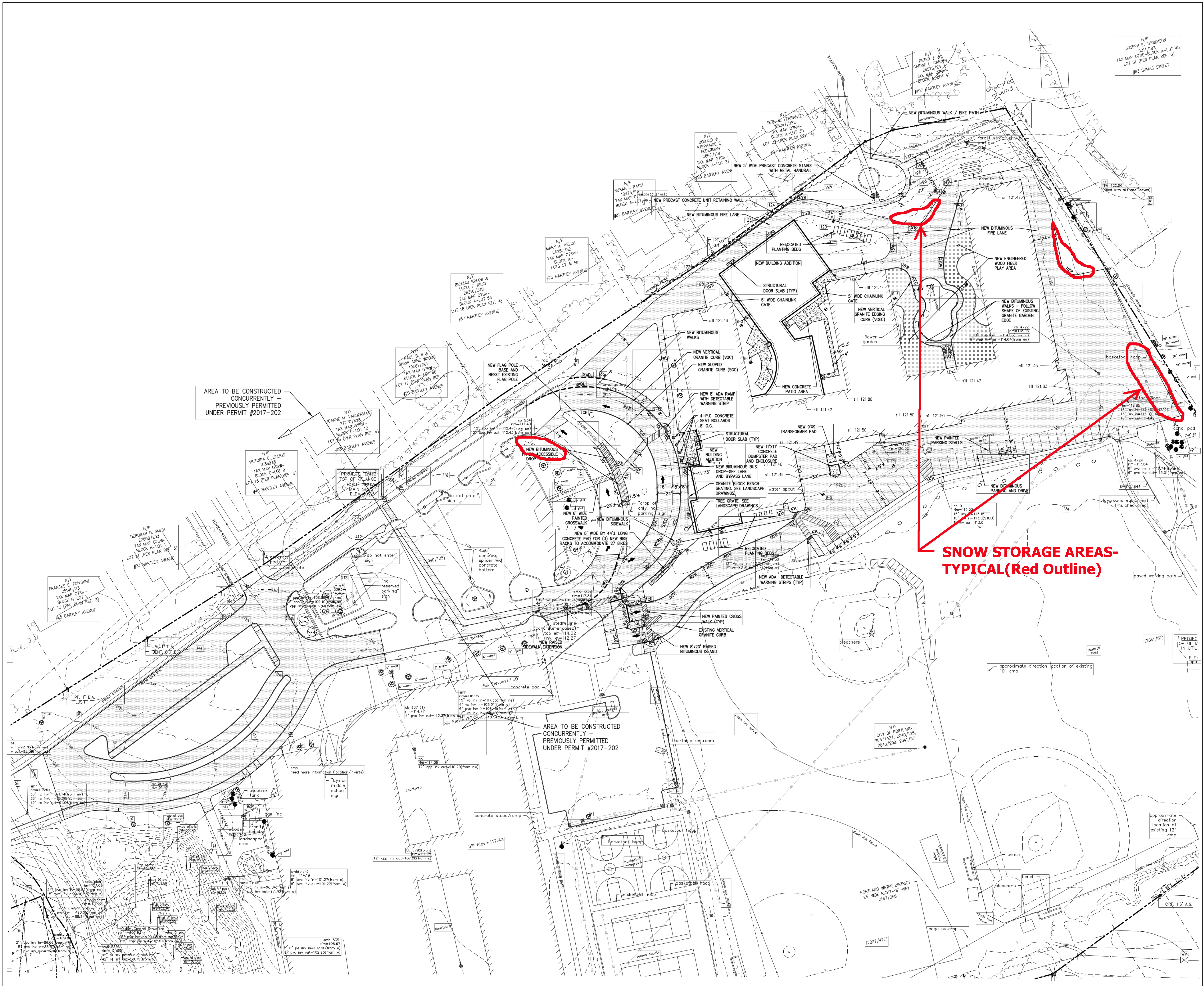
Hamman Project No.	18483
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Key Plan



GRAPHIC SCALE

1 inch = 30 feet)

[illegible]

PRELIMINARY
NOT FOR
CONSTRUCTION

Drawing Scales	
PA / PE: FLC	© 2019 Harriman Associates
Drawn By: PLS	

SNOW PLAN

SP-1



19a. MASSING, VENTILATION, AND WIND IMPACT

Massing, Ventilations and Wind Impact – (14-526 (d) 1)

- The size and height of the new Gym/Library building addition is typical for a single-story elementary school, and will not cause health or safety problems from changes in ventilation or wind effects on nearby structures. The building addition at 32' height and a setback of 20' from the north property line is within the zoning dimensional requirements.
- The existing Lyseth Elementary School receives its heat through a buried steam pipe line from the Moore Middle School boiler room, and has no fuel-burning equipment on or around the Elementary school. Therefore, there are no fumes being vented at the Lyseth site.
- There are two proposed air-conditioning condensing units on the building roof to accommodate the new building additions. They are small localized units to serve each addition. Both units are screened from the northerly residential properties by raised adjacent building walls. The unit on top of the Library roof is 150 ft. from the north property line, and is screened by the Gym wall, which is 16 ft. higher. The calculated sound level at the property line, without considering the Gym wall screening, is only 25 decibels. The unit on the existing building near the new Administration addition is 220 ft. from the north property line, and is screened by an existing building wall, which is 6 ft. higher. Its calculated sound level at the property line is less than 25 decibels, without considering the existing wall screening. Other ventilating fans and louvers located on the roof or building walls have minimal noise from the air they are venting. These air-handling fans operate primarily during the daytime, when the building spaces are occupied.



19b. SNOW AND ICE LOADING

Snow and Ice Loading – (14-526 (d) 3)

- The Lyseth School building additions have flat roofs that do not shed rainwater, snow, or ice to the ground. The roof structures are designed for the snow/ice loadings. The building design therefore prevents ice or snow from falling off the roof onto adjacent public ways or properties.



20. EXTERIOR LIGHTING

Exterior Lighting – (14-526 (d) 6)

- No new site lighting poles are proposed for this Lyseth School building addition project. The school doorways will be lit with wall-mounted lights or canopy-mounted lights. Attached are light fixture catalogue sheets for the selected building-mounted exterior light fixtures.
- There are no lights proposed in any street right-of-way.

JOB _____ TYPE _____

NOTES _____ APPROVALS _____

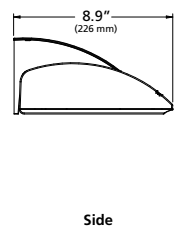
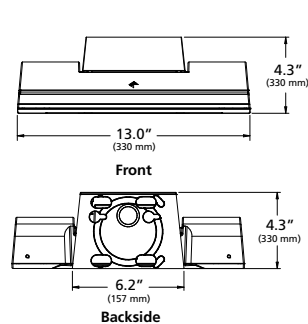
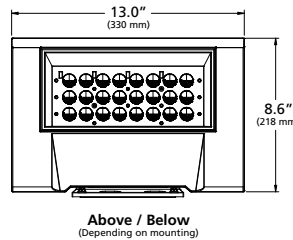
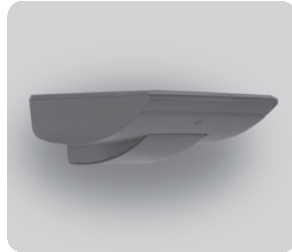
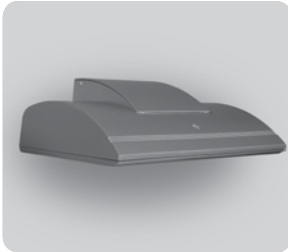
FEATURES

- -5° to +10° tilt adjustment
- High performance optics deliver up to 8,500 lumens
- up or down mountable without modification
- Diffused lens option
- Programmable occupancy sensor (dimming)
- NX and SiteSync wireless controls
- Up to 130 lumens per watt

Certifications



SPECIFICATIONS



Weight: 20 lbs

ORDERING CODE

Fixture	Mounting	Source	Wattage	Light Engine	Distribution	Voltage	Fixture Finish
WDS Wall Director Small	D Down U ¹ Up	24L 24 LEDs	30 30 Watts 40 40 Watts 60 60 Watts 75 75 Watts	3K7 3000K/70CRI 3K8 3000K/80CRI 4K7 4000K/70CRI 4K8 4000K/80CRI 5K7 5000K/70CRI	1 Type I 2 Type II 3 Type III 4W Type IV Wide 4F Type IV Forward WG ² Wall Graze SP Spot/Column FTD ² Forward Throw Diffuse WTD ² Wide Throw Diffuse	UNV 120-277V 347 ³ 347V 480 ³ 480V	BL Black DB Dark Bronze GT Graphite LG Light Gray PS Platinum Silver TT Titanium WH White CC Custom Color, consult representative
Control Options		Options		Accessories			
PC Button Photocell SCP-8F Programmable Occ. Sensor (<9' height) SCP-20F Programmable Occ. Sensor (9' - 20' height) SWP ⁴ SiteSync Wireless Pre-Commission NXWE ⁵ NX Wireless Enabled		EM ⁴ Internal Emergency Battery Backup SF Single Fuse & Fuse holder DF Double Fuse & Fuse holder		SCPREMOTE SCP configuration tool SWUSB SiteSync Software on USB SWTAB SiteSync Windows® Tablet SWBRG SiteSync Software Bridge Node			

Microsoft, Encarta, MSN, and Windows are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.

NX DISTRIBUTED™
INTELLIGENCE

Kim Lighting reserves the right to change specifications without notice.

¹ Not available with EM option or with SCP & SWPM sensor options.
² WG, FTD, and WTD come with a diffused lens.
³ 60 and 75 watt versions only
⁴ Universal voltage only (120-277), not available with PC option.
⁵ 120-347V only

LUMINAIRE PERFORMANCE

LED #	Nominal Lumen Package	Nominal Wattage	Lens Options	Distribution	3000K					4000K					5000K				
					Lumen	BUG Rating			lm/w	Lumen	BUG Rating			lm/w	Lumen	BUG Rating			lm/w
						B	U	G			B	U	G			B	U	G	
24L	3,000	29	Clear Lens	1	3433	1	0	0	119	3519	1	0	0	122	3560	1	0	0	123
				2	3351	1	0	1	116	3436	1	0	1	119	3475	1	0	1	120
				3	3340	1	0	1	116	3424	1	0	1	119	3463	1	0	1	120
				4F	3343	1	0	1	116	3427	1	0	1	119	3466	1	0	1	120
				4W	3172	1	0	1	110	3252	1	0	1	113	3289	1	0	1	114
				SP	3600	3	0	0	125	3691	3	0	0	128	3733	3	0	0	129
			Diffuse Lens	WG	3372	2	0	1	117	3456	2	0	1	120	3496	2	0	1	121
				FTD	2855	1	0	1	99	2927	1	0	1	101	2960	1	0	1	103
				WTD	3151	1	0	1	109	3230	1	0	1	112	3267	1	0	1	113
	4,500	42	Clear Lens	1	4593	1	0	0	111	4708	1	0	0	113	4762	1	0	0	115
				2	4484	1	0	1	108	4596	1	0	1	111	4649	1	0	1	112
				3	4468	1	0	1	108	4581	1	0	1	110	4633	1	0	1	112
				4F	4472	1	0	1	108	4585	1	0	1	110	4637	1	0	1	112
				4W	4244	1	0	1	102	4350	1	0	1	105	4400	1	0	1	106
				SP	4817	3	0	0	116	4938	3	0	0	119	4994	3	0	0	120
			Diffuse Lens	WG	4511	2	0	1	109	4624	2	0	1	111	4677	2	0	1	113
				FTD	3819	1	0	1	92	3915	1	0	1	94	3960	1	0	1	95
				WTD	4215	1	0	1	102	4321	1	0	1	104	4371	1	0	1	105
	6,000	59	Clear Lens	1	6333	1	0	1	108	6492	1	0	1	111	6566	1	0	1	112
				2	6182	1	0	1	106	6338	1	0	1	108	6410	1	0	1	110
				3	6161	1	0	2	105	6316	1	0	2	108	6388	1	0	2	109
				4F	6166	1	0	2	105	6321	1	0	2	108	6393	1	0	2	109
				4W	5851	1	0	2	100	5998	1	0	2	103	6067	1	0	2	104
				SP	6641	4	0	0	114	6808	4	0	0	116	6886	4	0	0	118
			Diffuse Lens	WG	6219	3	0	1	106	6376	3	0	1	109	6449	3	0	1	110
				FTD	5266	1	0	1	90	5398	2	0	1	92	5460	2	0	1	93
				WTD	5812	1	0	1	99	5958	1	0	1	102	6026	1	0	1	103
	7,500	74	Clear Lens	1	7879	1	0	1	106	8077	1	0	1	109	8170	1	0	1	110
				2	7692	1	0	1	104	7885	1	0	1	107	7975	1	0	2	108
				3	7665	1	0	2	104	7858	1	0	2	106	7948	1	0	2	107
				4F	7672	1	0	2	104	7865	1	0	2	106	7955	1	0	2	107
				4W	7280	1	0	2	98	7463	1	0	2	101	7548	1	0	2	102
				SP	8263	4	0	0	112	8471	4	0	0	114	8567	4	0	0	116
			Diffuse Lens	WG	7738	3	0	1	105	7933	3	0	1	107	8023	3	0	1	108
				FTD	6552	2	0	1	89	6717	2	0	1	91	6793	2	0	2	92
				WTD	7231	2	0	1	98	7413	2	0	1	100	7498	2	0	1	101

Electrical Characteristics											Dimming					
System Watts	Current	Line Voltage		Amps AC						Min. Power Factor	Max THD (%)	Dimming Range	Source current out		Absolute voltage	
		VAC	Hz	120	208	240	277	347	480				Min	Max	Min	Max
29	350mA	120-480	50/60	0.24	0.14	0.12	0.10	0.08	0.06	>0.9	20	10% to 100%	0mA	1mA	0V	10V
42	500mA			0.38	0.22	0.19	0.16	0.13	0.09							
59	725mA			0.48	0.27	0.24	0.21	0.16	0.12							
74	925mA			0.67	0.39	0.34	0.29	0.23	0.17							

TM-21 LIFETIME CALCULATION

Projected Lumen Maintenance (25°C / 77°F)						
HOURS	0	25,000	36,000	50,000	100,000	Reported L70
Projected Lumen Maintenance	100%	97%	95%	93%	86%	> 60,000 hrs

Kim Lighting reserves the right to change specifications without notice.

SPECIFICATIONS

Housing

- Optical housing is a one-piece, die-cast low copper (<0.6%) aluminum alloy with integral heat sink. The housing rotates against mounting arm housing to provide -5° to 10° of adjustment with degree markers cast into the housing. At 0 adjustment, lens is totally concealed from view above horizontal with fixture mounted in the downward position.
- Mounting arm housing is one-piece die-cast, low copper (<0.6%) aluminum alloy with provisions for tilt mechanism. Mounting arm fastens to the mounting plate with keyhole slots freeing both hands for securing and wiring. One stainless steel socket-head screw on the tilt mechanism frees the optical housing to rotate for aiming. Tightening the screws locks the housing and lens frame together with sealing provided by a silicone gasket. For visual aiming, adjustment may be accomplished with the fixture on.
- Lens Frame is a one-piece, die-cast low copper (<0.6%) aluminum alloy with integral cooling fins to dissipate driver thermal.
- Luminaire housing shall be free of any visible heat fins, hardware or fasteners.
- Bracketry and hardware shall be stainless steel.

Optical Array

- LEDs shall be mounted to a metal printed circuit board assembly (MCPCB).
- Optical lenses shall be clear injection molded PMMA acrylic.
- Secondary lens is impact resistant 1/8" tempered glass with anti-reflective coating.

Electronic Module

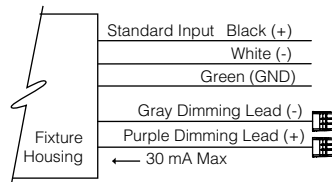
- Drivers shall be in direct contact with the die-cast aluminum lens frame across the entire surface area of the widest face for maximum thermal transfer.
- "Thermal Shield", secondary side, thermistor provides protection for the sustainable life of LED module and electronic components.
- Drivers shall have greater than a 0.9 power factor, less than 20% harmonic distortion, and be suitable for operation in -40°C to 40°C ambient environments
- luminaires shall have integral surge protection that shall be U.L. recognized and have a surge current rating of 10,000 Amps using the industry standard 8/20uSec wave and surge rating of

372J. Surge protection device shall be wired in series.

- Drivers shall be U.L. recognized.
- Drivers shall not be compatible with current sourcing dimmers, consult factory for current list of known compatible dimming systems approved dimmers include Lutron Diva AVTV, Lutron Nova NFTV and NTFTV.

Dimming

- 10% to 100% dimming by the use of standard 0-10V interface driver.
- The thermal shield works in conjunction with the control system to assure that overheating will not harm the LEDs.
- The wiring harness is connected with the use of the Purple lead as the positive (+) and the Grey lead as the negative (-) to an available control signal (by others).



Specifications

- Luminaire shall be capable of operating at 100% brightness in a 40°C environment. Both driver and optical array shall have integral thermal protection that will dim the luminaire upon detection of temperatures in excess of 85°C.
- luminaires not configured with a control system shall be provided with 0-10 purple and gray dimming leads.

Controls

- Optional universal voltage (120-277V) button photocontrol for dusk to dawn energy savings. Photocontrol is factory installed inside the housing with a fully gasketed sensor on the side wall. For multiple fixture mountings, one fixture is supplied with a photocell to operate the others.
- Occupancy Sensor shall be programmable and use passive infrared (PIR) sensing technology that reacts to changes in infrared energy (moving body heat) within the coverage area. Careful consideration must be given to obstructions that may block the sensor's line of sight.
- Factory default settings for SCP option shall be:
- High mode: 10V - Low mode: 1V - Ramp-up

rate: disabled - Fade-down rate: disabled - Photocell: Off - Sensitivity: Full - Time Delay: Fade to low: 5 minutes - Time Delay: Fade to off: 1 hour

- The SCP enables any wall mounted luminaire, in excess of 30 watts, to meet California Title 24 requirements with integral 10KA surge protection for added reliability and serviceability. For more detail: http://www.aal.net/products/sensor_control_programmable
- SiteSync™ wireless control system for reduction in energy and maintenance cost while optimizing light quality 24/7. See ordering information or visit www.hubbellighting.com/products/sitesync for more details.
- Hubbell Control Solutions' NX Distributed Intelligence™ lighting control platform utilizes a Distributed Network Architecture (DNA) that connects intelligent devices including luminaires, controllers, panels, occupancy sensors, photocells, wall switches and dimmers, creating a system with an unmatched level of reliability, scalability and simplicity

Options

- Integral battery backup provides emergency path of egress lighting for the required 90 minutes for 0°C ambient environments or -20°C with thermal jacket.

- Fusing:

SF for 120, 277 and 347 Line Volts

DF for 208, 240 and 480 Line Volts

High temperature fuse holders factory installed inside the fixture housing. Fuse is included.

Mounting and Installation

- JUNCTION BOX: Standard with steel, quick-mount junction box plate that mounts directly to 4" J-Box
- Mounting plate is stainless steel and features a one-piece EPDM gasket on back side of plate to firmly seal fixture to wall surface, forbidding entry of moisture and particulates.

Servicing

- Housing shall be able to hang freely in an open service position for inspection of primary wire connections. Once in service position, the housing shall be able to be removed for service by sliding the assembly to the left (for down mounting) or to the right (for up mounting) and disconnecting the wiring plugs.

Kim Lighting reserves the right to change specifications without notice.

SPECIFICATIONS

- Driver assembly shall be mounted to a prewired internal tray with quick disconnects for removal. Fusing SF for 120, 277, and 347 line volts DF for 208, 240, and 480 line volts high temperature fuse holders factory installed inside the fixture housing. Fuse is included.

Finish:

- Luminaire finish shall consist of a five stage pretreatment regimen with a polymer primer sealer, oven dry off, and top coated with a thermoset super TGIC polyester powder coat finish.
- Luminaire finish shall meet the AAMA 605.2 performance specification which includes passing a 3000 hour salt spray test for corrosion resistance.
- Standard colors include (BL) Black, (DB) Dark Bronze, (GT) Graphite, (LG) Light Gray, (PS) Platinum Silver, (TT) Titanium, (WH) White, and (CC) Custom Color (Include RAL#).

Certifications and Listings

- UL1598, UL 8750 and Canadian CSA Std. C22.2 no.250.
- IDA approved, down light only, 3000K and warmer CCTs only.
- 1.5G rated
- IP65 Compliant

CAUTION:

- Fixtures must be grounded in accordance with national, state and/or local electrical codes, Failure to do so may result in serious personal injury.

WARRANTY:

- For full warranty see <http://www.hubbellighting.com/resources/warranty>

Kim Lighting reserves the right to change specifications without notice.



21. NOISE AND VIBRATION

Noise and Vibration – (14-526 (d) 7)

- The only exterior mechanical equipment being added to the Lyseth School are two proposed air-conditioning condensing units on the building roof. Model REYQ72TATJU specifications and sound calculations for the units are attached. The small localized units serving separate areas are screened from the northerly residential properties by adjacent building walls. The unit on top of the Library roof is 150 ft. from the north property line, and is screened by the Gym wall, which is 16 ft. higher. The calculated sound level at the property line, without considering the Gym wall screening, is only 25 decibels. The unit on the existing building near the new Administration addition is 220 ft. from the north property line, and is screened by an existing building wall, which is 6 ft. higher. Its calculated sound level at the property line is less than 25 decibels, without considering the existing wall screening.
- There is no emergency generator for this school.

2. Specifications

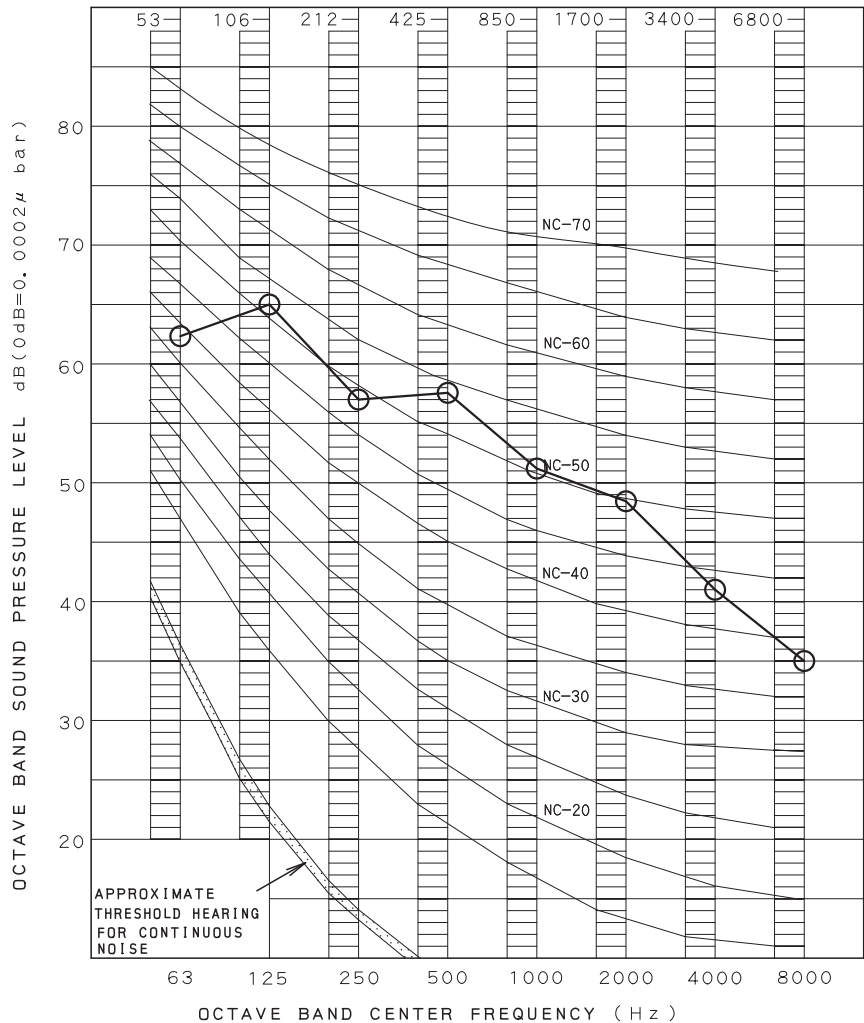
Model Name			REYQ72TATJU	REYQ96TATJU
Power Supply			3 phase, 208/230 V, 60 Hz	3 phase, 208/230 V, 60 Hz
★1 Cooling Capacity	Nominal	Btu/h (kW)	72,000 (21.1)	96,000 (28.1)
	Rated		69,000 (20.2)	92,000 (27.0)
★2 Heating Capacity	Nominal	Btu/h (kW)	81,000 (23.7)	108,000 (31.7)
	Rated		75,000 (22.0)	100,000 (29.3)
Casing Color			Ivory White (5Y7.5/1)	Ivory White (5Y7.5/1)
Dimensions: (H × W × D)		in. (mm)	66-11/16 × 36-11/16 × 30-3/16 (1,694 × 932 × 767)	66-11/16 × 48-7/8 × 30-3/16 (1,694 × 1,242 × 767)
Heat Exchanger			Cross Fin Coil	Cross Fin Coil
Compressor	Type		Hermetically Sealed Scroll Type	Hermetically Sealed Scroll Type
	Displacement	m³/h	14.8	9.6 + 9.6
	Number of Revolutions	r/min	4,644	4,536 + 4,536
	Motor Output × Number of Units	kW	4.8 × 1	(2.8 + 2.8) × 1
	Starting Method		Soft Start	Soft Start
Fan	Type		Propeller Fan	Propeller Fan
	Motor Output	kW	0.4 × 1	0.35 × 2
	Airflow Rate	cfm (m³/min)	5,544 (157)	5,827 (165)
	Drive		Direct Drive	Direct Drive
Connecting Pipes	Liquid Pipe	in. (mm)	φ3/8 (9.5) C1220T (Brazing Connection)	φ3/8 (9.5) C1220T (Brazing Connection)
	Suction Gas Pipe	in. (mm)	φ3/4 (19.1) C1220T (Brazing Connection)	φ7/8 (22.2) C1220T (Brazing Connection)
	High/Low Pressure Gas Pipe	in. (mm)	φ5/8 (15.9) C1220T (Brazing Connection)	φ3/4 (19.1) C1220T (Brazing Connection)
Weight		lbs (kg)	507 (230)	703 (319)
Sound Pressure Level (Reference Data)		dB(A)	58	61
Sound Power Level (Reference Data)		dB	79	81
Safety Devices			High Pressure Switch, Fan Driver Overload Protector, Overcurrent Relay, Inverter Overload Protector	High Pressure Switch, Fan Driver Overload Protector, Overcurrent Relay, Inverter Overload Protector
Defrost Method			Deicer	Deicer
Capacity Control		%	15-100	11-100
Refrigerant	Refrigerant Name		R410A	R410A
	Charge	lbs (kg)	21.9 (9.9)	25.8 (11.7)
	Control		Electronic Expansion Valve	Electronic Expansion Valve
Standard Accessories			Installation Manual, Operation Manual, Connection Pipes, Clamps	Installation Manual, Operation Manual, Connection Pipes, Clamps
Drawing No.	Specification		C: 4D091590C	C: 4D091623C
	Sound Level		C: 4D093380A	C: 4D093379A

Notes:

- ★1 Indoor temp.: 80°FDB (26.7°CDB), 67°FWB (19.4°CWB) / Outdoor temp.: 95°FDB (35.0°CDB) / Equivalent piping length: 25 ft. (7.6 m), level difference: 0 ft. (0 m).
- ★2 Indoor temp.: 70°FDB (21.1°CDB) / Outdoor temp.: 47°FDB (8.3°CDB), 43°FWB (6.1°CWB) / Equivalent piping length: 25 ft. (7.6 m), level difference: 0 ft. (0 m).

12. Sound Levels (Reference Data)

REYQ72TATJU



OVER ALL (dB)

OPERATING CONDITIONS

SCALE	60Hz
A	58

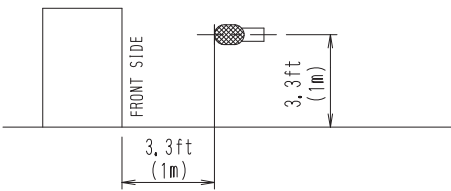
POWER SOURCE 208/230V, 460V 60Hz

(B, G, N IS ALREADY RECTIFIED)

MEASURING PLACE

ANECHOIC CHAMBER(CONVERSION VALUE)

LOCATION OF MICROPHONE

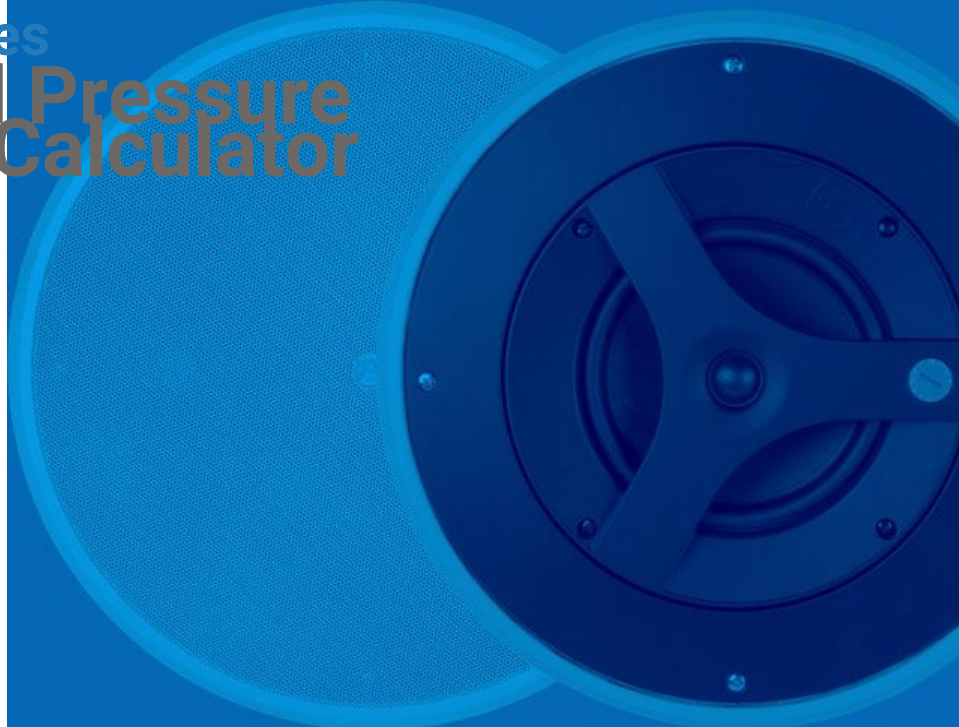


NOTE : THE OPERATING SOUND IS MEASURED IN ANECHOIC CHAMBER, IF IT IS MEASURED UNDER THE ACTUAL INSTALLATION CONDITIONS, IT IS NORMALLY OVER THE SET VALUE DUE TO ENVIRONMENTAL NOISE AND SOUND REFLECTION.

C: 4D093380A

Resources

Sound Pressure Level Calculator



Sound Pressure Level (SPL) Calculator

Inverse Square Law- When you double the distance, there will be a 6db loss in SPL

Meters	1	2	4	8	16	32	64	128	256	512	1024	2048
SPL	58	52	46	40	34	28	22	16	10	4	0	0
Feet	3.3	6.6	13.2	26.4	52.8	105.6	211.2	422.4	844.8	1689.6	3379.2	6758.4

Enter starting SPL at 1 meter:

Enter distance (in feet) to determine loss:

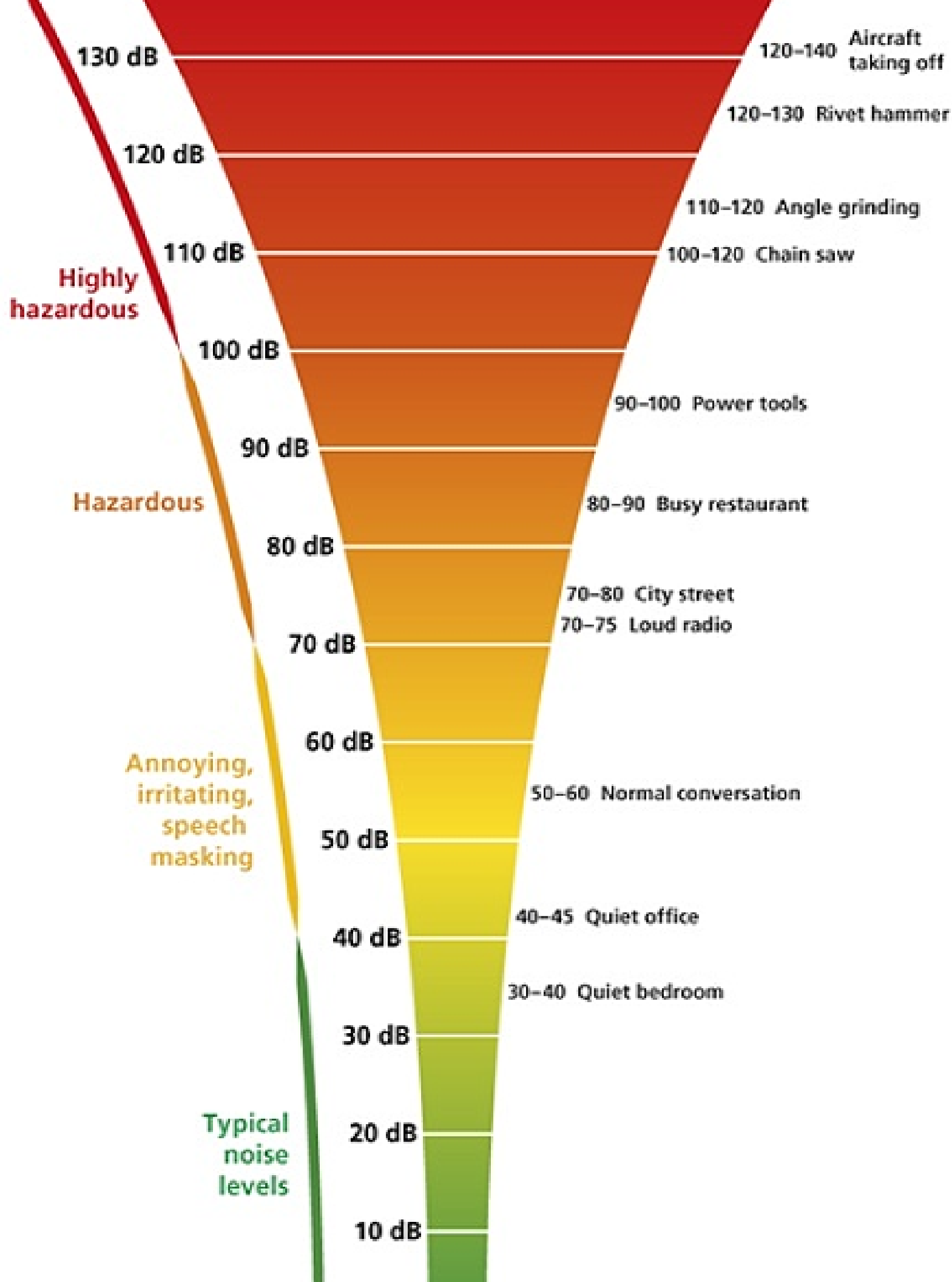
The SPL at 150 feet is 25

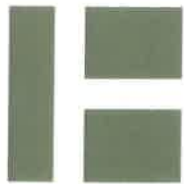
Double the Power Rule-When you double the power, there will be a 3db gain in SPL

Wattage	0.5	1	2	4	8	16	32	64	128	256	512	1024
SPL	55	58	61	64	67	70	73	76	79	82	85	88

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OK



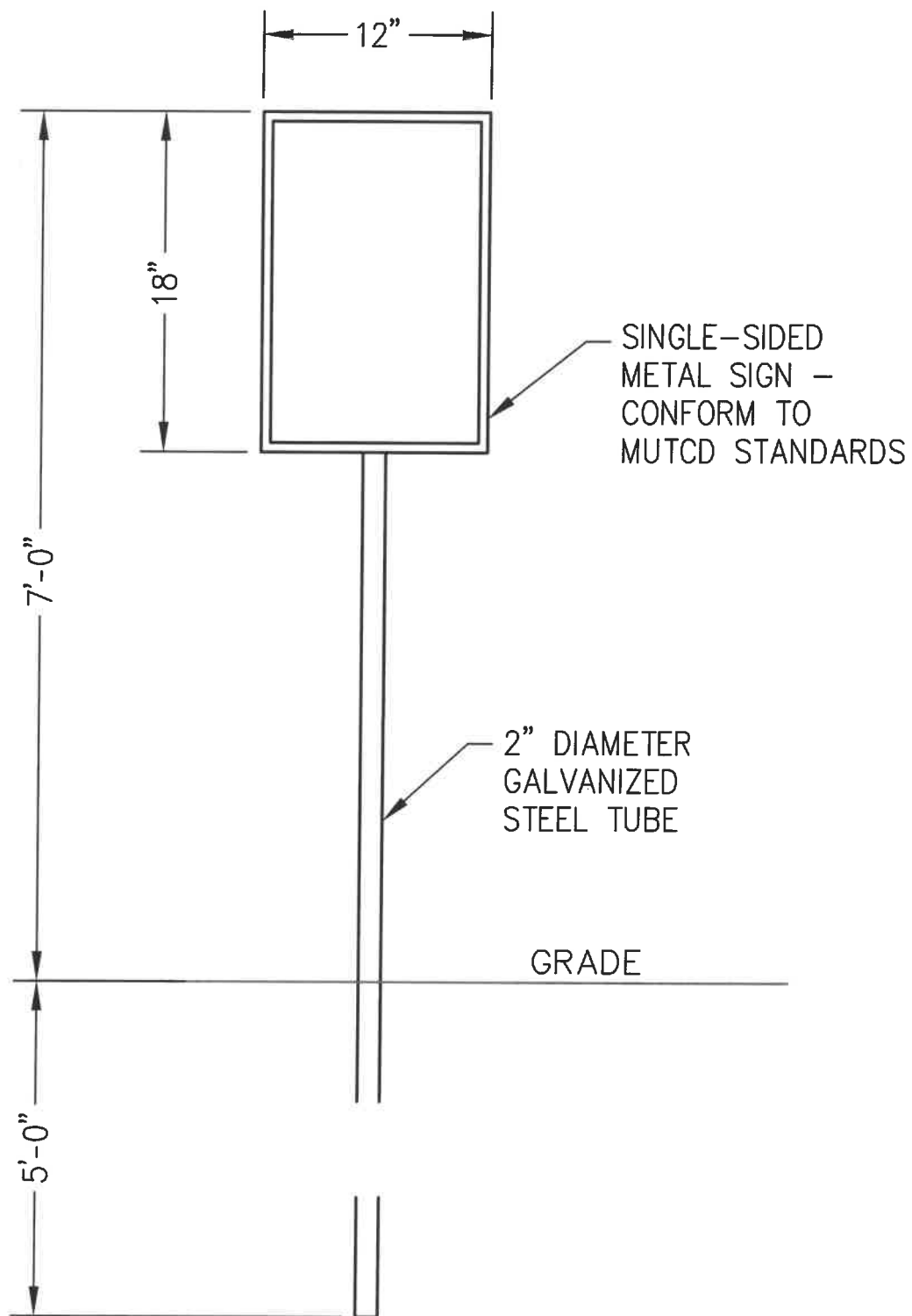


HARRIMAN

22. SIGNAGE AND WAYFINDING

Signage and Wayfinding – (14-526 (d) 8)

- There are no new identification signs or monument signs proposed for the Lyseth School.
- Directional traffic control signs are shown on the Site Plan C00.1. Typical standard directional sign detail is attached.



TYPICAL SIGN

NOT TO SCALE

B4



23. CONSTRUCTION MANGEMENT PLAN

- The General Construction Management Plan Template for the Harrison Lyseth Elementary School is attached, with proposed construction schedule included.
- Campus Phasing drawing CP-1 for the prior-approved LLM Campus Improvements Circulation Project is attached.
- Construction Sequence drawings CS-1 and CS-2 for the Lyseth School construction project are attached.

**Construction Management Plan
for
Portland Public Schools
Harrison Lyseth Elementary School
Additions and Renovations
January 2019**

Construction Management Plans shall depict the overall planning, coordination, and control of a construction site, including phases as applicable, from beginning to completion. The City's goal for a construction management plan is to support a safe construction site and protect the public safety, accessibility (including preserving accessible pedestrian, bicycle, and vehicular modes of transport throughout the city), and welfare during construction. In addition, the construction management plan shall minimize construction impacts in their duration and magnitude to the surrounding area and develop an effective communication process for resolving concerns and conflicts.

The Construction Management Plan will be submitted as part of the Site Plan Review and it shall address the construction logistics for a project. The Construction Management Plan shall include the following submissions: 1) a construction management site plan, 2) a construction schedule (time frame); and 3) a written narrative addressing the categories below.

A. Construction Management Principles

The following narrative provides an overview of the construction management principles that the Applicant has identified to minimize impacts from the construction, such as noise, vibrations, ground movement, truck traffic, and other construction related factors to the surrounding building and communities.

The school campus at 171 Auburn Street in Portland includes the Harrison Lyseth Elementary School and the Lyman Moore Middle School. On January 23, 2018, the City of Portland Planning Board approved the LLM Campus Improvements Circulation Project, which covered traffic circulation, parking, and storm drainage infrastructure improvements throughout the campus. In 2018, Phase 1 of these improvements was constructed, including four new catch basins and storm drains around the south side of the Harrison Lyseth School. At that time, Phase 2 was anticipated to include the remaining approved work throughout the campus. As a separate project, and separate Site Plan Review, this current Harrison Lyseth Elementary School building additions and site reconstruction project is coordinating with the prior approved site work project.

To keep the distinction between these two projects, the current Lyseth School building and sitework project is not given a phase designation, but will be designated as the Lyseth School project. The prior campus-wide circulation project will be approached as Phases 1 through 4. This current Construction Management Plan details the Lyseth School development, together with Phase 2 of the campus circulation project. This is explained further in the following Section E-Construction Schedule.

The selected Contractor will provide the City with a plan that indicates site access constraints, and signage/barriers to access at points of entry to the public, prior to construction. A general

approach to phases of the work has been included in the attached Construction Management Plan.

A final site access map prepared by the Contractor cannot be provided as part of this submission, since the project will be bid publicly in order to select the Contractor. The Site Plan Review process must proceed before the Contractor has been selected. The safety of the site, the scheduling of deliveries, and construction means and methods must be the responsibility of the Contractor to maintain an effective and safe corridor for the workers and site users. It is understood that the information provided in this document is provided as general information, and the Contractor will provide more specific information to the City upon award of the contract.

No utility connections or roadway work is anticipated in the Auburn Street corridor. Only sidewalks/stripping modifications are anticipated at the Junior Street entrance to the proposed project, and this work is proposed within the project's parcel bounds, not within the Junior Street Right-Of-Way.

During the neighborhood meeting of the LLM Campus Improvements Circulation Project of 2018, the neighbors stated that traffic access to Junior Street is a concern. Therefore, this location will not be used for construction vehicle access, but will remain open for emergency access and bike/pedestrian access when repair work is not happening in that corridor. Access to sidewalk and trail corridors is identified on the proposed Construction Management Plan, and will be maintained unless work is occurring in those locations.

B. Development Review of Construction Management Plan

The Contractor shall submit a construction management plan that provides a comprehensive logistics and safety program for the construction project, which will be reviewed and approved as part of the site plan review process. Minimizing impacts to areas surrounding the building/construction site will be primary considerations in the process.

The Planning Authority and the Department of Public Works have the right to seek revisions to an approved Construction Management Plan or require a condition of approval that states an applicant shall coordinate a project's construction schedule with the timing of nearby construction activity, in order to avoid cumulative impacts on a neighborhood. Such a condition may involve a delay in commencement of construction, if necessary.

The following details define the intended approach to the successful management of the project construction, and the construction management plan will address the general conditions contained below.

C. Performance Guarantees, Inspection Fees, Preconstruction Meeting, and Permits

Prior to scheduling a preconstruction meeting and the issuance of any city required permits, Contractor shall meet all of the requirements contained in Section 14-530. Development review fees and post approval requirements and 14-532. General requirements and enforcement of Portland's Land Use Code.

Other permits, as applicable, include

1. **Street Opening and Street Occupancy Permits:** Construction activity in the public right-of-way are controlled by Chapter 25 and sewer and stormwater system connections are controlled by Chapters 24 and 32 of the Land Use Code. All required permits shall be obtained through the Department of Public Works and the requests shall conform with the approved construction management plan.
2. **Blasting:** Blasting, if required, shall conform 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.
3. **Building Code:** Employ the best practices, as applicable, of Chapter 33 Safeguards During Construction, from the 2009 International Building Code.

D. Construction Administration and Communication

The Contractor will work diligently to implement a communication strategy as outlined below. The communication strategy is intended to ensure that all construction operations are performed in accordance with all agreements, ordinances and special permits applicable to this project. 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. The final construction management plan shall provide for the following:

1. Contact Person and contact information for the applicant and contractor, and who is available 24 hours.
2. Construction Signage posted on the site with Contact Information for Contractor.
3. Describe any additional communication strategies
 - Directional and safety signage
 - On-site safety/coordination meetings
4. All construction site signage is temporary and shall be removed at project completion. Signage will be included in the final construction management plan provided by the Contractor.

E. Construction Schedule

1. The contractor shall submit a schedule or time line for the construction project.
2. The construction schedule is proposed to follow the general timeline as follows(see Campus Phasing Plan CP-1):

• Lyseth School project	Spring 2019 – Summer 2021
• Phase 1 Circulation	Was completed Summer 2018
• Phase 2 Circulation	Spring 2019 – Summer 2020
• Phases 3 and 4 Circulation	Not Yet Determined

The Lyseth School project anticipates a general schedule as follows:

Spring 2019 – Summer 2019(see Construction Sequence Plan CS-1)

- a. Establish erosion control and temporary construction fencing
- b. Install drainage east of Lyseth School
- c. Relocate modular classroom building to east side of Lyseth School
- d. Demolish trees, pavements, etc
- e. Install remaining drainage, sewer, water, and utilities
- f. Excavate and install building foundations

- g. Construct retaining wall
- h. Install subsurface storm treatment bed/ connect to existing storm drain
- i. Reconstruct bus loop, fire lane, staff parking, and play area pavements

Fall 2019 – Summer 2021(see Construction Sequence Plan CS-2)

- j. Maintain erosion control and remove where stabilization is complete
- k. Re-align temporary construction fencing to allow normal school operations
- l. Construct building additions to the Lyseth School
- m. Maintain erosion control and remove sediment as needed
- n. Construct finish pavements adjacent to finished building additions and along north fire lane
- o. Install landscaping and finished grass areas throughout the school site
- p. Complete the building additions
- q. Remove temporary construction fence
- r. Remove temporary erosion control measures, remove captured sediments, and clean storm drain system

The Phase 2 Circulation project anticipates a general schedule as follows:

Spring 2019 – Summer 2019

- a. Establish erosion control and temporary construction fencing
 - b. Demolish trees and pavements
 - c. Install drainage lines and catch basins
 - d. Install grassed underdrained storm treatment basin / connect to existing storm drain
 - e. Construct new bus/parent drives and Junior Street intersection with finished pavement
 - f. Remove temporary construction fence
 - g. Remove temporary erosion control measures, remove captured sediments, and clean storm drain system
3. Hours of Construction. Construction may occur during the daytime hours as defined in Section 17-18. Construction Activities for Building permit ([Attachment 1](#)) and Section 25-129. Noise, dust and debris ([Attachment 2](#)).
4. 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 gives notice of the time and scope of such proposed activity, the notice to be given in a manner approved by the public works authority.”
5. Material Deliveries: Schedule and designated location for delivery of materials and boxed goods.

F. Security & Public Safety

1. The Construction Management Plan will depict all proposed fencing or other 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 Chapter 16. *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:
 - o Good Housekeeping
 - o On-site security
 - o Installation of new fire protection systems as construction progresses
 - o Preservation of existing systems during demolition
 - o Organization and training of an on-site fire brigade
 - o Development of a pre-fire plan with the local fire department
 - o Rapid communication
 - o Consideration of special hazards resulting from previous occupancies
 - o Protection of existing structures and equipment from exposure fires resulting from construction, alteration, and demolition operations
4. Blasting, if required, shall conform 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 proposed temporary security lighting shall be shown on CMP and all fixtures shall be full cutoffs.

G. Construction Permitting and Traffic Control Plans

1. Construction Activity in Public Streets: Construction activity in the public right-of-way is controlled by Chapter 25 Article VII of the City Code of Ordinances. Required licenses and permits, restrictions on activity, and fees & area are outlined in that Chapter. Rules and Regulations for Excavation Activity are available through the Street Opening Clerk at the Department of Public Works. At no time can construction activity including delivery vehicles 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 water system connections are controlled by 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.
3. Traffic Control Plans: Construction activity that impacts the existing public street system must be controlled to protect the safety of the construction workers and all modes of the traveling public. Projects are required to submit a satisfactory 'maintenance of traffic' (MOT) plan prior to any site plan, subdivision, or street opening permit approval. MOT plans may be required for projects that have impacts on local streets.

Maintenance of Traffic (MOT) plans shall provide for the safe passage of the public through or along the construction work zone. On a case-by-case basis, applicants may be allowed to close a street and/or detour a mode of traffic when absolutely necessary for safety. MOT plans shall employ the appropriate techniques and devices as 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 are an obstruction to bicycles or pedestrians.
- In some situations, flaggers may be required.
- Police details may be required at lighted intersections and may be requested by the City's transportation engineer or his designee.

All existing modes of travel in 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 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 of 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 bicycle 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.

H. Site Management and Controls

The final Construction Management Plan will address maintaining the site in a safe condition and will include the following:

1. Regular trash and debris removal
2. Street cleaning and damage controls
3. Dust controls- The construction shall comply with Portland's requirements under Section 25-129 on Noise, dust and debris (Attachment 2).
4. Noise: The construction shall comply with Portland's requirements under Section 17-18 of the City Code (Attachment 1) and Section 25-129 on Noise, dust and debris (Attachment 2).

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 & not to block any driveways or sight lines with the piles of snow.
 - 3) Clear all walks & ramps with the work zone
 - 4) Sand or Salt as needed
 - 5) Clear all basin or drainage to help snow melt
 - 6) This would include Monday-Friday Sat/Sunday/Holidays

I. 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 management systems 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 or the U.S. Environmental Protection Agency upon request.
2. The Contractor shall maintain all tree and landscaping preservation measures as depicted on the landscaping plan within the area of construction.
3. The storage of materials shall be identified and avoid being located under/near trees.

J. Construction Staging Area

1. The Construction Management Plan shall depict location of the material staging areas, the location on onsite temporary construction trailers, the location on onsite truck delivery holding areas, the location onsite truck washing stations, masonry mixing stations, the general location of the construction security fence and the general location of temporary construction dumpsters. An open storage areas shall be shown on the plan.
2. Delivery Truck Holding Areas On-Site: The delivery holding area shall be shown on the plan and shall not be blocked during construction. 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 the trucks until they can be unloaded. Once at the site all vehicles well be brought within the fence line and will make every attempt to avoid queueing on public streets.
3. Delivery Truck Holding Areas Off-Site: In the event that adequate on-site area for holding of trucks is not available, an off-site marshalling area will be utilized for trucking. The designated off-site location will be identified in the construction management plan.

K. Parking During Construction

1. Construction Parking: Adequate parking for construction workers shall be provided on site or arrangements for off-street parking at an off-site location shall be provided. The parking arrangements shall be included in the construction management plan.

2. **Parking:** Where existing facilities are remaining in operation during construction, the construction management plan shall identify how the parking for employees and others shall be managed.
3. **Truck Routes and Volumes:** The Construction Management Plan shall address the designated truck routes and expected truck volumes.

L. Special Measures as Necessary

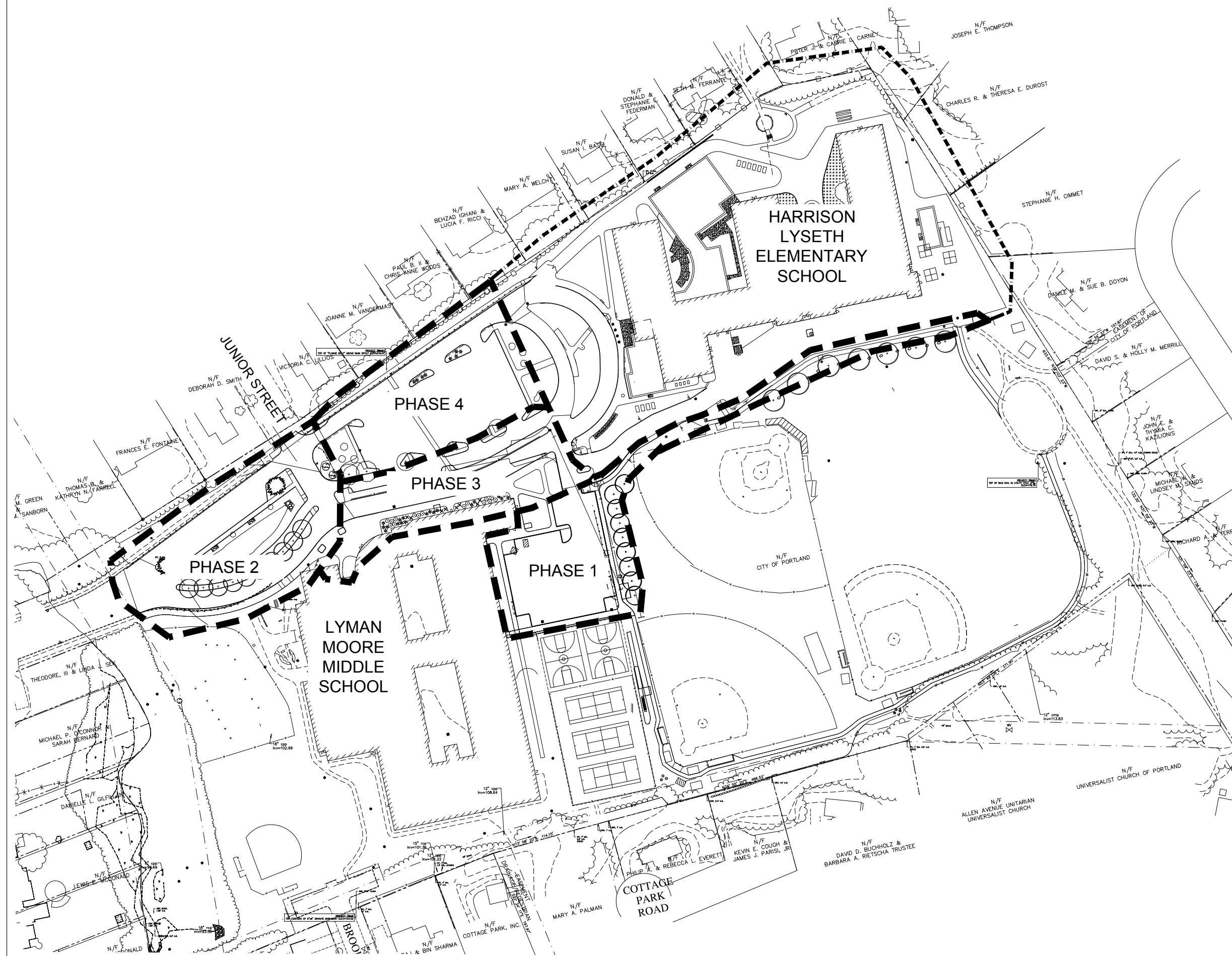
This construction work will take place over a 2-year or long period. The Construction Management Plan should provide details and demonstrate that all appropriate special measures have been taken to avoid, minimize, or possibly compensate for potential impacts. This may include taking baseline measurements before construction, such as arranging to photograph the foundations of nearby properties upon consent of the owners, in order to assess any future impacts of vibration, noise, etc.



PORTLAND, MAINE

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Key Ph

[illegible]

PRELIMINARY
NOT FOR
CONSTRUCTION

Drawing Scales	
PA / PE: FLC	© 2019 Harriman Associates
Drawn By: PLS	

CAMPUS PHASING PLAN

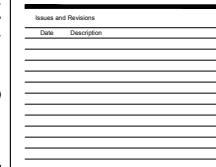
CP-1



PORTLAND, MAINE

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Key Ph



PRELIMINARY
NOT FOR
CONSTRUCTION

Drawing Scales

PA / PE:	FLC
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Harriman Associates

CONSTRUCTION SEQUENCE PLAN

CS-1



Neighborhood Meeting Certification

**Harrison Lyseth Elementary School
Additions and Renovations
Site Plan Level III and Conditional Use**

March 1, 2019

I, Frank L. Crabtree, PE, hereby certify that a neighborhood meeting was held on February 28, 2019 at Harrison Lyseth Elementary School at 6:00PM for the proposed project located at Harrison Lyseth Elementary School at 175 Auburn Street.

I also certify that on February 15, 2019, prior to the neighborhood meeting, invitations were mailed to the following:

1. All addresses on the mailing list provided by the Planning Division which includes property owners within 500 feet of the proposed development or within 1000 feet of a subdivision within an industrial zone or industrial zone change.
2. Residents on the "interested parties" list.

Signed,

Frank L. Crabtree, PE LEED AP BD+C

AUBURN

BOSTON

PORTLAND

PORTSMOUTH

Attached to this certification are:

1. Copy of the invitation sent
2. Sign-in sheet
3. Meeting minutes



NEIGHBORHOOD MEETING MINUTES

Project: Lyseth Elementary School Renovation and Addition
Project No. 18483

From: Frank L. Crabtree, PE

Date: March 1, 2019

Subject: A meeting was held Thursday February 28, 2019 at 6:00 pm at the Harrison Lyseth Elementary School at 175 Auburn Street, with neighbors and interested parties, to discuss the upcoming building additions and site improvements to the school campus.

Attendees:

- Steven Stilphen – Portland Public Schools
- Doug Sherwood – Portland Public Schools
- Mark Lee – Harriman
- Lisa Sawin – Harriman
- Frank Crabtree – Harriman
- Five members of the public (see attached sign-in sheet)

Harriman presented the proposed Lyseth School building additions and site reconstruction with a Powerpoint presentation. Color printed boards were also available for attendees to review closely for details, and to discuss with Harriman and Portland Public Schools staff.

The following topics were discussed:

- This current Planning Board application consists of the Lyseth School building additions, together with the site immediately surrounding the school.
- The previous 2018 Lyseth-Lyman Moore Circulation Improvements project overlaps with the Lyseth School project, but is not part of this current application.
- The driveway improvements between Lyman Moore School, Auburn Street, and Junior Street will be constructed concurrently with the Lyseth School project to coordinate the necessary storm drainage functions.
- The parking lot and driveway improvements in front of Lyman Moore School will be constructed under the prior permit, but at a later date.
- The building design process was described in detail, from the early conceptual planning and public participation that set the 'design statement' for the facility, "A nurturing community garden where everyone grows, learns and explores."
- Major design directives for the building included:
 - NEW SECURE ENTRANCE
 - EXPANDED ADMIN/NURSE
 - WELCOMING LOBBY

AUBURN

BOSTON

PORTLAND

PORTSMOUTH

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- REMOVE PORTABLE
- SEPARATE GYM
- NEW LIBRARY/LEARNING COMMONS
- UPDATES/RENOVATIONS
- SPRINKLER/FIRE ALARM
- The library and gym addition will create two outdoor courtyards that will be seen through large glass walls along the new connector, and will feel like part of the building rooms, even though they are outside garden/sitting spaces.
- The new entry and administration area will enhance the building security and better organize the entry experience.
- Most rooms of the building will be renovated to some degree; some with significant upgrades to function and finishes, and some with primarily safety system upgrades.
- Surrounding the building, all pavements will be removed and reconstructed, some will be relocated due to new building additions.
- Garden areas around the building will be either preserved or relocated, and coordinated with added landscaping.
- Neighborhood walkways into the school property will be preserved. The paved Martin Road walkway toward Bartley Avenue will be reconstructed to provide ADA access to the site via the relocated Fire Lane.
- The number of bicycle rack spaces will be doubled from the current racks, and will be located to best meet the students' access points.
- Storm drainage around the site will be improved to relieve the current wet site conditions.
- The construction schedule was presented:
 1. Bid Opening 3/28/19
 2. Negotiations/Award: April 2019
 3. Notice to Proceed: April 2019
 4. Mobilization: June 2019
 5. Substantial Completion: August 2021

From these presentations, the attendees had several comments and questions, as follows:

- Shouldn't the new courtyards be secure? *Yes, there are locking gates planned for each one.*
- Are the memorial tree and bench protected or relocated? *They will be relocated to the front area and coordinated with additional landscaping.*
- Is the work schedule only during summer months? *No, the outside work is intended to be done primarily in summer, but the building interior work will need to proceed year-round. Work areas will be fenced or barricaded to separate building occupants from the ongoing work.*
- Will work be done during daylight hours to minimize noise into the neighborhoods? *Work will be done only at hours that comply with City noise regulations.*
- Will the modular classroom building be removed following the new building additions? *Yes, it will be relocated to the east side of the site during construction, but then removed from the site when completed.*



- Will all the neighborhood pathways be maintained? *Yes, some of them may be re-directed during construction, but they will all be fully restored after construction is complete.*
- The Junior Street neighbor had concerns that the driveway reconfiguration in front of Lyman Moore School may cause more passenger car traffic to exit out of the site on Junior Street. He suggested a 'Do-Not-Enter' sign could be placed at the Junior Street intersection to make it one-way into the site. And then, a 'Right-Turn-Only' sign should also be installed. *The prior Circulation Improvements project addressed the revised driveways and signage in the Planning Board approval; and hopefully the approved improvements will allow Junior Street to function appropriately.*
- Will the Lyseth School have more classroom space once completed? *Technically, the classroom count will be the same as present, however, many rooms will be renovated to function better, which will make the school more efficient; such as several small break-out instructional areas for small-group or one-to-one learning.*
- Which school in the City will be next in line for design and upgrade? *That has not yet been decided.*

Before and after the presentation, several one-on-one discussions around the display boards helped the neighbors further understand the proposed construction. The meeting ended at approximately 7:30 pm.



PORTLAND PUBLIC SCHOOLS

prepared & empowered

February 15, 2019

Dear Neighbor:

Please join us for a neighborhood meeting to discuss our plans for the Harrison Lyseth Elementary School Additions and Renovations, located at 175 Auburn Street.

Meeting Location: Harrison Lyseth Elementary School

Meeting Date: Thursday February 28, 2019

Meeting Time: 6:00 PM

The City code requires that property owners within 500 feet of the proposed development and residents on an "interested parties list", be invited to participate in a neighborhood meeting. A sign-in sheet will be circulated and minutes of the meeting will be taken. Both the sign-in sheet and minutes will be submitted to the Planning Board.

If you have any questions, please call Portland Public Schools at (207) 842-5315.

Sincerely,

Steven Stilphen
Director of Facilities and Maintenance

Note:

Under Section 14-32(C) and 14-524(a)d of the City Code of Ordinances, an applicant for a Level III development, subdivision of over five lots/units, or zone change is required to hold a neighborhood meeting within 30 days of submitting a preliminary application or 21 days of submitting a final site plan application, if a preliminary plan was not submitted. The neighborhood meeting must be held at least seven days prior to the Planning Board public hearing on the proposal. Should you wish to offer additional comments on this proposed development, you may contact the Planning Division at 874-8721 or send written correspondence to the Planning and Urban Development Department, Planning Division, 4th Floor, 389 Congress Street Portland, ME 04101 or by email: to bab@portlandmaine.gov

Members of the Public in Attendance

NAME	E-MAIL
1. <u>Ien Cooper</u>	<u>Coopeja@PortlandSchools.org</u>
2. <u>Mike Del Camp</u>	<u>m.bdelcamp@gmail.com</u>
3. <u>Elvira Del Camp</u>	<u>elvira.delcamp87@gmail.com</u>
4. <u>Steve Stilson</u>	<u>STILPSE@PortlandSchools.org</u>
5. <u>Tina St. Hilare 43 Bartley Ave</u>	<u>tsthilare@maine.rr.com</u>
6. <u>Joanne Vandermaast</u>	<u>jmvitaly@gmail.com</u>
7. <u>Doug Sherwood</u>	<u>sherwd@portlandschools.org</u>
8. _____	_____
9. _____	_____
10. _____	_____
11. _____	_____
12. _____	_____
13. _____	_____
14. _____	_____
15. _____	_____
16. _____	_____
17. _____	_____
18. _____	_____
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21. _____	_____
22. _____	_____
23. _____	_____
24. _____	_____
25. _____	_____
26. _____	_____
27. _____	_____
28. _____	_____
29. _____	_____
30. _____	_____

Harrison Lyseth Elementary School
Additions and Renovations
Site Plan Level III and Conditional Use

Neighborhood Meeting Sign-In Sheet
February 28, 2019

School Department and Consultant Team in Attendance

	NAME	E-MAIL
1.	Frank Crabtree - Harriman	forabtree@harriman.com
2.	MARK LEE - HARRIMAN	m.lee@harriman.com
3.	LISA SAWIN - HARRIMAN	lsawin@harriman.com
4.		
5.		
6.		
7.		
8.		
9.		
10.		



17. PUBLIC SAFETY AND FIRE PREVENTION

Public Safety and Fire Prevention – (14-526 (c))

- The renovated school discourages crime by the design of the new front entry Administration addition, which places windows for full visibility of staff to observe those seeking to enter the building. Doors will be operated by the attending staff person to control access as appropriate. The new front entry will be well lit by building-mounted exterior lights for a welcoming safe front area. The two renovated exterior courtyard areas, between the new Library addition and the existing building, will be observed by many windows, for safety viewing of all the courtyard areas. The courtyard openings will be closed by two chain-link gates, which will be normally locked shut, with panic hardware on the inside for emergency egress. Building-mounted exterior lights will provide light throughout the courtyards to prevent dark hiding places. Throughout the site, landscaping will be primarily deciduous trees and shrubs to minimize dense evergreen hiding areas.
- Access to the school building by emergency vehicles, including fire trucks, is maintained by the renovated site design to function the same as current access, and provide access around all four sides of the building. Relocated fire lanes are at least 16' wide. The fire truck template, furnished by the City Fire Department, has been placed on the site plan by the Autoturn /Vehicle Tracking computer program at the revised drive and parking lot entry at the southwest corner of the Lyseth school. This shows that a fire truck can access the south side of the school with a fairly gently 'S-turn' movement, in-lieu of the previously proposed grassed 'Geoblock' mountable turf. The Autoturn truck template has also been run at the revised fire lane around the new Gym addition at the north side of the school. See the attached Autoturn sketches Turn-1 and Turn-2, that show the drives and curves are sized appropriately for the larger fire trucks
- The new building additions and renovations, together with the renovated site, have been designed consistent with Public safety standards of Technical Manual, Section 3. Pedestrian movements are improved by providing raised curbed sidewalks at the front of the Lyseth School, and between the two schools. The continued separation of the reconstructed bus drop-off drive from the parent

drop-off drive will provide safety for both pedestrians and drivers. The new building additions are located within 500' of an on-site fire hydrant.

- Code Summary--- See the attached Fire Department Checklist.



January 28, 2019

**Portland Fire Department
Site Review
Fire Department Checklist**

1. *Name of Applicant:*
Steven Stilphen
Portland Public Schools
353 Cumberland Avenue
Portland, ME 04101
207-842-5315
2. *Name of Architect:*
Mark D. Lee, AIA
Harriman
46 Harriman Drive
Auburn, Maine 04210
207-784-5162
3. *Proposed Use of Structure:*
Education
4. *Square footage of proposed structure (total and per story):*
1-Story Additions = 14,260 SF; Existing building – 1 story = 47,737 SF; Total = 61,998 SF
5. *Elevation of Structures*
See A20.1, A20.2, A20.3, A20.4 Exterior Elevations
6. *Proposed Fire Protection of All Structures*
Construction: NFPA II (000), IBC 2B
Addressable Fire Alarm System (New Additions)
Sprinkled in accordance with NFPA 101 9.7/NFPA 13(New Additions)



January 28, 2019

7. *Code Summary (NFPA 1)*

Chapter 6: Use and Classification, See above for Proposed Use of Structure

Chapter 10: General Safety Requirements

10.1.2 Building designed to NPFA 101 2009 with City of Portland Amendment (10-7-13) for the above listed occupancy uses

10.10.6 Existing Kitchen protected with Fire Suppression System at applicable equipment (Ansul or equivalent)

10.18.3.2 18" min clearance from sprinkler deflector to obstructions

Chapter 11: Building Services

11.1.2.1 Building designed to NFPA 70 NEC

11.2.1 Building designed to NFPA 90A, NFPA 90B

11.3 Single story building does not have an elevator

Chapter 12: Features of Fire Protection

12.2 Building designed to NPFA 101 2009 with City of Portland Amendment (10-7-13) for the above listed occupancy uses. Applicable section of this code (NFPA 1) will be addressed by compliance with NFPA 101.

Chapter 13: Fire Protection Systems

13.1 Building plans will be submitted to the City of Portland for review and approval with the building permit application.

Chapter 14: Means of Egress

14.1 Building designed to NPFA 101 2009 and Maine Uniform Building and Energy Code (MUBEC). Respective code summary will be provided with the building permit application.

Chapter 16: Safeguarding Construction, Alteration, and Demolition Operations

16.1.1 General Contractor for the project will contact the City of Portland Fire Department to coordinate necessary requirements under this Chapter prior to construction.

Chapter 18 Fire Department Access and Water Supply

18.1.3 Plans

Knox Box will be provided at the building entrance. See site plans for access drive and water supply.



Auburn, ME
207.784.5100

Portland, ME
207.775.0053

Portsmouth, NH
603.626.1242

Boston, MA
617.426.5050

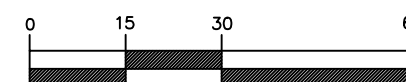
HARRISON LYSETH
ELEMENTARY SCHOOL

PORTLAND, MAINE

HA Project No.	18483
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GRAPHIC SCALE



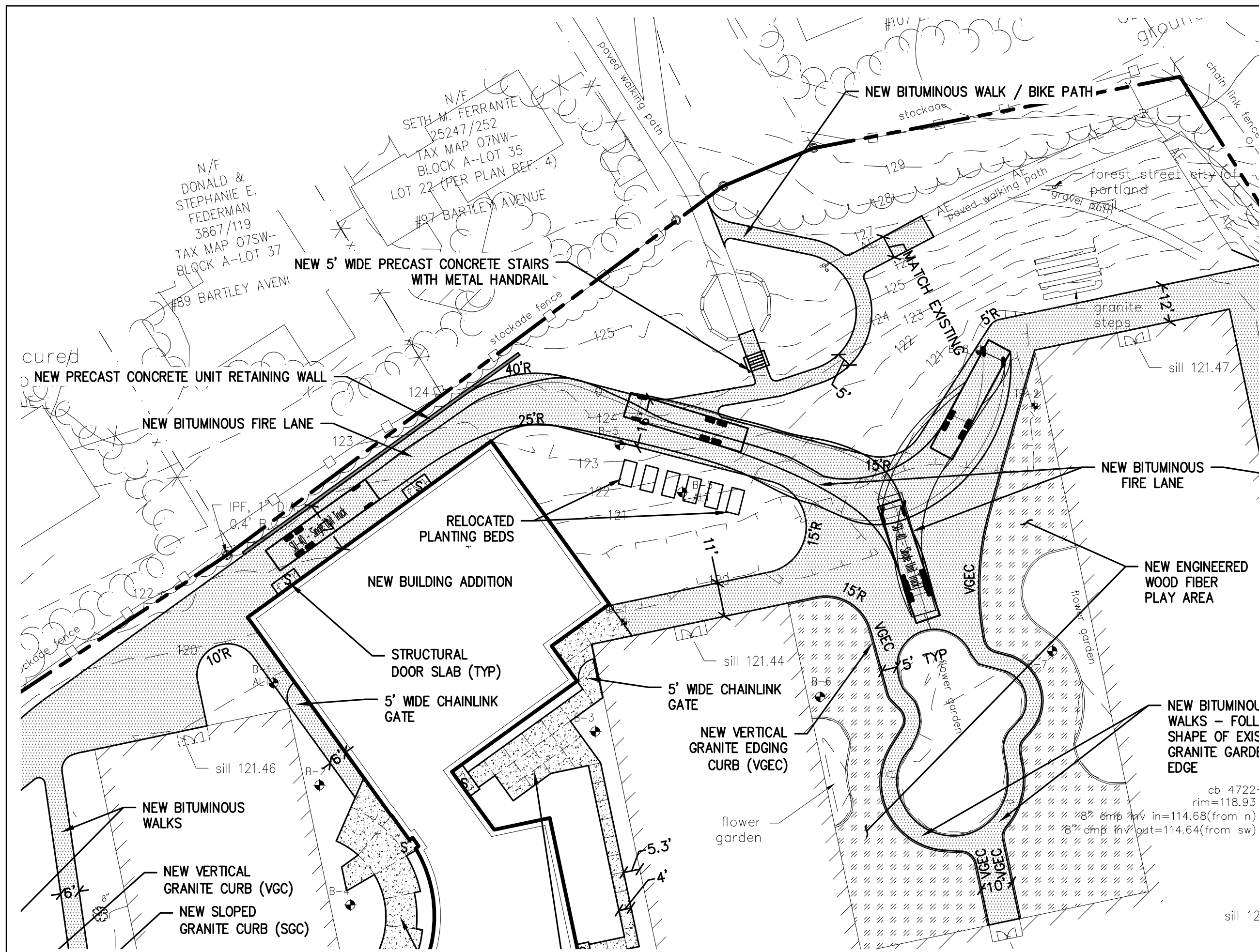
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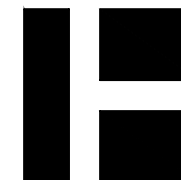
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Scale	1"=30'

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FIRE TRUCK TURNING TEMPLATE #1

TURN-1





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Portland, ME
207.775.0053

Portsmouth, NH
603.626.1242

Boston, MA
617.426.5050

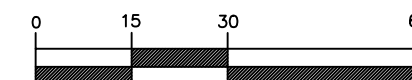
HARRISON LYSETH
ELEMENTARY SCHOOL

PORTLAND, MAINE

HA Project No.	18483
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GRAPHIC SCALE



(1 inch = 30 feet)

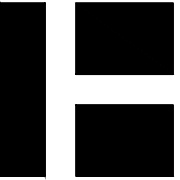
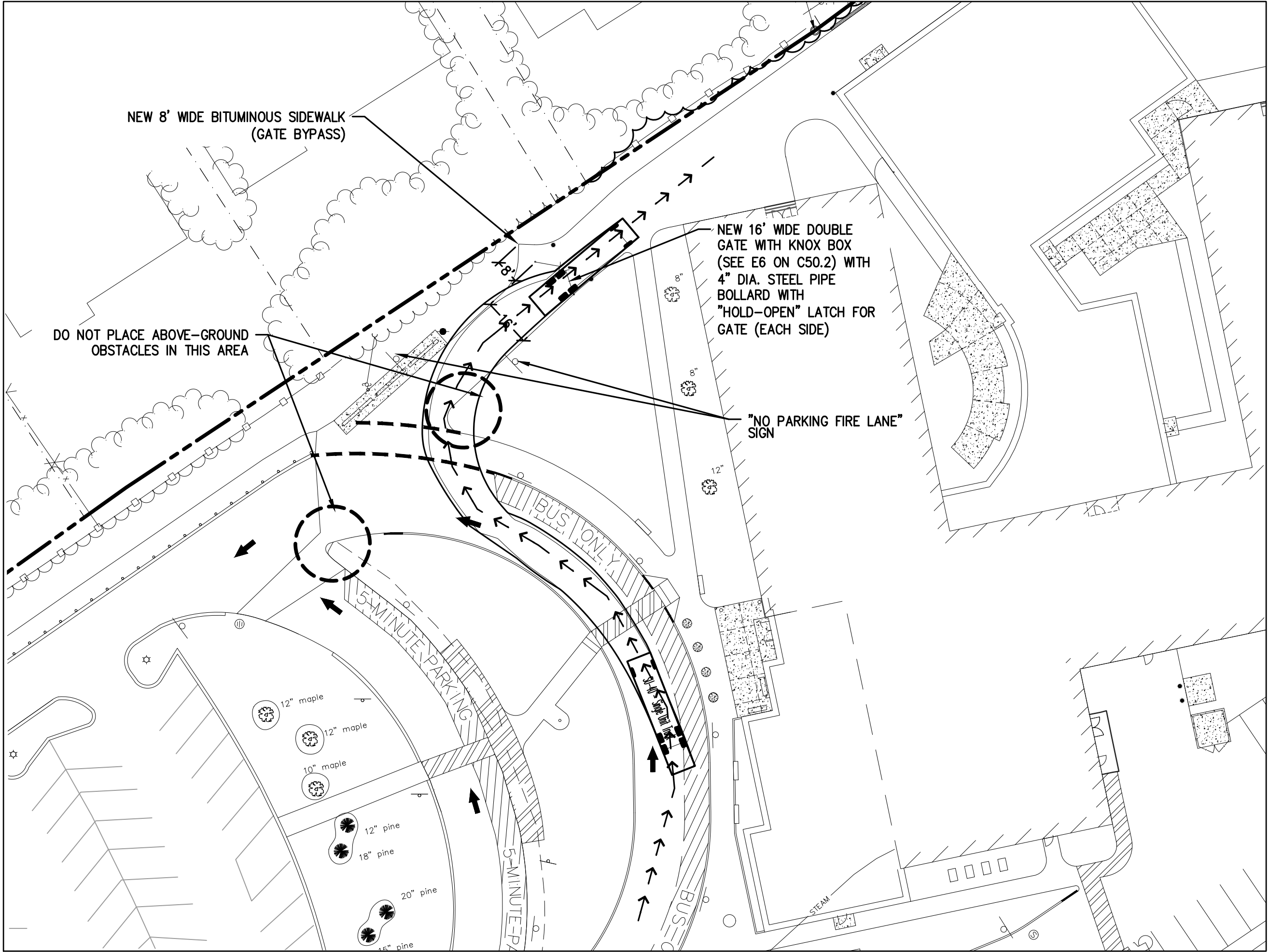
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FIRE TRUCK TURNING TEMPLATE #2

TURN-2



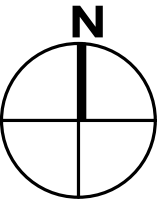
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Portland, ME
207.775.0053
Portsmouth, NH
603.626.1242
Boston, MA
617.426.5050

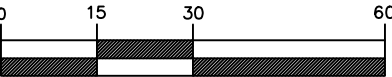
**HARRISON LYSETH
ELEMENTARY SCHOOL**

PORTLAND, MAINE

HA Project No. 18483



GRAPHIC SCALE



(1 inch = 30 feet)

Date 4-08-19

Scale 1"=30'

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**ALTERNATE NORTH FIRE
TRUCK ACCESS TURNING
TEMPLATE**

SK-1A



d#series

D-Series Size 1 LED Area Luminaire

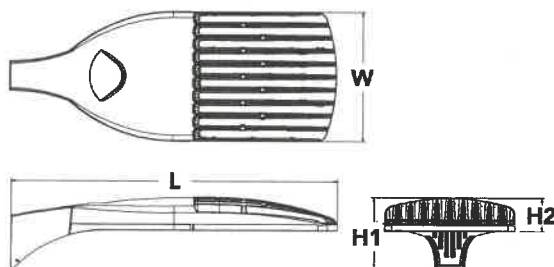


Catalog Number
Notes
Type

Hit the Tab key or mouse over the page to see all interactive elements.

Specifications

EPA:	1.01 ft ² (0.09 m ²)
Length:	33" (83.8 cm)
Width:	13" (33.0 cm)
Height H1:	7-1/2" (19.0 cm)
Height H2:	3-1/2"
Weight (max):	27 lbs (12.2 kg)



Introduction

The modern styling of the D-Series is striking yet unobtrusive - making a bold, progressive statement even as it blends seamlessly with its environment. The D-Series distills the benefits of the latest in LED technology into a high performance, high efficacy, long-life luminaire.

The outstanding photometric performance results in sites with excellent uniformity, greater pole spacing and lower power density. It is ideal for replacing up to 750W metal halide in pedestrian and area lighting applications with typical energy savings of 65% and expected service life of over 100,000 hours.



A+ Capable options indicated by this color background.

Ordering Information

EXAMPLE: DSX1 LED P7 40K T3M MVOLT SPA NLTAIR2 PIRHN DDBXD

DSX1 LED					
Series	LEDs	Color temperature	Distribution	Voltage	Mounting
DSX1 LED	Forward optics	30K 3000 K	T1S Type I short	MVOLT ¹	Shipped included SPA Square pole mounting RPA Round pole mounting WBA Wall bracket SPUMBA Square pole universal mounting adaptor ⁶ RPUMBA Round pole universal mounting adaptor ⁶ Shipped separately KMA8 DDBXD U Mast arm mounting bracket adaptor (specify finish) ⁷
	P1 P4 P7	40K 4000 K	T2S Type II short		
	P2 P5 P8	50K 5000 K	T2M Type II medium		
	P3 P6 P9		T3S Type III short		
	Rotated optics		T3M Type III medium		
	P10 ¹ P12 ¹		T4M Type IV medium		
	P11 ¹ P13 ¹		TFTM Forward throw medium		
			T5VS Type V very short		
			T5S Type V short		
			T5M Type V medium		
			T5W Type V wide		
			BLC Backlight control ²		
			LCCO Left corner cutoff ²		
			RCCO Right corner cutoff ²		

Control options	Other options	Finish
Shipped installed NLTAIR2 nLight AIR generation 2 enabled ⁸ PIRHN Network, high/low motion/ambient sensor ⁹ PER NEMA twist-lock receptacle only (controls ordered separate) ^{10,11} PER5 Five-pin receptacle only (controls ordered separate) ^{10,11} PER7 Seven-pin receptacle only (controls ordered separate) ^{10,11} DMG 0-10v dimming wires pulled outside fixture (for use with an external control, ordered separately) ¹² DS Dual switching ^{12,13,14}	Shipped installed HS House-side shield ¹⁷ SF Single fuse (120, 277, 347V) ⁴ DF Double fuse (208, 240, 480V) ⁴ L90 Left rotated optics ¹ R90 Right rotated optics ¹ Shipped separately BS Bird spikes ¹⁸ EGS External glare shield ¹⁸	DDBXD Dark bronze DBLXD Black DNAXD Natural aluminum DWHXD White DDBTXD Textured dark bronze DBLTXD Textured black DNATXD Textured natural aluminum DWHGXD Textured white
PIR High/low, motion/ambient sensor, 8-15' mounting height, ambient sensor enabled at 5fc ^{15,16} PIRH High/low, motion/ambient sensor, 15-30' mounting height, ambient sensor enabled at 5fc ^{15,16} PIR1FC3V High/low, motion/ambient sensor, 8-15' mounting height, ambient sensor enabled at 1fc ^{15,16} PIRH1FC3V Bi-level, motion/ambient sensor, 15-30' mounting height, ambient sensor enabled at 1fc ^{15,16} FAO Field adjustable output ¹⁴		



Ordering Information

Accessories

Ordered and shipped separately.

DLL127F 1.5 IU	Photocell - SSL twist-lock (120-277V) ¹⁹
DLL347F 1.5 CUL IU	Photocell - SSL twist-lock (347V) ¹⁹
DLL480F 1.5 CUL IU	Photocell - SSL twist-lock (480V) ¹⁹
DSHORT SBK U	Shorting cap ¹⁹
DSX1HS 30C U	House-side shield for P1, P2, P3, P4 and P5 ¹⁹
DSX1HS 40C U	House-side shield for P6 and P7 ¹⁹
DSX1HS 60C U	House-side shield for P8, P9, P10, P11 and P12 ¹⁹
PUMBA DDBXD U*	Square and round pole universal mounting bracket (specify finish) ¹⁹
KMA8 DDBXD U	Master arm mounting bracket adaptor (specify finish) ¹⁹

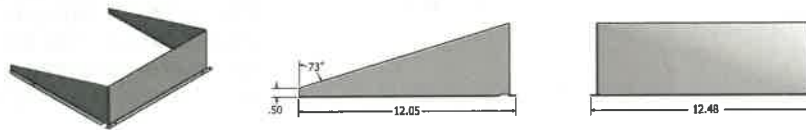
For more control options, visit [QTL](#) and [ROAM](#) online

NOTES

- P10, P11, P12 or P13 and rotated optics (L90, R90) only available together.
- Not available with HS.
- MVOLT driver operates on any line voltage from 120-277V (50/60 Hz).
- Single fuse (SF) requires 120V, 277V or 347V. Double fuse (DF) requires 208V, 240V or 480V.
- Not available in P1 or P10.
- Universal mounting brackets intended for retrofit on existing, pre-drilled poles only. 1.5 G vibration load rating per ANSI C136.31.
- Must order fixture with SPA option. Must be ordered as a separate accessory; see Accessories information. For use with 2-3/8" mast arm (not included).
- Must be ordered with PIR-HN. Sensor cover available only in dark bronze, black, white and natural aluminum colors.
- Must be ordered with NLTAIR2. For more information on nLight Air 2 visit [this link](#).
- Photocell ordered and shipped as a separate line item from Acuity Brands Controls. See accessories. Not available with DS option. Shorting cap included.
- If ROAM[®] node required, it must be ordered and shipped as a separate line item from Acuity Brands Controls. Node with integral dimming.
- Provides 50/50 fixture operation via (2) independent drivers. Not available with PER, PER5, PER7, PIR or PIRH. Not available P1, P2, P3, P4 or P5.
- Requires (2) separately switched circuits with isolated neutral. See Outdoor Control Technical Guide for details.
- Reference Motion Sensor table on page 4.
- Reference controls options table on page 4 to see functionality.
- Not available with other dimming controls options.
- Not available with BLC, LCCO and RCOO distribution. Also available as a separate accessory; see Accessories information.
- Must be ordered with fixture for factory pre-drilling.
- Requires luminaire to be specified with PER, PER5 or PER7 option. See PER Table on page 3.
- For retrofit use only.

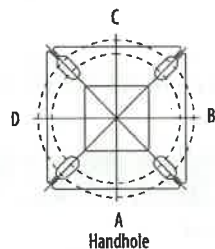
Options

EGS - External Glare Shield



Drilling

HANDHOLE ORIENTATION

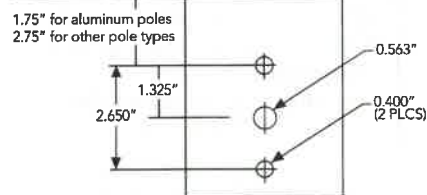


Tenon Mounting Slipfitter **

Tenon O.D.	Mounting	Single Unit	2 @ 180	2 @ 90	3 @ 120	3 @ 90	4 @ 90
2-3/8"	SPA/RPA	AS3-5190	AS3-5280	AS3-5290	AS3-5320	AS3-5390	AS3-5490
	SPUMBA	AS3-5190	AS3-5280	AS4-5290	AS3-5320	AS4-5390	AS4-5490
	RUPUMBA	AS3-5190	AS3-5280		AS3-5320		
2-7/8"	SPA/RPA	AST25-190	AST25-280	AST25-290	AST25-320	AST25-390	AST25-490
	SPUMBA	AST25-190	AST25-280		AST25-320		
	RUPUMBA	AST25-190	AST25-280		AST25-320		
4"	SPA/RPA	AST35-190	AST35-280	AST35-290	AST35-320	AST35-390	AST35-490
	SPUMBA	AST35-190	AST35-280	AST35-290	AST35-320	AST35-390	AST35-490
	RUPUMBA	AST35-190	AST35-280		AST35-320		

Template #8

Top of Pole



Mounting Option	Drilling Template	Single	2 @ 180	2 @ 90	3 @ 120	3 @ 90	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

	Drilling Template	Minimum Acceptable Outside Pole Dimension					
SPA	#8	2-7/8"	2-7/8"	3.5"	3.5"	3"	3.5"
RPA	#8	2-7/8"	2-7/8"	3.5"	3.5"	3"	3.5"
SPUMBA	#5	2-7/8"	3"	4"	4"	3.5"	4"
RUPUMBA	#5	2-7/8"	3.5"	5"	5"	3.5"	5"

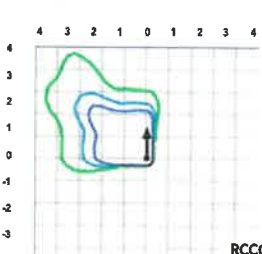
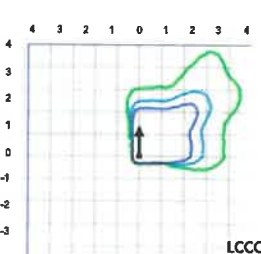
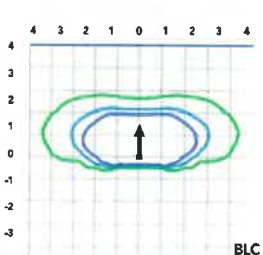
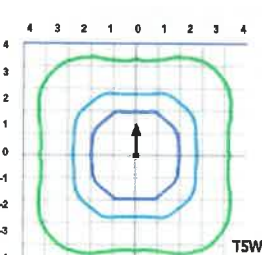
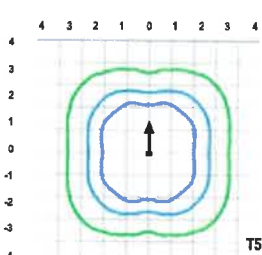
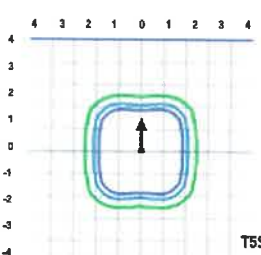
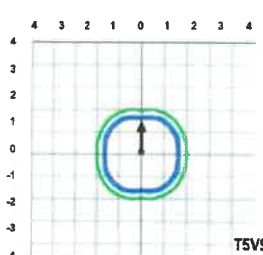
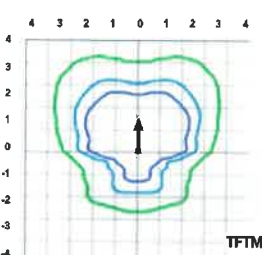
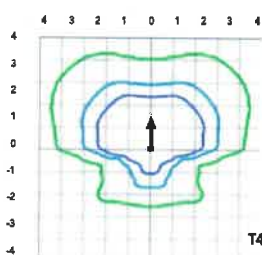
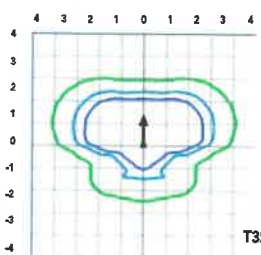
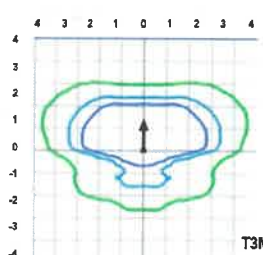
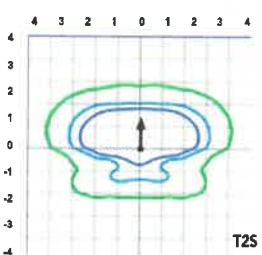
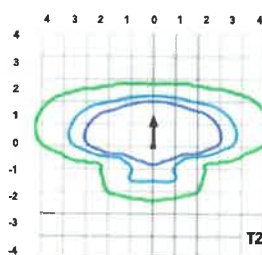
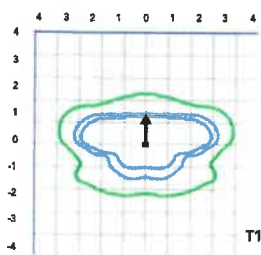
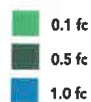


Photometric Diagrams

To see complete photometric reports or download .ies files for this product, visit Lithonia Lighting's [D-Series Area Size 1 homepage](#).

Isofootcandle plots for the DSX1 LED 60C 1000 40K. Distances are in units of mounting height (25').

LEGEND



Performance Data

Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

Ambient		Lumen Multiplier
0°C	32°F	1.04
5°C	41°F	1.04
10°C	50°F	1.03
15°C	59°F	1.02
20°C	68°F	1.01
25°C	77°F	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	0.96
50,000	0.92
100,000	0.85

Motion Sensor Default Settings						
Option	Dimmed State	High Level (when triggered)	Photocell Operation	Dwell Time	Ramp-up Time	Ramp-down Time
PIR or PIRH	3V (37%) Output	10V (100%) Output	Enabled @ 5FC	5 min	3 sec	5 min
*PIR1FC3V or PIRH1FC3V	3V (37%) Output	10V (100%) Output	Enabled @ 1FC	5 min	3 sec	5 min

*for use when motion sensor is used as dusk to dawn control.

Electrical Load

					Current (A)					
	Performance Package	LED Count	Drive Current	Wattage	120	208	240	277	347	480
Forward Optics (Non-Rotated)	P1	30	530	54	0.45	0.26	0.23	0.19	0.10	0.12
	P2	30	700	70	0.59	0.34	0.30	0.25	0.20	0.16
	P3	30	1050	102	0.86	0.50	0.44	0.38	0.30	0.22
	P4	30	1250	125	1.06	0.60	0.52	0.46	0.37	0.27
	P5	30	1400	138	1.16	0.67	0.58	0.51	0.40	0.29
	P6	40	1250	163	1.36	0.78	0.68	0.59	0.47	0.34
	P7	40	1400	183	1.53	0.88	0.76	0.66	0.53	0.38
	P8	60	1050	207	1.74	0.98	0.87	0.76	0.64	0.49
	P9	60	1250	241	2.01	1.16	1.01	0.89	0.70	0.51
Rotated Optics (Requires L90 or R90)	P10	60	530	106	0.90	0.52	0.47	0.43	0.33	0.27
	P11	60	700	137	1.15	0.67	0.60	0.53	0.42	0.32
	P12	60	1050	207	1.74	0.99	0.87	0.76	0.60	0.46
	P13	60	1250	231	1.93	1.12	0.97	0.86	0.67	0.49

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	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.
PERS 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
PIR or PIRH	Motion sensors with integral photocell. PIR for 8-15' mounting; PIRH for 15-30' mounting	Luminaires dim when no occupancy is detected.	Acuity Controls SBOR	Also available with PIRH1FC3V when the sensor photocell is used for dusk-to-dawn operation.
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 rSDGR	nLight AIR sensors can be programmed and commissioned from the ground using the CLAIRity Pro app.



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.

Forward Optics

LED Count	Drive Current	Power Package	System Watts	Dist. Type	30K (3000 K, 70 CRI)					40K (4000 K, 70 CRI)					50K (5000 K, 70 CRI)				
					Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
30	530	P1	54W	T1S	6,457	2	0	2	120	6,956	2	0	2	129	7,044	2	0	2	130
				T2S	6,450	2	0	2	119	6,949	2	0	2	129	7,037	2	0	2	130
				T2M	6,483	1	0	1	120	6,984	2	0	2	129	7,073	2	0	2	131
				T3S	6,279	2	0	2	116	6,764	2	0	2	125	6,850	2	0	2	127
				T3M	6,468	1	0	2	120	6,967	1	0	2	129	7,056	1	0	2	131
				T4M	6,327	1	0	2	117	6,816	1	0	2	126	6,902	1	0	2	128
				TFTM	6,464	1	0	2	120	6,963	1	0	2	129	7,051	1	0	2	131
				TSVS	6,722	2	0	0	124	7,242	3	0	0	134	7,334	3	0	0	136
				TSS	6,728	2	0	1	125	7,248	2	0	1	134	7,340	2	0	1	136
				TSM	6,711	3	0	1	124	7,229	3	0	1	134	7,321	3	0	2	136
				TSW	6,667	3	0	2	123	7,182	3	0	2	133	7,273	3	0	2	135
				BLC	5,299	1	0	1	98	5,709	1	0	2	106	5,781	1	0	2	107
				LCCO	3,943	1	0	2	73	4,248	1	0	2	79	4,302	1	0	2	80
				RCCO	3,943	1	0	2	73	4,248	1	0	2	79	4,302	1	0	2	80
30	700	P2	70W	T1S	8,249	2	0	2	118	8,886	2	0	2	127	8,999	2	0	2	129
				T2S	8,240	2	0	2	118	8,877	2	0	2	127	8,989	2	0	2	128
				T2M	8,283	2	0	2	118	8,923	2	0	2	127	9,036	2	0	2	129
				T3S	8,021	2	0	2	115	8,641	2	0	2	123	8,751	2	0	2	125
				T3M	8,263	2	0	2	118	8,901	2	0	2	127	9,014	2	0	2	129
				T4M	8,083	2	0	2	115	8,708	2	0	2	124	8,818	2	0	2	126
				TFTM	8,257	2	0	2	118	8,896	2	0	2	127	9,008	2	0	2	129
				TSVS	8,588	3	0	0	123	9,252	3	0	0	132	9,369	3	0	0	134
				TSS	8,595	3	0	1	123	9,259	3	0	1	132	9,376	3	0	1	134
				TSM	8,573	3	0	2	122	9,236	3	0	2	132	9,353	3	0	2	134
				TSW	8,517	3	0	2	122	9,175	4	0	2	131	9,291	4	0	2	133
				BLC	6,770	1	0	2	97	7,293	1	0	2	104	7,386	1	0	2	106
				LCCO	5,038	1	0	2	72	5,427	1	0	2	78	5,496	1	0	2	79
				RCCO	5,038	1	0	2	72	5,427	1	0	2	78	5,496	1	0	2	79
30	1050	P3	102W	T1S	11,661	2	0	2	114	12,562	3	0	3	123	12,721	3	0	3	125
				T2S	11,648	2	0	2	114	12,548	3	0	3	123	12,707	3	0	3	125
				T2M	11,708	2	0	2	115	12,613	2	0	2	124	12,773	2	0	2	125
				T3S	11,339	2	0	2	111	12,215	3	0	3	120	12,370	3	0	3	121
				T3M	11,680	2	0	2	115	12,582	2	0	2	123	12,742	2	0	2	125
				T4M	11,426	2	0	3	112	12,309	2	0	3	121	12,465	2	0	3	122
				TFTM	11,673	2	0	2	114	12,575	2	0	3	123	12,734	2	0	3	125
				TSVS	12,140	3	0	1	119	13,078	3	0	1	128	13,244	3	0	1	130
				TSS	12,150	3	0	1	119	13,089	3	0	1	128	13,254	3	0	1	130
				TSM	12,119	4	0	2	119	13,056	4	0	2	128	13,221	4	0	2	130
				TSW	12,040	4	0	3	118	12,970	4	0	3	127	13,134	4	0	3	129
				BLC	9,570	1	0	2	94	10,310	1	0	2	101	10,440	1	0	2	102
				LCCO	7,121	1	0	3	70	7,671	1	0	3	75	7,768	1	0	3	76
				RCCO	7,121	1	0	3	70	7,671	1	0	3	75	7,768	1	0	3	76
30	1250	P4	125W	T1S	13,435	3	0	3	107	14,473	3	0	3	116	14,657	3	0	3	117
				T2S	13,421	3	0	3	107	14,458	3	0	3	116	14,641	3	0	3	117
				T2M	13,490	2	0	2	108	14,532	3	0	3	116	14,716	3	0	3	118
				T3S	13,064	3	0	3	105	14,074	3	0	3	113	14,252	3	0	3	114
				T3M	13,457	2	0	2	108	14,497	2	0	2	116	14,681	2	0	2	117
				T4M	13,165	2	0	3	105	14,182	2	0	3	113	14,362	2	0	3	115
				TFTM	13,449	2	0	3	108	14,488	2	0	3	116	14,672	2	0	3	117
				TSVS	13,987	4	0	1	112	15,068	4	0	1	121	15,259	4	0	1	122
				TSS	13,999	3	0	1	112	15,080	3	0	1	121	15,271	3	0	1	122
				TSM	13,963	4	0	2	112	15,042	4	0	2	120	15,233	4	0	2	122
				TSW	13,872	4	0	3	111	14,944	4	0	3	120	15,133	4	0	3	121
				BLC	11,027	1	0	2	88	11,879	1	0	2	95	12,029	1	0	2	96
				LCCO	8,205	1	0	3	66	8,839	1	0	3	71	8,951	1	0	3	72
				RCCO	8,205	1	0	3	66	8,839	1	0	3	71	8,951	1	0	3	72
30	1400	P5	138W	T1S	14,679	3	0	3	106	15,814	3	0	3	115	16,014	3	0	3	116
				T2S	14,664	3	0	3	106	15,797	3	0	3	114	15,997	3	0	3	116
				T2M	14,739	3	0	3	107	15,878	3	0	3	115	16,079	3	0	3	117
				T3S	14,274	3	0	3	103	15,377	3	0	3	111	15,572	3	0	3	113
				T3M	14,704	2	0	3	107	15,840	3	0	3	115	16,040	3	0	3	116
				T4M	14,384	2	0	3	104	15,496	3	0	3	112	15,692	3	0	3	114
				TFTM	14,695	2	0	3	106	15,830	3	0	3	115	16,030	3	0	3	116
				TSVS	15,283	4	0	1	111	16,464	4	0	1	119	16,672	4	0	1	121
				TSS	15,295	3	0	1	111	16,477	4	0	1	119	16,686	4	0	1	121
				TSM	15,257	4	0	2	111	16,435	4	0	2	119	16,644	4	0	2	121
				TSW	15,157	4	0	3	110	16,328	4	0	3	118	16,534	4	0	3	120
				BLC	12,048	1	0	2	87	12,979	1	0	2	94	13,143	1	0	2	95
				LCCO	8,965	1	0	3	65	9,657	1	0	3	70	9,780	1	0	3	71
				RCCO	8,965	1	0	3	65	9,657	1	0	3	70	9,780	1	0	3	71



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.

Forward Optics																			
LED Count	Drive Current	Power Package	System Watts	Dist. Type	30K (3000 K, 70 CRI)					40K (4000 K, 70 CRI)					50K (5000 K, 70 CRI)				
					Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
40	1250	P6	163W	T1S	17,654	3	0	3	108	19,018	3	0	3	117	19,259	3	0	3	118
				T2S	17,635	3	0	3	108	18,998	3	0	3	117	19,238	3	0	3	118
				T2M	17,726	3	0	3	109	19,096	3	0	3	117	19,337	3	0	3	119
				T3S	17,167	3	0	3	105	18,493	3	0	3	113	18,727	3	0	3	115
				T3M	17,683	3	0	3	108	19,049	3	0	3	117	19,290	3	0	3	118
				T4M	17,299	3	0	3	106	18,635	3	0	4	114	18,871	3	0	4	116
				TFTM	17,672	3	0	3	108	19,038	3	0	4	117	19,279	3	0	4	118
				TSVS	18,379	4	0	1	113	19,800	4	0	1	121	20,050	4	0	1	123
				TSS	18,394	4	0	2	113	19,816	4	0	2	122	20,066	4	0	2	123
				TSM	18,348	4	0	2	113	19,766	4	0	2	121	20,016	4	0	2	123
				TSW	18,228	5	0	3	112	19,636	5	0	3	120	19,885	5	0	3	122
				BLC	14,489	2	0	2	89	15,609	2	0	3	96	15,806	2	0	3	97
				LCCO	10,781	1	0	3	66	11,614	1	0	3	71	11,761	2	0	3	72
				RCCO	10,781	1	0	3	66	11,614	1	0	3	71	11,761	2	0	3	72
				40	1400	P7	183W	T1S	19,227	3	0	3	105	20,712	3	0	3	113	20,975
T2S	19,206	3	0					3	105	20,690	3	0	3	113	20,952	3	0	3	114
T2M	19,305	3	0					3	105	20,797	3	0	3	114	21,060	3	0	3	115
T3S	18,696	3	0					3	102	20,141	3	0	3	110	20,396	3	0	4	111
T3M	19,258	3	0					3	105	20,746	3	0	3	113	21,009	3	0	3	115
T4M	18,840	3	0					4	103	20,296	3	0	4	111	20,553	3	0	4	112
TFTM	19,246	3	0					4	105	20,734	3	0	4	113	20,996	3	0	4	115
TSVS	20,017	4	0					1	109	21,564	4	0	1	118	21,837	4	0	1	119
TSS	20,033	4	0					2	109	21,581	4	0	2	118	21,854	4	0	2	119
TSM	19,983	4	0					2	109	21,527	5	0	3	118	21,799	5	0	3	119
TSW	19,852	5	0					3	108	21,386	5	0	3	117	21,656	5	0	3	118
BLC	15,780	2	0					3	86	16,999	2	0	3	93	17,214	2	0	3	94
LCCO	11,742	2	0					3	64	12,649	2	0	3	69	12,809	2	0	3	70
RCCO	11,742	2	0					3	64	12,649	2	0	3	69	12,809	2	0	3	70
60	1050	P8	207W					T1S	22,490	3	0	3	109	24,228	3	0	3	117	24,535
				T2S	22,466	3	0	4	109	24,202	3	0	4	117	24,509	3	0	4	118
				T2M	22,582	3	0	3	109	24,327	3	0	3	118	24,635	3	0	3	119
				T3S	21,870	3	0	4	106	23,560	3	0	4	114	23,858	3	0	4	115
				T3M	22,527	3	0	4	109	24,268	3	0	4	117	24,575	3	0	4	119
				T4M	22,038	3	0	4	106	23,741	3	0	4	115	24,041	3	0	4	116
				TFTM	22,513	3	0	4	109	24,253	3	0	4	117	24,560	3	0	4	119
				TSVS	23,415	5	0	1	113	25,224	5	0	1	122	25,543	5	0	1	123
				TSS	23,434	4	0	2	113	25,244	4	0	2	122	25,564	4	0	2	123
				TSM	23,374	5	0	3	113	25,181	5	0	3	122	25,499	5	0	3	123
				TSW	23,221	5	0	4	112	25,016	5	0	4	121	25,332	5	0	4	122
				BLC	18,458	2	0	3	89	19,885	2	0	3	96	20,136	2	0	3	97
				LCCO	13,735	2	0	3	66	14,796	2	0	4	71	14,983	2	0	4	72
				RCCO	13,735	2	0	3	66	14,796	2	0	4	71	14,983	2	0	4	72
				60	1250	P9	241W	T1S	25,575	3	0	3	106	27,551	3	0	3	114	27,900
T2S	25,548	3	0					4	106	27,522	3	0	4	114	27,871	3	0	4	116
T2M	25,680	3	0					3	107	27,664	3	0	3	115	28,014	3	0	3	116
T3S	24,870	3	0					4	103	26,791	3	0	4	111	27,130	3	0	4	113
T3M	25,617	3	0					4	106	27,597	3	0	4	115	27,946	3	0	4	116
T4M	25,061	3	0					4	104	26,997	3	0	4	112	27,339	3	0	4	113
TFTM	25,602	3	0					4	106	27,580	3	0	4	114	27,929	3	0	4	116
TSVS	26,626	5	0					1	110	28,684	5	0	1	119	29,047	5	0	1	121
TSS	26,648	4	0					2	111	28,707	5	0	2	119	29,070	5	0	2	121
TSM	26,581	5	0					3	110	28,635	5	0	3	119	28,997	5	0	3	120
TSW	26,406	5	0					4	110	28,447	5	0	4	118	28,807	5	0	4	120
BLC	20,990	2	0					3	87	22,612	2	0	3	94	22,898	2	0	3	95
LCCO	15,619	2	0					4	65	16,825	2	0	4	70	17,038	2	0	4	71
RCCO	15,619	2	0					4	65	16,825	2	0	4	70	17,038	2	0	4	71





STORMWATER FOR ADDED TRAIL WIDTH 3-29-2019

As requested by the Planning Board and the Portland Trails staff, the existing sidewalks along the north side of the campus, and the existing gravel trails north to Bartley Avenue and east to Bramblewood Drive, will be new bituminous paved to 8' wide. The stormwater runoff from the net increase in impervious surface on the school campus is assessed for water quality treatment complying with MDEP Chapter 500 standards. The existing sidewalks are between 6' and 8' impervious pavement; and the existing trails are between 5' and 6' impervious gravel. The added impervious total for the new 8' wide campus pavements equals only 2,310 sq.ft. spread throughout the campus. Modified calculations for these pavement trail increases are shown in **Bold type**.

New Lyseth School Impervious Summary

- Gym/Library Addition	11,045 sq.ft. Floor Area =	7,450 sq.ft. Net New Impervious
- Administration Addition	3,431 sq.ft. Floor Area =	1,450 sq.ft. Net New Impervious
- Pavement reconstruction	=	<u>6,900 sq.ft.</u> Net New Impervious
- Sidewalk /Trail Reconstruction	=	2310 sq.ft. Net New Impervious
	Total =	<u>18,110 sq.ft.</u>

Water quality treatment for the Lyseth School net impervious increase is proposed to be provided by a new subsurface underdrained chamber sand filter bed 'A'(Pond P3) , to the west side of the building addition. This is the best location for a storm filter around the fully-developed Lyseth School. The roof drain from the 11,045 sq.ft. Gym/Library wing will discharge to the treatment bed through a new storm drain pipe. Sheet runoff from the surrounding 5,215 sq.ft. of new and existing paved areas will also be treated in the filter bed, along with 4,640 sq.ft. of grass area runoff. The water quality volume of approximately 1,519 cubic feet will be contained in the subsurface chambers and crushed stone. The attached Stormwater Quality Summary shows the treated impervious area of 16,260 sq.ft. virtually matches the net new impervious surfaces of **18,110 sq.ft.** for a treatment ratio of **90%**.

Urban Impaired Stream Standards

The proposed project is located within the Fall Brook watershed and is subject to the Urban Impaired Stream Standard by virtue of creating new impervious surfaces within the watershed. The previous LLM Campus Improvements Circulation Project, permitted by the City as #2017-202, created 2,800 sq.ft. of new impervious drives and parking. In addition, 33,157 sq.ft. of rooftop area at the Lyseth

School was to be relocated from the sanitary sewer into the storm drains tributary to the Fall Brook watershed. These are the first two items in the following table.

The current Lyseth School building additions and pavement reconstruction will add a net increase of 8,900 sq.ft. of building roof runoff and 6,900 sq.ft. of pavement runoff into the existing storm drain system that discharges in the Fall Brook watershed. **The proposed widening of the northerly sidewalks and gravel trails will add approximately 2310 sq.ft. of pavement to the existing paved walks, raising the Lyseth Net New Pavements to 9210 sq.ft. in the following table.**

Proposed New Impervious Areas				
Location	Total Impervious (sf)	Total Impervious (acre)	Credits Per Acre	Credits Required
Lyseth Roof Area from Prior 2017 Permit	33,157	0.76	0.20	0.152
Added Impervious from Prior 2017 Permit	2,800	0.06	0.50	0.032
Lyseth Building Additions Net Roof Area	8,900	0.2	0.20	0.04
Lyseth Net New Pavements	9210	0.21	0.50	0.106
Total Credits Required =				0.33

Total Treated Amount								
System ID	Total Area drains to system		Credits Per Acre			Impervious Credits	Landscape Credits	TOTAL CREDITS PROVIDED
	Treated Impervious (ac)	Treated Landscaped (ac)	Impervious Parking Treated	Impervious Roof Treated	Landscaped Treated			
UGSF-1 from prior 2017 permit	0.838	0.238	1.2	0	0.3	0.838	0.071	0.909
Sub. Filter Bed 'A'	0.252 Roof 0.121 Paved	0.11	1.2	0.6	0.3	0.296	0.033	0.329

Total Treated Amount = 1.238

As indicated above, the credits accrued from the treatment in both the previously permitted grassed underdrained soil filter #1(GUSF-1) and the new vegetated underdrained soil filter 'A' account for a Total Treated Amount of 1.238. The required credits to meet the water quality standards yield a Total Credits Required of **0.33**. Since the proposed parking lot, pavement additions, and proposed roof connections require only **0.33** credits, the proposed stormwater treatment measures provide **0.908** additional credits beyond that required for the new development. Since the stormwater treatment measures provide an additional treatment of more than 2 times the required amount, we believe this satisfies the intent of the urban impaired stream standard.

Stormwater Quantity(Flooding)

The site has been analyzed for pre-development and post-development runoff corresponding to the 2, 10, and 25 year storms. The Soil Conservation Service (SCS) TR-20 methodology was selected to determine the flow rates for this hydrologic analysis, and the HydroCAD (release 10.00) computer modeling software was utilized to perform the computations. **The added small amount of 2310 sq.ft. of impervious walk/trail pavement widening has no measured effect on the Hydrocad Post-Development model, as shown below.**

One Study Point has been chosen to determine where stormwater exits the property for this entire campus in both the pre- and post-developed conditions. The former Post-Development Hydrocad model from the previous permit for 2017 LLM Campus Improvements Circulation Project is being used by this current Lyseth School development as the Pre-Development condition. The current Post-Development condition reflects the new Lyseth School building additions and pavement reconstruction. The results for runoff exiting the site at this Study Point SP-1 is summarized in the table below:

Stormwater Quantity Flow Summary

Watershed Study Point	Pre-Development	Post-Development	Peak Flow Change
Reach SP-1 at Gravel Wetland	25 Year = 43.26 cfs 10 Year = 29.94 2 Year = 7.44	25 Year = 42.63 cfs 10 Year = 29.06 2 Year = 6.88	-0.63 cfs -0.88 -0.56

In summary, the stormwater flow rates at the gravel wetland study point and, therefore, the flow rate leaving the property following construction will be slightly less than the Pre-Development flows. Construction of the new building additions and pavements will therefore have no measurable impact to abutters or the Fall Brook system.

STORMWATER QUALITY SUMMARY - DEP CHAPTER 500

Project: Harrison Lyseth Elementary School
Portland, Maine

3/29/2019

Revision for Widened Sidewalks/Trails

Project No. 18483

Watershed Subcatchments - Quality Treatment:

Subcatch Number	Net New Impervious on Exist. Vegetated Sq. Ft.	New Impervious Area Treated Sq. Ft.	Existing Impervious Area Treated Sq. Ft.	Treated by:
S2	5700			
S3	Included in Prior permit -	LLM Campus #2017-202		
S4	Included in Prior permit -	LLM Campus #2017-202		
S5	10960	10960	5300	New Soil Filter 'A'
S6	1450			
Totals =	18110	10960	5300	

Treated Treated

NOTES

1. The total amount of Impervious area receiving treatment is 16,260 sq.ft.(10960 + 5300)
Net New Impervious area requiring treatment on the site is **18,110 sq.ft.**
The Impervious Treatment Ratio is **90%**, (~~16260~~/18110), which is reasonably close to the 95% Standard.
2. Total New Developed area is equivalent to the impervious area and exceeds the 80% General Standard.

WIDENED SIDEWALKS/TRAILS

Lyseth-Moore Campus - Post-Develop-Revised Portland_ME 24-hr S0P 25-yr Rainfall=5.92"

Prepared by HARRIMAN

Printed 3/29/2019

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Time span=1.00-48.00 hrs, dt=0.01 hrs, 4701 points x 3

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

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment S-2: General Site to Gravel Runoff Area=725,793 sf 45.20% Impervious Runoff Depth=4.23"
Flow Length=1,612' Tc=29.3 min CN=85 Runoff=40.19 cfs 5.869 af

NO CHANGE

Subcatchment S-4: Parking Lot to GUSF-1 Runoff Area=46,872 sf 78.08% Impervious Runoff Depth=5.10"
Tc=7.0 min CN=93 Runoff=5.20 cfs 0.458 af

NO CHANGE

Reach SP-1: SP-1

Avg. Flow Depth=1.21' Max Vel=4.09 fps Inflow=42.66 cfs 6.752 af
n=0.035 L=250.0' S=0.0120 '/' Capacity=908.60 cfs Outflow=42.61 cfs 6.752 af

Pond P-1: Gravel Wetland

Peak Elev=107.23' Storage=55,739 cf Inflow=43.66 cfs 6.752 af
Primary=34.15 cfs 1.784 af Secondary=8.51 cfs 4.968 af Outflow=42.66 cfs 6.752 af

Pond P-2: GUSF-1

Peak Elev=111.23' Storage=5,750 cf Inflow=5.20 cfs 0.458 af
Primary=0.23 cfs 0.346 af Secondary=2.85 cfs 0.112 af Tertiary=0.00 cfs 0.000 af Outflow=3.08 cfs 0.458 af

Summary for Subcatchment S-2: General Site to Gravel Wetland

Runoff = 40.19 cfs @ 12.34 hrs, Volume= 5.869 af, Depth= 4.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
 Portland_ME 24-hr S0P 25-yr Rainfall=5.92"

Area (sf)	CN	Description
328,030	98	Paved parking & roofs
397,763	74	>75% Grass cover, Good, HSG C
725,793	85	Weighted Average
397,763		54.80% Pervious Area
328,030		45.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.0	285	0.0150	0.20		Sheet Flow, Grass: Short n= 0.150 P2= 3.60"
5.3	1,327	0.0050	4.20	7.43	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
29.3	1,612	Total			

Summary for Subcatchment S-4: Parking Lot to GUSF-1

Runoff = 5.20 cfs @ 12.05 hrs, Volume= 0.458 af, Depth= 5.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
 Portland_ME 24-hr S0P 25-yr Rainfall=5.92"

Area (sf)	CN	Description
* 36,596	98	
* 10,276	75	
46,872	93	Weighted Average
10,276		21.92% Pervious Area
36,596		78.08% Impervious Area

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

Summary for Reach SP-1: SP-1

Inflow Area = 19.048 ac, 50.26% Impervious, Inflow Depth = 4.25" for 25-yr event
 Inflow = 42.66 cfs @ 12.39 hrs, Volume= 6.752 af
 Outflow = 42.61 cfs @ 12.40 hrs, Volume= 6.752 af, Atten= 0%, Lag= 0.8 min

Lyseth-Moore Campus - Post-Develop-Revised Portland_ME 24-hr S0P 25-yr Rainfall=5.92"

Prepared by HARRIMAN

Printed 3/29/2019

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Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 3

Max. Velocity= 4.09 fps, Min. Travel Time= 1.0 min

Avg. Velocity = 1.24 fps, Avg. Travel Time= 3.3 min

Peak Storage= 2,605 cf @ 12.40 hrs

Average Depth at Peak Storage= 1.21'

Bank-Full Depth= 5.00' Flow Area= 100.0 sf, Capacity= 908.60 cfs

5.00' x 5.00' deep channel, n= 0.035 High grass

Side Slope Z-value= 3.0 '/' Top Width= 35.00'

Length= 250.0' Slope= 0.0120 '/'

Inlet Invert= 91.00', Outlet Invert= 88.00'

**Summary for Pond P-1: Gravel Wetland**

Inflow Area = 19.048 ac, 50.26% Impervious, Inflow Depth = 4.25" for 25-yr event
 Inflow = 43.66 cfs @ 12.34 hrs, Volume= 6.752 af
 Outflow = 42.66 cfs @ 12.39 hrs, Volume= 6.752 af, Atten= 2%, Lag= 2.9 min
 Primary = 34.15 cfs @ 12.39 hrs, Volume= 1.784 af
 Secondary = 8.51 cfs @ 12.39 hrs, Volume= 4.968 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 107.23' @ 12.39 hrs Surf.Area= 18,164 sf Storage= 55,739 cf

Plug-Flow detention time= 176.0 min calculated for 6.751 af (100% of inflow)

Center-of-Mass det. time= 176.1 min (1,014.6 - 838.5)

Volume	Invert	Avail.Storage	Storage Description
#1	102.00'	70,788 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
102.00	3,572	549.0	0	0	3,572
103.00	6,200	771.0	4,826	4,826	26,901
104.00	9,020	829.0	7,566	12,392	34,329
105.00	11,611	872.0	10,288	22,680	40,211
106.00	14,502	904.0	13,030	35,710	44,820
107.00	17,279	924.0	15,870	51,580	47,870
108.00	21,203	764.0	19,208	70,788	69,378

Device	Routing	Invert	Outlet Devices
#1	Primary	106.50'	15.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	107.00'	32.0' 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
#3	Secondary	101.67'	12.0" Round Culvert L= 37.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.67' / 100.00' S= 0.0451 '/' Cc= 0.900 n= 0.011, Flow Area= 0.79 sf
#4	Device 3	101.67'	4.0" Vert. Orifice/Grate C= 0.600
#5	Device 3	106.00'	6.0' long x 0.7' 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 Coef. (English) 2.76 2.82 2.93 3.09 3.18 3.22 3.27 3.30 3.32 3.31 3.32

Primary OutFlow Max=34.14 cfs @ 12.39 hrs HW=107.23' TW=92.21' (Dynamic Tailwater)

1=Broad-Crested Rectangular Weir (Weir Controls 25.44 cfs @ 2.31 fps)

2=Broad-Crested Rectangular Weir (Weir Controls 8.71 cfs @ 1.16 fps)

Secondary OutFlow Max=8.51 cfs @ 12.39 hrs HW=107.23' TW=92.21' (Dynamic Tailwater)

3=Culvert (Inlet Controls 8.51 cfs @ 10.84 fps)

4=Orifice/Grate (Passes < 0.98 cfs potential flow)

5=Broad-Crested Rectangular Weir (Passes < 26.58 cfs potential flow)

Summary for Pond P-2: GUSF-1

Inflow Area = 1.076 ac, 78.08% Impervious, Inflow Depth = 5.10" for 25-yr event
 Inflow = 5.20 cfs @ 12.05 hrs, Volume= 0.458 af
 Outflow = 3.08 cfs @ 12.18 hrs, Volume= 0.458 af, Atten= 41%, Lag= 8.0 min
 Primary = 0.23 cfs @ 12.18 hrs, Volume= 0.346 af
 Secondary = 2.85 cfs @ 12.18 hrs, Volume= 0.112 af
 Tertiary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 111.23' @ 12.18 hrs Surf.Area= 4,185 sf Storage= 5,750 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 171.6 min (952.0 - 780.4)

Volume	Invert	Avail.Storage	Storage Description
#1	109.50'	11,839 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Lyseth-Moore Campus - Post-Develop-Revised *Portland_ME 24-hr SOP 25-yr Rainfall=5.92"*

Prepared by HARRIMAN

Printed 3/29/2019

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
109.50	2,471	0	0
112.00	4,950	9,276	9,276
112.50	5,300	2,563	11,839

Device	Routing	Invert	Outlet Devices
#1	Secondary	106.00'	15.0" Round Culvert L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 106.00' / 105.50' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	111.00'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Primary	109.50'	2.410 in/hr Exfiltration over Surface area
#4	Tertiary	112.00'	250.0' long x 4.0' 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) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.23 cfs @ 12.18 hrs HW=111.23' TW=107.03' (Dynamic Tailwater)
↑ **3=Exfiltration** (Exfiltration Controls 0.23 cfs)

Secondary OutFlow Max=2.84 cfs @ 12.18 hrs HW=111.23' TW=107.03' (Dynamic Tailwater)
↑ **1=Culvert** (Passes 2.84 cfs of 9.56 cfs potential flow)
↑ **2=Orifice/Grate** (Weir Controls 2.84 cfs @ 1.56 fps)

Tertiary OutFlow Max=0.00 cfs @ 1.00 hrs HW=109.50' TW=102.00' (Dynamic Tailwater)
↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)



Staff Note: Attachments to this also included in subject files.

HARRISON LYSETH ELEMENTARY SCHOOL
ADDITIONS AND RENOVATIONS
PORTLAND PUBLIC SCHOOLS

April 2, 2019

RESPONSES TO PLANNING BOARD COMMENTS OF MEETING MARCH 12, 2019

1. *North Fire Lane: What steps can be taken to limit cars parking/blocking the gate?*
Two additional “No Parking – Fire Lane” signs are being placed on either side of the gated drive. Many other No Parking signs are shown at the fire lanes on the revised Site Plan C00.1. The school staff will also speak to individuals that are seen parking in the fire lane.
2. *North Fire Lane: Could the fire lane gate and walk-around be detailed better?*
The attached Site Plan drawing C00.1 has an added enlarged detail showing the gate and the walk.
3. *North Fire Lane: Should the gate be replaced with removable bollards?*
We do not recommend removable bollards in the Maine climate. The sand, salt, and ice of the winter make the bollards difficult to keep clean for removal and replacement. Often, after several removals, the hole fills with sand and the bollards do not get replaced. The gate operation is much more consistent.
4. *North Fire Lane: Can a fire truck turn from the parent drop-off aisle into the fire lane?*
Yes, a full-size fire truck can turn from the parent drop-off bypass aisle into the gated fire lane, by driving over a small section of concrete pavers, which have recently been added to the Site Plan C00.1. A ‘North Fire Truck Access Turning Template’ drawing has also been included to show the turning movement for the Portland fire truck.
5. *North Fire Lane: Show the actual grades and distances between the new gym wall and the neighbor’s fence. How can a buffer be established along the neighbor’s property line, since there is no available ground on the school’s property?*
A ‘Section A-A’ detail has been added to the Site Plan drawing C00.1, that shows the new gym, the new 3’ tall retaining wall, and the neighbor’s fence and grade. The School Department will meet with the neighbors and discuss their wishes for screening. The best solution may be to purchase plantings or a new stockade fence, to be located on the neighbor’s property. See attached photo of existing property line and fence.
6. *How is the gym designed and operated to reduce noise and visual impacts to the neighbors?*
No windows are located in the west-facing gym wall, in order to eliminate light trespass from inside the gym. The two exit doors on the west wall are for emergency exit only, and will not be available for patrons to use on a normal basis. People will access the gym through the inside of the existing school, through the front doors to the existing parking lot. The gym façade is a standard brick color and is softened by a large trellis with a natural climbing vine.

AUBURN

BOSTON

PORTLAND

PORTSMOUTH



7. *Should additional site lighting be considered for safety to address CPTED?*

Five lighting poles have been added to Site Plan C00.1 to address Crime Prevention Through Environmental Design(CPTED); three poles on the south side parking area, and two at the front entry bus and parent drives. A Site Photometric Plan C70.1 has been included.

8. *How is snow addressed around the school site?*

Snow will be plowed, stored, and removed, after construction of the building additions, in a very similar manner as currently managed. The snow to the north, south, and east sides of the building are typically plowed to the east side of paved walks and play yard for storage. The snow near the front of the building(west side) must be removed by bucket-loader after the small amount of storage on parking lot islands is used up.

9. *Provide enhanced walking/biking trails at 8' paved width to meet Portland Trails' connectivity request.*

Several 8'-wide pavements to enhance the trail network have been added to the Site Plan C00.1. These include:

- a. Reconstructed paved walk from the north side of the school building to Bartley Avenue to the north. And added easterly curved walk at the bottom of the embankment.
- b. Reconstructed paved walk from the east playground to Bramblewood Drive to the east.
- c. Reconstructed paved sidewalk and curb to replace sidewalk and timber guardrail from Junior Street toward Auburn Street; and reconstructed walk behind existing curb for the full length to Auburn Street.
- d. For the Future Parkinglot Reconstruction area, along the northerly exit driveway between the Lyseth School and Junior Street, the existing sidewalk and timber guardrail will be removed and replaced with the 8'-wide sidewalk and new raised curb, when that parking lot work progresses.

10. *Is there any plan to add electric vehicle charging stations to the parking lots?*

At this time, there is no plan to add charging stations. In the future, they could be added to parking spaces closest to the school building, where disturbance to pavements would be a minimum.

11. *Should the incoming traffic from Junior Street be limited to right-turn only?*

The 2018 Campus Improvements Circulation Plan that was approved by the Planning Board shows the Junior Street traffic moving either straight through or turning right. We are currently developing construction drawings, to implement this approved design. In the future, if blocking the straight-through traffic movement is desired, it could be done with signs and barriers.

12. *Will the relocated trash dumpster be screened?*



Yes, the dumpster enclosure is a 6' tall black-coated chain-link fence, with black privacy strips to create a solid visual barrier to the containers inside; detail D2 on drawing C50.2.

13. Will the proposed stormwater system handle the increased impervious surface of the wider 8' paved trails?

Yes, there will be no measurable change to the runoff from the proposed stormwater system. The existing sidewalks are between 6' and 8' impervious pavement; and the existing trails are between 5' and 6' impervious gravel. The added impervious total for the new 8' wide campus pavements equals only 2,310 sq.ft. spread throughout the campus. This has no measurable effect on the stormwater calculations, as shown by the attached revised calculation pages.

14. Please clarify the improvements to the Junior Street intersection area.

The pavements between the Lyman Moore School and Junior Street are being reconstructed according to the plans approved by the Planning Board on 1-23-2018. These improvements include:

- Re-aligning the pavement and curblines to match Junior Street, instead of the current pavement offset.
- Relocating the crosswalk and sidewalks to align with the Junior Street sidewalk, to the west side of the intersection.
- Adding "Do Not Enter" signs on the one-way sections of the loop drive.
- Adding pedestrian warning signs at crosswalks.
- Adding directional signage for "Left Turn Only" at Junior Street extension in front of Lyman Moore driveway.

15. Confirm the delivery arrangements at the Lyseth School.

The service yard to the south side of the elementary school will not be significantly changed, except for the relocation of the screened trash dumpster enclosure. Trash pick-up occurs two mornings each week by Waste Management Services, before 7:00 am, when school activity has not yet started. The truck has ample room in the paved service yard and parking lot driveway to turn-around and exit the site. A food service 30' box-truck delivers the daily meals between 9:30 and 10:30 each day. A dairy/milk truck delivers twice per week, between 7:00 and 9:15 in the morning. And approximately once per month, a UPS box truck delivers supplies at random times during the day. All of these vehicles can access the service yard and maneuver without any issue.

16. Provide details regarding the planted green trellis on the gym wall.

The attached Planting Plan Enlargement SKA-L01.0 defines the climbing vine on the trellis as English Ivy(Hedera Helix). The elevation view of the gym wall and trellis is on the drawing of Exterior Elevations A20.2. The trellis is approximately 14' wide by 19' tall.



d#series

D-Series Size 1 LED Area Luminaire

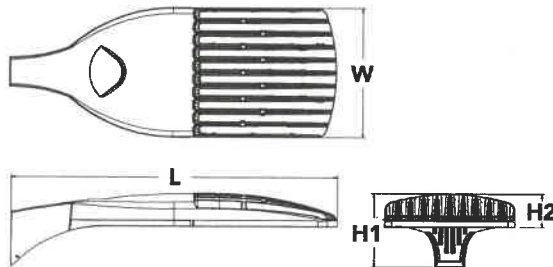


Catalog Number
Notes
Type

Hit the Tab key or mouse over the page to see all interactive elements.

Specifications

EPA:	1.01 ft ² (0.09 m ²)
Length:	33" (83.8 cm)
Width:	13" (33.0 cm)
Height H1:	7-1/2" (19.0 cm)
Height H2:	3-1/2"
Weight (max):	27 lbs (12.2 kg)



Introduction

The modern styling of the D-Series is striking yet unobtrusive - making a bold, progressive statement even as it blends seamlessly with its environment. The D-Series distills the benefits of the latest in LED technology into a high performance, high efficacy, long-life luminaire.

The outstanding photometric performance results in sites with excellent uniformity, greater pole spacing and lower power density. It is ideal for replacing up to 750W metal halide in pedestrian and area lighting applications with typical energy savings of 65% and expected service life of over 100,000 hours.



A+ Capable options indicated by this color background.

Ordering Information

EXAMPLE: DSX1 LED P7 40K T3M MVOLT SPA NLTAIR2 PIRHN DDBXD

DSX1 LED					
Series	LEDs	Color temperature	Distribution	Voltage	Mounting
DSX1 LED	Forward optics	30K 3000 K	T1S Type I short	MVOLT ¹	Shipped included
	P1 P4 P7	40K 4000 K	T2S Type II short		
	P2 P5 P8	50K 5000 K	T2M Type II medium		
	P3 P6 P9		T3S Type III short		
	Rotated optics		T3M Type III medium		
	P10 ¹ P12 ¹		T4M Type IV medium		
	P11 ¹ P13 ¹		TFTM Forward throw medium		
			T5VS Type V very short		
			T5S Type V short		
			T5M Type V medium		
			T5W Type V wide		
			BLC Backlight control ²		
			LCCO Left corner cutoff ²		
			RCCO Right corner cutoff ²		
					Shipped separately
					KMA8 DDBXD U Mast arm mounting bracket adaptor (specify finish) ⁷

Control options	Other options	Finish
Shipped installed	Shipped installed	DDBXD Dark bronze
NLTAIR2 nLight AIR generation 2 enabled ⁸	HS House-side shield ¹⁷	DBLXD Black
PIRHN Network, high/low motion/ambient sensor ⁹	SF Single fuse (120, 277, 347V) ⁴	DNAXD Natural aluminum
PER NEMA twist-lock receptacle only (controls ordered separate) ¹⁰	DF Double fuse (208, 240, 480V) ⁴	DWHXD White
PER5 Five-pin receptacle only (controls ordered separate) ^{10,11}	L90 Left rotated optics ¹	DDBTXD Textured dark bronze
PER7 Seven-pin receptacle only (controls ordered separate) ^{10,11}	R90 Right rotated optics ¹	DBL BXD Textured black
DMG 0-10v dimming wires pulled outside fixture (for use with an external control, ordered separately) ¹²	Shipped separately	DNATXD Textured natural aluminum
DS Dual switching ^{12,13,14}	BS Bird spikes ¹⁸	DWHGXD Textured white
	EGS External glare shield ¹⁸	
PIR High/low, motion/ambient sensor, 8-15' mounting height, ambient sensor enabled at 5fc ^{15,16}		
PIRH High/low, motion/ambient sensor, 15-30' mounting height, ambient sensor enabled at 5fc ^{15,16}		
PIR1FC3V High/low, motion/ambient sensor, 8-15' mounting height, ambient sensor enabled at 1fc ^{15,16}		
PIRH1FC3V Bi-level, motion/ambient sensor, 15-30' mounting height, ambient sensor enabled at 1fc ^{15,16}		
FAO Field adjustable output ¹⁴		



Ordering Information

Accessories

Ordered and shipped separately.

DLL127F 1.5 IU	Photocell - SSL twist-lock (120-277V) ¹⁹
DLL347F 1.5 CUL IU	Photocell - SSL twist-lock (347V) ¹⁹
DLL480F 1.5 CUL IU	Photocell - SSL twist-lock (480V) ¹⁹
DSHORT SBK U	Shorting cap ¹⁹
DSX1HS 30C U	House-side shield for P1, P2, P3, P4 and P5 ¹⁹
DSX1HS 40C U	House-side shield for P6 and P7 ¹⁹
DSX1HS 60C U	House-side shield for P8, P9, P10, P11 and P12 ¹⁹
PUMBA DDBXD U*	Square and round pole universal mounting bracket (specify finish) ¹⁹
KMA8 DDBXD U	Master arm mounting bracket adaptor (specify finish) ¹⁹

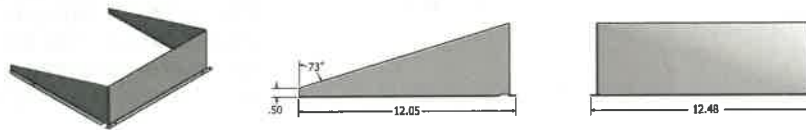
For more control options, visit [QTL](#) and [ROAM](#) online

NOTES

- P10, P11, P12 or P13 and rotated optics (L90, R90) only available together.
- Not available with HS.
- MVOLT driver operates on any line voltage from 120-277V (50/60 Hz).
- Single fuse (SF) requires 120V, 277V or 347V. Double fuse (DF) requires 208V, 240V or 480V.
- Not available in P1 or P10.
- Universal mounting brackets intended for retrofit on existing, pre-drilled poles only. 1.5 G vibration load rating per ANSI C136.31.
- Must order fixture with SPA option. Must be ordered as a separate accessory; see Accessories information. For use with 2-3/8" mast arm (not included).
- Must be ordered with PIR-IN. Sensor cover available only in dark bronze, black, white and natural aluminum colors.
- Must be ordered with NLTAIR2. For more information on nLight Air 2 visit [this link](#).
- Photocell ordered and shipped as a separate line item from Acuity Brands Controls. See accessories. Not available with DS option. Shorting cap included.
- If ROAM[®] node required, it must be ordered and shipped as a separate line item from Acuity Brands Controls. Node with integral dimming.
- Provides 50/50 fixture operation via (2) independent drivers. Not available with PER, PER5, PER7, PIR or PIRH. Not available P1, P2, P3, P4 or P5.
- Requires (2) separately switched circuits with isolated neutral. See Outdoor Control Technical Guide for details.
- Reference Motion Sensor table on page 4.
- Reference controls options table on page 4 to see functionality.
- Not available with other dimming controls options.
- Not available with BLC, LCCO and RCOO distribution. Also available as a separate accessory; see Accessories information.
- Must be ordered with fixture for factory pre-drilling.
- Requires luminaire to be specified with PER, PER5 or PER7 option. See PER Table on page 3.
- For retrofit use only.

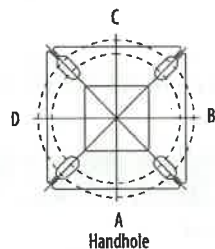
Options

EGS - External Glare Shield



Drilling

HANDHOLE ORIENTATION



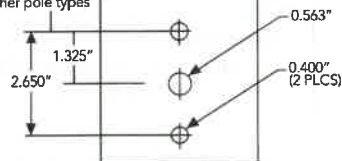
Tenon Mounting Slipfitter **

Tenon O.D.	Mounting	Single Unit	2 @ 180	2 @ 90	3 @ 120	3 @ 90	4 @ 90
2-3/8"	SPA/RPA	AS3-5190	AS3-5280	AS3-5290	AS3-5320	AS3-5390	AS3-5490
	SPUMBA	AS3-5190	AS3-5280	AS4-5290	AS3-5320	AS4-5390	AS4-5490
	RUPUMBA	AS3-5190	AS3-5280		AS3-5320		
2-7/8"	SPA/RPA	AST25-190	AST25-280	AST25-290	AST25-320	AST25-390	AST25-490
	SPUMBA	AST25-190	AST25-280		AST25-320		
	RUPUMBA	AST25-190	AST25-280		AST25-320		
4"	SPA/RPA	AST35-190	AST35-280	AST35-290	AST35-320	AST35-390	AST35-490
	SPUMBA	AST35-190	AST35-280	AST35-290	AST35-320	AST35-390	AST35-490
	RUPUMBA	AST35-190	AST35-280		AST35-320		

Template #8

Top of Pole

1.75" for aluminum poles
2.75" for other pole types



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

	Drilling Template	Minimum Acceptable Outside Pole Dimension					
SPA	#8	2-7/8"	2-7/8"	3.5"	3.5"	3"	3.5"
RPA	#8	2-7/8"	2-7/8"	3.5"	3.5"	3"	3.5"
SPUMBA	#5	2-7/8"	3"	4"	4"	3.5"	4"
RUPUMBA	#5	2-7/8"	3.5"	5"	5"	3.5"	5"

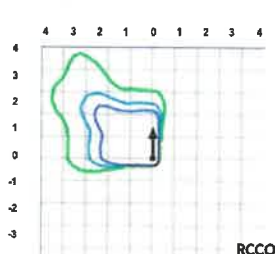
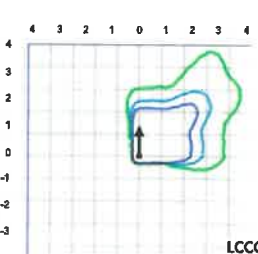
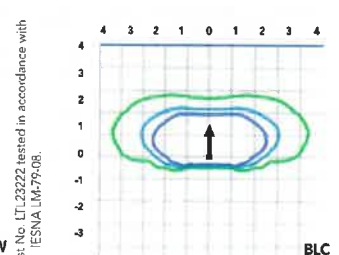
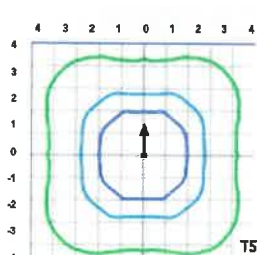
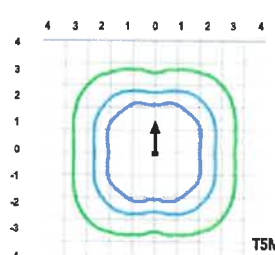
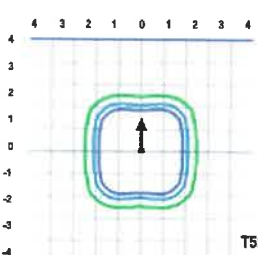
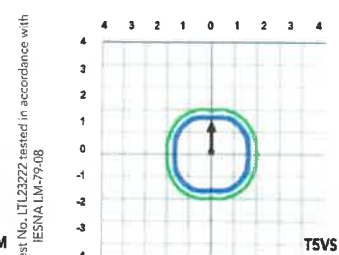
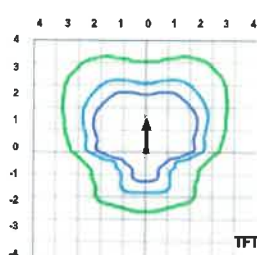
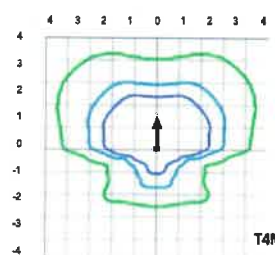
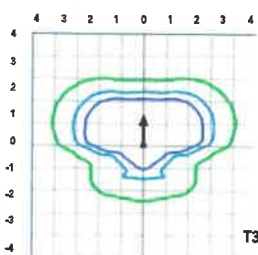
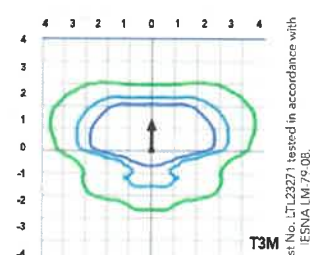
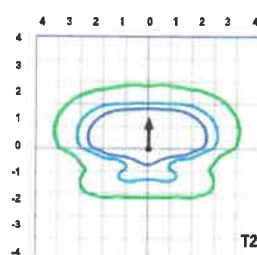
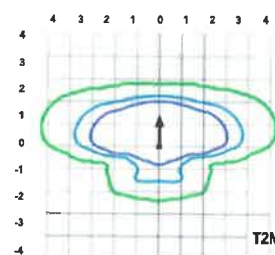
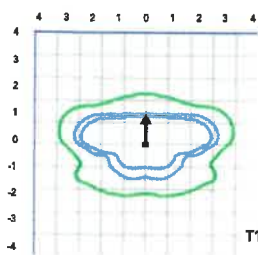
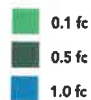


Photometric Diagrams

To see complete photometric reports or download .ies files for this product, visit Lithonia Lighting's [D-Series Area Size 1 homepage](#).

Isofootcandle plots for the DSX1 LED 60C 1000 40K. Distances are in units of mounting height (25').

LEGEND



Performance Data

Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

Ambient		Lumen Multiplier
0°C	32°F	1.04
5°C	41°F	1.04
10°C	50°F	1.03
15°C	59°F	1.02
20°C	68°F	1.01
25°C	77°F	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	0.96
50,000	0.92
100,000	0.85

Motion Sensor Default Settings						
Option	Dimmed State	High Level (when triggered)	Photocell Operation	Dwell Time	Ramp-up Time	Ramp-down Time
PIR or PIRH	3V (37%) Output	10V (100%) Output	Enabled @ 5FC	5 min	3 sec	5 min
*PIR1FC3V or PIRH1FC3V	3V (37%) Output	10V (100%) Output	Enabled @ 1FC	5 min	3 sec	5 min

*for use when motion sensor is used as dusk to dawn control.

Electrical Load

					Current (A)					
	Performance Package	LED Count	Drive Current	Wattage	120	208	240	277	347	480
Forward Optics (Non-Rotated)	P1	30	530	54	0.45	0.26	0.23	0.19	0.10	0.12
	P2	30	700	70	0.59	0.34	0.30	0.25	0.20	0.16
	P3	30	1050	102	0.86	0.50	0.44	0.38	0.30	0.22
	P4	30	1250	125	1.06	0.60	0.52	0.46	0.37	0.27
	P5	30	1400	138	1.16	0.67	0.58	0.51	0.40	0.29
	P6	40	1250	163	1.36	0.78	0.68	0.59	0.47	0.34
	P7	40	1400	183	1.53	0.88	0.76	0.66	0.53	0.38
	P8	60	1050	207	1.74	0.98	0.87	0.76	0.64	0.49
	P9	60	1250	241	2.01	1.16	1.01	0.89	0.70	0.51
Rotated Optics (Requires L90 or R90)	P10	60	530	106	0.90	0.52	0.47	0.43	0.33	0.27
	P11	60	700	137	1.15	0.67	0.60	0.53	0.42	0.32
	P12	60	1050	207	1.74	0.99	0.87	0.76	0.60	0.46
	P13	60	1250	231	1.93	1.12	0.97	0.86	0.67	0.49

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	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.
PERS 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
PIR or PIRH	Motion sensors with integral photocell. PIR for 8-15' mounting; PIRH for 15-30' mounting	Luminaires dim when no occupancy is detected.	Acuity Controls SBOR	Also available with PIRH1FC3V when the sensor photocell is used for dusk-to-dawn operation.
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 rSDGR	nLight AIR sensors can be programmed and commissioned from the ground using the CLAIRity Pro app.



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.

Forward Optics

LED Count	Drive Current	Power Package	System Watts	Dist. Type	30K (3000 K, 70 CRI)					40K (4000 K, 70 CRI)					50K (5000 K, 70 CRI)				
					Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
30	530	P1	54W	T1S	6,457	2	0	2	120	6,956	2	0	2	129	7,044	2	0	2	130
				T2S	6,450	2	0	2	119	6,949	2	0	2	129	7,037	2	0	2	130
				T2M	6,483	1	0	1	120	6,984	2	0	2	129	7,073	2	0	2	131
				T3S	6,279	2	0	2	116	6,764	2	0	2	125	6,850	2	0	2	127
				T3M	6,468	1	0	2	120	6,967	1	0	2	129	7,056	1	0	2	131
				T4M	6,327	1	0	2	117	6,816	1	0	2	126	6,902	1	0	2	128
				TFTM	6,464	1	0	2	120	6,963	1	0	2	129	7,051	1	0	2	131
				TSVS	6,722	2	0	0	124	7,242	3	0	0	134	7,334	3	0	0	136
				TSS	6,728	2	0	1	125	7,248	2	0	1	134	7,340	2	0	1	136
				TSM	6,711	3	0	1	124	7,229	3	0	1	134	7,321	3	0	2	136
				TSW	6,667	3	0	2	123	7,182	3	0	2	133	7,273	3	0	2	135
				BLC	5,299	1	0	1	98	5,709	1	0	2	106	5,781	1	0	2	107
				LCCO	3,943	1	0	2	73	4,248	1	0	2	79	4,302	1	0	2	80
				RCCO	3,943	1	0	2	73	4,248	1	0	2	79	4,302	1	0	2	80
30	700	P2	70W	T1S	8,249	2	0	2	118	8,886	2	0	2	127	8,999	2	0	2	129
				T2S	8,240	2	0	2	118	8,877	2	0	2	127	8,989	2	0	2	128
				T2M	8,283	2	0	2	118	8,923	2	0	2	127	9,036	2	0	2	129
				T3S	8,021	2	0	2	115	8,641	2	0	2	123	8,751	2	0	2	125
				T3M	8,263	2	0	2	118	8,901	2	0	2	127	9,014	2	0	2	129
				T4M	8,083	2	0	2	115	8,708	2	0	2	124	8,818	2	0	2	126
				TFTM	8,257	2	0	2	118	8,896	2	0	2	127	9,008	2	0	2	129
				TSVS	8,588	3	0	0	123	9,252	3	0	0	132	9,369	3	0	0	134
				TSS	8,595	3	0	1	123	9,259	3	0	1	132	9,376	3	0	1	134
				TSM	8,573	3	0	2	122	9,236	3	0	2	132	9,353	3	0	2	134
				TSW	8,517	3	0	2	122	9,175	4	0	2	131	9,291	4	0	2	133
				BLC	6,770	1	0	2	97	7,293	1	0	2	104	7,386	1	0	2	106
				LCCO	5,038	1	0	2	72	5,427	1	0	2	78	5,496	1	0	2	79
				RCCO	5,038	1	0	2	72	5,427	1	0	2	78	5,496	1	0	2	79
30	1050	P3	102W	T1S	11,661	2	0	2	114	12,562	3	0	3	123	12,721	3	0	3	125
				T2S	11,648	2	0	2	114	12,548	3	0	3	123	12,707	3	0	3	125
				T2M	11,708	2	0	2	115	12,613	2	0	2	124	12,773	2	0	2	125
				T3S	11,339	2	0	2	111	12,215	3	0	3	120	12,370	3	0	3	121
				T3M	11,680	2	0	2	115	12,582	2	0	2	123	12,742	2	0	2	125
				T4M	11,426	2	0	3	112	12,309	2	0	3	121	12,465	2	0	3	122
				TFTM	11,673	2	0	2	114	12,575	2	0	3	123	12,734	2	0	3	125
				TSVS	12,140	3	0	1	119	13,078	3	0	1	128	13,244	3	0	1	130
				TSS	12,150	3	0	1	119	13,089	3	0	1	128	13,254	3	0	1	130
				TSM	12,119	4	0	2	119	13,056	4	0	2	128	13,221	4	0	2	130
				TSW	12,040	4	0	3	118	12,970	4	0	3	127	13,134	4	0	3	129
				BLC	9,570	1	0	2	94	10,310	1	0	2	101	10,440	1	0	2	102
				LCCO	7,121	1	0	3	70	7,671	1	0	3	75	7,768	1	0	3	76
				RCCO	7,121	1	0	3	70	7,671	1	0	3	75	7,768	1	0	3	76
30	1250	P4	125W	T1S	13,435	3	0	3	107	14,473	3	0	3	116	14,657	3	0	3	117
				T2S	13,421	3	0	3	107	14,458	3	0	3	116	14,641	3	0	3	117
				T2M	13,490	2	0	2	108	14,532	3	0	3	116	14,716	3	0	3	118
				T3S	13,064	3	0	3	105	14,074	3	0	3	113	14,252	3	0	3	114
				T3M	13,457	2	0	2	108	14,497	2	0	2	116	14,681	2	0	2	117
				T4M	13,165	2	0	3	105	14,182	2	0	3	113	14,362	2	0	3	115
				TFTM	13,449	2	0	3	108	14,488	2	0	3	116	14,672	2	0	3	117
				TSVS	13,987	4	0	1	112	15,068	4	0	1	121	15,259	4	0	1	122
				TSS	13,999	3	0	1	112	15,080	3	0	1	121	15,271	3	0	1	122
				TSM	13,963	4	0	2	112	15,042	4	0	2	120	15,233	4	0	2	122
				TSW	13,872	4	0	3	111	14,944	4	0	3	120	15,133	4	0	3	121
				BLC	11,027	1	0	2	88	11,879	1	0	2	95	12,029	1	0	2	96
				LCCO	8,205	1	0	3	66	8,839	1	0	3	71	8,951	1	0	3	72
				RCCO	8,205	1	0	3	66	8,839	1	0	3	71	8,951	1	0	3	72
30	1400	P5	138W	T1S	14,679	3	0	3	106	15,814	3	0	3	115	16,014	3	0	3	116
				T2S	14,664	3	0	3	106	15,797	3	0	3	114	15,997	3	0	3	116
				T2M	14,739	3	0	3	107	15,878	3	0	3	115	16,079	3	0	3	117
				T3S	14,274	3	0	3	103	15,377	3	0	3	111	15,572	3	0	3	113
				T3M	14,704	2	0	3	107	15,840	3	0	3	115	16,040	3	0	3	116
				T4M	14,384	2	0	3	104	15,496	3	0	3	112	15,692	3	0	3	114
				TFTM	14,695	2	0	3	106	15,830	3	0	3	115	16,030	3	0	3	116
				TSVS	15,283	4	0	1	111	16,464	4	0	1	119	16,672	4	0	1	121
				TSS	15,295	3	0	1	111	16,477	4	0	1	119	16,686	4	0	1	121
				TSM	15,257	4	0	2	111	16,435	4	0	2	119	16,644	4	0	2	121
				TSW	15,157	4	0	3	110	16,328	4	0	3	118	16,534	4	0	3	120
				BLC	12,048	1	0	2	87	12,979	1	0	2	94	13,143	1	0	2	95
				LCCO	8,965	1	0	3	65	9,657	1	0	3	70	9,780	1	0	3	71
				RCCO	8,965	1	0	3	65	9,657	1	0	3	70	9,780	1	0	3	71



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.

Forward Optics																			
LED Count	Drive Current	Power Package	System Watts	Dist. Type	30K (3000 K, 70 CRI)					40K (4000 K, 70 CRI)					50K (5000 K, 70 CRI)				
					Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
40	1250	P6	163W	T1S	17,654	3	0	3	108	19,018	3	0	3	117	19,259	3	0	3	118
				T2S	17,635	3	0	3	108	18,998	3	0	3	117	19,238	3	0	3	118
				T2M	17,726	3	0	3	109	19,096	3	0	3	117	19,337	3	0	3	119
				T3S	17,167	3	0	3	105	18,493	3	0	3	113	18,727	3	0	3	115
				T3M	17,683	3	0	3	108	19,049	3	0	3	117	19,290	3	0	3	118
				T4M	17,299	3	0	3	106	18,635	3	0	4	114	18,871	3	0	4	116
				TFTM	17,672	3	0	3	108	19,038	3	0	4	117	19,279	3	0	4	118
				TSVS	18,379	4	0	1	113	19,800	4	0	1	121	20,050	4	0	1	123
				TSS	18,394	4	0	2	113	19,816	4	0	2	122	20,066	4	0	2	123
				TSM	18,348	4	0	2	113	19,766	4	0	2	121	20,016	4	0	2	123
				TSW	18,228	5	0	3	112	19,636	5	0	3	120	19,885	5	0	3	122
				BLC	14,489	2	0	2	89	15,609	2	0	3	96	15,806	2	0	3	97
				LCCO	10,781	1	0	3	66	11,614	1	0	3	71	11,761	2	0	3	72
				RCCO	10,781	1	0	3	66	11,614	1	0	3	71	11,761	2	0	3	72
				40	1400	P7	183W	T1S	19,227	3	0	3	105	20,712	3	0	3	113	20,975
T2S	19,206	3	0					3	105	20,690	3	0	3	113	20,952	3	0	3	114
T2M	19,305	3	0					3	105	20,797	3	0	3	114	21,060	3	0	3	115
T3S	18,696	3	0					3	102	20,141	3	0	3	110	20,396	3	0	4	111
T3M	19,258	3	0					3	105	20,746	3	0	3	113	21,009	3	0	3	115
T4M	18,840	3	0					4	103	20,296	3	0	4	111	20,553	3	0	4	112
TFTM	19,246	3	0					4	105	20,734	3	0	4	113	20,996	3	0	4	115
TSVS	20,017	4	0					1	109	21,564	4	0	1	118	21,837	4	0	1	119
TSS	20,033	4	0					2	109	21,581	4	0	2	118	21,854	4	0	2	119
TSM	19,983	4	0					2	109	21,527	5	0	3	118	21,799	5	0	3	119
TSW	19,852	5	0					3	108	21,386	5	0	3	117	21,656	5	0	3	118
BLC	15,780	2	0					3	86	16,999	2	0	3	93	17,214	2	0	3	94
LCCO	11,742	2	0					3	64	12,649	2	0	3	69	12,809	2	0	3	70
RCCO	11,742	2	0					3	64	12,649	2	0	3	69	12,809	2	0	3	70
60	1050	P8	207W					T1S	22,490	3	0	3	109	24,228	3	0	3	117	24,535
				T2S	22,466	3	0	4	109	24,202	3	0	4	117	24,509	3	0	4	118
				T2M	22,582	3	0	3	109	24,327	3	0	3	118	24,635	3	0	3	119
				T3S	21,870	3	0	4	106	23,560	3	0	4	114	23,858	3	0	4	115
				T3M	22,527	3	0	4	109	24,268	3	0	4	117	24,575	3	0	4	119
				T4M	22,038	3	0	4	106	23,741	3	0	4	115	24,041	3	0	4	116
				TFTM	22,513	3	0	4	109	24,253	3	0	4	117	24,560	3	0	4	119
				TSVS	23,415	5	0	1	113	25,224	5	0	1	122	25,543	5	0	1	123
				TSS	23,434	4	0	2	113	25,244	4	0	2	122	25,564	4	0	2	123
				TSM	23,374	5	0	3	113	25,181	5	0	3	122	25,499	5	0	3	123
				TSW	23,221	5	0	4	112	25,016	5	0	4	121	25,332	5	0	4	122
				BLC	18,458	2	0	3	89	19,885	2	0	3	96	20,136	2	0	3	97
				LCCO	13,735	2	0	3	66	14,796	2	0	4	71	14,983	2	0	4	72
				RCCO	13,735	2	0	3	66	14,796	2	0	4	71	14,983	2	0	4	72
				60	1250	P9	241W	T1S	25,575	3	0	3	106	27,551	3	0	3	114	27,900
T2S	25,548	3	0					4	106	27,522	3	0	4	114	27,871	3	0	4	116
T2M	25,680	3	0					3	107	27,664	3	0	3	115	28,014	3	0	3	116
T3S	24,870	3	0					4	103	26,791	3	0	4	111	27,130	3	0	4	113
T3M	25,617	3	0					4	106	27,597	3	0	4	115	27,946	3	0	4	116
T4M	25,061	3	0					4	104	26,997	3	0	4	112	27,339	3	0	4	113
TFTM	25,602	3	0					4	106	27,580	3	0	4	114	27,929	3	0	4	116
TSVS	26,626	5	0					1	110	28,684	5	0	1	119	29,047	5	0	1	121
TSS	26,648	4	0					2	111	28,707	5	0	2	119	29,070	5	0	2	121
TSM	26,581	5	0					3	110	28,635	5	0	3	119	28,997	5	0	3	120
TSW	26,406	5	0					4	110	28,447	5	0	4	118	28,807	5	0	4	120
BLC	20,990	2	0					3	87	22,612	2	0	3	94	22,898	2	0	3	95
LCCO	15,619	2	0					4	65	16,825	2	0	4	70	17,038	2	0	4	71
RCCO	15,619	2	0					4	65	16,825	2	0	4	70	17,038	2	0	4	71





Lyseth Elementary School north property line opposite new gym addition – existing conditions Nov.2018



STORMWATER FOR ADDED TRAIL WIDTH 3-29-2019

As requested by the Planning Board and the Portland Trails staff, the existing sidewalks along the north side of the campus, and the existing gravel trails north to Bartley Avenue and east to Bramblewood Drive, will be new bituminous paved to 8' wide. The stormwater runoff from the net increase in impervious surface on the school campus is assessed for water quality treatment complying with MDEP Chapter 500 standards. The existing sidewalks are between 6' and 8' impervious pavement; and the existing trails are between 5' and 6' impervious gravel. The added impervious total for the new 8' wide campus pavements equals only 2,310 sq.ft. spread throughout the campus. Modified calculations for these pavement trail increases are shown in **Bold type**.

New Lyseth School Impervious Summary

- Gym/Library Addition	11,045 sq.ft. Floor Area =	7,450 sq.ft. Net New Impervious
- Administration Addition	3,431 sq.ft. Floor Area =	1,450 sq.ft. Net New Impervious
- Pavement reconstruction	=	<u>6,900 sq.ft.</u> Net New Impervious
- Sidewalk /Trail Reconstruction	=	2310 sq.ft. Net New Impervious
	Total =	<u>18,110 sq.ft.</u>

Water quality treatment for the Lyseth School net impervious increase is proposed to be provided by a new subsurface underdrained chamber sand filter bed 'A'(Pond P3) , to the west side of the building addition. This is the best location for a storm filter around the fully-developed Lyseth School. The roof drain from the 11,045 sq.ft. Gym/Library wing will discharge to the treatment bed through a new storm drain pipe. Sheet runoff from the surrounding 5,215 sq.ft. of new and existing paved areas will also be treated in the filter bed, along with 4,640 sq.ft. of grass area runoff. The water quality volume of approximately 1,519 cubic feet will be contained in the subsurface chambers and crushed stone. The attached Stormwater Quality Summary shows the treated impervious area of 16,260 sq.ft. virtually matches the net new impervious surfaces of **18,110 sq.ft.** for a treatment ratio of **90%**.

Urban Impaired Stream Standards

The proposed project is located within the Fall Brook watershed and is subject to the Urban Impaired Stream Standard by virtue of creating new impervious surfaces within the watershed. The previous LLM Campus Improvements Circulation Project, permitted by the City as #2017-202, created 2,800 sq.ft. of new impervious drives and parking. In addition, 33,157 sq.ft. of rooftop area at the Lyseth

School was to be relocated from the sanitary sewer into the storm drains tributary to the Fall Brook watershed. These are the first two items in the following table.

The current Lyseth School building additions and pavement reconstruction will add a net increase of 8,900 sq.ft. of building roof runoff and 6,900 sq.ft. of pavement runoff into the existing storm drain system that discharges in the Fall Brook watershed. **The proposed widening of the northerly sidewalks and gravel trails will add approximately 2310 sq.ft. of pavement to the existing paved walks, raising the Lyseth Net New Pavements to 9210 sq.ft. in the following table.**

Proposed New Impervious Areas				
Location	Total Impervious (sf)	Total Impervious (acre)	Credits Per Acre	Credits Required
Lyseth Roof Area from Prior 2017 Permit	33,157	0.76	0.20	0.152
Added Impervious from Prior 2017 Permit	2,800	0.06	0.50	0.032
Lyseth Building Additions Net Roof Area	8,900	0.2	0.20	0.04
Lyseth Net New Pavements	9210	0.21	0.50	0.106
Total Credits Required =				0.33

Total Treated Amount								
System ID	Total Area drains to system		Credits Per Acre			Impervious Credits	Landscape Credits	TOTAL CREDITS PROVIDED
	Treated Impervious (ac)	Treated Landscaped (ac)	Impervious Parking Treated	Impervious Roof Treated	Landscaped Treated			
UGSF-1 from prior 2017 permit	0.838	0.238	1.2	0	0.3	0.838	0.071	0.909
Sub. Filter Bed 'A'	0.252 Roof 0.121 Paved	0.11	1.2	0.6	0.3	0.296	0.033	0.329

Total Treated Amount = 1.238

As indicated above, the credits accrued from the treatment in both the previously permitted grassed underdrained soil filter #1(GUSF-1) and the new vegetated underdrained soil filter 'A' account for a Total Treated Amount of 1.238. The required credits to meet the water quality standards yield a Total Credits Required of **0.33**. Since the proposed parking lot, pavement additions, and proposed roof connections require only **0.33** credits, the proposed stormwater treatment measures provide **0.908** additional credits beyond that required for the new development. Since the stormwater treatment measures provide an additional treatment of more than 2 times the required amount, we believe this satisfies the intent of the urban impaired stream standard.

Stormwater Quantity(Flooding)

The site has been analyzed for pre-development and post-development runoff corresponding to the 2, 10, and 25 year storms. The Soil Conservation Service (SCS) TR-20 methodology was selected to determine the flow rates for this hydrologic analysis, and the HydroCAD (release 10.00) computer modeling software was utilized to perform the computations. **The added small amount of 2310 sq.ft. of impervious walk/trail pavement widening has no measured effect on the Hydrocad Post-Development model, as shown below.**

One Study Point has been chosen to determine where stormwater exits the property for this entire campus in both the pre- and post-developed conditions. The former Post-Development Hydrocad model from the previous permit for 2017 LLM Campus Improvements Circulation Project is being used by this current Lyseth School development as the Pre-Development condition. The current Post-Development condition reflects the new Lyseth School building additions and pavement reconstruction. The results for runoff exiting the site at this Study Point SP-1 is summarized in the table below:

Stormwater Quantity Flow Summary

Watershed Study Point	Pre-Development	Post-Development	Peak Flow Change
Reach SP-1 at Gravel Wetland	25 Year = 43.26 cfs 10 Year = 29.94 2 Year = 7.44	25 Year = 42.63 cfs 10 Year = 29.06 2 Year = 6.88	-0.63 cfs -0.88 -0.56

In summary, the stormwater flow rates at the gravel wetland study point and, therefore, the flow rate leaving the property following construction will be slightly less than the Pre-Development flows. Construction of the new building additions and pavements will therefore have no measurable impact to abutters or the Fall Brook system.

STORMWATER QUALITY SUMMARY - DEP CHAPTER 500

Project: Harrison Lyseth Elementary School
Portland, Maine

3/29/2019

Revision for Widened Sidewalks/Trails

Project No. 18483

Watershed Subcatchments - Quality Treatment:

Subcatch Number	Net New Impervious on Exist. Vegetated Sq. Ft.	New Impervious Area Treated Sq. Ft.	Existing Impervious Area Treated Sq. Ft.	Treated by:
S2	5700			
S3	Included in Prior permit -	LLM Campus #2017-202		
S4	Included in Prior permit -	LLM Campus #2017-202		
S5	10960	10960	5300	New Soil Filter 'A'
S6	1450			
Totals =	18110	10960	5300	

Treated Treated

NOTES

1. The total amount of Impervious area receiving treatment is 16,260 sq.ft.(10960 + 5300)
Net New Impervious area requiring treatment on the site is **18,110 sq.ft.**
The Impervious Treatment Ratio is **90%**, (**16260/18110**), which is reasonably close to the 95% Standard.
2. Total New Developed area is equivalent to the impervious area and exceeds the 80% General Standard.

WIDENED SIDEWALKS/TRAILS

Lyseth-Moore Campus - Post-Develop-Revised Portland_ME 24-hr S0P 25-yr Rainfall=5.92"

Prepared by HARRIMAN

Printed 3/29/2019

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Time span=1.00-48.00 hrs, dt=0.01 hrs, 4701 points x 3

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

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment S-2: General Site to Gravel Runoff Area=725,793 sf 45.20% Impervious Runoff Depth=4.23"
Flow Length=1,612' Tc=29.3 min CN=85 Runoff=40.19 cfs 5.869 af

NO CHANGE

Subcatchment S-4: Parking Lot to GUSF-1 Runoff Area=46,872 sf 78.08% Impervious Runoff Depth=5.10"
Tc=7.0 min CN=93 Runoff=5.20 cfs 0.458 af

NO CHANGE

Reach SP-1: SP-1

Avg. Flow Depth=1.21' Max Vel=4.09 fps Inflow=42.66 cfs 6.752 af
n=0.035 L=250.0' S=0.0120 '/' Capacity=908.60 cfs Outflow=42.61 cfs 6.752 af

Pond P-1: Gravel Wetland

Peak Elev=107.23' Storage=55,739 cf Inflow=43.66 cfs 6.752 af
Primary=34.15 cfs 1.784 af Secondary=8.51 cfs 4.968 af Outflow=42.66 cfs 6.752 af

Pond P-2: GUSF-1

Peak Elev=111.23' Storage=5,750 cf Inflow=5.20 cfs 0.458 af
Primary=0.23 cfs 0.346 af Secondary=2.85 cfs 0.112 af Tertiary=0.00 cfs 0.000 af Outflow=3.08 cfs 0.458 af

Summary for Subcatchment S-2: General Site to Gravel Wetland

Runoff = 40.19 cfs @ 12.34 hrs, Volume= 5.869 af, Depth= 4.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
 Portland_ME 24-hr S0P 25-yr Rainfall=5.92"

Area (sf)	CN	Description
328,030	98	Paved parking & roofs
397,763	74	>75% Grass cover, Good, HSG C
725,793	85	Weighted Average
397,763		54.80% Pervious Area
328,030		45.20% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.0	285	0.0150	0.20		Sheet Flow, Grass: Short n= 0.150 P2= 3.60"
5.3	1,327	0.0050	4.20	7.43	Pipe Channel, 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
29.3	1,612	Total			

Summary for Subcatchment S-4: Parking Lot to GUSF-1

Runoff = 5.20 cfs @ 12.05 hrs, Volume= 0.458 af, Depth= 5.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs
 Portland_ME 24-hr S0P 25-yr Rainfall=5.92"

Area (sf)	CN	Description
* 36,596	98	
* 10,276	75	
46,872	93	Weighted Average
10,276		21.92% Pervious Area
36,596		78.08% Impervious Area

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

Summary for Reach SP-1: SP-1

Inflow Area = 19.048 ac, 50.26% Impervious, Inflow Depth = 4.25" for 25-yr event
 Inflow = 42.66 cfs @ 12.39 hrs, Volume= 6.752 af
 Outflow = 42.61 cfs @ 12.40 hrs, Volume= 6.752 af, Atten= 0%, Lag= 0.8 min

Lyseth-Moore Campus - Post-Develop-Revised Portland_ME 24-hr S0P 25-yr Rainfall=5.92"

Prepared by HARRIMAN

Printed 3/29/2019

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Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 3

Max. Velocity= 4.09 fps, Min. Travel Time= 1.0 min

Avg. Velocity = 1.24 fps, Avg. Travel Time= 3.3 min

Peak Storage= 2,605 cf @ 12.40 hrs

Average Depth at Peak Storage= 1.21'

Bank-Full Depth= 5.00' Flow Area= 100.0 sf, Capacity= 908.60 cfs

5.00' x 5.00' deep channel, n= 0.035 High grass

Side Slope Z-value= 3.0 '/' Top Width= 35.00'

Length= 250.0' Slope= 0.0120 '/'

Inlet Invert= 91.00', Outlet Invert= 88.00'

**Summary for Pond P-1: Gravel Wetland**

Inflow Area = 19.048 ac, 50.26% Impervious, Inflow Depth = 4.25" for 25-yr event
 Inflow = 43.66 cfs @ 12.34 hrs, Volume= 6.752 af
 Outflow = 42.66 cfs @ 12.39 hrs, Volume= 6.752 af, Atten= 2%, Lag= 2.9 min
 Primary = 34.15 cfs @ 12.39 hrs, Volume= 1.784 af
 Secondary = 8.51 cfs @ 12.39 hrs, Volume= 4.968 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 3

Peak Elev= 107.23' @ 12.39 hrs Surf.Area= 18,164 sf Storage= 55,739 cf

Plug-Flow detention time= 176.0 min calculated for 6.751 af (100% of inflow)

Center-of-Mass det. time= 176.1 min (1,014.6 - 838.5)

Volume	Invert	Avail.Storage	Storage Description
#1	102.00'	70,788 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
102.00	3,572	549.0	0	0	3,572
103.00	6,200	771.0	4,826	4,826	26,901
104.00	9,020	829.0	7,566	12,392	34,329
105.00	11,611	872.0	10,288	22,680	40,211
106.00	14,502	904.0	13,030	35,710	44,820
107.00	17,279	924.0	15,870	51,580	47,870
108.00	21,203	764.0	19,208	70,788	69,378

Device	Routing	Invert	Outlet Devices
#1	Primary	106.50'	15.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Primary	107.00'	32.0' 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
#3	Secondary	101.67'	12.0" Round Culvert L= 37.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 101.67' / 100.00' S= 0.0451 '/' Cc= 0.900 n= 0.011, Flow Area= 0.79 sf
#4	Device 3	101.67'	4.0" Vert. Orifice/Grate C= 0.600
#5	Device 3	106.00'	6.0' long x 0.7' 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 Coef. (English) 2.76 2.82 2.93 3.09 3.18 3.22 3.27 3.30 3.32 3.31 3.32

Primary OutFlow Max=34.14 cfs @ 12.39 hrs HW=107.23' TW=92.21' (Dynamic Tailwater)

1=Broad-Crested Rectangular Weir (Weir Controls 25.44 cfs @ 2.31 fps)

2=Broad-Crested Rectangular Weir (Weir Controls 8.71 cfs @ 1.16 fps)

Secondary OutFlow Max=8.51 cfs @ 12.39 hrs HW=107.23' TW=92.21' (Dynamic Tailwater)

3=Culvert (Inlet Controls 8.51 cfs @ 10.84 fps)

4=Orifice/Grate (Passes < 0.98 cfs potential flow)

5=Broad-Crested Rectangular Weir (Passes < 26.58 cfs potential flow)

Summary for Pond P-2: GUSF-1

Inflow Area = 1.076 ac, 78.08% Impervious, Inflow Depth = 5.10" for 25-yr event
 Inflow = 5.20 cfs @ 12.05 hrs, Volume= 0.458 af
 Outflow = 3.08 cfs @ 12.18 hrs, Volume= 0.458 af, Atten= 41%, Lag= 8.0 min
 Primary = 0.23 cfs @ 12.18 hrs, Volume= 0.346 af
 Secondary = 2.85 cfs @ 12.18 hrs, Volume= 0.112 af
 Tertiary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 1.00-48.00 hrs, dt= 0.01 hrs / 3
 Peak Elev= 111.23' @ 12.18 hrs Surf.Area= 4,185 sf Storage= 5,750 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 171.6 min (952.0 - 780.4)

Volume	Invert	Avail.Storage	Storage Description
#1	109.50'	11,839 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Lyseth-Moore Campus - Post-Develop-Revised *Portland_ME 24-hr SOP 25-yr Rainfall=5.92"*

Prepared by HARRIMAN

Printed 3/29/2019

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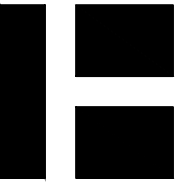
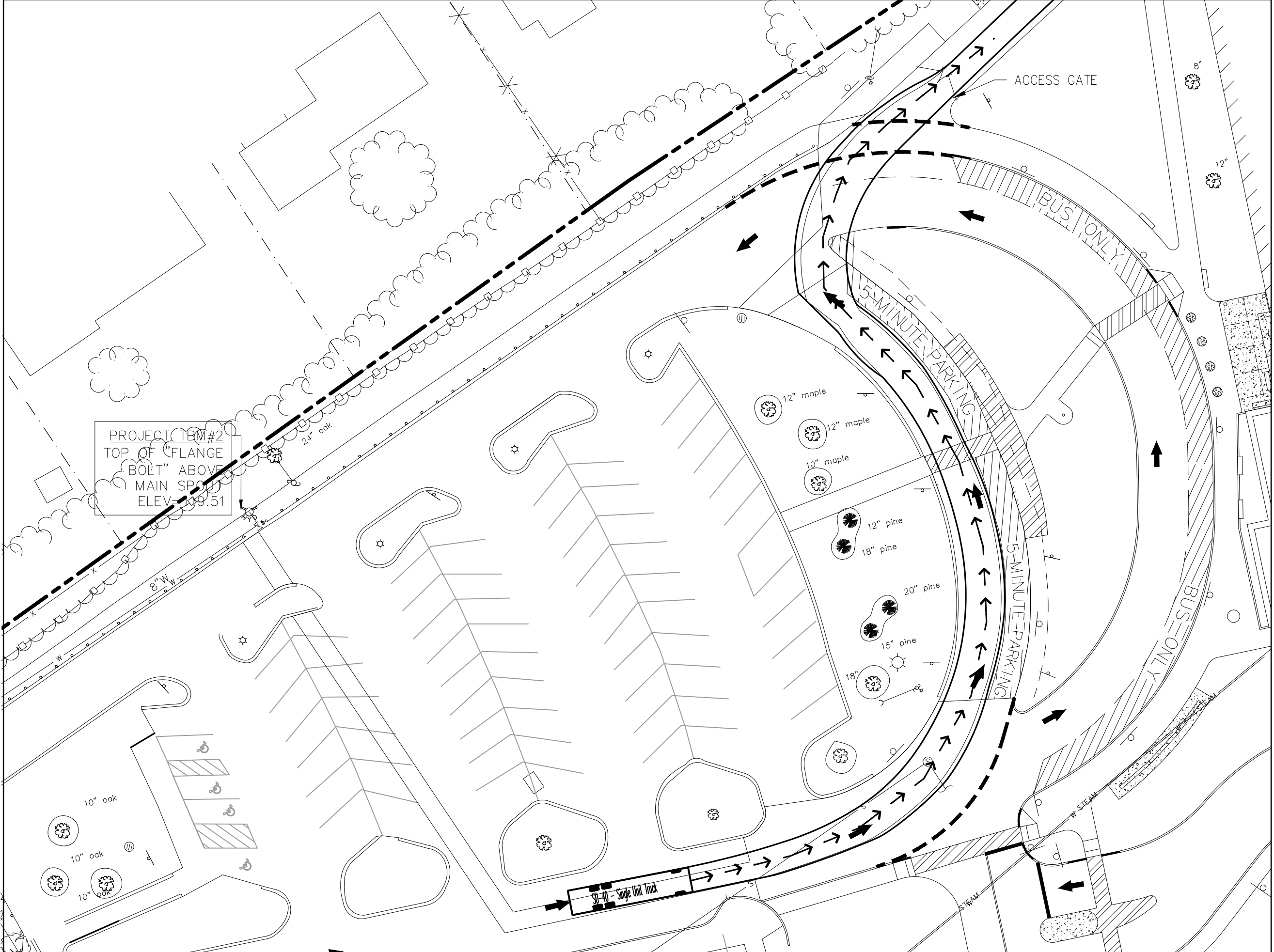
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
109.50	2,471	0	0
112.00	4,950	9,276	9,276
112.50	5,300	2,563	11,839

Device	Routing	Invert	Outlet Devices
#1	Secondary	106.00'	15.0" Round Culvert L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 106.00' / 105.50' S= 0.0100 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	111.00'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#3	Primary	109.50'	2.410 in/hr Exfiltration over Surface area
#4	Tertiary	112.00'	250.0' long x 4.0' 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) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Primary OutFlow Max=0.23 cfs @ 12.18 hrs HW=111.23' TW=107.03' (Dynamic Tailwater)
↑ **3=Exfiltration** (Exfiltration Controls 0.23 cfs)

Secondary OutFlow Max=2.84 cfs @ 12.18 hrs HW=111.23' TW=107.03' (Dynamic Tailwater)
↑ **1=Culvert** (Passes 2.84 cfs of 9.56 cfs potential flow)
↑ **2=Orifice/Grate** (Weir Controls 2.84 cfs @ 1.56 fps)

Tertiary OutFlow Max=0.00 cfs @ 1.00 hrs HW=109.50' TW=102.00' (Dynamic Tailwater)
↑ **4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)



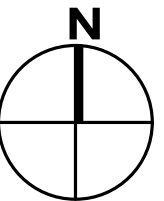
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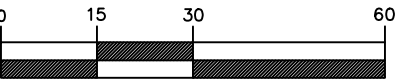
**HARRISON LYSETH
ELEMENTARY SCHOOL**

PORTLAND, MAINE

HA Project No. 18483



GRAPHIC SCALE



(1 inch = 30 feet)

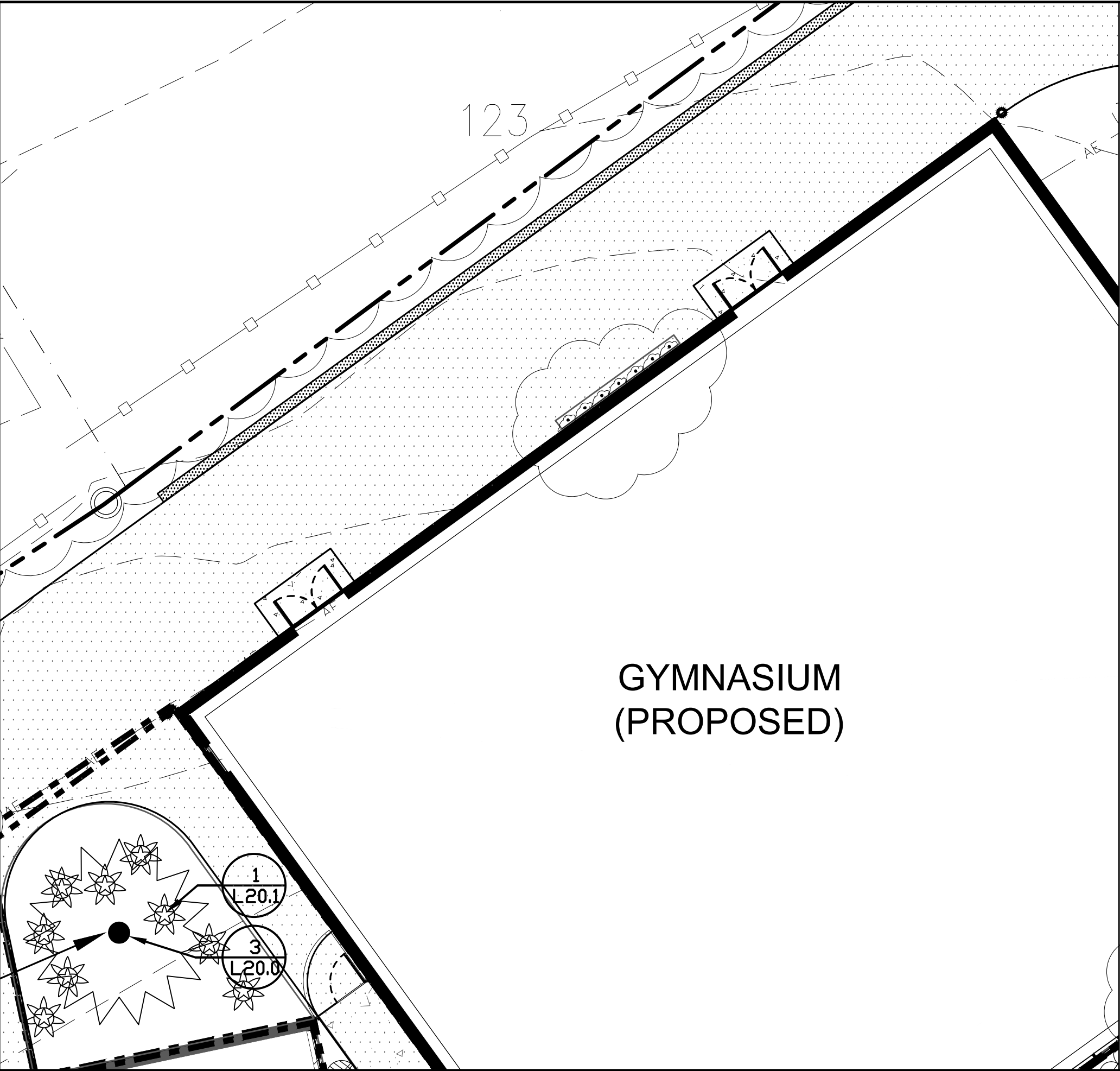
Date 3-29-19

Scale 1"=30'

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**NORTH FIRE TRUCK
ACCESS TURNING
TEMPLATE**

SK-1



PLANT LEGEND			
SHADE TREES	SIZE	NOTES	QTY
Acer rubrum 'Bowhall'	2.0" - 2.5" Cal.	Zone: 3	4
October Glory Red Maple		Fall Plant Hazard	
Cotinus obovatus	1.0" - 1.5" Cal.	Zone: 4	1
American Smoketree		Fall Plant Hazard	
Carpinus caroliniana	2.0" - 2.5" Cal.	Zone: 3a	3
American Hornbeam		Fall Plant Hazard	
Cladratis kentukea	2.0" - 2.5" Cal.	Zone: 4	1
American Yellowwood			
Oxydendrum arboreum	1.0" - 1.5" Cal.	Zone: 5	3
Sourwood		Fall Plant Hazard	
FLOWERING TREES	SIZE	NOTES	QTY
Amelanchier canadensis	1.5" - 2.0" Cal.	Zone: 4	2
Shadblow Serviceberry			
Cercis canadensis	1.5" - 2.0" Cal.	Zone: 4	2
Eastern Redbud		Fall Plant Hazard	
ORNAMENTAL TREES	SIZE	NOTES	QTY
Magnolia stellata		Field	1
Relocated memorial tree		verify location	
Populus tremuloides	2.0" - 2.5" Cal.	Zone: 1	1
American Aspen			
Stewartia ovata	1.0" - 1.5" Cal.	Zone: 5	3
Mountain Stewartia			
CONIFER TREES	SIZE	NOTES	QTY
Picea mariana	14' - 16'	Zone: 3	1
Black Spruce			
DECIDUOUS SHRUBS	SIZE	NOTES	QTY
Cephalanthus occidentalis	#3	Zone: 5	4
Buttonbush			
Clethra alnifolia	#3	Zone: 3	7
Coastal Sweet Pepperbush			
Comptonia peregrina	#2	Zone: 3	26
Sweetfern			
Dasiphora fruticosa	#2	Zone: 3	3
Shrubby cinquefoil			
Deutzia gracilis	#2	Zone: 4	28
Slender deutzia			
Ledum groenlandicum	#3	Zone: 2	33
Labrador Tea			
Salix purpurea 'Nana'	#2	Zone: 4	3
Dwarf Artic Willow			
EVERGREEN SHRUBS	SIZE	NOTES	QTY
Juniperus communis	#2	Zone: 2	12
Common Juniper			
GROUNDCOVERS	SIZE	NOTES	QTY
Arctostaphylos uva-ursi	#SP2	Zone: 2	23
Kinnikinnick			
Coreopsis lanceoleaf	#SP2	Zone: 4	3
Tickseed			
Cornus canadensis	#SP1	Zone: 2	32
Bunchberry		Fall plant hazard	
Liriope spicata	#SP2	Zone: 4	41
Creeping Liriope			
Vaccinium angustifolium	#SP1	Zone: 2	22
Low Sweet Blueberry			
PERENNIALS	SIZE	NOTES	QTY
Coreopsis grandiflora	#SP2	Zone: 4a	42
Large Flowered Tickseed			
Dennstaedtia punctilobula	#SP2	Zone: 3	50
Hay Scented Fern			
Echinacea purpurea	#SP2	Zone: 4a	23
Purple Coneflower			
Hyacinthoides hispanica	#SP2	Zone: 3	31
Spanish Bluebell			
Lavandula angustifolia 'Hidcote'	#SP3	Zone: 5	40
English Lavender			
Lupinus perennis	#SP2	Zone: 3	33
Wild Lupine			
Penstemon digitalis	#SP2	Zone: 3	33
Beardtongue			
Polygonatum odoratum	#2 Container	Zone: 3	32
Solomon's Seal			
Stachys byzantina	#SP2	Zone: 4	46
Lamb's Ear			
Symphyotrichum novae-angliae	#SP3	Zone: 4	32
New England Aster			
VINE	SIZE	NOTES	QTY
Hedera Helix	#SP2	Zone: 4	7
English Ivy		ONE PER TRELLIS PANEL	
LANDSCAPE MATERIALS			QTY
Shredded organic bark mulch			3,910 sq. ft
Three inch depth all planting areas			

Auburn, ME
207.784.5100
Portland, ME
207.775.0053
Portsmouth, NH
603.626.1242
Boston, MA
617.426.5050

HARRISON LYSETH
ELEMENTARY SCHOOL

PORTLAND, MAINE

HA Project No.18483

PRELIMINARY
NOT FOR
CONSTRUCTION

Date

Scale

05'10'15'

©Harriman Associates

PLANTING PLAN
ENLARGEMENT

SKA-L01.0



Jean Fraser <jf@portlandmaine.gov>

RE: Lyseth School

1 message

Mark D. Lee <mlee@harriman.com>

Fri, Apr 19, 2019 at 9:16 AM

To: Jean Fraser <jf@portlandmaine.gov>

Cc: "Frank L. Crabtree" <fcrabtree@harriman.com>, "Lisa D. Sawin" <LSawin@harriman.com>

Jean,

As discussed we offer the following opportunities to address the concerns you raised regarding the gym north wall and the pathway/drive immediately adjacent to it.

Wall Elevation: We have taken some care to break up the wall with the brick patterning. The wall is intentionally windowless as to avoid light, noise trespass during after school events. We agree that the scale of the trellis is minimal compared with the scale of the wall. We offer the following:

- Continue to look at the patterning to further mitigate the scale of the wall
- Resize or remove the trellis
- Look at ways to improve the area with lighting including lighting of the wall being careful to prevent up-lighting or lighting trespass.

Drive/Walk: We understand your concerns regarding the character of the drive between the gym wall and the retaining wall and the concern that it feels like a unwelcoming alley way. We offer the following

- Differentiate paving patterns to create a more pedestrian/bicycle friendly appearance and function
- Introduce plantings of an appropriate scale on the north side of the drive
- Look at adding lighting bollards or similar to create a purposefully designed, well lit, welcoming pathway.

-Mark

Mark D. Lee, AIA, LEED AP

HARRIMAN

207.784.5100

From: Jean Fraser <jf@portlandmaine.gov>**Sent:** Thursday, April 18, 2019 9:49 AM**To:** Mark D. Lee <mlee@harriman.com>**Subject:** Re: Lyseth School

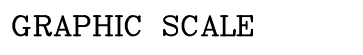
Mark



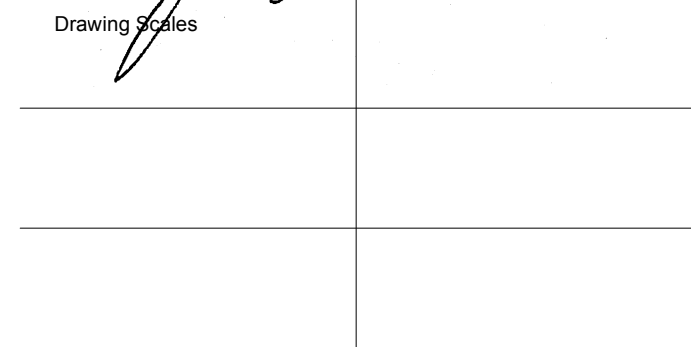
HARRISON LYSETH
ELEMENTARY SCHOOL

Harriman Project No.	18483
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N



(1 inch = 30 feet)



C10.1



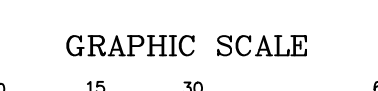
AUBURN PORTLAND PORTSMOUTH BOSTON

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PORTLAND, MAINE

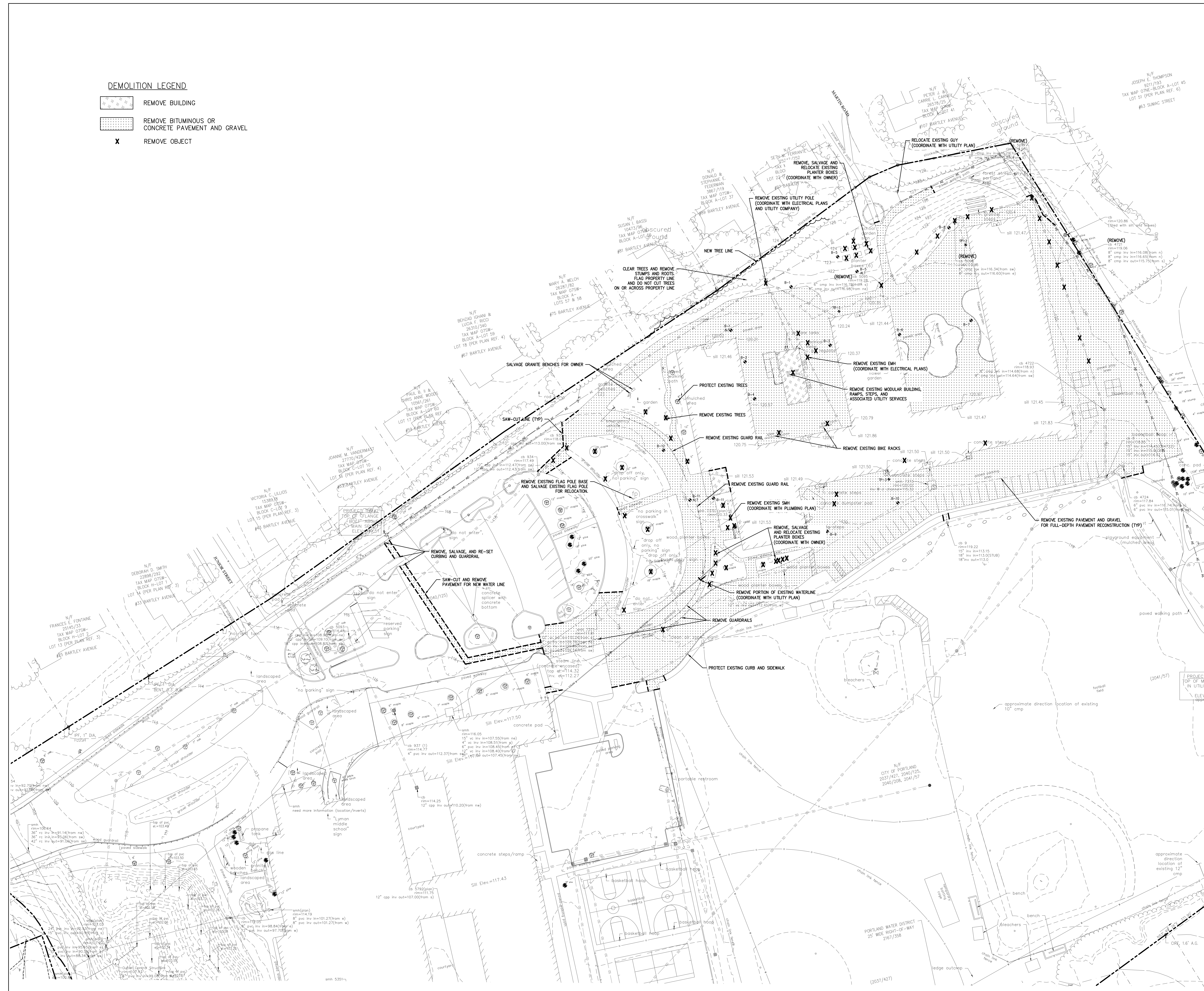
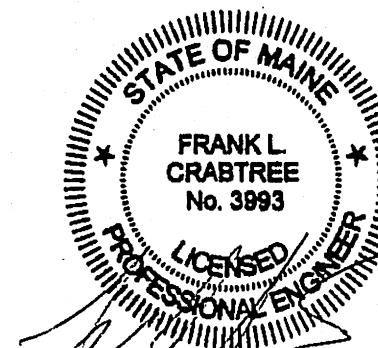
Harriman Project No.	18483
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Key Plan



GRADING SCALE

(1 inch = 30 feet)

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Drawing Scale

PA / PF:

Drawn By:

DE

100

100

114



PORTLAND, MAINE

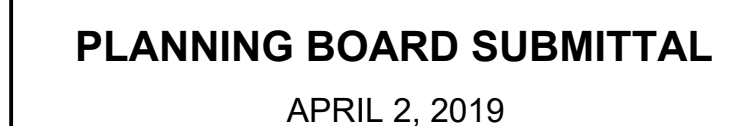
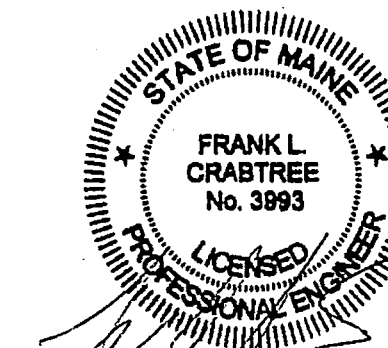
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Key Plan



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(1 inch = 30 feet)

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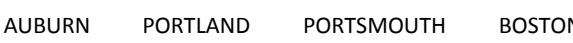
Drawing 500

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DATE: _____

SITE PLAN

C00.1



PORTLAND, MAINE

Harriman Project No.	18483
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18483

Key Plan

C00.2



PORTLAND, MAINE

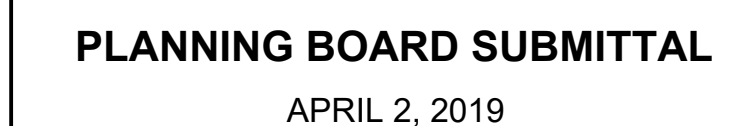
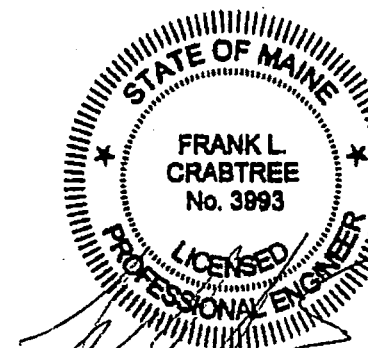
Harriman Project No.	18483
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Key Plan



GRAPHIC SCALE

(1 inch = 30 feet)

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Drawing 500

P4 / PE:

Drawn By:

SITE GRADING, AND EROSION CONTROL PLAN

C30.1



AUBURN PORTLAND PORTSMOUTH BOSTON

HARRISON LYSETH
ELEMENTARY SCHOOL

PORTLAND, MAINE

Harrison Project No.	18483
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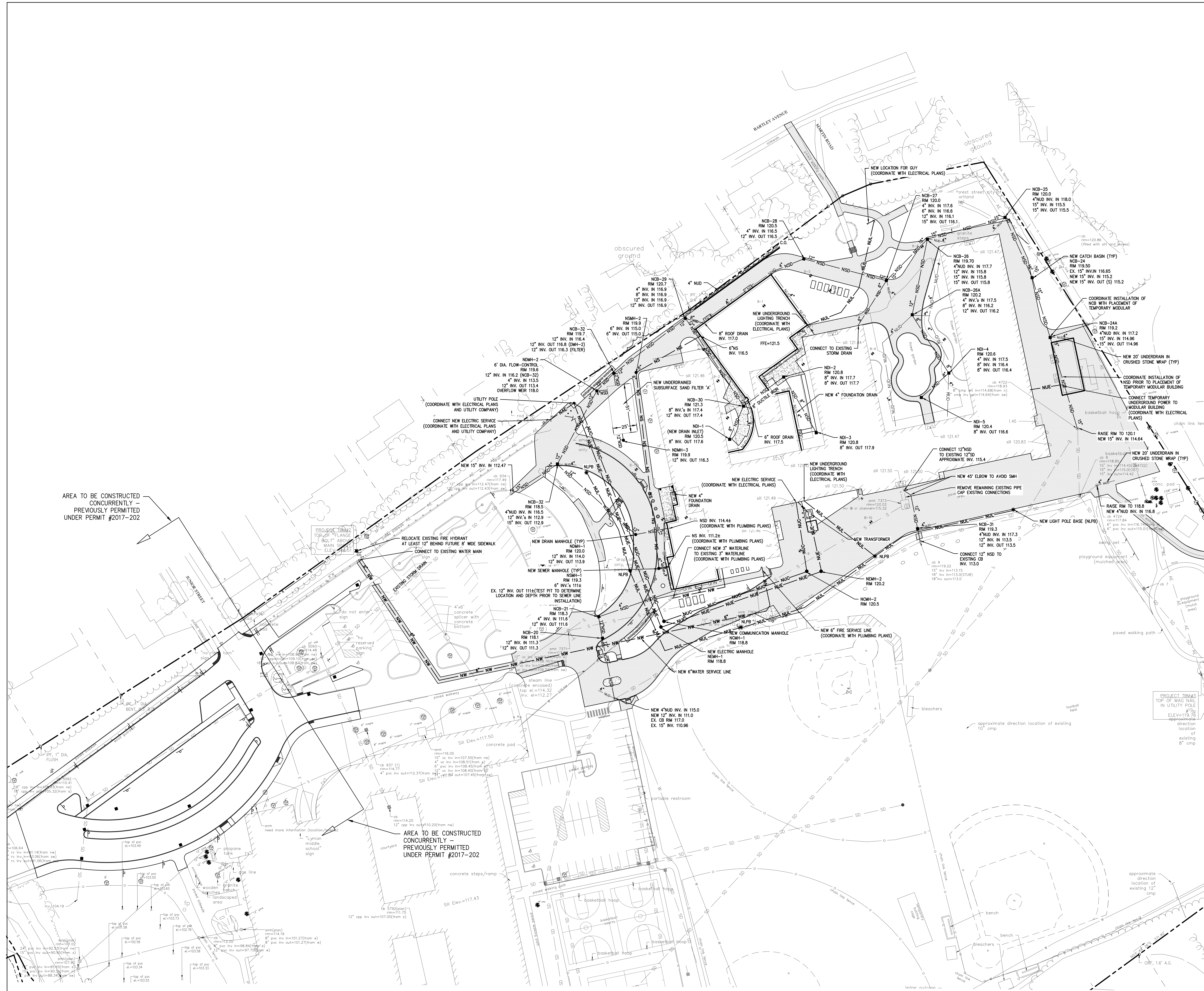
Key Plan



GRAPHIC SCALE

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(1 inch = 30 feet)



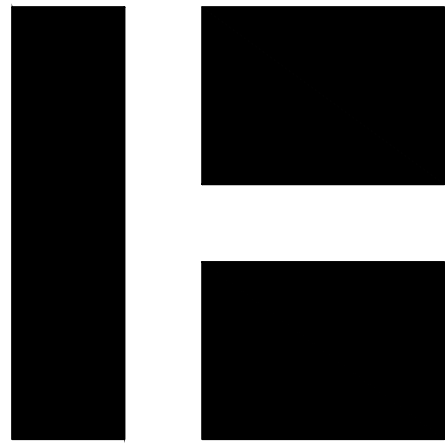
PLANNING BOARD SUBMITTAL
APRIL 2, 2019

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PA / PE:	FLC	© 2019 Harriman Associates
Drawn By:	PLS	

SITE UTILITY PLAN

C40.1



HARRIMAN

AUBURN PORTLAND PORTSMOUTH BOSTON

HARRISON LYSETH
ELEMENTARY SCHOOL

PORTLAND, MAINE

Harriman Project No. 18483

Key Plan

1. GENERAL

- A. PLAN THE SEQUENCE OF CONSTRUCTION SO THAT THE SMALLEST PRACTICAL AREA OF LAND IS EXPOSED AT ANY ONE TIME DURING CONSTRUCTION. SCHEDULE THE WORK SUCH THAT SEDIMENTATION BARRIERS AND DETENTION PONDS ARE INSTALLED EARLY IN THE CONSTRUCTION SEQUENCE, TO PREVENT SEDIMENTS FROM UPHILL AREAS REACHING STREAMS, WETLANDS OR PROPERTY LINES. THE AREA DISTURBED BY STRIPPING OF VEGETATION, SOIL REMOVAL, AND REGARDING SHALL BE THE MINIMUM NECESSARY AT ANY ONE TIME. THE DURATION OF EXPOSURE OF THE DISTURBED AREA SHALL BE KEPT TO A PRACTICAL MINIMUM. UNTIL A DISTURBED AREA IS STABILIZED, SEDIMENT IN RUN-OFF SHALL BE TRAPPED BY THE USE OF DEBRIS BASIN, SEDIMENT BASINS, SILT TRAPS OR OTHER ACCEPTABLE METHODS.
- B. AFTER SUBSURFACE CHAMBER FILTER BEDS ARE CONSTRUCTED, INSTALL TEMPORARY PLUGS IN INLET PIPES TO PREVENT SILTY STORMWATER FROM ENTERING THE CHAMBERS DURING CONSTRUCTION. AFTER UPSTREAM AREAS ARE FULLY STABILIZED REMOVE THE PLUGS.
- C. TAKE NECESSARY STEPS TO PREVENT SOIL EROSION. REFER TO PUBLICATION OF MAINE DEP PARTICULARLY CHAPTER 500, AND THE MAINE SOIL AND WATER CONSERVATION COMMISSION FOR ADDITIONAL PREVENTION MEASURES TO STOP SOIL EROSION AND FOLLOW DEP MAINE EROSION AND SEDIMENT CONTROL BMPs. THE CONTRACTOR SHALL CONDUCT HIS OPERATIONS IN CONFORMITY WITH ALL FEDERAL AND STATE PERMIT REQUIREMENTS CONCERNING WATER, AIR OR NOISE POLLUTION, OR THE DISPOSAL OF CONTAMINATED OR HAZARDOUS MATERIALS. EROSION CONTROL MEASURES SHOWN ON THE PLANS ARE MINIMUM ONLY. SATISFY THE CURRENT REQUIREMENTS OF THE REGULATORY AGENCIES. REPAIR ALL AREAS OF INSTABILITY AND EROSION IMMEDIATELY AND MAINTAIN UNTIL THE SITE IS FULLY STABILIZED.
- D. IF UNDERDRAIN FILTER BASINS, BIO-RETENTION CELLS, OR WETPONS ARE USED AS TEMPORARY SEDIMENT PONDS, DO NOT INSTALL UNDERDRAIN, GRAVEL FILTER, SOIL FILTER, OR GEOTEXTILE FABRIC UNTIL AFTER THE SURROUNDING AREAS ARE STABILIZED AND/OR THE AREAS ARE NO LONGER RECEIVING SEDIMENT LOADING. SEDIMENT BASINS MUST PROVIDE STORAGE FOR EITHER THE RUNOFF FROM A TWO (2) YEAR, 24 HOUR STORM OR PROVIDE FOR 3, 600 CUBIC FEET OF CAPACITY PER ACRE DRAINING TO THE SCHEDULE BASIN/POND CONSTRUCTION DURING THE BASIN. MONTHS OF JUNE THROUGH SEPTEMBER; WITH PONDS STABILIZED BY OCTOBER 1ST. CLEAN ALL STORM WATER BASINS, PIPES, AND TREATMENT TANKS PRIOR TO SUBSTANTIAL COMPLETION.
- E. WHENEVER PRACTICABLE, NO DISTURBANCE ACTIVITIES SHOULD TAKE PLACE WITHIN 50 FEET OF ANY PROTECTED NATURAL RESOURCE. IF DISTURBANCE ACTIVITIES TAKE PLACE BETWEEN 30 FEET AND 50 FEET OF ANY PROTECTED NATURAL RESOURCE, AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TOWARD THE PROTECTED NATURAL RESOURCE, PERMETER EROSION CONTROLS MUST BE DOUBLED. IF DISTURBANCE ACTIVITIES TAKE PLACE LESS THAN 30 FEET FROM ANY PROTECTED NATURAL RESOURCE, AND STORMWATER DISCHARGES THROUGH THE DISTURBED AREAS TOWARD THE PROTECTED NATURAL RESOURCE, PERMETER EROSION CONTROLS MUST BE DOUBLED AND DISTURBED AREAS MUST BE TEMPORARILY OR PERMANENTLY STABILIZED WITH 7 DAYS.
- F. EROSION CONTROL MESH: INTENDED AS A TEMPORARY EROSION CONTROL MEASURE THAT WILL DECOMPOSE AFTER STABILIZATION. OPEN WEAVE, SINGLE JUTE YARN OF LOOSELY TWISTED CONSTRUCTION, NOT VARYING IN THICKNESS BY MORE THAN 1/16 NORMAL DIAMETER. THE WOVEN MATERIALS SHALL WEIGH 0.9 POUNDS PER SQUARE YARD. SYNTHETIC MESH MATERIAL MAY BE USED AS APPROVED. STAPLES: NO. 11 (OR HEAVIER) PLAIN IRON WIRE, MADE 6 INCHES IN LENGTH.
- G. EROSION CONTROL BLANKET: INTENDED AS A PERMANENT EROSION CONTROL MEASURE THAT WILL REINFORCE THE TOPSOIL AND VEGETATION AGAINST EROSION AFTER CONSTRUCTION. SYNTHETIC FIBER MATRIX SANDWICHED BETWEEN HEAVY DUTY UV STABILIZED NETTING. BLANKET SHALL WEIGH NOT LESS THAN 0.9 POUNDS PER SQUARE YARD. NORTH AMERICAN GREEN P300 OR APPROVED EQUAL. STAPLES: NO. 11 (OR HEAVIER) PLAIN IRON WIRE, MADE 6 INCHES IN LENGTH.
- H. SILT FENCE:
- POST: 1X1" HARDWOOD POST, 4.5 FEET IN LENGTH.
- FABRIC: PERVIOUS 36" WIDE SHEET OF SYNTHETIC POLYMER OF 12-MIL THICKNESS, SUCH AS MIRAF 100X; TERRA TEX-5C OR APPROVED EQUAL. THE BOTTOM OF THE FABRIC SHALL BE TRENCHED INTO THE EXISTING GROUND A MINIMUM OF 6 INCHES. IN ADDITION, HAY BALES OR DITCH CHECKS SHALL BE INSTALLED ALONG THE SILT FENCE TO CREATE SEDIMENTATION POOLS IN LOW AREAS WHERE RUN-OFF CONCENTRATES.
- I. EROSION CONTROL SOIL/BARK MIX: SHALL CONSIST OF A MIX OF RECYCLED COMPOSTED BARK, FLUME GRIT, AND FRAGMENTED WOOD GENERATED FROM WATER-FLUME LOG HANDLING SYSTEMS. CONFORMING TO THE FOLLOWING:
1. PH - 5.0 TO 6.0.
 2. SCREEN SIZE - 6 INCHES MINUS.
 3. NO LESS THAN 25 PERCENT ORGANIC MATERIAL.
 4. NO STONES LARGER THAN 2 INCHES IN DIAMETER.
 5. APPROVE BY MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION FOR USE IN WETLANDS AND NEAR WATERWAYS.
- J. HAY BALES: BALES SHALL BE AT LEAST 14" X 18" X 30" IN SIZE, STAKED TWICE PER BALE. STAKES SHALL BE 1" X 1" X 36" WOODEN. PLACE BALES WITH TWINE ON SIDES OF BALE, NOT TOP OR BOTTOM.
- K. CATCH BASIN SEDIMENT FILTER BAG: A FILTER FABRIC BAG WHICH HANGS UNDER THE GRATE TO CATCH SEDIMENTS. PROVIDE "STREAMGUARD MODEL 3003," BASIN BAG BY EMCO DISTRIBUTION, "SILT SACKS HIGH FLOW" BY ACF ENVIRONMENTAL, OR APPROVED EQUAL. INSTALL THE BAG DEVICE PER MANUFACTURER'S RECOMMENDATION.
- L. BEFORE EARTHWORK IS STARTED, A SILT FENCE, FILTER BERM, OR STONE SEDIMENT DAM SHALL BE INSTALLED ALONG THE DOWN-SLOPE SIDE OF THE CONSTRUCTION SITE, AS NECESSARY, TO PREVENT SOIL SEDIMENT MIGRATION AWAY FROM THE SITE. INSTALL SILT FENCE OR FILTER BERM ALONG THE DOWN-SLOPE SIDE OF ALL TOP-SOIL AND SUBSOIL STOCKPILES.
- M. EROSION CONTROLS BARRIERS SHALL BE REMOVED AFTER CONSTRUCTION IS COMPLETE, BUT NOT UNTIL FINISH GRADING, FINAL SEEDING, AND MULCHING HAS BEEN COMPLETED AND THE ESTABLISHED GRASS HAS STABILIZED THE SOIL. MAINTAIN BARRIERS IN GOOD CONDITION UNTIL REMOVED.
- N. INSPECT EROSION AND SEDIMENTATION CONTROL WEEKLY AND AFTER STORM AND MAINTAIN IN GOOD WORKING CONDITION FOR PROJECT DURATION. REMOVE SILT DEPOSITS FROM THE SITE, PLACE IN AN AREA OF LOW EROSION POTENTIAL SO IT WILL NOT WASH INTO A WETLAND OR WATER BODY, SEED WITH EROSION CONTROL MIX, AND MULCH.
- O. FILTER BERM: PLACE UNCOMPACTED EROSION CONTROL MIX IN A WINDROW AT LOCATIONS SHOWN ON THE PLAN OR AS DIRECTED BY THE ARCHITECT. AT A MINIMUM THE BERM SHALL BE 3 FEET WIDE AT THE BASE AND 2 FEET HIGH AT THE CENTER OF ALL POINTS ALONG ITS LENGTH. BERM MATERIAL, WHERE THE BERM IS STILL REQUIRED, WHICH HAS DECOMPOSED, CLOTTED WITH SEDIMENT, ERODED, OR BECOMES INEFFECTIVE, SHALL BE REPLACED. THE BERM SHALL BE REMOVED FROM THE SITE OR RAKED INTO NEARBY WOODS TO A DEPTH NO GREATER THAN 1"; WHEN NO LONGER REQUIRED, AS APPROVED BY THE ARCHITECT.
- P. TEMPORARY STABILIZATION: WITHIN 7 DAYS OF THE CESSATION OF CONSTRUCTION ACTIVITIES IN AN AREA THAT WILL NOT BE WORKED FOR MORE THAN 7 DAYS, STABILIZE EXPOSED SOIL WITH MULCH, OR OTHER NON-ERODIBLE COVER. STABILIZE AREAS WITHIN 75 FEET OF A WETLAND OR WATERBODY WITHIN 48 HOURS OF THE INITIAL DISTURBANCE OF THE SOIL OR PRIOR TO A STORM EVENT, WHOEVER COMES FIRST. REMOVE TEMPORARY CONTROL MEASURES, SUCH AS SILT FENCE, WITHIN 30 DAYS AFTER PERMANENT STABILIZATION IS ATTAINED. REMOVE ANY ACCUMULATED SEDIMENTS AND STABILIZE. MAINTAIN TEMPORARY EROSION CONTROL MEASURES FOR THE FULL DURATION OF CONSTRUCTION. INSPECT WEEKLY AND AFTER EACH STORM AND REPAIR AS NEEDED. REMOVE SEDIMENTS FROM THE SITE, PLACE IN AREA OF LOW EROSION POTENTIAL, AND STABILIZE WITH SEED AND MULCH.
- Q. PERMANENT STABILIZATION: IF THE AREA WILL NOT BE WORKED FOR MORE THAN ONE YEAR OR HAS BEEN BROUGHT TO FINAL GRADE, THEN PERMANENTLY STABILIZE THE AREA WITHIN 7 DAYS BY PLANTING VEGETATION, SEEDING, SOO, OR THROUGH THE USE OF PERMANENT MULCH, OR RIPRAP, OR ROAD SUB-BASE. IF USING VEGETATION FOR STABILIZATION, SELECT THE PROPER VEGETATION FOR THE LIGHT, MOISTURE, AND SOIL CONDITIONS. AMEND AREAS OF DISTURBED SUBSOIL WITH TOPSOIL, COMPOST, OR FERTILIZERS; PROTECT SEEDED AREAS WITH MULCH OR, IF NECESSARY, EROSION CONTROL BLANKETS; AND SCHEDULE SOODING, PLANTING, AND SEEDING SO TO AVOID DIE-OFF FROM SUMMER DROUGHT AND FALL FROSTS; NEWLY SEEDD OR SOODD AREAS MUST BE PROTECTED FROM VEHICLE TRAFFIC, EXCESSIVE PEDESTRIAN TRAFFIC, AND CONCENTRATED RUNOFF UNTIL VEGETATION IS WELL-ESTABLISHED WITH 90% COVER BY HEALTHY VEGETATION. IF NECESSARY, AREAS MUST BE REMORKED AND RESTABILIZED IF GERMINATION IS SPARSE, PLANT COVERAGE IS SPOTTY, OR TOPSOIL EROSION IS EVIDENT. PERMANENT STABILIZATION IS DEFINED AS FOLLOWS:

1. SEEDD AREAS: PERMANENT STABILIZATION MEANS A 90% COVER OF THE DISTURBED AREA WITH MATURE, HEALTHY PLANTS WITH NO EVIDENCE OF WASHING OR RILLING OF THE TOPSOIL.
2. SOODD AREAS: PERMANENT STABILIZATION MEANS THE COMPLETE BINDING OF THE SOO ROOTS INTO THE UNDERLYING SOIL WITH NO SLUMPING OF THE SOO OR DIE-OFF.
3. PERMANENT MULCH: PERMANENT MULCHING MEANS TOTAL COVERAGE OF THE EXPOSED AREA WITH AN APPROVED MULCH MATERIAL. EROSION CONTROL MIX MAY BE USED AS MULCH FOR PERMANENT STABILIZATION ACCORDING TO THE APPROVED APPLICATION RATES AND LIMITATIONS.
4. RIPRAP: PERMANENT STABILIZATION MEANS THAT SLOPES STABILIZED WITH RIPRAP HAVE AN APPROPRIATE BACKING OF A WELL-GRADED GRAVEL OR APPROVED GEOTEXTILE TO PREVENT SOIL MOVEMENT FROM BEHIND THE RIPRAP. STONE MUST BE SIZED APPROPRIATELY. IT IS RECOMMENDED THAT ANGULAR STONE BE USED.
5. PAVED AREAS: PERMANENT STABILIZATION MEANS PLACEMENT OF THE COMPACTED SUBBASE GRAVEL IS COMPLETED, PROVIDED IT IS FREE OF FINE MATERIALS THAT MAY RUNOFF WITH A RAIN EVENT.
6. DITCHES, CHANNELS, AND SWALES: PERMANENT STABILIZATION MEANS THE CHANNEL IS STABILIZED WITH A 90% COVER OF HEALTHY VEGETATION, WITH A WELL-GRADED RIPRAP LINING, TURF REINFORCEMENT MAT, OR WITH ANOTHER NON-EMISIVE LINING SUCH AS CONCRETE OR ASPHALT PAVEMENT. THERE MUST BE NO EVIDENCE OF SLUMPING OF THE CHANNEL LINING, UNDERCUTTING OF THE CHANNEL BANKS OR DOWN-CUTTING OF THE CHANNEL.

2. TEMPORARY SEEDING AND MULCHING

- A. TOPSOIL STRIPPED AND STOCKPILED ON SITE SHALL BE IMMEDIATELY SEEDDED WITH EROSION CONTROL SEED MIX AND MULCHED WITH HAY. MULCH SHALL BE CURED STRAW FREE FROM NOXIOUS WEED SEEDS AND ROUGH OR WOODY MATERIALS.
- B. EROSION CONTROL SEED:
- | Seed Type | % Weight | % Purity | % Germination |
|---------------|----------|----------|---------------|
| Domestic Rye | 70 | 85 | 80 |
| Perennial Rye | 30 | 85 | 80 |
- C. EXPOSED EARTHWORK AREAS WHICH WILL NOT BE WORKED ON FOR ONE WEEK SHALL BE MULCHED WITH STRAW.
- D. UNFINISHED AREAS WHICH ARE NOT TO BE WORKED ON FOR ONE MONTH OR WILL BE WATERED SHALL BE SEEDDED WITH EROSION CONTROL MIX AT A RATE OF 3 POUNDS OF SEED PER 1,000 SQ. FT. AND MULCHED WITH STRAW. APPLY STRAW MULCH AT THE RATE OF 75 POUNDS PER 1,000 SQ. FT. ANCHOR MULCH TO PREVENT WIND BLOWN MOVEMENT.
- E. IN SENSITIVE AREAS (WITHIN 25 FT. OF STREAM OR WETLAND EDGES) TEMPORARY MULCH MUST BE APPLIED AT THE END OF EACH WORK DAY AND PRIOR TO ANY STORM EVENT. NO FILL SHALL BE PLACED ON HAY MULCH.

3. PERMANENT SEEDING AND MULCHING

- A. GRASS SEED SHALL BE FREE FROM NOXIOUS WEED SEEDS AND RECLEANED, GRADE A RECENT CROP SEED, TREATED WITH APPROPRIATE FLUGUIDE AT TIME OF MIXING, DELIVERED TO THE SITE IN SEALED CONTAINERS WITH DEALER'S GUARANTEED ANALYSIS AND EACH VARIETY OF SEED SHALL HAVE PERCENTAGES OF GERMINATION OF NOT LESS THAN 80% AND A PERCENTAGE OF PURITY OF NOT LESS THAN 80%. SOW SEEDS AT A RATE OF 50#s PER 1,000sq.ft.
- B. WEED SEED CONTENT SHALL NOT EXCEED 0.25% WET, MOLDY OR OTHERWISE DAMAGED SEED WILL BE REJECTED.
- C. SEED MIX PROPORTIONS BY WEIGHT:
- | Seed Type | % Weight | % Purity | % Germination |
|---------------------|----------|----------|---------------|
| Chewing Fescue | 35 | 85 | 80 |
| Creeping Red Fescue | 35 | 85 | 80 |
| Perennial Rye | 30 | 85 | 80 |

4. WINTER CONSTRUCTION

- A. WINTER CONSTRUCTION" IS CONSTRUCTION ACTIVITY PERFORMED DURING THE PERIOD FROM NOVEMBER 1 THROUGH APRIL 15. IF DISTURBED AREAS ARE NOT STABILIZED WITH PERMANENT MEASURES BY NOVEMBER 1 OR NEW SOIL DISTURBANCE OCCURS AFTER NOVEMBER 1, BUT BEFORE APRIL 15, THEN THESE AREAS MUST BE PROTECTED AND RUNOFF FROM THEM MUST BE CONTROLLED BY ADDITIONAL MEASURES AND RESTRICTIONS.
- B. SITE STABILIZATION: FOR WINTER STABILIZATION, HAY MULCH IS APPLIED AT TWICE THE STANDARD TEMPORARY STABILIZATION RATE. AT THE END OF EACH CONSTRUCTION DAY, AREAS THAT HAVE BEEN BROUGHT TO FINAL GRADE MUST BE STABILIZED. MULCH MAY NOT BE SPREAD ON TOP OF SNOW.
- C. SEDIMENT BARRIERS: ALL AREAS WITHIN 75 FEET OF A PROTECTED NATURAL RESOURCE MUST BE PROTECTED WITH A DOUBLE ROW OF SEDIMENT BARRIERS.
- D. DITCH: ALL VEGETATED DITCH LINES THAT HAVE NOT BEEN STABILIZED BY NOVEMBER 1 OR WILL BE WORKED DURING THE WINTER CONSTRUCTION PERIOD MUST BE STABILIZED WITH AN APPROPRIATE STONE LINING BACKED BY AN APPROPRIATE GRAVEL BED OR GEOTEXTILE UNLESS SPECIFICALLY RELEASED FROM THIS STANDARD BY THE DEPARTMENT.
- E. SLOPES: MULCH NETTING MUST BE USED TO ANCHOR MULCH ON ALL SLOPES GREATER THAN 8% UNLESS EROSION CONTROL BLANKETS OR EROSION CONTROL MIX IS BEING USED ON THESE SLOPES.

5. DRAINAGE DITCHES AND EMBANKMENTS

- A. DRAINAGE DITCHES SHALL BE PROVIDED WITH TEMPORARY STONE CHECK DAMS NO GREATER THAN 100 FEET APART. TEMPORARY DITCH CHECK DAMS SHALL BE CONSTRUCTED WHERE INDICATED. ADDITIONAL TEMPORARY DITCH DAMS SHALL BE INSTALLED DURING THE CONSTRUCTION, WHERE NECESSARY TO PREVENT SOIL FROM LEAVING THE WORK AREA.
- B. GRASSSED DRAINAGE DITCHES AND SWALES SHALL BE LINED WITH A CONTINUOUS MAT OF EROSION CONTROL MESH FOR FULL BOTTOM WIDTH AND SIDE SLOPES TO 12" ABOVE BOTTOM, WITHIN 48 HOURS OF FINAL GRADING AND PRIOR TO A STORM EVENT, IN ORDER TO STABILIZE THE LOAM, SEED AND MULCH.
- C. WHERE ERODIVE VELOCITIES IN DITCHES OR EMBANKMENTS ARE ANTICIPATED OR EXPERIENCED AND SOIL CANNOT BE STABILIZED WITH MULCH AND MESH, SUBSTITUTE EROSION CONTROL SOIL/BARK MIX IN PLACE OF LOAM. SCREEN THE EROSION CONTROL SOIL/BARK MIX TO REMOVE WOOD, BARK AND STONES ONE INCH IN SIZE AND GREATER. IF ERODIVE VELOCITIES ARE EXCESSIVE, PROVIDE A 12" THICK STONE RIP-RAP LINING ALONG DITCH BOTTOM AND UP SIDE SLOPES TO ONE FOOT ABOVE THE BOTTOM ELEVATION. PLACE NON-WOVEN GEOTEXTILE BENEATH RIP-RAP.
- D. STABILIZE POND EMBANKMENT (INTERIOR AND EXTERIOR), SLOPES STEEPER THAN THREE HORIZONTAL TO ONE VERTICAL AND DRAINAGE DITCHES BY SEPTEMBER 15, CONSISTING OF PERMANENT SEEDING AND MULCH. IF THIS DATE CANNOT BE MET, PROVIDE ALTERNATIVE PERMANENT OR TEMPORARY STABILIZATION DESCRIBED AS FALL AND WINTER STABILIZATION.
- E. INSTALL EROSION CONTROL MESH OVER MULCH ON SLOPES STEEPER THAN SIX HORIZONTAL TO ONE VERTICAL (16%) AND IN CONFORMANCE TO DOT STANDARD SPECIFICATION, LATEST EDITION, SECTION 9.48, PARAGRAPHS 613.03 THROUGH 613.06. ANCHOR MESH AS RECOMMENDED BY MANUFACTURER.
- F. PERMANENTLY RIP-RAP INLETS AND OUTLETS OF CULVERTS AND PIPE OUTFALLS WITHIN 48 HOURS OF INSTALLATION, AS SPECIFIED IN SECTION 312000 - EARTH MOVING AND AS SHOWN ON THE DRAWINGS.
- G. INSTALL PERMANENT EROSION CONTROL BLANKET AROUND CULVERT INLETS AND OUTLETS AS SHOWN ON THE DRAWINGS AND ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
1. PREPARE SOIL WITH LOAM, FERTILIZER AND SEED AS SPECIED IN SECTION 329200 PRIOR TO INSTALLING THE EROSION CONTROL BLANKET.
 2. INSTALL PERMANENT EROSION CONTROL BLANKET FIVE FEET MINIMUM IN ALL DIRECTIONS AROUND CULVERT INLETS.
 3. INSTALL PERMANENT EROSION CONTROL BLANKET FIVE FEET MINIMUM IN ALL DIRECTIONS AROUND CULVERT OUTLETS AND A SIX FOOT WIDTH CENTERED ALONG THE OUTLET CHANNEL FOR TEN FEET.
 4. INSTALL STAPLES AS SHOWN ON THE EROSION CONTROL BLANKET DETAIL ON THE DRAWINGS AND THROUGHOUT THE BLANKET IN AN 18 BY 18 INCH GRID.

6. PARKING AND DRIVES

- A. PLACE A TEMPORARY STABILIZED CONSTRUCTION EXITS WHERE VEHICLES LEAVE THE SITE AND ENTER EXISTING PAVED ROADS, CONSISTING OF A 6" LAYER OF 1 1/2" TO 3" CRUSHED STONE. TRACKING A SPILLING OF EARTH AND/OR DEBRIS ON PUBLIC STREETS SHALL BE AVOIDED TO THE MAXIMUM EXTENT POSSIBLE. CLEAN UP AND REMOVE SUCH SPILLAGE.
- B. AS THE CRUSHED STONE STABILIZED CONSTRUCTION EXITS CONTINUE TO SCORR THE SOIL FROM THE TRUCKS, THE STONE LAYER WILL TEND TO FILL WITH SEDIMENTS. WHEN THIS OCCURS, REMOVE THE STONE AND SEDIMENT AND REPLACE IT WITH A CLEAN LAYER OF STONE.
- C. AS SOON AS POSSIBLE AFTER ROADS AND PARKING AREAS ARE CLEARED, GRUBBED AND GRADED TO THE REQUIRED SUBGRADE, THE BASE GRAVEL SHALL BE PLACED.

7. REMOVAL AND DISPOSAL

WHEN PERMANENT SOIL STABILIZATION HAS BEEN ACHIEVED, TEMPORARY MATERIALS AND DEVICES THAT ARE NOT READILY DEGRADABLE SHALL BE REMOVED AND DISPOSED OF OFF SITE. SILT FENCES, FILTER BERMS AND CATCH BASIN SEDIMENT FILTERS MUST BE FULLY REMOVED. REUSABLE MATERIALS ARE AND SHALL REMAIN THE PROPERTY OF THE CONTRACTOR.

8. STONES FOR RIP-RAP

- A. SIZE THE STONE MIXTURE SUCH THAT 50% OF THE STONES, BY WEIGHT, ARE LARGER THAN THE SPECIFIED D50 SIZE. STONES SHALL NOT BE SCHISTOUS.
- B. PLAIN RIP-RAP: 4" TO 12" DIAMETER, HARD, SOUND ANGULAR STONES, D50 = 6".
- C. SPECIAL RIP-RAP: 8" TO 18" WIDE SOUND STONES WITH FLAT TOP SURFACE, D50 = 11".
- D. THE STONES SHALL BE PLACED WITH THEIR BENDS AT RIGHT ANGLES TO THE SLOPE, THE LARGER STONES BEING USED IN BOTTOM COURSES.
- E. THE FINISHED WORK SHALL PRESENT AN EVEN, TIGHT AND REASONABLY SMOOTH SURFACE CONFORMING TO THE REQUIRED CONTOUR AND HAVE A NEAT ORDERLY APPEARANCE WITHOUT SCATTERED STONES.
- F. SPECIAL RIP-RAP SHALL BE HAND-PLACED IN CLOSE CONTACT TO FORM AN EVEN, TIGHT AND REASONABLY SMOOTH SURFACE WITH RELATIVELY FLAT TOP SURFACES. USE NO SMALL STONES OR SPALL.

9. PLANTING TIME

- A. SEEDING: SEEDING SHALL BE DONE BETWEEN AUGUST 15TH TO SEPTEMBER 15TH AND/OR APRIL 15TH TO JUNE 15TH.
- B. SOODING: SOODING MAY BE DONE BETWEEN APRIL 15TH AND NOVEMBER 15TH.
- C. VARIANCE: IF SPECIAL CONDITIONS EXIST WHICH MAY WARRANT A VARIANCE IN THE ABOVE PLANTING DATES, A WRITTEN REQUEST SHALL BE SUBMITTED TO THE ARCHITECT STATING THE SPECIAL CONDITIONS FOR THE PROPOSED VARIANCE. PERMISSION FOR THE VARIANCE WILL BE GIVEN IF WARRANTED IN THE OPINION OF THE ARCHITECT. REGARDLESS OF THE TIME OF SEEDING, THE CONTRACTOR SHALL BE RESPONSIBLE FOR A FULL GROWTH OF GRASS.
- D. PLACE PERMANENT SOIL STABILIZATION WITHIN 15 DAYS OF FINAL GRADING.

HOUSEKEEPING

10. SPILL PREVENTION AND GROUNDWATER PROTECTION

- A. AREAS INSIDE AND OUTSIDE THE CONTRACT WORK LIMITS SHALL BE PROTECTED FROM LUBRICANTS, FUEL, SEDIMENT, LITTER, CONSTRUCTION DEBRIS, CHEMICALS AND OTHER POLLUTANTS.
- B. TAKE PRECAUTIONS AND CONFORM TO ALL FEDERAL, STATE AND LOCAL REGULATIONS TO PREVENT POLLUTANTS FROM BEING DISCHARGED FROM MATERIALS ON SITE, INCLUDING STORAGE PRACTICES TO MINIMIZE EXPOSURE OF THE MATERIALS TO STORMWATER. IMPLEMENT SPILL PREVENTION, CONTAINMENT AND RESPONSE.
- C. DURING CONSTRUCTION, LIQUID PETROLEUM PRODUCTS AND OTHER HAZARDOUS MATERIALS WITH POTENTIAL TO CONTAMINATE GROUNDWATER MAY NOT BE STORED OR HANDLED IN AREAS OF THE SITE DRAINING TO AN INFILTRATION AREA. IF ANY AREA OF THE SITE THAT BE DESIGN OR AS A RESULT OF SOILS, TOPOGRAPHY ACCUMULATES RUNOFF THAT INFILTRATES INTO THE SOIL, IMPERVIOUS LINERS OR MATERIALS MUST BE USED TO STORE OR CONTAIN THE HAZARDOUS MATERIALS AND PREVENT THEM FROM ENTERING THE GROUNDWATER.

11. ERODIVE SEDIMENT AND DUST

- A. USE TRAFFIC CONTROL TO RESTRICT TRAFFIC TO PREDETERMINED ROUTES. MAINTAIN AS MUCH NATURAL VEGETATION AS IS PRACTICABLE. USE PHASING OF CONSTRUCTION TO REDUCE THE AREA OF LAND DISTURBED AT ANY ONE TIME. THE USE OF TEMPORARY MULCHING, PERMANENT MULCHING, TEMPORARY VEGETATIVE COVER, PERMANENT VEGETATIVE COVER, OR SOODING WILL REDUCE THE NEED FOR DUST CONTROL. USE MECHANICAL SWEEPERS ON PAVED SURFACES WHERE NECESSARY TO PREVENT DUST BUILDUP. STATIONARY SOURCES OF DUST, I.E. ROCK CRUSHERS, SHOULD UTILIZE FINE WATER SPRAYS TO CONTROL DUST.
- B. THE EXPOSED SOIL SURFACE SHOULD BE MOISTENED PERIODICALLY WITH ADEQUATE WATER TO CONTROL DUST.
- C. CALCIUM CHLORIDE SHALL BE EITHER LOOSE DRY GRANULES OR FLAKES FINE ENOUGH TO FEED THROUGH A SPREADER AT A RATE THAT WILL KEEP SURFACE MOIST BUT NOT CAUSE POLLUTION OR PLANT DAMAGE. LIQUID CALCIUM CHLORIDE CAN ALSO BE USED. TO REDUCE POTENTIAL FOR ENVIRONMENTAL DEGRADATION, USE ONLY WHEN OTHER METHODS ARE NOT PRACTICAL.
- D. COVER SURFACE WITH CRUSHED STONE OR COARSE GRAVEL IN AREAS ADJACENT TO WATERWAYS, USE CHEMICALLY STABLE AGGREGATE.
- E. WHEN TEMPORARY DUST CONTROL MEASURES ARE USED, REPETITIVE TREATMENT SHALL BE APPLIED AS NEEDED TO ACCOMPLISH CONTROL.

12. DEBRIS AND OTHER MATERIALS - MINIMIZE THE EXPOSURE OF CONSTRUCTION DEBRIS, BUILDING AND LANDSCAPING MATERIALS, TRASH, FERTILIZERS, HERBICIDES, DETERGENTS, SANITARY WASTE AND OTHER MATERIALS TO PRECIPITATION AND STORMWATER RUNOFF.

13. EXCAVATION DE-WATERING

- A. WATER FROM CONSTRUCTION DEWATERING OPERATIONS SHALL BE CLEANED OF SEDIMENT BEFORE REACHING WETLANDS, WATER BODIES, STREAMS, OR SITE BOUNDARIES. UTILIZE TEMPORARY SEDIMENT BASINS, EROSION CONTROL SOIL FILTER BERMS BACKED BY STAKED HAY BALES, A DIRT BAG 35" SEDIMENT FILTER BAG BY ACF ENVIRONMENTAL, INC. OR OTHER APPROVED BEST MANAGEMENT PRACTICES (BMPs).
- B. IN SENSITIVE AREAS, NEAR STREAMS OR PONDS, DISCHARGE THE WATER FROM THE DE-WATERING OPERATION INTO A TEMPORARY SEDIMENT BASIN CREATED BY A SURROUNDING FILTER BERM OF UNCOMPACTED EROSION CONTROL MIX IMMEDIATELY BACKED BY STAKED HAY BALES (SEE THE SITE DETAILS). LOCATE THE TEMPORARY SEDIMENT BASIN AT LEAST 100 FEET FROM THE NEAREST WATER BODY, SUCH THAT THE FILTERED WATER WILL FLOW THROUGH UNDISTURBED VEGETATED SOIL AREAS PRIOR TO REACHING THE WATER BODY OR PROPERTY LINE.
- C. PREPARE A DE-WATERING PLAN TO ADDRESS EXCAVATION DE-WATERING FOLLOWING HEAVY RAINFALL EVENTS OR WHERE THE EXCAVATION MAY INTERSECT 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. FOLLOW THE DETAIL OF THE PLAN THROUGHOUT CONSTRUCTION DURATION.
- D. THE OWNER OR REGULATORY AGENCIES DO NOT AUTHORIZE A WATER DISCHARGE THAT IS MIXED WITH A SOURCE OF NON-STORMWATER, INCLUDING THE FOLLOWINGS: WASTEWATER FROM CLEANOUT OF CONCRETE, STUCCO, PAINT, FORM RELEASE OILS, CURING COMPOUNDS OR OTHER CONSTRUCTION MATERIALS; FUELS, OILS OR OTHER POLLUTANTS USED IN VEHICLE AND EQUIPMENT OPERATION AND MAINTENANCE; SOAPS, SOLVENTS OR DETERGENTS USED IN VEHICLE AND EQUIPMENT WASHING; AND TOXIC OR HAZARDOUS SUBSTANCES FROM A SPILL OR OTHER RELEASE.
14. UNAUTHORIZED NON-STORMWATER DISCHARGES, THE DEPARTMENT OF ENVIRONMENTAL PROTECTION DOES NOT AUTHORIZE DISCHARGES OF THE FOLLOWING:
- WASTEWATER FROM THE WASHOUT OR CLEAN OUT OF CONCRETE, STUCCO, PAINT, FORM RELEASE OILS, CURING COMPOUNDS OR OTHER CONSTRUCTION MATERIALS.
 - FUELS, OILS OR OTHER POLLUTANTS USED IN VEHICLE AND EQUIPMENT OPERATION AND MAINTENANCE.
 - SOAPS, SOLVENTS OR DETERGENTS USED IN VEHICLE AND EQUIPMENT WASHING.
 - TOXIC OR HAZARDOUS SUBSTANCES FROM A SPILL OR OTHER RELEASE.

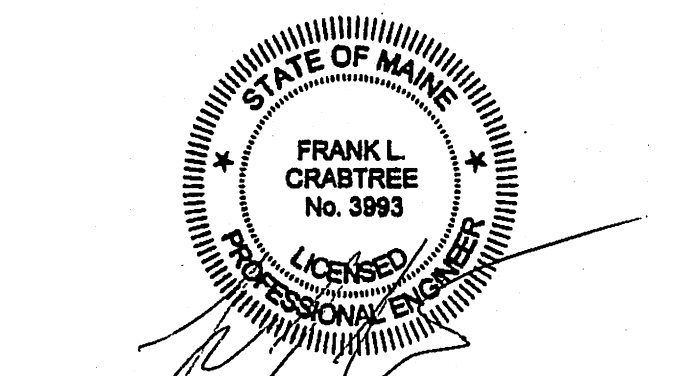
CONSTRUCTION OBSERVATION

15. INSPECTION AND MAINTENANCE

- A. INSPECT DISTURBED AND IMPERVIOUS AREAS, EROSION CONTROL MEASURES, MATERIALS STORAGE AREAS THAT ARE EXPOSED TO PRECIPITATION AND LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE AT LEAST ONCE A WEEK AS WELL AS BEFORE AND WITHIN 24 HOURS AFTER A RAIN EVENT AND PRIOR TO COMPLETING PERMANENT STABILIZATION. A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL AND STANDARDS AND CONDITIONS OF THE PERMIT, SHALL CONDUCT THE INSPECTIONS.
- B. UPON DISCOVERY OF A PROBLEM, REPAIR BMPs NO LATER THAN THE END OF THE NEXT WORK DAY. IF ADDITIONAL BMPs OR SIGNIFICANT REPAIRS ARE NECESSARY, IMPLEMENTATION MUST BE COMPLETED WITHIN 7 CALENDAR DAYS AND PRIOR TO A RAIN EVENT.
- C. KEEP A LOG (REPORT) SUMMARIZING THE INSPECTIONS AND CORRECTIVE ACTION TAKEN, INCLUDING THE NAME AND QUALIFICATIONS OF THE PERSON MAKING THE INSPECTIONS, THE DATE OF THE INSPECTIONS AND MAJOR OBSERVATIONS OF OPERATION AND MAINTENANCE OF EROSION AND SEDIMENTATION CONTROLS, MATERIALS STORAGE AREAS AND VEHICLES 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 LOCATION(S) WHERE ADDITIONAL BMPs ARE NEEDED. NOTE IN THE LOG THE CORRECTIVE ACTION TAKEN AND WHEN IT WAS TAKEN. THE LOG MUST BE MADE ACCESSIBLE TO THE OWNER, ARCHITECT AND REGULATORY AGENCIES' STAFF AND A COPY MUST BE PROVIDED UPON REQUEST. THE PERMITTEE SHALL RETAIN A COPY OF THE LOG FOR A PERIOD OF AT LEAST THREE YEARS FROM THE COMPLETION OF PERMANENT STABILIZATION.

Issues and Revisions

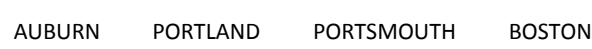
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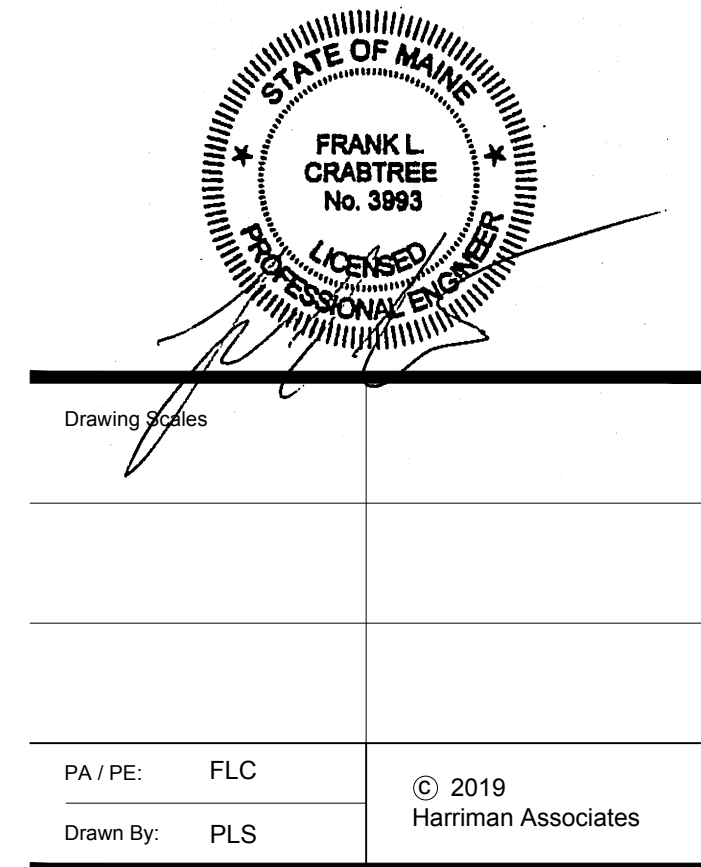
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Drawn By	PLS	

SITE EROSION
CONTROL NOTES

C00.3

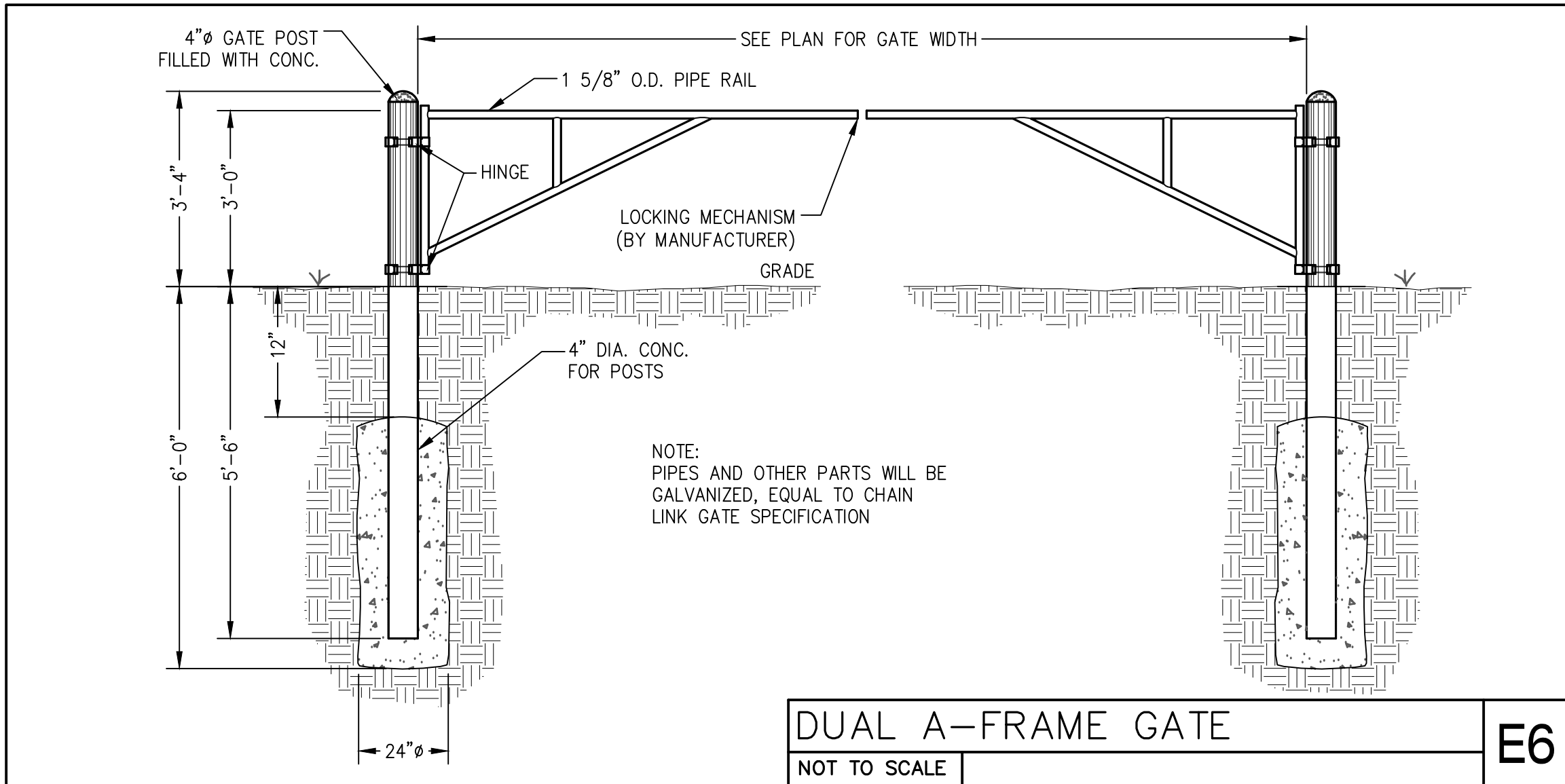


PORTLAND, MAINE	
Harriman Project No.	18483
Key Plan	

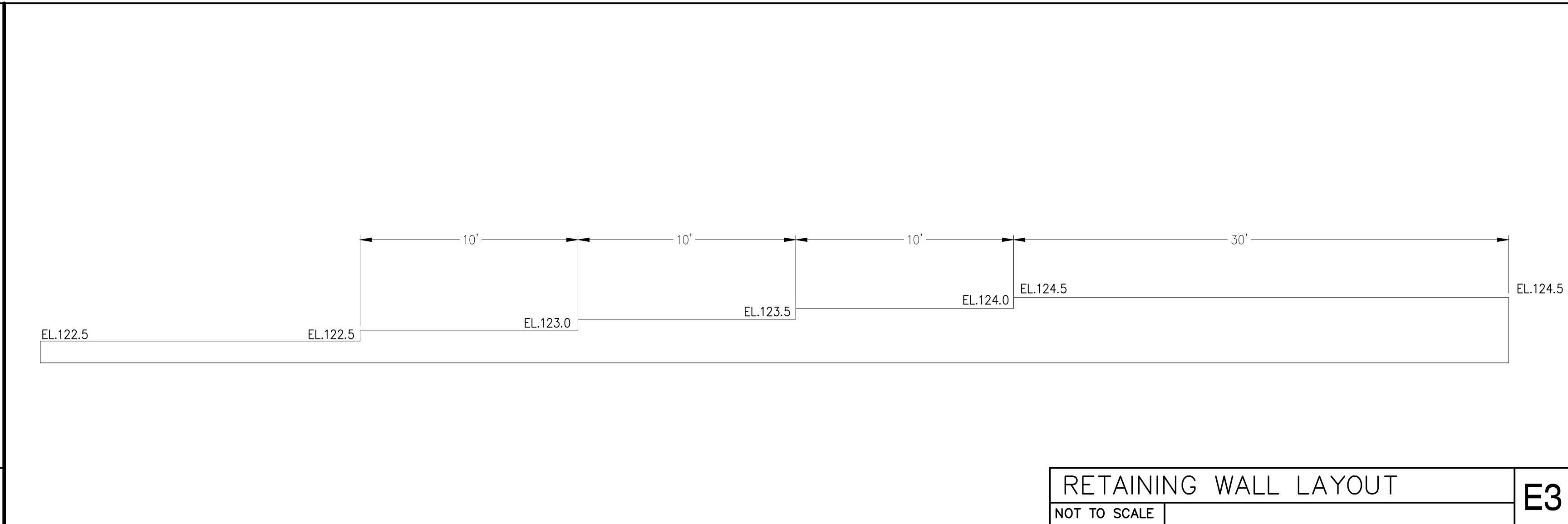


SITE DETAILS

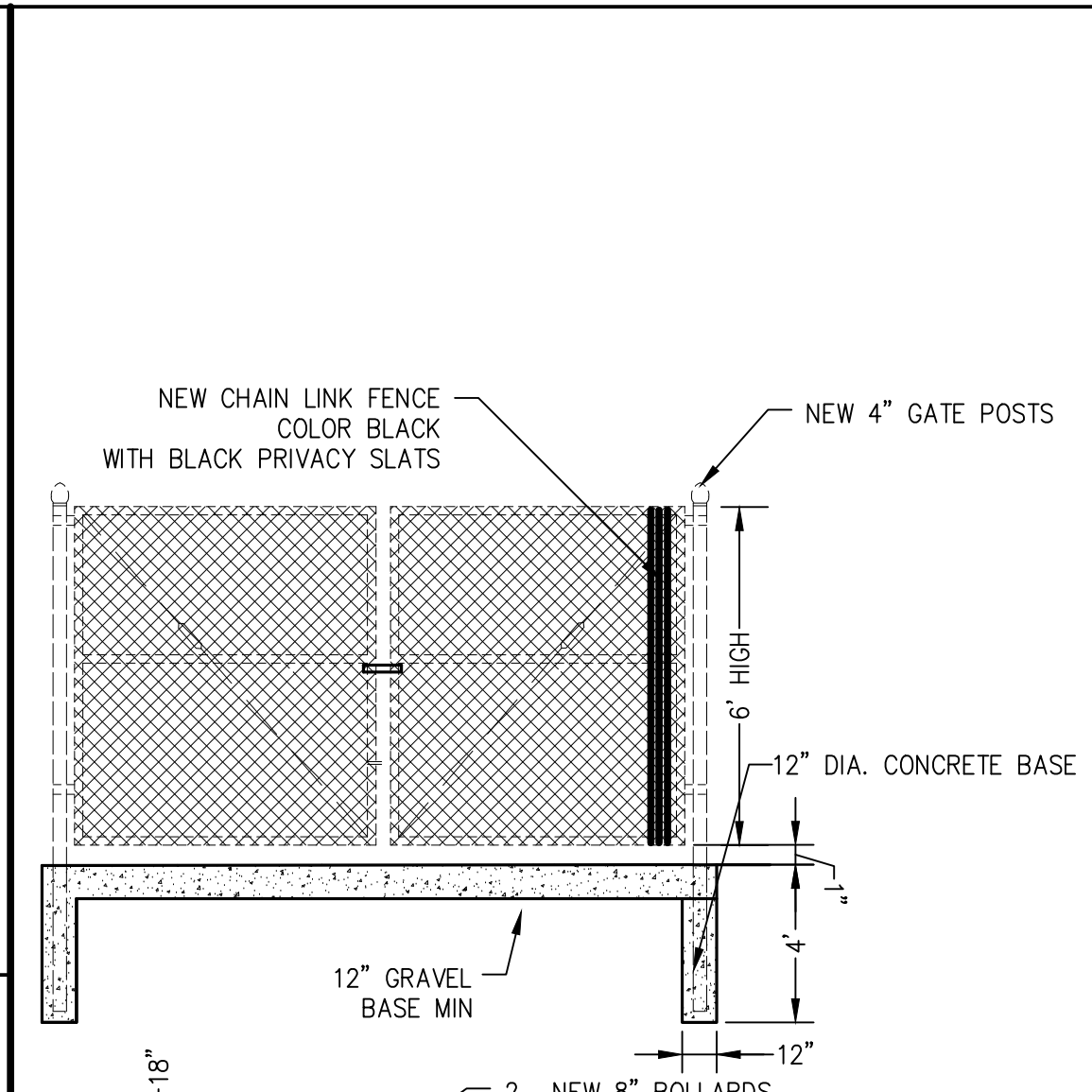
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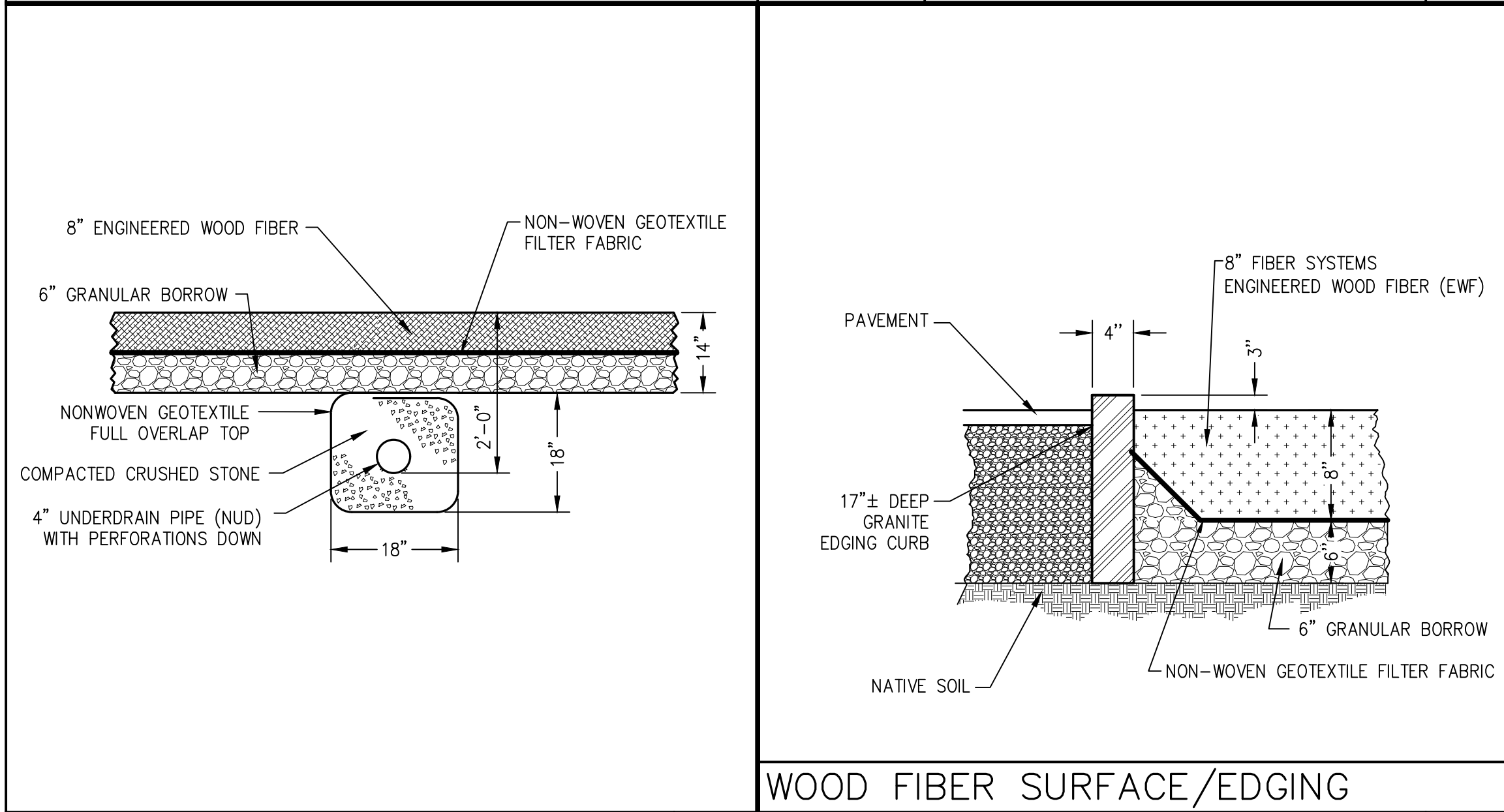
DUAL A-FRAME GATE
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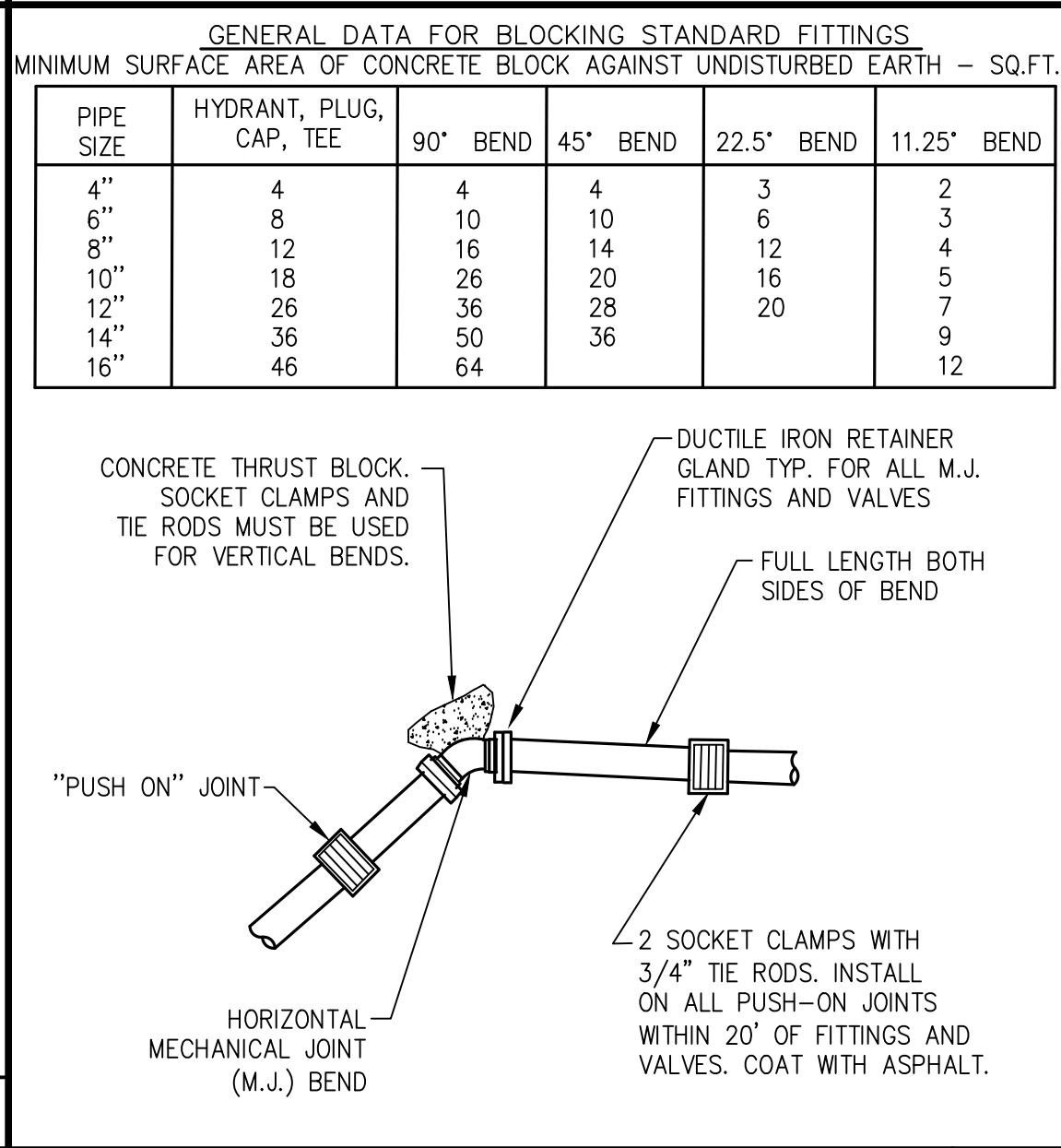
RETAINING WALL LAYOUT
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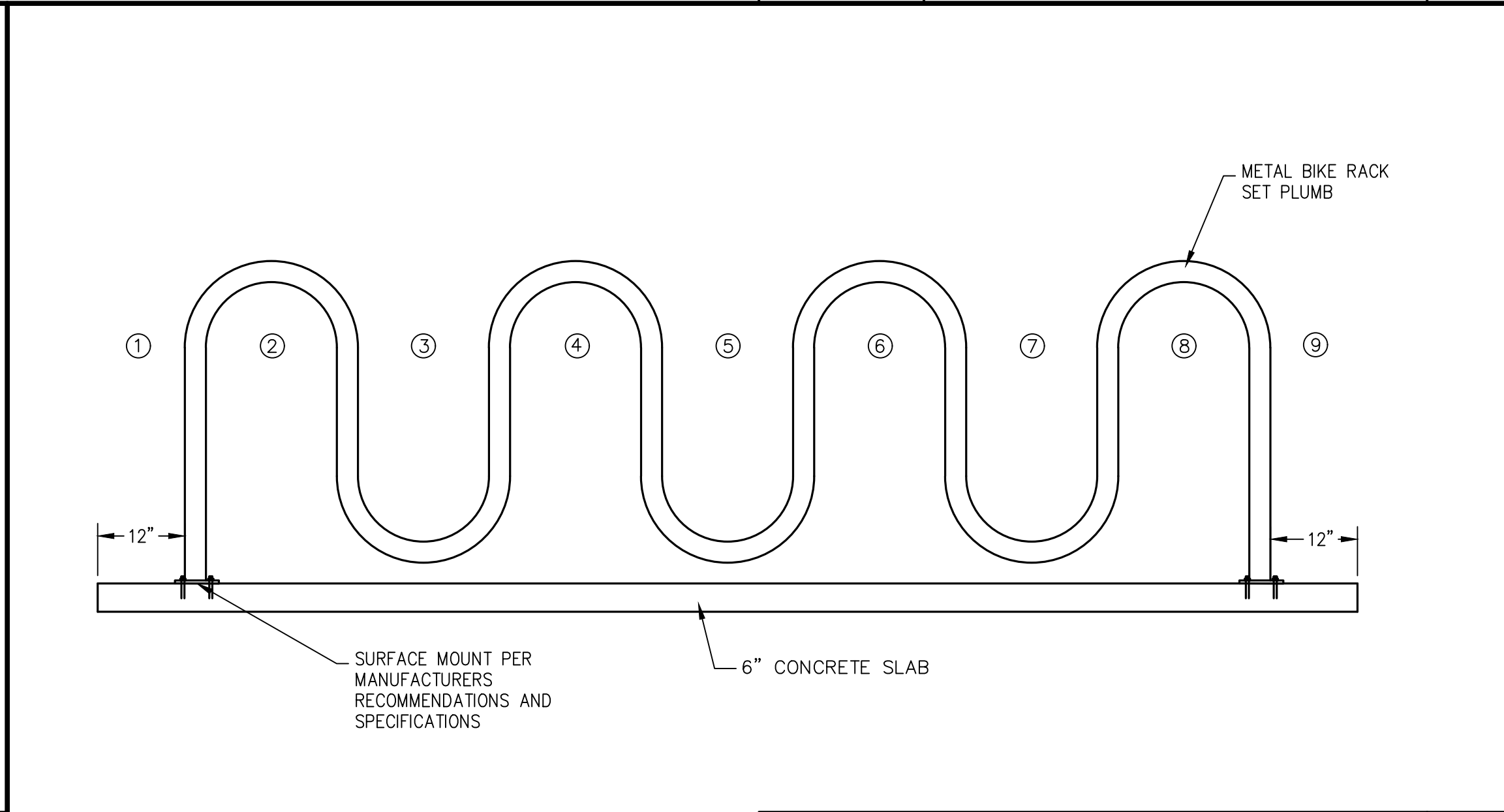
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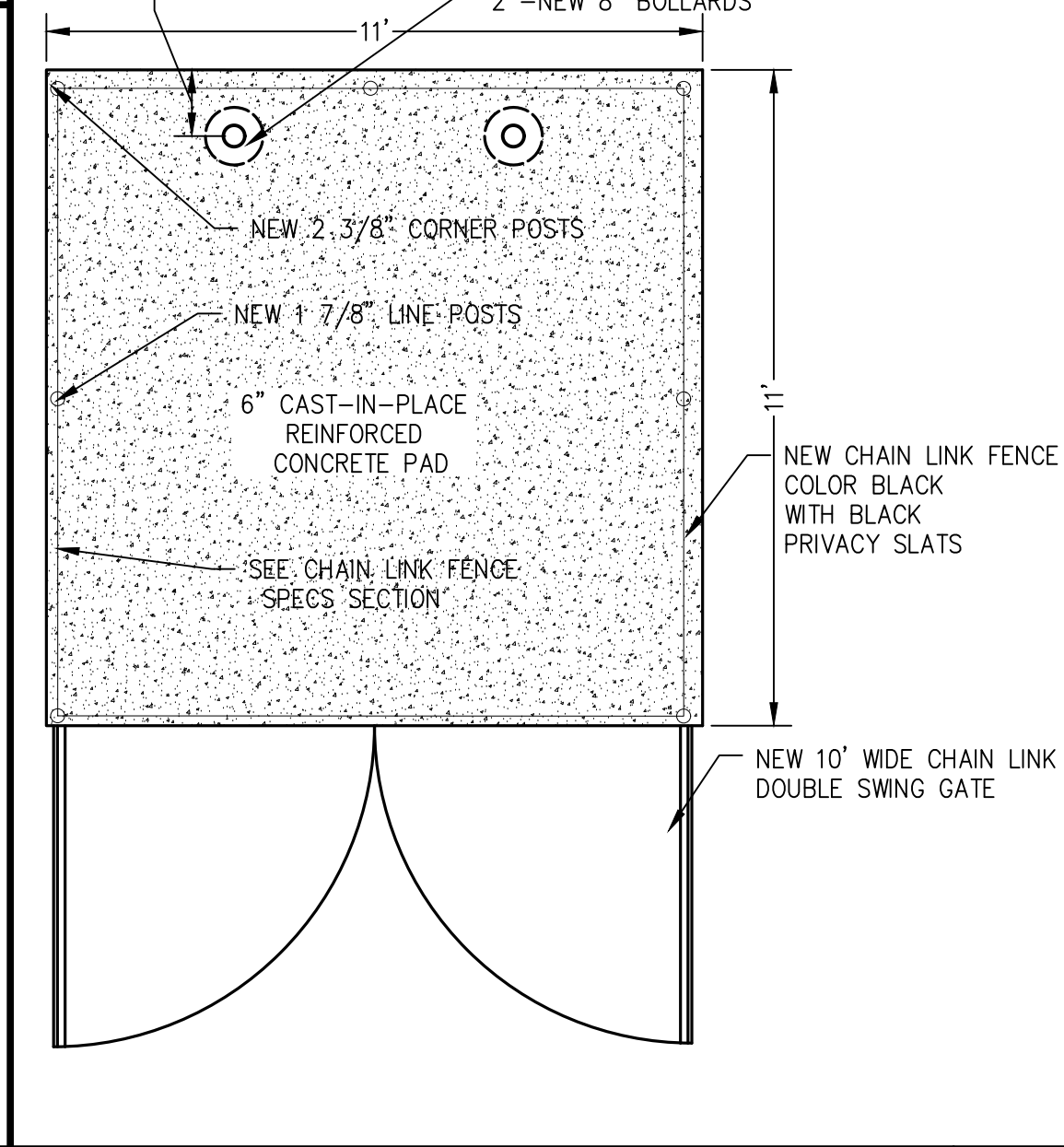
WOOD FIBER UNDERDRAIN DETAIL
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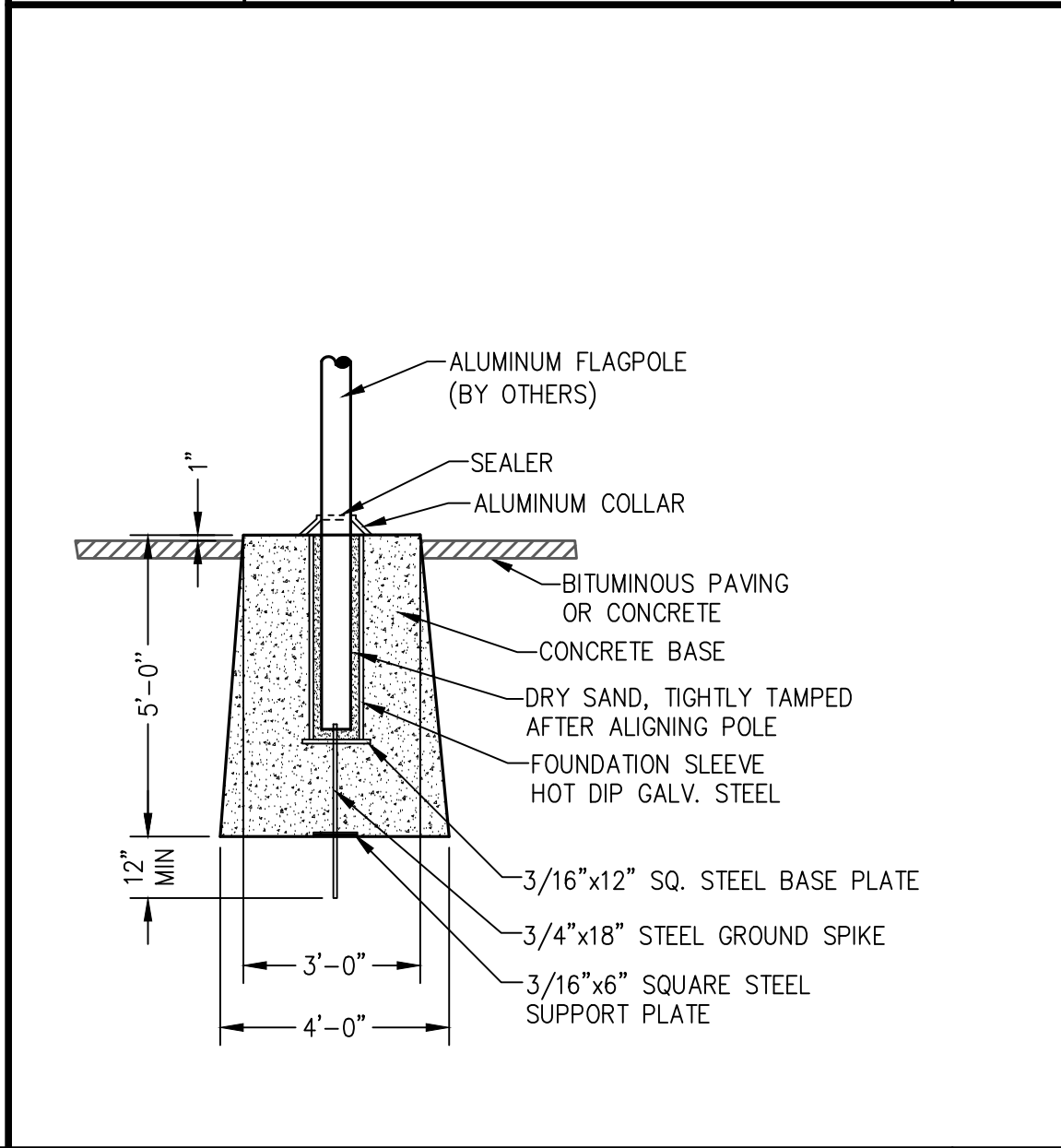
WOOD FIBER SURFACE/EDGING
ABUTTING PAVED AREAS
NOT TO SCALE



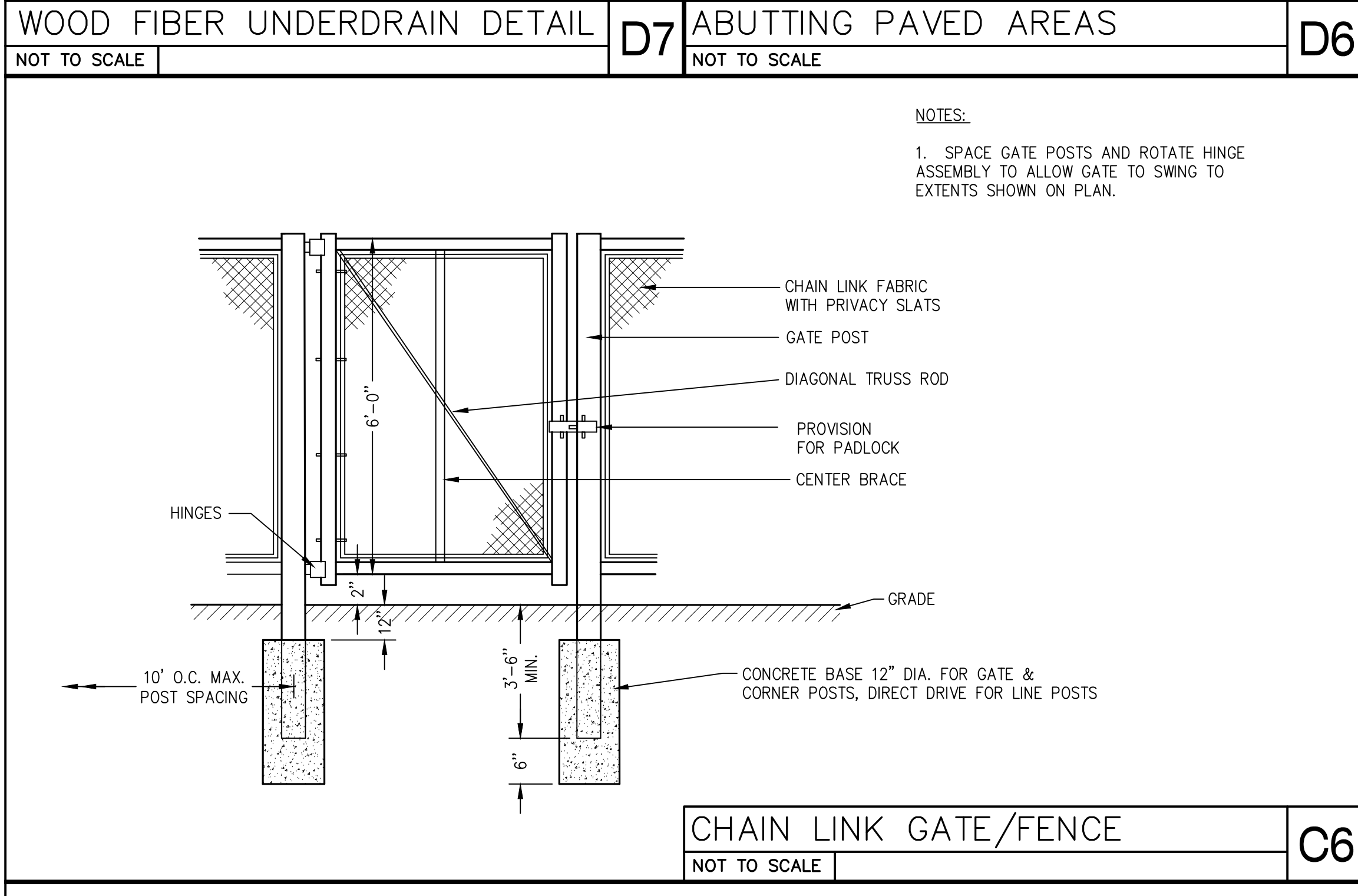
RESTRAINT AT WATER LINE FITTINGS
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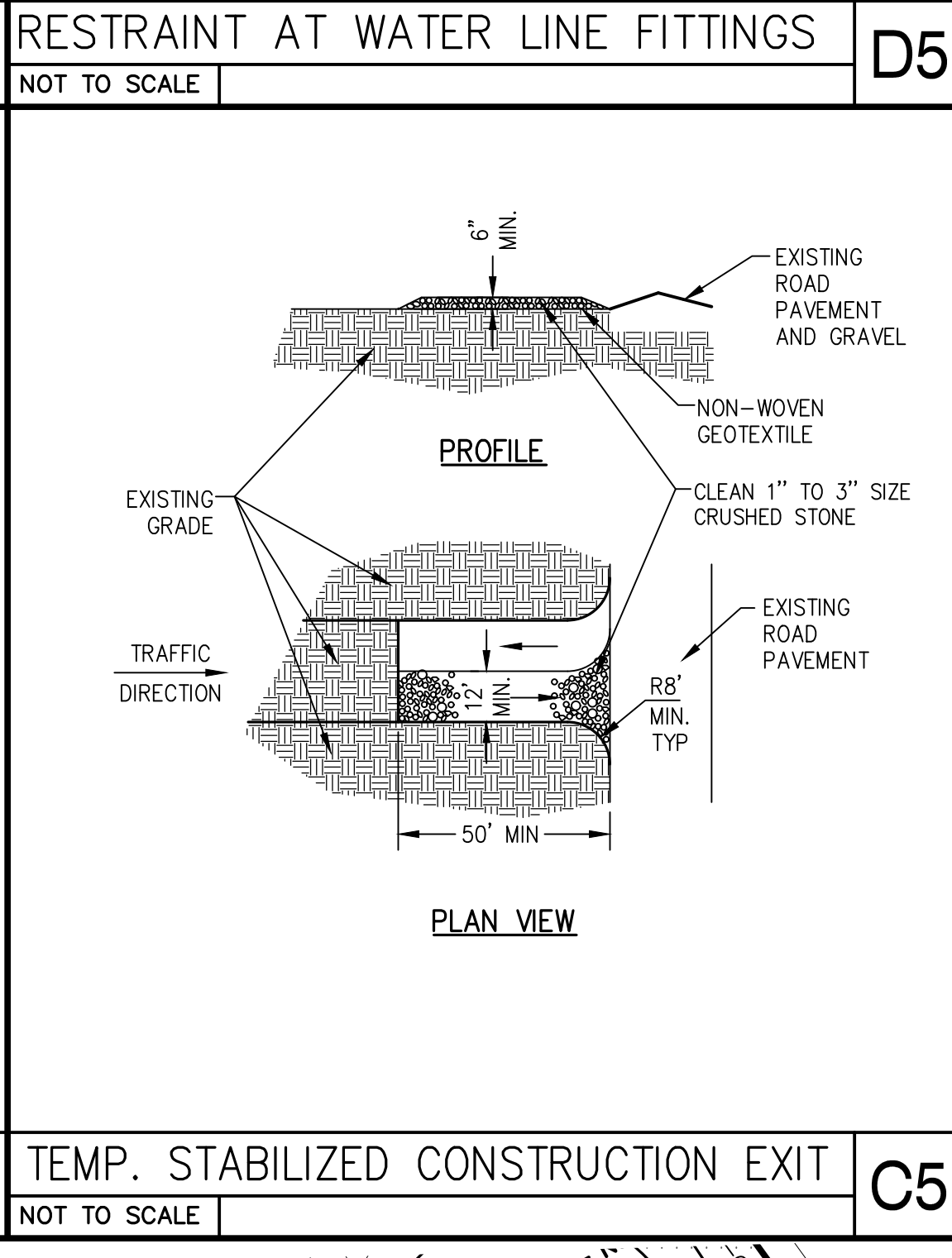
BIKE RACK DETAIL
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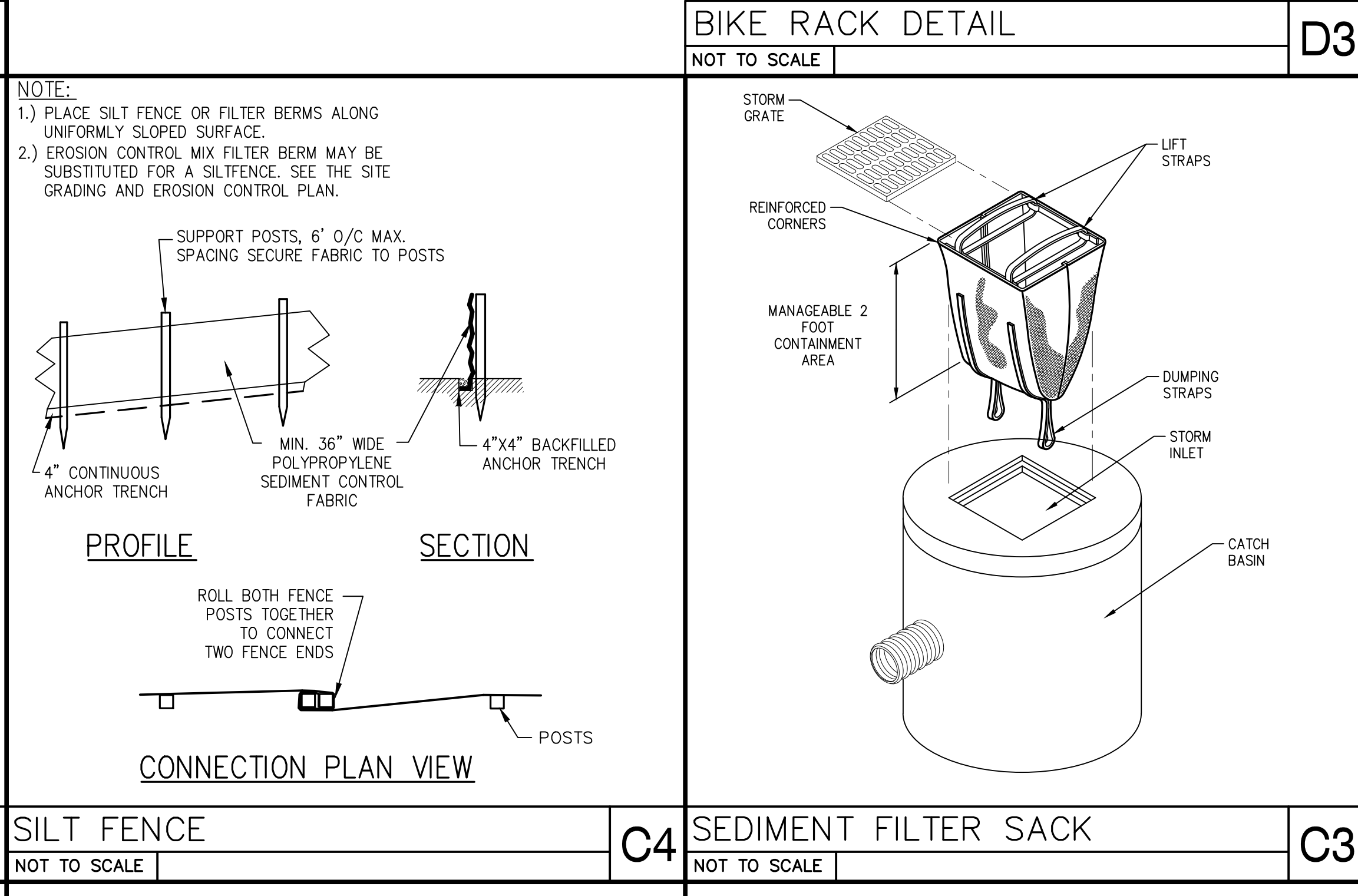
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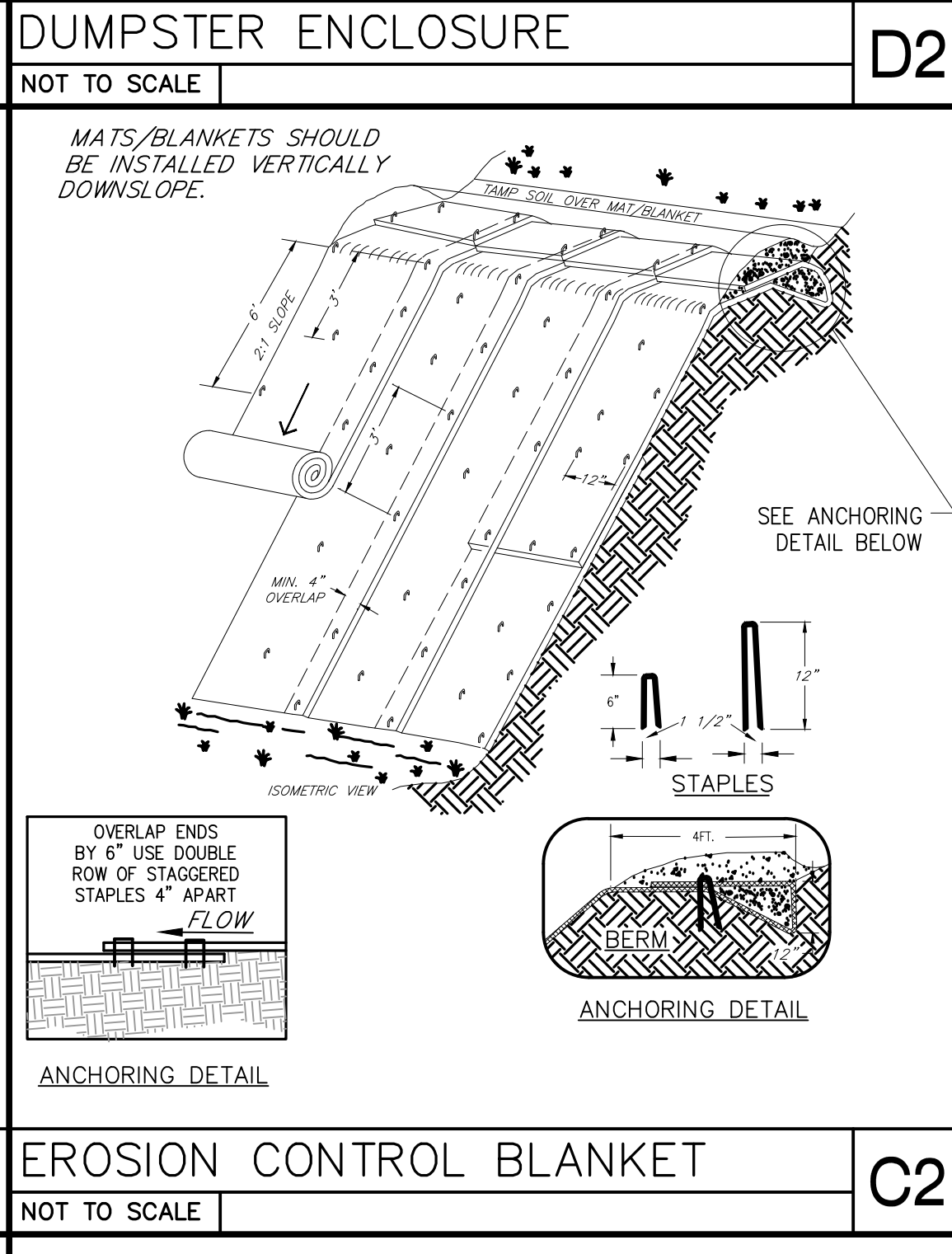
CHAIN LINK GATE/FENCE
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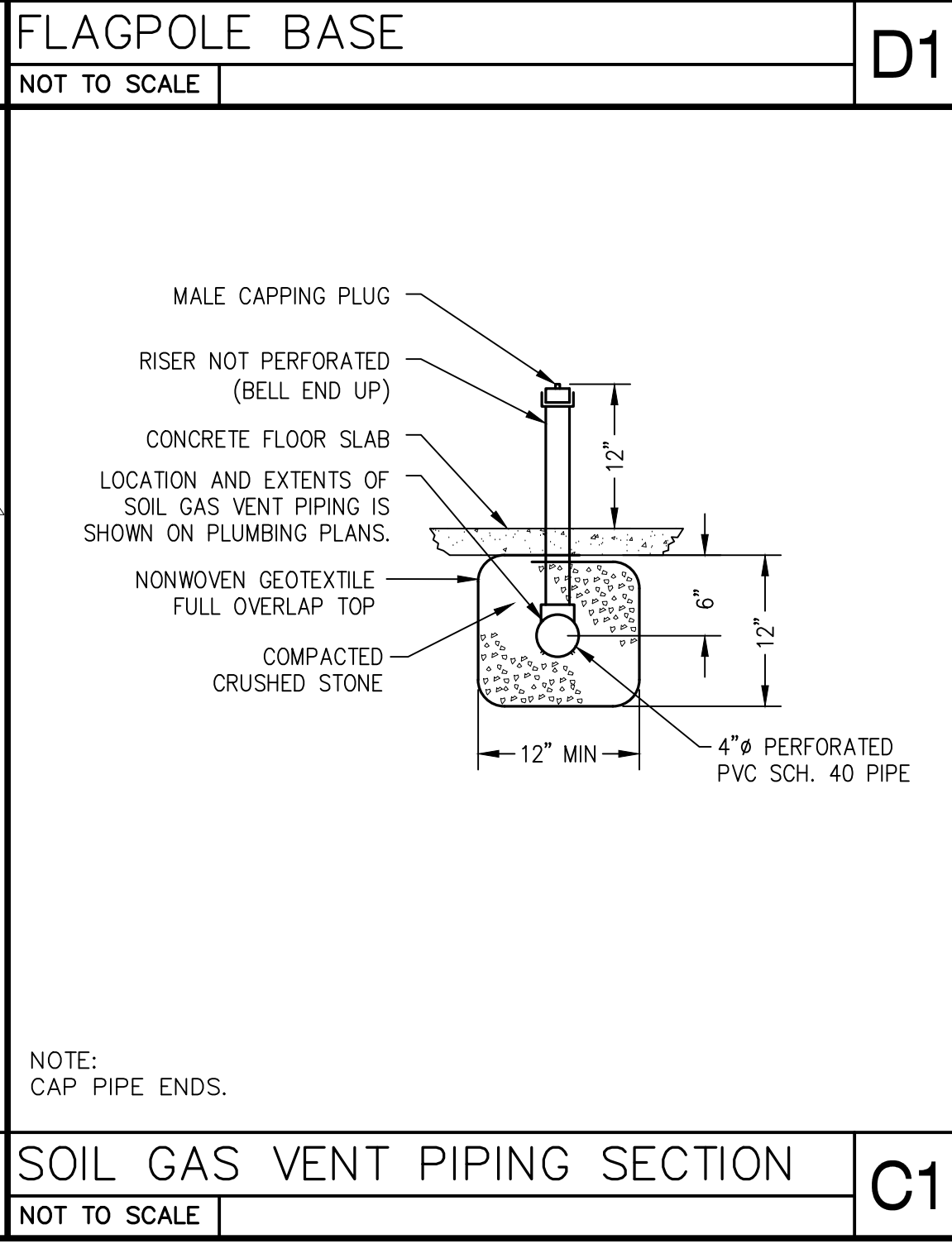
TEMP. STABILIZED CONSTRUCTION EXIT
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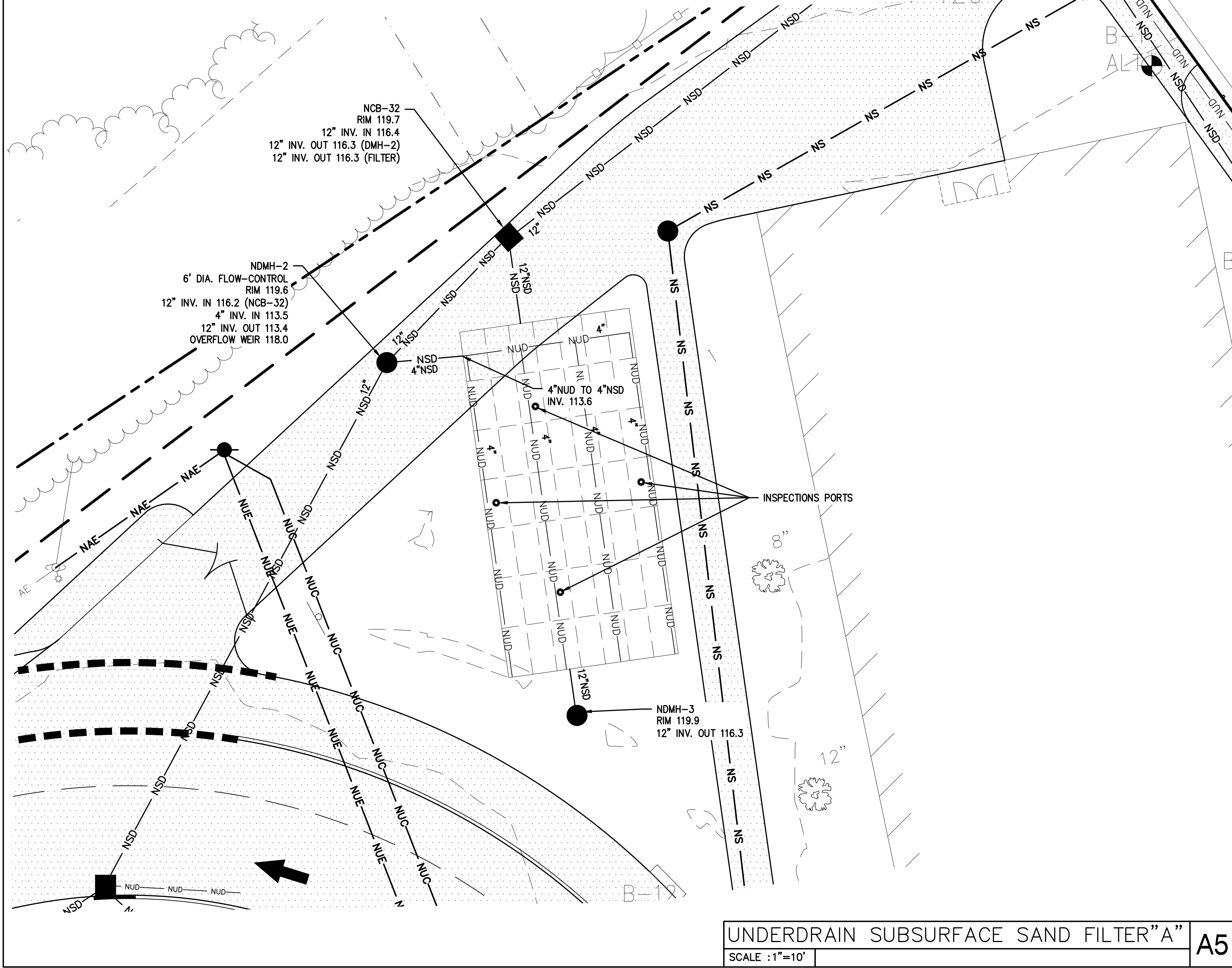
SILT FENCE
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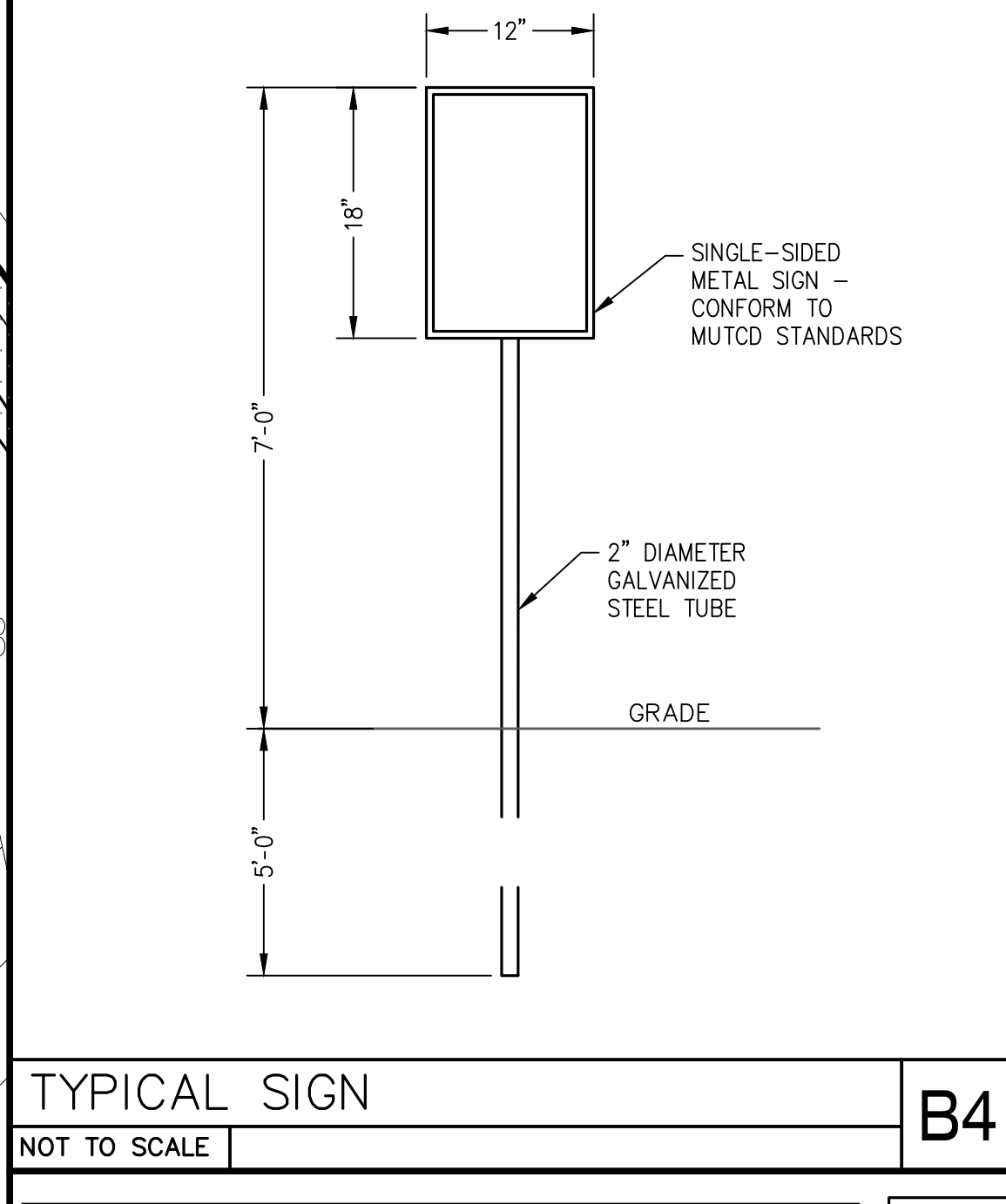
SEDIMENT FILTER SACK
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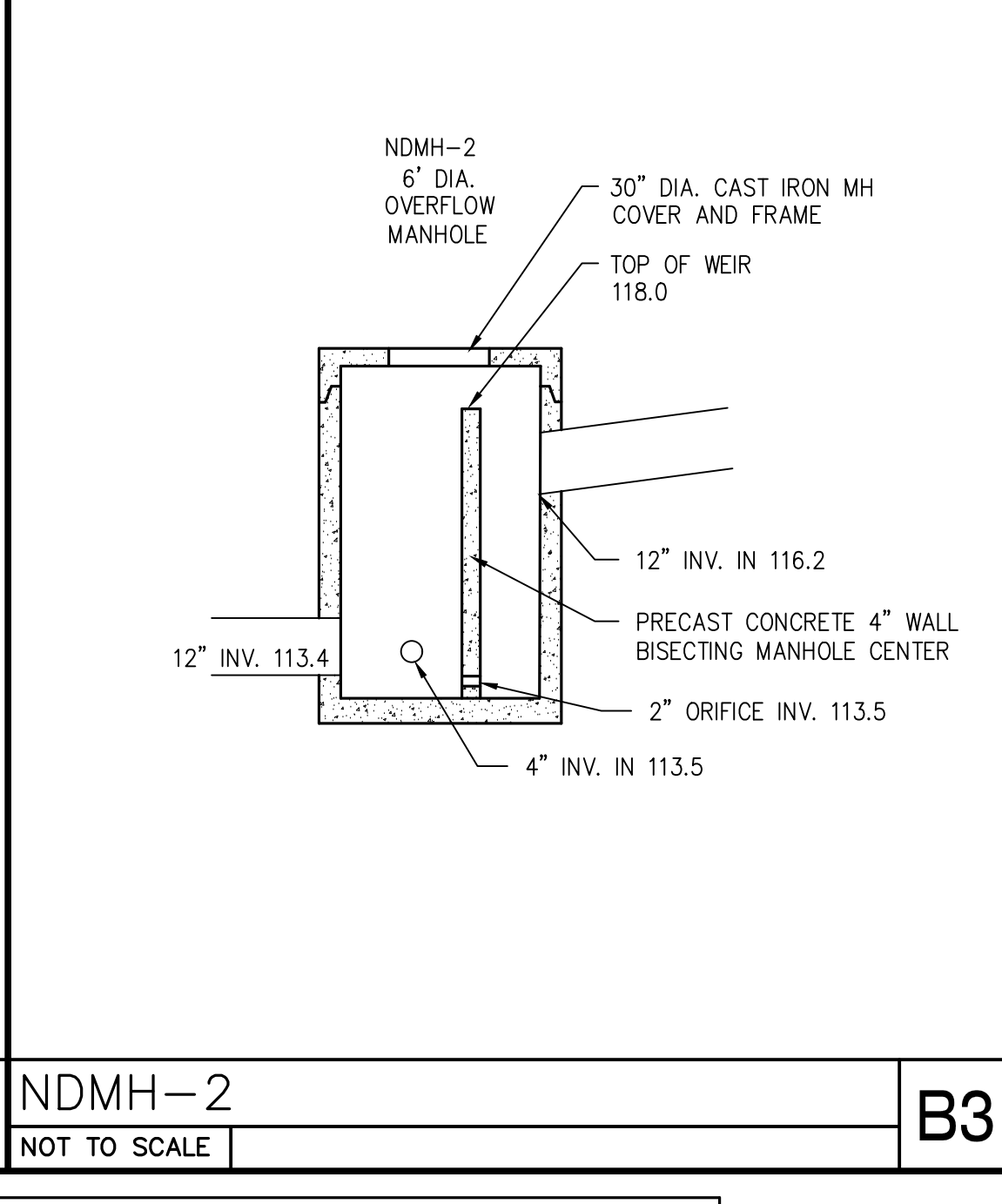
EROSION CONTROL BLANKET
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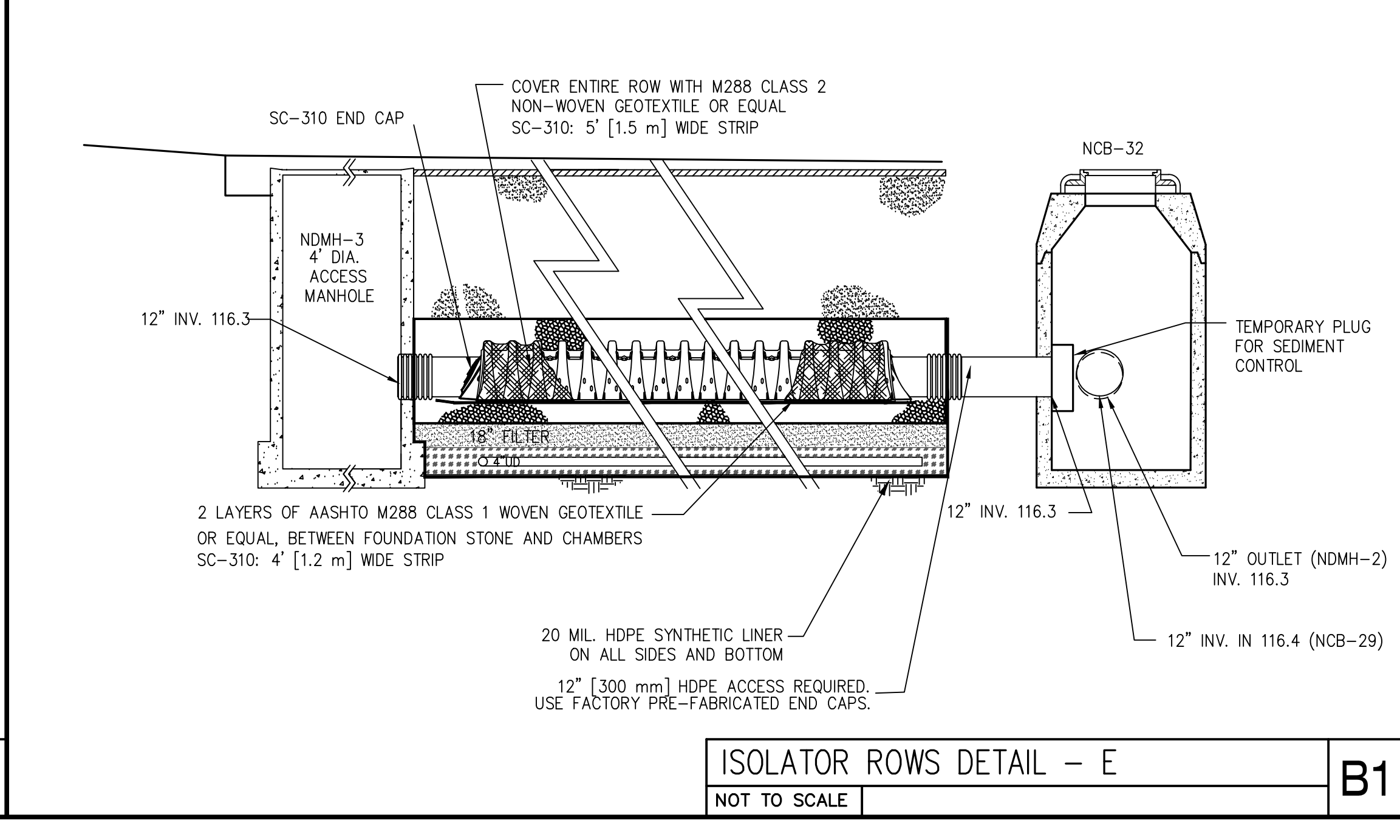
UNDERDRAIN SUBSURFACE SAND FILTER "A"
SCALE: 1"=10'



TYPICAL SIGN
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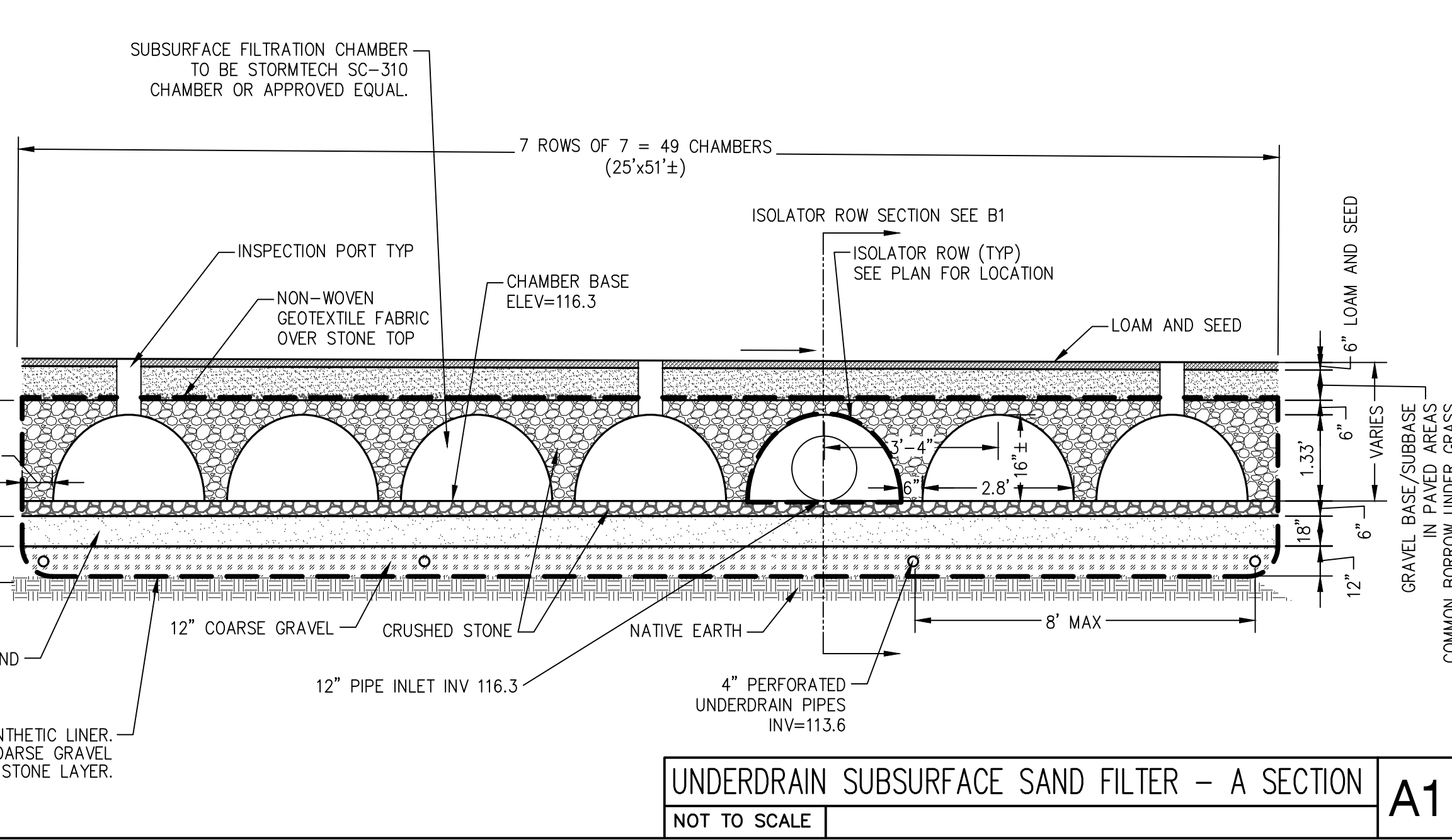
NDMH-2
NOT TO SCALE



ISOLATOR ROWS DETAIL - E
NOT TO SCALE

SOIL FOR 18" LOAMY COARSE SAND LAYER (MEDOT #703.01)	
SIEVE SIZE	% BY WEIGHT
#4	100
#8	95-100
#16	50-85
#30	25-60
#50	10-30
#100	2-10
#200	0-5*

COARSE GRAVEL MEDOT SPECIFICATIONS FOR UNDERDRAINS (MEDOT #703.22)	
SIEVE SIZE	% PASSING BY WEIGHT
UNDERDRAIN TYPE B	
1"	90-100
3"	75-100
#4	50-100
#20	15-80
#50	0-15
#200	0-5



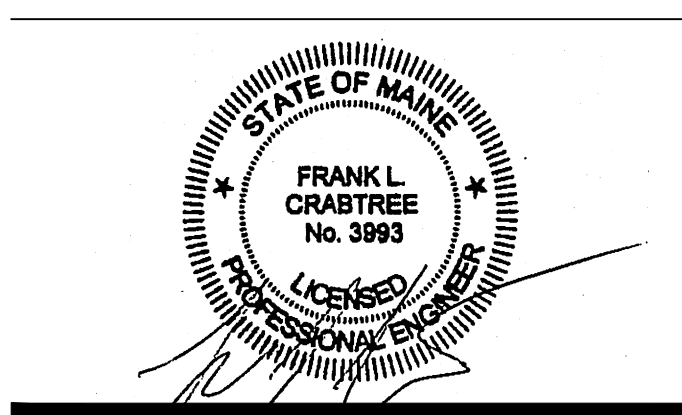
UNDERDRAIN SUBSURFACE SAND FILTER - A SECTION
NOT TO SCALE



AUBURN PORTLAND PORTSMOUTH BOSTON

HARRISON LYSETH
ELEMENTARY SCHOOL

PORTLAND, MAINE
Harriman Project No. 18483
Key Plan



Issues and Revisions
Date Description
01-25-19 PLANNING BOARD SUBMITTAL

PA/PE FLC
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SITE DETAILS

C50.2



PORTLAND, MAINE

Harriman Project No.	18483
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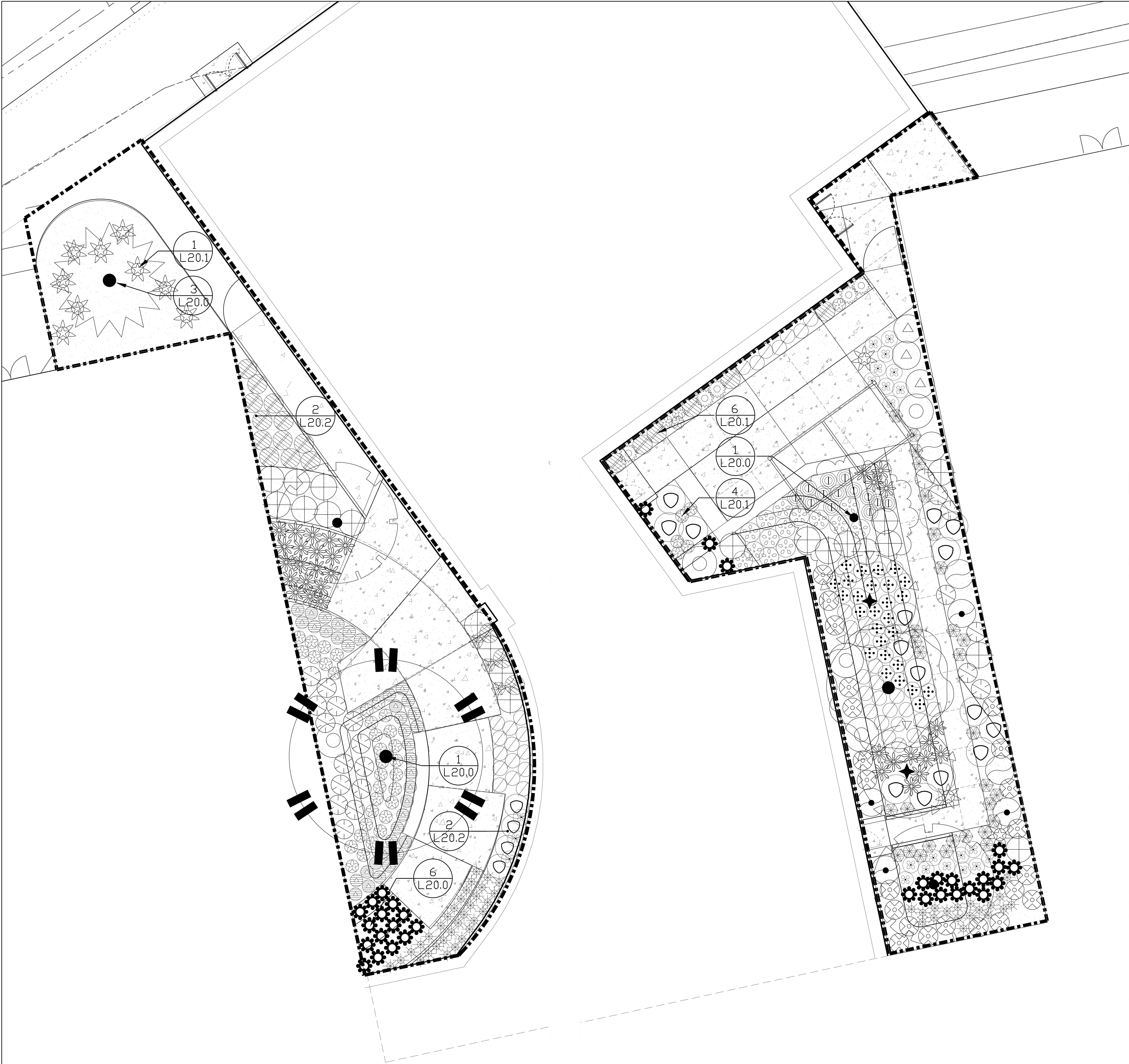
Key Plan

PORTLAND, MAINE

1. Final plant material selection and quantities dependent on conformance to, and approval by, local and state regulations and agencies.
2. Plant material specified shall conform to ANLA American Standard for Nursery Stock. ANSI Z60.1 current edition.

PA / PE:	MDL	© 2019 Harriman Associates
Drawn By:	HAS	

L10.0



A KINDERGARTEN COURTYARD: ENLARGED PLANTING PLAN
Scale: Not to Scale

B KINDERGARTEN COURTYARD: ENLARGED PLANTING PLAN
Scale: Not to Scale

PLANT LEGEND			
SHADE TREES	SIZE	NOTES	QTY
Acer rubrum 'Bowhall'	2.0' - 2.5' Cal.	Zone: 3	4
October Glory Red Maple		Fall Plant Hazard	
Cotinus obovatus	1.0' - 1.5' Cal.	Zone: 4	1
American Smoketree		Fall Plant Hazard	
Carpinus caroliniana	2.0' - 2.5' Cal.	Zone: 3a	3
American Hornbeam		Fall Plant Hazard	
Cladratis kentukea	2.0' - 2.5' Cal.	Zone: 4	1
American Yellowwood			
Oxydendrum arboreum	1.0' - 1.5' Cal.	Zone: 5	3
Sourwood		Fall Plant Hazard	
FLOWERING TREES	SIZE	NOTES	QTY
Amelanchier canadensis	1.5' - 2.0' Cal.	Zone: 4	2
Shadblow Serviceberry			
Cercis canadensis	1.5' - 2.0' Cal.	Zone: 4	1
Eastern Redbud		Fall Plant Hazard	
ORNAMENTAL TREES	SIZE	NOTES	QTY
Magnolia stellata		Field verify location	1
Relocated memorial tree			
Populus tremuloides	2.0' - 2.5' Cal.	Zone: 1	1
American Aspen			
Stewartia ovata	1.0' - 1.5' Cal.	Zone: 5	2
Mountain Stewartia			
CONIFER TREES	SIZE	NOTES	QTY
Picea mariana	14' - 16'	Zone: 3	1
Black Spruce			
DECIDUOUS SHRUBS	SIZE	NOTES	QTY
Cephalanthus occidentalis	#3	Zone: 5	4
Buttonbush			
Clethra alnifolia	#3	Zone: 3	5
Coastal Sweet Pepperbush			
Comptonia peregrina	#2	Zone: 3	21
Sweetfern			
Dasiphora fruticosa	#2	Zone: 3	3
Shrubby cinquefoil			
Deszui gracilis	#2	Zone: 4	21
Slender Dogwood			
Ledum groenlandicum	#3	Zone: 2	22
Salix purpurea 'Nana'	#2	Zone: 4	3
Dwarf Arctic Willow			
EVERGREEN SHRUBS	SIZE	NOTES	QTY
Juniperus communis	#2	Zone: 2	12
Common Juniper			
GROUNDCOVERS	SIZE	NOTES	QTY
Arctostaphylos uva-ursi	#SP2	Zone: 2	23
Kinnikinnick			
Coreopsis lanceoleaf	#SP2	Zone: 4	3
Tickseed			
Cornus canadensis	#SP1	Zone: 2	32
Bunchberry		Fall plant hazard	
Liriope spicata	#SP2	Zone: 4	41
Creeping Liriope			
Vaccinium angustifolium	#SP1	Zone: 2	22
Low Sweet Blueberry			
PERENNIALS	SIZE	NOTES	QTY
Coreopsis grandiflora	#SP2	Zone: 4a	42
Large-flowered Tickseed			
Dennstaedtia punctilobula	#SP2	Zone: 3	50
Hay Scented Fern			
Echinacea purpurea	#SP2	Zone: 4a	23
Purple Coneflower			
Hyacinthoides hispanica	#SP2	Zone: 3	31
Spanish Bluebell			
Lavandula angustifolia 'Hidcote'	#SP3	Zone: 5	27
English Lavender			
Lupinus perennis	#SP2	Zone: 3	25
Wild Lupine			
Penstemon digitalis	#SP2	Zone: 3	33
Beardtongue			
Polygonatum odoratum	#2 Container	Zone: 3	32
Solomon's Seal			
Stachys byzantina	#SP2	Zone: 4	37
Lamb's Ear			
Symphyotrichum novae-angliae	#SP3	Zone: 4	17
New England Aster			

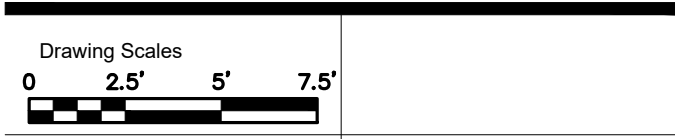
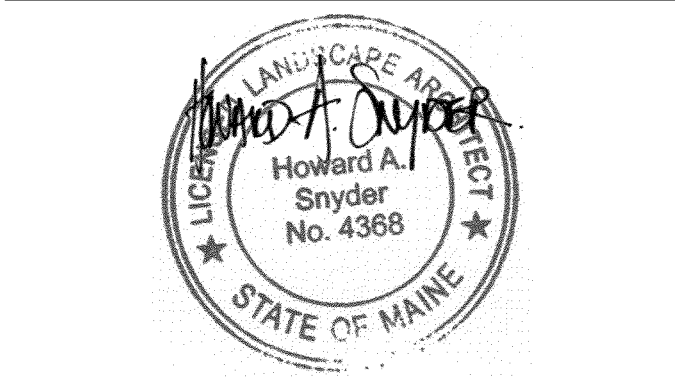
1. Final plant material selection and quantities dependent on conformance to, and approval by, local and state regulations and agencies.
2. Plant material specified shall conform to ANLA American Standard for Nursery Stock, ANSI Z60.1 current edition.



HARRISON LYSETH
ELEMENTARY SCHOOL

PORTLAND, MAINE
Harriman Project No. 18483
Key Plan

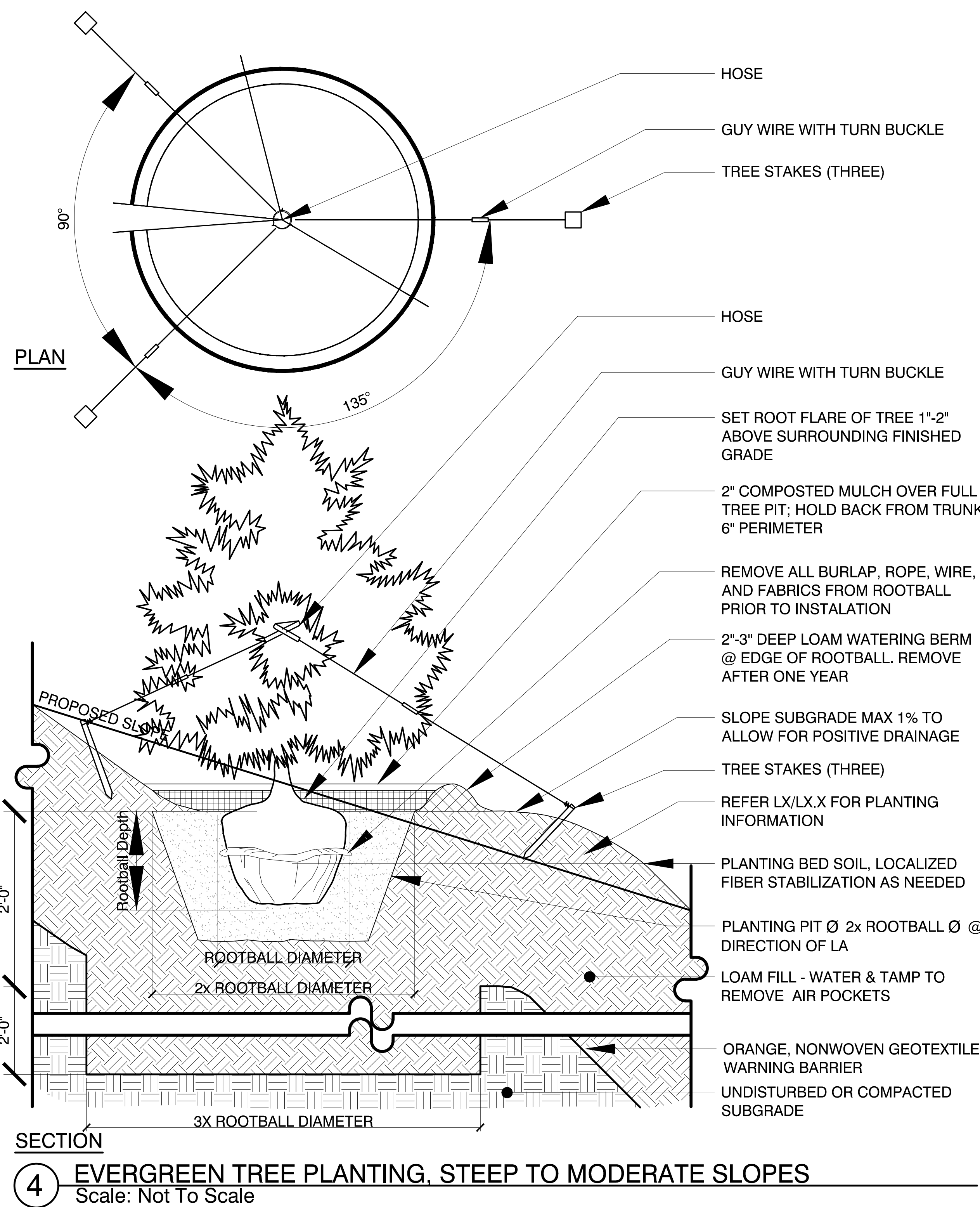
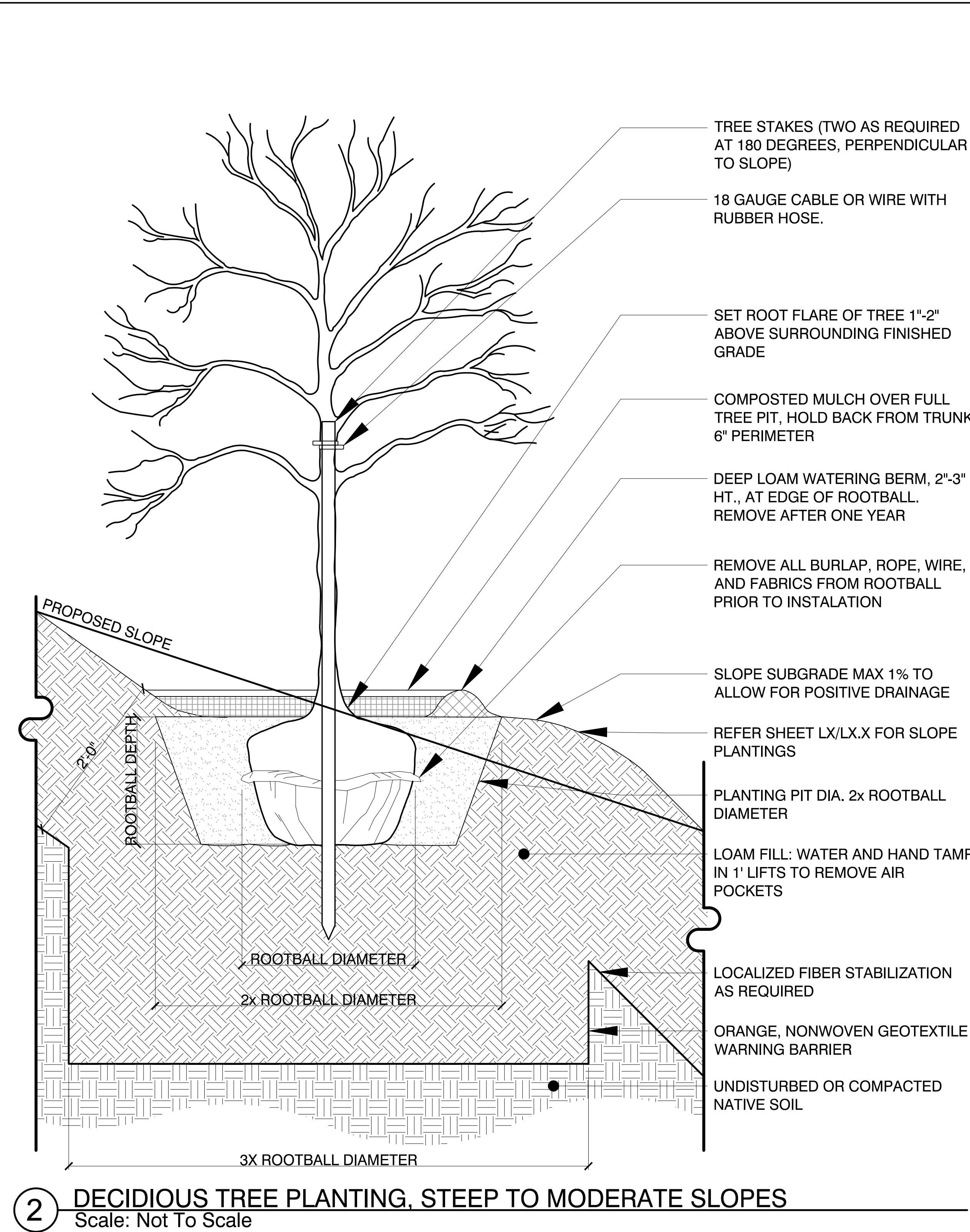
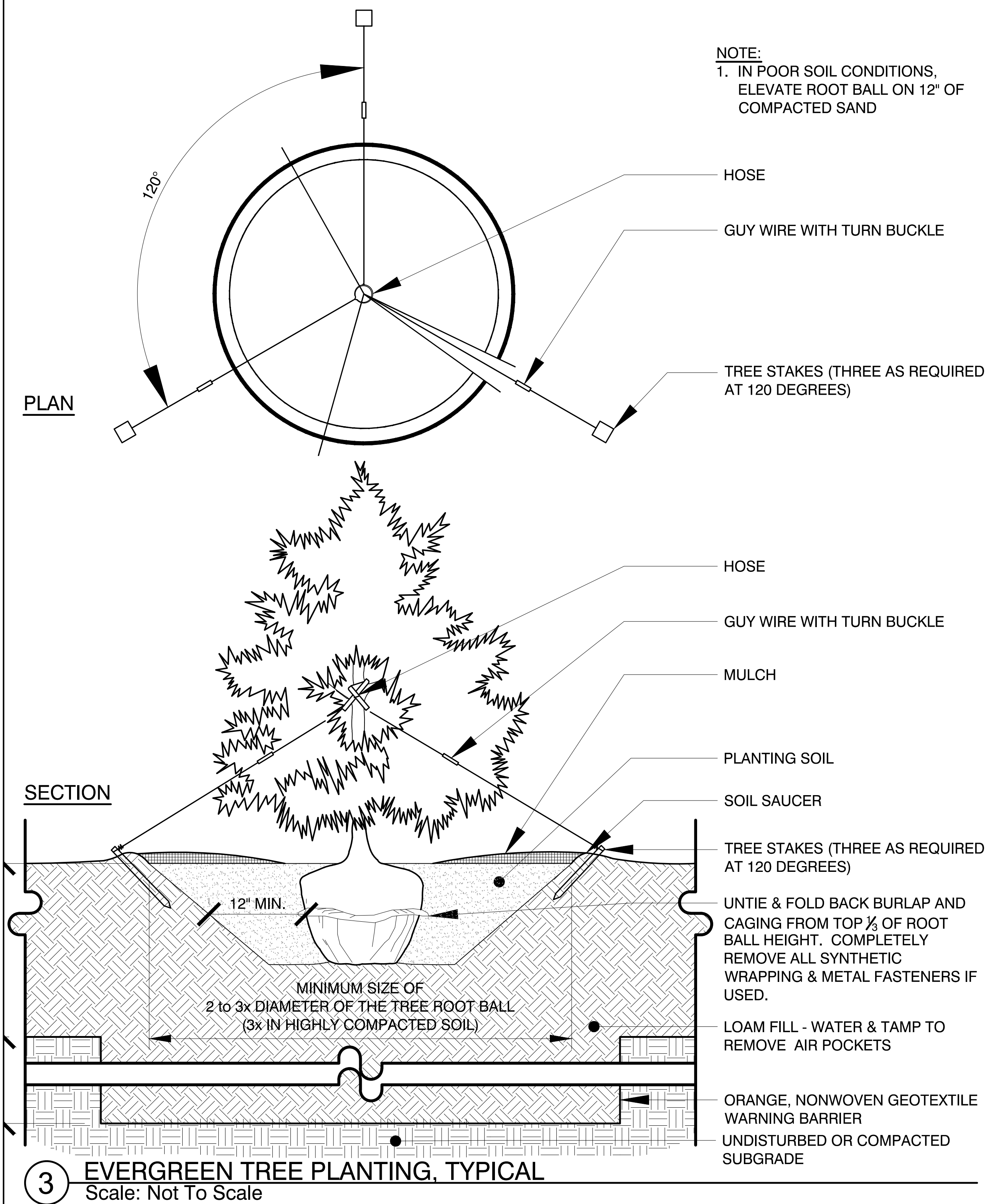
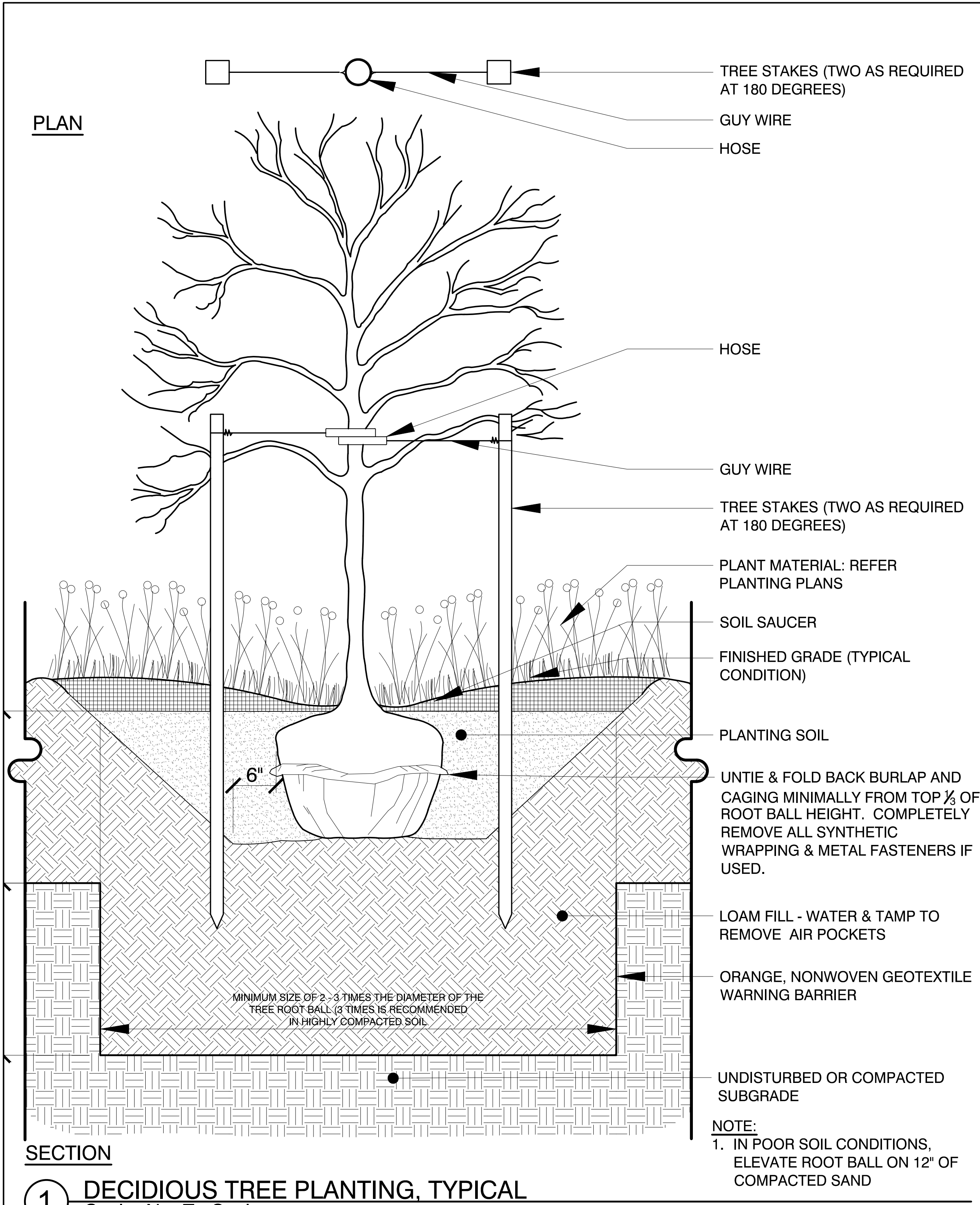
Revisions and Remarks	
Date	Description
01-25-19	PLANNING BOARD SUBMITTAL



PA / PE: MDL
Drawn By: HAS
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ENLARGED
PLANTING PLAN

L10.1



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AUBURN PORTLAND PORTSMOUTH BOSTON

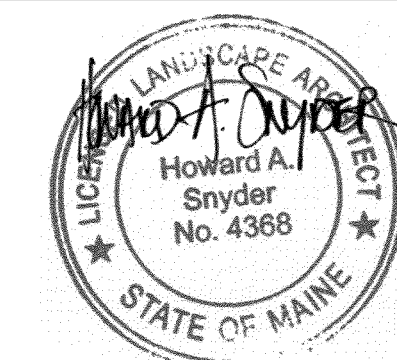
**HARRISON LYSETH
ELEMENTARY SCHOOL**

PORTLAND, MAINE

Harriman Project No. 18483

Key Plan

Issues and Revisions	
Date	Description
01-25-19	PLANNING BOARD SUBMITTAL



Drawing Scales	
PA / PE	MDL
Drawn By: HAS	© 2019 Harriman Associates

**PLANTING
DETAILS**

L20.0



PORTLAND, MAINE

Harriman Project No.	18483
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Key Plan

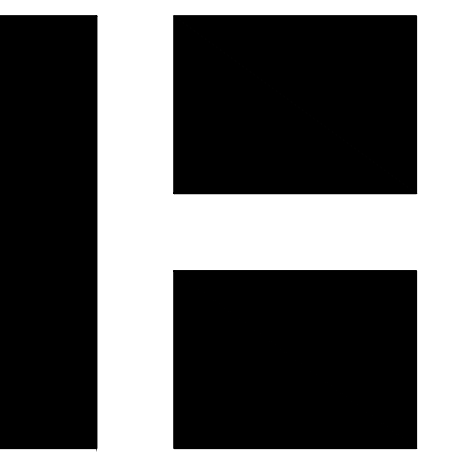
Key Plan



Drawing Scales	
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PA / PE:	MDL	© 2019 Harriman Associates
Drawn By:	HAS	

L20.1



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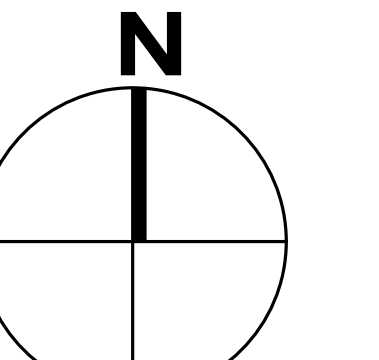
AUBURN PORTLAND PORTSMOUTH BOSTON

HARRISON LYSETH
ELEMENTARY SCHOOL

PORTLAND, MAINE

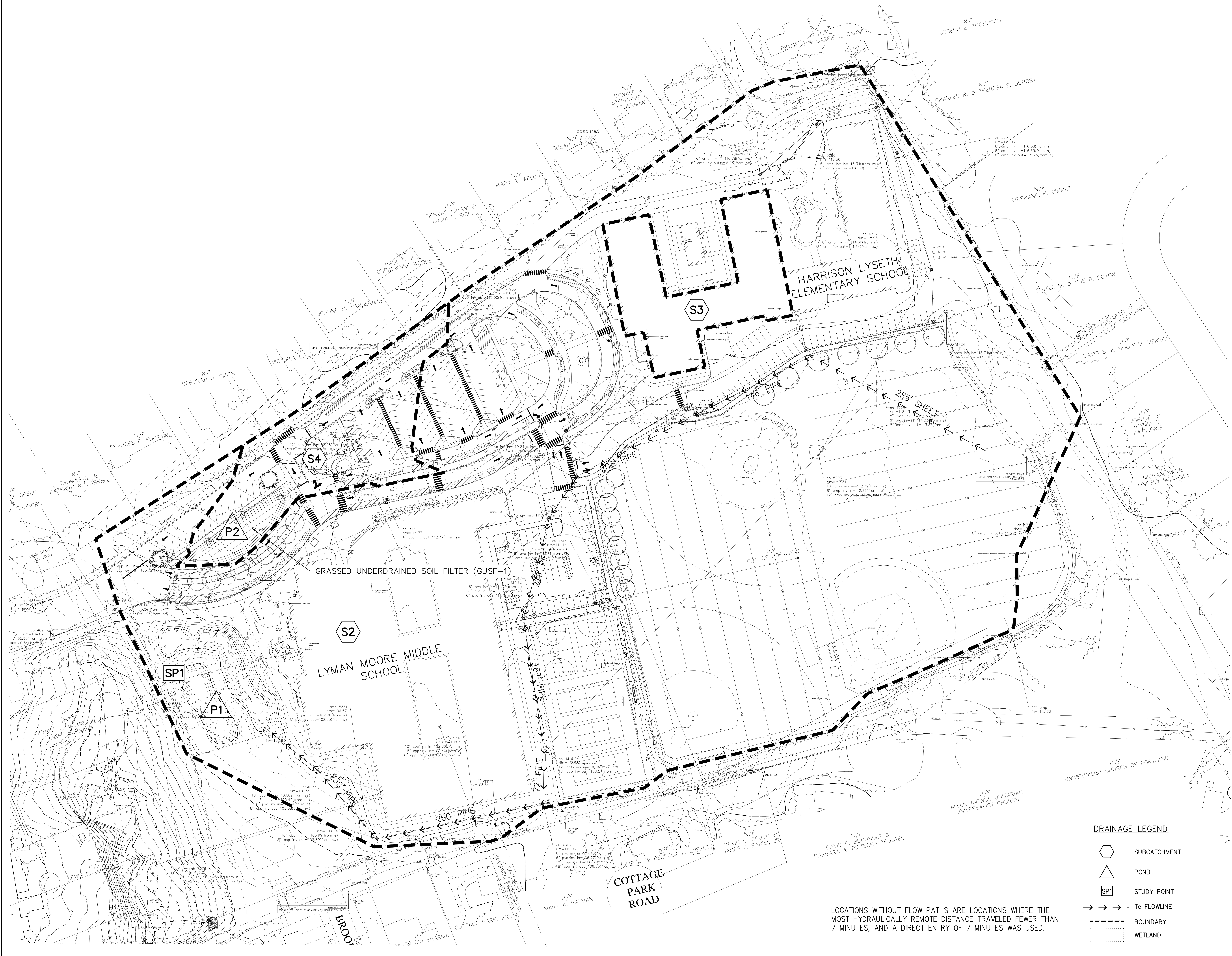
Harriman Project No. 18483

Key Plan



GRAPHIC SCALE

(1 inch = 40 feet)

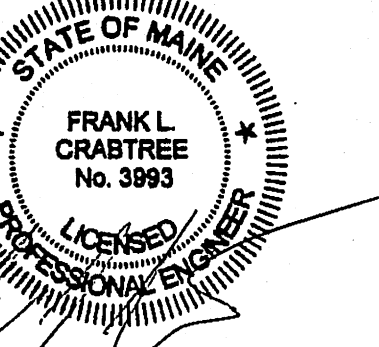


DRAINAGE LEGEND

- SUBCATCHMENT
- POND
- STUDY POINT
- Tc FLOWLINE
- BOUNDARY
- WETLAND

LOCATIONS WITHOUT FLOW PATHS ARE LOCATIONS WHERE THE MOST HYDRAULICALLY REMOTE DISTANCE TRAVELED FEWER THAN 7 MINUTES, AND A DIRECT ENTRY OF 7 MINUTES WAS USED.

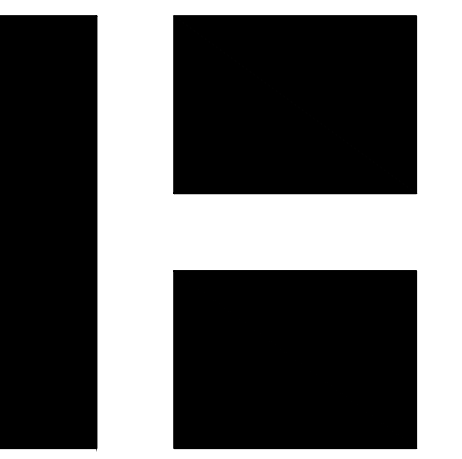
Issues and Revisions	
Date	Description
01-25-19	PLANNING BOARD SUBMITTAL



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PRE-DEVELOPMENT
DRAINAGE PLAN

C11.1



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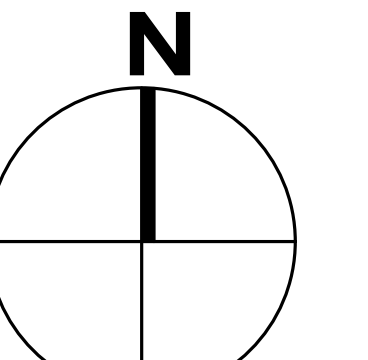
AUBURN PORTLAND PORTSMOUTH BOSTON

HARRISON LYSETH
ELEMENTARY SCHOOL

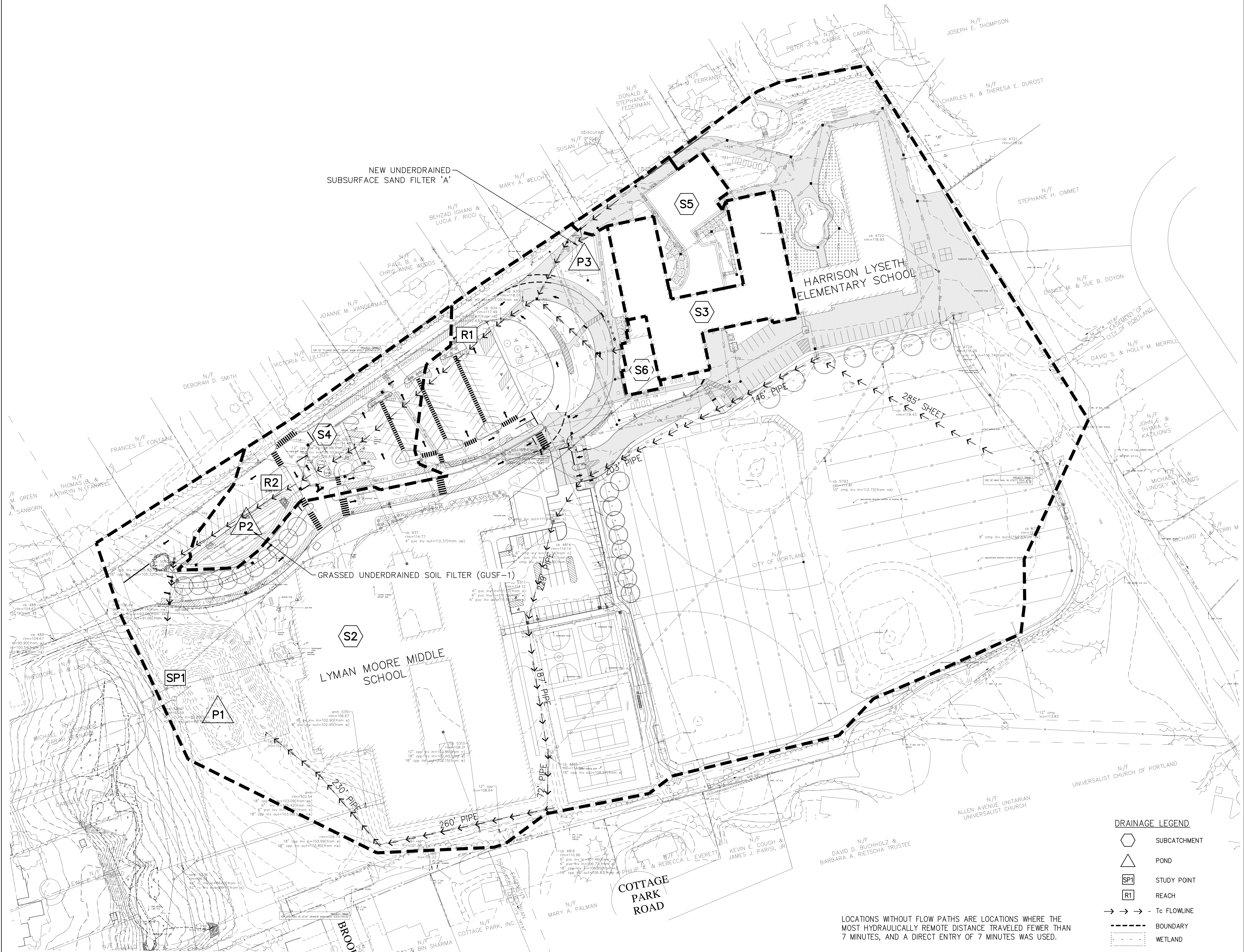
PORTLAND, MAINE

Harriman Project No. 18483

Key Plan



GRAPHIC SCALE
0 20 40 80
(1 inch = 40 feet)

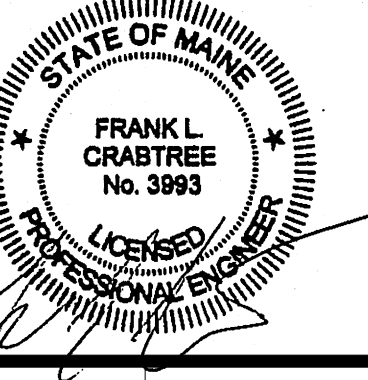


DRAINAGE LEGEND

- SUBCATCHMENT
- POND
- STUDY POINT
- REACH
- Tc FLOWLINE
- BOUNDARY
- WETLAND

LOCATIONS WITHOUT FLOW PATHS ARE LOCATIONS WHERE THE MOST HYDRAULICALLY REMOTE DISTANCE TRAVELED FEWER THAN 7 MINUTES, AND A DIRECT ENTRY OF 7 MINUTES WAS USED.

Issues and Revisions	
Date	Description
01-25-19	PLANNING BOARD SUBMITTAL



PA/PE: FLC
Drawn By: PLS
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POST-DEVELOPMENT
DRAINAGE PLAN

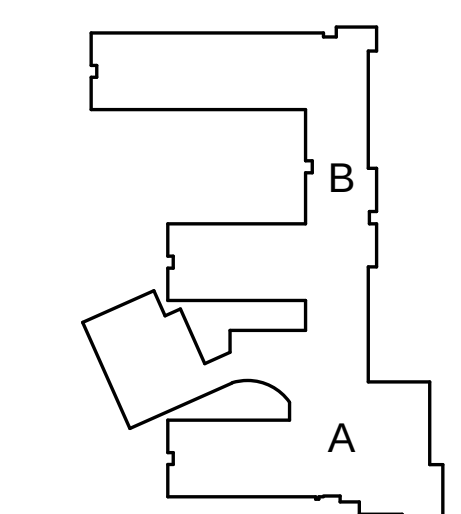
C12.1

HARRISON LYSETH
ELEMENTARY SCHOOL

PORTLAND, MAI

Hariman Project No.	1848
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Key Plan	Proj North
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GENERAL NOTES

1. PATCH ALL EXISTING OPENINGS AND OPENINGS CREATED BY THE REMOVAL OF DUCTS, CONDUIT, PIPES ETC WITH MATERIALS TO MATCH ADJACENT CONSTRUCTION.
2. SMOKE AND FIRESTOP AT ALL FLOOR & WALL PENETRATIONS AT TOP OF WALL AND AROUND DUCTS, CONDUIT, PIPES ETC WITH A UL APPROVED ASSEMBLY. SEE CONSTRUCTION DETAILS ON SHEET A40.3.
3. ALL PATCHING AND FIRESTOPPING OF NEW HOLES, EXISTING HOLES BELOW THE EXISTING FINISH CEILING LINE AND HOLES CREATED FOR CABLE, ELEC & MECHANICAL EQUIPMENT SHOWN TO BE REMOVED SHALL BE COVERED IN THE BASE BID.
4. PATCHING AND FIRESTOPPING OF EXISTING HOLES AND TOP OF WALL CORNERS, NOT NOTED ABOVE AND UNFORESEEN SHALL BE ASSIGNED A UNIT COST AND PAID FOR WITH A PATCHING AND FIRESTOPPING ALLOWANCE.

[illegible]

PRELIMINARY
NOT FOR
CONSTRUCTION

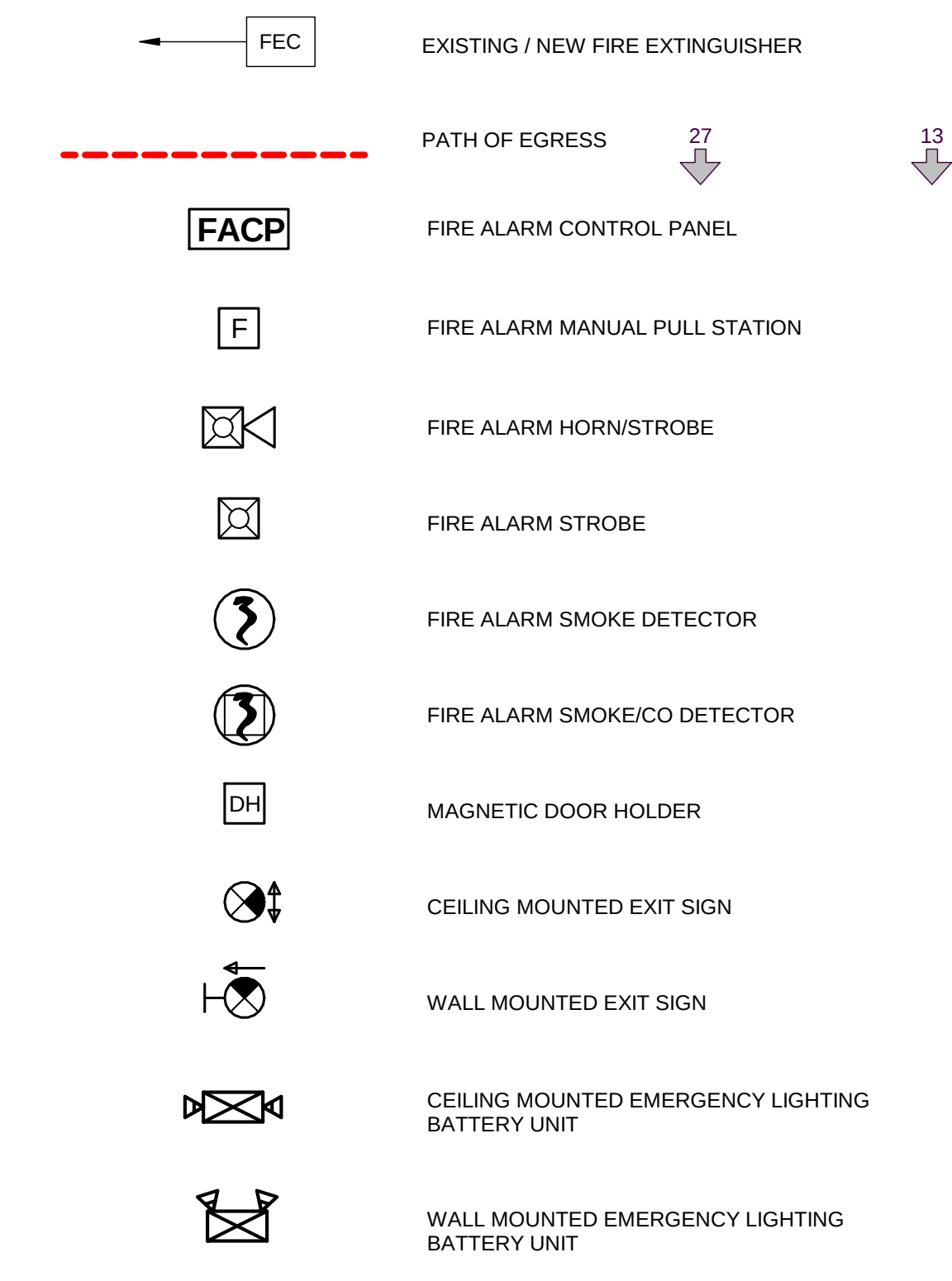
PA / PIE: MDL	© 2019 Harriman Associates
Drawn By: SJF	

FIRST FLOOR INDEX AND
CODE PLAN

A01.1



LIFE SAFETY PLAN LEGEND



SEPARATION REQUIRMEENTS

-S- -- -S- -- -S- -- -S- -- DENOTES **SMOKE PARTITION ASSEMBLY**

1 HR -+HR -+HR -+-- DENOTES 1 HOUR RATED **FIRE BARRIER ASSEMBLY**

2 HR - - - 2 HR - - - DENOTES 2 HOUR RATED **FIRE BARRIER ASSEMBLY**

 DENOTES 2 HOUR RATED **FIRE WALL ASSEMBLY**

NOTE: CONTRACTOR TO SEAL ANY NEW OR EXISTING PENETRATIONS THROUGH THE REFERENCED WALL TYPES LABELED ON THESE PLANS. REFER TO A40 SERIES DRAWINGS FOR DETAILS.

CODE COMPLIANCE

BUILDING DESIGN CODES:
AMERICANS WITH DISABILITIES ACT (ADA)
NFPA 101 LIFE SAFETY CODE / 2015
 INTERNATIONAL BUILDING CODE / 2015
 INTERNATIONAL EXISTING BUILDING CODE / 2015
 MAINE UNIFORM BUILDING AND ENERGY CODE / 2015
 UNIFORM PLUMBING CODE / 2015
 NFPA STANDARD FOR THE INSTALLATION OF SPRINKLER SYSTEMS
 INTERNATIONAL ENERGY CONSERVATION CODE / 2009
 INTERNATIONAL MECHANICAL CODE / 2015
 ASHRAE / IES STANDARD 90.1 - 2013
 NFPA 70 NATIONAL ELECTRIC CODE / 2017

CONSTRUCTION TYPE

NFPA: TYPE II (000)
IBC: TYPE IIIB

OCCUPANCY CLASSIFICATION

NFPA:	
NEW ASSEMBLY	(CHAPTER 12)
EXISTING ASSEMBLY	(CHAPTER 13)
NEW EDUCATION	(CHAPTER 14)
EXISTING EDUCATION	(CHAPTER 15)
MULTIPLE OCCUPANCIES	TABLE 6.1.14.4.1(a)
IBC:	
EDUCATION GROUP E	(SECTION 303.1.3 WITH ASSOCIATED ASSEMBLY)

BUILDING AREA

EXISTING TO REMAIN	47,737 NET SF
NEW FLOOR AREA	14,261 NET SF
NEW CANOPIES	XX,XXX SF
TOTAL	61,998 NET SF

FRONTAGE INCREASES

$$58,000 + 21,054 = 79,054$$
OCCUPANCY LOADS: (PER PERSON)

OFFICE (BUSINESS)	100 SF GROSS
CLASSROOM:	20 SF NET
GYMNASIUM:	7 SF NET AND 1 PERSON PER 18" OF BLEACHER
CAFETERIA:	15 SF NET
LIBRARY	
STACKS:	100 SF GROSS
READING AREA:	50 SF NET
KITCHEN:	200 SF GROSS (IBC)
	100 SF GROSS (NFPA)
STORAGE:	300 SF GROSS
MECHANICAL:	300 SF GROSS

NUMBER OF STORIES:

ACTUAL: 2
ALLOWABLE: 3

BUILDING HEIGHT:

ACTUAL:	
EXISTING	18'-0"
NEW	26'-0"
ALLOWABLE:	75'-0"

FIRE ALARM:

MONITORED FIRE ALARM SYSTEM

FIRE SUPPRESSION:

FULLY SUPERVISED SPRINKLER SYSTEM

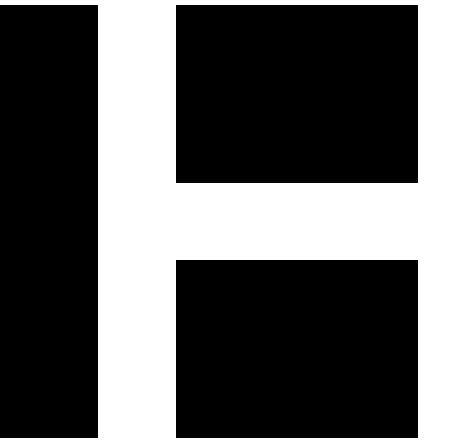
FIRE SEPARATION

2 HOUR FIRE SEPARATION BETWEEN EDUCATION
AND ASSEMBLY PER NFPA TABLE 6.1.14.4.1(a)

MEANS OF EGRESS (WITH SPRINKLER SYSTEM)

EXIT ACCESS TRAVEL:	
IBC: 250'	NFPA: 200'
CORRIDOR FIRE-RESISTIVE RATING:	
IBC: NO REQUIREMENT	NFPA: NO REQUIREMENT
COMMON PATH OF TRAVEL:	
IBC: 75'	NFPA: 100'
DEAD END CORRIDOR:	
IBC: 50'	NFPA: 50'

A3 CODE COMPLIANCE
NO SCALE



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AUBURN PORTLAND PORTSMOUTH BOSTON

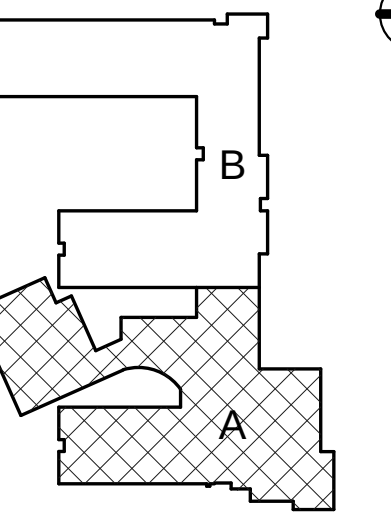
HARRISON LYSETH
ELEMENTARY SCHOOL

PORTLAND, MAINE

Harriman Project No. 18483

Key Plan

Proj. North



GENERAL NOTES

- SEE DRAWING A60.1 FOR PARTITION TYPES.
- DIMENSIONS LOCATING INTERIOR PARTITIONS ARE TO FACE OF GP/W OR CMU UNLESS NOTED OTHERWISE.
- SEE DRAWING A60.1 FOR DOOR SCHEDULE.
- SEE DRAWING A61.1 FOR ROOM FINISH SCHEDULE. NEW WALLPAPERS AND PATCHING OF EXISTING WALLPAPERS NOT LABELED SHALL BE PAINTED TO MATCH EXISTING ADJACENT WALLS, U.N.O.
- SEE EXTERIOR ELEVATIONS ON DRAWINGS A20.1, A20.2 & A20.3 FOR WINDOW TYPES.
- PROVIDE CONTROL JOINTS IN GP/W PARTITIONS AT A MAX SPACING OF 30'-0" UNLESS NOTED OTHERWISE. MAX SPACING AT ABUSE GP/W IS 20'-0" UNO. LOCATE AT EDGE OF DOOR FRAME UP TO CEILING WHERE PRACTICAL. REVIEW LOCATIONS WITH THE ARCHITECT.
- AT REMOVED FIXTURES, PARTITIONS, EQUIPMENT, CASEWORK, ETC., THAT WILL BECOME EXPOSED TO VIEW, PATCH AND PATCH PARTITIONS TO CREATE A SMOOTH SURFACE. PAINT TO MATCH EXISTING ADJACENT U.N.O.
- PATCH ALL OPENINGS CREATED FOR INSTALLATION OF NEW MECH., PLUMB., ELEC., ETC., WITH MATERIALS TO MATCH ADJACENT CONSTRUCTION.

SYMBOLS LEGEND

- 216 PARTITION TAG
SEE A60.1 FOR PARTITION TAG KEY & PARTITION DEFINITION DETAILS
- ROOM NAME
ROOM NAME AND NUMBER
SEE A61.1 FOR SCHEDULE
- 201 DOOR & BORROWED LITE NUMBERS
SEE A60.1 FOR SCHEDULE
- 72 MISCELLANEOUS ITEMS MARKER
SEE SCHEDULE ON A60.1

Issues and Revisions	
Date	Description
12-09-18	DESIGN DEVELOPMENT
01-25-19	PLANNING BOARD SUBMITTAL

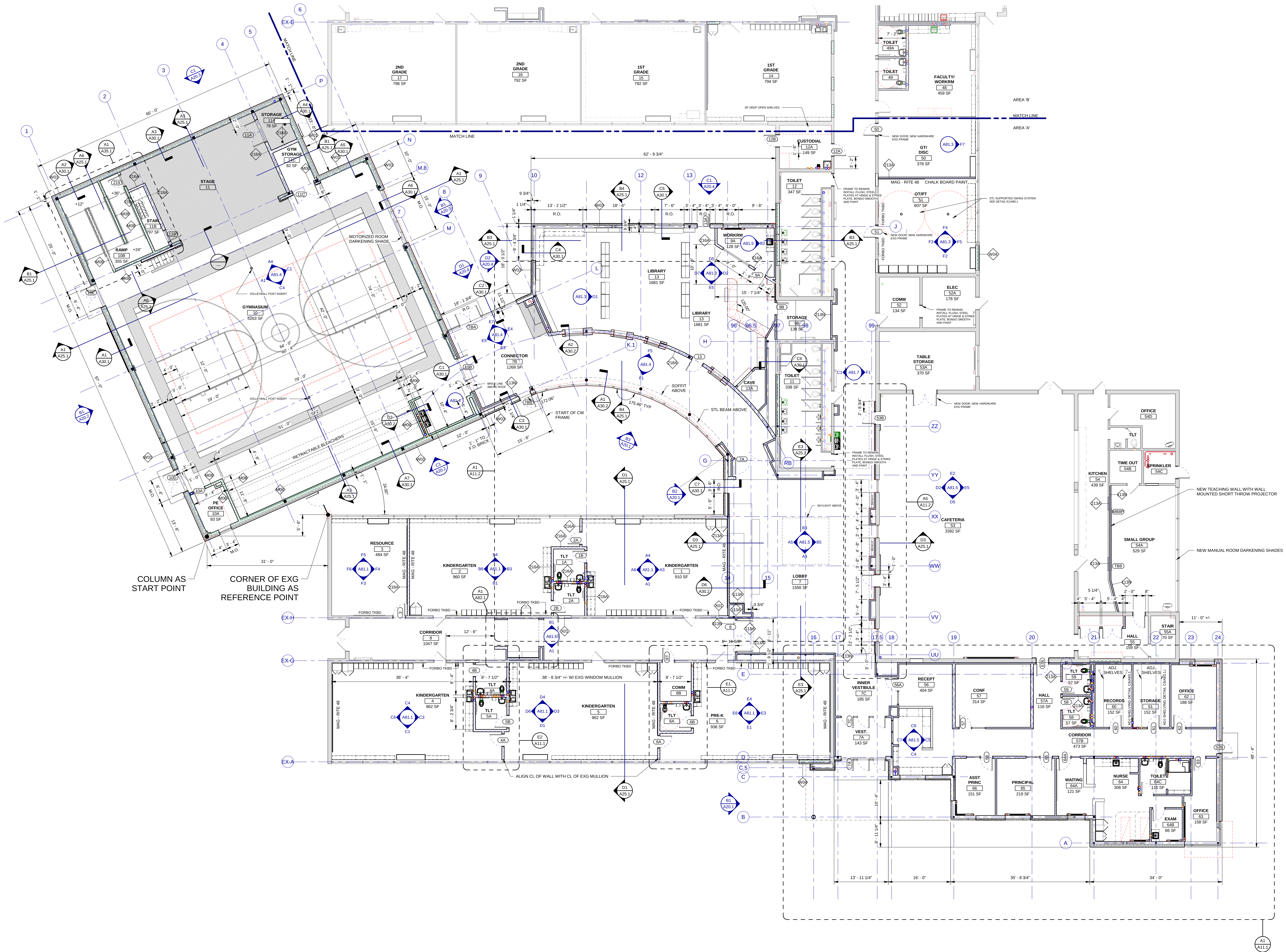
PRELIMINARY
NOT FOR
CONSTRUCTION

PA / PE: MDL
Drawn By: MCM

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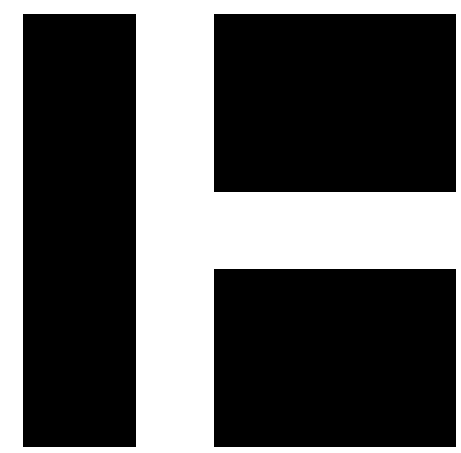
FIRST FLOOR PLAN -
AREA A

A10.1



A1 FIRST FLOOR PLAN AREA A
SCALE: 1/8" = 1'-0"

FILED DATE: 12/20/2019 1:06:10 PM



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AUBURN PORTLAND PORTSMOUTH BOSTON

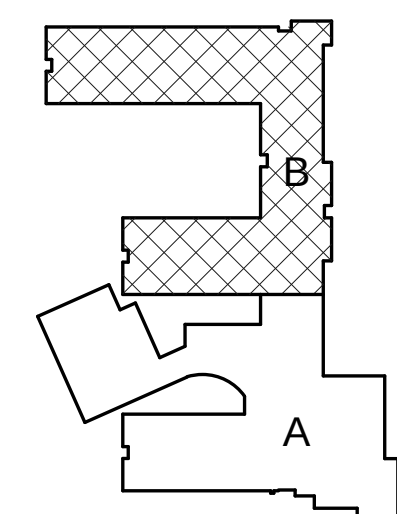
HARRISON LYSETH
ELEMENTARY SCHOOL

PORTLAND, MAINE

Harriman Project No. 18483

Key Plan

Proj North



GENERAL NOTES

- SEE DRAWING A00.1 FOR PARTITION TYPES.
- DIMENSIONS LOCATING INTERIOR PARTITIONS ARE TO FACE OF GPWD OR CMU UNLESS NOTED OTHERWISE.
- SEE DRAWING A00.1 FOR DOOR SCHEDULE.
- SEE DRAWING A01.1 FOR ROOM FINISH SCHEDULE. NEW WALLPAPERS AND PATCHING OF EXISTING WALLPAPERS NOT LABELED SHALL BE PAINTED TO MATCH EXISTING ADJACENT WALLS, U.N.O.
- SEE EXTERIOR ELEVATIONS ON DRAWINGS A20.1, A20.2 & A20.3 FOR WINDOW TYPES.
- PROVIDE CONTROL JOINTS IN GPWD PARTITIONS AT A MAX SPACING OF 30'-0" UNLESS NOTED OTHERWISE. MAX SPACING AT ABUSE GPWD IS 28'-0" UNO. LOCATE AT EDGE OF DOOR FRAME UP TO CEILING WHERE PRACTICAL. REVIEW LOCATIONS WITH THE ARCHITECT.
- AT REMOVED FIXTURES, PARTITIONS, EQUIPMENT, CASEWORK, ETC., THAT WILL BECOME EXPOSED TO VIEW, PATCH AND PARGE PARTITIONS TO CREATE A SMOOTH SURFACE. PAINT TO MATCH EXISTING ADJACENT U.N.O.
- PATCH ALL OPENINGS CREATED FOR INSTALLATION OF NEW MECH., PLUMB., ELEC., ETC. WITH MATERIALS TO MATCH ADJACENT CONSTRUCTION.

SYMBOLS LEGEND

- 210 PARTITION TAG
SEE A00.1 FOR PARTITION TAG KEY & PARTITION DEFINITION DETAILS
- ROOM NAME
101 ROOM NAME AND NUMBER
SEE A01.1 FOR SCHEDULE
- 201 DOOR & BORROWED LITE NUMBERS
SEE A00.1 FOR SCHEDULE
- 72 MISCELLANEOUS ITEMS MARKER
SEE SCHEDULE ON A00.1

Issues and Revisions

Date	Description
12-05-18	DESIGN DEVELOPMENT
01-25-19	PLANNING BOARD SUBMITTAL

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FIRST FLOOR PLAN -
AREA B

A10.2



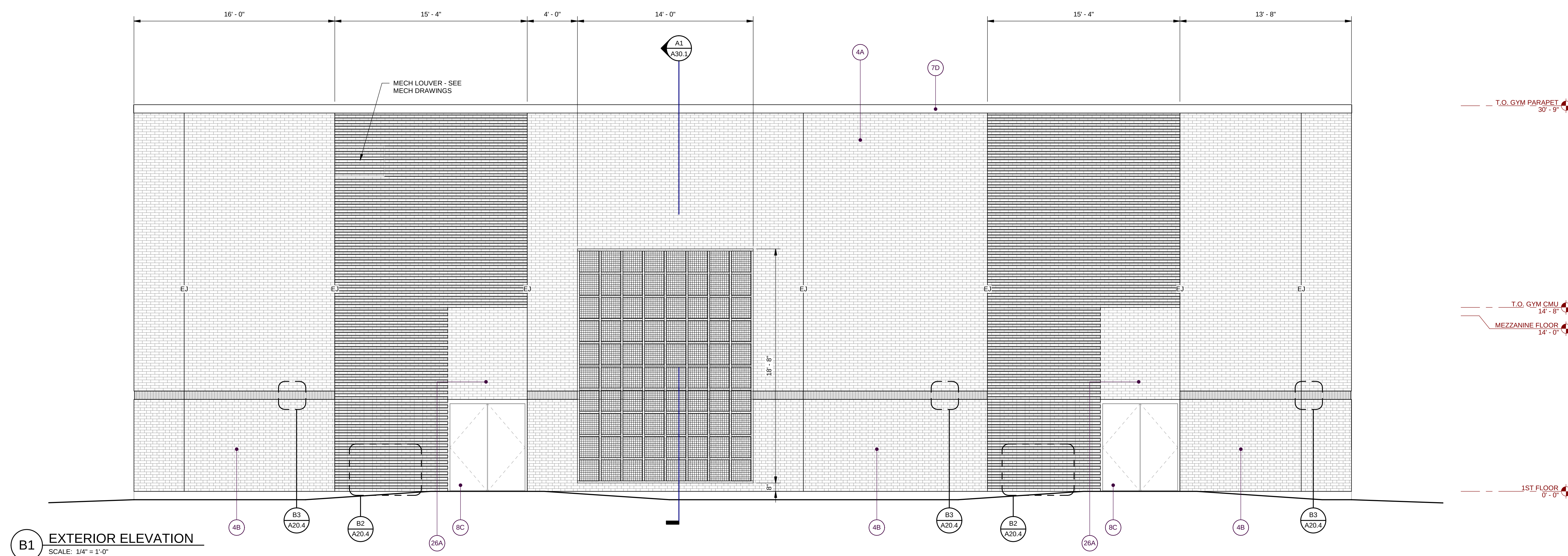
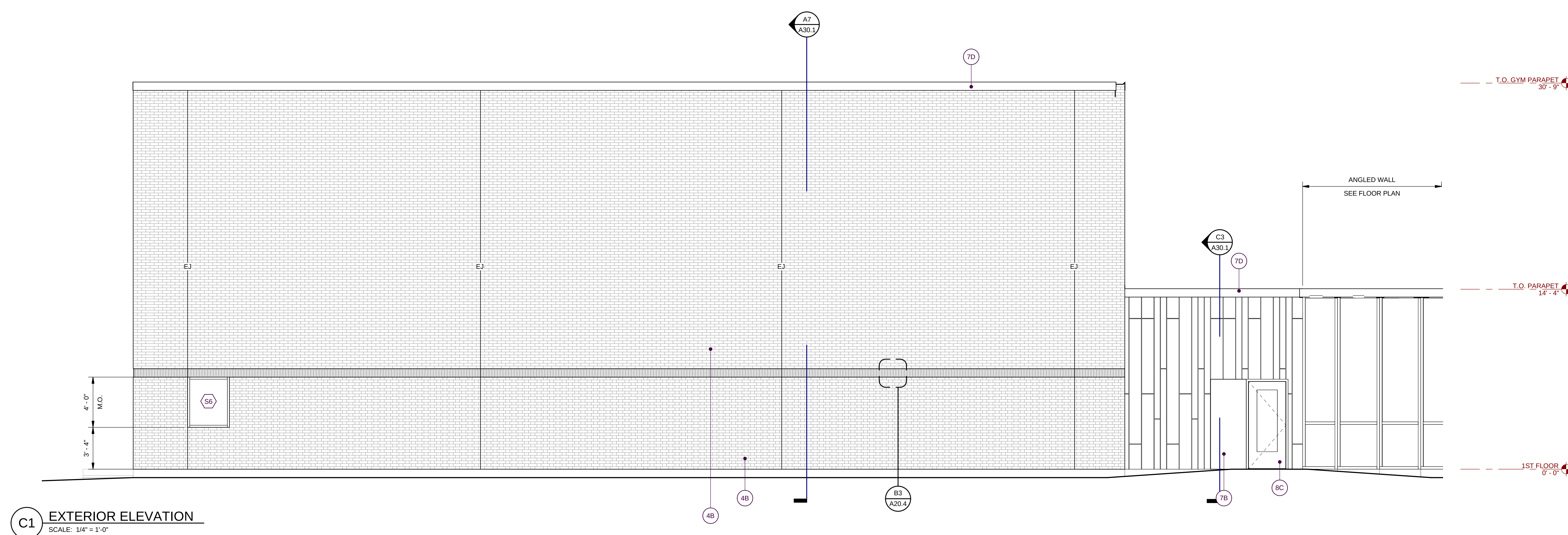
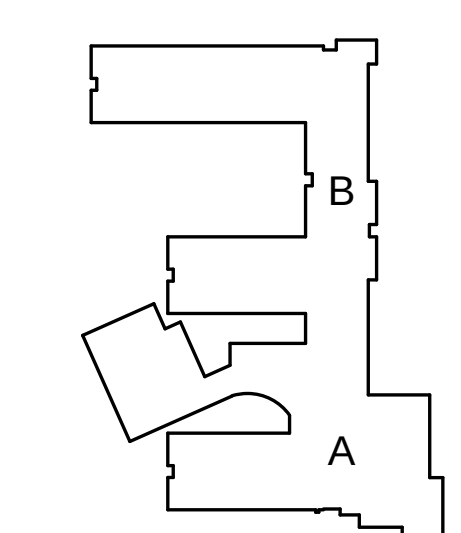
HARRISON LYSETH
ELEMENTARY SCHOOL

PORTLAND, MAINE

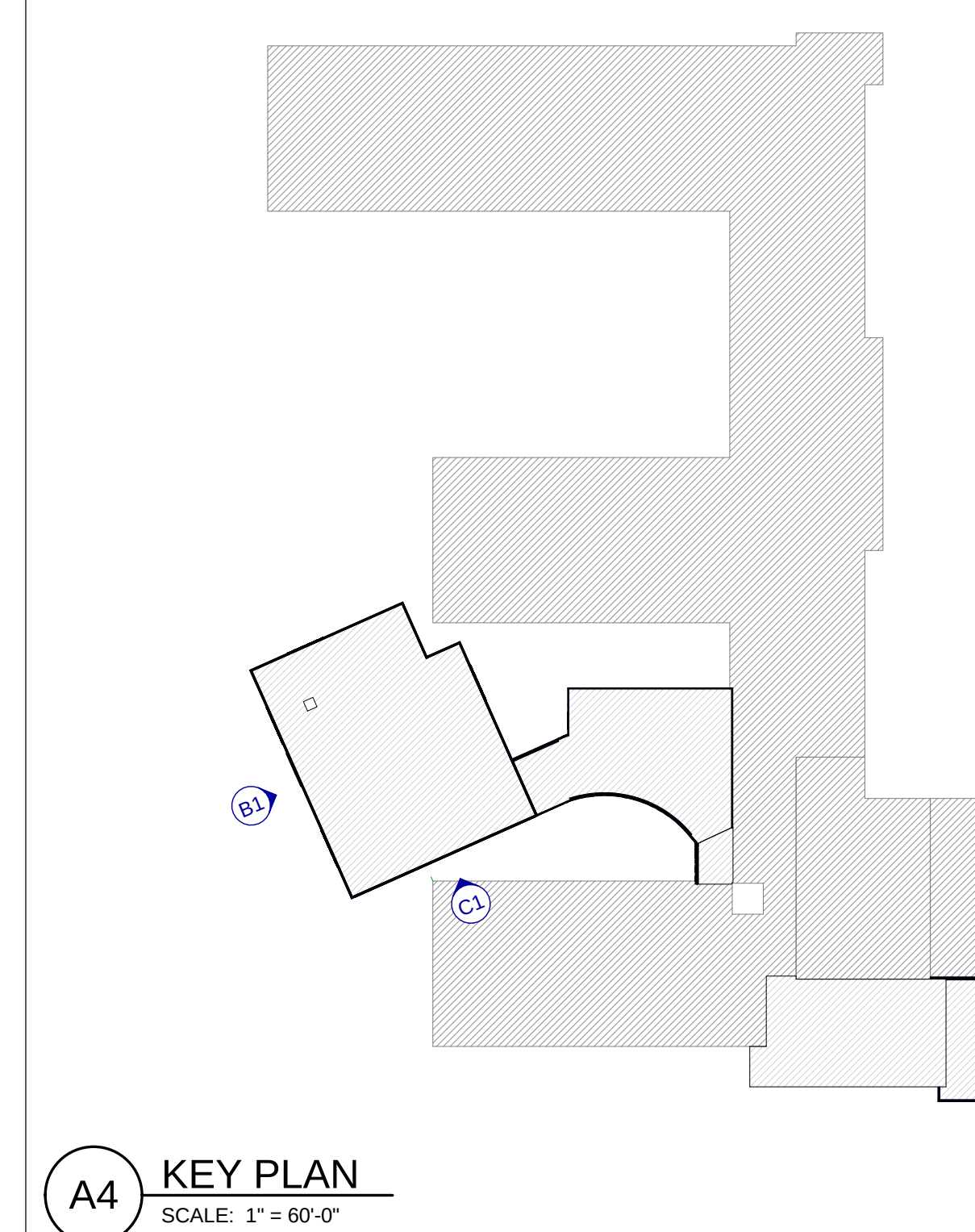
Harriman Project No.	18483
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Key Plan

Proj North



EXTERIOR MATERIALS LEGEND		
CODE	DESCRIPTION	COLOR / MFR
4A	BRICK VENEER (FIELD)	MORIN BRICK/ COLOR TBD
4B	BRICK VENEER (FIELD)	MORIN BRICK FLEMISH BOND, COLOR TBD
7A	BRICK ACCENT	MORIN BRICK/ COLOR TBD
4D	BRICK VENEER (FIELD)	MORIN BRICK/ COLOR TO MATCH EXISTING
7A	UPHC WALL PANELS	TAKLI / COLOR TBD
7B	UPHC WALL PANELS	TRESPA / COLOR TBD
7C	VERTICAL METAL SIDING	TRESPA / COLOR TBD
7D	PREHINORIED ROOF EDGE STRIP	METAL ANE ARCHITECTURE COLOR TBD
8C	HM DOOR AND FRAME	PAINT COLOR TBD
9	WALL PACT LIGHT FIXTURE AT 10' - 0" AFF	

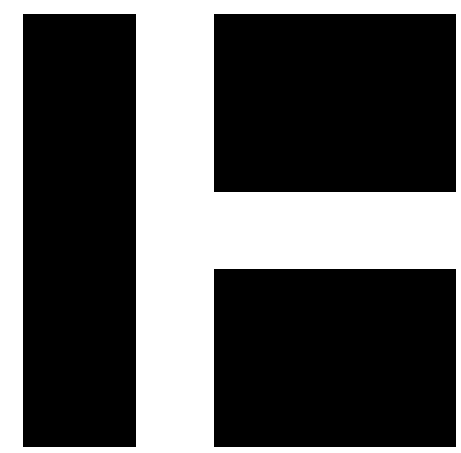


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EXTERIOR ELEVATIONS

A20.2



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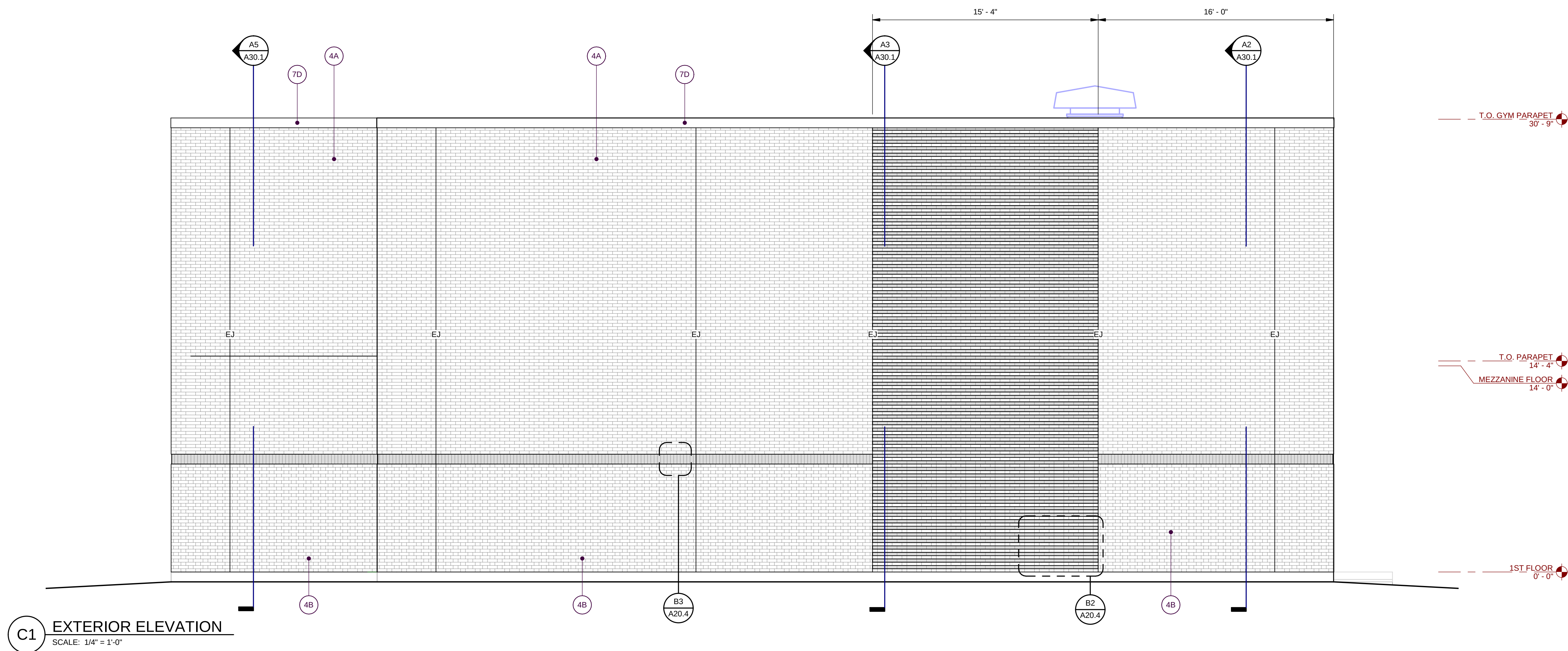
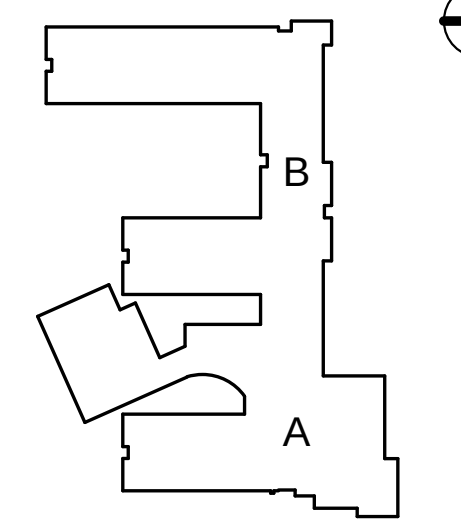
AUBURN PORTLAND PORTSMOUTH BOSTON

HARRISON LYSETH
ELEMENTARY SCHOOL

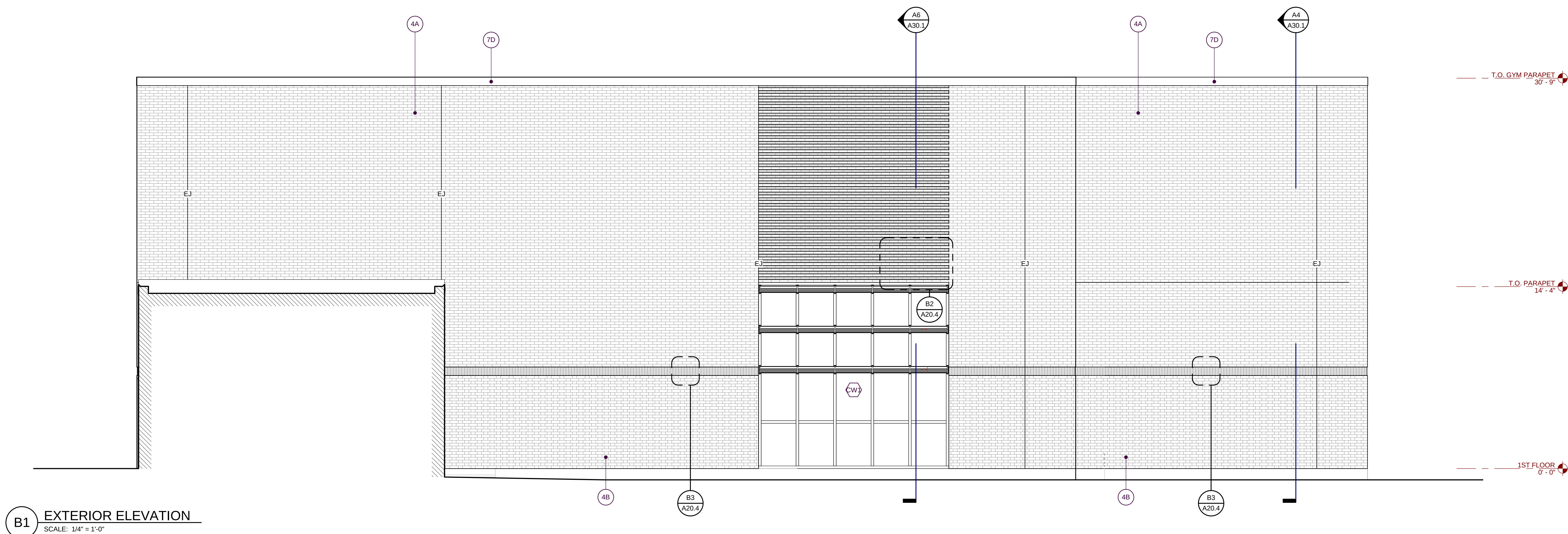
PORTLAND, MAINE

Harriman Project No. 18483

Key Plan



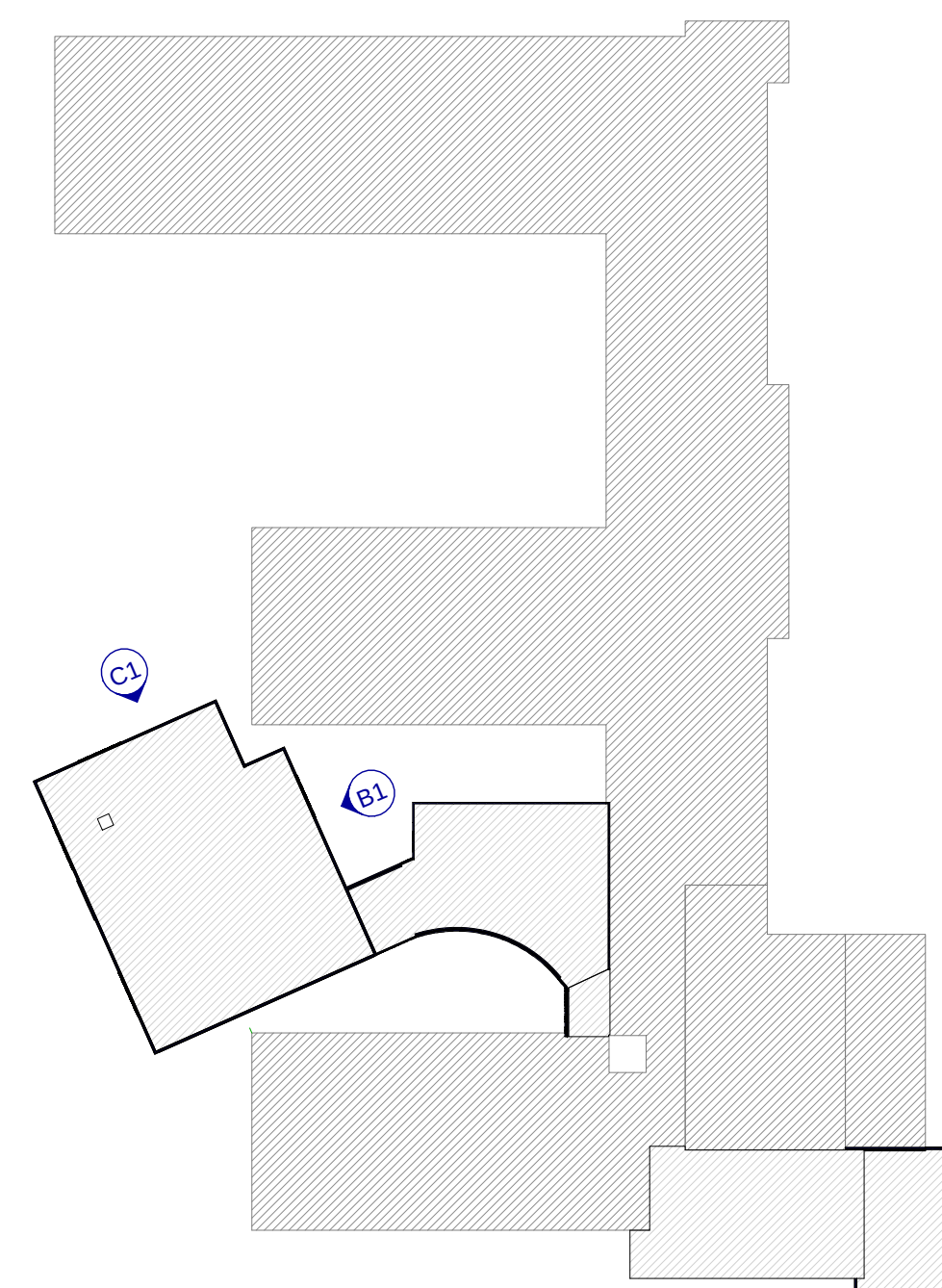
C1 EXTERIOR ELEVATION
SCALE: 1/4" = 1'-0"



B1 EXTERIOR ELEVATION
SCALE: 1/4" = 1'-0"

EXTERIOR MATERIALS LEGEND

CODE	DESCRIPTION	COLOR / MFR
4A	BRICK VENEER (FIELD)	MORIN BRICK/ COLOR TBD
4B	BRICK VENEER (FIELD)	MORIN BRICK/ FLEMISH BOND, COLOR TB
4C	BRICK ACCENT	MORIN BRICK/ COLOR TBD
4D	BRICK VENEER (FIELD)	MORIN BRICK/ COLOR TO MATCH EXISTING
7A	UPSC WALL PANELS	TAKTL / COLOR TBD
7B	HPCL WALL PANELS	TRESPA / COLOR TBD
7C	VERTICAL METAL SIDING	TRESPA / COLOR TBD
7D	PREFINISHED ROOF EDGE STRIP	METAL EPA-ANCHOR-TITE COLOR: TBD
8C	HM DOOR AND FRAME	PAINTE COLOR: TBD
26A	WALL PAC LIGHT FIXTURE AT 10' - 0" AFF	



A4 KEY PLAN
SCALE: 1" = 60'-0"

Issues and Revisions	
Date	Description
12-05-18	DESIGN DEVELOPMENT
01-25-19	PLANNING BOARD SUBMITTAL

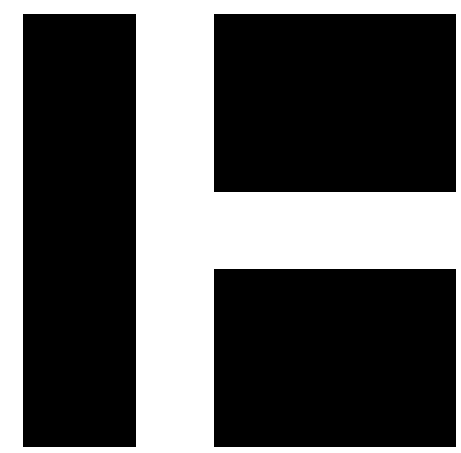
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EXTERIOR ELEVATIONS

A20.3



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AUBURN PORTLAND PORTSMOUTH BOSTON

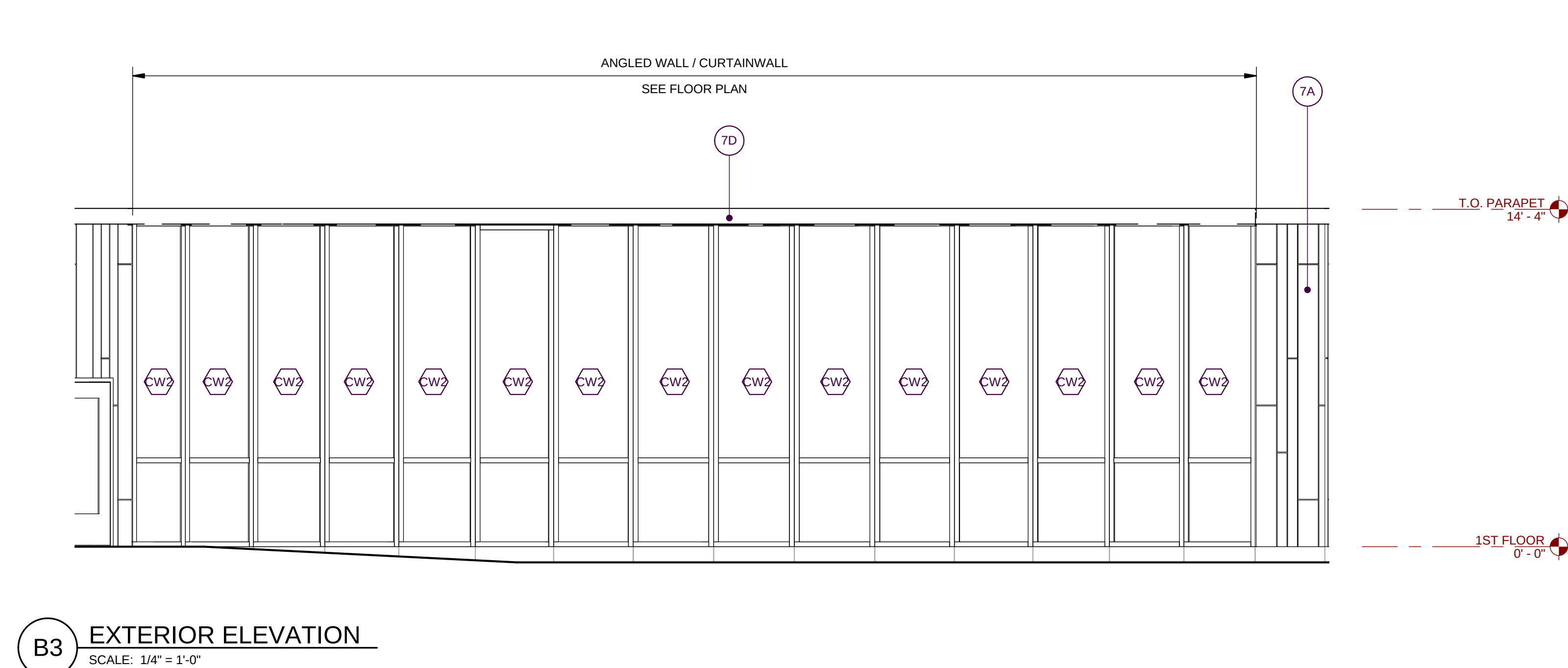
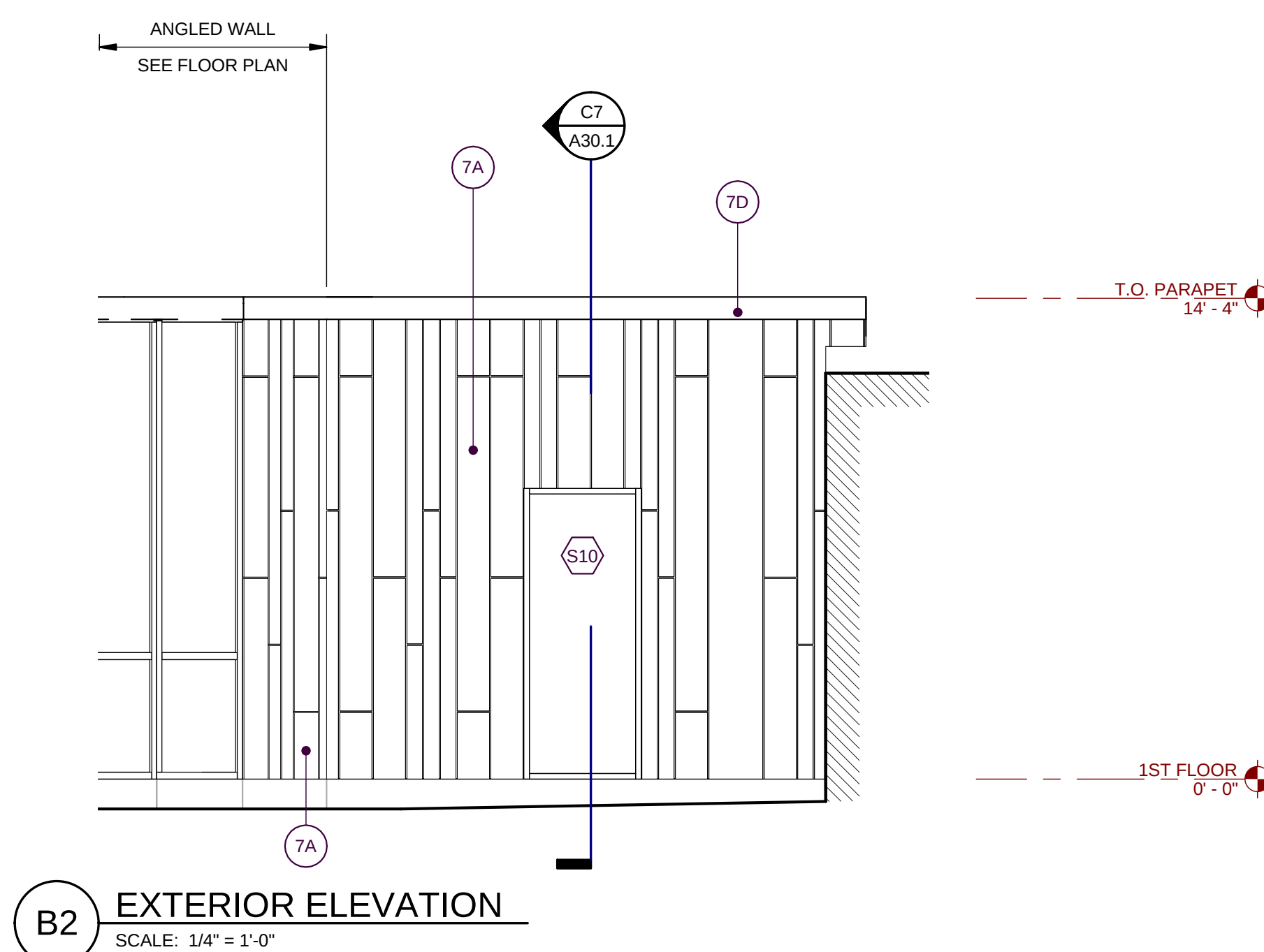
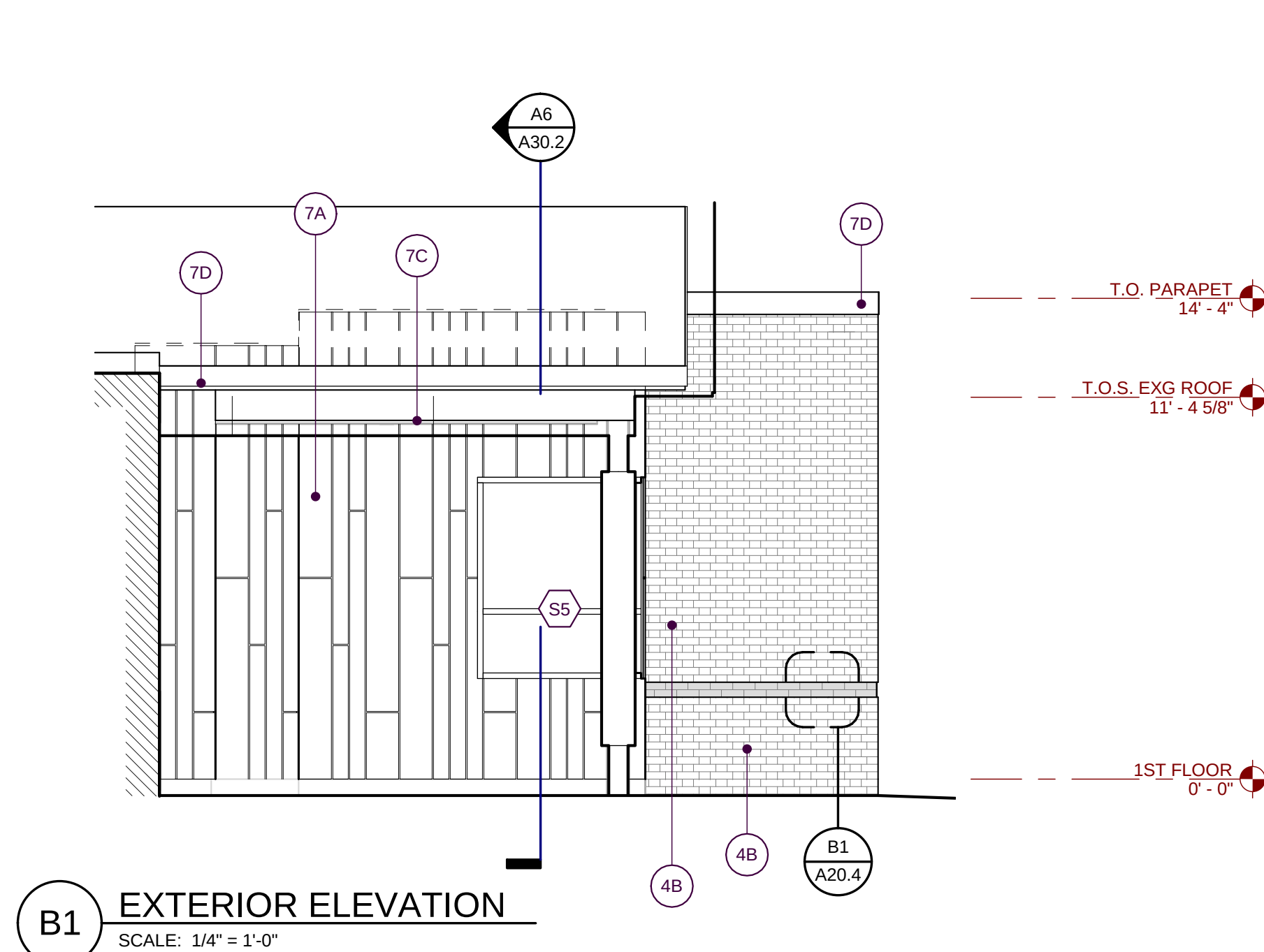
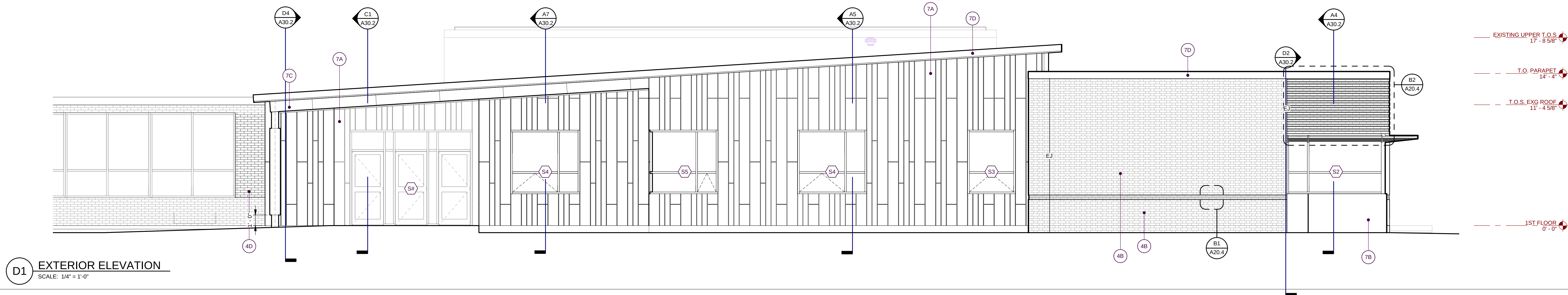
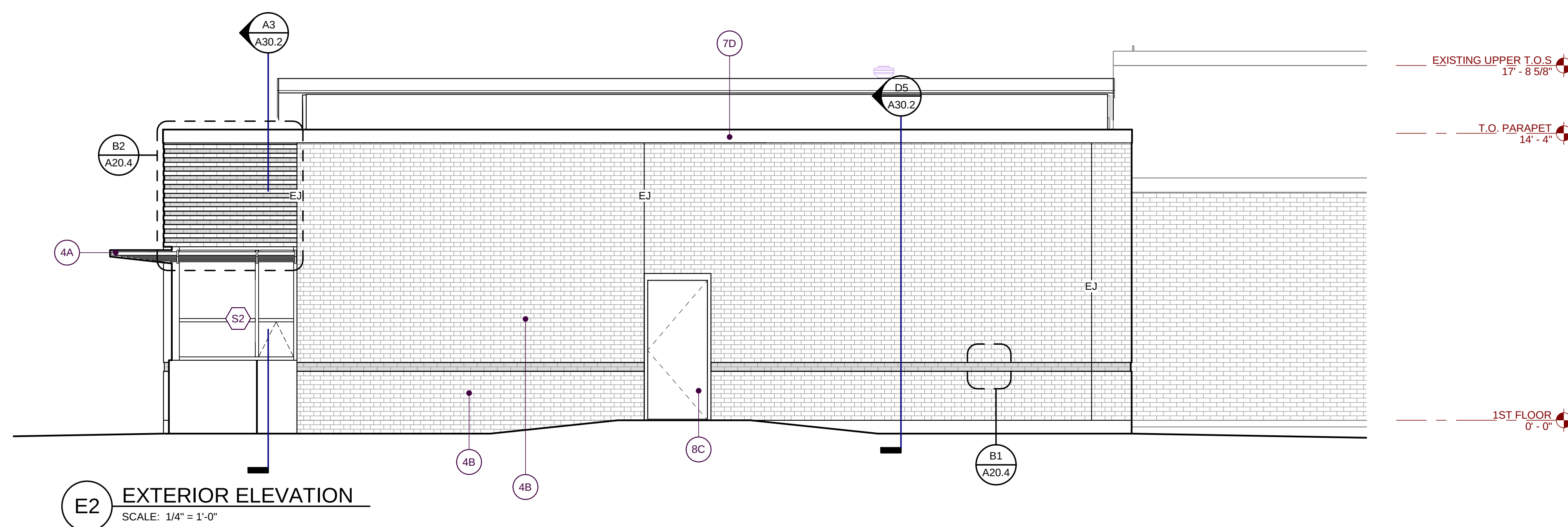
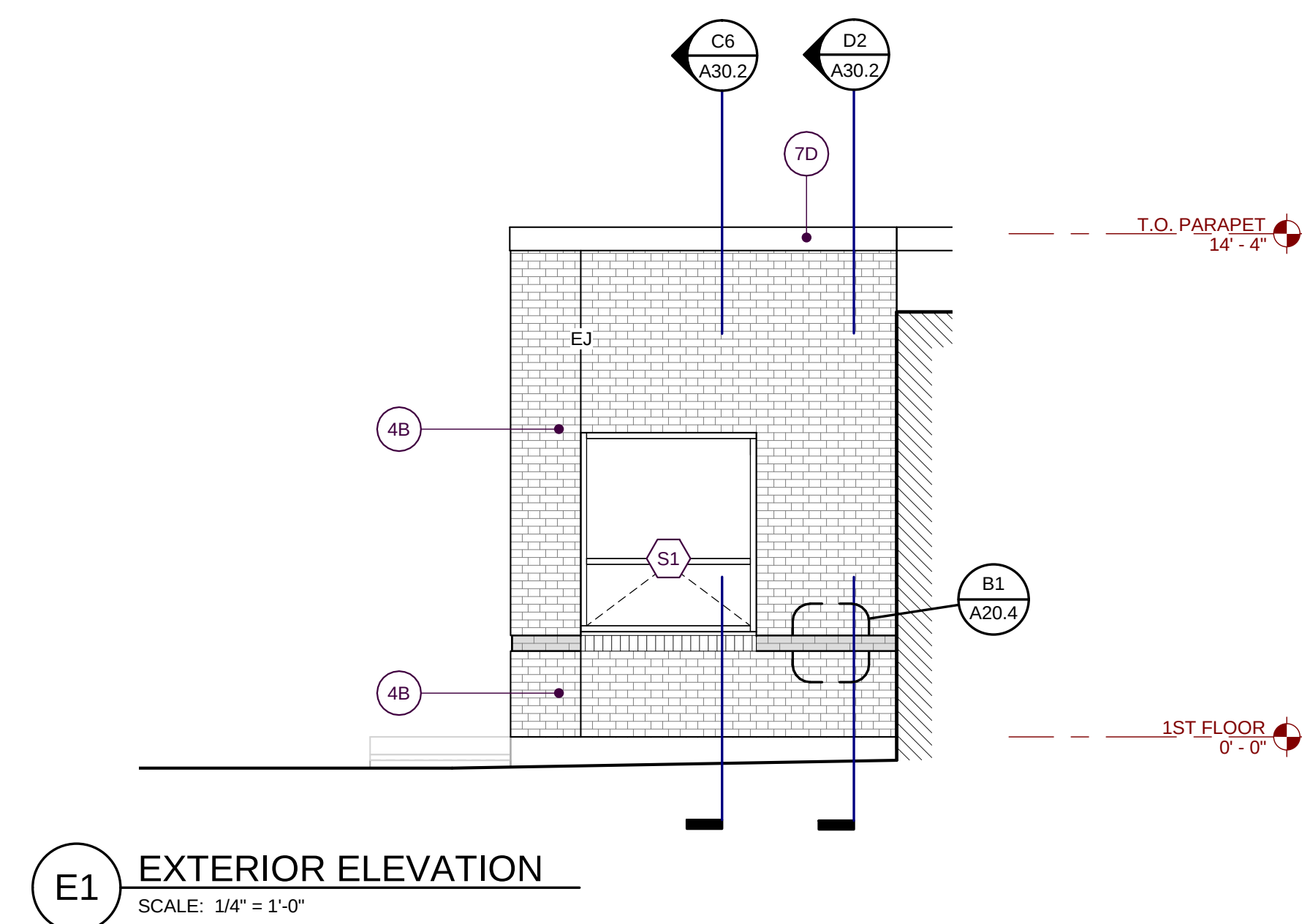
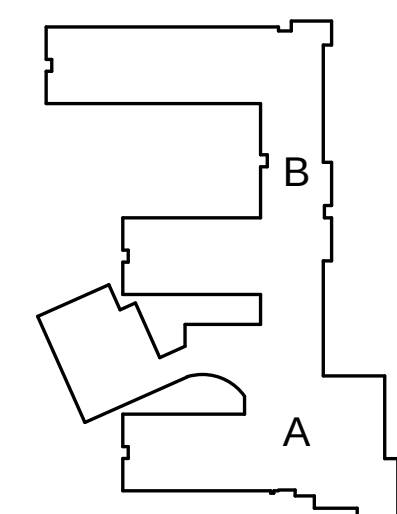
HARRISON LYSETH
ELEMENTARY SCHOOL

PORTLAND, MAINE

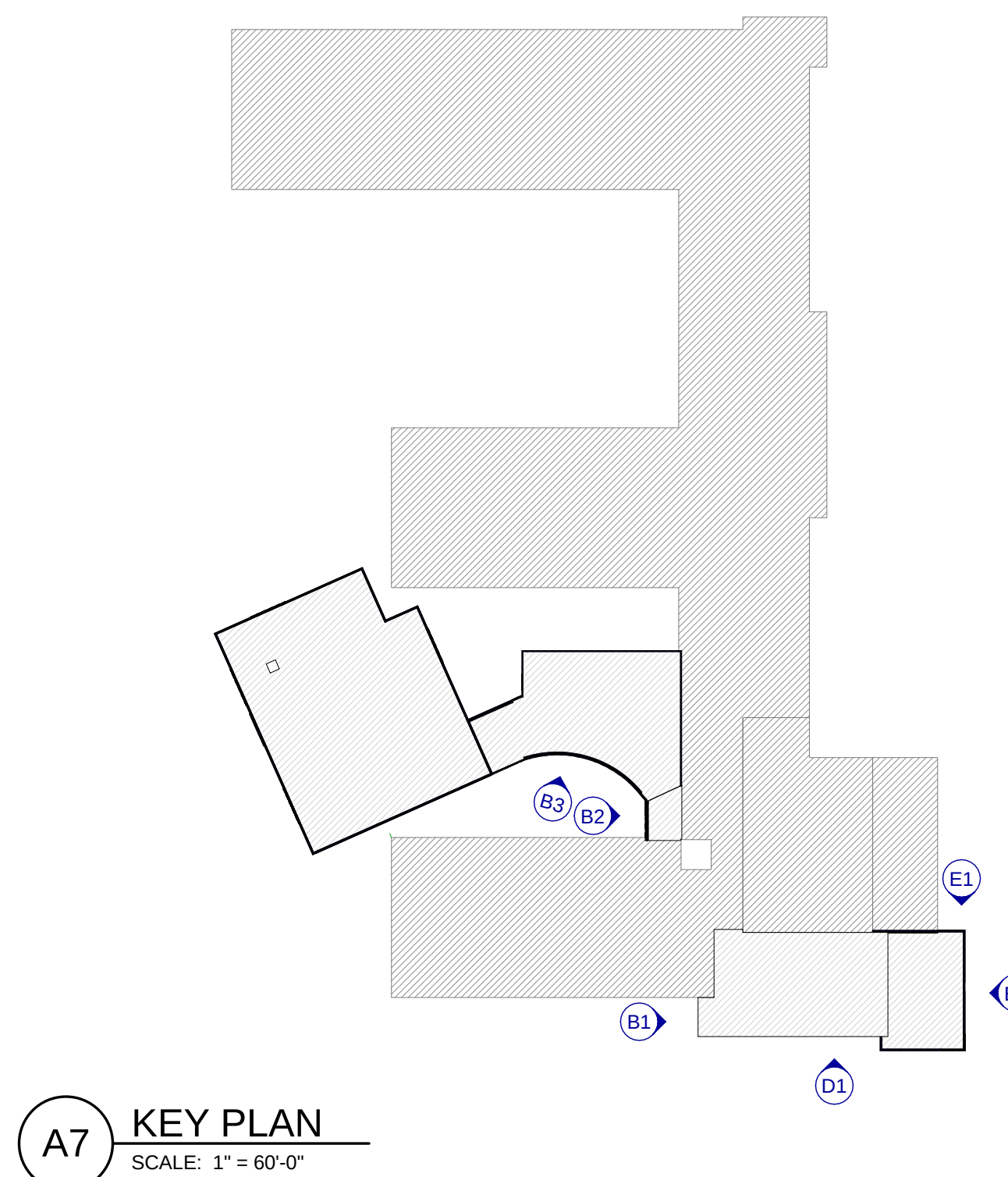
Harriman Project No. 18483

Key Plan

Proj North



EXTERIOR MATERIALS LEGEND		
CODE	DESCRIPTION	COLOR / MFR
4A	BRICK VENEER (FIELD)	MORIN BRICK/ COLOR TBD
4B	BRICK VENEER (FIELD)	MORIN BRICK/ FLEMISH BOND, COLOR TB
4C	BRICK ACCENT	MORIN BRICK/ COLOR TBD
4D	BRICK VENEER (FIELD)	MORIN BRICK/ COLOR TO MATCH EXISTING
7A	UPSPC WALL PANELS	TAKTL / COLOR: TBD
7B	HPCL WALL PANELS	TRESPA / COLOR: TBD
7C	VERTICAL METAL SIDING	TRESPA / COLOR: TBD
7D	PREFINISHED ROOF EDGE STRIP	METAL EPA ANCHOR-TITE COLOR: TBD
8C	HM DOOR AND FRAME	PAINTE COLOR: TBD
26A	WALL PAC LIGHT FIXTURE AT 10' - 0" AFF	



Issues and Revisions	
Date	Description
12-05-18	DESIGN DEVELOPMENT
01-25-19	PLANNING BOARD SUBMITTAL

PRELIMINARY
NOT FOR
CONSTRUCTION

PA / PE: MDL
Drawn By: MCM

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EXTERIOR ELEVATIONS

A20.1



HARRIMAN

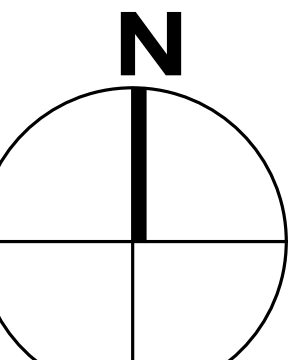
AUBURN PORTLAND PORTSMOUTH BOSTON

HARRISON LYSETH
ELEMENTARY SCHOOL

PORTLAND, MAINE

Harriman Project No. 18483

Key Plan



GRAPHIC SCALE

0 20 40
(1 inch = 40 feet)



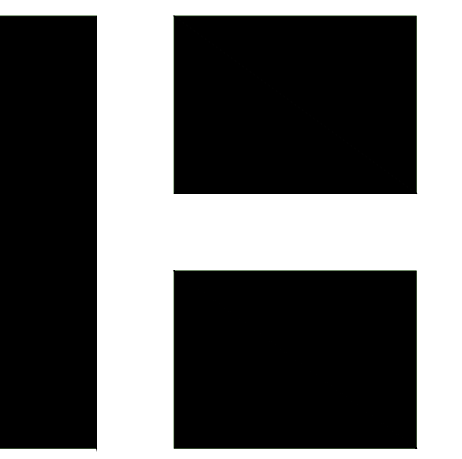
MARCH 5, 2019

Rev	Date	Revision Description

Drawing Scales	
PA/PE	FLC
Drawn By	PLS
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SITE PHASING
PLAN

SP-1



HARRIMAN

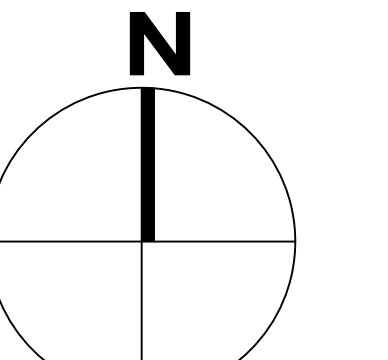
AUBURN PORTLAND PORTSMOUTH BOSTON

HARRISON LYSETH
ELEMENTARY SCHOOL

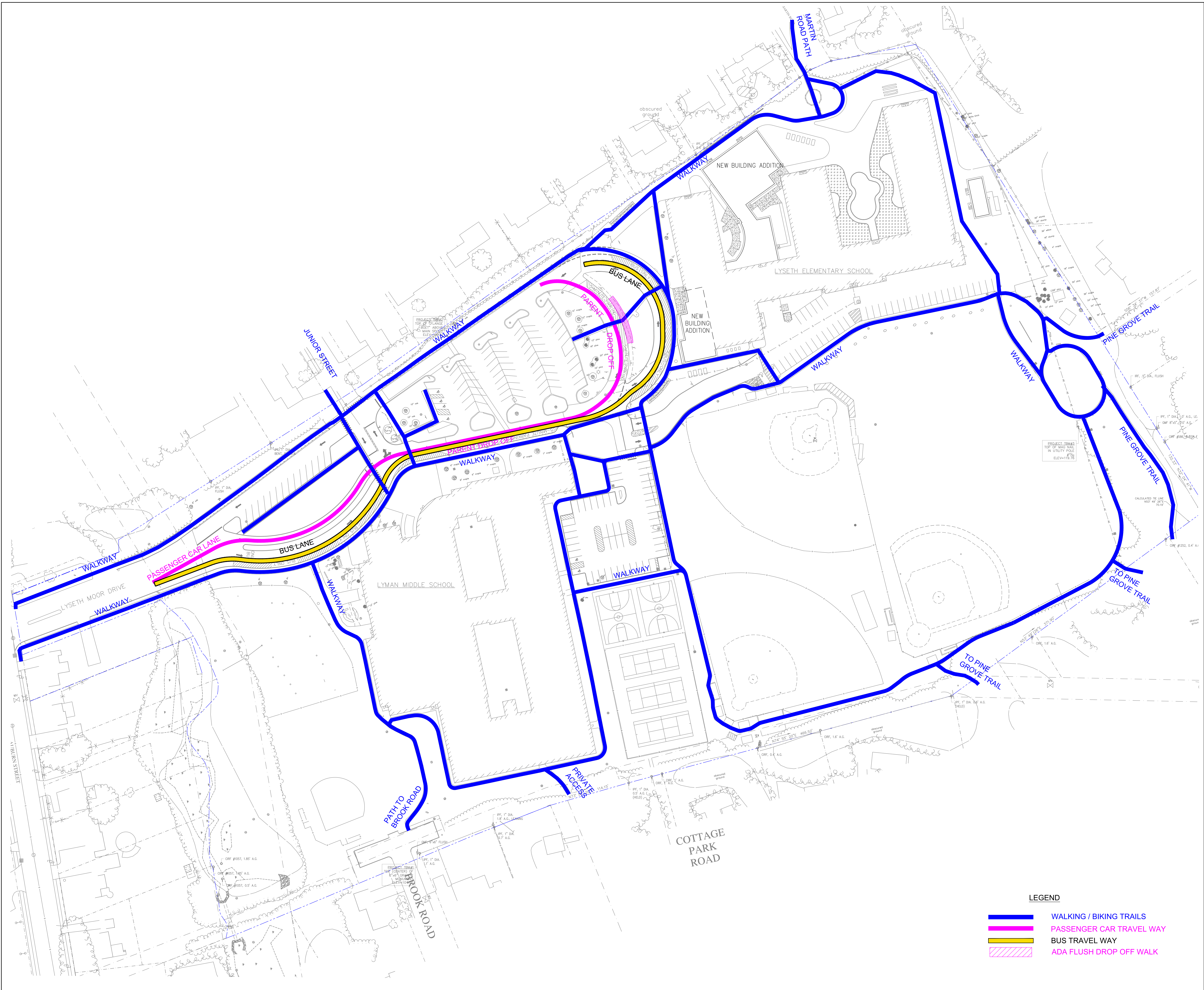
PORTLAND, MAINE

Harriman Project No. 18483

Key Plan



GRAPHIC SCALE
0 20 40
(1 inch = 40 feet)



LEGEND

- WALKING / BIKING TRAILS
- PASSENGER CAR TRAVEL WAY
- BUS TRAVEL WAY
- ADA FLUSH DROP OFF WALK

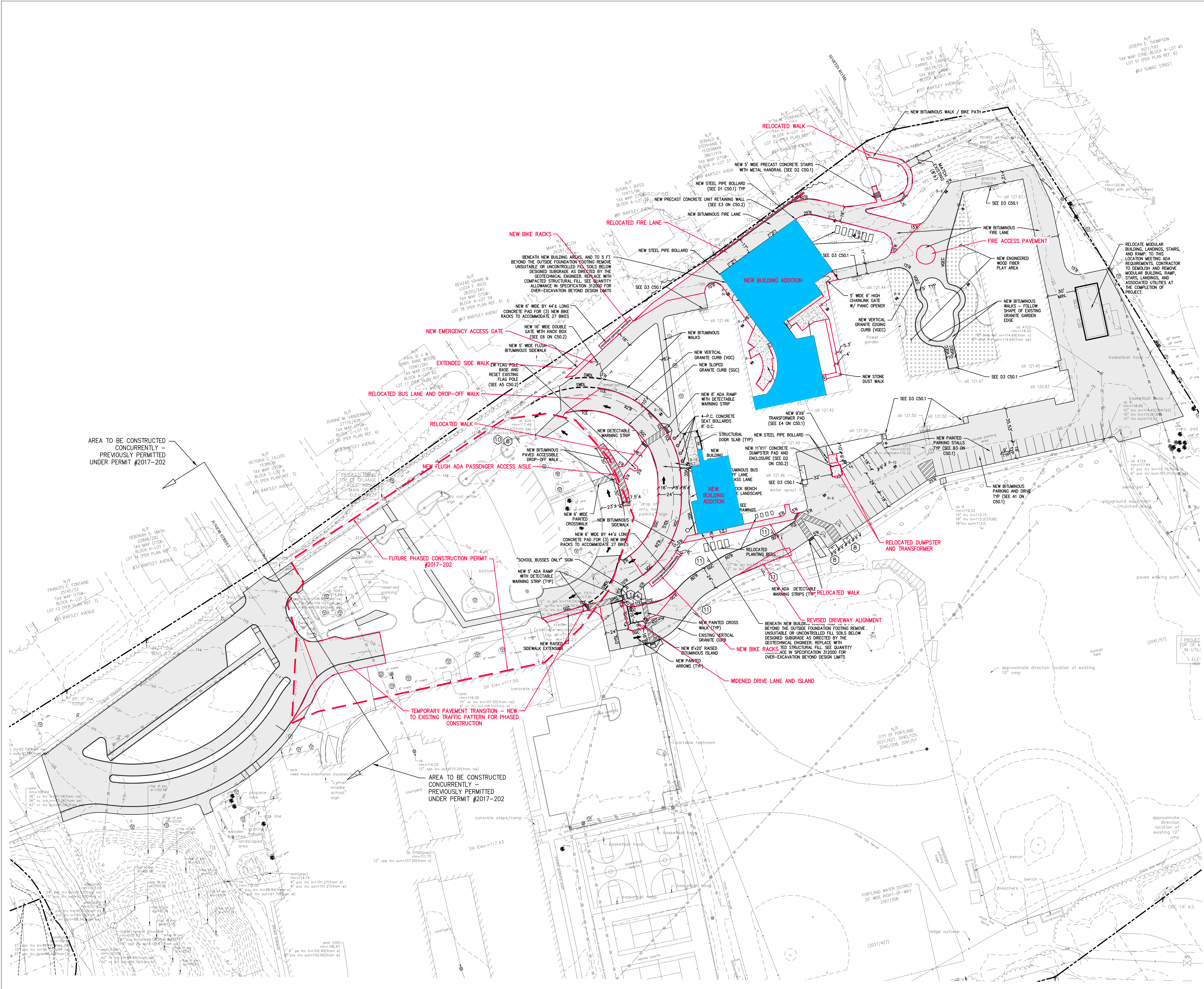
MARCH 6, 2019

Rev Date	Revision Description

Drawing Scales	
PA / PE	FLC
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CIRCULATION PLAN
2019 CONSTRUCTION

CP-1



**HARRISON LYSETH
ELEMENTARY SCHOOL**

PORTLAND, MAINE
Harriman Project No. 18483
Key Plan

N

GRAPHIC SCALE
1 inch = 30 feet

NOTE:
THIS PLAN SHOWS PROPOSED
CHANGES FROM THE APPROVED
#2017-202 LLM CAMPUS
IMPROVEMENTS CIRCULATION
PROJECT.

Issues and Revisions	
Date	Description
01-25-19	PLANNING BOARD SUBMITTAL

Drawing Scales	

PA/PE: FLC
Drawn By: PLS

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**KEY CHANGES
SITE PLAN**



AUBURN PORTLAND PORTSMOUTH BOSTON

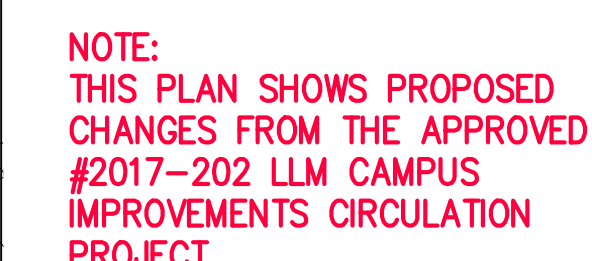
PORTLAND, MAINE

Harriman Project No.	18483
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Key Plan



0 15 30

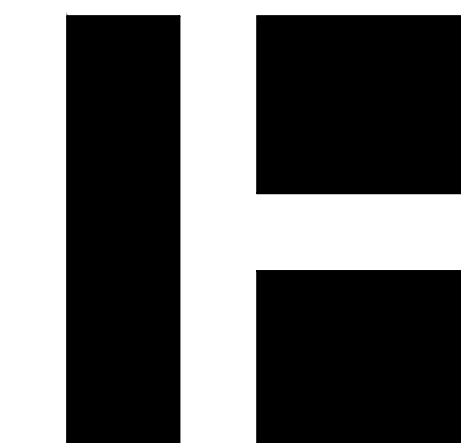
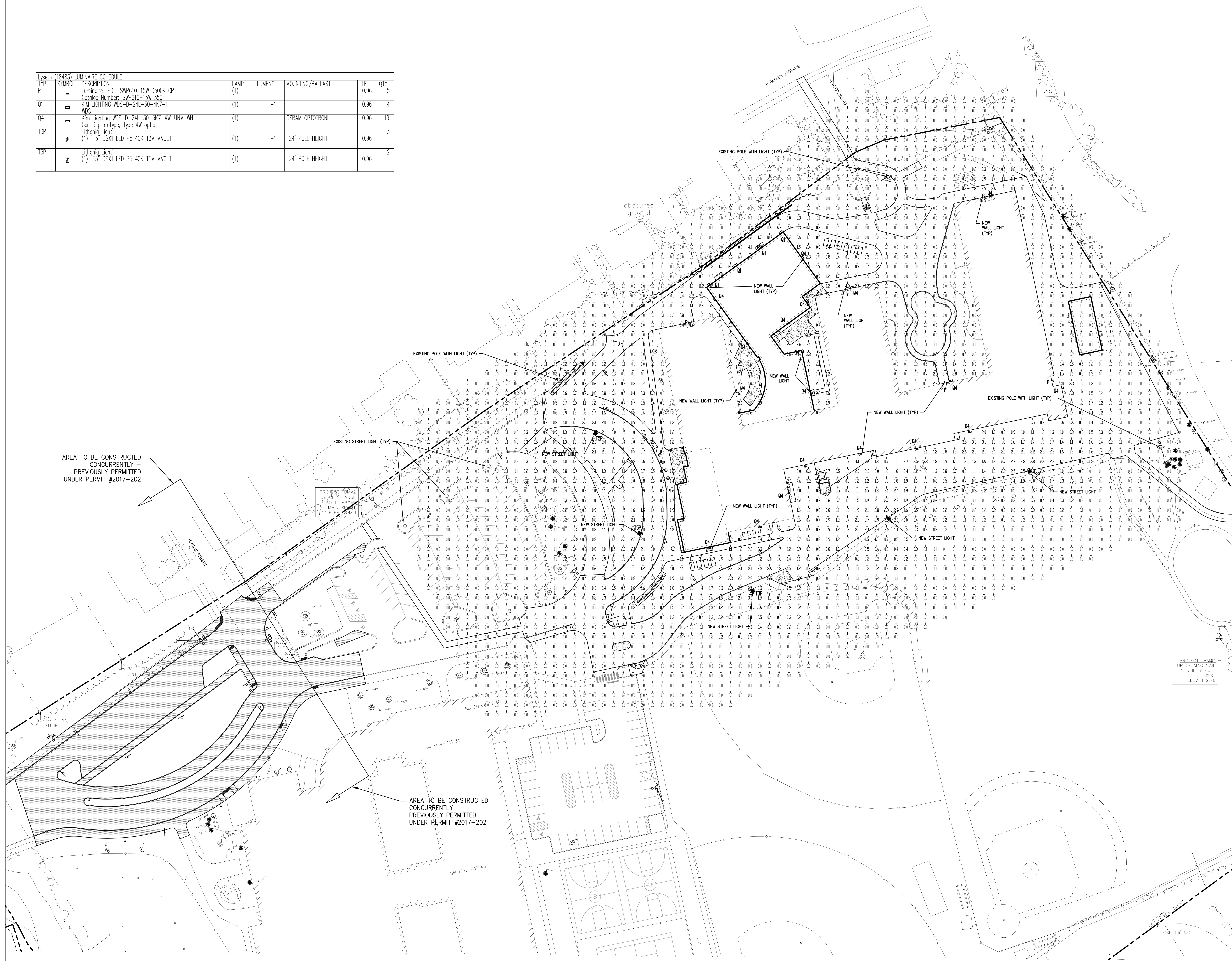
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Drawing Scales	
PA / PE: FLC	© 2019 Harriman Associates
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KEY CHANGES UTILITY PLAN

KC-2

LUMINAIRE SCHEDULE						
TYPE	SYMBOL	DESCRIPTION	LAMP	LUMENS	MOUNTING/BALLAST	ULF QTY
P	■	Luminaire LED, SWP610-15W 3500K CP Catalog Number: SWP610-15W 350	(1)	-1		0.96 5
Q1	□	KIM LIGHTING WDS-D-24L-30-4K7-1 WDS	(1)	-1		0.96 4
Q4	□	Kim Lighting WDS-D-24L-30-5K7-4W-UNV-WH Gen 3 prototype, Type 4W optic	(1)	-1	OSRAM OPTOTRON	0.96 19
T3P	⬢	Lithonia Lighti (1) T3 DSX1 LED P5 40K T3M MVOLT	(1)	-1	24" POLE HEIGHT	0.96 3
T5P	⬢	Lithonia Lighti (1) T5 DSX1 LED P5 40K T5M MVOLT	(1)	-1	24" POLE HEIGHT	0.96 2



HARRIMAN

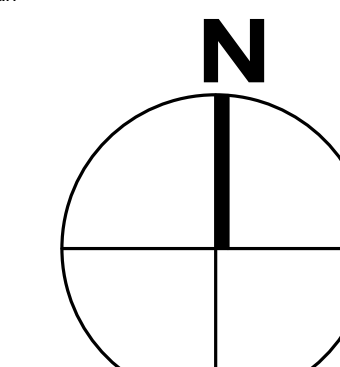
AUBURN PORTLAND PORTSMOUTH BOSTON

HARRISON LYSETH
ELEMENTARY SCHOOL

PORTLAND, MAINE

Harriman Project No.	18483
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Key Plan



GRAPHIC SCALE

(1 inch = 30 feet)

PLANNING BOARD SUBMITTAL
APRIL 8, 2019

[illegible]

Drawing Scales		© 2019 Harriman Associates
PA / PE:	FLC	
Drawn By:	PLS	

SITE PHOTOMETRIC PLAN

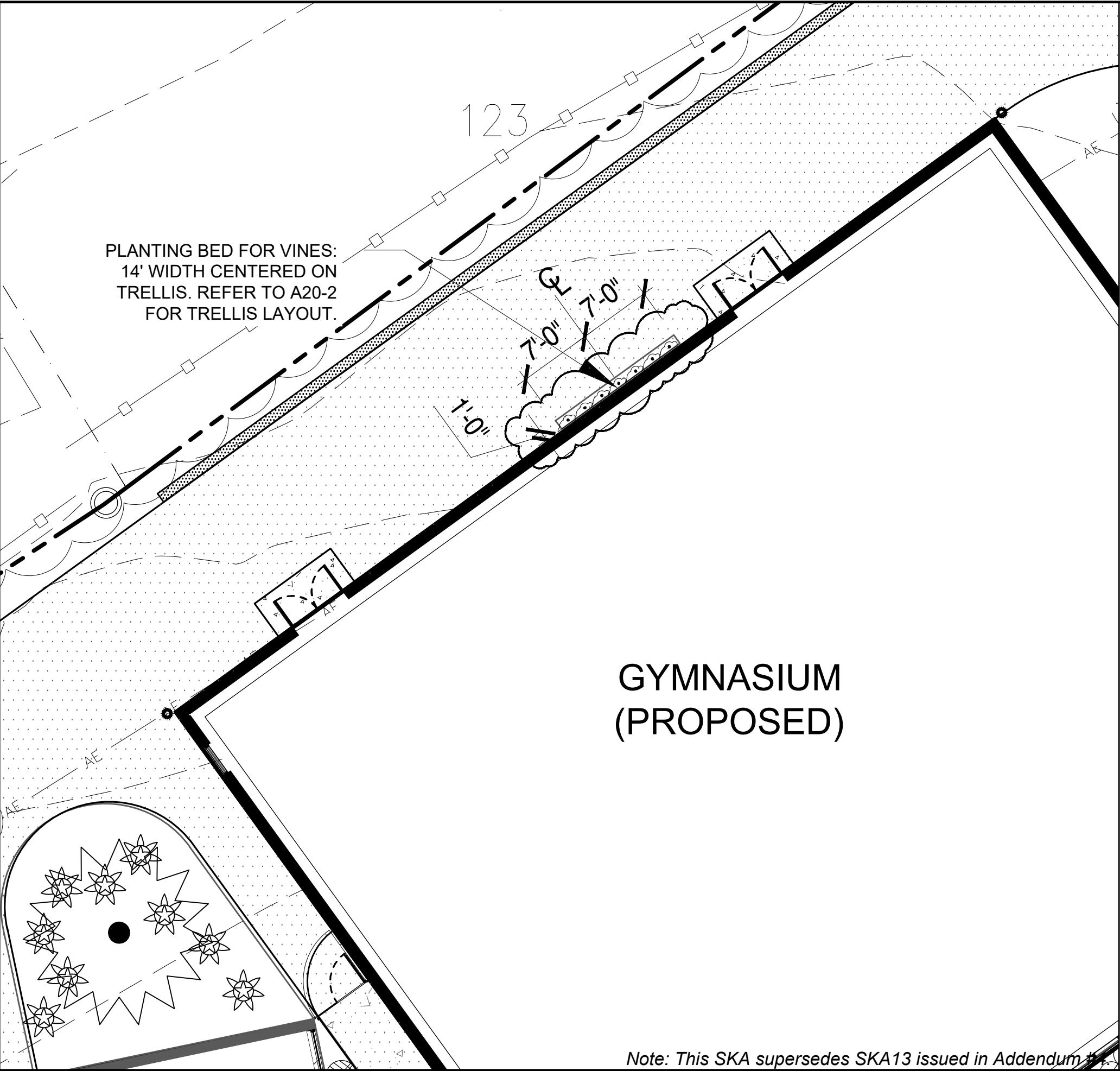
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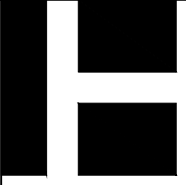
HARRISON LYSETH ELEMENTARY SCHOOL

GYMNASIUM NORTH ELEVATION

APRIL 8, 2019



PLANT LEGEND				
SHADE TREES		SIZE	NOTES	QTY
	Acer rubrum 'Bowhall'	2.0" - 2.5" Cal.	Zone: 3	4
	October Glory Red Maple		Fall Plant Hazard	
	Cotinus obovatus	1.0" - 1.5" Cal.	Zone: 4	1
	American Smoketree		Fall Plant Hazard	
	Carpinus caroliniana	2.0" - 2.5" Cal.	Zone: 3a	3
	American Hornbeam		Fall Plant Hazard	
	Cladratis kentukea	2.0" - 2.5" Cal.	Zone: 4	1
	American Yellowwood			
	Oxydendrum arboreum	1.0" - 1.5" Cal.	Zone: 5	3
	Sourwood		Fall Plant Hazard	
FLOWERING TREES		SIZE	NOTES	QTY
	Amelanchier canadensis	1.5" - 2.0" Cal.	Zone: 4	2
	Shadblow Serviceberry			
	Cercis canadensis	1.5" - 2.0" Cal.	Zone: 4	2
	Eastern Redbud		Fall Plant Hazard	
ORNAMENTAL TREES		SIZE	NOTES	QTY
	Magnolia stellata	16" - 20" Cal.	Multi-trunk	1
	Relocated memorial tree			
	Populus tremuloides	2.0" - 2.5" Cal.	Zone: 1	1
	American Aspen			
	Stewartia ovata	1.0" - 1.5" Cal.	Zone: 5	3
	Mountain Stewartia			
CONIFER TREES		SIZE	NOTES	QTY
	Picea mariana	14" - 16"	Zone: 3	1
	Black Spruce			
DECIDUOUS SHRUBS		SIZE	NOTES	QTY
	Cephalanthus occidentalis	#3	Zone: 5	4
	Buttonbush			
	Clethra alnifolia	#3	Zone: 3	7
	Coastal Sweet Pepperbush			
	Comptonia peregrina	#2	Zone: 3	26
	Sweetfern			
	Dasiphora fruticosa	#2	Zone: 3	3
	Shrubby cinquefoil			
	Deutzia gracilis	#2	Zone: 4	28
	Slender deutzia			
	Ledum groenlandicum	#3	Zone: 2	33
	Labrador Tea			
	Salix purpurea 'Nana'	#2	Zone: 4	3
	Dwarf Artic Willow			
EVERGREEN SHRUBS		SIZE	NOTES	QTY
	Juniperus communis	#2	Zone: 2	12
	Common Juniper			
GROUNDCOVERS		SIZE	NOTES	QTY
	Arctostaphylos uva-ursi	#SP2	Zone: 2	23
	Kinnikinnick			
	Coreopsis lanceoleaf	#SP2	Zone: 4	3
	Tickseed			
	Cornus canadensis	#SP1	Zone: 2	32
	Bunchberry		Fall plant hazard	
	Liriope spicata	#SP2	Zone: 4	41
	Creeping Liriope			
	Vaccinium angustifolium	#SP1	Zone: 2	22
	Low Sweet Blueberry			
PERENNIALS		SIZE	NOTES	QTY
	Coreopsis grandiflora	#SP2	Zone: 4a	42
	Large Flowered Tickseed			
	Dennstaedtia punctilobula	#SP2	Zone: 3	50
	Hay Scented Fern			
	Echinacea purpurea	#SP2	Zone: 4a	23
	Purple Coneflower			
	Hyacinthoides hispanica	#SP2	Zone: 3	31
	Spanish Bluebell			
	Lavandula angustifolia 'Hidcote'	#SP3	Zone: 5	40
	English Lavender			
	Lupinus perennis	#SP2	Zone: 3	33
	Wild Lupine			
	Penstemon digitalis	#SP2	Zone: 3	33
	Beardtongue			
	Polygonatum odoratum	#2 Container	Zone: 3	32
	Solomon's Seal			
	Stachys byzantina	#SP2	Zone: 4	46
	Lamb's Ear			
	Symphyotrichum novae-angliae	#SP3	Zone: 4	32
	New England Aster			
VINE		SIZE	NOTES	QTY
	Clematis virginiana	#SP4	Zone: 3	7
	Virgin's Bower		(One plant per trellis panel)	
LANDSCAPE MATERIALS		QTY		
	Shredded organic bark mulch	3,910 sq. ft.		
	Three inch depth all planting areas			
1. Final plant material selection and quantities dependent on conformance to, and approval by, local and state regulations and agencies.				
2. Plant material specified shall conform to ANLA American Standard for Nursery Stock, ANSI Z60.1 current edition.				



Auburn, ME
207.784.5100

Portland, ME
207.775.0053

Portsmouth, NH
603.626.1242

Boston, MA
617.426.5050

HARRISON LYSETH
ELEMENTARY SCHOOL

PORTLAND, MAINE

HA Project No.

18483

PRELIMINARY
NOT FOR
CONSTRUCTION

Date

Scale

05'10'15'

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PLANTING PLAN
NORTH WALL GYMNASIUM
AND
REVISED PLANT LEGEND

SKA15

PLANNING BOARD REPORT PORTLAND, MAINE



PMA Parking Lot Expansion
Vicinity of 87 Spring Street
Conditional Use and Site Plan Review
Portland Museum of Art, Applicant
CU-000566-2019 and PL-000524-2019

Submitted to: Portland Planning Board
Public Hearing Date: April 23, 2019

Prepared by: Andrew Tufts, Planner
Date: April 19, 2019

I. INTRODUCTION

Acorn Engineering, on behalf of the Portland Museum of Art, has submitted a Level 2 site plan application for the expansion of a parking lot at 87 Spring Street. The proposal is to expand the impervious area from 15,000 sf to 22,396 sf and to accommodate 69 vehicle parking spaces. Three ADA spaces are proposed along with 2 electric vehicle charging stations. The application is subject to review by the Planning Board under the site plan standards and the conditional use standards for a surface parking lot in the Downtown Business B-3 zone. In light of the comprehensiveness of the project proposal, the Staff has chosen to present the project before the Planning Board without conducting a workshop.

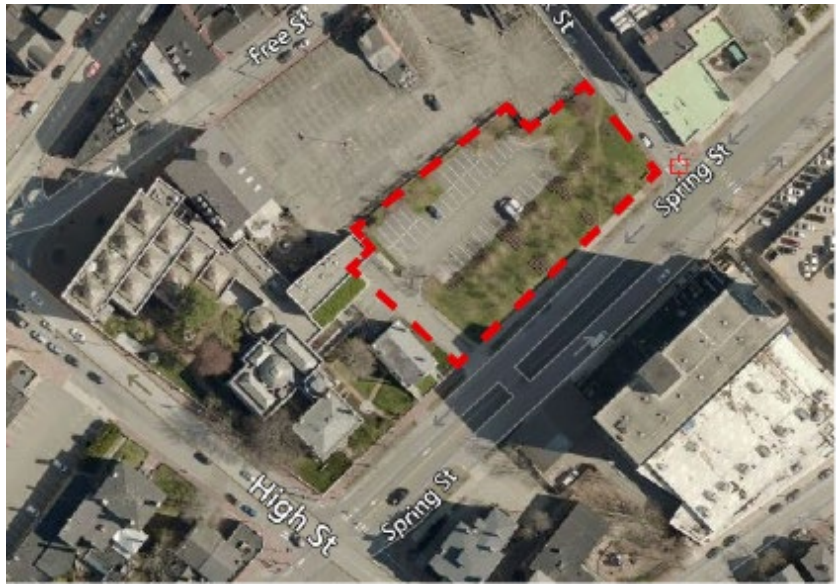


Figure 1 87 Spring Street Site Location

The proposal is anticipated to be an interim use for 7-8 years while the Museum develops a longer-range plan for Museum use of this site (see [Attachments 1 & 2](#)). Staff suggests that the Board review this proposal as if it were a permanent use and site plan development. A total of 137 notices were sent to property owners within 500 feet of the site and to interested parties.

Applicant: Portland Museum of Art

Consultants: Will Savage, P.E., Acorn Engineering, Faith Thomas, Acorn Engineering

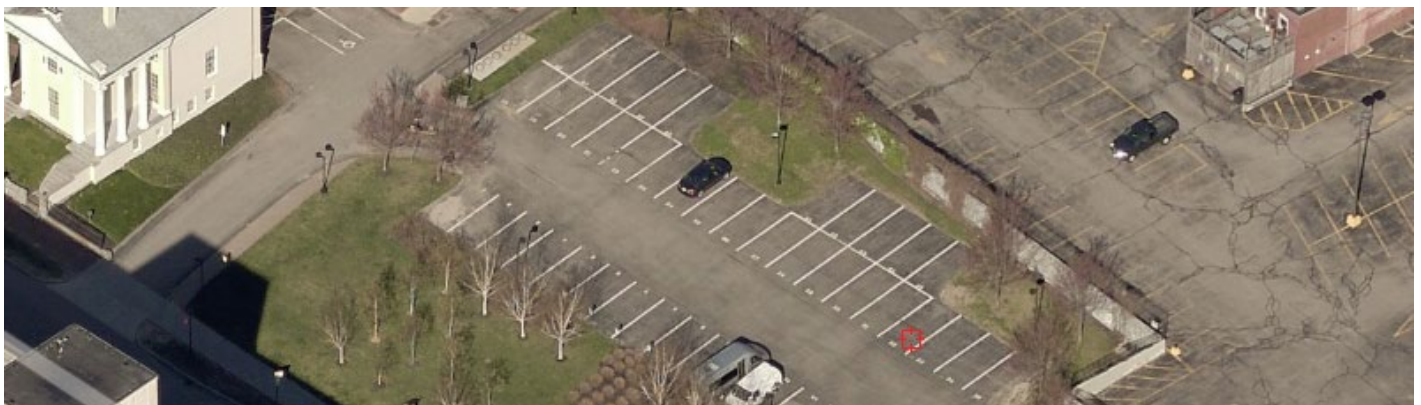
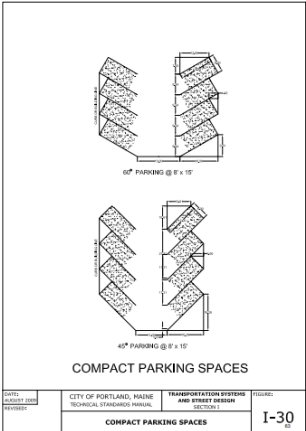


Figure 2 87 Spring Street Aerial

II. REQUIRED REVIEWS

<i>Waiver Requests</i>	Applicable Standards
1. Parking Lot and Parking Space Design a. A waiver is requested for the parking dimensions outlined in the City's Technical Manual. The proposed parking lot features a one-way drive aisle and stalls oriented at a 75-degree angle. The Technical Manual does not explicitly identify the dimensional requirements for this layout; however, the applicant has demonstrated adequate clearance has been provided to ensure functional circulation with the Civil3D 2019 program "Vehicle Tracking", a circulation program that utilizes turning templates to simulate vehicular movements by vehicle model and sample parking structure guidelines from another city's parking structure design guidelines as supporting material	Technical Manual Section I Figure I-27 – I-30 
<i>Review</i>	<i>Applicable Standards</i>
Conditional Use in the B-3 zone	Section 14-218
General Conditional Uses	Section 14-474
Site Plan	Section 14-526

PROJECT DATA

Existing Zoning	B-3 Business
Existing Use	45-47 Space Surface Parking
Proposed Use	69 Space Surface Parking
Parcel Size	38,500 SF (0.88 acre)

	<i>Existing</i>	<i>Proposed</i>	<i>Net Change</i>
Impervious Surface Area	15,000 SF	22,396 SF	7,396 SF
Parking Spaces	47	69	22
Bicycle Parking Spaces	0	4 (meets standard)	4

III. BACKGROUND & EXISTING CONDITIONS

The site is currently used as a 47 space surface parking lot, following the past demolition of the former YWCA building that covered most of the parcel. It is bounded to the west by the boundary of the Historic District and Clapp House, designated a Historic Landmark and on the national Historic Register. Behind the site towards Free Street, at a higher level, is a parking area for the Holiday Inn which is also used by visitors to the former Children's Museum of Maine. A walkway with stairs up to this parking area runs through the site alongside the access drive and is the subject, along with the adjacent lighting, of an 8 foot easement to Holiday Inn. Along the back of the site there is an existing concrete retaining wall (on Museum property) with chain link fencing above it. The central sections of the existing chain link fencing are not fixed permanently to the retaining wall and the panels currently rest on the ground (on other side of the wall from the site).

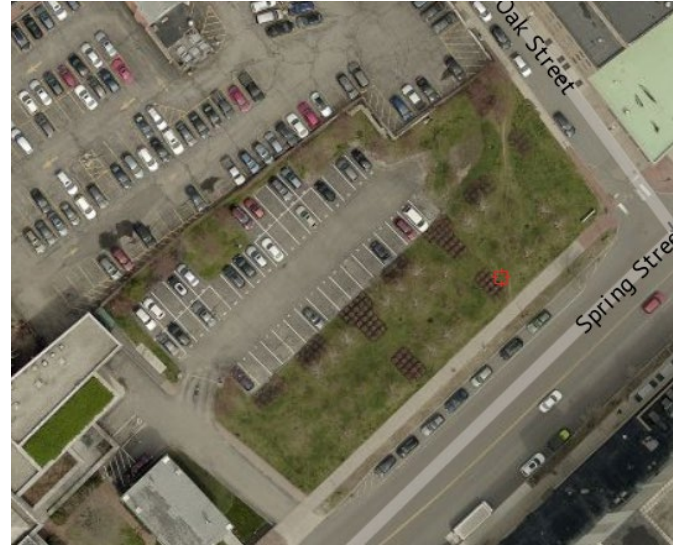
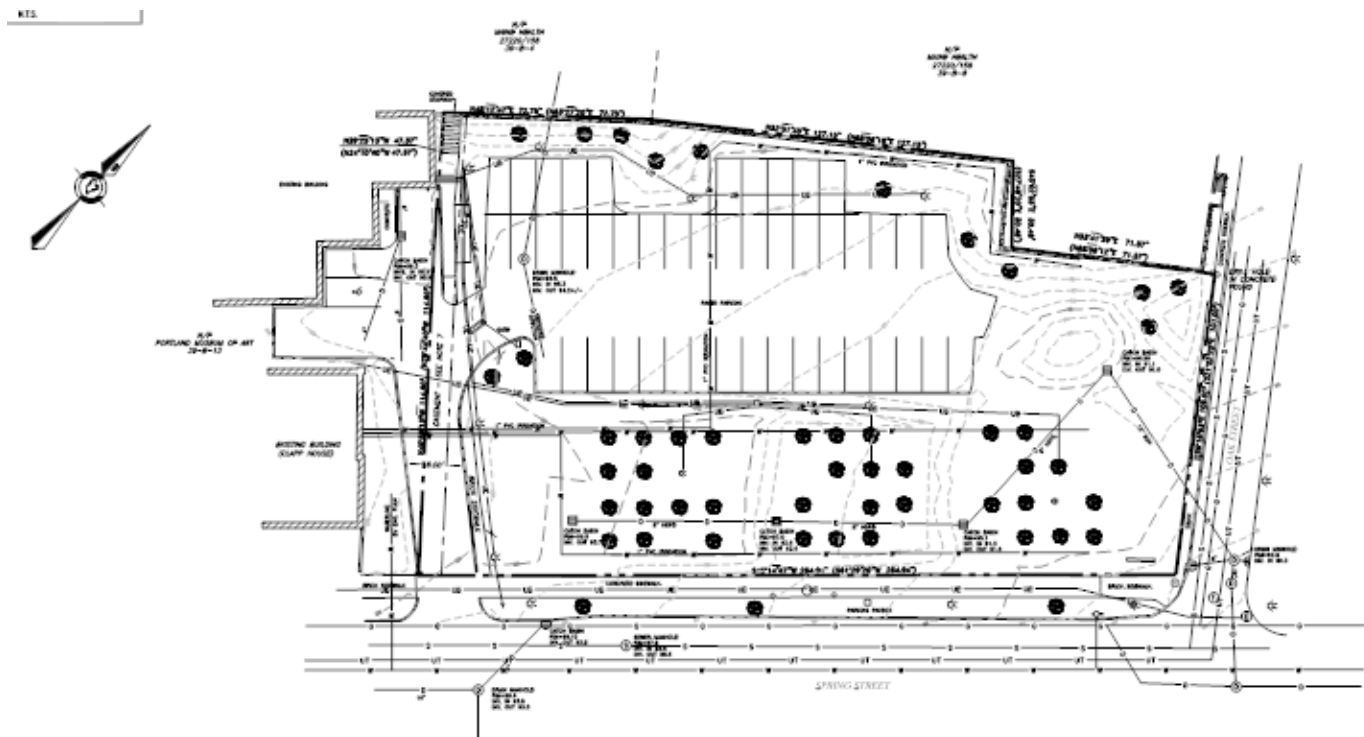


Figure 3: 87 Spring Street Existing Conditions

The original landscape design, by Mohr & Associates, and was approved by the Planning Board in 2008, is comprised of a visual landscape design that suggest the massing of the historic homes removed from this site (prior to the YWCA); three flat terraces are separated by slopes with formal birch planting in the terraced areas. These tree plantings are augmented by groups of shrub planting and lawn; irrigation has been incorporated to assure survival of the planting. Low level lighting is attached to trees in the center of each terrace, which was required in the earlier approval to meet CPTED requirements. Additional tree plantings (mostly red maples) are in groups of three at the throat of the parking lot and in four places along the rear of the site in front of the concrete retaining wall. The concrete retaining wall is painted with anti-vandal paint and has an "armature of plant growth on the entire wall".

Figure 4: Existing Site Conditions



V. PUBLIC COMMENT

A total of 137 notices were sent to property owners within 500 feet of the site and to interested parties. As of this writing no public comments have been received.

VI. RIGHT, TITLE, AND INTEREST

The current owner of the property is the Portland Museum of Art, a Maine nonprofit corporation. The applicant has provided a copy of PMA's existing deed, recorded at the Cumberland County Registry of Deeds (Book 4689, Page 284) in attachment C.

VII. ZONING ANALYSIS**A. ZONE SPECIFIC CONDITIONAL USE STANDARDS – SEC. 14-218****5. Surface parking provided that:**

- a. In the case of lot undergoing level I or level II site plan review, no new surface parking spaces, parking aisles, or vehicle lanes shall be allowed within thirty-five (35) feet of any street, except for driveway(s) located perpendicular to the street and providing access to the site.

Applicant Response: The proposed parking area does not come within thirty-five feet of any street except for the driveway entrance to the site.

- b. No surface parking spaces shall be encumbered by lease or other use commitment exceeding twenty-four (24) month term.

Applicant Response: The proposed site is an expansion to an existing use, not subject to terms of lease.

Staff comment: Based upon the applicant's response to review comments, Staff supports the proposed design and waiver request.

B. GENERAL CONDITIONAL USE STANDARDS – SEC. 14-474

Standards. The Board shall, after review of required materials, authorize issuance of a conditional use permit, upon a showing that the proposed use, at the size and intensity contemplated at the proposed location, will not have substantially greater negative impacts than would normally occur from surrounding uses or other allowable uses in the same zoning district. The Board shall find that this standard is satisfied if it finds that:

- a. The volume and type of vehicle traffic to be generated, hours of operation, expanse of pavement, and the number of parking spaces required are not substantially greater than would normally occur at surrounding uses or other allowable uses in the same zone.

Applicant Response: The number of spaces is not substantially greater than would normally occur at surrounding uses or other allowable uses in the B-3, Downtown Business Zone. The type of traffic to be generated and hours of operation is anticipated to remain the same as existing conditions

The proposed number of parking spaces resides within the “Peak Period Demand Range” of 49-104 spaces based upon the gross floor area of the adjacent Portland Museum of Art buildings (0.63 – 1.34 vehicles/1,000 SF of gross floor area from the 4th Edition Parking Generation from the Institute of Transportation Engineers).

- b. The proposed use will not create unsanitary or harmful conditions by reason of noise, glare, dust, sewage disposal, emissions to the air, odor, lighting, or litter.

Applicant Response: The applicant does not anticipate the creation of unsanitary or harmful conditions by reason of noise, glare, dust, sewage disposal, emissions to the air, odor, lighting, or litter. Stormwater quality treatment will be provided through the development of the vegetated underdrain soil filter best management practice.

- c. The design and operation of the proposed use, including but not limited to landscaping, screening, signs, loading, deliveries, trash or waste generation, arrangement of structures, and materials storage will not have a substantially greater effect/impact on surrounding properties than those associated with surrounding uses or other allowable uses in the zone.

Applicant Response: The existing landscaping will be repurposed in such a way that provides adequate screening, as shown on the Site and Landscape Plan, Sheet C-10 of Civil Plan Set.

The staff finds the proposal to be generally compliant with the city’s general standards for conditional uses.

VIII. DEVELOPMENT REVIEW

The proposed development has been reviewed by staff for conformance with the relevant review standards of Portland’s site plan ordinance and applicable regulations. Staff comments are listed below.

1. Transportation Standards

- a. Impact on Surrounding Street Systems and Access and Circulation
- The proposed development will have minimal traffic impacts.

- b. Sidewalks
Existing sidewalks will not be disturbed. While the district calls for brick materials, the concrete in place is in good condition.

- c. Public Transit Access
The public transit requirements do not apply to this project.

Parking

Mike Tremblay, P.E. and Senior Engineer with DPW, has reviewed the plans and offers the following comments (Attachment 2):

Comment 1: The ADA spaces do not appear to be placed appropriately. They do not seem to represent the closest possible travel distance to the accessible entrance of the building. Please verify that there is no

more appropriate locations for the accessible spaces, or provide an accessible route to an existing sidewalk from the proposed accessible spaces.

Applicant Response 1: The nearest accessible entrance is a private, employee entrance located at PMA's adjacent parcel's loading dock, with a travel length of approximately 128 feet from the proposed accessible spaces. If the ADA spaces were moved closer to Spring Street at the immediate parking lot entrance, the travel length would be approximately 155 feet, which includes the addition of an ADA compliant brick walkway that would join the existing sidewalk. If the brick sidewalk was not included, the travel length would be approximately 134 feet. The nearest public accessible entrance to the Portland Museum of Art is located at Congress Square. The nearest on-street public ADA space is located at 626 Congress Street, with a travel length of approximately 459 feet, and an additional on-street public ADA space is located at 567 Congress Street, with a travel length of approximately 472 feet. Regardless of whether the proposed accessible spaces are located at the designed location or moved closer to Spring Street, the travel length to the accessible public entrance would range from approximately 714 to 788 feet and exceed the distance from both the noted on-street public Congress Street spaces.

Comment 2: The parking spaces proposed are shown as 75-degree spaces with an 18-foot drive aisle and standard lengths and widths. The City's technical standards do not provide a detail for 75-degree parking spaces; we have details for 30-, 45-, 60-, and 90-degree spaces. The drive aisle width is potentially problematic for 75-degree spaces. The City's technical standards require 19-foot drive aisles for 60-degree spaces; in general, the greater the angle of parking spaces, the less drive aisle space is needed, so 75-degree spaces would typically require a drive aisle greater than 19 feet. Several online resources indicate that the appropriate aisle width for 75-degree spaces are in the range of 20-22 feet.

Applicant Response 2: Attached in this submission is a formal waiver request including circulation exhibits and supporting documents for the proposed 75-degree parking spaces. This geometry has been supported by the City peer review staff in the past for 667 Congress and 82 Hanover St.

Staff comment: Based upon the applicant's response to review comments, Staff supports the proposed design and waiver request.

d. Bicycle Parking

The existing site has 12 designated bicycle spaces and the proposed site incorporates 20 bicycle spaces. A net increase of 8 bicycle spaces. The site plan meets the standard requiring a minimum of two bicycle parking spaces for every ten vehicle parking spaces.

2. Environmental Quality Standards

a. Preservation of Significant Natural Features

There are no known significant natural features on the site.

b. Landscaping and Landscape Preservation

The initial proposal did not meet the street tree standard along Spring Street. The applicant responded to review comments and added two additional street trees along Spring Street to meet 4.6.3 of the Technical Manual, as shown on the attached Site Plan, Sheet C-10. The revised plan meets the Landscaping and Landscape Preservation Standards.

Water Quality, Storm Water Management and Erosion Control

The proposed areas of additional pavement located along the north, northeasterly and northwesterly regions of the parcel will be graded to match existing pavement grades and maintain existing drainage paths to the soil filter. The pervious concrete surface was

Surface Treatment Summary	
<u>Surface</u>	<u>Area SF</u>
Pavement & Curbing	21,196
Retaining Wall, Walkways and Concrete Pads	1,190
PMA Sign	10
<u>Total Floor Area</u>	<u>22,396</u>

sized to meet or exceed the requirements set forth in the MDEP Volume III BMPs Technical Design Manual, Chapter 7.1: "Grassed Underdrained Soil Filters". Grassed Underdrained Soil Filter systems have shown to be effective at filtering and removing a wide range of pollutants, including suspended solids, phosphorus, nitrogen, metals, hydrocarbons and some dissolved pollutants.

The Stormwater review was conducted by Lauren Swett, Project Engineer, who confirms that the project meets Site Plan and MDEP standards.

3. Public Infrastructure and Community Safety Standards

The landscaping and lighting designs are in compliance with CPTED standards.

4. Site Design Standards

a. Snow and Ice Loading

Based upon the roof design, it is not anticipated that snow or ice loading will be a concern to pedestrians within the public right-of-way or on the applicant's property. The staff finds the proposal to meet the standards.

b. View Corridors

This site is not within a Protected View Corridor as per the "View Corridor Protection Plan" approved by the Portland City Council in 2001. Further, the site is located outside of the zone for which view corridors are required per the WPDZ ordinance. The staff finds the proposal to meet the standards.

c. Historic Resources

The original landscape design, by Mohr & Associates, is comprised of a visual landscape design that suggest the massing of the historic homes removed from this site. The staff finds the proposal to meet the standards.

d. Exterior Lighting

The proposed project intends to reuse the existing site and tree lighting fixtures. The site lighting has been retrofitted to LED compatibility since original installation. Please refer to the attached LED manufactures product sheets. The staff finds the proposal to meet the standards.

e. Signage and Wayfinding

The existing private parking sign indicated on Construction Management Plan, Sheet C-03, is to be relocated as indicated on Site and Landscape Plan, Sheet C-10. The existing Portland Museum of Art sign at the intersection of Oak and Spring Street is to remain undisturbed. Acorn anticipates additional signage to consist of Barrier Free Parking Signs for the ADA parking spaces, as displayed on Site Details, Sheet C-40. The staff finds the proposal to meet the standards.

IX. STAFF RECOMMENDATION

Subject to the proposed motions and conditions of approval listed below, Planning Division staff recommend that the Planning Board approve the expansion of the existing, Portland Museum of Art parking lot to accommodate 69 vehicle parking spaces at 87 Spring Street.

X. PROPOSED MOTIONS FOR THE PLANNING BOARD'S CONSIDERATION**A. WAIVERS**

On the basis of the application, plans, reports and other information submitted by the applicant, findings and recommendations contained in the Planning Board Report for the public hearing on April 23, 2019 for application # PL-000524-2019 (87 Spring Street) relevant to the Site Plan Standards of the Land Use Code and Portland's Technical and Design Standards, and other regulations, and the testimony presented at the Planning Board hearing:

1. Parking Lot and Parking Space Design
The Planning Board [**finds / does not find**] based upon the DPW Engineer's Review, that extraordinary conditions exist or undue hardship may result from strict compliance with the Technical Manual standard (Section 1.14. Parking Lot and Parking Space Design) which specifies parking lot geometry, that substantial justice and the public interest are secured with the proposed variation in this standard, and that variation is consistent with the intent of the ordinance. The Planning Board [**waives/ does not waive**] the Technical Manual standard Section 1.14 to allow an 18 foot drive aisle width in combination with stalls oriented at a 75-degree angle.

B. CONDITIONAL USE

On the basis of the application, plans, reports and other information submitted by the applicant, findings and recommendations contained in the Planning Board report for the public hearing on April 23, 2019 for application # CU-000566-2019 (87 Spring Street) relevant to the conditional use standards listed under Sec. Sec. 14-218 and Sec. 14-474, and the testimony presented at the Planning Board hearing, the Planning Board [**finds/does not find**] that the plan is in conformance with the conditional use standards of the Land Use Code.

C. SITE PLAN REVIEW

On the basis of the application, plans, reports and other information submitted by the applicant; findings and recommendations contained in the Planning Board Report for the public hearing on April 23, 2019 for application # PL- PL-000524-2019 (87 Spring Street) relevant to the site plan regulations; and the testimony presented at the Planning Board hearing, the Planning Board [**finds/does not find**] that the plan is in conformance with the site plan standards of the land use code.

XI. ATTACHMENTSSTAFF REVIEW

1. Final Civil Engineering and Stormwater Comments
2. Final DPW Comments

Applicants submittal

- A. Cover Letter
- B. Level II Final Site Plan Application & Checklist
- C. Right, Title and Interest
- D. Zoning Assessment
- E. Written Easements
- F. Requests for Waivers
- G. Financial Capacity

- H. Technical Capacity
- I. Conformity with Land Use Ordinance
- J. Stormwater Management Report
- K. Erosion and Sedimentation Control Report
- L. Lighting
- M. Utilities
- N. Construction Management Report
- O. Transportation Analysis
- P. Solid Waste Disposal

Plans

- Plan 1 Cover Sheet
- Plan 2 Drainage Details
- Plan 3 Erosion & Sedimentation Control Details
- Plan 4 Circulation Exhibits
- Plan 5 General Notes
- Plan 6 Existing Conditions Plan
- Plan 7 Construction Management Plan
- Plan 8 Site Plan & Landscape Plan
- Plan 9 Utility Plan
- Plan 10 Grading & Drainage Plan
- Plan 11 Site Details
- Plan 12 Landscape & Utility Details
- Plan 13 Acorn PMA Response Letter 4-12-19
- Plan 14 Request for Waivers
- Plan 15 Parking Final
- Plan 16 Photometric Plan



Andrew Tufts <atufts@portlandmaine.gov>

87 Spring St Comments

13 messages

Andrew Tufts <atufts@portlandmaine.gov>
To: William Savage <wsavage@acorn-engineering.com>

Wed, Apr 10, 2019 at 10:10 AM

Hi Will,

I'm looking forward to this afternoons meeting. I think we'll be in good shape after reviewing and discussing comments. Here are the comments I have so far:

Stormwater: Lauren Swett says the stormwater looks good but she's still looking into connections and will have final comments this week.

Management: Converting from employee to visitor, how will this be controlled?

ADA: The ADA spaces do not appear to be placed appropriately. They do not seem to represent the closest possible travel distance to the accessible entrance of the building. Please verify that there is no more appropriate locations for the accessible spaces, or provide an accessible route to an existing sidewalk from the proposed accessible spaces.

Parking Specs:

The parking spaces proposed are shown as 75-degree spaces with an 18-foot drive aisle and standard lengths and widths. The City's technical standards do not provide a detail for 75-degree parking spaces; we have details for 30-, 45-, 60-, and 90-degree spaces. The drive aisle width is potentially problematic for 75-degree spaces. The City's technical standards require 19-foot drive aisles for 60-degree spaces; in general, the greater the angle of parking spaces, the less drive aisle space is needed, so 75-degree spaces would typically require a drive aisle greater than 19 feet. Several online resources indicate that the appropriate aisle width for 75-degree spaces are in the range of 20-22 feet.

Landscaping: I'm going to be discussing this further with Jeff Tarling shortly and will have those comments by this afternoon.

--

Andrew Tufts
Project Planner
Planning and Urban Development Department

389 Congress Street 4th Floor
Portland, ME 04101
atufts@portlandmaine.gov
(207) 751-0028

William Savage <wsavage@acorn-engineering.com>

Wed, Apr 10, 2019 at 3:26 PM

To: Andrew Tufts <atufts@portlandmaine.gov>

Cc: "Mike Tremblay (mtremblay@portlandmaine.gov)" <mtremblay@portlandmaine.gov>, "BAB@portlandmaine.gov" <BAB@portlandmaine.gov>, Faith Thomas <fthomas@acorn-engineering.com>

We will send along a more formal comment response but in the interim here is the approval for 667 Congress as well as the parking standards I was referencing at the meeting.

Thanks for meeting.

- Will

B. 207.775.2655

C. 207.317.1884

[Quoted text hidden]

Notice: Under Maine law, documents - including e-mails - in the possession of public officials or city employees about government business may be classified as public records. There are very few exceptions. As a result, please be advised that what is written in an e-mail could be released to the public and/or the media if requested.

3 attachments

Congress St. - 667 (Report).pdf
1780K



Congress St. - 667 (Memo Attachments).pdf
1211K



Parking Design Standards.pdf
2187K

William Savage <wsavage@acorn-engineering.com>

Thu, Apr 11, 2019 at 10:27 AM

To: Andrew Tufts <atufts@portlandmaine.gov>

Cc: "Mike Tremblay (mtremblay@portlandmaine.gov)" <mtremblay@portlandmaine.gov>, "BAB@portlandmaine.gov" <BAB@portlandmaine.gov>, Faith Thomas <fthomas@acorn-engineering.com>

Mike/Andrew,

Here is the autoturn for your review. Any other comments from Jeff Tarling or Lauren Swett?

- Will

B. 207.775.2655

C. 207.317.1884

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EXHIBITS_4-11-19 R1.pdf
1599K

Andrew Tufts <atufts@portlandmaine.gov>

Thu, Apr 11, 2019 at 10:40 AM

To: William Savage <wsavage@acorn-engineering.com>

Thanks Will,

I should be hearing from Lauren shortly, I'll be reaching out to her.

Jeff has been busy, so I will move forward with my project report independently of his comments and tie them in accordingly

Barbara has added you to the April 23 agenda, so we'll be able to move forward and I'll begin my report.

Let me know if you have any questions.

- Andrew

[Quoted text hidden]

William Savage <wsavage@acorn-engineering.com>
To: Andrew Tufts <atufts@portlandmaine.gov>

Thu, Apr 11, 2019 at 10:45 AM

Thank-you!

[Quoted text hidden]

Mike Tremblay <mtremblay@portlandmaine.gov>
To: William Savage <wsavage@acorn-engineering.com>

Thu, Apr 11, 2019 at 1:41 PM

Cc: Andrew Tufts <atufts@portlandmaine.gov>, "Mike Tremblay (mtremblay@portlandmaine.gov)" <mtremblay@portlandmaine.gov>, "BAB@portlandmaine.gov" <BAB@portlandmaine.gov>, Faith Thomas <fthomas@acorn-engineering.com>

Will,

Please include one additional turning move showing a typical maneuver into one of the spaces. The entering maneuver you show is indeed one of the more challenging turns, but it uses more width than a typical turn would take into one of the other 75-degree spaces. As you'll need to ask for a waiver from the city's technical standards, I'd like to be able to make sure the Board can see that a typical turning movement into a space is possible without much fuss.

Thanks!

Mike Tremblay, P.E.
Senior Engineer
Engineering Division
Department of Public Works
City of Portland, ME
mtremblay@portlandmaine.gov
P. 207.874.8881 F. 207.874.8852



On Thu, Apr 11, 2019 at 10:27 AM William Savage <wsavage@acorn-engineering.com> wrote:

[Quoted text hidden]

William Savage <wsavage@acorn-engineering.com>
To: Mike Tremblay <mtremblay@portlandmaine.gov>
Cc: Andrew Tufts <atufts@portlandmaine.gov>, "BAB@portlandmaine.gov" <BAB@portlandmaine.gov>, Faith Thomas <fthomas@acorn-engineering.com>

Thu, Apr 11, 2019 at 2:22 PM

Mike,

How does this look? Also threw in a WB-67 to really jazz up the plan.

- Will

B. 207.775.2655

C. 207.317.1884

From: Mike Tremblay <mtremblay@portlandmaine.gov>

Sent: Thursday, April 11, 2019 1:41 PM

To: William Savage <wsavage@acorn-engineering.com>

Cc: Andrew Tufts <atufts@portlandmaine.gov>; Mike Tremblay (mtremblay@portlandmaine.gov)

<mtremblay@portlandmaine.gov>; BAB@portlandmaine.gov; Faith Thomas <fthomas@acorn-engineering.com>

Subject: Re: 87 Spring St Comments

Will,

Please include one additional turning move showing a typical maneuver into one of the spaces. The entering maneuver you show is indeed one of the more challenging turns, but it uses more width than a typical turn would take into one of the other 75-degree spaces. As you'll need to ask for a waiver from the city's technical standards, I'd like to be able to make sure the Board can see that a typical turning movement into a space is possible without much fuss.

Thanks!

Mike Tremblay, P.E.

Senior Engineer

Engineering Division

Department of Public Works

City of Portland, ME

mtremblay@portlandmaine.gov

P. 207.874.8881 F. 207.874.8852

[REDACTED]

[Quoted text hidden]



EX_5_4-11-19.pdf

994K

Mike Tremblay <mtremblay@portlandmaine.gov>

Fri, Apr 12, 2019 at 8:02 AM

To: William Savage <wsavage@acorn-engineering.com>

Cc: Andrew Tufts <atufts@portlandmaine.gov>, "BAB@portlandmaine.gov" <BAB@portlandmaine.gov>, Faith Thomas <fthomas@acorn-engineering.com>

Looks good to me. Thanks!

-Mike

Mike Tremblay, P.E.

Senior Engineer

Engineering Division

Department of Public Works

City of Portland, ME

mtremblay@portlandmaine.gov

P. 207.874.8881 F. 207.874.8852



[Quoted text hidden]

Faith Thomas <fthomas@acorn-engineering.com>

Tue, Apr 16, 2019 at 5:09 PM

To: Andrew Tufts <atufts@portlandmaine.gov>

Cc: "Mike Tremblay (mtremblay@portlandmaine.gov)" <mtremblay@portlandmaine.gov>, "BAB@portlandmaine.gov" <BAB@portlandmaine.gov>, William Savage <wsavage@acorn-engineering.com>

Andrew and Team,

The formalized comment response plans and documents were uploaded to ePlan yesterday, April 15th. Let us know if we can provide any additional information before the Planning Board Public Hearing on the 23rd.

Thanks,

From: William Savage <wsavage@acorn-engineering.com>

Sent: Wednesday, April 10, 2019 3:27 PM

To: Andrew Tufts <atufts@portlandmaine.gov>

Cc: Mike Tremblay (mtremblay@portlandmaine.gov) <mtremblay@portlandmaine.gov>; BAB@portlandmaine.gov; Faith Thomas <fthomas@acorn-engineering.com>

Subject: RE: 87 Spring St Comments

We will send along a more formal comment response but in the interim here is the approval for 667 Congress as well as the parking standards I was referencing at the meeting.

[Quoted text hidden]

Andrew Tufts <atufts@portlandmaine.gov>

Wed, Apr 17, 2019 at 8:09 AM

To: Faith Thomas <fthomas@acorn-engineering.com>

Cc: "Mike Tremblay (mtremblay@portlandmaine.gov)" <mtremblay@portlandmaine.gov>, "BAB@portlandmaine.gov" <BAB@portlandmaine.gov>, William Savage <wsavage@acorn-engineering.com>

Hi Faith,

Thanks for the submittal update. I'll read through the changes today and get back to you soon.

Best

[Quoted text hidden]

Faith Thomas <fthomas@acorn-engineering.com>

Wed, Apr 17, 2019 at 8:36 AM

To: Andrew Tufts <atufts@portlandmaine.gov>

Cc: "Mike Tremblay (mtremblay@portlandmaine.gov)" <mtremblay@portlandmaine.gov>, "BAB@portlandmaine.gov" <BAB@portlandmaine.gov>, William Savage <wsavage@acorn-engineering.com>

Andrew,

Sounds great, we'll wait to hear from you.

Thanks,

[Quoted text hidden]

Andrew Tufts <atufts@portlandmaine.gov>

Wed, Apr 17, 2019 at 2:23 PM

To: Faith Thomas <fthomas@acorn-engineering.com>

Hi Faith,

Here are the additional comments I've gathered from Bruce Hyman (transportation) and Lauren Swett (stormwater).

BH - Bike Parking:

If they are not providing any additional bike parking, I think they should, in conformance with the bike parking provisions. I may have missed this (or forgotten if it was raised) as part of our discussions previously.

LS:

The lighting submission refers to LED product information that was not included with the current submission.

The construction management plan notes that "Adequate parking for construction workers shall be provided along Spring Street or arrangements for off-street parking at an off-site location shall be provided." It is our understanding that the City generally does not want contractor parking to be provided along City streets, and if street parking is to be used, additional information on agreements for parking use should be provided.

The project is required to comply with the Basic, General, and Flooding standards for stormwater in accordance with Maine DEP Chapter 500 and Chapter 5 of the City of Portland Technical Standards. The plans show adequate erosion and sedimentation control standards in accordance with the Basic Standards. A vegetated underdrained soil filter has been proposed to provide stormwater quality and quantity management to meet the General and Flooding Standards. We have the following comments:

The HydroCAD model shows that during the 10- and 25-year storms, water elevations will be at or greater than the catch basin rim elevation, and grades appear to slope down away from the catch basin to the sidewalk. The catch basin provides the only overflow discharge location. Additional spot grades, and possibly some additional elevation should be provided at the eastern corner of the soil filter, near the proposed catch basin to provide further protection from overflow onto the sidewalk.

[Quoted text hidden]

Faith Thomas <fthomas@acorn-engineering.com>

Fri, Apr 19, 2019 at 11:11 AM

To: Andrew Tufts <atufts@portlandmaine.gov>
Cc: William Savage <wsavage@acorn-engineering.com>

Andrew,

Revised plans have been uploaded to ePLan.

Below are Acorn's comment responses:

BH - Bike Parking:

If they are not providing any additional bike parking, I think they should, in conformance with the bike parking provisions. I may have missed this (or forgotten if it was raised) as part of our discussions previously.

Bike parking is indicated on the Site Plan, Sheet C-10 resubmitted on 4-12-19. Plan left of the sheet displays callouts concerning the existing bike parking as well as the 4 proposed surface-mounted dero round racks. The existing conditions include 12 spaces, with the proposed providing 20 spaces (15 spaces required).

LS:

The lighting submission refers to LED product information that was not included with the current submission.

The lighting submission has been revised to include the referenced LED product information.

The construction management plan notes that "Adequate parking for construction workers shall be provided along Spring Street or arrangements for off-street parking at an off-site location shall be provided." It is our understanding that the City generally does not want contractor parking to be provided along City streets, and if street parking is to be used, additional information on agreements for parking use should be provided.

The construction management plan has been revised to note that construction related parking will be provided on site.

The project is required to comply with the Basic, General, and Flooding standards for stormwater in accordance with Maine DEP Chapter 500 and Chapter 5 of the City of Portland Technical Standards. The plans show adequate erosion and sedimentation control standards in accordance with the Basic Standards. A vegetated underdrained soil filter has been proposed to provide stormwater quality and quantity management to meet the General and Flooding Standards. We have the following comments:

The HydroCAD model shows that during the 10- and 25-year storms, water elevations will be at or greater than the catch basin rim elevation, and grades appear to slope down away from the catch basin to the sidewalk. The catch basin provides the only overflow discharge location. Additional spot grades, and possibly some additional elevation should be provided at the eastern corner of the soil filter, near the proposed catch basin to provide further protection from overflow onto the sidewalk.

The VUSF area and volume has remained the same, but area has been reshaped to allow for the berm to be increased from 95.6' to 95.75' in most locations, to provide increased protection from overflow onto the sidewalk.

Let us know if we can be of additional assistance in reviewing the latest submission materials.

Thanks and have a great weekend,

4/19/2019

City of Portland Mail - 87 Spring St Comments

[Quoted text hidden]



Andrew Tufts <atufts@portlandmaine.gov>

Bike Parking: 87 Spring

1 message

Bruce Hyman <bhyman@portlandmaine.gov>

Wed, Apr 17, 2019 at 9:27 AM

To: Andrew Tufts <atufts@portlandmaine.gov>, Michael Tremblay <mtremblay@portlandmaine.gov>

If they are not providing any additional bike parking, I think they should, in conformance with the bike parking provisions. I may have missed this (or forgotten if it was raised) as part of our discussions previously.

B

--

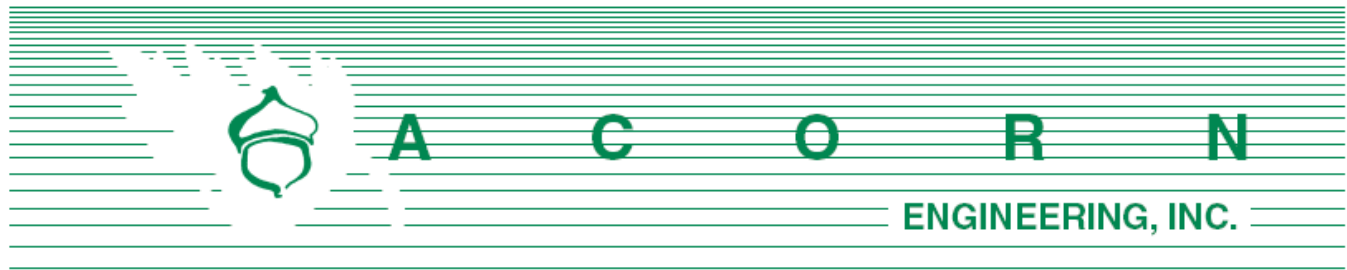
Bruce Hyman
Transportation Program Manager

Department of Planning & Urban Development
389 Congress Street
Portland, Maine 04101
(207) 874-8717 phone

bhyman@portlandmaine.gov
<http://www.portlandmaine.gov/1363/Transportation-Division>
<http://www.portlandmaine.gov>

Yes! Transportation's Good Here





Planning Division
City of Portland, Maine
389 Congress Street, 4th Floor
Portland, ME 04101

February 21, 2019

Subject: Level II Final Site Plan Application
Portland Museum of Art Visitor Parking Lot Project

To Whom It May Concern:

On behalf of the Portland Museum of Art (PMA), we are pleased to submit the accompanying submission material package related to PMA's proposed visitor parking lot redevelopment project. The project is located at 87 Spring Street, which resides within the Downtown Business (B-3) and Downtown Entertainment Overlay (DEOZ) Zoning Districts. The project's objective is to provide a more efficient parking layout while minimizing the expanded footprint to the greatest practical extent and complying with the required 35 ft buffer from both Spring and Oak Street.

Proposed parking lot improvements include constructing full depth pavement in the expanded footprint areas. Existing landscaping and granite curbing is to be reused based upon the expanded footprint. The project also proposes to modify water quality treatment measures, with the addition of a vegetated underdrain soil filter. The designed vegetated underdrain soil filter is an accepted Low Impact Development (LID) strategy by the Maine Department of Environmental Protection.

In addition, the parking lot redevelopment will increase ADA accessible parking and has been designed with LID practices and aims to reuse existing landscaping, lighting and additional site elements. The proposed stormwater system measures are designed to reduce the effect of increased impervious area and create an aesthetically pleasing environment around the proposed parking lot.

We are pleased to submit this application as the proposed development will create more inviting and open access to PMA for its visitors and staff, which aids in fostering PMA's organizational objective. This submission package is intended to meet the City's Submission Requirements as outlined in the Level II Site Plan Application procedures.

The PMA staff has compiled a team of leading professionals from the development and sustainable construction industries to complete the design. If you have any questions regarding these materials or the completeness of the application materials, please contact us within the next five (5) days.

Sincerely,



William H. Savage, P.E.
Project Manager
Acorn Engineering, Inc.

The following documents and drawings will be uploaded onto the City's electronic submission site per the procedure outlined in the Level II Site Plan Application:

Documents:

- Section A: Cover Letter
- Section B: Level II Final Site Plan Application & Checklist
- Section C: Right, Title, Interest
- Section D: Zoning Assessment
- Section E: Summary of Written Easements
- Section F: Request for Waivers
- Section G: Financial Capacity
- Section H: Technical Capacity
- Section I: Conformity with Land Use Ordinance
- Section J: Stormwater Management Report
- Section K: Erosion & Sedimentation Control Report
- Section L: Lighting
- Section M: Utilities
- Section N: Construction Management Plan
- Section O: Transportation Analysis
- Section P: Solid Waste Disposal

Drawings:

- Civil Site Plan Set



Section B

Level II Site Plan
Application & Checklist



LEVEL II and LEVEL III APPLICATION SUBMISSION CHECKLIST

Please submit each document as a separate PDF file.

Please confirm by electronically checking the boxes to the left

General Application Documents

Checklist	Items to be Provided
Yes ☒ NA ☐ Plan ☐	PROJECT DESCRIPTION Cover Letter with detailed project description
Yes ☐ NA ☒ Plan ☐	COMPLETED CHECKLIST – LEVEL III APPLICATION
Yes ☒ NA ☐ Plan ☐	RIGHT, TITLE AND INTEREST Deeds, leases, or purchase and sales agreements
Yes ☐ NA ☒ Plan ☐	EVIDENCE OF STATE OR FEDERAL APPROVALS , if applicable Permits or letters of non-jurisdiction, if applicable
Yes ☒ NA ☐ Plan ☐	ZONING ASSESSMENT Table listing required and proposed uses and dimensional standards Zoning Assessment Table
Yes ☒ NA ☐ Plan ☐	EXISTING &/OR PROPOSED EASEMENTS OR COVENANTS , if applicable Evidence of existing easements and any proposed easements
Yes ☐ NA ☒ Plan ☐	WAIVER REQUESTS Written request for waiver describing request and reason. Waiver Table
Yes ☒ NA ☐ Plan ☐	FINANCIAL CAPABILITY Letter or evidence from a financial institution or third party verifying financial capacity to undertake project
Yes ☒ NA ☐ Plan ☐	TECHNICAL CAPABILITY Evidence of technical capability of applicant and consultants – resumes and/or examples of past projects

LEVEL II AND LEVEL III 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

Check list	Assess/Provide/Document:
Yes NA Plan ☒ ☐ ☐	Transportation Analysis- Traffic Impact (14-526 (a) 1) - Provisions for pedestrian, bicycle, vehicle, and loading circulation and incremental volume of traffic impacts - Traffic Impact Study (Technical Manual, Section 1) if applicable
Yes NA Plan ☒ ☐ ☐	Access and Circulation (14-526 (a) 2 a) - Access and internal circulation, addressing ADA access - Access and egress impacts on traffic flows - Description and use of drive-up features, if applicable
Yes NA Plan ☒ ☐ ☐	Loading and Servicing (14-526 (a) 2 b) - Loading and servicing needs, route and travel way geometrics for deliveries - Turning templates for delivery vehicles, if applicable
Yes NA Plan ☒ ☐ ☐	Sidewalks (14-526 (a) 2 c) - Sidewalks and condition along street frontages and internal walkways - Engineered details for ADA ramps and public sidewalk details meeting sidewalk materials policy and ADA ramp construction details as applicable (Technical Manual, Section 1)
Yes NA Plan ☐ ☒ ☐	Public Transit (14-526 (a) 3), if applicable - Existing available transit services - Proposed site plan design details, such as easement, pad base, and shelter
Yes NA Plan ☒ ☐ ☐	Off-Street Parking: Vehicle & Motorcycle/Scooter) (14-526 (a) 4 a and c) - Expected parking demand, proposed parking supply, ADA parking, and applicable Zoning Requirements - Address Technical Manual standards (Section 1) for curb cut separation and parking lot layout and locate on site plan
Yes NA Plan ☒ ☐ ☐	Bicycle Parking (14-526 (a) 4 b) - Address bicycle parking requirements and identify locations on-site - Construction details for bike racks (Technical Manual, Section 1)
Yes NA Plan ☒ ☐ ☐	Snow Storage (14-526 (a) 4 d) Management plan for snow removal and locate snow storage areas on plan
Yes NA Plan ☐ ☒ ☐	Traffic Demand Management (TDM) (14-526 (a) 5), if applicable Develop TDM with Trip Reduction Targets and Strategies

ENVIRONMENTAL AND LANDSCAPE FEATURES			
Check list		Assess/Provide/Document:	
Yes	NA	Plan	Preservation of Significant Natural Features (14-526 (b) 1), if applicable - Trees, plants, habitats listed on State or Federal list of endangered or threatened - High and moderate value waterfowl and wading habitat - Aquifers on Casco Bay Islands - Waterbodies (including wetlands, watercourses, significant vernal pools and floodplains) - Proposed preservation areas and protection measures - Documentation from environmental consultants, determinations from applicable state agencies
☐	☒	☐	
Yes	NA	Plan	Landscaping and Landscape Preservation (14-526 (b) 2 a) - Preservation of trees and preservation within required zoning setbacks (Technical Manual, Section 4) - Protection measures of existing vegetation during construction - Protection measures within Shoreland Zone, if applicable
☒	☐	☐	
Yes	NA	Plan	Site Landscaping (14-526 (b) 2 b) - Screening and buffering of service areas and between non-residential and residential uses - Planting plans with plant schedule and sizes (Technical Manual, Section 4)
☒	☐	☐	
Yes	NA	Plan	Parking Lot Landscaping (14-526 (b) 2 b ii), if applicable Landscaped islands within parking areas (Technical Manual, Section 4)
☒	☐	☐	
Yes	NA	Plan	Street Trees (14-526 (b) 2 b iii) - Existing Heritage or Feature Trees on site and measures to preserve - Identify street trees on the plan meeting the site plan and Technical Manual standards (Section 4) or identify alternative measures, if applicable
☒	☐	☐	
ENVIRONMENTAL AND STORMWATER			
Check list		Assess/Provide/Document:	
Yes	NA	Plan	Water Quality, Stormwater Management and Erosion Control (14-526 (b) 3 a) - Stormwater report in compliance with Section 5 of Technical Manual and DEP Chapter 500 stormwater for basic, general and flooding standards, as applicable - Erosion control plan and measures - Evidence of compliance with Urban Impaired Stream Standards pursuant to DEP Chapter 500 stormwater, as applicable - Subsurface sanitary sewage disposal and groundwater protection
☒	☐	☐	

PUBLIC INFRASTRUCTURE AND SAFETY			
Check list		Assess/Provide/Document:	
Yes	NA	Plan	Consistency with City Master Plans (14-526 (c) 1) - Identify consistency with master plans - Proposed easements, rights and improvements to connect or continue off-premises public infrastructure, as applicable
☒	☐	☐	
Yes	NA	Plan	Public Safety and Fire Prevention (14-526 (c)) - Address Crime Prevention through Environmental Design (CPTED) (Technical Manual, Section 3) - Emergency vehicle access - Address consistency with public safety standards (Technical Manual, Section 3) - Submit a code summary referring NFPA 1 and all Fire Department standards (Technical Manual, Section 3) – Fire Checklist
☒	☐	☐	
Yes	NA	Plan	Availability and Adequacy of Public Utilities (14-526 (c) 3) (Technical Manual, Sections 2 & 9) - Electrical services, including providing underground services - Identify existing and proposed connections for public utilities and required public utility upgrades - Sewer line connections are required, if there is a main within 200 feet - Proposed solid waste management facilities on-site and management for the site - Written evidence of the ability to serve from utility companies, as applicable
☒	☐	☐	
SITE DESIGN			
Check list		Assess/Provide/Document:	
Yes	NA	Plan	Massing, Ventilations and Wind Impact (14-526 (d) 1) - Wind and ventilation impacts on adjoining structures and/or adjacent public spaces. Wind study, if applicable - Bulk, location or height impacts on adjoining structures - Identify and locate HVAC equipment and venting away from public spaces and residential properties - Identify screening and manufacturing specifications for noise, if applicable
☐	☒	☐	
Yes	NA	Plan	Shadows (14-526 (d) 2), if applicable Shadow analysis of impacts on publicly accessible open space (Technical Manual, Section 11)
☐	☒	☐	
Yes	NA	Plan	Snow and Ice Loading (14-526 (d) 3) Building design to prevent snow and ice from loading or falling onto adjacent properties or public ways
☒	☐	☐	
Yes	NA	Plan	View Corridors (14-526 (d) 4), if applicable Protection of designated view corridors (Portland Design Manual, Appendix 1)
☐	☒	☐	

Yes NA Plan ☒ ☐ ☐	Historic Resources (14-526 (d) 5), if applicable - Identify developments within Historic Districts or affecting Designated Landmarks - Certificate of Appropriateness or other evidence - Identify Developments within 100 feet of Historic Districts or affecting Designated Landmarks. Advisory HP review may be required - Address preservation and documentation of Archaeological Resources
Yes NA Plan ☐ ☒ ☐	Exterior Lighting (14-526 (d) 6) - Cut sheets of on-site light fixtures and any architectural or specialty lights (Technical Manual, Section 12) - Engineered details for any lights proposed in street right-of-way (Technical Manual, Section 10)
Yes NA Plan ☐ ☒ ☐	Noise and Vibration (14-526 (d) 7) Evidence of noise levels for equipment, such as equipment specifications, to demonstrate consistency with zoning requirements
Yes NA Plan ☐ ☒ ☐	Signage and Wayfinding (14-526 (d) 8), if applicable - Signage plan showing the location, dimensions, height and setback of all existing and proposed signs. Signs in Historic Districts are reviewed by Historic Preservation staff - Proposed commercial and directional signage on site
Yes NA Plan ☐ ☒ ☐	Zone Related Design Standards (14-526 (d) 5) - Address Historic Preservation Design Review, if applicable - Address any applicable design review standards by zone - Address submission requirements from Design Manual, page 1, addressing neighborhood context - Description of exterior materials, color, finish, and samples
Construction Management Plan	
Yes NA Plan ☒ ☐ ☐	Construction Management Plan Construction Management Document and Plan

Level II and Level III Site Plan Checklist Please upload the following drawings with the listed details into e-Plan as separate pdfs.	
☒	RECENT BOUNDARY SURVEY (stamped by Maine Licensed Surveyor)
Must be in compliance with Technical Manual, Section 13	
SITE PLAN(s) (stamped by Maine Licensed Engineer) including:	
☒	Existing Conditions • Approximate location of structures on abutting property • Topography • Locate water courses • Delineate wetlands • Zone lines
☒	Proposed Site Plan • Ground floor area, and grade elevations for all buildings
☒	Access, Circulation, and Parking • Streets and intersections adjacent to site , any proposed geometric modifications • Location, dimensions and materials of all existing and 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 • Existing and proposed transit infrastructure with dimensions/ engineering specifications • Location of vehicle and bicycle parking with dimensions and engineering specifications
☒	Site Considerations • Identify snow storage areas • Location of fire hydrants • Location of solid waste management facilities
☒	UTILITY PLAN including:
• Existing utilities on site and within public streets • Location, sizing, and directional flows of all existing and proposed utilities • Location and dimensions of off-premises public or publicly accessible infrastructure adjacent to site • Electric utility infrastructure	

☒	GRADING and DRAINAGE PLAN including:
	- Existing grades and drainage - Proposed grades - Proposed stormwater management meeting Technical Manual (Section 5) standards - Location and proposed alteration of a water course - Preservation or alteration of wetlands
☒	EROSION CONTROL
	Must be in compliance with Technical Manual, Section 5
☒	LANDSCAPE PLAN including:
	- Existing vegetation to be preserved and preservation measures - Proposed landscaping and buffers - Planting schedule
☐	RECORDING PLAT , if applicable
	IF SUBDIVISION: Must be in compliance with requirements of Section 14-496 (b)
☐	ARCHITECTURAL PLANS & RENDERINGS including:
	- Exterior building elevations, color renderings, illustrations of all sides - Location and dimensions of all existing & proposed HVAC & mechanical equipment, all proposed screening - Provide context drawings, if applicable (Design Manual, page 1) - Floor plans

Section C

Right, Title, Interest

QUITCLAIM DEED

THE YOUNG WOMEN'S CHRISTIAN ASSOCIATION OF PORTLAND, MAINE, a Maine nonprofit corporation, for consideration paid, GRANTS to the **PORTLAND MUSEUM OF ART**, a Maine nonprofit corporation having a mailing address of Seven Congress Square, Portland, Maine 04101, certain real estate located in Portland, Cumberland County, Maine, which is more particularly described in Exhibit A attached hereto and made a part hereof.

Reference is hereby made to the following deeds: State of Maine to Young Women's Christian Association of Portland, Maine by quitclaim deed dated November 19, 1958 and recorded in the Cumberland County Registry of Deeds in Book 2451, Page 19; and Porteous, Mitchell & Braun Company to Young Women's Christian Association of Portland, Maine by warranty deed dated August 12, 1966 and recorded in the Cumberland County Registry of Deeds in Book 3303, Page 47. Further reference is made to that certain "ALTA/ACSM LAND TITLE SURVEY at 87 Spring Street, Portland, Maine made for Maine State Housing Authority" dated December 1, 2006 and prepared by Owen Haskell, Inc.

IN WITNESS WHEREOF, this instrument is executed on behalf of The Young Women's Christian Association of Portland, Maine this 10th day of July, 2007 by Margaret F. Cleveland, its President, thereunto duly authorized.

SIGNED, SEALED AND DELIVERED
IN THE PRESENCE OF

Witness

STATE OF MAINE
County of Cumberland, SS.

THE YOUNG WOMEN'S CHRISTIAN
ASSOCIATION OF PORTLAND, MAINE

Margaret F. Cleveland, its President

July 10, 2007

Then personally appeared the above-named Margaret F. Cleveland, President of The Young Women's Christian Association of Portland, Maine, and acknowledged the foregoing instrument to be her free act and deed in said capacity and the free act and deed of The Young Women's Christian Association of Portland, Maine.

Before me,

Joleen M. Rice
Notary Public/Maine Attorney-at-Law

Printed Name:

JOLEEN M. RICE

NOTARY PUBLIC, MAINE

COMMISSION EXPIRES MAY 3, 2012

SEAL

EXHIBIT A

87 Spring Street, Portland, Maine

A certain lot or parcel of land, with the buildings thereon, situated on the northerly side of Spring Street and the westerly side of Oak Street in the City of Portland, County of Cumberland, and State of Maine, bounded and described as follows:

Beginning at the aforementioned intersection of Spring and Oak Streets;

Thence S 61° 29' 20" W along said northerly side of Spring Street, 264.94 feet to land now or formerly of the Portland Society of Art;

Thence, leaving said Spring Street, N 25° 44' 40" W along said Portland Society of Art land 114.90 feet;

Thence N 24° 10' 40" W, continuing along said Portland Society of Art land 47.37 feet to land now or formerly of Harper Hotels Inc.;

Thence, along said Harper Hotels Inc. the following courses and distances:

N 63° 27' 20" E a distance of 72.75 feet;

N 68° 06' 18" E a distance of 127.15 feet;

S 27° 48' 20" E a distance of 30.48 feet;

N 68° 56' 12" E a distance of 71.57 feet to the westerly side of the aforementioned Oak Street;

Thence S 21° 02' 20" E along said Oak Street 106.00 feet to the point of beginning and containing 0.89 acres, more or less.

Together with the benefit of rights and easements granted to The Young Women's Christian Association of Portland, Maine by Portland Society of Art as set forth in an Indenture dated October 8, 1980 and recorded in the Cumberland County Registry of Deeds in Book 4689, Page 284, and subject to the rights and easements granted to the Portland Society of Art in said instrument and the terms and conditions contained therein, as affected by an Amendment to Indenture dated December 1, 1982 and recorded in said Registry of Deeds in Book 5089, Page 116.

Subject to an easement granted to Harper Hotels, Inc. by The Young Women's Christian Association of Portland, Maine as set forth in an Easement Deed dated September 30, 1992 and recorded in the Cumberland County Registry of Deeds in Book 10376, Page 112.

Received
Recorded Register of Deeds
Jul 10, 2007 01:19:15P
Cumberland County
Pamela E. Lovley

Section D

Zoning Assessment



ZONING ANALYSIS Relevant Zone(s) B-3, DEOZ

All Projects:

	Required	Proposed
Lot Size	N/A	38,737 SF
Area Per Dwelling Unit	N/A	N/A
Minimum Street Frontage	15 FT	106 FT
Front Yard Minimum	N/A	N/A
Front Yard Maximum	N/A	N/A
Rear Yard	N/A	N/A
Yard Right	N/A	N/A
Yard Left	N/A	N/A
Side Street Setback	N/A	N/A
Step Back	N/A	N/A
Maximum Lot Coverage	100%	59%
Minimum Lot Coverage	N/A	N/A
Maximum Height	150 FT	N/A
Open Space	N/A	N/A
Maximum Impervious Area	N/A	N/A
Pavement Setback	35 FT	35 FT
Floor Area Ratio	N/A	N/A
Off Street Parking Spaces	NOT DEFINED	NOT DEFINED
Loading Bays	0	0
Other 1		
Other 2		
Other 3		

Planned Residential Unit Developments (PRUD) Requirements

	Required	Proposed
Minimum Lot Size	N/A	N/A
Minimum Lot Area per Dwelling	N/A	N/A
Maximum # Units per Building	N/A	N/A
Maximum Building Length	N/A	N/A
Maximum Accessory Building Length	N/A	N/A
Minimum Setbacks	N/A	N/A
Minimum Building Separation	N/A	N/A
Minimum Open Space	N/A	N/A

Affordable Housing Density Bonuses (if applicable)

	Bonus Increase or Decrease	Maximum Allowable With Bonus	Proposed
Density	N/A	N/A	N/A
Height	N/A	N/A	N/A
Setback Reduction	N/A	N/A	N/A
Recreation Space	N/A	N/A	N/A
Maximum Accessory Building Length	N/A	N/A	N/A
Minimum Setbacks	N/A	N/A	N/A
Minimum Building Separation	N/A	N/A	N/A
Minimum Open Space	N/A	N/A	N/A
Explanatory Text 1 (optional):			
Explanatory Text 2 (optional):			
Explanatory Text 3 (optional):			

Section E

**Summary of Written
Easements**

E. Summary of Written Easements

- Existing Easements – The Existing Conditions Plan developed by Spurwink Surveying, Inc. identified one existing easements:
 - An easement for access and maintenance purposes conveyed from the Young Women's Christian Association to Harper Hotels, further described in the Cumberland County Registry of Deeds Book 10376, page 112.
- Proposed Easements – There are no proposed easements at this time.



Section F

Request for Waivers

F. Request for Waivers

There are no project waivers requested at this time.



Section G

Financial Capacity



TD Bank
America's Most Convenient Bank®
One Portland Square
P.O. Box 9540
Portland, ME 04112-9540
T 207 761 8600
F 207 761 8660

tdbank.com

February 11, 2019

City of Portland, Planning Division
389 Congress Street, 4th Floor
Portland, ME 04101

RE: Portland Museum of Art (PMA), Parking lot expansion.

To whom it may concern:

The Portland Museum of Art is well known and well regarded by TD Bank. TD Bank has worked with the PMA for over fifteen years.

Based on our experience with the PMA we believe that the organization has the financial capacity to finance and complete the project as it has been outlined. TD Bank would look forward to providing the financing for the project if financing was requested.

Should you have any questions please do not hesitate to contact me at 207-253-6708.

Best Regards,

William Sipperly
VP, Sr. RM
TD Bank



Section H

Technical Capacity

H. Technical Capacity

Acorn Engineering, Inc. has successfully permitted and engineered over 15 level II/III projects in Portland in the past 5 years, many of which have been constructed. Some examples include:

- Eldredge Lumber Expansion
 - 127 York Street – Harborview Townhomes
 - Munjoy Heights
 - 89 Anderson St. – East Bayside Lofts
 - 667 Congress St – The Hiawatha
 - 121 Washington Ave Redevelopment
 - 31 Fore Street Condominiums
-
- Wright-Ryan (Construction Management Co.) has over thirty years of experience in the construction industry throughout northern New England. The staff at Wright-Ryan is well-versed and experienced in property redevelopment/management and have completed multiple projects within Portland. Wright-Ryan has also received multiple awards for their commitment to sustainable business practices, such as: Governor’s Achievement Award for Environmental Excellence, Governor’s Award for Carbon Emission Reduction, State of Maine Historic Preservation Award and Greater Portland Landmarks Preservation Award.



Section I

Conformity with Land Use
Ordinance

I. Conformity with Land Use Ordinance

The following outline is made in accordance with the City of Portland Code of Ordinances, Chapter 14 Land Use, Article V Section 14-526 as well as the City of Portland Technical Manual, Chapter 14 Standards for Local Site Location of Development Review.

OVERVIEW

The proposed parking lot redevelopment has been designed to conform to City standards as well as improve upon existing non-conformities. This project conforms with Portland's Land Use Ordinance Section 14-526 as demonstrated in the following narrative.

1) Transportation Standards

a) Impact on Surrounding Street Systems:

- i) The site is located at 87 Spring Street, with frontage also running along Oak Street. Spring Street is a minor arterial road with steady commuter traffic. Oak Street is a public road that is used by local traffic. The parking lot redevelopment increases the existing parking count, but the primary use of the site remains the same. The anticipation is that the impact and overall safety on Spring Street is to be unaffected by the redevelopment.

b) Access and Circulation:

i) Site Access and Circulation:

This project conforms with the design standards of Section 14-526 as demonstrated in the following narrative:

- (1) The development will provide safe access and internal circulation for both pedestrians and vehicles as seen on the Site Plan (see Sheet C-10).
- (2) Points of access and egress will be shifted slightly towards Spring St to allow for vehicles to exit the parking lot when a tractor trailer (WB-67) is parked at the existing loading dock.
- (3) The site does not feature drive up services as mentioned in this requirement.

ii) Loading and Servicing:

- (1) The existing loading docks will remain unchanged. The parking lot access point will be shifted slightly towards Spring St to allow for vehicles to exit the parking lot when a tractor trailer (WB-67) is parked at the existing loading dock.

iii) Sidewalks:

- (1) The existing concrete sidewalk along Spring Street is within City standards and will not be impacted.
- (2) The existing brick sidewalk leading from Spring Street along the driveway is currently within City Standard. Any impacted sidewalk surface within the property will be rebuilt per standard, as shown on Site Plan and Site Details sheets (see Sheets C-10 and C-40).
- (3) No additional internal sidewalks will be necessary to facilitate the movement of pedestrians.

c) Public Transit Access:

- i) Not applicable.
- ii) A new transit stop is not proposed as part of the project.
- iii) A new transit stop is not proposed as part of the project.

d) Parking:

i) Location and Required Number of Vehicle Parking Spaces:

- (1) The required number of vehicle parking spaces for a museum is undefined, per Sec 14-332. The existing site has 47 standard parking spaces. The proposed parking lot plan suggests 69 parking spaces. Fifty-three of which are standard spaces, including 3 ADA accessible spaces, 10 are 9'x15' compact and 6 are 8.5'x19'. Parking space minimums have been compared to the *4th Edition Parking Generation from the Institute of Transportation Engineers* values during "Peak Period Demand Range" for a museum. The "Peak Period Demand Range" is 0.63-1.34 vehicles/1,000 SF of gross floor area. The gross floor area of the buildings located at PMA's abutting parcel is 77,507 SF, which requires 49 to 104 spaces, if using the above Demand Range.
- (2) A parking study is not required.
- (3) Minimum parking requirements are not defined, per Sec 14-332.
- (4) Fifty-three parking spaces are to be standard 9'X18' stall size with a minimum 18' wide one-way drive aisle per Technical Manual Standard. Ten spaces will be compact 9'X15' stall size and 6 spaces will be 8.5'X18' with a minimum 22' wide one-way drive aisle.
- (5) The entire parking lot will be a finished asphalt surface course and graded to prevent ponding and erosion.



ii) Location and Required Number of Bicycle Parking Spaces:

- (1) There are two existing hoop racks with a total of 12 bicycle parking spaces, as noted on the Site Plan (see Sheet C-10). The net increase of 22 parking spaces will require a minimum of 3 additional spaces. It is proposed to add 4 additional bike hoop racks with a parking capacity of 8 spaces.

iii) Motorcycles and Scooter Parking:

- (1) There are no areas designated for motorcycles or scooters.

iv) Snow Storage:

- (1) Snow storage locations are indicated on Site Plan (see Sheet C-10).

e) Transportation Demand Management (TDM):

- i) A TDM plan is not required for this project.
- ii) A TDM plan is not required for this project.
- iii) A TDM plan is not required for this project.

2) Environmental Quality Standards

a) Preservation of Significant Natural Features:

- i) Not applicable.
- ii) Not applicable.
- iii) A waiver is not requested.

b) Landscaping and Landscaping Preservation:

i) Landscape Preservation.

- (1) There is existing landscaping that will be preserved to the greatest extent practical during the construction process. Plantings that require removal will be transplanted to any allowable locations on the parcel.
- (2) There are no trees >10" dbh within any required setbacks.
- (3) The street trees along Spring Street and remaining trees within property line are to be protected during construction per the Technical Manual Standards.
- (4) Not applicable.
- (5) Not applicable.



ii) Site Landscaping:

(1) Landscaped Buffers:

- (a) Solid waste storage is to remain unchanged and will continue to be stored in the designated dumpster enclosure at the abutting PMA parcel.
- (b) Not applicable.
- (c) Not applicable.
- (d) Not applicable.

(2) Parking Lot Landscaping:

- a. The islands are designed to reuse the existing paper birch and hydrangea shrubs on site, as shown on the Site Plan (see Sheet C-10).
- b. The proposed landscaped parking islands are distributed so uninterrupted pavement does not exceed forty parking spaces, as shown on the Site Plan (see Sheet C-10).
- c. The proposed landscaped island areas are 223 SF & 463 SF.
- d. Not applicable.
- e. Not applicable.

(3) Street Trees:

- (a) The three existing street trees along Spring Street are to remain and be protected during construction, per City of Portland Tree Preservation Detail (see Sheet C-41).
- (b) No additional street trees are proposed for this site.
 - 1. Irrigation lines to be provided as measure to enhance tree survival.
 - 2. Preservation of existing healthy paper birch trees visible from the right-of-way and on site within 20-ft of property line, see Sheet C-10.

c) Water Quality, Stormwater Management and Erosion Control:

i) Stormwater:

- (1) The parking lot is to preserve the existing grade path that directs stormwater runoff into a vegetated soil underdrain to the northeast edge of the property. The directed post-development runoff is designed to neither pond or flood adjacent lots.
- (2) There is no anticipated increase in the volume or rate of stormwater from existing



conditions. All runoff is to be directed into the proposed grassed underdrained soil filter and existing stormwater infrastructure before entering the City storm drain line at the current tie-in at a manhole within Oak Street. The existing 12" SDR drain line from the PMA parcel to the Oak Street manhole is to remain.

- (3) The runoff from the site onto City property is anticipated to remain the same as the pre-development condition.
- (4) The City's storm drain system is anticipated to continue accommodating the site stormwater flow; any increase will not exceed the capacity of the existing system within Oak or Spring Street.
- ii) A site-specific Stormwater Management Plan has been developed for the project to show compliance with Section 5 of the Technical Manual, including the basic standards of MEDEP Chapter 500. Please refer to the Stormwater Management and Erosion & Sedimentation Control Plans, sections J and K, for more information.
- iii) The project is not located in a watershed of an urban impaired stream as listed by the MEDEP.
- iv) Not applicable.
- v) The development is not anticipated to pose a contamination risk to groundwater during or after construction.
- vi) Not applicable.

(c) Public Infrastructure and Community Safety Standards

- 1. Consistency with City Master Plans:
 - a. The project has been designed to be consistent with the City's Zoning Ordinance and off-site infrastructure.
 - b. Not applicable.
- 2. Public Safety and Fire Prevention:
 - a. The site has been designed to promote safe and inviting public access.
 - b. Existing site driveway to remain undisturbed and will continue to provide ambulance and fire truck access to the north side of the adjacent parcel buildings, the Clapp House and Portland Museum of Art. Fire access on additional sides to be fostered by adjacent parcel.
 - c. According to the Spurwink Surveying, Inc. boundary survey, there is one fire hydrant located within the Spring Street right-of-way, as shown on Site Plan (see Sheet C-10). The hydrant is located approximately 14' from the property line parallel to Spring



Street, near the Oak Street intersection.

3. Availability and Adequate Capacity of Public Utilities:

- a. The public utilities in the vicinity of the site have capacity to serve the project demands. Ability to Serve letters have been sent to the respective companies. Responses received have been included in the submission.
- b. A new underground single-phase electrical service is proposed to supply power to the EV charging stations.
- c. All new stormwater infrastructure will meet the provisions outlined in Section 9 of the Technical Manual.
- d. No proposed sanitary sewer modifications.
- e. The stormwater management system is designed to meet all applicable sections of the Technical Manual. The stormwater management system is designed to meet the basic standards of Chapter 500.
- f. Solid waste will continue to be stored at the abutting PMA site within the enclosed dumpsters that are serviced by a private company.

(d) Site Design Standards

1. Massing, Ventilation and Wind Impact:

- a. Not applicable.
- b. Not applicable.
- c. Not applicable.

2. Shadows:

- a. Not applicable.

3. Snow and Ice Loading:

- a. Not applicable.

4. View Corridors:

- a. The project site is located outside the Downtown Vision View Corridor Protection Plan.

5. Historic Resources:



- a. The development doesn't affect any designated landmarks and is located outside the historic district and historic landscape district.
 - b. The Charles Q. Clapp House, is a classified Historic Landmark, per City of Portland Historic District Map Viewer. The proposed redevelopment is within 100' of the landmark, which requires it to be "generally compatible with the major character-defining elements of the landmark", according to Sec. 14-526(5)(b). With reference to the Portland Historical Resources Inventory, the "character-defining elements" of the Clapp House are its construction of "brick with wood and stone trim". The parking lot redevelopment will not alter or affect the Clapp House, and the re-use of existing landscaping will continue to blend seamlessly with other landscaping in the immediate vicinity.
 - c. There are no known archaeological resources on the site.
6. Exterior Lighting:
- a. Site Lighting.
 - (i) The proposed exterior lighting plan intends to reuse the existing site and tree light fixtures.
 - (ii) Not applicable.
 - b. Architectural and Specialty Lighting.
 - (i) No architectural or specialty lighting is proposed.
 - (ii) No up-lighting is proposed.
 - c. Street Lighting.
 - (i) No new street lights are proposed.
7. Noise and Vibration:
- a. No HVAC system is currently proposed.
8. Signage and Wayfinding:
- a. All street and wayfinding signage shall meet the requirements of the Manual on Uniform Traffic Devices (MUTCD) and Division 22 of the City Code.
 - (i) The project is not located in a historic district or subject to Article IX.
 - (ii) Not applicable.
 - (iii) All street and wayfinding signage shall meet the requirements of the Manual on

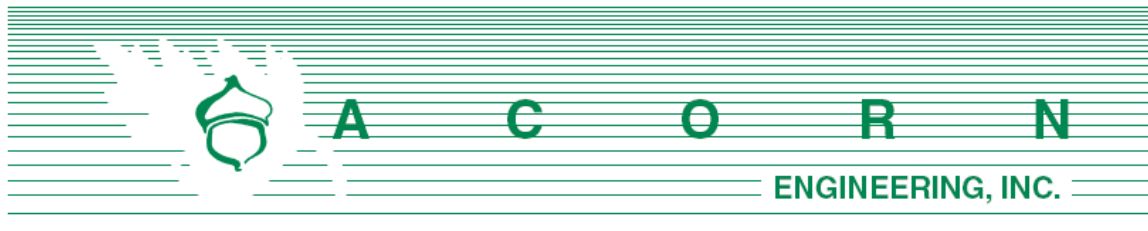


Uniform Traffic Devices (MUTCD) and Division 22 of the City Code.

9. Zoning Related Design Standards:

- a. The project has been designed to meet the standards set forth in the B-3 and Downtown Entertainment Overlay zones. Please refer to the Site Plan (see Sheet C-10) for more information on Space & Bulk Standards.





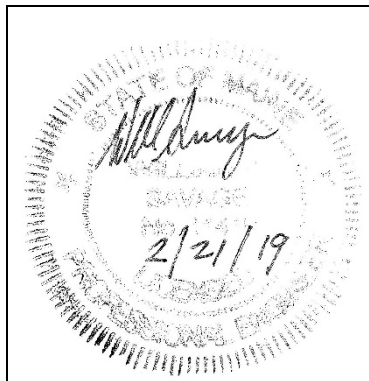
J. STORMWATER MANAGEMENT **REPORT**

Prepared For:

**Portland Museum of Art
Seven Congress Square
Portland, Maine 04101**

Prepared By:

**Acorn Engineering, Inc.
65 Hanover Street
Portland, Maine 04102**



March 2019

INTRODUCTION

Acorn Engineering, Inc. has been retained by the Portland Museum of Art to provide civil engineering services for the proposed visitor parking lot redevelopment at 87 Spring Street. The project proposes improvements to existing pavement, expansion of parking spaces, reuse of existing landscaping features and new stormwater management.

A stormwater analysis has been prepared to demonstrate that the project will meet the following requirements of the City of Portland (the City):

- City of Portland Land Use Ordinance Chapter 14, Article V. Site Plan Section 14-523. Required Approvals and Applicability (E) Level II Site Plan Review.
- City of Portland Technical Manual; Section 5 – Portland Stormwater Management Standards
- Maine DEP Chapter 500 Stormwater Management

EXISTING CONDITIONS

The proposed project is located at 87 Spring Street. A boundary plan has been prepared by Spurwink Surveying, Inc of Scarborough, Maine dated February 7, 2019.

The site resides within the B-3 Business and Downtown Entertainment Overlay zones. Approximately 39% of the site is impervious in the form of pavement, brick or concrete.

The project team is not aware of the presence of any existing significant natural features located on the site. Given the urban setting and existing impervious surfaces, a field inventory of significant natural feature was not undertaken. The project is not located within a watershed classified as an Urban Impaired Stream.

PROPOSED DEVELOPMENT

The proposed project is a redevelopment through expansion of an existing surface parking lot with stormwater improvements. Pedestrian access to the site will be provided via concrete and brick walkways on Spring Street and an existing brick sidewalk within the site. The development will be served by CMP (electric) and Portland Department of Public Works (storm). An additional single-phase electric service will be routed underground.

Proposed parking lot improvements include constructing full depth pavement in the expanded footprint areas. Existing landscaping and granite curbing are to be reused based upon the expanded footprint. The project also proposes to modify water quality treatment measures with the addition of a vegetated underdrain soil filter (VUSF). Locations where existing pavement will be disturbed are at saw cuts for new pavement extents and utility trenching, as shown in the Civil Site Plan, see Sheet C-10.

Stormwater will continue to enter the City's stormwater system within Oak Street through an existing 12" SDR pipe. Please refer to Sheet C-30 for more information.

The project's stormwater system is sized to treat all impervious surface areas on project site. A



summary of surfaces to be improved and remain are as follows:

Table 1 – Surface Treatment Summary	
Surface	Area (SF)
Pavement & Curbing	21,196
Retaining Wall, Walkways and Concrete Pads	1,190
PMA Sign	10
Total Floor Area	22,396

The project incorporates Maine DEP approved stormwater Best Management Practices to meet the General and Flooding Standards.

GENERAL STANDARDS – WATER QUALITY

The proposed areas of additional pavement located along the north, northeasterly and northwesterly regions of the parcel will be graded to match existing pavement grades and maintain existing drainage paths to the soil filter.

The pervious concrete surface was sized to meet or exceed the requirements set forth in the MDEP Volume III BMPs Technical Design Manual, Chapter 7.1: “Grassed Underdrained Soil Filters”. Grassed Underdrained Soil Filter systems have shown to be effective at filtering and removing a wide range of pollutants, including suspended solids, phosphorus, nitrogen, metals, hydrocarbons and some dissolved pollutants.

Impervious Treatment Area

The VUSF was sized per the standards designated for Grassed Underdrained Soil Filters (Chapter 7.7.1), as displayed in the following paragraphs “Filter Area Size” and “Water Quality Volume.”

The stormwater shall be detained within the filter course layer for a minimum of 24 hours and maximum of 48 hours before draining vertically through the crushed stone layer. The treated stormwater shall then be collected within the perforated underdrain pipe and outlet into a proposed catch basin.

When stormwater flows exceed the storage and treatment volume capacity of the system, the excess runoff will be collected by the proposed catch basin, PR. CB-1, located at the top of the filter volume.

Table 2 – Impervious Treatment Area Table				
	Existing Impervious Area (SF)	Proposed Total Impervious Area (SF)	Total Area with Treatment (SF)	Percentage of Overall Total Impervious Area Treated
Vegetated Underdrained Soil Filter	15,000	22,396	22,786	102%

As shown in Table 2, it is anticipated that the VUSF will meet and exceed the Maine DEP required 95% treatment of impervious area.



Filter Area Size

Per the requirements for manmade pervious surfaces, all specifications from Chapter 7: Filtration BMPs apply for sizing the VUSF surface area. As defined in Chapter 7.7.1, the surface area of the filter shall be no less than the sum of 5% of the tributary impervious area and 2% of the tributary landscaped area. The filter area is calculated by the following formula:

$$\text{Required Filter Area (SF)} = \{[\text{Impervious Area (SF)} \times 0.05] + [\text{Landscaped Area (SF)} \times 0.02]\}$$

The proposed filter area is as follows:

Table 3 – Total Filter Surface Area					
	Impervious Area (SF)	Landscaped Area (SF)	Required Filter Area (SF)	Proposed Filter Area (SF)	Percentage of Required Area
Vegetated Underdrained Soil Filter	22,396	16,341	1,447	1,612	111%

The outflow from the VUSF is then tributary to the proposed catch basin before entering an existing 12" SDR pipe leading to an existing manhole within the Oak Street municipal system. As shown, the size of the soil filter area will meet and exceed the surface area requirements. Values from the HydroCAD calculations are attached to this report.

Water Quality Volume

Per the requirements for manmade pervious surfaces, all specifications from Chapter 7: Filtration BMPs apply for sizing the Vegetated Underdrained Soil Filter volume. A water quality volume of 1.0-inch times the tributary impervious area plus 0.4-inch times the tributary landscaped developed area is required to be treated by the VUSF. The water quality volume is calculated by the following formula:

$$\text{Treatment Volume (CF)} = \left\{ \frac{\text{Impervious Area (SF)} \times 1.0"}{12"/1'} \right\} + \left\{ \frac{\text{Landscaped Area (SF)} \times 0.4"}{12"/1'} \right\}$$

The proposed water quality volume is as follows:

Table 4 – Water Quality Volume Table					
	Total Landscaped Area (SF)	Total Impervious Area (SF)	Treatment Volume Required (CF)	Treatment Volume Provided (CF)	Percentage of Required Volume
Subsurface Sand Filter	16,341	22,396	2,411	2,418	100%

As shown, the size of the combined water quality volume will meet the treatment volume requirements. A 1" vertical orifice is modeled in HydroCAD to mimic the permeability rate through the soil filter media. The orifice diameter is the approximate size that would detain the stormwater for an approximate period of 24 hours. A physical 1" orifice will not be installed. Values from the



HydroCAD calculations are included in Attachment D of this report.

FLOODING STANDARDS – WATER QUANTITY

To evaluate the project with respect to Section F. Flooding Standard of MDEP Chapter 500: Stormwater Management, the proposed development was modeled using HydroCAD to verify that post-development drainage conditions do not exceed pre-development conditions. The model applied a 24-hours SCS Type III storm distribution for the 2, 10 and 25-year storm events with the corresponding rainfall amounts of 3.10", 4.6" and 5.8" respectively. Rainfall amounts were accessed from *Appendix H. 24-hours duration rainfalls for various return periods* within Chapter 500: Stormwater Management for SE Cumberland County.

The existing stormwater runoff eventually flows into the Oak Street municipal system. Therefore, both the pre- and post-development conditions model the runoff into Oak Street

Due to the numerous variables and inherent inaccuracies with the modeling programs used to calculate stormwater runoff, it is custom at Acorn Engineering, Inc. to round to the nearest whole number or to the nearest tenth for urban infill projects. Due to the project size, the stormwater runoff shall be rounded to the nearest tenth of a cubic foot per second (cfs).

Time of Concentration (T_c)

A minimum time of concentration duration of 5-minutes was used for the pre- and post-development tributaries. For flow paths with durations longer than 5-minutes, the flow path was modeled as sheet flow when less than 100-feet long.

Curve Number

The stormwater calculations used the following Curve Number (CN) values in the pre- and post-development conditions are as follows:

- Pavement, Concrete, Brick – CN 98
- > 75% Grass Cover – Good, HSG A – CN 39

Pre-Development Calculations

The pre-development conditions were modeled as six subcatchments to determine the net impact of the development.

- Subcatchment 1 – Northwesterly, northerly and northeasterly location, including pavement and curbs, concrete retaining wall, concrete pads brick sidewalk and landscaping. Tributary to existing soil filter and catch basin (Ex. CB-4).
- Subcatchment 2 – Southerly side parallel to Spring Street including landscaping. Tributary to existing catch basin (Ex. CB-1)
- Subcatchment 3 – Southerly side parallel to Spring Street including landscaping. Tributary to existing catch basin (Ex. CB-2)
- Subcatchment 4 – Southerly side parallel to Spring Street including landscaping. Tributary to existing catch basin (Ex. CB-3)



- Subcatchment 5 – Southwesterly side of site at driveway entrance including pavement and brick sidewalk. Tributary to point of interest (POA #1).
- Subcatchment 6 – Easterly side of site at intersection of Oak and Spring Street including landscaping. Tributary to point of interest (POA #1).

A Pre-Development Watershed Map developed for this project can be viewed in Attachment A and a copy of the HydroCAD calculations is included within Attachment D of this report.

Peak flow rates for the storm events are as follows:

Table 5 – Pre-Development Peak Stormwater Flows			
Drainage Area	2-Year Storm Event (cfs)	10-Year Storm Event (cfs)	25-Year Storm Event (cfs)
Oak Street	0.1	1.2	1.9

Post-Development Calculations

The post-development conditions were also modeled as six subcatchments to determine the net impact of the development.

- Subcatchment 1 – Northwesterly, northerly and northeasterly location, including pavement and curbs, concrete retaining wall, concrete pads brick sidewalk and landscaping. Tributary to existing soil filter and proposed catch basin (Pr. CB-1).
- Subcatchment 2 – Southerly side parallel to Spring Street including landscaping. Tributary to existing catch basin (Ex. CB-1)
- Subcatchment 3 – Southerly side parallel to Spring Street including landscaping. Tributary to existing catch basin (Ex. CB-2)
- Subcatchment 4 – Southerly side parallel to Spring Street including landscaping. Tributary to existing catch basin (Ex. CB-3)
- Subcatchment 5 – Southwesterly side of site at driveway entrance including pavement and brick sidewalk. Tributary to point of interest (POA #1).
- Subcatchment 6 – Easterly side of site at intersection of Oak and Spring Street including landscaping. Tributary to point of interest (POA #1).

The post-development calculations include the additional impervious surfaces and compensation provided by the VUSF. The following table displays a comparison of pre- and post-development condition peak runoff rates for the proposed development.

Table 6 – Comparison of Peak Flows						
Drainage Area	2-Year Storm Event (cfs)		10-Year Storm Event (cfs)		25-Year Storm Event (cfs)	
	Pre	Post	Pre	Post	Pre	Post
Oak Street	0.1	0.1	1.2	0.3	1.9	1.5

As show in Table 5, the net impact of the post-development peak flows shall remain at or below the pre-development value levels for the 2, 10 and 25-year storm events.

A Post-Development Watershed Map created for this project can be viewed in Attachment B and a copy of the HydroCAD calculations is included within Attached D of this report.

SOILS

Onsite soil information has been gathered from the following resource:

- United States Department of Agriculture (USDA) Web Soil Survey (WSS)

The area within and surrounding the project includes the soil type listed in Table 1 below. The susceptibility of soils to erosion is indicated on a relative “Kw” scale of values over a range of 0.02 to 0.69. Higher “Kw” values indicate more erodible soils. The Kw value listed was derived from the Revised Universal Soil Loss Equation (RUSLE), identified at the end of the report from the USDA’s WSS (Attachment C). The soil type used in design was also derived from the USDA’s WSS, as visible on Attachment C.

Table 1		
Soils Type	Depth	Kf Value
Hinckley loamy sand	Whole soil	0.1

Given the soils information listed above, and the fact that the site is currently developed, it is Acorn Engineering’s professional opinion that a more intense hydric soil boundary delineation is not required since waiver requirements set forth in Section 7: Soil Survey of the City of Portland Technical Manual (Rev. 6/17/11) are met.

CONCLUSION

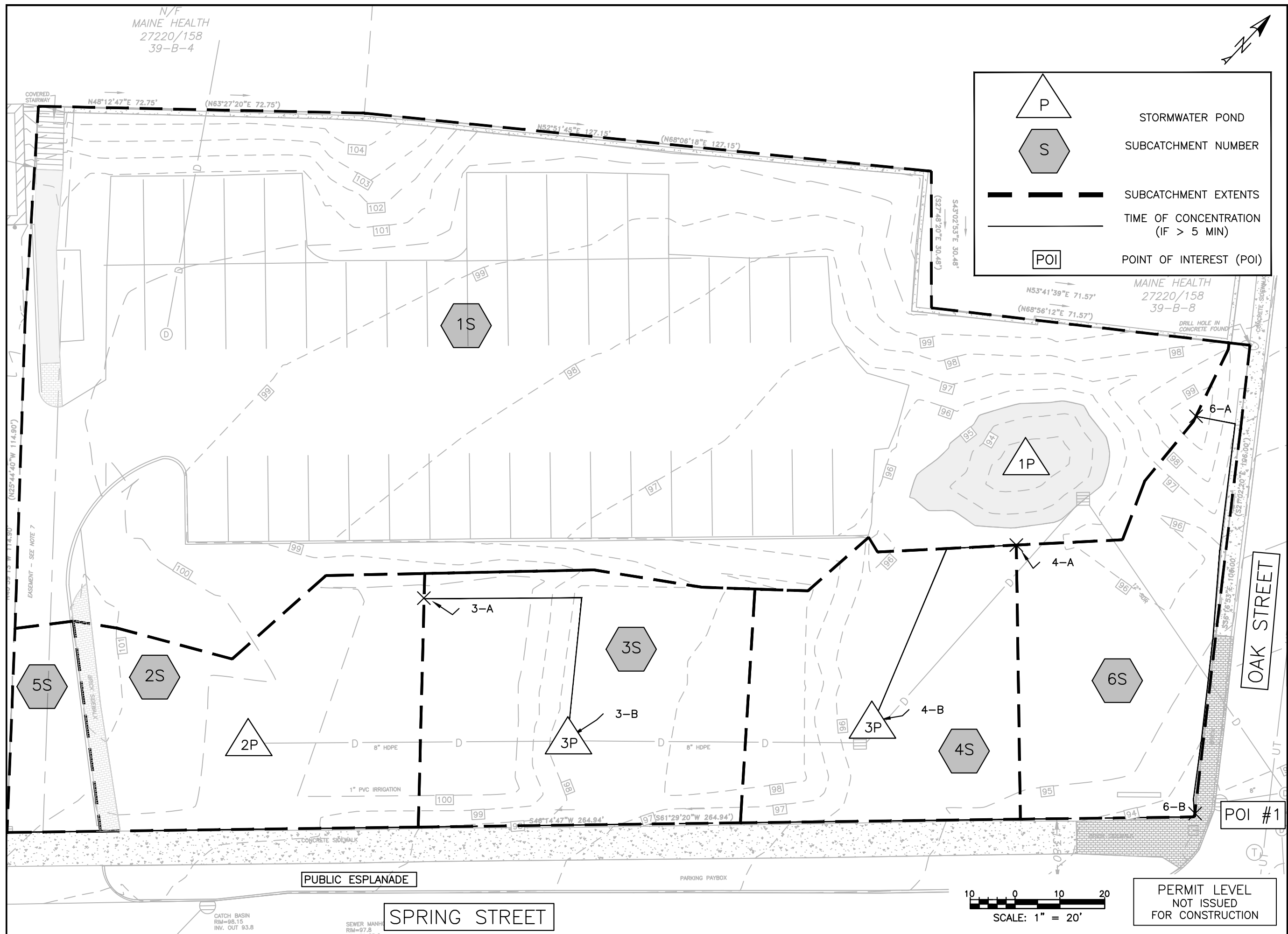
The proposed development was designed to meet the requirements implemented by the MDEP under the Stormwater Management Statute (38 M.R.S.A § 420-D) as well as Section 5: Portland Stormwater Management Standards of the City of Portland Technical Manual. As a result, the design of the proposed development and stormwater system is not anticipated to create erosion, drainage or runoff problems in the development or with respect to adjacent properties.

ATTACHMENTS

Attachment A: Pre-Development Watershed Map
 Attachment B: Post-Development Watershed Map
 Attachment C: United States Department of Agriculture Web Soil Survey
 Attachment D: HydroCAD Calculations

Attachment A

**Pre-Development
Watershed Map**

[illegible]

Attachment B

Post-Development
Watershed Map

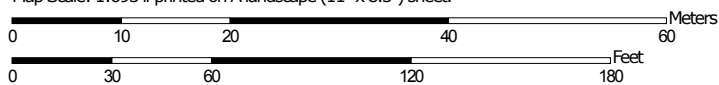
Attachment C

United States Department
of Agriculture Web Soil
Survey

Hydrologic Soil Group—Cumberland County and Part of Oxford County, Maine (PROP BOUNDARY_WSS)



Map Scale: 1:693 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84



**Natural Resources
Conservation Service**

Web Soil Survey
National Cooperative Soil Survey

2/20/2019
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Hydrologic Soil Group—Cumberland County and Part of Oxford County, Maine
(PROP BOUNDARY_WSS)

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

Soil Rating Polygons

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Lines

 A
 A/D
 B
 B/D
 C
 C/D
 D
 Not rated or not available

Soil Rating Points

 A
 A/D
 B
 B/D

 C
 C/D
 D
 Not rated or not available

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 15, Sep 6, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Data not available.

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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
HIB	Hinckley loamy sand, 3 to 8 percent slopes	A	0.9	100.0%
Totals for Area of Interest			0.9	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

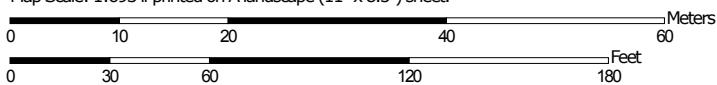
Component Percent Cutoff: None Specified

Tie-break Rule: Higher

K Factor, Whole Soil—Cumberland County and Part of Oxford County, Maine
(PROP BOUNDARY_WSS)



Map Scale: 1:693 if printed on A landscape (11" x 8.5") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84



**Natural Resources
Conservation Service**

Web Soil Survey
National Cooperative Soil Survey

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Page 1 of 3

K Factor, Whole Soil—Cumberland County and Part of Oxford County, Maine
(PROP BOUNDARY_WSS)

MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

Soil Rating Polygons

	.02
	.05
	.10
	.15
	.17
	.20
	.24
	.28
	.32
	.37
	.43
	.49
	.55
	.64
	Not rated or not available

Soil Rating Lines

	.02
	.05
	.10
	.15
	.17
	.20

	.24
	.28
	.32
	.37
	.43
	.49
	.55
	.64
	Not rated or not available

Soil Rating Points

	.02
	.05
	.10
	.15
	.17
	.20
	.24
	.28
	.32
	.37
	.43
	.49
	.55
	.64
	Not rated or not available

Water Features

	Streams and Canals
	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 15, Sep 6, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Data not available.

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.

K Factor, Whole Soil

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
HIB	Hinckley loamy sand, 3 to 8 percent slopes	.10	0.9	100.0%
Totals for Area of Interest			0.9	100.0%

Description

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and saturated hydraulic conductivity (Ksat). Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

"Erosion factor Kw (whole soil)" indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Rating Options

Aggregation Method: Dominant Condition

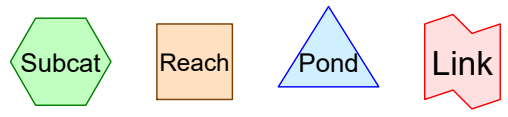
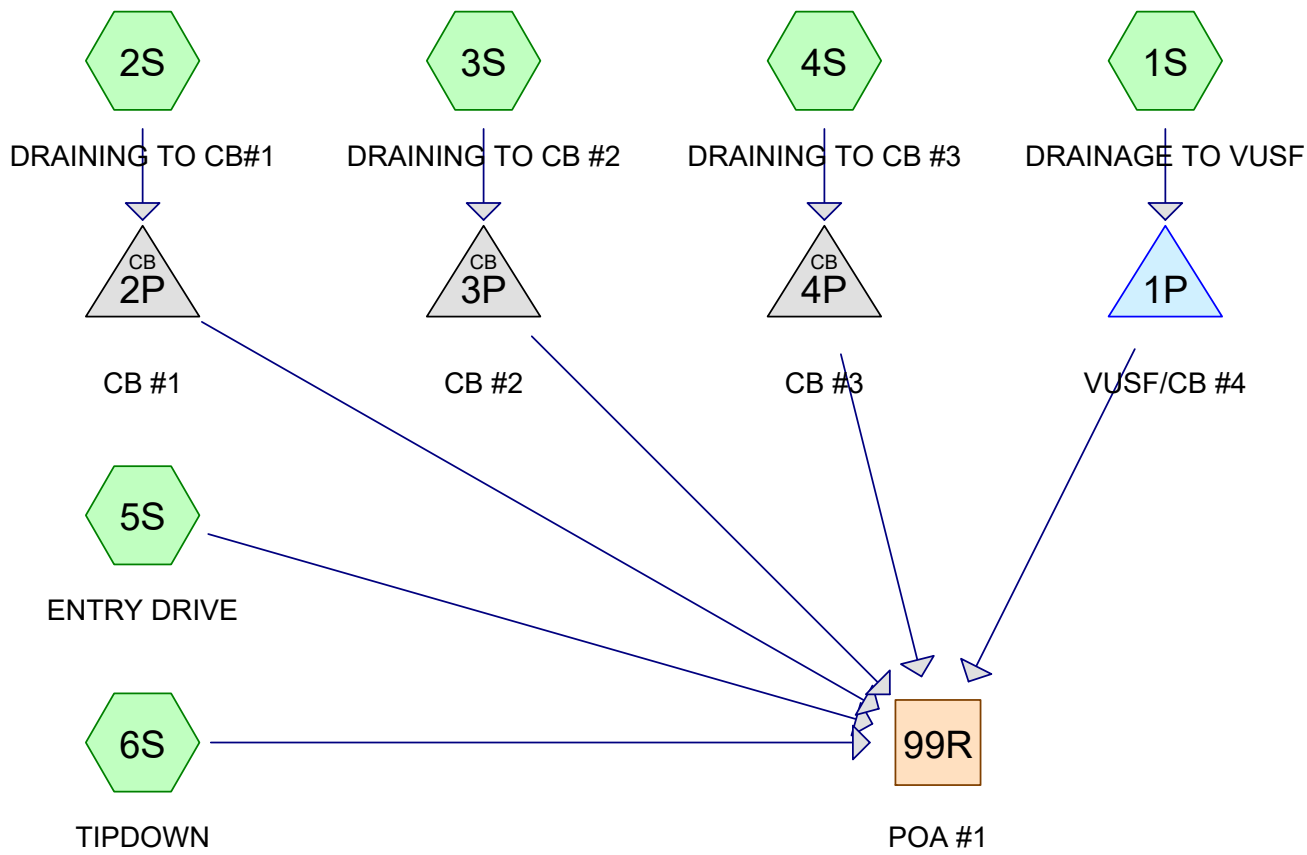
Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Layer Options (Horizon Aggregation Method): All Layers (Weighted Average)

Attachment D

HydroCAD Calculations



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Page 2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.545	39	>75% Grass cover, Good, HSG A (1S, 2S, 3S, 4S, 6S)
0.002	98	BRICK AND CONCRETE SIDEWALK (6S)
0.004	98	BRICK SIDEWALK (2S)
0.018	98	PAVED ENTRY (5S)
0.320	98	PAVEMENT, SIDEWALKS, RETAINING WALL (1S)
0.889	62	TOTAL AREA

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.545	HSG A	1S, 2S, 3S, 4S, 6S
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.344	Other	1S, 2S, 5S, 6S
0.889		TOTAL AREA

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover
0.545	0.000	0.000	0.000	0.000	0.545	>75% Grass cover, Good
0.000	0.000	0.000	0.000	0.002	0.002	BRICK AND CONCRETE SIDEWALK
0.000	0.000	0.000	0.000	0.004	0.004	BRICK SIDEWALK
0.000	0.000	0.000	0.000	0.018	0.018	PAVED ENTRY
0.000	0.000	0.000	0.000	0.320	0.320	PAVEMENT, SIDEWALKS, RETAINING WALL
0.545	0.000	0.000	0.000	0.344	0.889	TOTAL AREA

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Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	1P	91.00	89.30	76.0	0.0224	0.010	12.0	0.0	0.0
2	2P	95.70	93.40	68.5	0.0336	0.013	8.0	0.0	0.0
3	3P	93.40	91.30	62.5	0.0336	0.013	8.0	0.0	0.0
4	4P	91.30	91.30	70.8	0.0000	0.013	8.0	0.0	0.0

PRE

Type III 24-hr 2-year Rainfall=3.10"

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Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 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: DRAINAGE TO VUSF Runoff Area=23,562 sf 59.17% Impervious Runoff Depth=0.97"
Tc=5.0 min CN=74 Runoff=0.60 cfs 0.044 af

Subcatchment2S: DRAINING TO CB#1 Runoff Area=3,570 sf 5.21% Impervious Runoff Depth=0.01"
Tc=5.0 min CN=42 Runoff=0.00 cfs 0.000 af

Subcatchment3S: DRAINING TO CB #2 Runoff Area=4,038 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=67' Slope=0.0467 '/' Tc=5.1 min CN=39 Runoff=0.00 cfs 0.000 af

Subcatchment4S: DRAINING TO CB #3 Runoff Area=3,504 sf 0.00% Impervious Runoff Depth=0.00"
Flow Length=58' Slope=0.0100 '/' Tc=8.5 min CN=39 Runoff=0.00 cfs 0.000 af

Subcatchment5S: ENTRY DRIVE Runoff Area=785 sf 100.00% Impervious Runoff Depth=2.87"
Tc=5.0 min CN=98 Runoff=0.06 cfs 0.004 af

Subcatchment6S: TIPDOWN Runoff Area=3,270 sf 2.32% Impervious Runoff Depth=0.00"
Flow Length=97' Slope=0.0670 '/' Tc=6.0 min CN=40 Runoff=0.00 cfs 0.000 af

Reach 99R: POA #1 Inflow=0.07 cfs 0.037 af
Outflow=0.07 cfs 0.037 af

Pond 1P: VUSF/CB #4 Peak Elev=94.90' Storage=1,054 cf Inflow=0.60 cfs 0.044 af
Outflow=0.05 cfs 0.032 af

Pond 2P: CB #1 Peak Elev=95.70' Inflow=0.00 cfs 0.000 af
8.0" Round Culvert n=0.013 L=68.5' S=0.0336 '/' Outflow=0.00 cfs 0.000 af

Pond 3P: CB #2 Peak Elev=93.40' Inflow=0.00 cfs 0.000 af
8.0" Round Culvert n=0.013 L=62.5' S=0.0336 '/' Outflow=0.00 cfs 0.000 af

Pond 4P: CB #3 Peak Elev=91.30' Inflow=0.00 cfs 0.000 af
8.0" Round Culvert n=0.013 L=70.8' S=0.0000 '/' Outflow=0.00 cfs 0.000 af

Total Runoff Area = 0.889 ac Runoff Volume = 0.048 af Average Runoff Depth = 0.65"
61.30% Pervious = 0.545 ac 38.70% Impervious = 0.344 ac

Summary for Subcatchment 1S: DRAINAGE TO VUSF

Runoff = 0.60 cfs @ 12.08 hrs, Volume= 0.044 af, Depth= 0.97"

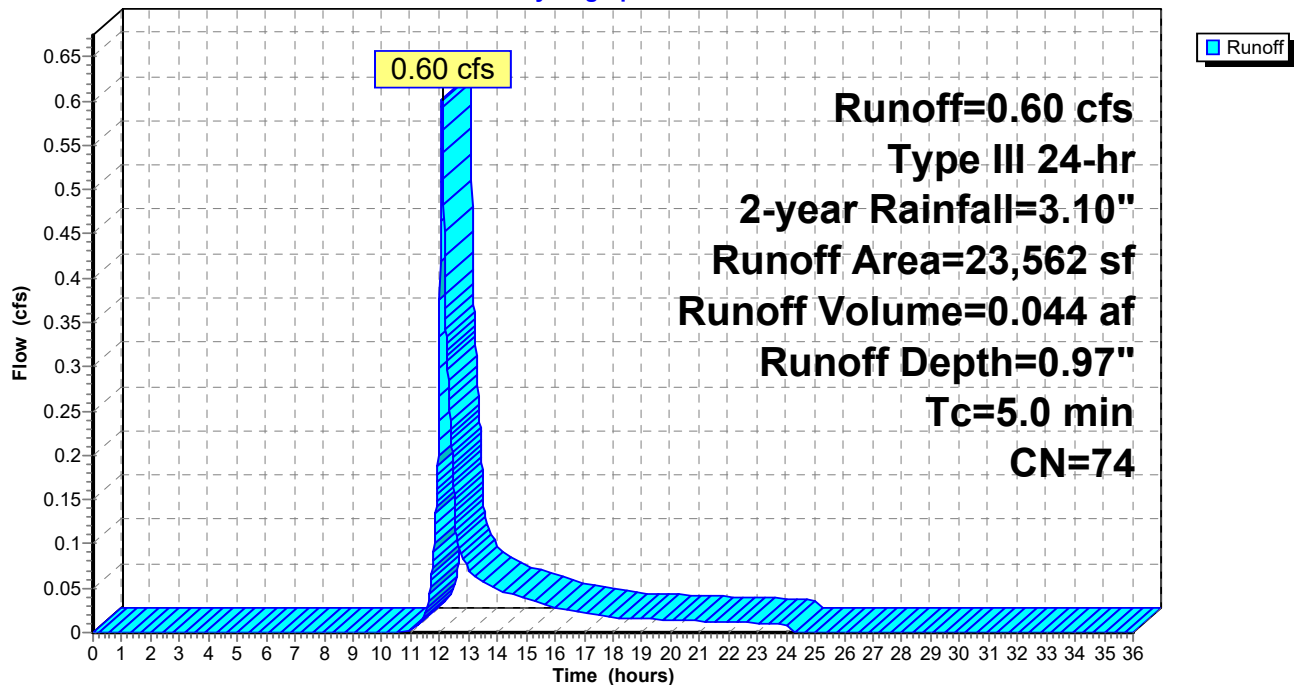
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

	Area (sf)	CN	Description
*	13,942	98	PAVEMENT, SIDEWALKS, RETAINING WALL
	9,620	39	>75% Grass cover, Good, HSG A
	23,562	74	Weighted Average
	9,620		40.83% Pervious Area
	13,942		59.17% Impervious Area

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

Subcatchment 1S: DRAINAGE TO VUSF

Hydrograph



Summary for Subcatchment 2S: DRAINING TO CB#1

Runoff = 0.00 cfs @ 22.35 hrs, Volume= 0.000 af, Depth= 0.01"

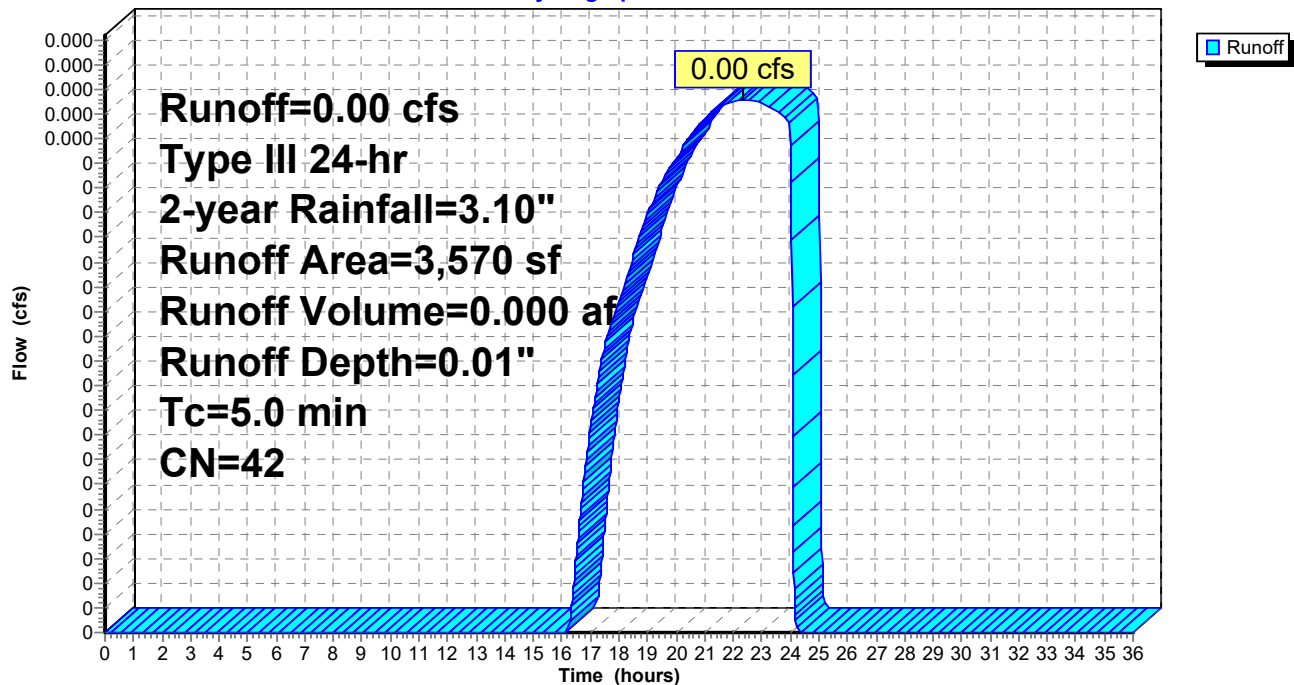
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

	Area (sf)	CN	Description
*	3,384	39	>75% Grass cover, Good, HSG A
	186	98	BRICK SIDEWALK
	3,570	42	Weighted Average
	3,384		94.79% Pervious Area
	186		5.21% Impervious Area

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

Subcatchment 2S: DRAINING TO CB#1

Hydrograph



Summary for Subcatchment 3S: DRAINING TO CB #2

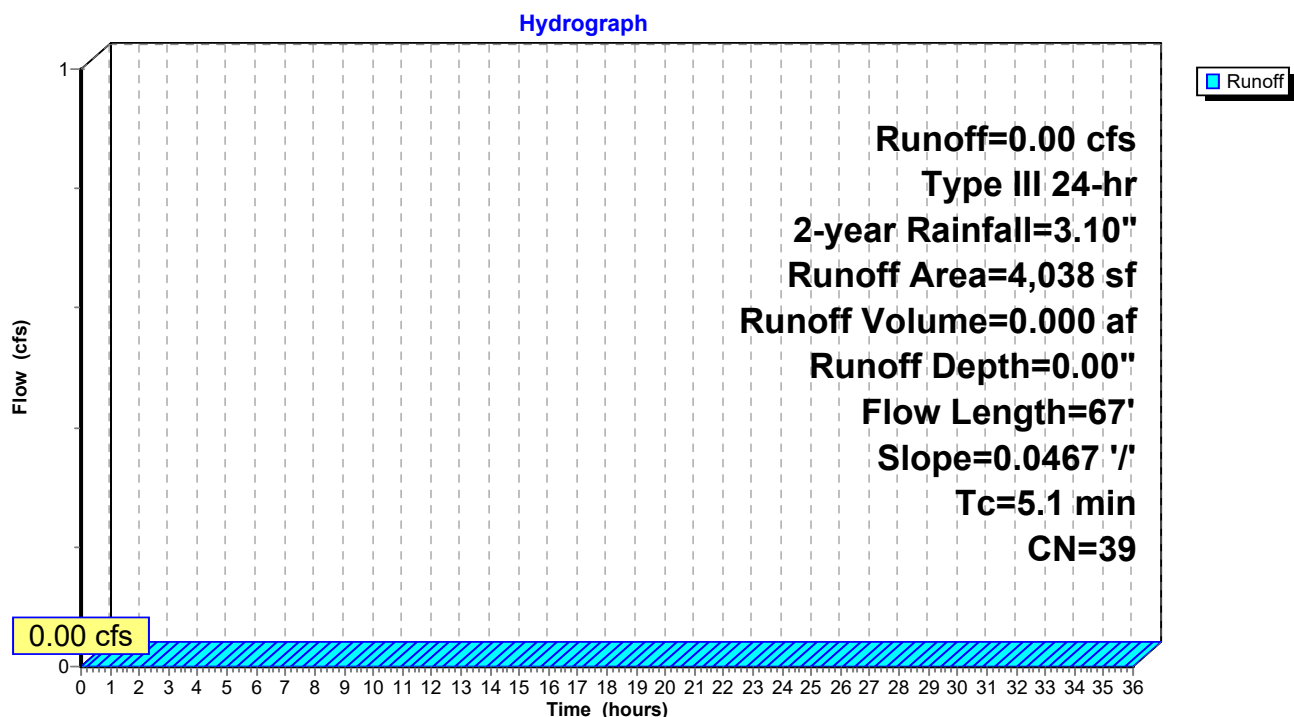
[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
4,038	39	>75% Grass cover, Good, HSG A
4,038		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	67	0.0467	0.22		Sheet Flow, 3A-3B Grass: Short n= 0.150 P2= 3.10"

Subcatchment 3S: DRAINING TO CB #2

Summary for Subcatchment 4S: DRAINING TO CB #3

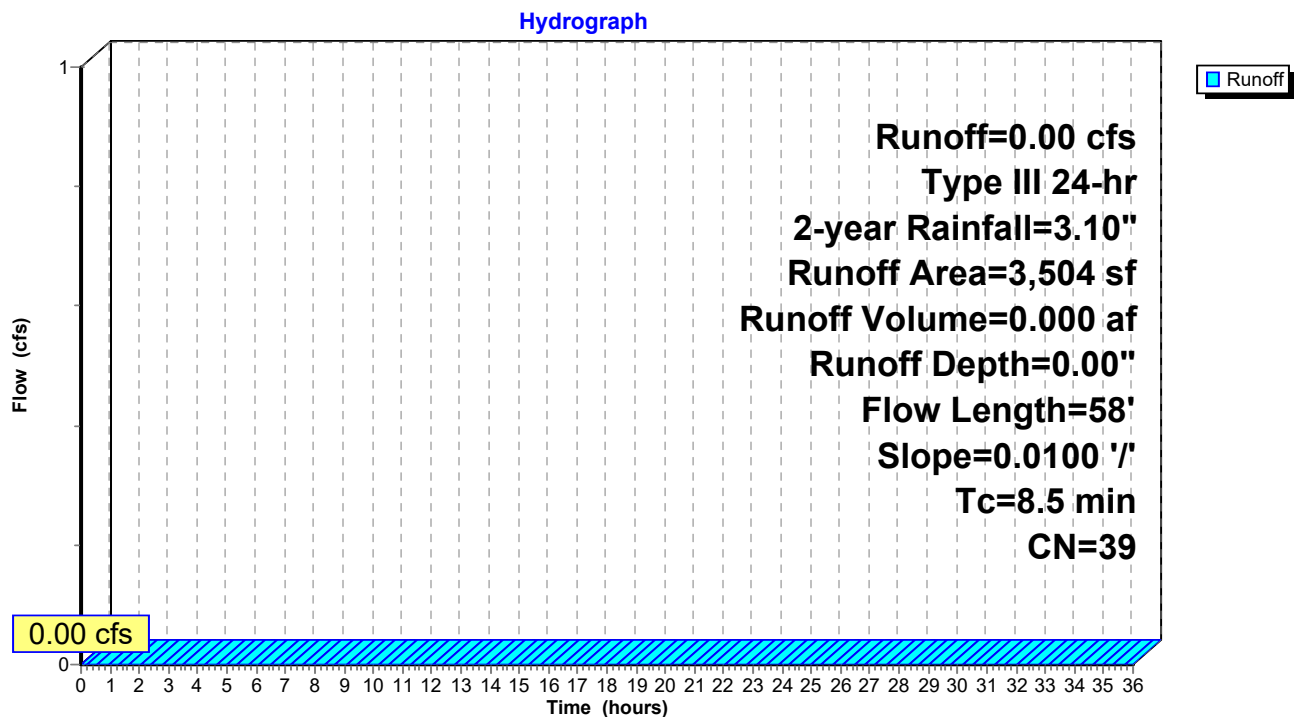
[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
3,504	39	>75% Grass cover, Good, HSG A
3,504		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	58	0.0100	0.11		Sheet Flow, 4A-4B Grass: Short n= 0.150 P2= 3.10"

Subcatchment 4S: DRAINING TO CB #3

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Type III 24-hr 2-year Rainfall=3.10"

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Summary for Subcatchment 5S: ENTRY DRIVE

Runoff = 0.06 cfs @ 12.07 hrs, Volume= 0.004 af, Depth= 2.87"

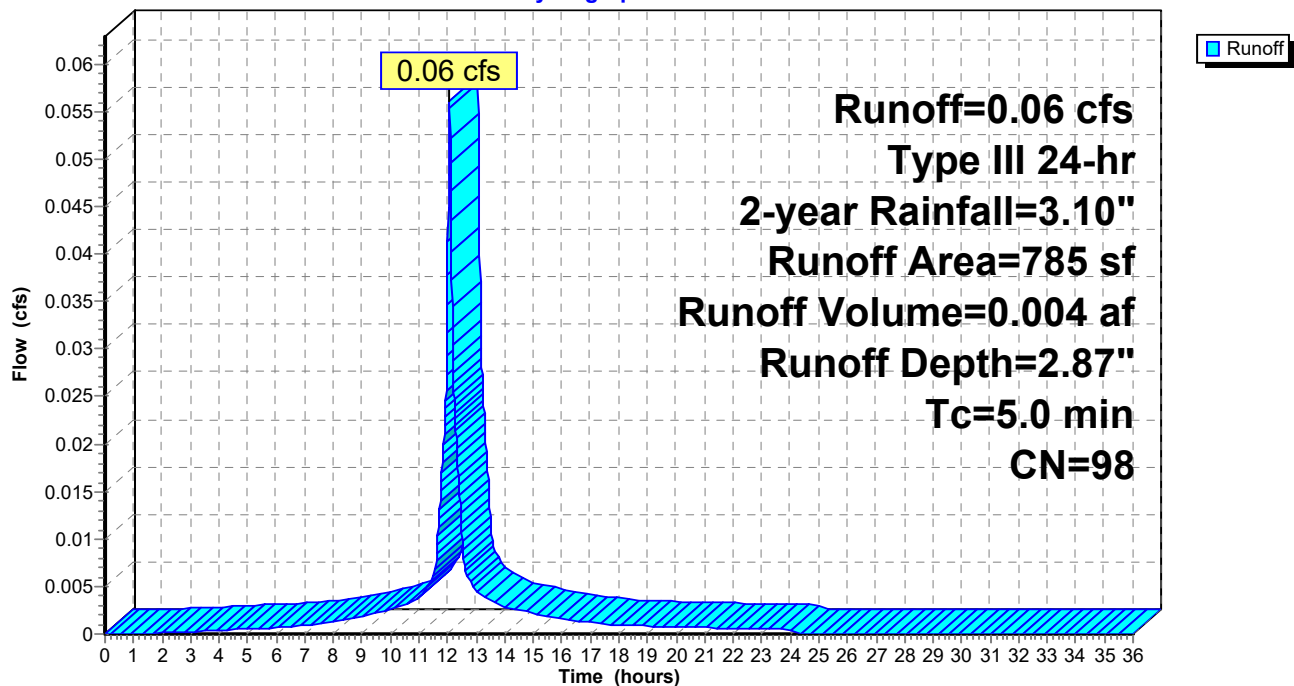
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

	Area (sf)	CN	Description
*	785	98	PAVED ENTRY
	785		100.00% Impervious Area

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

Subcatchment 5S: ENTRY DRIVE

Hydrograph



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Type III 24-hr 2-year Rainfall=3.10"

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Summary for Subcatchment 6S: TIPDOWN

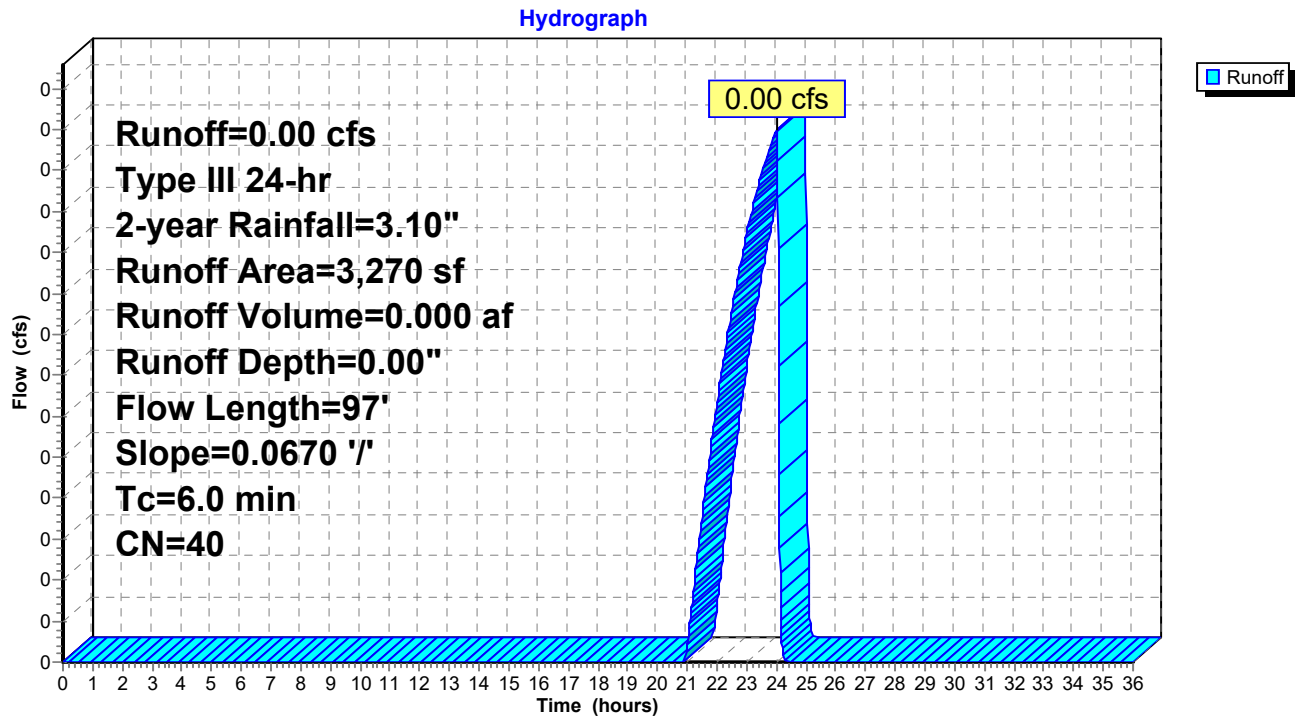
Runoff = 0.00 cfs @ 24.01 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
3,194	39	>75% Grass cover, Good, HSG A
* 76	98	BRICK AND CONCRETE SIDEWALK
3,270	40	Weighted Average
3,194		97.68% Pervious Area
76		2.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	97	0.0670	0.27		Sheet Flow, 6A-6B
Grass: Short n= 0.150 P2= 3.10"					

Subcatchment 6S: TIPDOWN

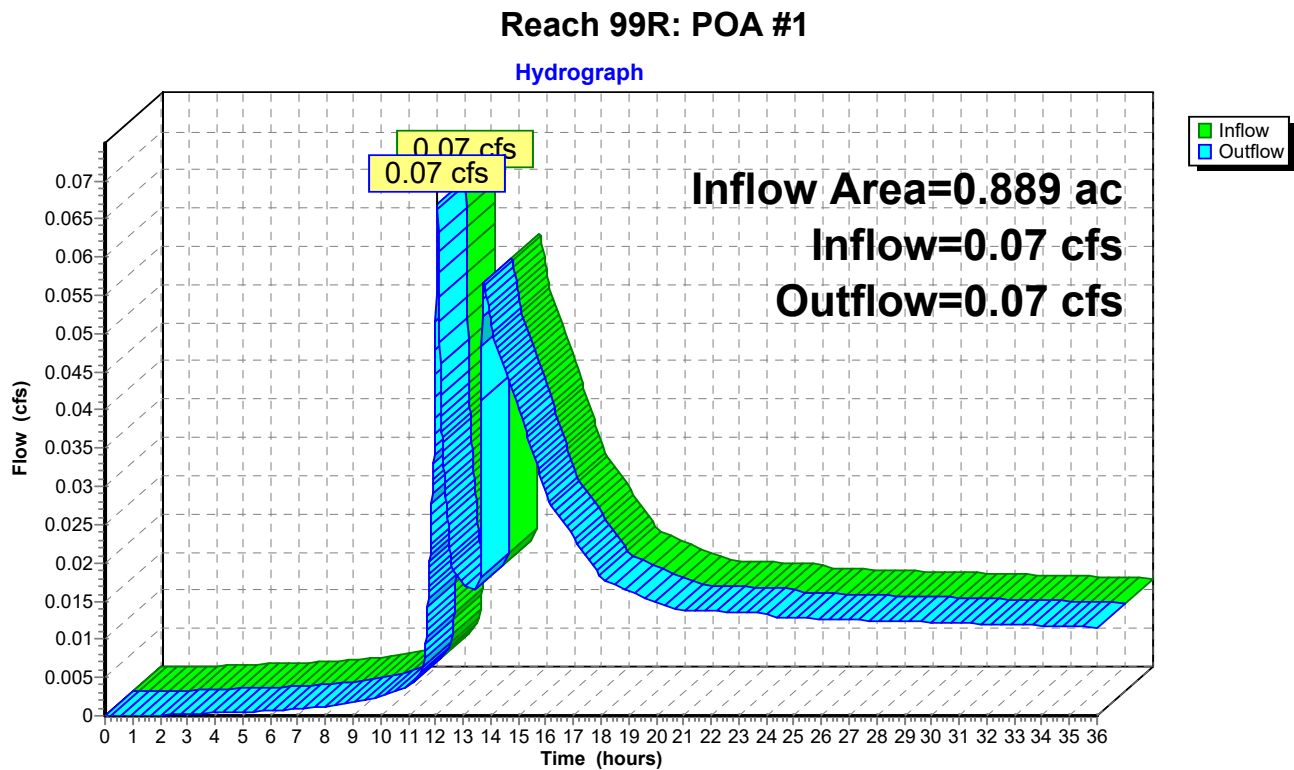


Summary for Reach 99R: POA #1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.889 ac, 38.70% Impervious, Inflow Depth > 0.49" for 2-year event
Inflow = 0.07 cfs @ 12.07 hrs, Volume= 0.037 af
Outflow = 0.07 cfs @ 12.07 hrs, Volume= 0.037 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs



Summary for Pond 1P: VUSF/CB #4

Inflow Area = 0.541 ac, 59.17% Impervious, Inflow Depth = 0.97" for 2-year event
 Inflow = 0.60 cfs @ 12.08 hrs, Volume= 0.044 af
 Outflow = 0.05 cfs @ 13.74 hrs, Volume= 0.032 af, Atten= 91%, Lag= 99.6 min
 Primary = 0.05 cfs @ 13.74 hrs, Volume= 0.032 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
 Peak Elev= 94.90' @ 13.74 hrs Surf.Area= 1,181 sf Storage= 1,054 cf
 Flood Elev= 96.00' Surf.Area= 1,939 sf Storage= 2,381 cf

Plug-Flow detention time= 547.4 min calculated for 0.032 af (73% of inflow)
 Center-of-Mass det. time= 449.8 min (1,313.0 - 863.2)

Volume	Invert	Avail.Storage	Storage Description
#1	93.00'	2,277 cf	Custom Stage Data (Prismatic) Listed below
#2	91.50'	24 cf	FILTER MEDIA (Prismatic) Listed below (Recalc) 240 cf Overall x 10.0% Voids
#3	91.00'	5 cf	4.0" Round Pipe Storage Inside #4 L= 60.0'
#4	90.30'	75 cf	FREE-DRAINING GRAVEL (Prismatic) Listed below (Recalc) 192 cf Overall - 5 cf Embedded = 187 cf x 40.0% Voids
		2,381 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
93.00	160	0	0
93.50	305	116	116
94.00	501	202	318
95.00	899	700	1,018
96.00	1,619	1,259	2,277

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
91.50	160	0	0
93.00	160	240	240

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
90.30	160	0	0
91.50	160	192	192

Device	Routing	Invert	Outlet Devices
#1	Device 3	91.00'	0.5" Vert. WQV C= 0.600
#2	Device 3	94.90'	2.0" x 2.0" Horiz. CB OVERFLOW X 6.00 columns X 6 rows C= 0.600 Limited to weir flow at low heads
#3	Primary	91.00'	12.0" Round SDR L= 76.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 91.00' / 89.30' S= 0.0224 ' S= 0.0224 ' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

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Type III 24-hr 2-year Rainfall=3.10"

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Primary OutFlow Max=0.03 cfs @ 13.74 hrs HW=94.90' (Free Discharge)

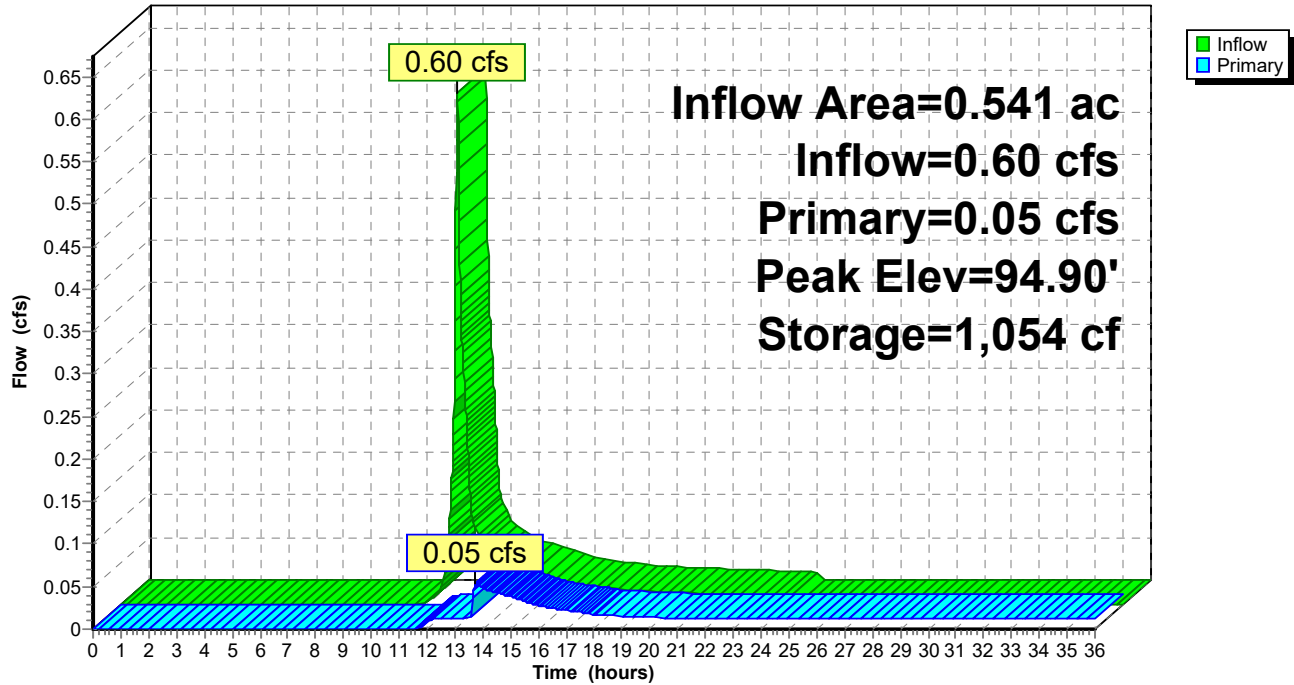
3=SDR (Passes 0.03 cfs of 5.51 cfs potential flow)

1=WQV (Orifice Controls 0.01 cfs @ 9.49 fps)

2=CB OVERFLOW (Weir Controls 0.02 cfs @ 0.21 fps)

Pond 1P: VUSF/CB #4

Hydrograph



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Type III 24-hr 2-year Rainfall=3.10"

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Summary for Pond 2P: CB #1

Inflow Area = 0.082 ac, 5.21% Impervious, Inflow Depth = 0.01" for 2-year event
Inflow = 0.00 cfs @ 22.35 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 22.35 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 22.35 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Peak Elev= 95.70' @ 22.35 hrs

Flood Elev= 99.50'

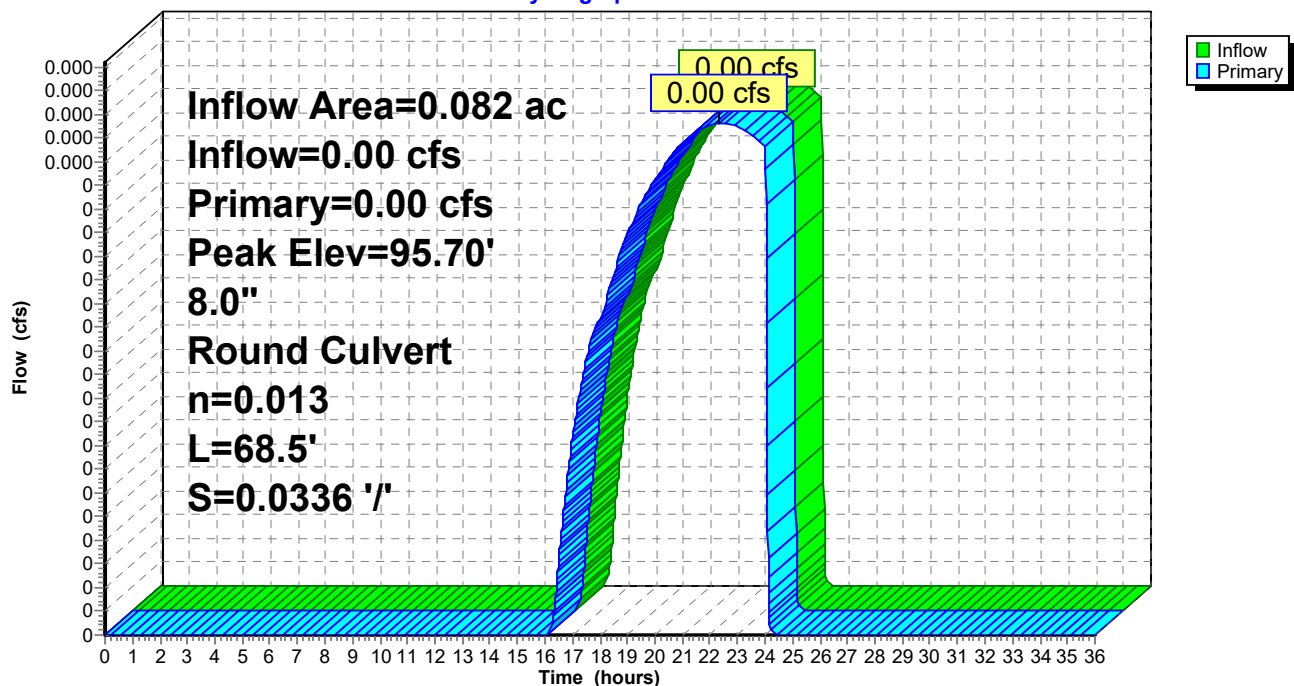
Device	Routing	Invert	Outlet Devices
#1	Primary	95.70'	8.0" Round HDPE L= 68.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 95.70' / 93.40' S= 0.0336 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.00 cfs @ 22.35 hrs HW=95.70' (Free Discharge)

1=HDPE (Inlet Controls 0.00 cfs @ 0.08 fps)

Pond 2P: CB #1

Hydrograph



Summary for Pond 3P: CB #2

Inflow Area = 0.093 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-year event
 Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

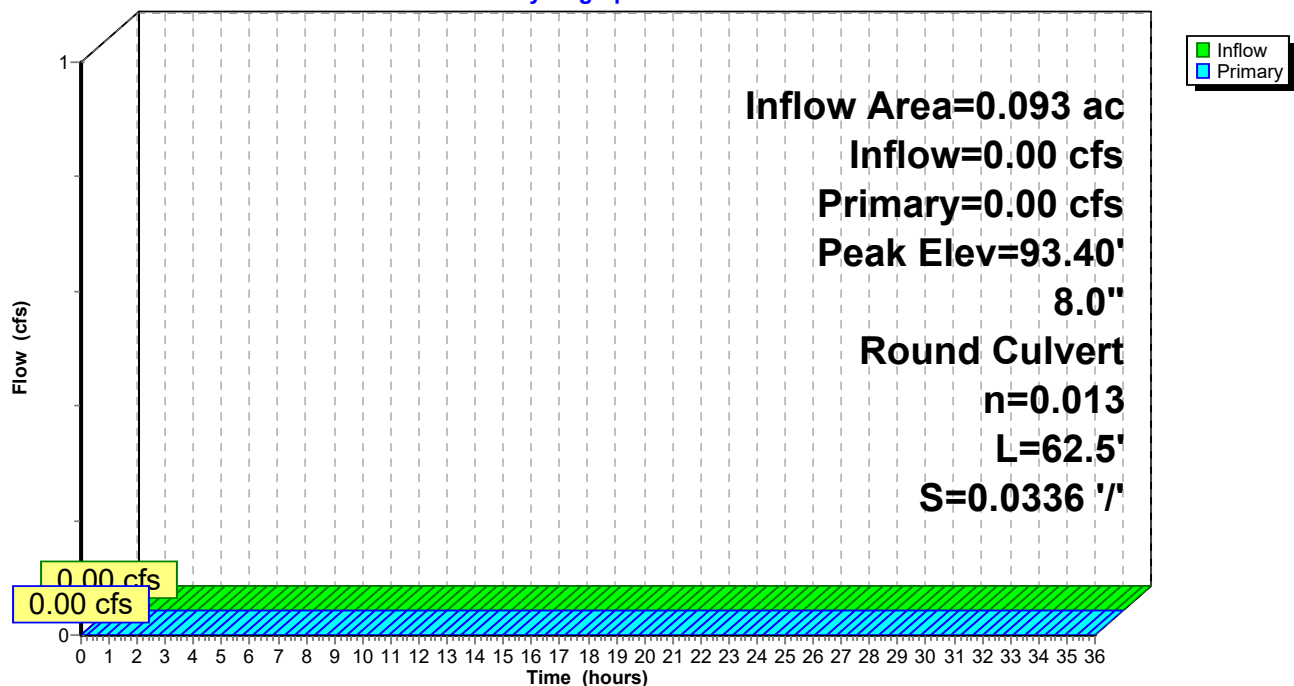
Peak Elev= 93.40' @ 0.00 hrs

Flood Elev= 97.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	93.40'	8.0" Round HDPE L= 62.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 93.40' / 91.30' S= 0.0336 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=93.40' (Free Discharge)

↑1=HDPE (Controls 0.00 cfs)

Pond 3P: CB #2**Hydrograph**

Summary for Pond 4P: CB #3

Inflow Area = 0.080 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-year event
 Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
 Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

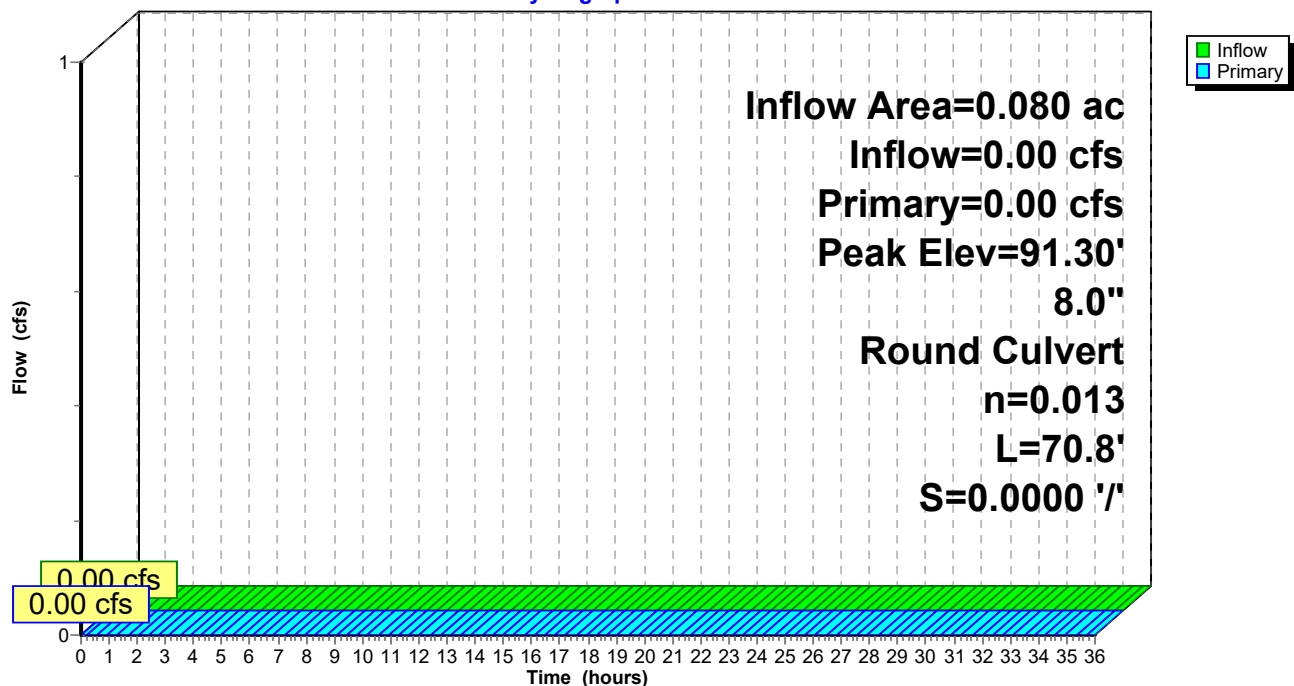
Peak Elev= 91.30' @ 0.00 hrs

Flood Elev= 95.10'

Device	Routing	Invert	Outlet Devices
#1	Primary	91.30'	8.0" Round HDPE L= 70.8' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 91.30' / 91.30' S= 0.0000 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.30' (Free Discharge)

↑1=HDPE (Controls 0.00 cfs)

Pond 4P: CB #3**Hydrograph**

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Type III 24-hr 10-year Rainfall=4.60"

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Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 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: DRAINAGE TO VUSF Runoff Area=23,562 sf 59.17% Impervious Runoff Depth=2.05"
Tc=5.0 min CN=74 Runoff=1.34 cfs 0.092 af

Subcatchment2S: DRAINING TO CB#1 Runoff Area=3,570 sf 5.21% Impervious Runoff Depth=0.22"
Tc=5.0 min CN=42 Runoff=0.00 cfs 0.001 af

Subcatchment3S: DRAINING TO CB #2 Runoff Area=4,038 sf 0.00% Impervious Runoff Depth=0.13"
Flow Length=67' Slope=0.0467 '/' Tc=5.1 min CN=39 Runoff=0.00 cfs 0.001 af

Subcatchment4S: DRAINING TO CB #3 Runoff Area=3,504 sf 0.00% Impervious Runoff Depth=0.13"
Flow Length=58' Slope=0.0100 '/' Tc=8.5 min CN=39 Runoff=0.00 cfs 0.001 af

Subcatchment5S: ENTRY DRIVE Runoff Area=785 sf 100.00% Impervious Runoff Depth=4.36"
Tc=5.0 min CN=98 Runoff=0.08 cfs 0.007 af

Subcatchment6S: TIPDOWN Runoff Area=3,270 sf 2.32% Impervious Runoff Depth=0.15"
Flow Length=97' Slope=0.0670 '/' Tc=6.0 min CN=40 Runoff=0.00 cfs 0.001 af

Reach 99R: POA #1 Inflow=1.18 cfs 0.091 af
Outflow=1.18 cfs 0.091 af

Pond 1P: VUSF/CB #4 Peak Elev=94.96' Storage=1,096 cf Inflow=1.34 cfs 0.092 af
Outflow=1.11 cfs 0.080 af

Pond 2P: CB #1 Peak Elev=95.74' Inflow=0.00 cfs 0.001 af
8.0" Round Culvert n=0.013 L=68.5' S=0.0336 '/' Outflow=0.00 cfs 0.001 af

Pond 3P: CB #2 Peak Elev=93.42' Inflow=0.00 cfs 0.001 af
8.0" Round Culvert n=0.013 L=62.5' S=0.0336 '/' Outflow=0.00 cfs 0.001 af

Pond 4P: CB #3 Peak Elev=91.35' Inflow=0.00 cfs 0.001 af
8.0" Round Culvert n=0.013 L=70.8' S=0.0000 '/' Outflow=0.00 cfs 0.001 af

Total Runoff Area = 0.889 ac Runoff Volume = 0.103 af Average Runoff Depth = 1.39"
61.30% Pervious = 0.545 ac 38.70% Impervious = 0.344 ac

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Summary for Subcatchment 1S: DRAINAGE TO VUSF

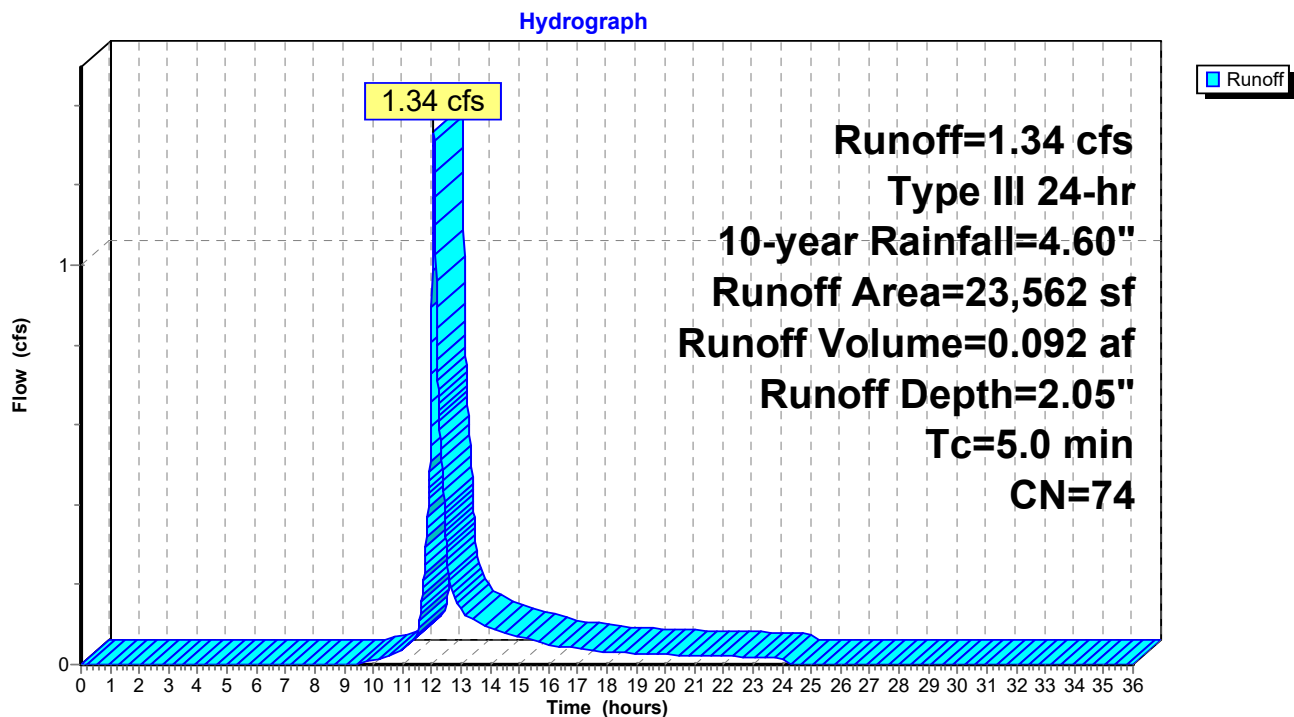
Runoff = 1.34 cfs @ 12.08 hrs, Volume= 0.092 af, Depth= 2.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.60"

	Area (sf)	CN	Description
*	13,942	98	PAVEMENT, SIDEWALKS, RETAINING WALL
	9,620	39	>75% Grass cover, Good, HSG A
	23,562	74	Weighted Average
	9,620		40.83% Pervious Area
	13,942		59.17% Impervious Area

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

Subcatchment 1S: DRAINAGE TO VUSF



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Summary for Subcatchment 2S: DRAINING TO CB#1

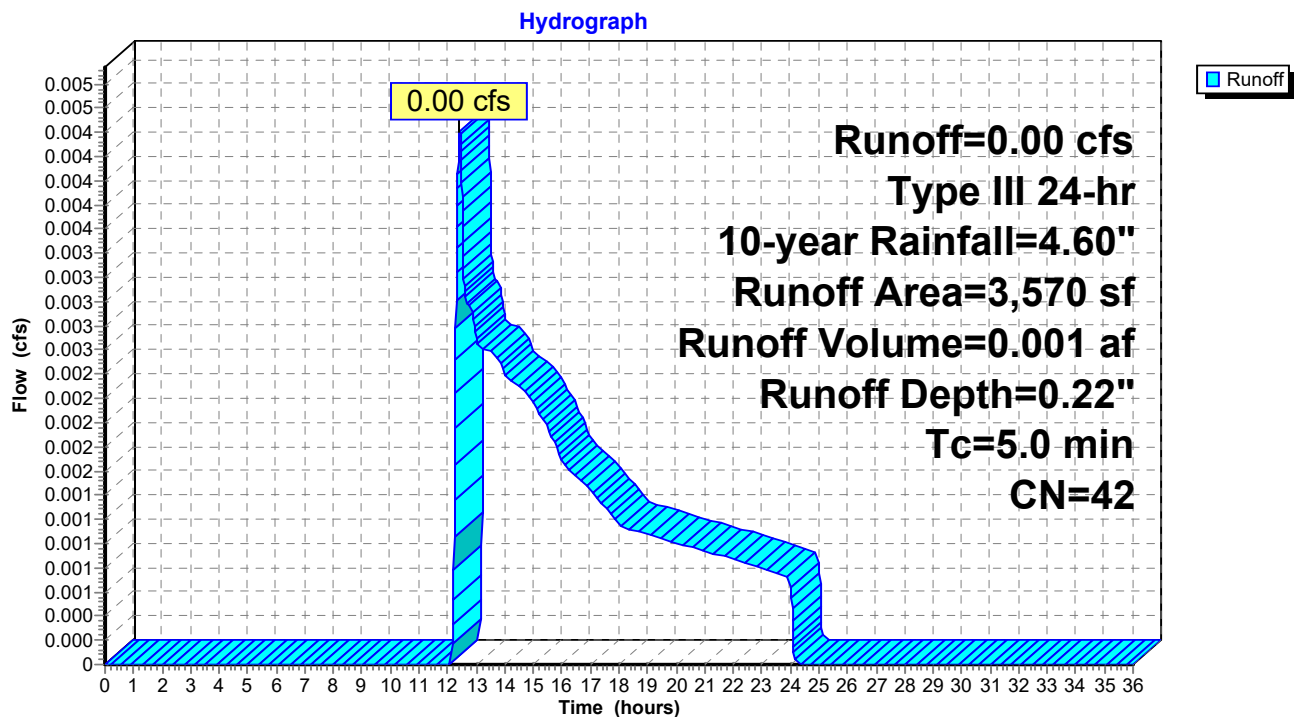
Runoff = 0.00 cfs @ 12.42 hrs, Volume= 0.001 af, Depth= 0.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
3,384	39	>75% Grass cover, Good, HSG A
* 186	98	BRICK SIDEWALK
3,570	42	Weighted Average
3,384		94.79% Pervious Area
186		5.21% Impervious Area

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

Subcatchment 2S: DRAINING TO CB#1



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Summary for Subcatchment 3S: DRAINING TO CB #2

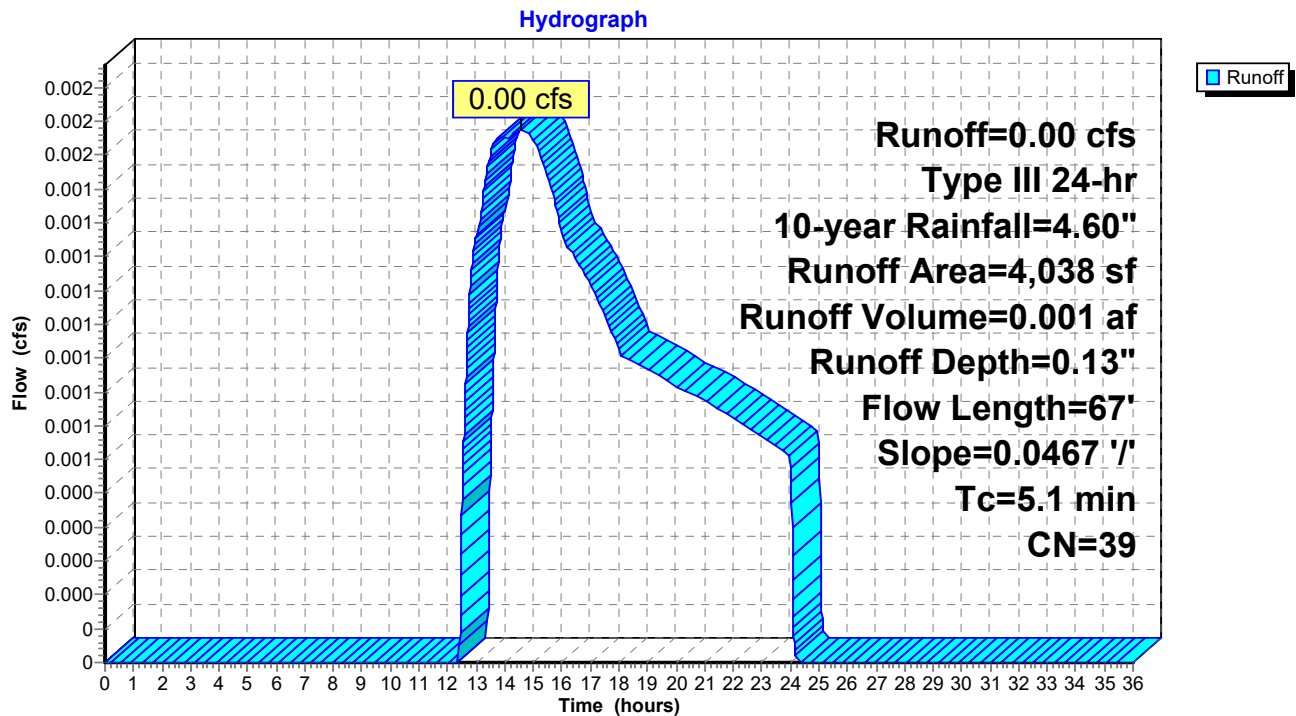
Runoff = 0.00 cfs @ 14.57 hrs, Volume= 0.001 af, Depth= 0.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
4,038	39	>75% Grass cover, Good, HSG A
4,038		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	67	0.0467	0.22		Sheet Flow, 3A-3B
Grass: Short n= 0.150 P2= 3.10"					

Subcatchment 3S: DRAINING TO CB #2



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Summary for Subcatchment 4S: DRAINING TO CB #3

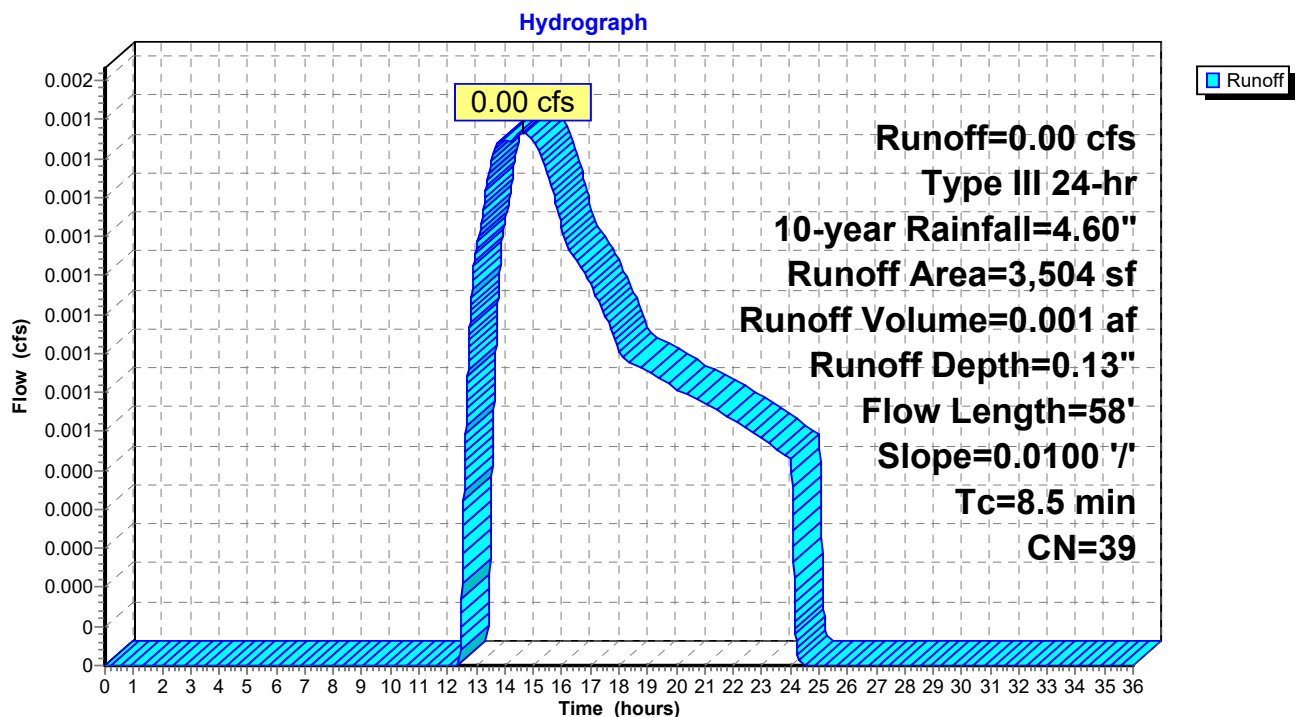
Runoff = 0.00 cfs @ 14.61 hrs, Volume= 0.001 af, Depth= 0.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
3,504	39	>75% Grass cover, Good, HSG A
3,504		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	58	0.0100	0.11		Sheet Flow, 4A-4B
Grass: Short n= 0.150 P2= 3.10"					

Subcatchment 4S: DRAINING TO CB #3



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Summary for Subcatchment 5S: ENTRY DRIVE

Runoff = 0.08 cfs @ 12.07 hrs, Volume= 0.007 af, Depth= 4.36"

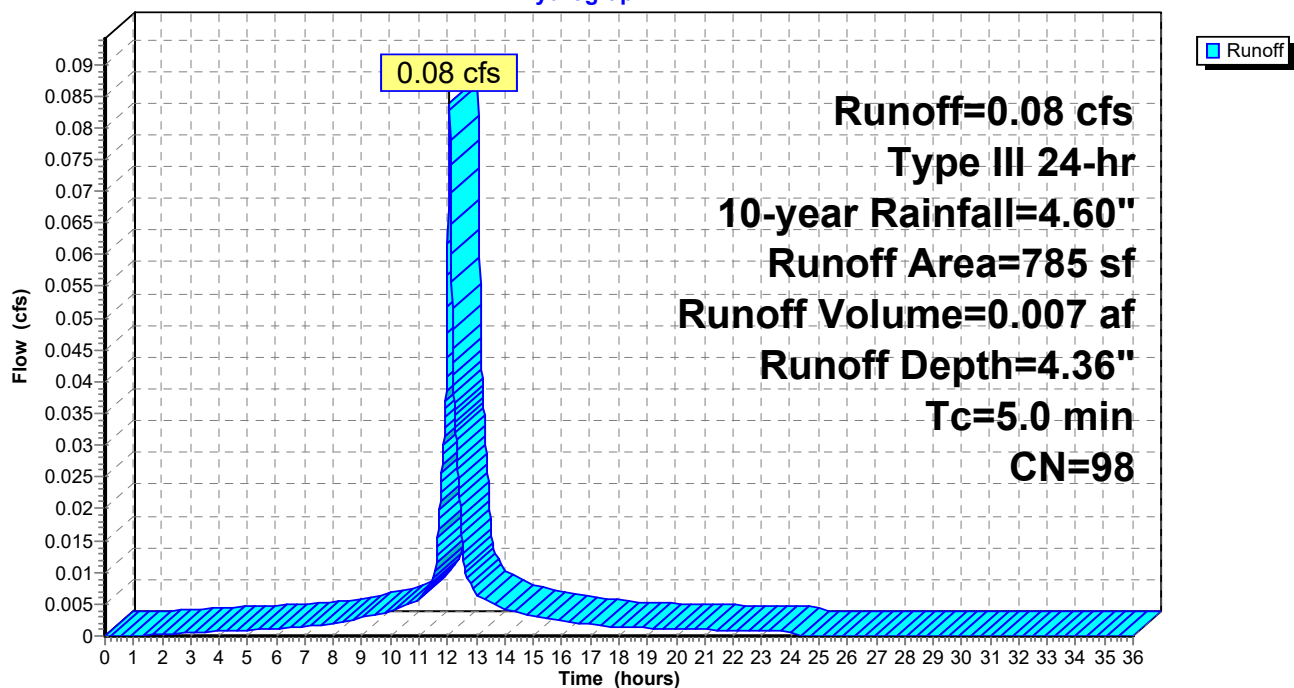
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.60"

	Area (sf)	CN	Description
*	785	98	PAVED ENTRY
	785		100.00% Impervious Area

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

Subcatchment 5S: ENTRY DRIVE

Hydrograph



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Type III 24-hr 10-year Rainfall=4.60"

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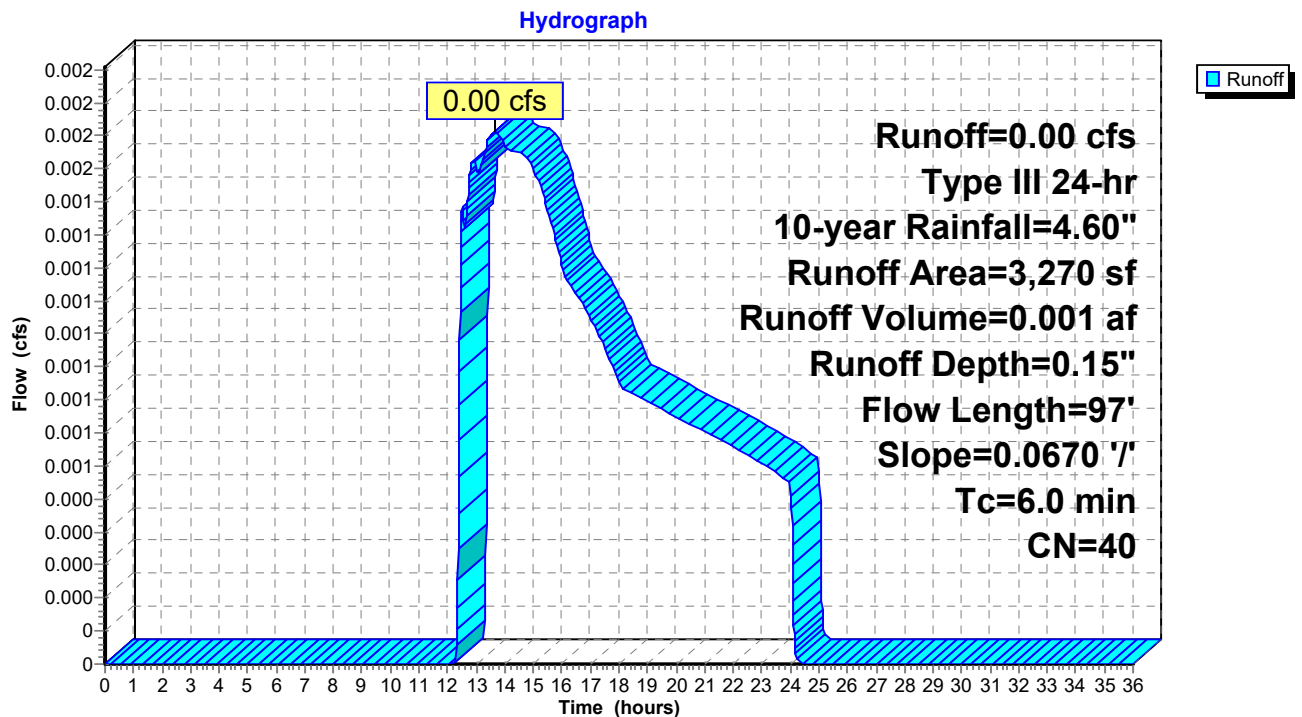
Summary for Subcatchment 6S: TIPDOWN

Runoff = 0.00 cfs @ 13.66 hrs, Volume= 0.001 af, Depth= 0.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
3,194	39	>75% Grass cover, Good, HSG A
* 76	98	BRICK AND CONCRETE SIDEWALK
3,270	40	Weighted Average
3,194		97.68% Pervious Area
76		2.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	97	0.0670	0.27		Sheet Flow, 6A-6B
Grass: Short n= 0.150 P2= 3.10"					

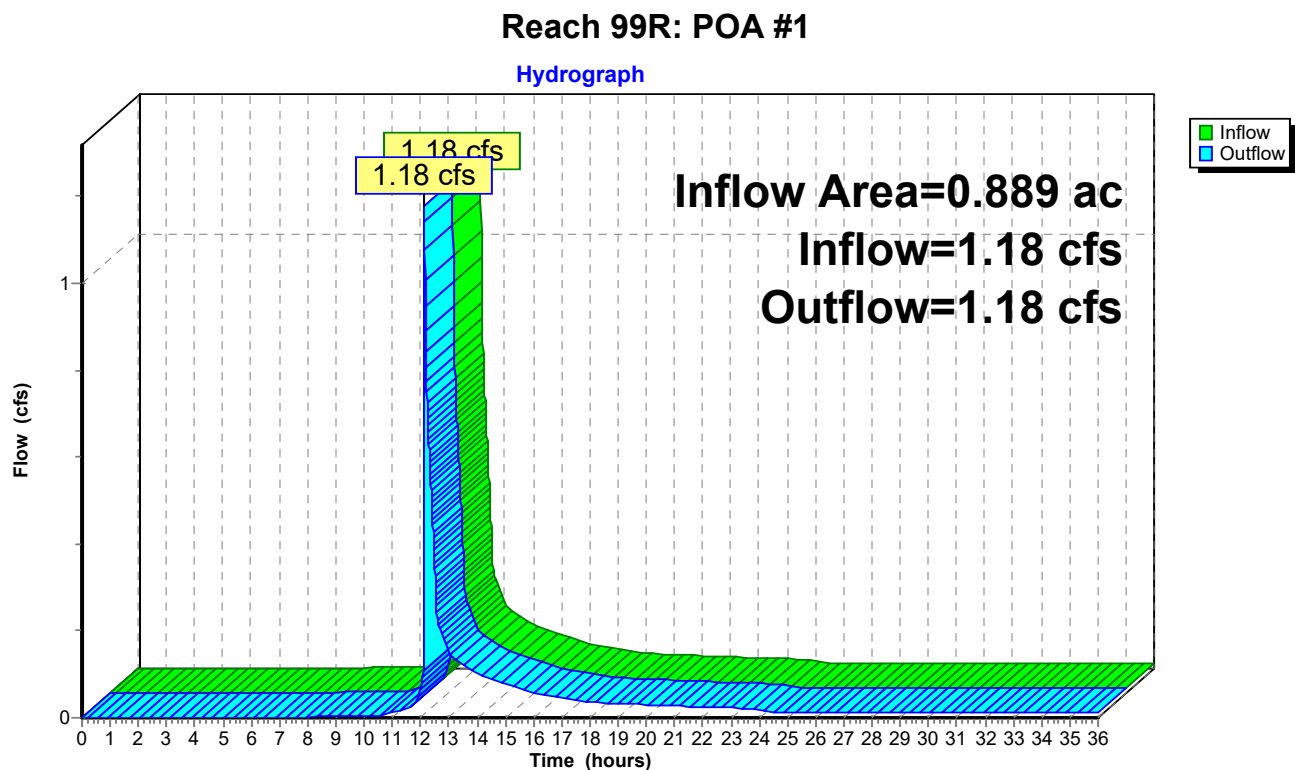
Subcatchment 6S: TIPDOWN

Summary for Reach 99R: POA #1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.889 ac, 38.70% Impervious, Inflow Depth > 1.23" for 10-year event
Inflow = 1.18 cfs @ 12.13 hrs, Volume= 0.091 af
Outflow = 1.18 cfs @ 12.13 hrs, Volume= 0.091 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs



Summary for Pond 1P: VUSF/CB #4

Inflow Area = 0.541 ac, 59.17% Impervious, Inflow Depth = 2.05" for 10-year event
 Inflow = 1.34 cfs @ 12.08 hrs, Volume= 0.092 af
 Outflow = 1.11 cfs @ 12.13 hrs, Volume= 0.080 af, Atten= 17%, Lag= 3.2 min
 Primary = 1.11 cfs @ 12.13 hrs, Volume= 0.080 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
 Peak Elev= 94.96' @ 12.13 hrs Surf.Area= 1,204 sf Storage= 1,096 cf
 Flood Elev= 96.00' Surf.Area= 1,939 sf Storage= 2,381 cf

Plug-Flow detention time= 244.3 min calculated for 0.080 af (87% of inflow)
 Center-of-Mass det. time= 184.8 min (1,025.5 - 840.7)

Volume	Invert	Avail.Storage	Storage Description
#1	93.00'	2,277 cf	Custom Stage Data (Prismatic) Listed below
#2	91.50'	24 cf	FILTER MEDIA (Prismatic) Listed below (Recalc) 240 cf Overall x 10.0% Voids
#3	91.00'	5 cf	4.0" Round Pipe Storage Inside #4 L= 60.0'
#4	90.30'	75 cf	FREE-DRAINING GRAVEL (Prismatic) Listed below (Recalc) 192 cf Overall - 5 cf Embedded = 187 cf x 40.0% Voids
		2,381 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
93.00	160	0	0
93.50	305	116	116
94.00	501	202	318
95.00	899	700	1,018
96.00	1,619	1,259	2,277

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
91.50	160	0	0
93.00	160	240	240

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
90.30	160	0	0
91.50	160	192	192

Device	Routing	Invert	Outlet Devices
#1	Device 3	91.00'	0.5" Vert. WQV C= 0.600
#2	Device 3	94.90'	2.0" x 2.0" Horiz. CB OVERFLOW X 6.00 columns X 6 rows C= 0.600 Limited to weir flow at low heads
#3	Primary	91.00'	12.0" Round SDR L= 76.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 91.00' / 89.30' S= 0.0224 ' S= 0.0224 ' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

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Primary OutFlow Max=1.23 cfs @ 12.13 hrs HW=94.96' (Free Discharge)

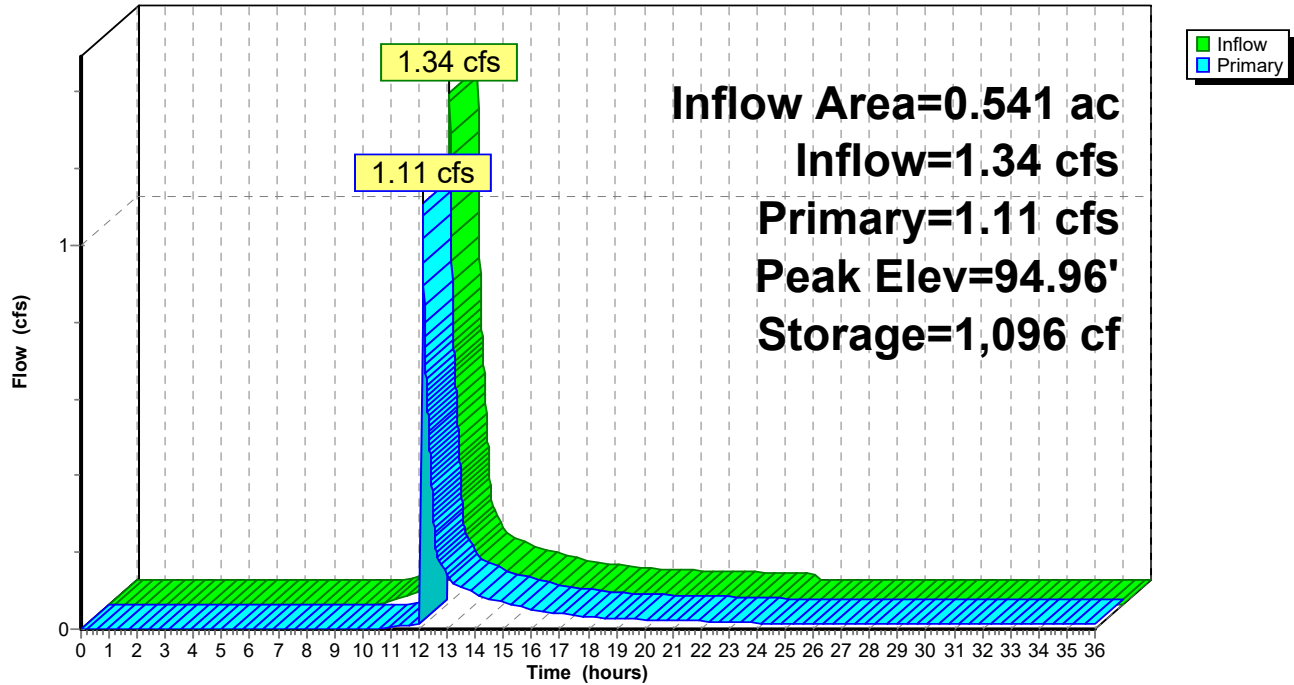
3=SDR (Passes 1.23 cfs of 5.56 cfs potential flow)

1=WQV (Orifice Controls 0.01 cfs @ 9.56 fps)

2=CB OVERFLOW (Orifice Controls 1.21 cfs @ 1.21 fps)

Pond 1P: VUSF/CB #4

Hydrograph



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Type III 24-hr 10-year Rainfall=4.60"

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Summary for Pond 2P: CB #1

Inflow Area = 0.082 ac, 5.21% Impervious, Inflow Depth = 0.22" for 10-year event
Inflow = 0.00 cfs @ 12.42 hrs, Volume= 0.001 af
Outflow = 0.00 cfs @ 12.42 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 12.42 hrs, Volume= 0.001 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Peak Elev= 95.74' @ 12.42 hrs

Flood Elev= 99.50'

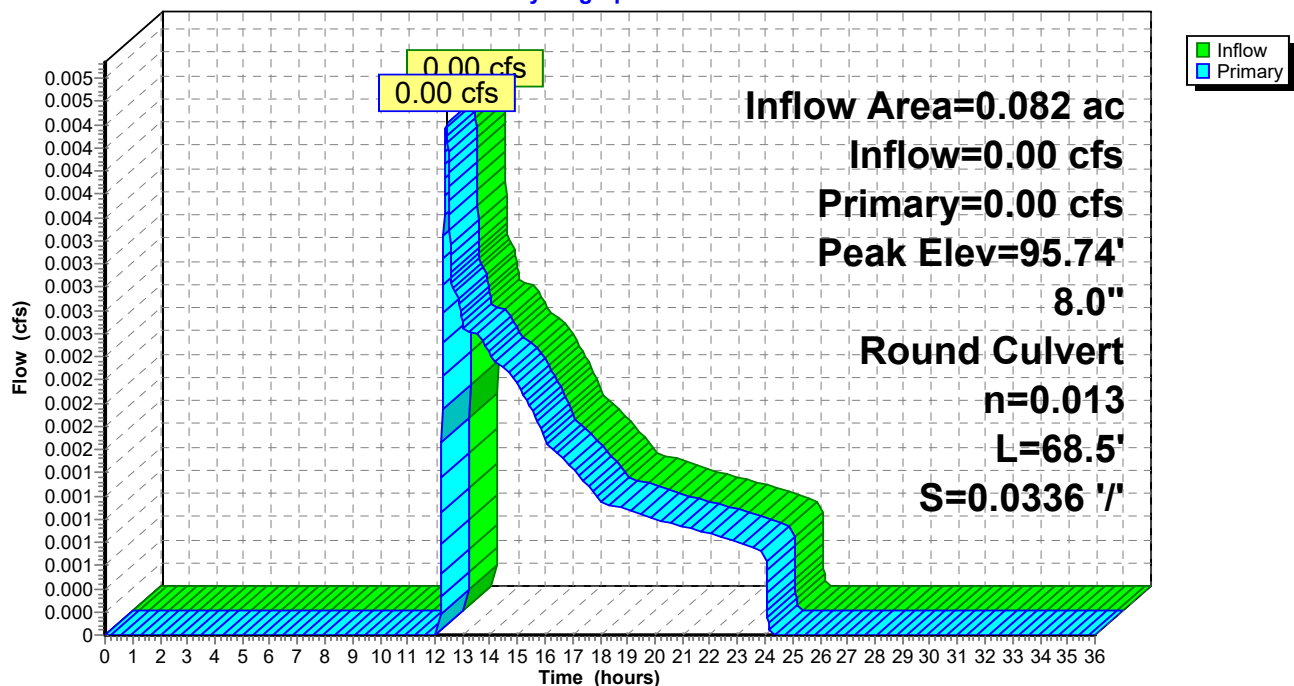
Device	Routing	Invert	Outlet Devices
#1	Primary	95.70'	8.0" Round HDPE L= 68.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 95.70' / 93.40' S= 0.0336 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.00 cfs @ 12.42 hrs HW=95.74' (Free Discharge)

1=HDPE (Inlet Controls 0.00 cfs @ 0.53 fps)

Pond 2P: CB #1

Hydrograph



Summary for Pond 3P: CB #2

Inflow Area = 0.093 ac, 0.00% Impervious, Inflow Depth = 0.13" for 10-year event
 Inflow = 0.00 cfs @ 14.57 hrs, Volume= 0.001 af
 Outflow = 0.00 cfs @ 14.57 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.00 cfs @ 14.57 hrs, Volume= 0.001 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Peak Elev= 93.42' @ 14.57 hrs

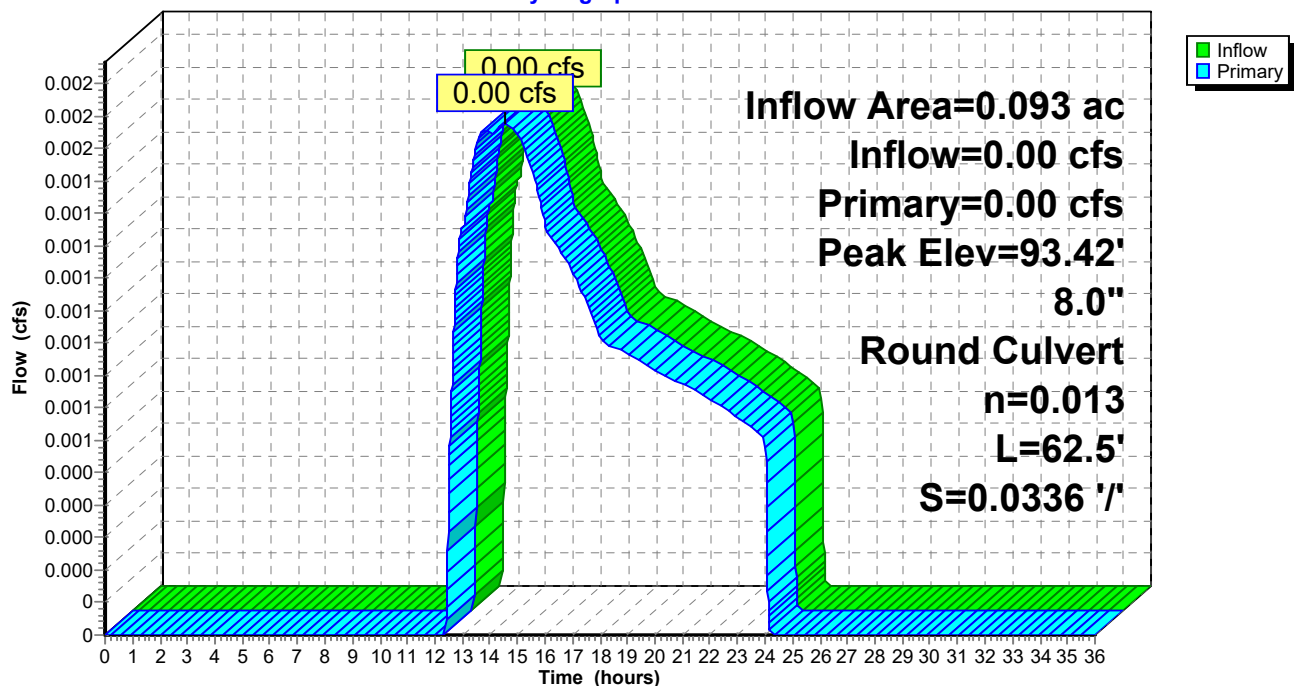
Flood Elev= 97.00'

Device	Routing	Invert	Outlet Devices
#1	Primary	93.40'	8.0" Round HDPE L= 62.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 93.40' / 91.30' S= 0.0336 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.00 cfs @ 14.57 hrs HW=93.42' (Free Discharge)
 ↳ **1=HDPE** (Inlet Controls 0.00 cfs @ 0.33 fps)

Pond 3P: CB #2

Hydrograph



Summary for Pond 4P: CB #3

Inflow Area = 0.080 ac, 0.00% Impervious, Inflow Depth = 0.13" for 10-year event
 Inflow = 0.00 cfs @ 14.61 hrs, Volume= 0.001 af
 Outflow = 0.00 cfs @ 14.61 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min
 Primary = 0.00 cfs @ 14.61 hrs, Volume= 0.001 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Peak Elev= 91.35' @ 14.61 hrs

Flood Elev= 95.10'

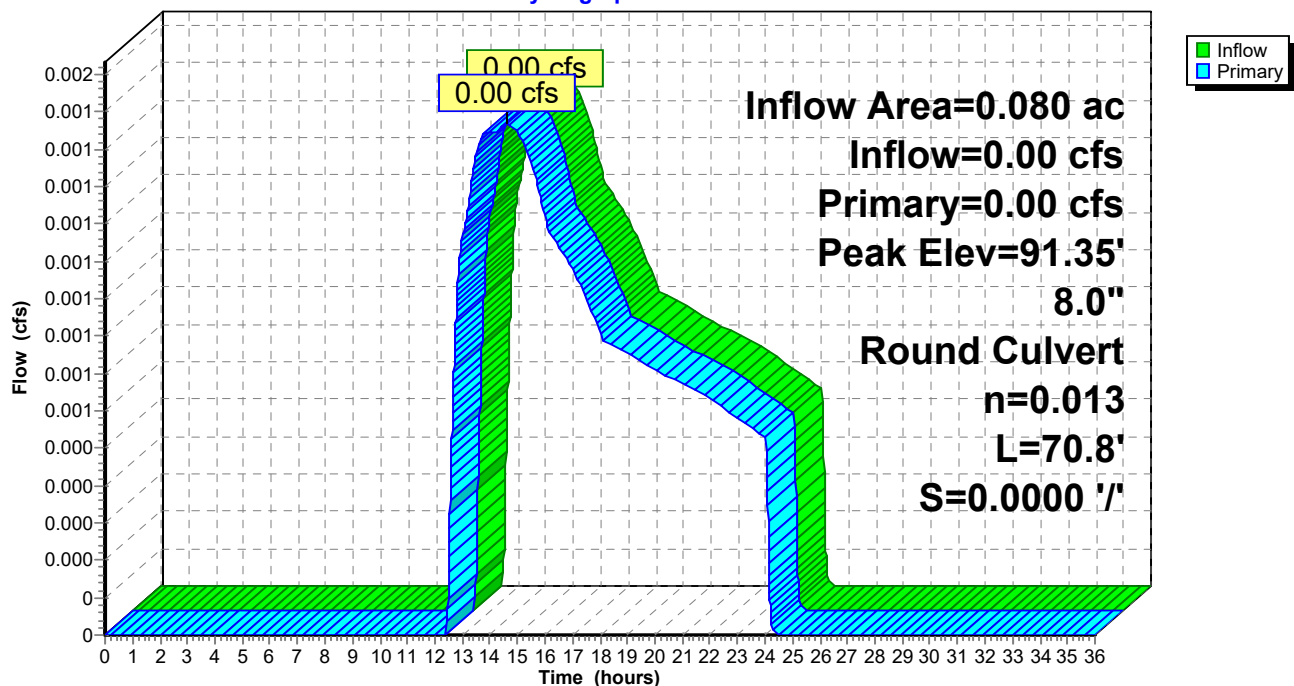
Device	Routing	Invert	Outlet Devices
#1	Primary	91.30'	8.0" Round HDPE L= 70.8' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 91.30' / 91.30' S= 0.0000 '/ S= 0.0000 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.00 cfs @ 14.61 hrs HW=91.35' (Free Discharge)

1=HDPE (Barrel Controls 0.00 cfs @ 0.13 fps)

Pond 4P: CB #3

Hydrograph



PRE

Type III 24-hr 25-year Rainfall=5.80"

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Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 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: DRAINAGE TO VUSF Runoff Area=23,562 sf 59.17% Impervious Runoff Depth=3.02"
Tc=5.0 min CN=74 Runoff=1.98 cfs 0.136 af

Subcatchment2S: DRAINING TO CB#1 Runoff Area=3,570 sf 5.21% Impervious Runoff Depth=0.55"
Tc=5.0 min CN=42 Runoff=0.02 cfs 0.004 af

Subcatchment3S: DRAINING TO CB #2 Runoff Area=4,038 sf 0.00% Impervious Runoff Depth=0.39"
Flow Length=67' Slope=0.0467 '/' Tc=5.1 min CN=39 Runoff=0.01 cfs 0.003 af

Subcatchment4S: DRAINING TO CB #3 Runoff Area=3,504 sf 0.00% Impervious Runoff Depth=0.39"
Flow Length=58' Slope=0.0100 '/' Tc=8.5 min CN=39 Runoff=0.01 cfs 0.003 af

Subcatchment5S: ENTRY DRIVE Runoff Area=785 sf 100.00% Impervious Runoff Depth=5.56"
Tc=5.0 min CN=98 Runoff=0.11 cfs 0.008 af

Subcatchment6S: TIPDOWN Runoff Area=3,270 sf 2.32% Impervious Runoff Depth=0.44"
Flow Length=97' Slope=0.0670 '/' Tc=6.0 min CN=40 Runoff=0.01 cfs 0.003 af

Reach 99R: POA #1 Inflow=1.93 cfs 0.144 af
Outflow=1.93 cfs 0.144 af

Pond 1P: VUSF/CB #4 Peak Elev=95.04' Storage=1,173 cf Inflow=1.98 cfs 0.136 af
Outflow=1.81 cfs 0.124 af

Pond 2P: CB #1 Peak Elev=95.79' Inflow=0.02 cfs 0.004 af
8.0" Round Culvert n=0.013 L=68.5' S=0.0336 '/' Outflow=0.02 cfs 0.004 af

Pond 3P: CB #2 Peak Elev=93.47' Inflow=0.01 cfs 0.003 af
8.0" Round Culvert n=0.013 L=62.5' S=0.0336 '/' Outflow=0.01 cfs 0.003 af

Pond 4P: CB #3 Peak Elev=91.43' Inflow=0.01 cfs 0.003 af
8.0" Round Culvert n=0.013 L=70.8' S=0.0000 '/' Outflow=0.01 cfs 0.003 af

Total Runoff Area = 0.889 ac Runoff Volume = 0.156 af Average Runoff Depth = 2.11"
61.30% Pervious = 0.545 ac 38.70% Impervious = 0.344 ac

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Subcatchment 1S: DRAINAGE TO VUSF

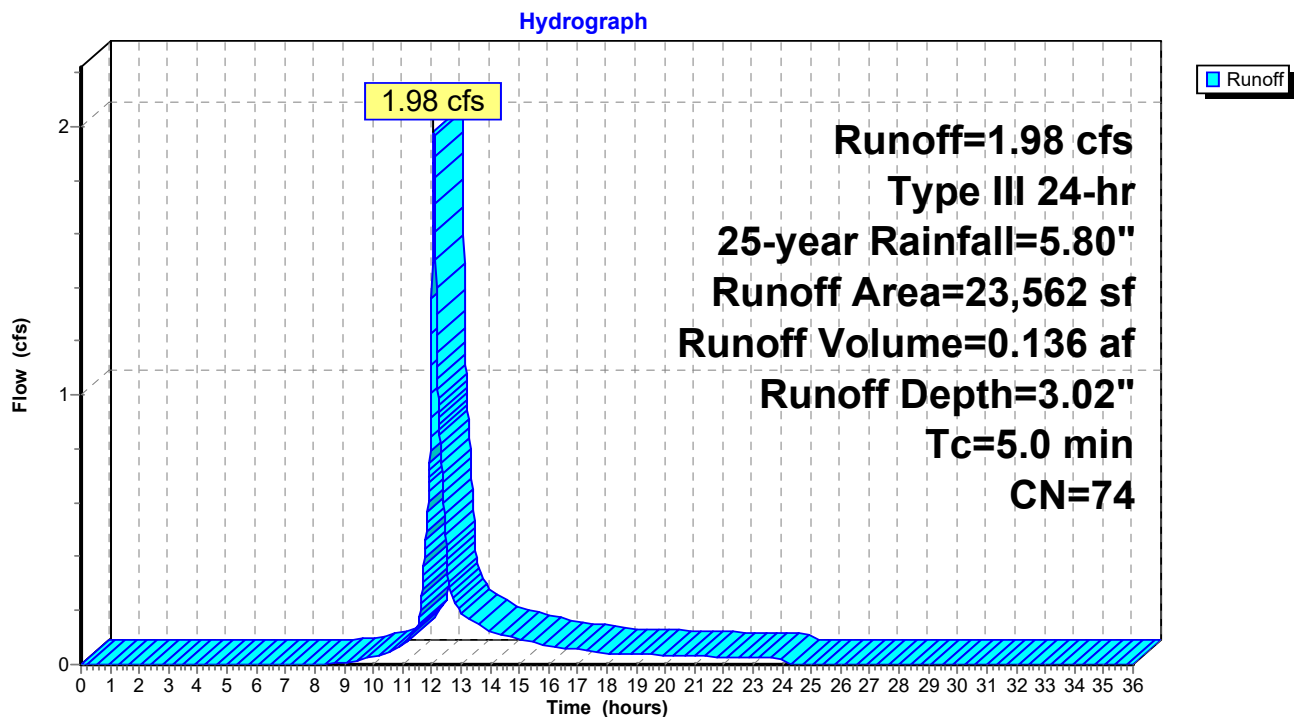
Runoff = 1.98 cfs @ 12.08 hrs, Volume= 0.136 af, Depth= 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

	Area (sf)	CN	Description
*	13,942	98	PAVEMENT, SIDEWALKS, RETAINING WALL
	9,620	39	>75% Grass cover, Good, HSG A
	23,562	74	Weighted Average
	9,620		40.83% Pervious Area
	13,942		59.17% Impervious Area

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

Subcatchment 1S: DRAINAGE TO VUSF



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Summary for Subcatchment 2S: DRAINING TO CB#1

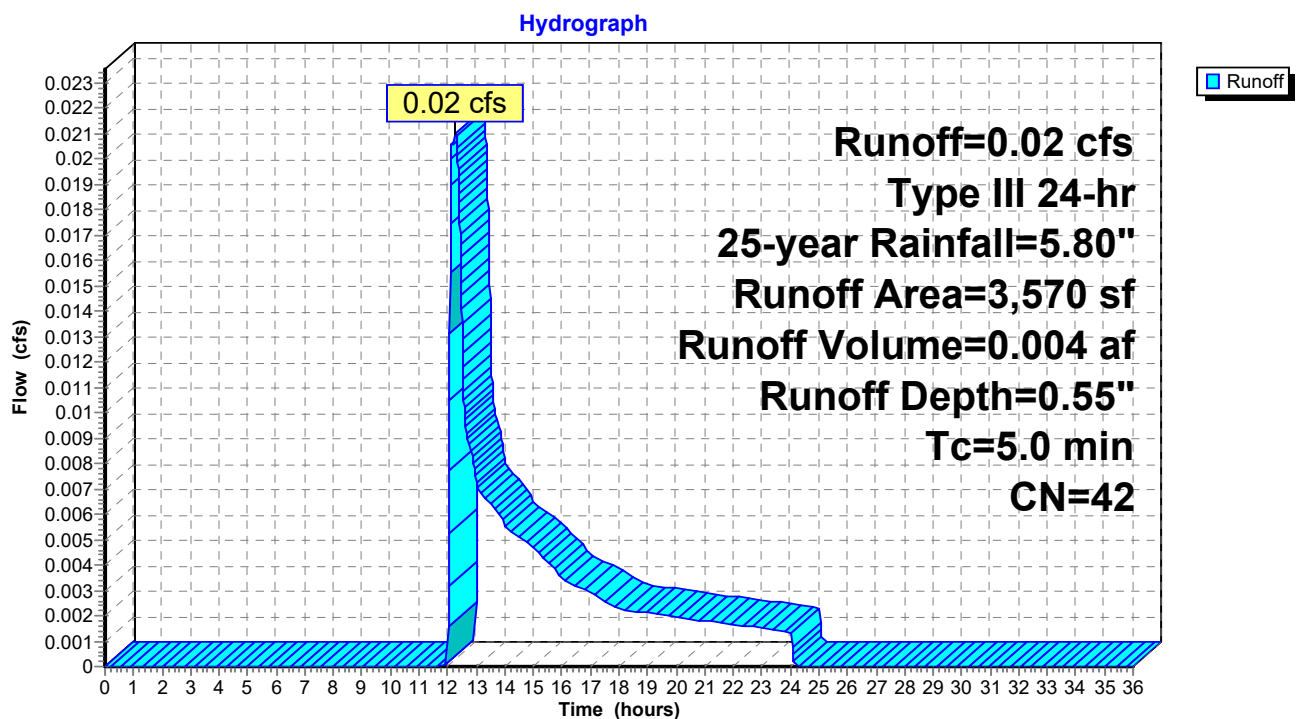
Runoff = 0.02 cfs @ 12.27 hrs, Volume= 0.004 af, Depth= 0.55"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
3,384	39	>75% Grass cover, Good, HSG A
* 186	98	BRICK SIDEWALK
3,570	42	Weighted Average
3,384		94.79% Pervious Area
186		5.21% Impervious Area

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

Subcatchment 2S: DRAINING TO CB#1



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Summary for Subcatchment 3S: DRAINING TO CB #2

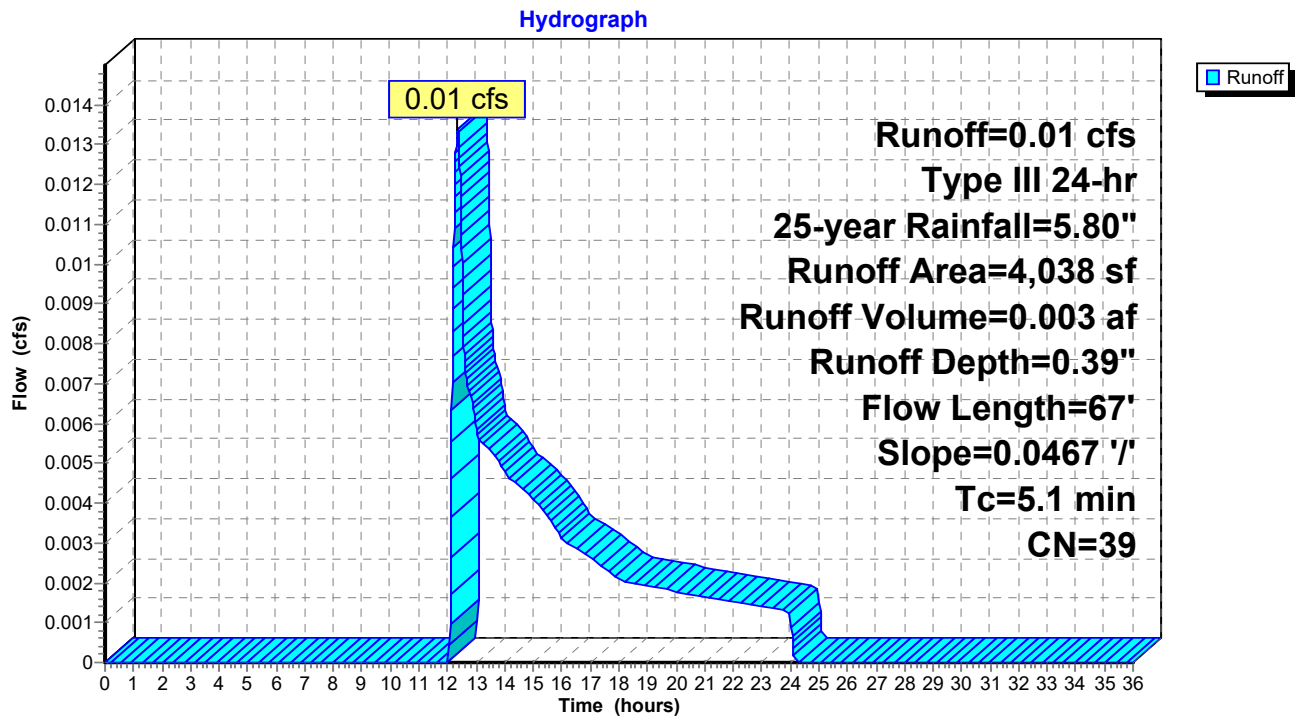
Runoff = 0.01 cfs @ 12.35 hrs, Volume= 0.003 af, Depth= 0.39"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
4,038	39	>75% Grass cover, Good, HSG A
4,038		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	67	0.0467	0.22		Sheet Flow, 3A-3B
Grass: Short n= 0.150 P2= 3.10"					

Subcatchment 3S: DRAINING TO CB #2



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Summary for Subcatchment 4S: DRAINING TO CB #3

Runoff = 0.01 cfs @ 12.40 hrs, Volume= 0.003 af, Depth= 0.39"

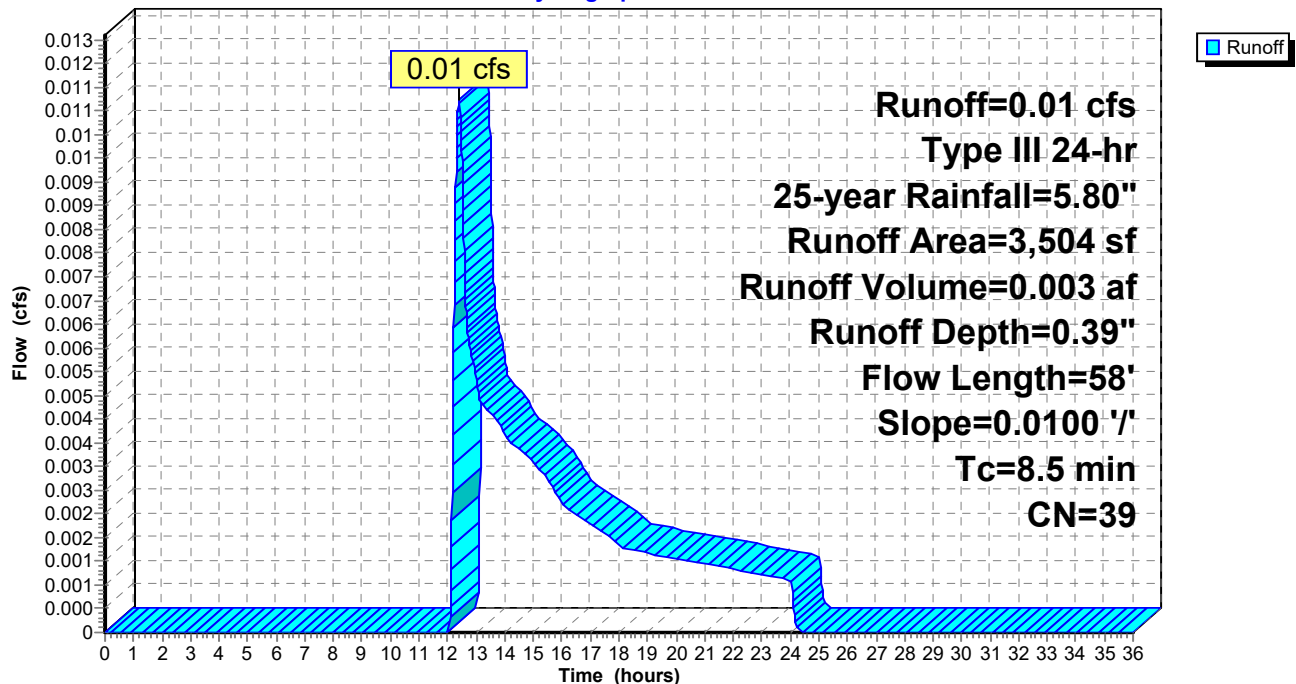
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
3,504	39	>75% Grass cover, Good, HSG A
3,504		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	58	0.0100	0.11		Sheet Flow, 4A-4B
Grass: Short n= 0.150 P2= 3.10"					

Subcatchment 4S: DRAINING TO CB #3

Hydrograph



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Summary for Subcatchment 5S: ENTRY DRIVE

Runoff = 0.11 cfs @ 12.07 hrs, Volume= 0.008 af, Depth= 5.56"

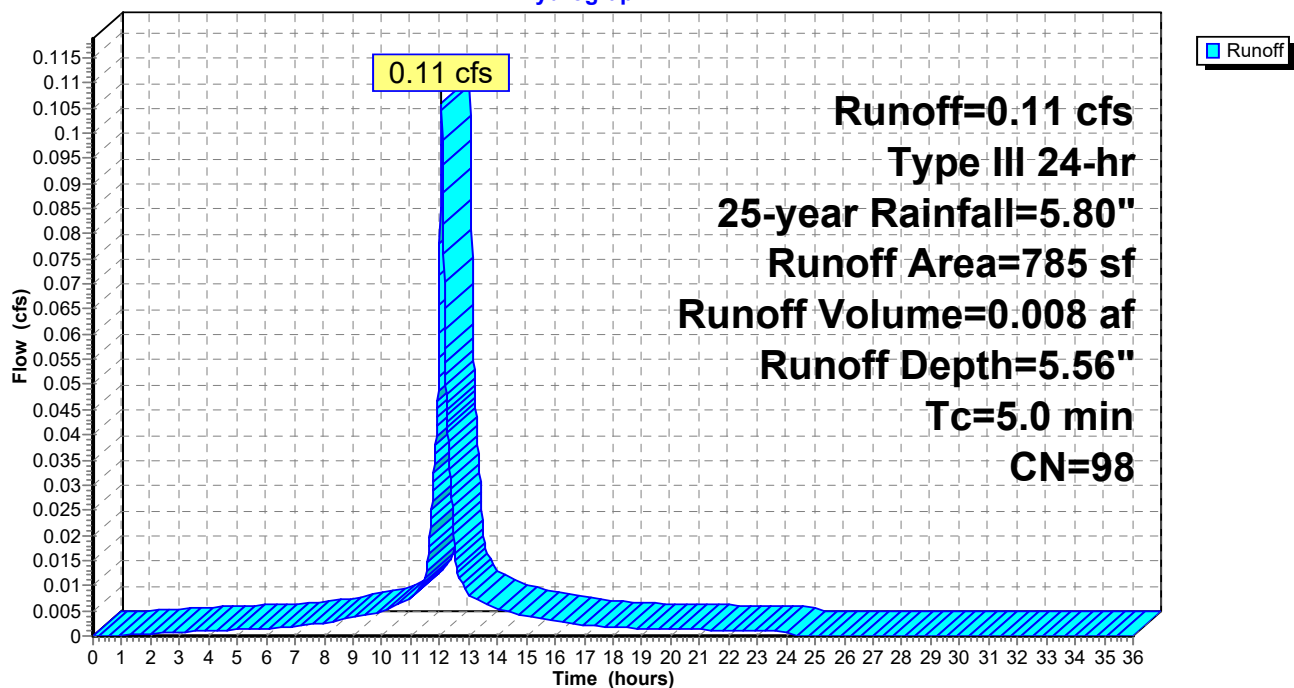
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

	Area (sf)	CN	Description
*	785	98	PAVED ENTRY
	785		100.00% Impervious Area

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

Subcatchment 5S: ENTRY DRIVE

Hydrograph



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Type III 24-hr 25-year Rainfall=5.80"

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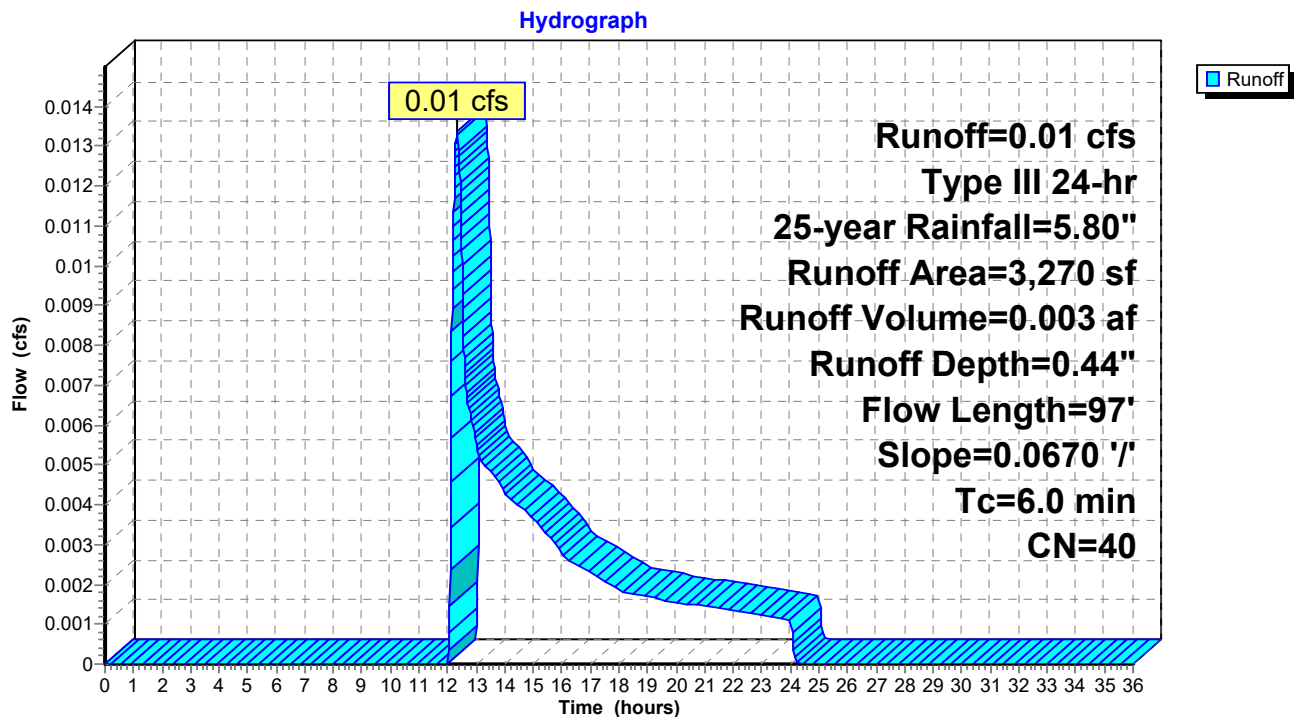
Summary for Subcatchment 6S: TIPDOWN

Runoff = 0.01 cfs @ 12.34 hrs, Volume= 0.003 af, Depth= 0.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
3,194	39	>75% Grass cover, Good, HSG A
* 76	98	BRICK AND CONCRETE SIDEWALK
3,270	40	Weighted Average
3,194		97.68% Pervious Area
76		2.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	97	0.0670	0.27		Sheet Flow, 6A-6B
Grass: Short n= 0.150 P2= 3.10"					

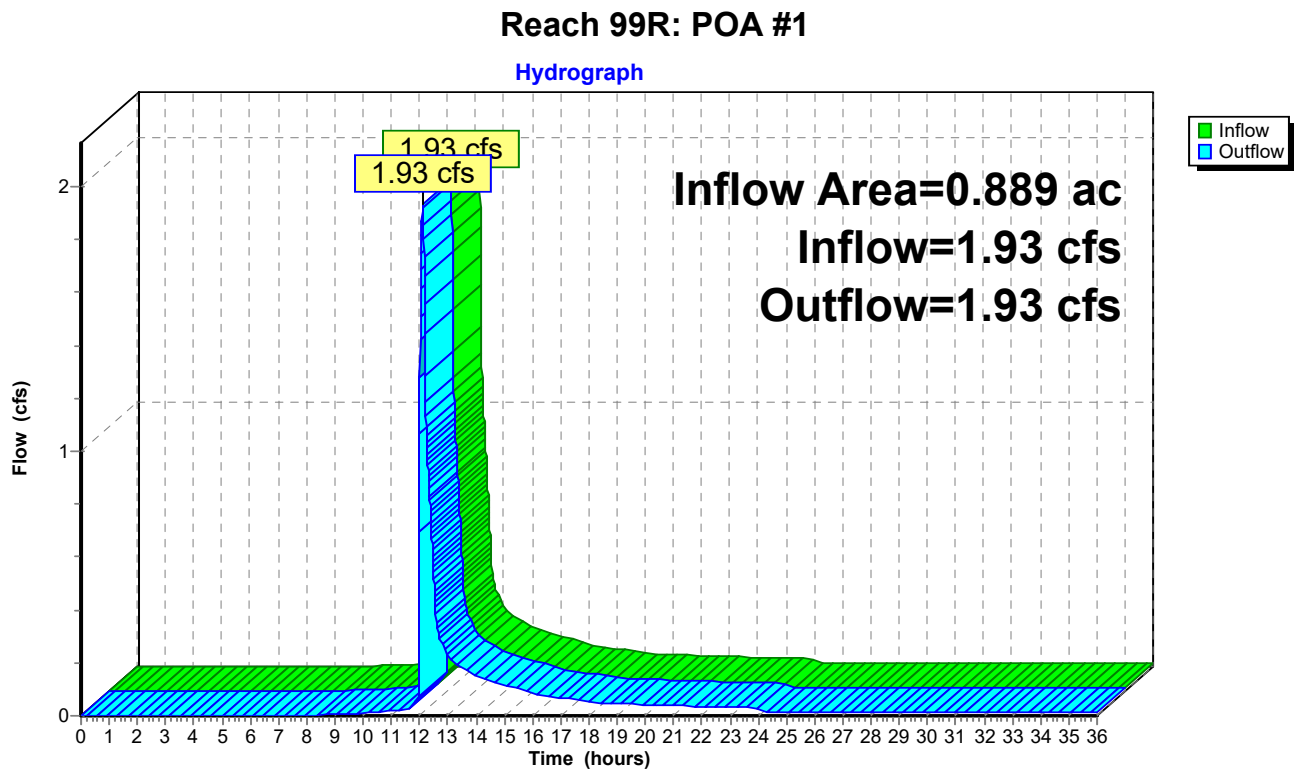
Subcatchment 6S: TIPDOWN

Summary for Reach 99R: POA #1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.889 ac, 38.70% Impervious, Inflow Depth > 1.95" for 25-year event
Inflow = 1.93 cfs @ 12.11 hrs, Volume= 0.144 af
Outflow = 1.93 cfs @ 12.11 hrs, Volume= 0.144 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs



Summary for Pond 1P: VUSF/CB #4

Inflow Area = 0.541 ac, 59.17% Impervious, Inflow Depth = 3.02" for 25-year event
 Inflow = 1.98 cfs @ 12.08 hrs, Volume= 0.136 af
 Outflow = 1.81 cfs @ 12.11 hrs, Volume= 0.124 af, Atten= 9%, Lag= 2.0 min
 Primary = 1.81 cfs @ 12.11 hrs, Volume= 0.124 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
 Peak Elev= 95.04' @ 12.11 hrs Surf.Area= 1,248 sf Storage= 1,173 cf
 Flood Elev= 96.00' Surf.Area= 1,939 sf Storage= 2,381 cf

Plug-Flow detention time= 167.1 min calculated for 0.124 af (91% of inflow)
 Center-of-Mass det. time= 123.0 min (952.5 - 829.4)

Volume	Invert	Avail.Storage	Storage Description
#1	93.00'	2,277 cf	Custom Stage Data (Prismatic) Listed below
#2	91.50'	24 cf	FILTER MEDIA (Prismatic) Listed below (Recalc) 240 cf Overall x 10.0% Voids
#3	91.00'	5 cf	4.0" Round Pipe Storage Inside #4 L= 60.0'
#4	90.30'	75 cf	FREE-DRAINING GRAVEL (Prismatic) Listed below (Recalc) 192 cf Overall - 5 cf Embedded = 187 cf x 40.0% Voids
		2,381 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
93.00	160	0	0
93.50	305	116	116
94.00	501	202	318
95.00	899	700	1,018
96.00	1,619	1,259	2,277

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
91.50	160	0	0
93.00	160	240	240

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
90.30	160	0	0
91.50	160	192	192

Device	Routing	Invert	Outlet Devices
#1	Device 3	91.00'	0.5" Vert. WQV C= 0.600
#2	Device 3	94.90'	2.0" x 2.0" Horiz. CB OVERFLOW X 6.00 columns X 6 rows C= 0.600 Limited to weir flow at low heads
#3	Primary	91.00'	12.0" Round SDR L= 76.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 91.00' / 89.30' S= 0.0224 ' S= 0.0224 ' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

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Primary OutFlow Max=1.82 cfs @ 12.11 hrs HW=95.04' (Free Discharge)

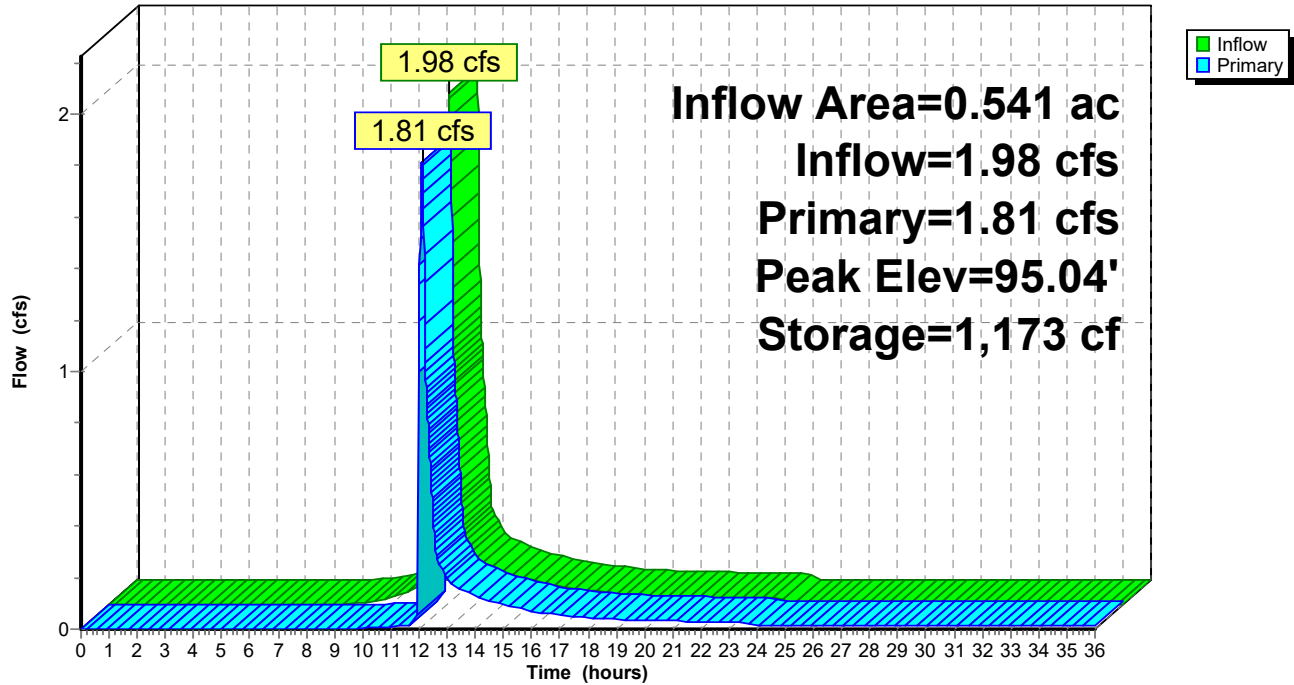
3=SDR (Passes 1.82 cfs of 5.62 cfs potential flow)

1=WQV (Orifice Controls 0.01 cfs @ 9.65 fps)

2=CB OVERFLOW (Orifice Controls 1.80 cfs @ 1.80 fps)

Pond 1P: VUSF/CB #4

Hydrograph



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Summary for Pond 2P: CB #1

Inflow Area = 0.082 ac, 5.21% Impervious, Inflow Depth = 0.55" for 25-year event
Inflow = 0.02 cfs @ 12.27 hrs, Volume= 0.004 af
Outflow = 0.02 cfs @ 12.27 hrs, Volume= 0.004 af, Atten= 0%, Lag= 0.0 min
Primary = 0.02 cfs @ 12.27 hrs, Volume= 0.004 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Peak Elev= 95.79' @ 12.27 hrs

Flood Elev= 99.50'

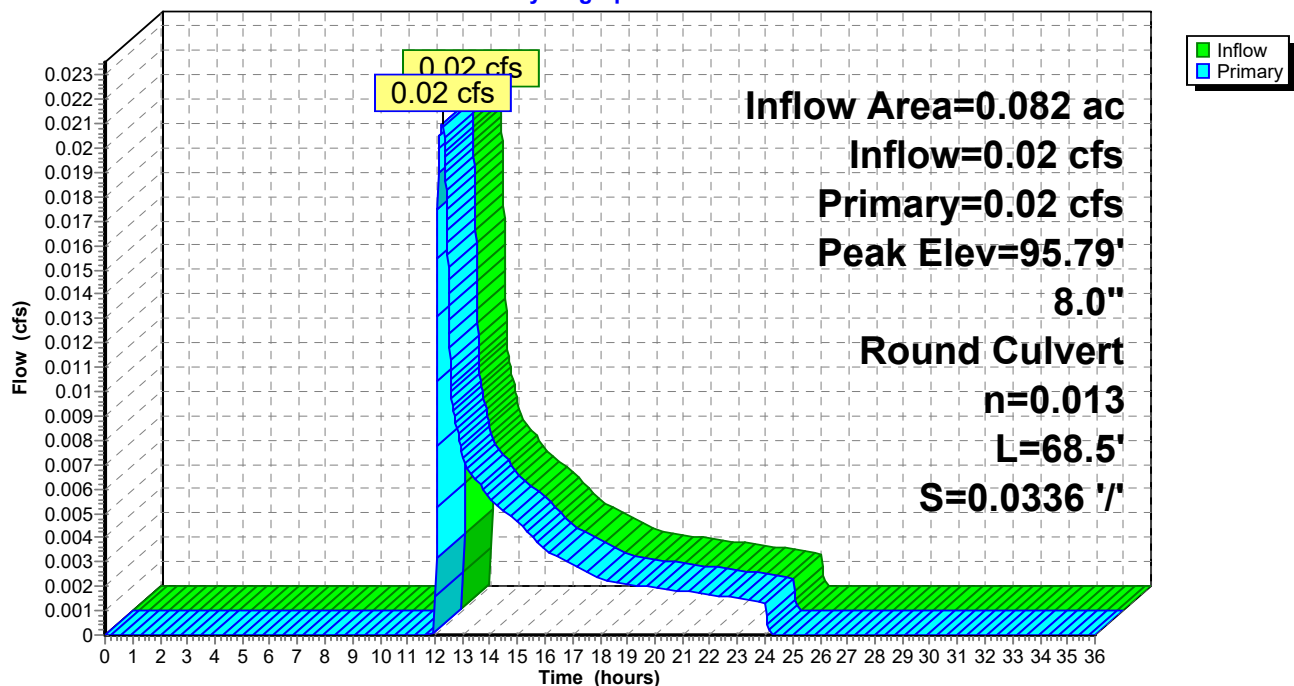
Device	Routing	Invert	Outlet Devices
#1	Primary	95.70'	8.0" Round HDPE L= 68.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 95.70' / 93.40' S= 0.0336 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.02 cfs @ 12.27 hrs HW=95.79' (Free Discharge)

1=HDPE (Inlet Controls 0.02 cfs @ 0.78 fps)

Pond 2P: CB #1

Hydrograph



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Summary for Pond 3P: CB #2

Inflow Area = 0.093 ac, 0.00% Impervious, Inflow Depth = 0.39" for 25-year event
Inflow = 0.01 cfs @ 12.35 hrs, Volume= 0.003 af
Outflow = 0.01 cfs @ 12.35 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.0 min
Primary = 0.01 cfs @ 12.35 hrs, Volume= 0.003 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Peak Elev= 93.47' @ 12.35 hrs

Flood Elev= 97.00'

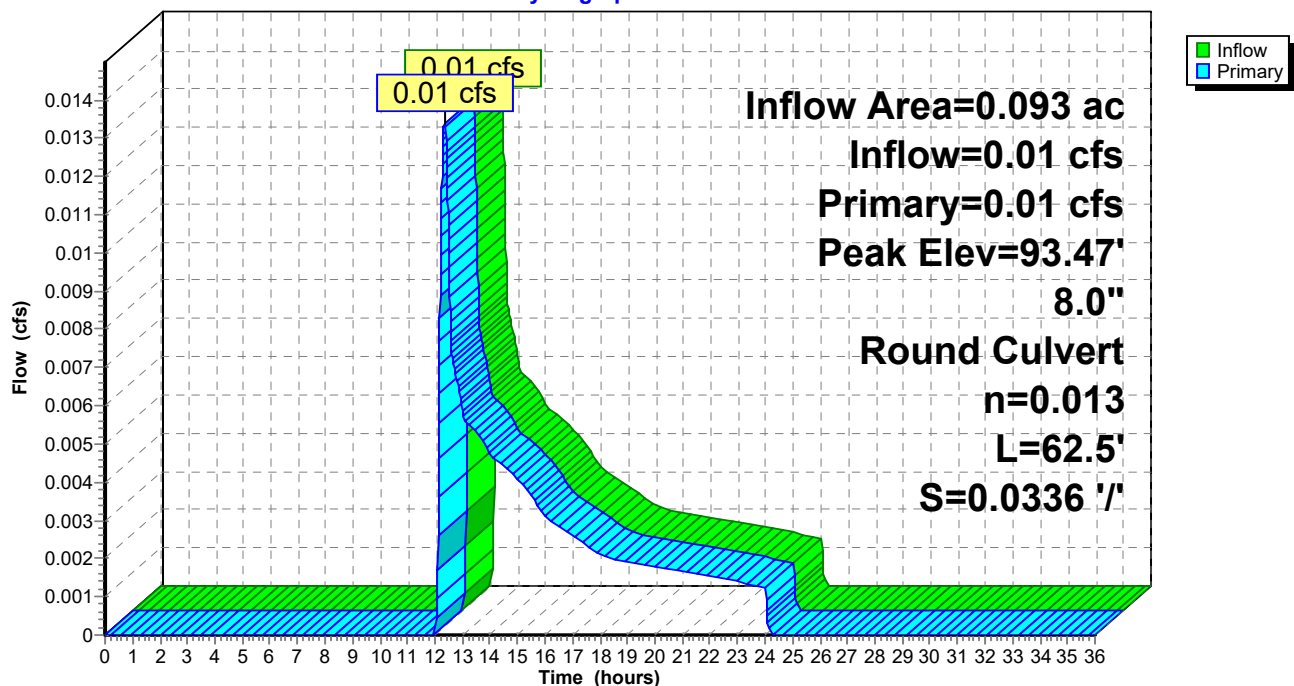
Device	Routing	Invert	Outlet Devices
#1	Primary	93.40'	8.0" Round HDPE L= 62.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 93.40' / 91.30' S= 0.0336 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.01 cfs @ 12.35 hrs HW=93.47' (Free Discharge)

1=HDPE (Inlet Controls 0.01 cfs @ 0.70 fps)

Pond 3P: CB #2

Hydrograph



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Summary for Pond 4P: CB #3

Inflow Area = 0.080 ac, 0.00% Impervious, Inflow Depth = 0.39" for 25-year event
Inflow = 0.01 cfs @ 12.40 hrs, Volume= 0.003 af
Outflow = 0.01 cfs @ 12.40 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.0 min
Primary = 0.01 cfs @ 12.40 hrs, Volume= 0.003 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Peak Elev= 91.43' @ 12.40 hrs

Flood Elev= 95.10'

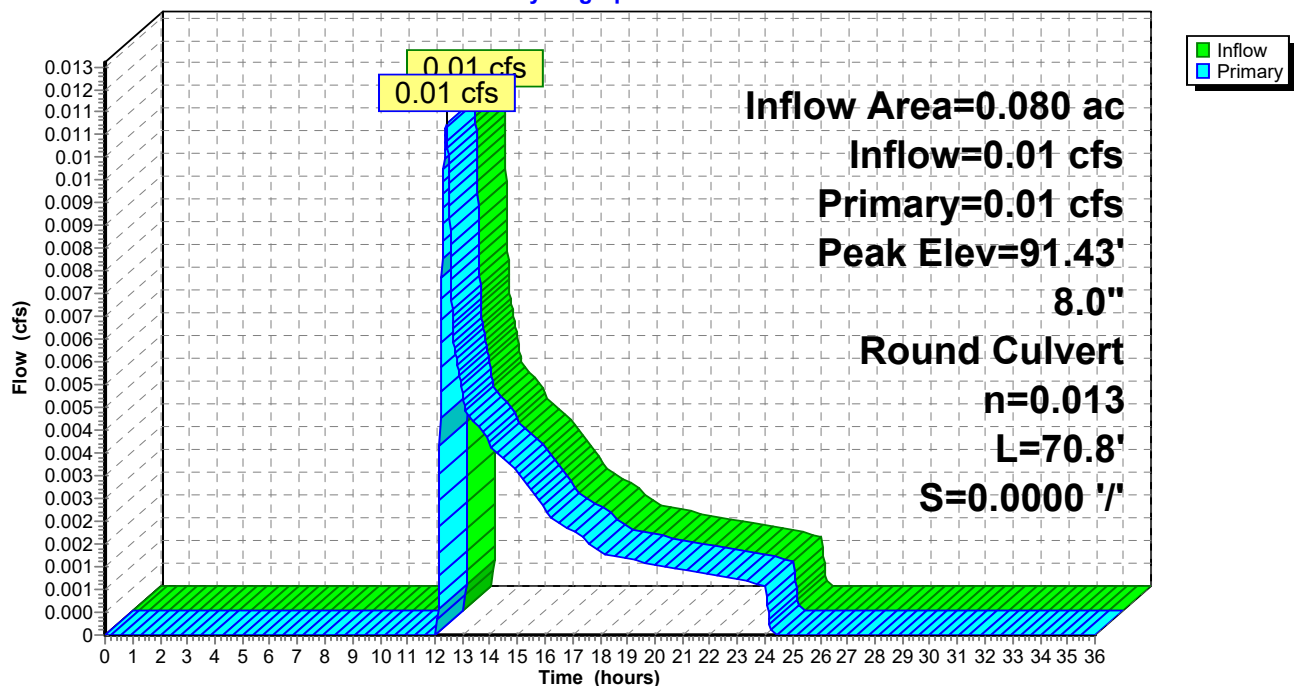
Device	Routing	Invert	Outlet Devices
#1	Primary	91.30'	8.0" Round HDPE L= 70.8' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 91.30' / 91.30' S= 0.0000 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

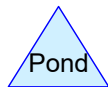
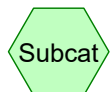
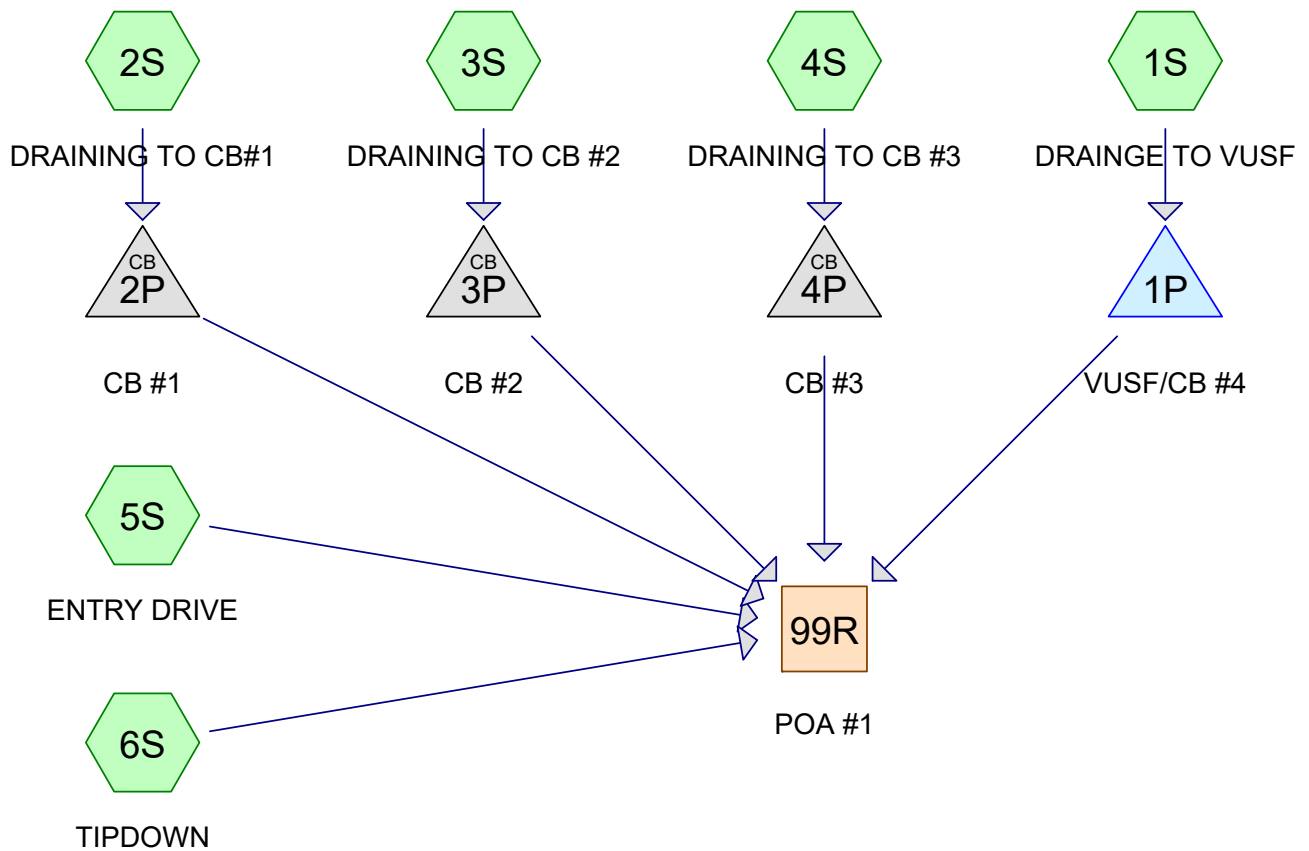
Primary OutFlow Max=0.01 cfs @ 12.40 hrs HW=91.43' (Free Discharge)

↑1=HDPE (Barrel Controls 0.01 cfs @ 0.35 fps)

Pond 4P: CB #3

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Routing Diagram for POST

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Page 2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.343	39	>75% Grass cover, Good, HSG A (1S, 2S, 3S, 4S, 6S)
0.001	98	BRICK AND CONCRETE SIDEWALK (6S)
0.004	98	BRICK SIDEWALK (2S)
0.018	98	PAVED ENTRY (5S)
0.523	98	PAVEMENT, SIDEWALKS, RETAINING WALL (1S)
0.889	75	TOTAL AREA

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Page 3

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.343	HSG A	1S, 2S, 3S, 4S, 6S
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
0.547	Other	1S, 2S, 5S, 6S
0.889		TOTAL AREA

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover
0.343	0.000	0.000	0.000	0.000	0.343	>75% Grass cover, Good
0.000	0.000	0.000	0.000	0.001	0.001	BRICK AND CONCRETE SIDEWALK
0.000	0.000	0.000	0.000	0.004	0.004	BRICK SIDEWALK
0.000	0.000	0.000	0.000	0.018	0.018	PAVED ENTRY
0.000	0.000	0.000	0.000	0.523	0.523	PAVEMENT, SIDEWALKS, RETAINING WALL
0.343	0.000	0.000	0.000	0.547	0.889	TOTAL AREA

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Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	1P	90.05	89.30	34.8	0.0216	0.010	12.0	0.0	0.0
2	2P	95.70	93.40	68.5	0.0336	0.013	8.0	0.0	0.0
3	3P	93.40	91.30	62.5	0.0336	0.013	8.0	0.0	0.0
4	4P	91.30	91.23	25.3	0.0028	0.013	8.0	0.0	0.0

POST*Type III 24-hr 2-year Rainfall=3.10"*

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Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 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: DRAINAGE TO VUSF	Runoff Area=30,526 sf 74.64% Impervious Runoff Depth=1.53" Tc=5.0 min CN=83 Runoff=1.30 cfs 0.089 af
Subcatchment2S: DRAINING TO CB#1	Runoff Area=2,452 sf 7.71% Impervious Runoff Depth=0.02" Tc=5.0 min CN=44 Runoff=0.00 cfs 0.000 af
Subcatchment3S: DRAINING TO CB #2	Runoff Area=2,079 sf 0.00% Impervious Runoff Depth=0.00" Tc=5.0 min CN=39 Runoff=0.00 cfs 0.000 af
Subcatchment4S: DRAINING TO CB #3	Runoff Area=1,754 sf 0.00% Impervious Runoff Depth=0.00" Flow Length=44' Slope=0.0100 '/' Tc=6.8 min CN=39 Runoff=0.00 cfs 0.000 af
Subcatchment5S: ENTRY DRIVE	Runoff Area=785 sf 100.00% Impervious Runoff Depth=2.87" Tc=5.0 min CN=98 Runoff=0.06 cfs 0.004 af
Subcatchment6S: TIPDOWN	Runoff Area=1,135 sf 4.14% Impervious Runoff Depth=0.00" Tc=5.0 min CN=41 Runoff=0.00 cfs 0.000 af
Reach 99R: POA #1	Inflow=0.10 cfs 0.084 af Outflow=0.10 cfs 0.084 af
Pond 1P: VUSF/CB #4	Peak Elev=94.80' Storage=2,449 cf Inflow=1.30 cfs 0.089 af Outflow=0.05 cfs 0.080 af
Pond 2P: CB #1	Peak Elev=95.70' Inflow=0.00 cfs 0.000 af 8.0" Round Culvert n=0.013 L=68.5' S=0.0336 '/' Outflow=0.00 cfs 0.000 af
Pond 3P: CB #2	Peak Elev=93.40' Inflow=0.00 cfs 0.000 af 8.0" Round Culvert n=0.013 L=62.5' S=0.0336 '/' Outflow=0.00 cfs 0.000 af
Pond 4P: CB #3	Peak Elev=91.30' Inflow=0.00 cfs 0.000 af 8.0" Round Culvert n=0.013 L=25.3' S=0.0028 '/' Outflow=0.00 cfs 0.000 af

Total Runoff Area = 0.889 ac Runoff Volume = 0.094 af Average Runoff Depth = 1.26"
38.53% Pervious = 0.343 ac 61.47% Impervious = 0.547 ac

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Type III 24-hr 2-year Rainfall=3.10"

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Summary for Subcatchment 1S: DRAINAGE TO VUSF

Runoff = 1.30 cfs @ 12.08 hrs, Volume= 0.089 af, Depth= 1.53"

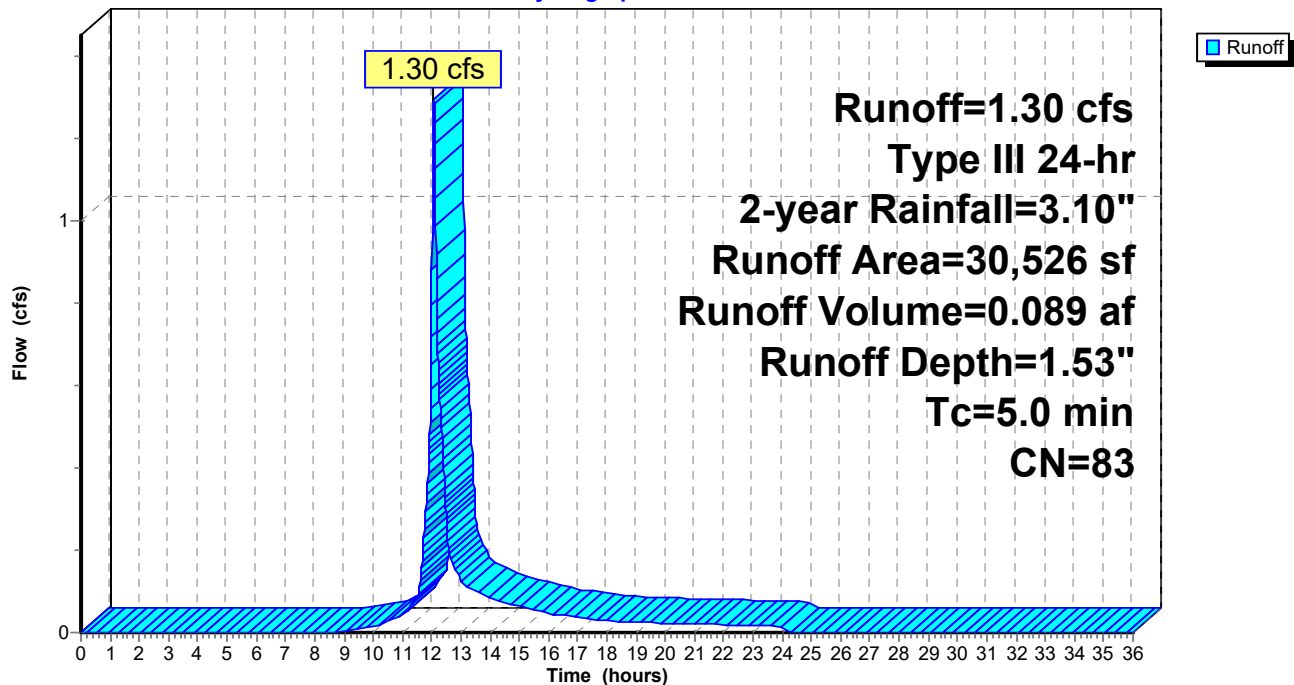
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

	Area (sf)	CN	Description
*	22,786	98	PAVEMENT, SIDEWALKS, RETAINING WALL
	7,740	39	>75% Grass cover, Good, HSG A
	30,526	83	Weighted Average
	7,740		25.36% Pervious Area
	22,786		74.64% Impervious Area

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

Subcatchment 1S: DRAINAGE TO VUSF

Hydrograph



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Type III 24-hr 2-year Rainfall=3.10"

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Summary for Subcatchment 2S: DRAINING TO CB#1

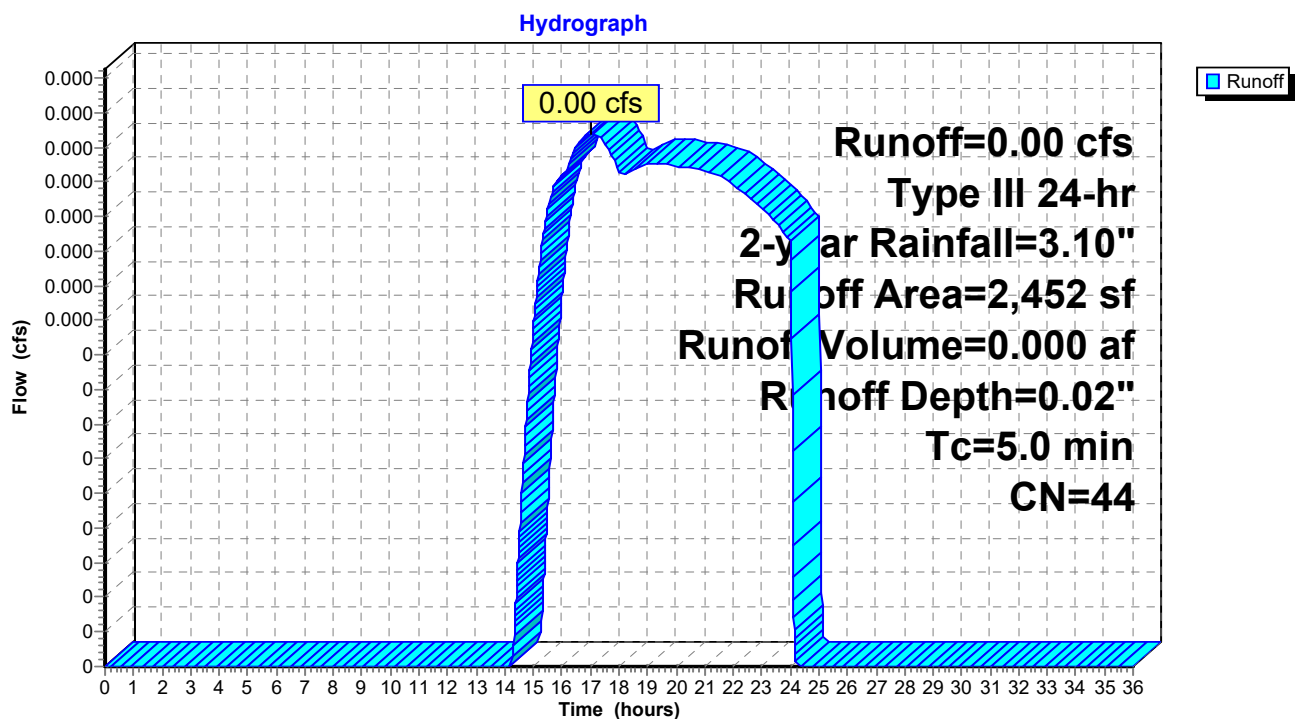
Runoff = 0.00 cfs @ 17.05 hrs, Volume= 0.000 af, Depth= 0.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

	Area (sf)	CN	Description
*	2,263	39	>75% Grass cover, Good, HSG A
	189	98	BRICK SIDEWALK
	2,452	44	Weighted Average
	2,263		92.29% Pervious Area
	189		7.71% Impervious Area

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

Subcatchment 2S: DRAINING TO CB#1



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Summary for Subcatchment 3S: DRAINING TO CB #2

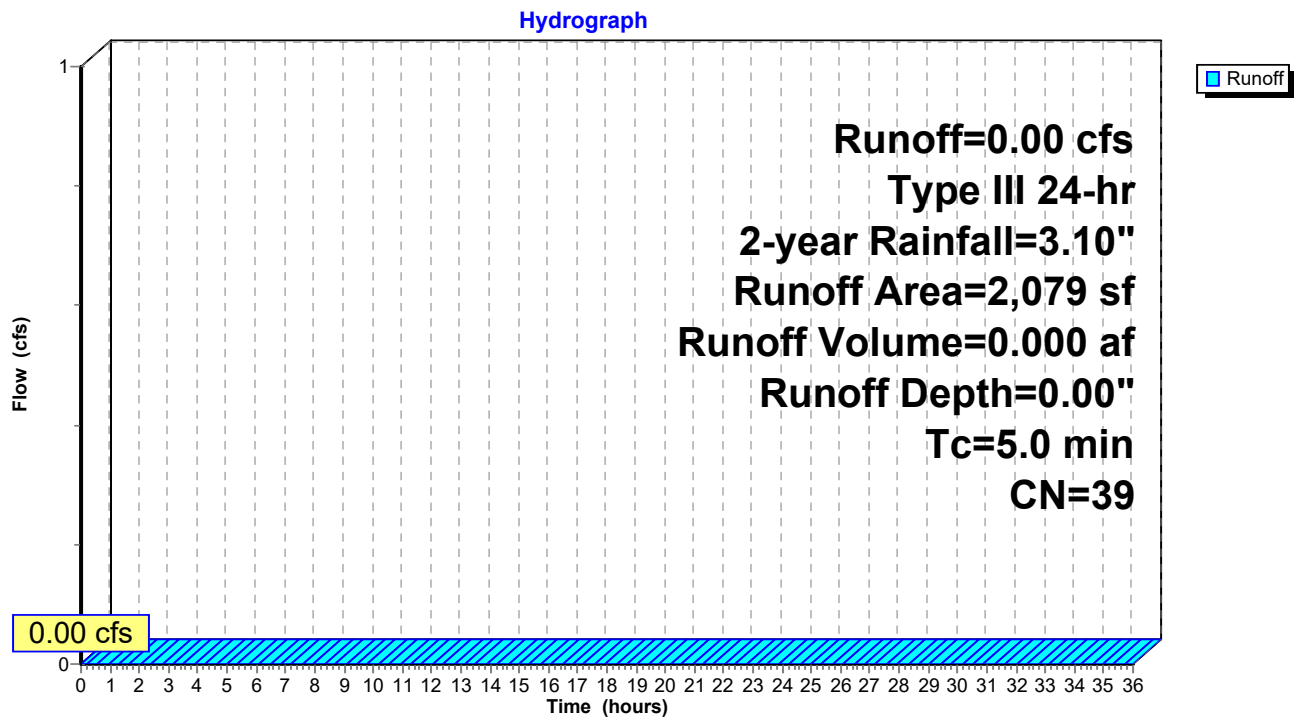
[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
2,079	39	>75% Grass cover, Good, HSG A
2,079		100.00% Pervious Area

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

Subcatchment 3S: DRAINING TO CB #2

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Summary for Subcatchment 4S: DRAINING TO CB #3

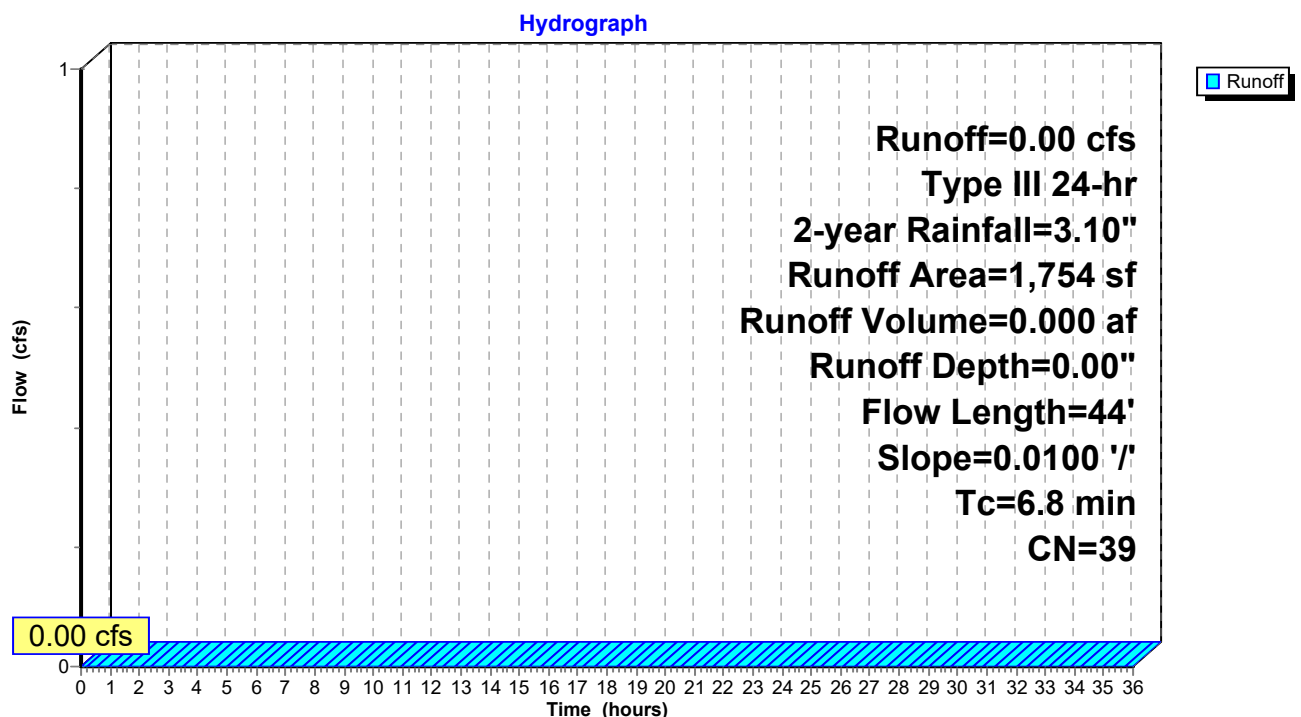
[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

Area (sf)	CN	Description
1,754	39	>75% Grass cover, Good, HSG A
1,754		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	44	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 3.10"

Subcatchment 4S: DRAINING TO CB #3

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Type III 24-hr 2-year Rainfall=3.10"

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Summary for Subcatchment 5S: ENTRY DRIVE

Runoff = 0.06 cfs @ 12.07 hrs, Volume= 0.004 af, Depth= 2.87"

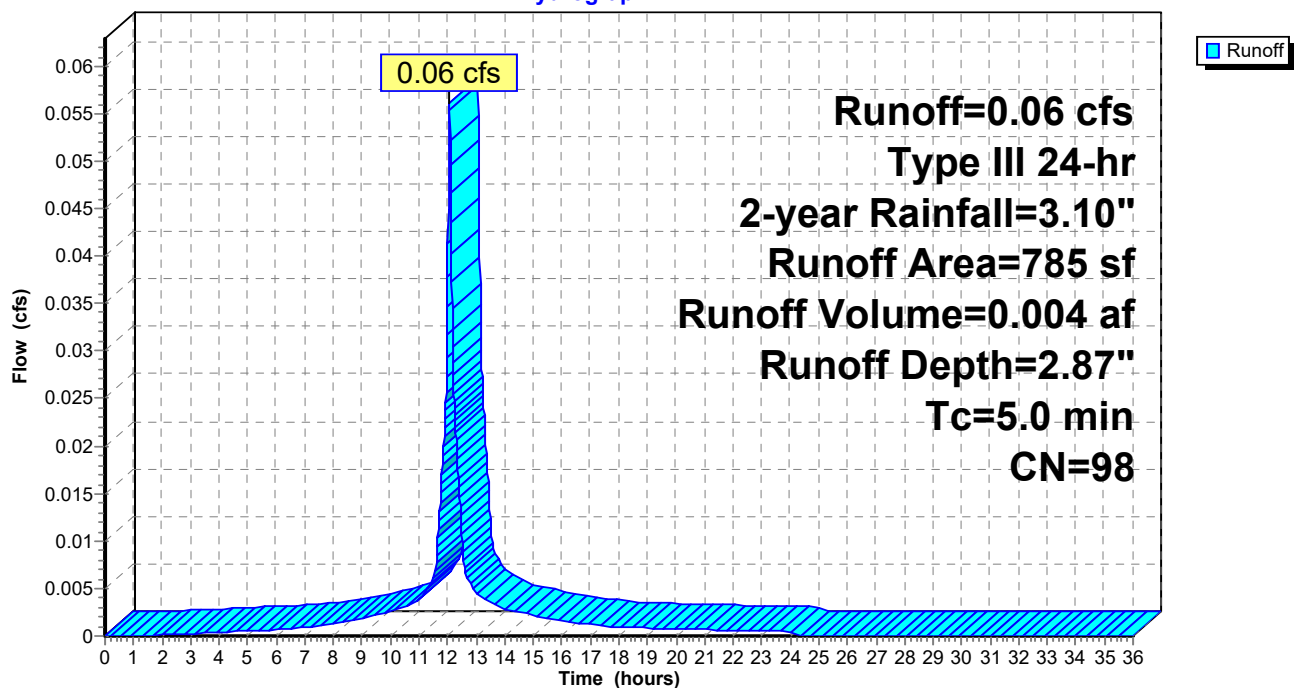
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

	Area (sf)	CN	Description
*	785	98	PAVED ENTRY
	785		100.00% Impervious Area

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

Subcatchment 5S: ENTRY DRIVE

Hydrograph



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Type III 24-hr 2-year Rainfall=3.10"

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Summary for Subcatchment 6S: TIPDOWN

Runoff = 0.00 cfs @ 23.75 hrs, Volume= 0.000 af, Depth= 0.00"

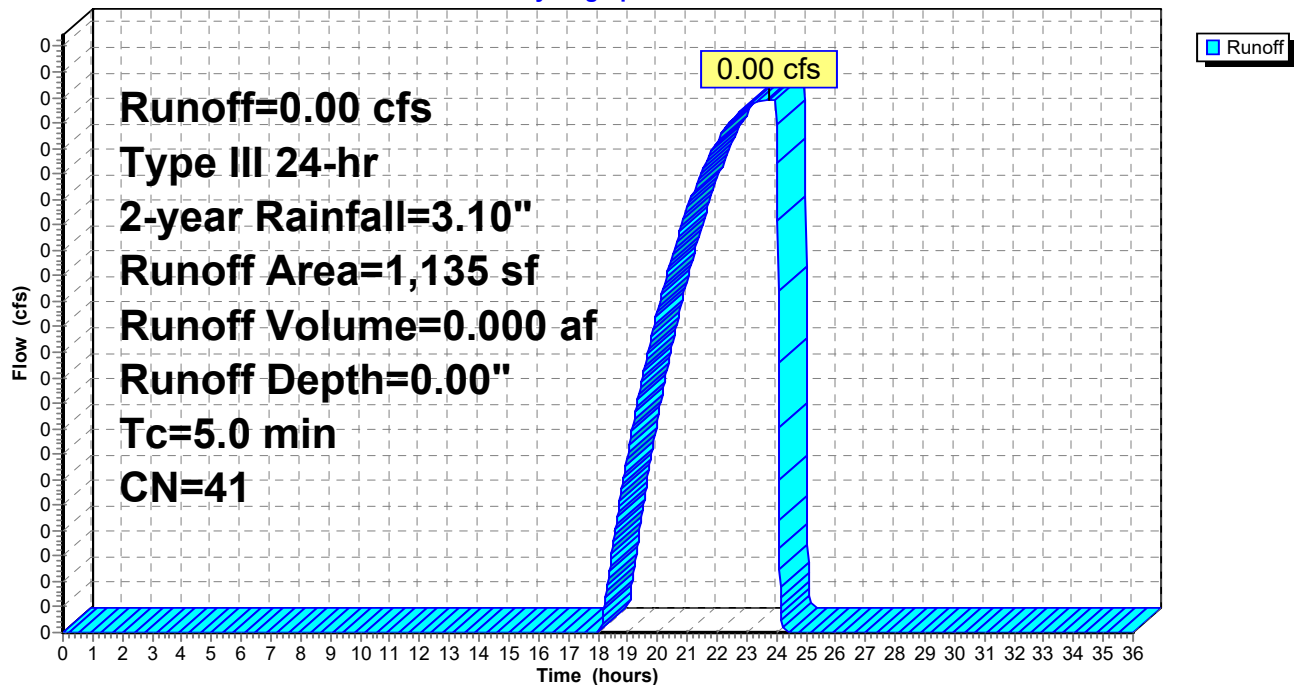
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-year Rainfall=3.10"

	Area (sf)	CN	Description
	1,088	39	>75% Grass cover, Good, HSG A
*	47	98	BRICK AND CONCRETE SIDEWALK
	1,135	41	Weighted Average
	1,088		95.86% Pervious Area
	47		4.14% Impervious Area

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

Subcatchment 6S: TIPDOWN

Hydrograph



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Summary for Reach 99R: POA #1

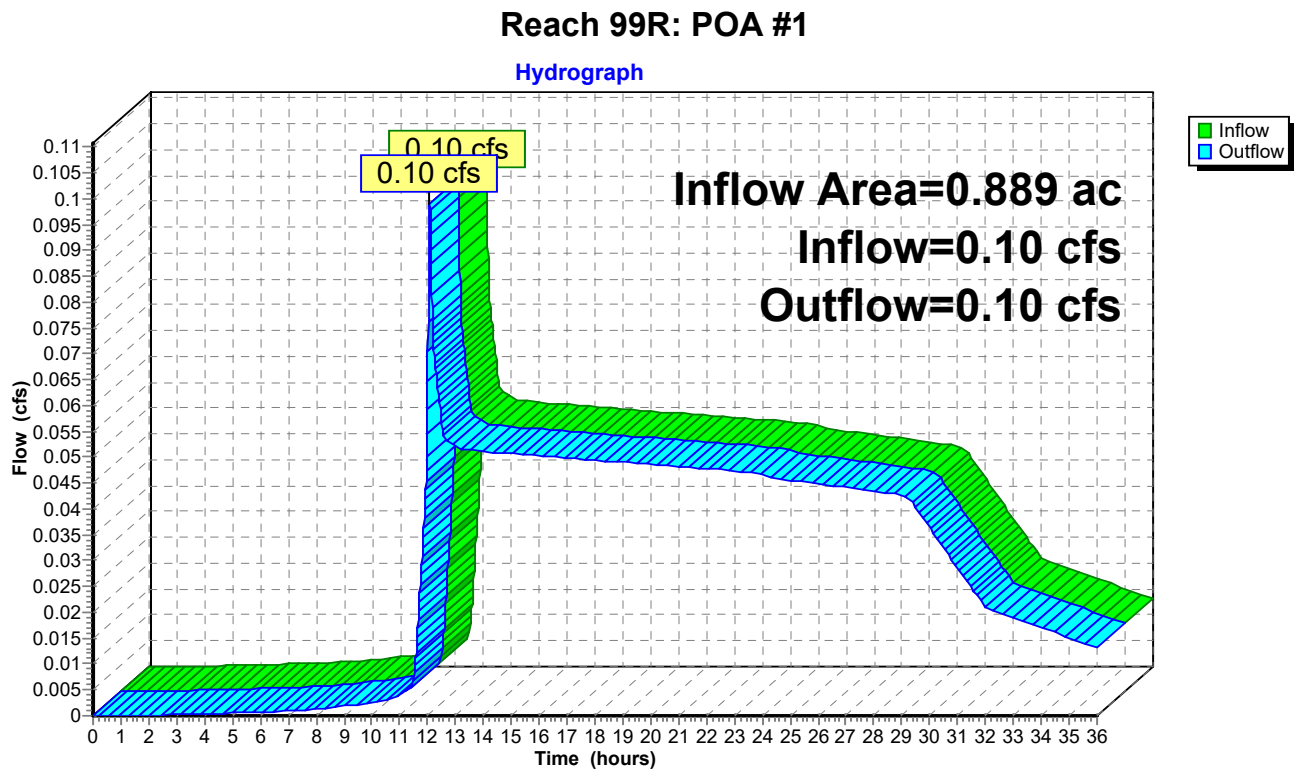
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.889 ac, 61.47% Impervious, Inflow Depth > 1.14" for 2-year event

Inflow = 0.10 cfs @ 12.07 hrs, Volume= 0.084 af

Outflow = 0.10 cfs @ 12.07 hrs, Volume= 0.084 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs



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Type III 24-hr 2-year Rainfall=3.10"

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Summary for Pond 1P: VUSF/CB #4

Inflow Area = 0.701 ac, 74.64% Impervious, Inflow Depth = 1.53" for 2-year event
 Inflow = 1.30 cfs @ 12.08 hrs, Volume= 0.089 af
 Outflow = 0.05 cfs @ 15.86 hrs, Volume= 0.080 af, Atten= 96%, Lag= 227.2 min
 Primary = 0.05 cfs @ 15.86 hrs, Volume= 0.080 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
 Peak Elev= 94.80' @ 15.86 hrs Surf.Area= 8,518 sf Storage= 2,449 cf
 Flood Elev= 95.50' Surf.Area= 8,938 sf Storage= 4,040 cf

Plug-Flow detention time= 553.2 min calculated for 0.080 af (89% of inflow)
 Center-of-Mass det. time= 502.6 min (1,336.2 - 833.5)

Volume	Invert	Avail.Storage	Storage Description
#1	94.00'	4,658 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2	93.50'	81 cf	Transition Layer (Prismatic) Listed below (Recalc)
			806 cf Overall x 10.0% Voids
#3	92.50'	161 cf	SOIL FILTER (Prismatic) Listed below (Recalc)
			1,612 cf Overall x 10.0% Voids
#4	92.00'	81 cf	COURSE GRAVEL (Prismatic) Listed below (Recalc)
			806 cf Overall x 10.0% Voids
#5	91.33'	11 cf	4.0" Round Pipe Storage Inside #6
			L= 127.0'
#6	91.00'	640 cf	CRUSHED STONE UD BEDDING (Prismatic) Listed below (Recalc)
			1,612 cf Overall - 11 cf Embedded = 1,601 cf x 40.0% Voids
		5,632 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
94.00	1,612	0	0
95.00	2,183	1,898	1,898
95.50	2,490	1,168	3,066
96.00	3,878	1,592	4,658

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
93.50	1,612	0	0
94.00	1,612	806	806

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
92.50	1,612	0	0
93.50	1,612	1,612	1,612

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
92.00	1,612	0	0
92.50	1,612	806	806

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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
91.00	1,612	0	0
92.00	1,612	1,612	1,612

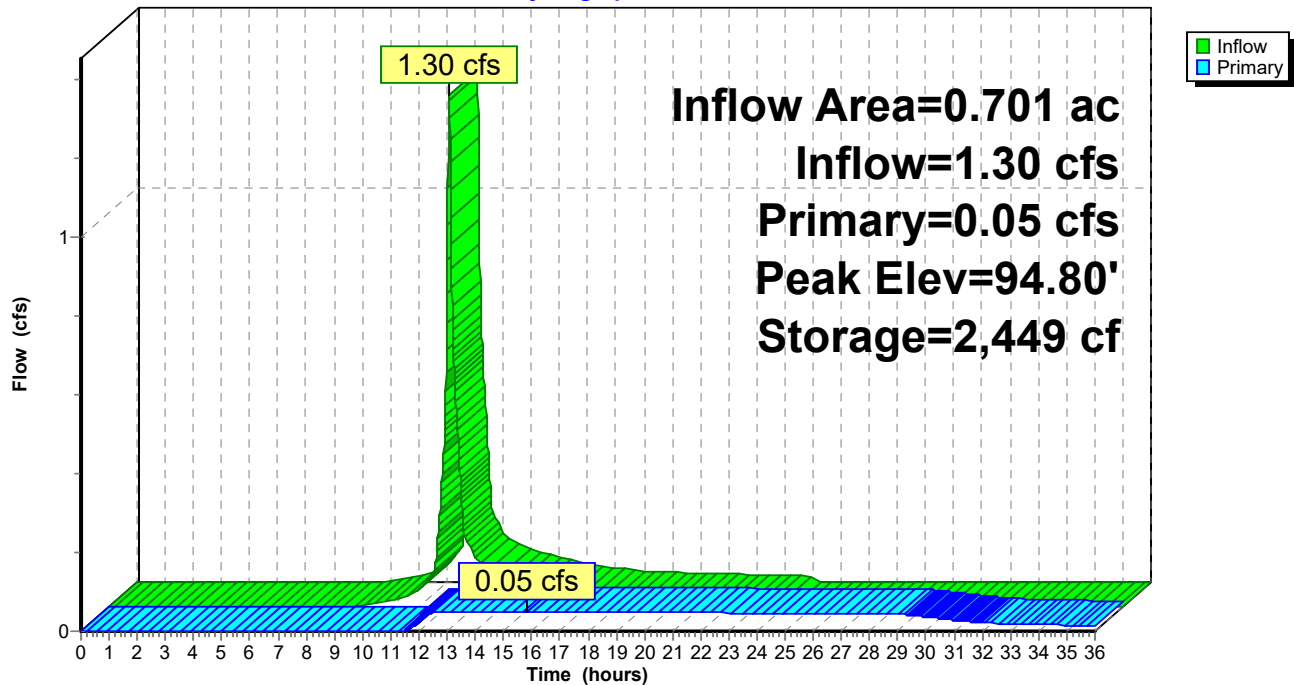
Device	Routing	Invert	Outlet Devices
#1	Primary	90.05'	12.0" Round 12" SDR L= 34.8' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 90.05' / 89.30' S= 0.0216 ' S= 0.0216 ' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf
#2	Device 1	95.50'	2.0" x 2.0" Horiz. CB OVERFLOW X 6.00 columns X 6 rows C= 0.600 Limited to weir flow at low heads
#3	Device 1	91.33'	1.0" Vert. WQV C= 0.600

Primary OutFlow Max=0.05 cfs @ 15.86 hrs HW=94.80' (Free Discharge)

1=12" SDR (Passes 0.05 cfs of 6.16 cfs potential flow)

2=CB OVERFLOW (Controls 0.00 cfs)

3=WQV (Orifice Controls 0.05 cfs @ 8.92 fps)

Pond 1P: VUSF/CB #4**Hydrograph**

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Summary for Pond 2P: CB #1

Inflow Area = 0.056 ac, 7.71% Impervious, Inflow Depth = 0.02" for 2-year event
Inflow = 0.00 cfs @ 17.05 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 17.05 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 17.05 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Peak Elev= 95.70' @ 17.05 hrs

Flood Elev= 99.50'

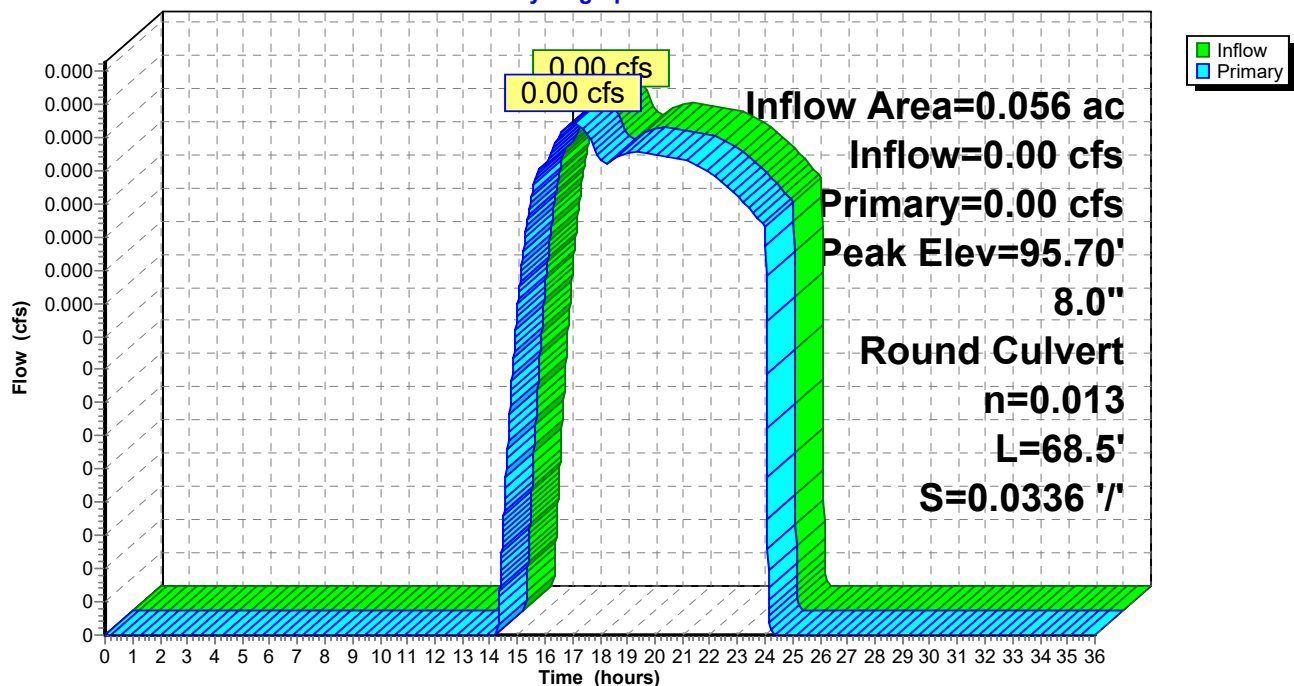
Device	Routing	Invert	Outlet Devices
#1	Primary	95.70'	8.0" Round HDPE L= 68.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 95.70' / 93.40' S= 0.0336 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.00 cfs @ 17.05 hrs HW=95.70' (Free Discharge)

1=HDPE (Inlet Controls 0.00 cfs @ 0.10 fps)

Pond 2P: CB #1

Hydrograph



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Summary for Pond 3P: CB #2

Inflow Area = 0.048 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Peak Elev= 93.40' @ 0.00 hrs

Flood Elev= 97.00'

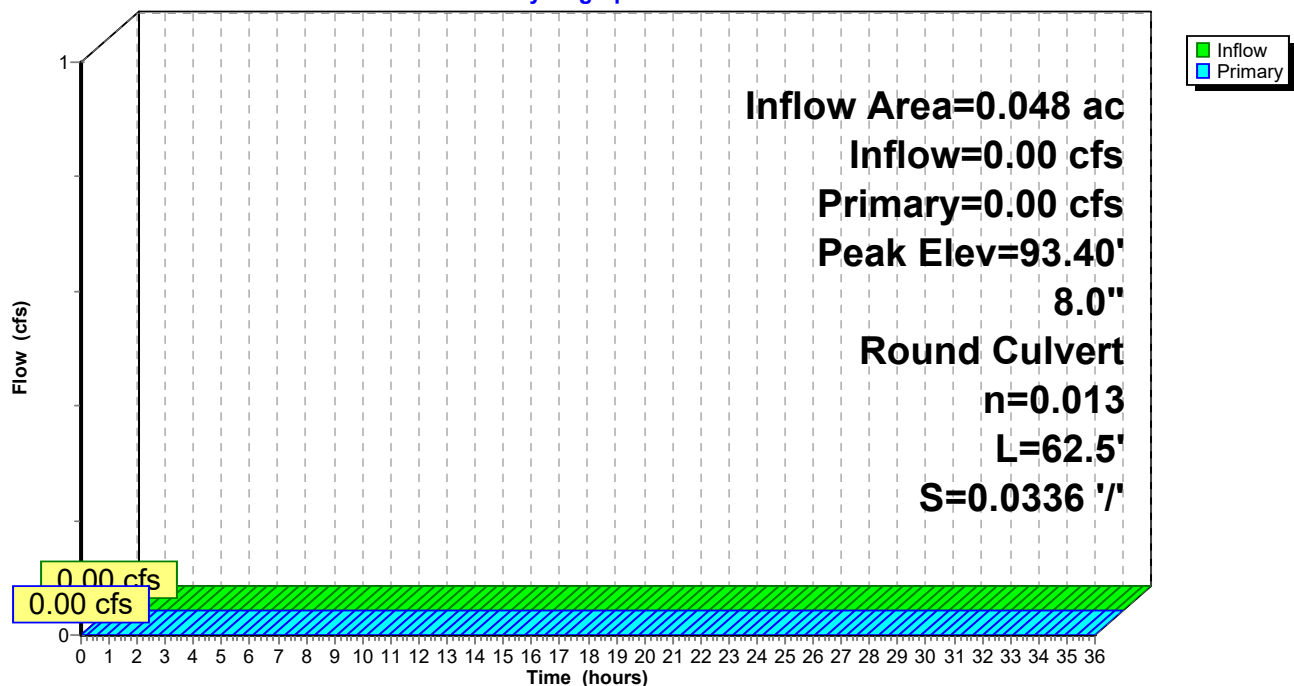
Device	Routing	Invert	Outlet Devices
#1	Primary	93.40'	8.0" Round HDPE L= 62.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 93.40' / 91.30' S= 0.0336 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=93.40' (Free Discharge)

↑1=HDPE (Controls 0.00 cfs)

Pond 3P: CB #2

Hydrograph



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Type III 24-hr 2-year Rainfall=3.10"

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Summary for Pond 4P: CB #3

Inflow Area = 0.040 ac, 0.00% Impervious, Inflow Depth = 0.00" for 2-year event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Peak Elev= 91.30' @ 0.00 hrs

Flood Elev= 95.10'

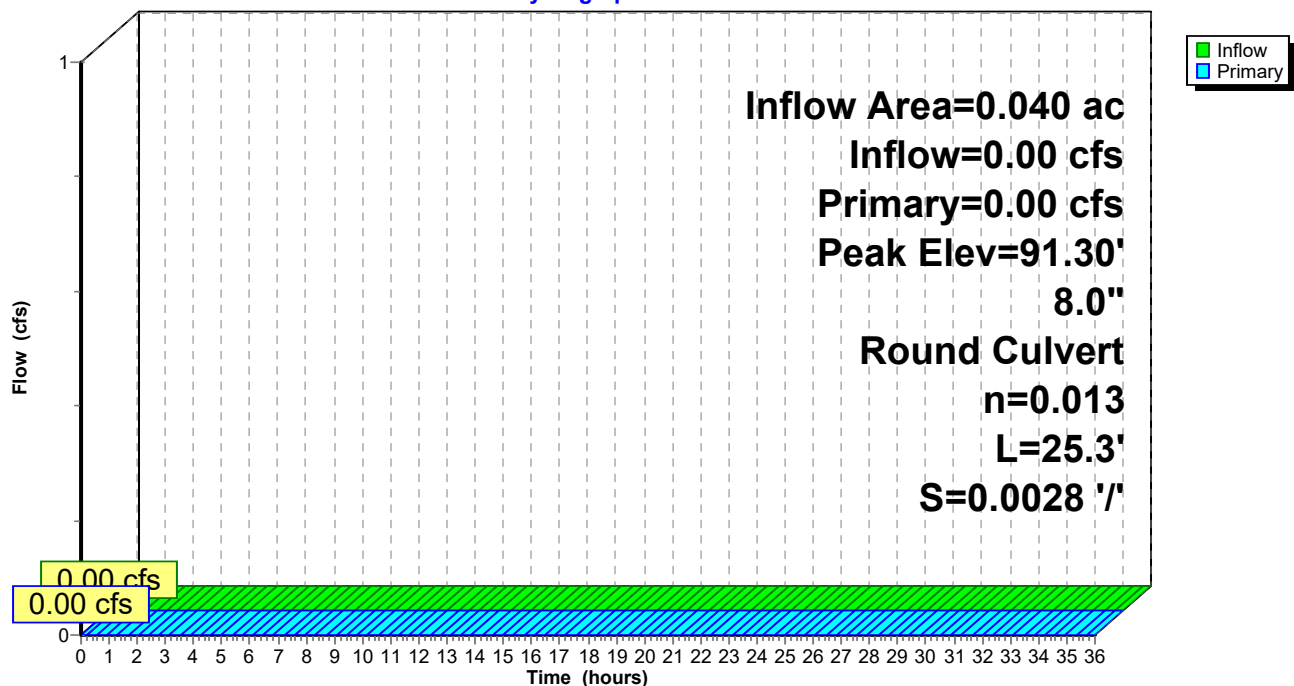
Device	Routing	Invert	Outlet Devices
#1	Primary	91.30'	8.0" Round HDPE L= 25.3' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 91.30' / 91.23' S= 0.0028 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=91.30' (Free Discharge)

↑1=HDPE (Controls 0.00 cfs)

Pond 4P: CB #3

Hydrograph



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Type III 24-hr 10-year Rainfall=4.60"

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Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 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: DRAINAGE TO VUSF Runoff Area=30,526 sf 74.64% Impervious Runoff Depth=2.81"
 Tc=5.0 min CN=83 Runoff=2.39 cfs 0.164 af

Subcatchment2S: DRAINING TO CB#1 Runoff Area=2,452 sf 7.71% Impervious Runoff Depth=0.29"
 Tc=5.0 min CN=44 Runoff=0.01 cfs 0.001 af

Subcatchment3S: DRAINING TO CB #2 Runoff Area=2,079 sf 0.00% Impervious Runoff Depth=0.13"
 Tc=5.0 min CN=39 Runoff=0.00 cfs 0.001 af

Subcatchment4S: DRAINING TO CB #3 Runoff Area=1,754 sf 0.00% Impervious Runoff Depth=0.13"
 Flow Length=44' Slope=0.0100 '/' Tc=6.8 min CN=39 Runoff=0.00 cfs 0.000 af

Subcatchment5S: ENTRY DRIVE Runoff Area=785 sf 100.00% Impervious Runoff Depth=4.36"
 Tc=5.0 min CN=98 Runoff=0.08 cfs 0.007 af

Subcatchment6S: TIPDOWN Runoff Area=1,135 sf 4.14% Impervious Runoff Depth=0.18"
 Tc=5.0 min CN=41 Runoff=0.00 cfs 0.000 af

Reach 99R: POA #1 Inflow=0.27 cfs 0.138 af
 Outflow=0.27 cfs 0.138 af

Pond 1P: VUSF/CB #4 Peak Elev=95.51' Storage=4,069 cf Inflow=2.39 cfs 0.164 af
 Outflow=0.26 cfs 0.129 af

Pond 2P: CB #1 Peak Elev=95.74' Inflow=0.01 cfs 0.001 af
 8.0" Round Culvert n=0.013 L=68.5' S=0.0336 '/' Outflow=0.01 cfs 0.001 af

Pond 3P: CB #2 Peak Elev=93.41' Inflow=0.00 cfs 0.001 af
 8.0" Round Culvert n=0.013 L=62.5' S=0.0336 '/' Outflow=0.00 cfs 0.001 af

Pond 4P: CB #3 Peak Elev=91.31' Inflow=0.00 cfs 0.000 af
 8.0" Round Culvert n=0.013 L=25.3' S=0.0028 '/' Outflow=0.00 cfs 0.000 af

Total Runoff Area = 0.889 ac Runoff Volume = 0.174 af Average Runoff Depth = 2.34"
38.53% Pervious = 0.343 ac 61.47% Impervious = 0.547 ac

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Type III 24-hr 10-year Rainfall=4.60"

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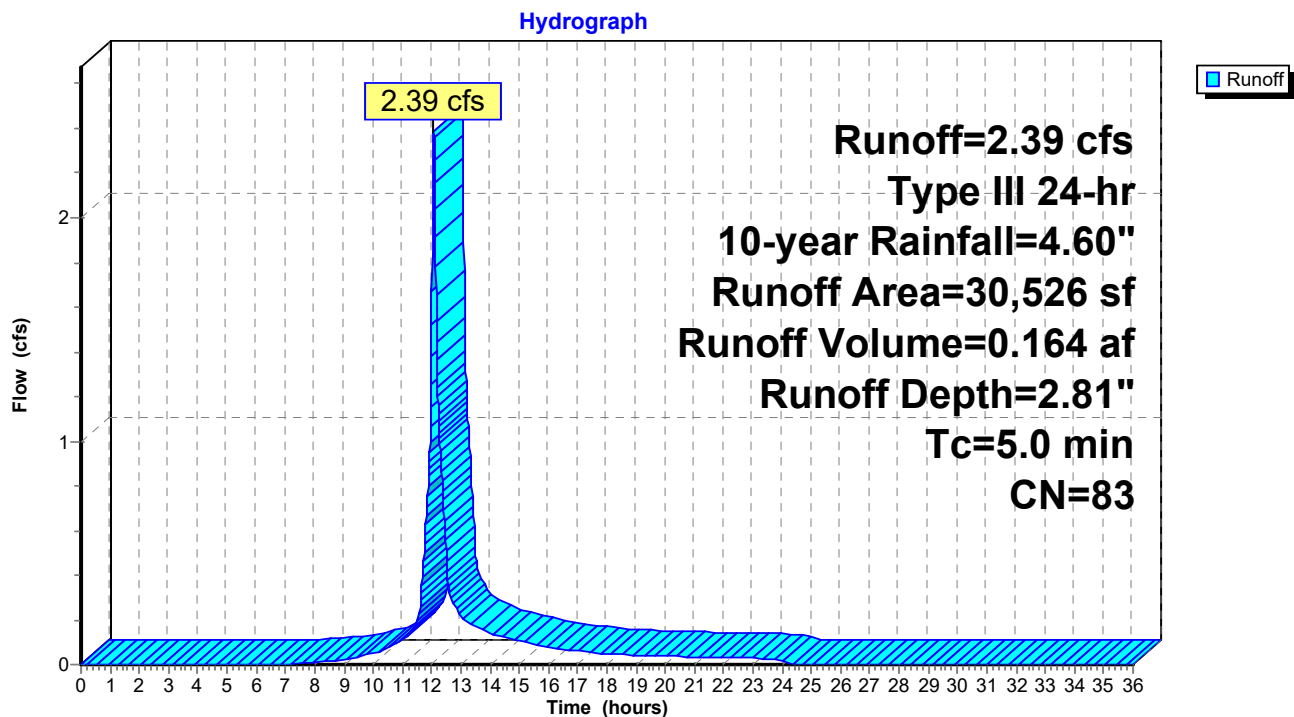
Summary for Subcatchment 1S: DRAINAGE TO VUSF

Runoff = 2.39 cfs @ 12.07 hrs, Volume= 0.164 af, Depth= 2.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.60"

	Area (sf)	CN	Description
*	22,786	98	PAVEMENT, SIDEWALKS, RETAINING WALL
	7,740	39	>75% Grass cover, Good, HSG A
	30,526	83	Weighted Average
	7,740		25.36% Pervious Area
	22,786		74.64% Impervious Area

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

Subcatchment 1S: DRAINAGE TO VUSF

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Type III 24-hr 10-year Rainfall=4.60"

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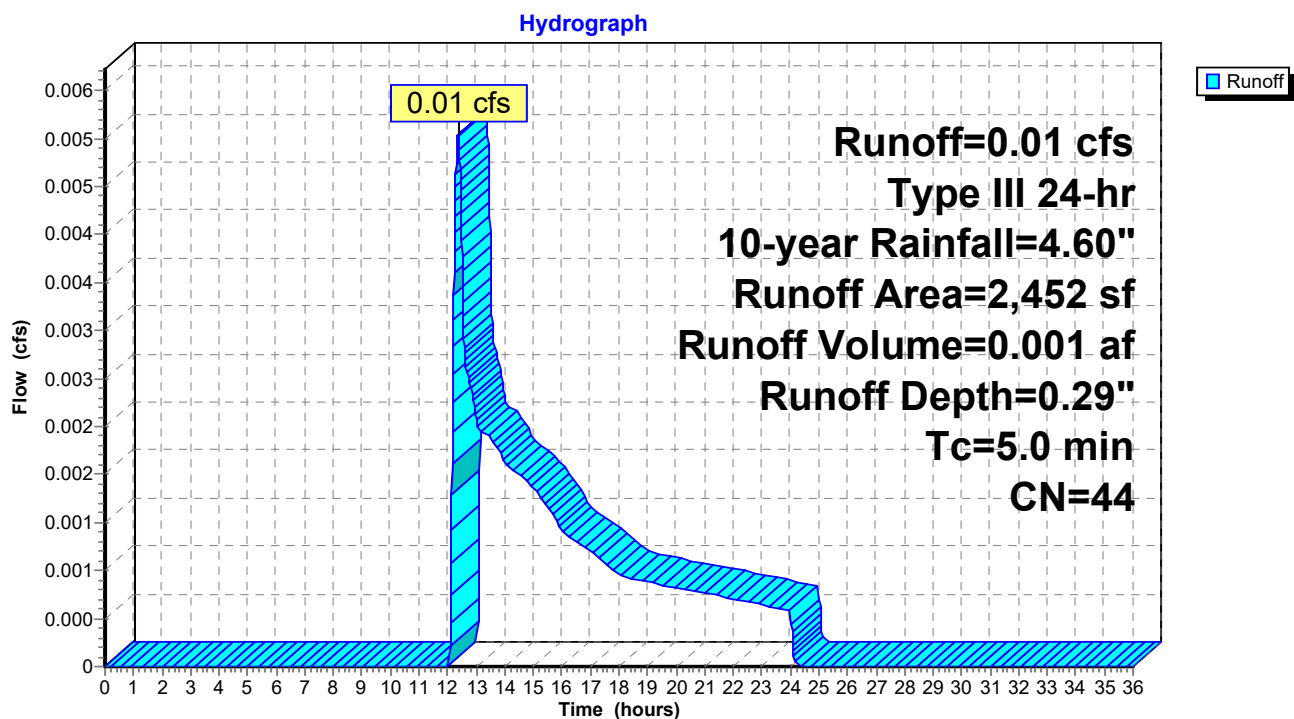
Summary for Subcatchment 2S: DRAINING TO CB#1

Runoff = 0.01 cfs @ 12.36 hrs, Volume= 0.001 af, Depth= 0.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
2,263	39	>75% Grass cover, Good, HSG A
* 189	98	BRICK SIDEWALK
2,452	44	Weighted Average
2,263		92.29% Pervious Area
189		7.71% Impervious Area

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

Subcatchment 2S: DRAINING TO CB#1

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Type III 24-hr 10-year Rainfall=4.60"

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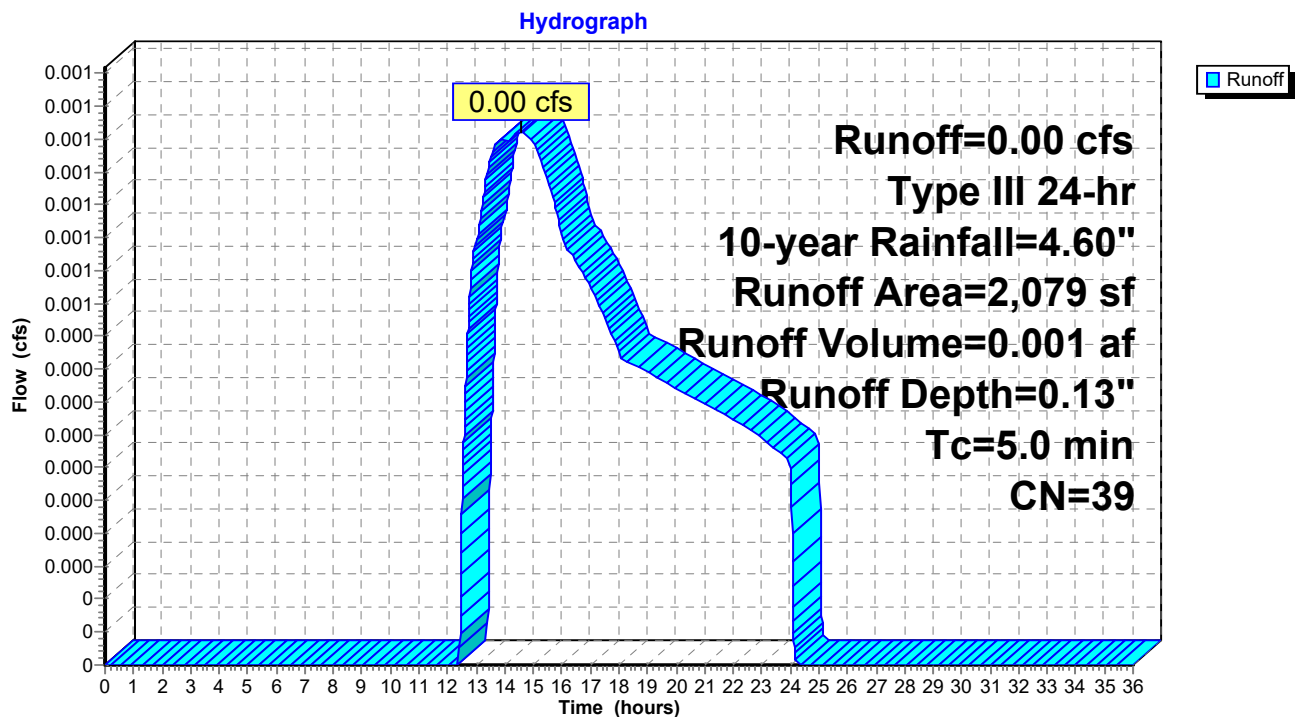
Summary for Subcatchment 3S: DRAINING TO CB #2

Runoff = 0.00 cfs @ 14.55 hrs, Volume= 0.001 af, Depth= 0.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
2,079	39	>75% Grass cover, Good, HSG A
2,079		100.00% Pervious Area

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

Subcatchment 3S: DRAINING TO CB #2

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Type III 24-hr 10-year Rainfall=4.60"

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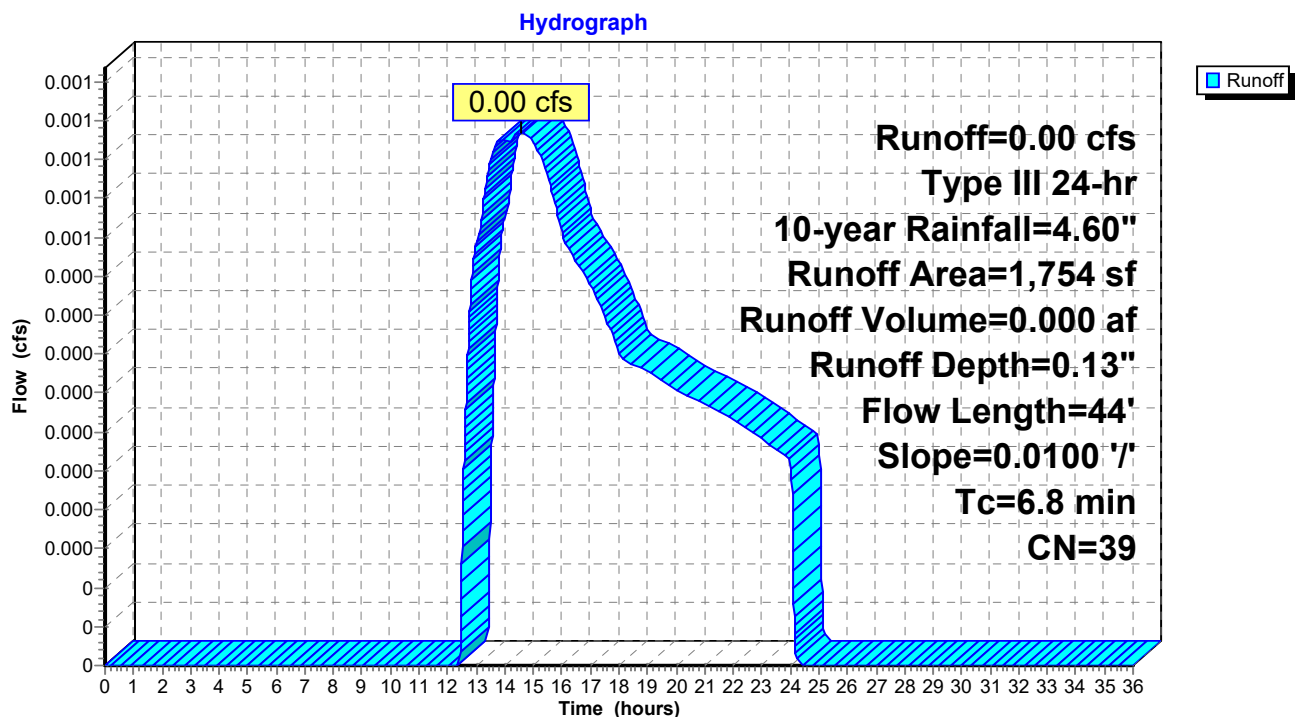
Summary for Subcatchment 4S: DRAINING TO CB #3

Runoff = 0.00 cfs @ 14.59 hrs, Volume= 0.000 af, Depth= 0.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
1,754	39	>75% Grass cover, Good, HSG A
1,754		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	44	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 3.10"

Subcatchment 4S: DRAINING TO CB #3

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Type III 24-hr 10-year Rainfall=4.60"

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Summary for Subcatchment 5S: ENTRY DRIVE

Runoff = 0.08 cfs @ 12.07 hrs, Volume= 0.007 af, Depth= 4.36"

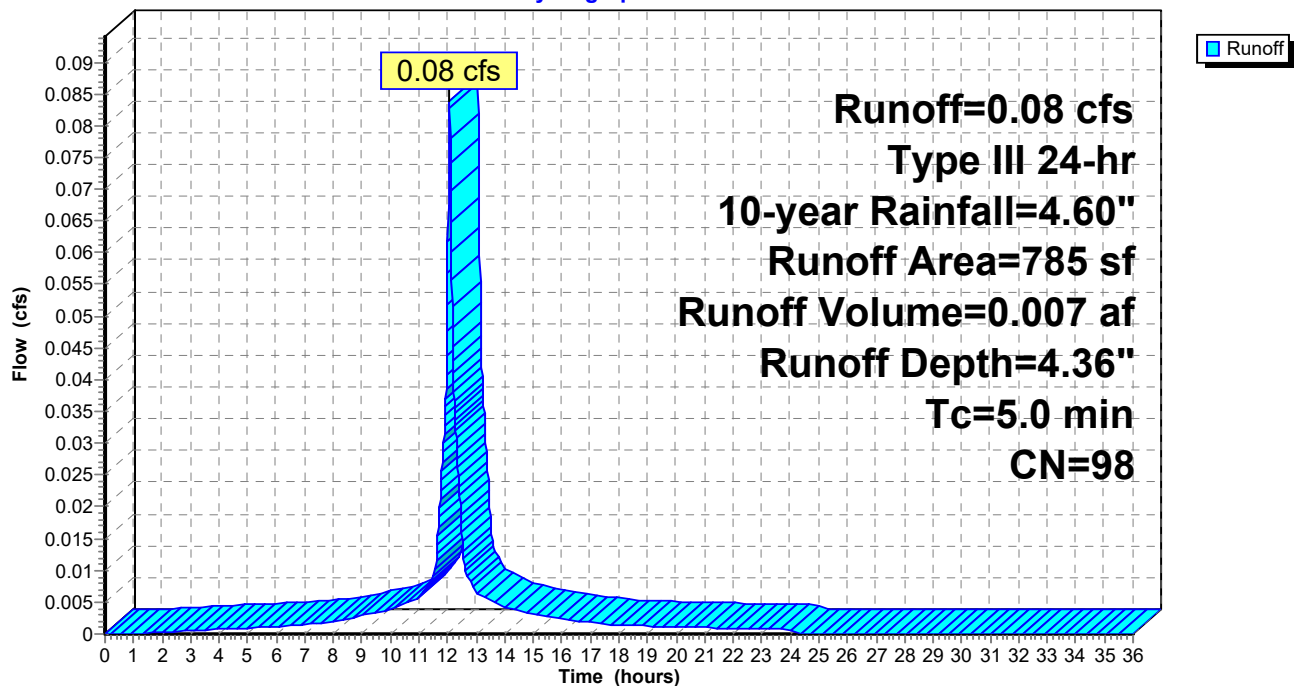
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.60"

	Area (sf)	CN	Description
*	785	98	PAVED ENTRY
	785		100.00% Impervious Area

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

Subcatchment 5S: ENTRY DRIVE

Hydrograph



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Type III 24-hr 10-year Rainfall=4.60"

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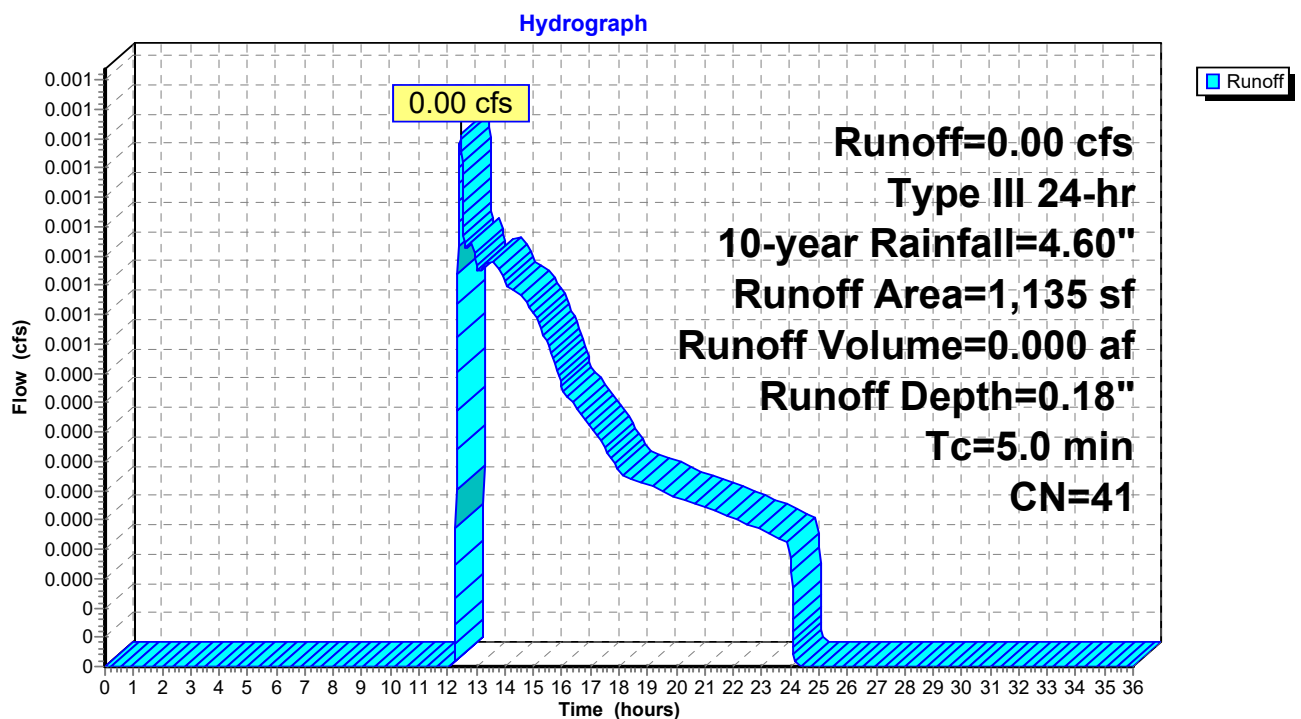
Summary for Subcatchment 6S: TIPDOWN

Runoff = 0.00 cfs @ 12.46 hrs, Volume= 0.000 af, Depth= 0.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-year Rainfall=4.60"

Area (sf)	CN	Description
1,088	39	>75% Grass cover, Good, HSG A
* 47	98	BRICK AND CONCRETE SIDEWALK
1,135	41	Weighted Average
1,088		95.86% Pervious Area
47		4.14% Impervious Area

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

Subcatchment 6S: TIPDOWN

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Summary for Reach 99R: POA #1

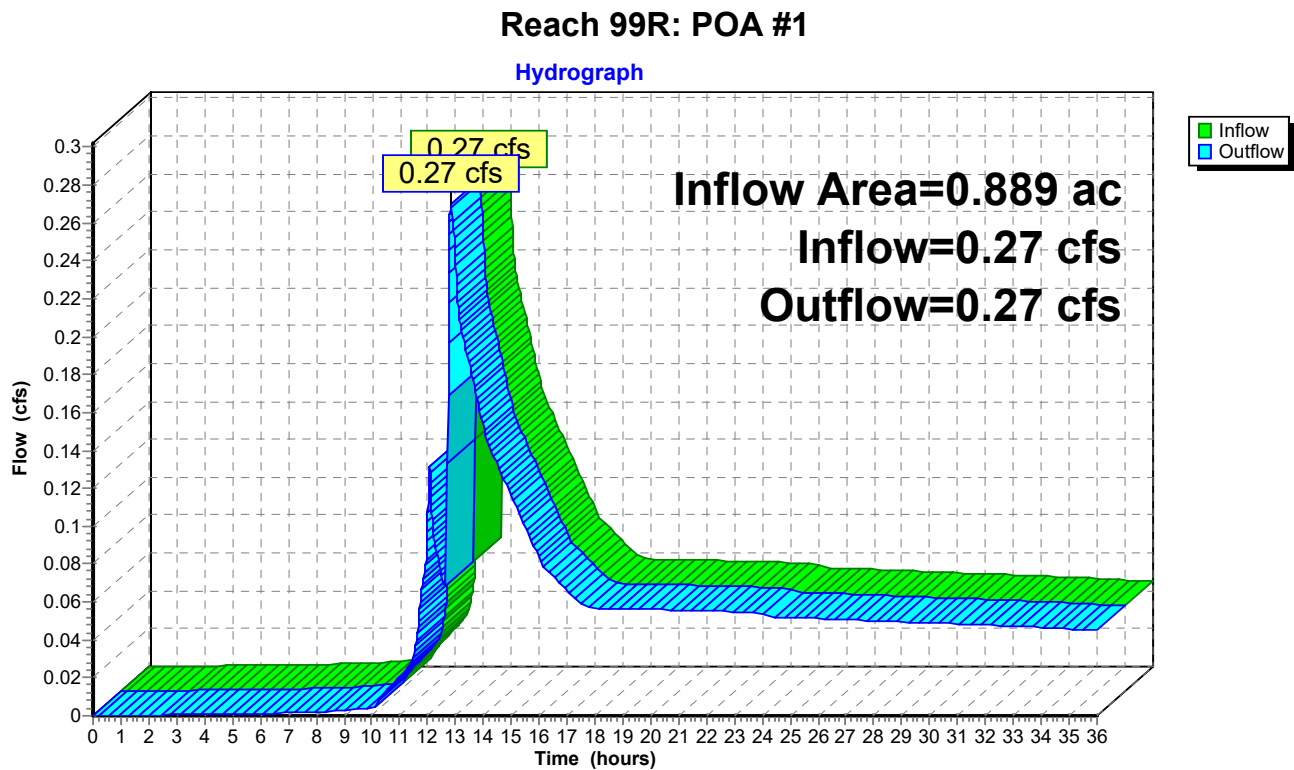
[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.889 ac, 61.47% Impervious, Inflow Depth > 1.87" for 10-year event

Inflow = 0.27 cfs @ 12.84 hrs, Volume= 0.138 af

Outflow = 0.27 cfs @ 12.84 hrs, Volume= 0.138 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs



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Type III 24-hr 10-year Rainfall=4.60"

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Summary for Pond 1P: VUSF/CB #4

[58] Hint: Peaked 0.01' above defined flood level

Inflow Area = 0.701 ac, 74.64% Impervious, Inflow Depth = 2.81" for 10-year event
 Inflow = 2.39 cfs @ 12.07 hrs, Volume= 0.164 af
 Outflow = 0.26 cfs @ 12.84 hrs, Volume= 0.129 af, Atten= 89%, Lag= 45.8 min
 Primary = 0.26 cfs @ 12.84 hrs, Volume= 0.129 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
 Peak Elev= 95.51' @ 12.84 hrs Surf.Area= 8,970 sf Storage= 4,069 cf
 Flood Elev= 95.50' Surf.Area= 8,938 sf Storage= 4,040 cf

Plug-Flow detention time= 556.3 min calculated for 0.129 af (79% of inflow)
 Center-of-Mass det. time= 476.2 min (1,292.2 - 815.9)

Volume	Invert	Avail.Storage	Storage Description
#1	94.00'	4,658 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2	93.50'	81 cf	Transition Layer (Prismatic) Listed below (Recalc)
			806 cf Overall x 10.0% Voids
#3	92.50'	161 cf	SOIL FILTER (Prismatic) Listed below (Recalc)
			1,612 cf Overall x 10.0% Voids
#4	92.00'	81 cf	COURSE GRAVEL (Prismatic) Listed below (Recalc)
			806 cf Overall x 10.0% Voids
#5	91.33'	11 cf	4.0" Round Pipe Storage Inside #6
			L= 127.0'
#6	91.00'	640 cf	CRUSHED STONE UD BEDDING (Prismatic) Listed below (Recalc)
			1,612 cf Overall - 11 cf Embedded = 1,601 cf x 40.0% Voids
		5,632 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
94.00	1,612	0	0
95.00	2,183	1,898	1,898
95.50	2,490	1,168	3,066
96.00	3,878	1,592	4,658

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
93.50	1,612	0	0
94.00	1,612	806	806

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
92.50	1,612	0	0
93.50	1,612	1,612	1,612

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
92.00	1,612	0	0
92.50	1,612	806	806

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Type III 24-hr 10-year Rainfall=4.60"

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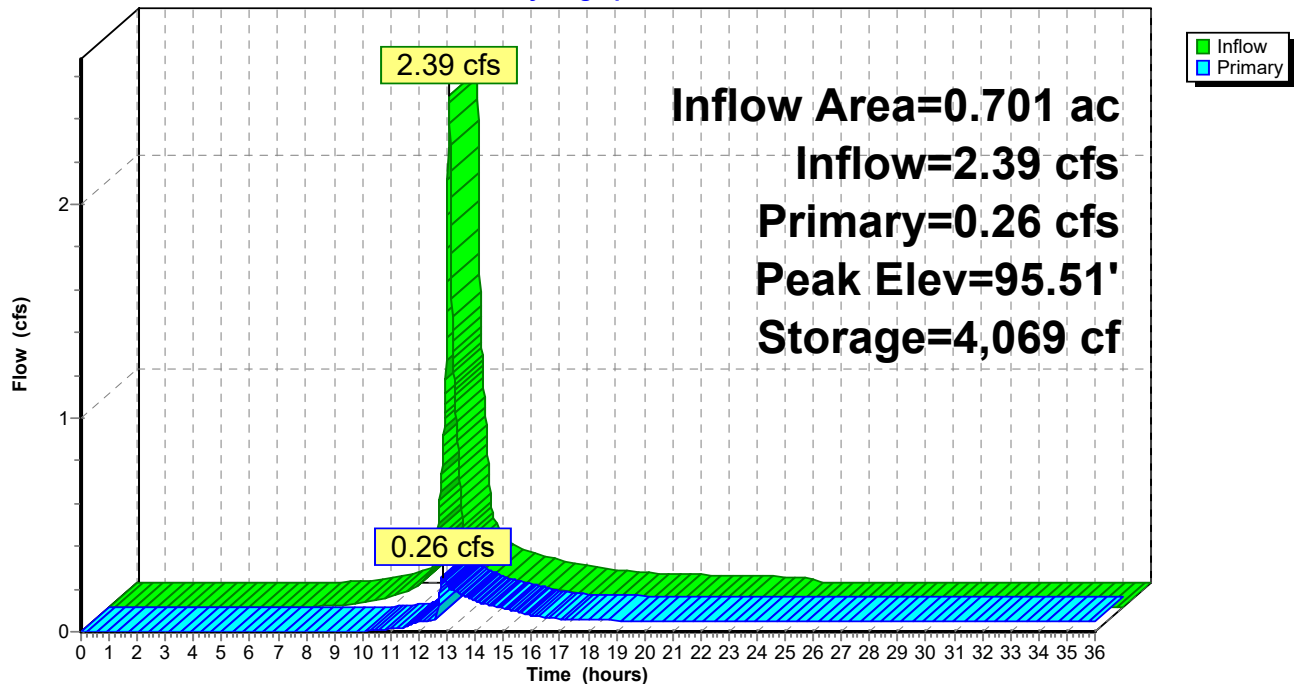
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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
91.00	1,612	0	0
92.00	1,612	1,612	1,612

Device	Routing	Invert	Outlet Devices
#1	Primary	90.05'	12.0" Round 12" SDR L= 34.8' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 90.05' / 89.30' S= 0.0216 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf
#2	Device 1	95.50'	2.0" x 2.0" Horiz. CB OVERFLOW X 6.00 columns X 6 rows C= 0.600 Limited to weir flow at low heads
#3	Device 1	91.33'	1.0" Vert. WQV C= 0.600

Primary OutFlow Max=0.15 cfs @ 12.84 hrs HW=95.51' (Free Discharge)

- 1=12" SDR (Passes 0.15 cfs of 6.65 cfs potential flow)
- 2=CB OVERFLOW (Weir Controls 0.10 cfs @ 0.35 fps)
- 3=WQV (Orifice Controls 0.05 cfs @ 9.80 fps)

Pond 1P: VUSF/CB #4**Hydrograph**

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Type III 24-hr 10-year Rainfall=4.60"

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Summary for Pond 2P: CB #1

Inflow Area = 0.056 ac, 7.71% Impervious, Inflow Depth = 0.29" for 10-year event
Inflow = 0.01 cfs @ 12.36 hrs, Volume= 0.001 af
Outflow = 0.01 cfs @ 12.36 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min
Primary = 0.01 cfs @ 12.36 hrs, Volume= 0.001 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Peak Elev= 95.74' @ 12.36 hrs

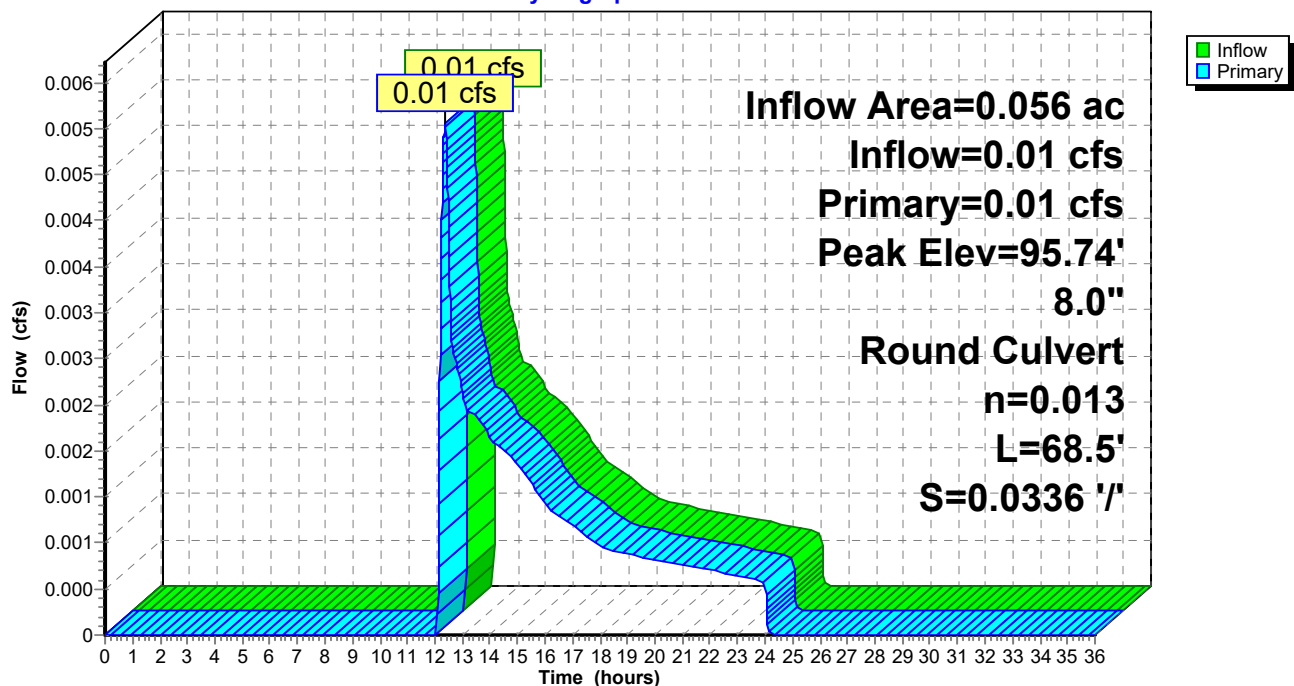
Flood Elev= 99.50'

Device	Routing	Invert	Outlet Devices
#1	Primary	95.70'	8.0" Round HDPE L= 68.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 95.70' / 93.40' S= 0.0336 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.01 cfs @ 12.36 hrs HW=95.74' (Free Discharge)
↑1=HDPE (Inlet Controls 0.01 cfs @ 0.55 fps)

Pond 2P: CB #1

Hydrograph



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Type III 24-hr 10-year Rainfall=4.60"

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Summary for Pond 3P: CB #2

Inflow Area = 0.048 ac, 0.00% Impervious, Inflow Depth = 0.13" for 10-year event
Inflow = 0.00 cfs @ 14.55 hrs, Volume= 0.001 af
Outflow = 0.00 cfs @ 14.55 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 14.55 hrs, Volume= 0.001 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Peak Elev= 93.41' @ 14.55 hrs

Flood Elev= 97.00'

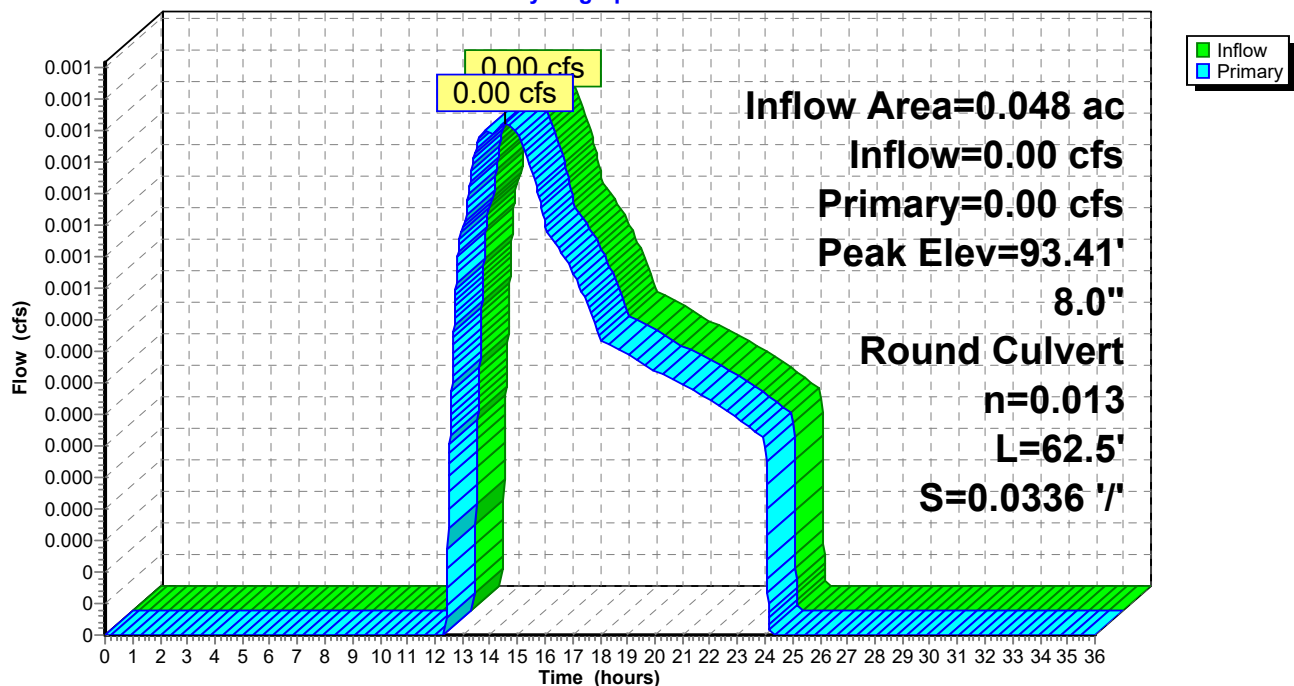
Device	Routing	Invert	Outlet Devices
#1	Primary	93.40'	8.0" Round HDPE L= 62.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 93.40' / 91.30' S= 0.0336 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.00 cfs @ 14.55 hrs HW=93.41' (Free Discharge)

↑1=HDPE (Inlet Controls 0.00 cfs @ 0.24 fps)

Pond 3P: CB #2

Hydrograph



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Type III 24-hr 10-year Rainfall=4.60"

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Summary for Pond 4P: CB #3

Inflow Area = 0.040 ac, 0.00% Impervious, Inflow Depth = 0.13" for 10-year event
Inflow = 0.00 cfs @ 14.59 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 14.59 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min
Primary = 0.00 cfs @ 14.59 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Peak Elev= 91.31' @ 14.59 hrs

Flood Elev= 95.10'

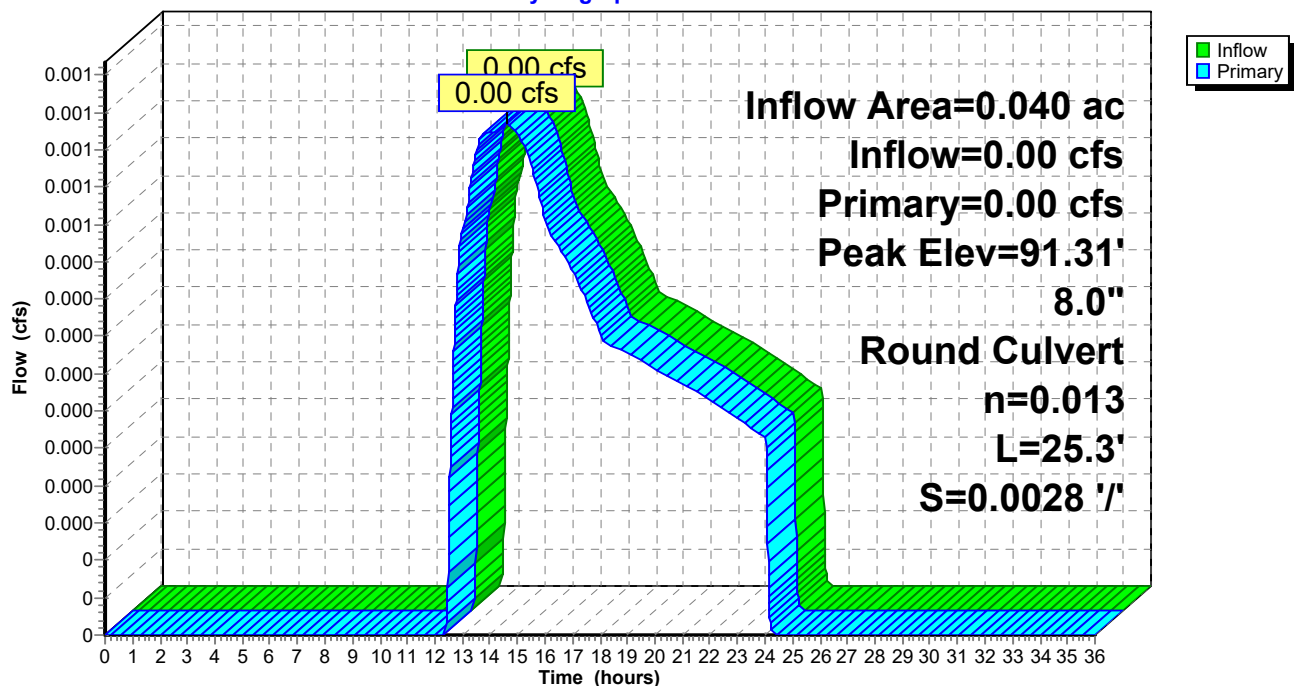
Device	Routing	Invert	Outlet Devices
#1	Primary	91.30'	8.0" Round HDPE L= 25.3' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 91.30' / 91.23' S= 0.0028 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.00 cfs @ 14.59 hrs HW=91.31' (Free Discharge)

1=HDPE (Barrel Controls 0.00 cfs @ 0.20 fps)

Pond 4P: CB #3

Hydrograph



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Type III 24-hr 25-year Rainfall=5.80"

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Time span=0.00-36.00 hrs, dt=0.01 hrs, 3601 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: DRAINAGE TO VUSF	Runoff Area=30,526 sf 74.64% Impervious Runoff Depth=3.91" Tc=5.0 min CN=83 Runoff=3.29 cfs 0.228 af
Subcatchment2S: DRAINING TO CB#1	Runoff Area=2,452 sf 7.71% Impervious Runoff Depth=0.66" Tc=5.0 min CN=44 Runoff=0.02 cfs 0.003 af
Subcatchment3S: DRAINING TO CB #2	Runoff Area=2,079 sf 0.00% Impervious Runoff Depth=0.39" Tc=5.0 min CN=39 Runoff=0.01 cfs 0.002 af
Subcatchment4S: DRAINING TO CB #3	Runoff Area=1,754 sf 0.00% Impervious Runoff Depth=0.39" Flow Length=44' Slope=0.0100 '/' Tc=6.8 min CN=39 Runoff=0.01 cfs 0.001 af
Subcatchment5S: ENTRY DRIVE	Runoff Area=785 sf 100.00% Impervious Runoff Depth=5.56" Tc=5.0 min CN=98 Runoff=0.11 cfs 0.008 af
Subcatchment6S: TIPDOWN	Runoff Area=1,135 sf 4.14% Impervious Runoff Depth=0.49" Tc=5.0 min CN=41 Runoff=0.01 cfs 0.001 af
Reach 99R: POA #1	Inflow=1.46 cfs 0.204 af Outflow=1.46 cfs 0.204 af
Pond 1P: VUSF/CB #4	Peak Elev=95.58' Storage=4,261 cf Inflow=3.29 cfs 0.228 af Outflow=1.38 cfs 0.189 af
Pond 2P: CB #1	Peak Elev=95.79' Inflow=0.02 cfs 0.003 af 8.0" Round Culvert n=0.013 L=68.5' S=0.0336 '/' Outflow=0.02 cfs 0.003 af
Pond 3P: CB #2	Peak Elev=93.45' Inflow=0.01 cfs 0.002 af 8.0" Round Culvert n=0.013 L=62.5' S=0.0336 '/' Outflow=0.01 cfs 0.002 af
Pond 4P: CB #3	Peak Elev=91.36' Inflow=0.01 cfs 0.001 af 8.0" Round Culvert n=0.013 L=25.3' S=0.0028 '/' Outflow=0.01 cfs 0.001 af

Total Runoff Area = 0.889 ac Runoff Volume = 0.244 af Average Runoff Depth = 3.29"
38.53% Pervious = 0.343 ac 61.47% Impervious = 0.547 ac

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Subcatchment 1S: DRAINAGE TO VUSF

Runoff = 3.29 cfs @ 12.07 hrs, Volume= 0.228 af, Depth= 3.91"

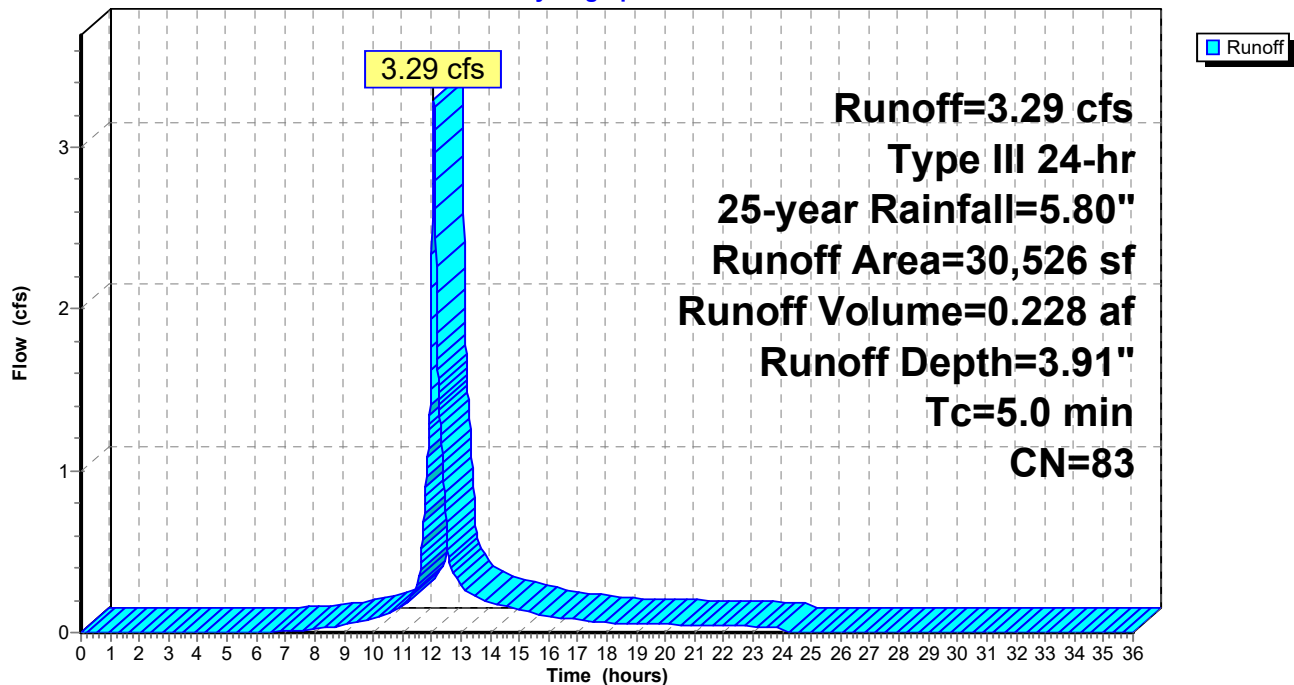
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

	Area (sf)	CN	Description
*	22,786	98	PAVEMENT, SIDEWALKS, RETAINING WALL
	7,740	39	>75% Grass cover, Good, HSG A
	30,526	83	Weighted Average
	7,740		25.36% Pervious Area
	22,786		74.64% Impervious Area

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

Subcatchment 1S: DRAINAGE TO VUSF

Hydrograph



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Summary for Subcatchment 2S: DRAINING TO CB#1

Runoff = 0.02 cfs @ 12.12 hrs, Volume= 0.003 af, Depth= 0.66"

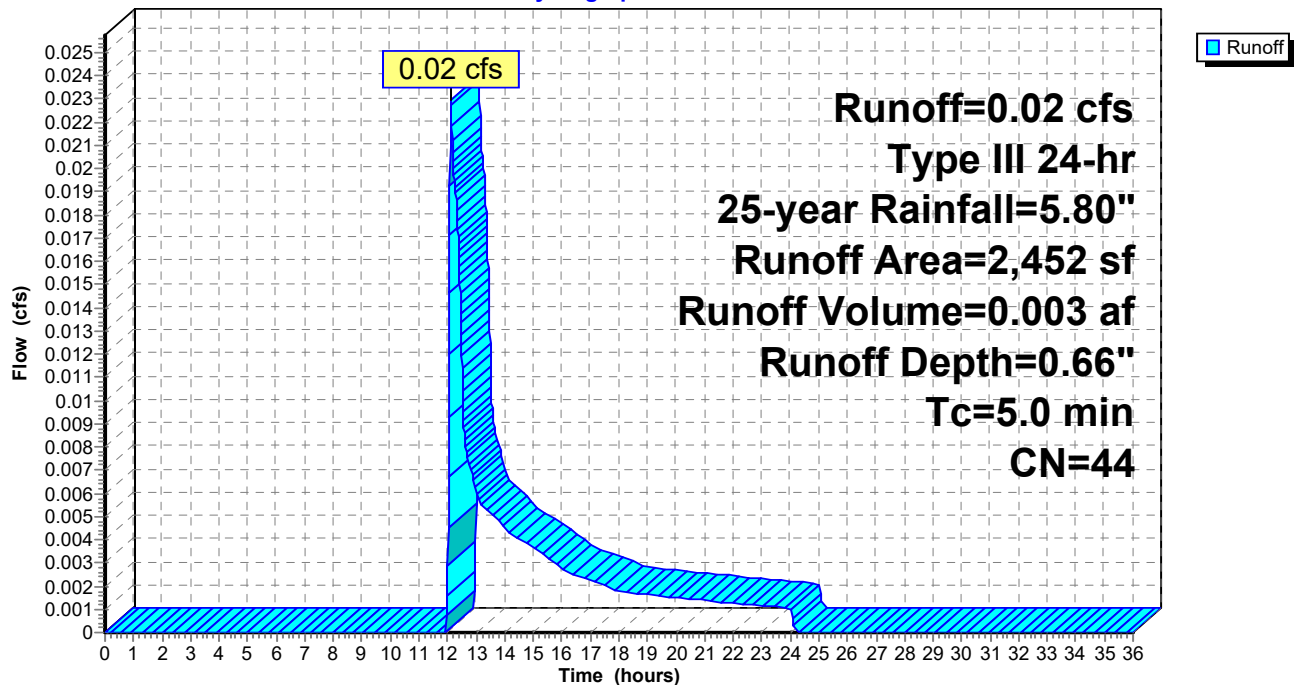
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
2,263	39	>75% Grass cover, Good, HSG A
* 189	98	BRICK SIDEWALK
2,452	44	Weighted Average
2,263		92.29% Pervious Area
189		7.71% Impervious Area

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

Subcatchment 2S: DRAINING TO CB#1

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Subcatchment 3S: DRAINING TO CB #2

Runoff = 0.01 cfs @ 12.35 hrs, Volume= 0.002 af, Depth= 0.39"

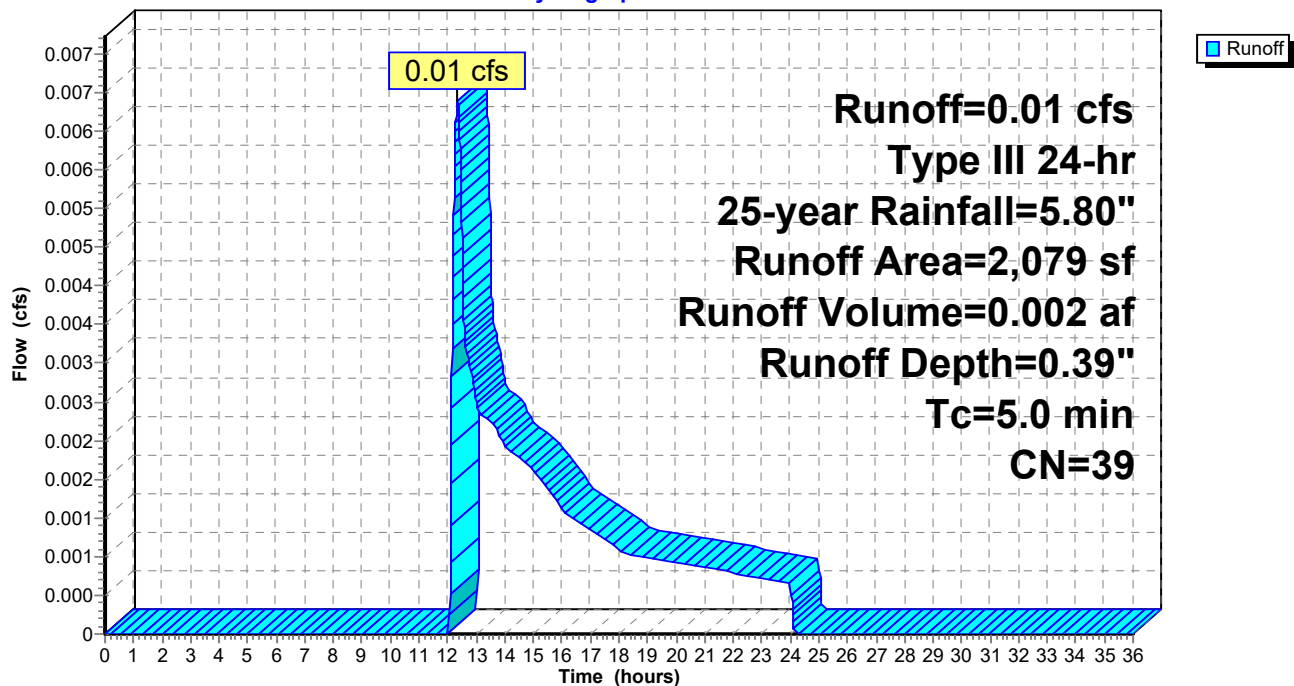
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
2,079	39	>75% Grass cover, Good, HSG A
2,079		100.00% Pervious Area

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

Subcatchment 3S: DRAINING TO CB #2

Hydrograph



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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Subcatchment 4S: DRAINING TO CB #3

Runoff = 0.01 cfs @ 12.38 hrs, Volume= 0.001 af, Depth= 0.39"

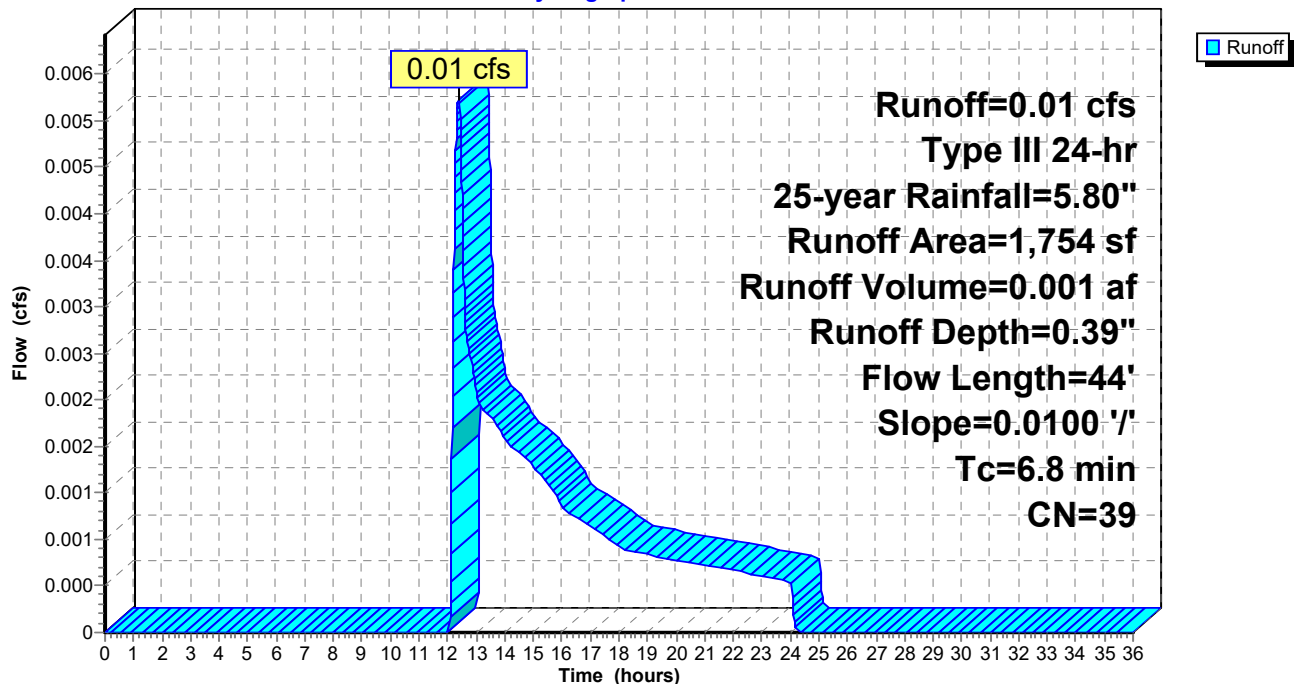
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
1,754	39	>75% Grass cover, Good, HSG A
1,754		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.8	44	0.0100	0.11		Sheet Flow, Grass: Short n= 0.150 P2= 3.10"

Subcatchment 4S: DRAINING TO CB #3

Hydrograph



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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Subcatchment 5S: ENTRY DRIVE

Runoff = 0.11 cfs @ 12.07 hrs, Volume= 0.008 af, Depth= 5.56"

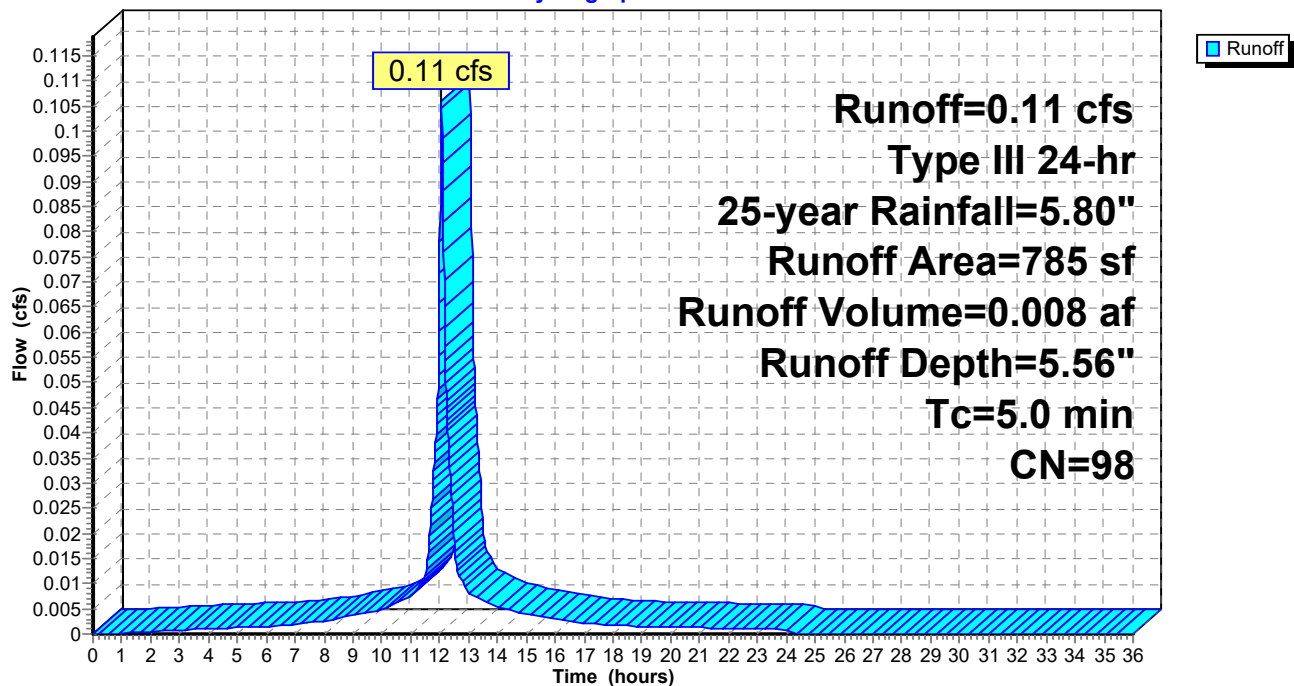
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

	Area (sf)	CN	Description
*	785	98	PAVED ENTRY
	785		100.00% Impervious Area

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

Subcatchment 5S: ENTRY DRIVE

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Type III 24-hr 25-year Rainfall=5.80"

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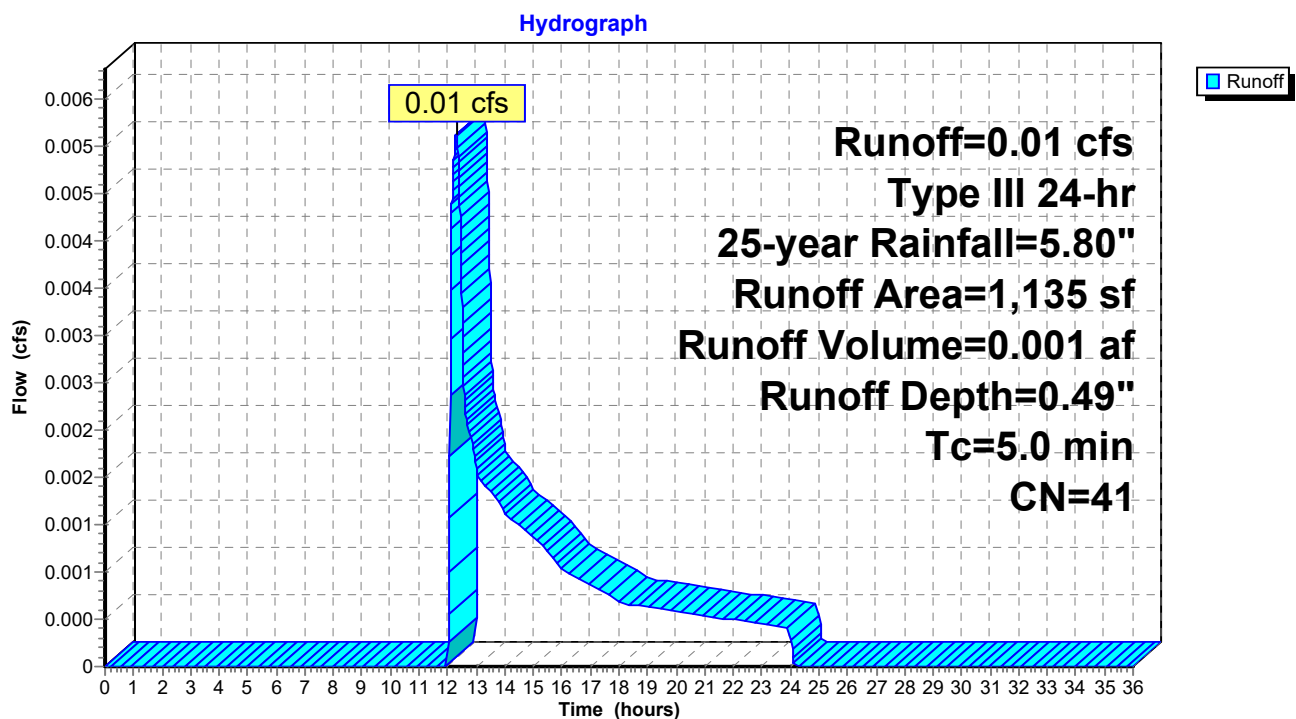
Summary for Subcatchment 6S: TIPDOWN

Runoff = 0.01 cfs @ 12.30 hrs, Volume= 0.001 af, Depth= 0.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type III 24-hr 25-year Rainfall=5.80"

Area (sf)	CN	Description
1,088	39	>75% Grass cover, Good, HSG A
* 47	98	BRICK AND CONCRETE SIDEWALK
1,135	41	Weighted Average
1,088		95.86% Pervious Area
47		4.14% Impervious Area

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

Subcatchment 6S: TIPDOWN

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Type III 24-hr 25-year Rainfall=5.80"

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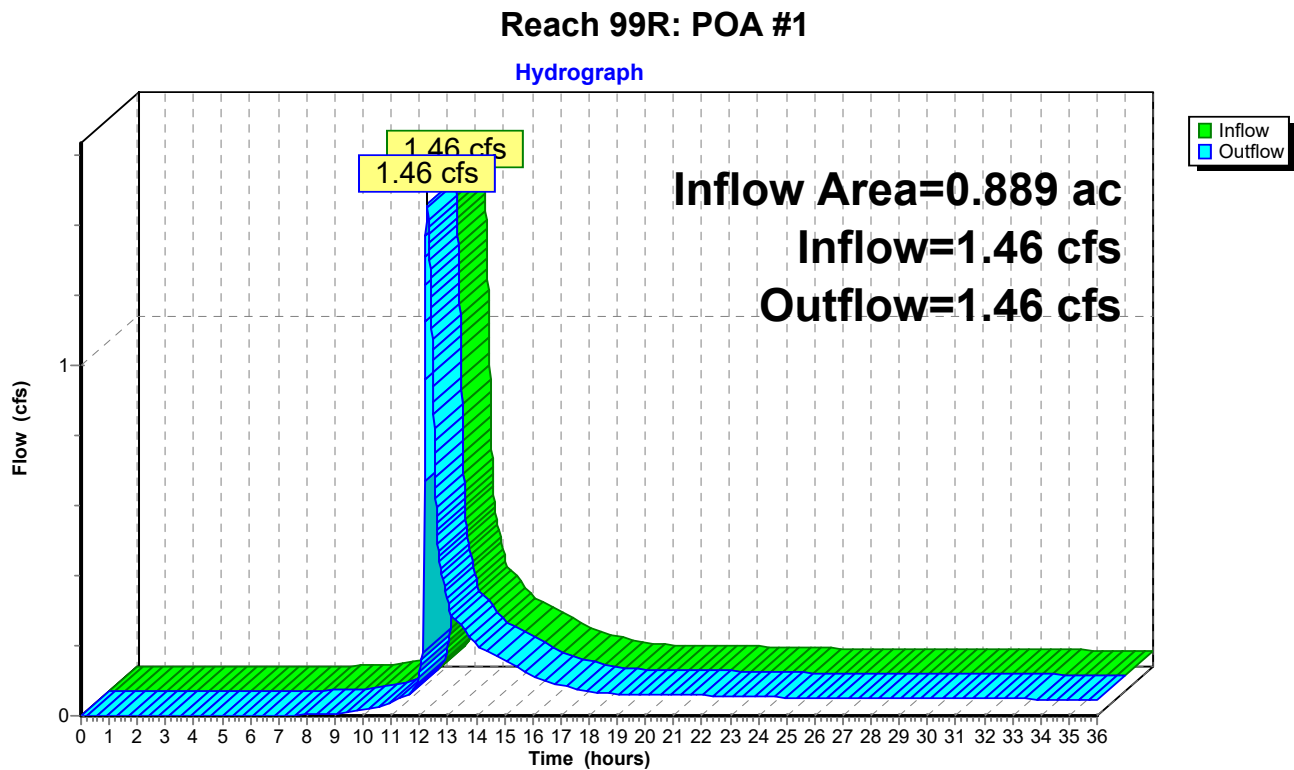
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Summary for Reach 99R: POA #1

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 0.889 ac, 61.47% Impervious, Inflow Depth > 2.75" for 25-year event
Inflow = 1.46 cfs @ 12.27 hrs, Volume= 0.204 af
Outflow = 1.46 cfs @ 12.27 hrs, Volume= 0.204 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs



POST

Type III 24-hr 25-year Rainfall=5.80"

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Summary for Pond 1P: VUSF/CB #4

[58] Hint: Peaked 0.08' above defined flood level

Inflow Area = 0.701 ac, 74.64% Impervious, Inflow Depth = 3.91" for 25-year event
 Inflow = 3.29 cfs @ 12.07 hrs, Volume= 0.228 af
 Outflow = 1.38 cfs @ 12.27 hrs, Volume= 0.189 af, Atten= 58%, Lag= 11.7 min
 Primary = 1.38 cfs @ 12.27 hrs, Volume= 0.189 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
 Peak Elev= 95.58' @ 12.27 hrs Surf.Area= 9,173 sf Storage= 4,261 cf
 Flood Elev= 95.50' Surf.Area= 8,938 sf Storage= 4,040 cf

Plug-Flow detention time= 397.4 min calculated for 0.189 af (83% of inflow)
 Center-of-Mass det. time= 327.2 min (1,133.8 - 806.6)

Volume	Invert	Avail.Storage	Storage Description
#1	94.00'	4,658 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2	93.50'	81 cf	Transition Layer (Prismatic) Listed below (Recalc)
			806 cf Overall x 10.0% Voids
#3	92.50'	161 cf	SOIL FILTER (Prismatic) Listed below (Recalc)
			1,612 cf Overall x 10.0% Voids
#4	92.00'	81 cf	COURSE GRAVEL (Prismatic) Listed below (Recalc)
			806 cf Overall x 10.0% Voids
#5	91.33'	11 cf	4.0" Round Pipe Storage Inside #6
			L= 127.0'
#6	91.00'	640 cf	CRUSHED STONE UD BEDDING (Prismatic) Listed below (Recalc)
			1,612 cf Overall - 11 cf Embedded = 1,601 cf x 40.0% Voids
		5,632 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
94.00	1,612	0	0
95.00	2,183	1,898	1,898
95.50	2,490	1,168	3,066
96.00	3,878	1,592	4,658

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
93.50	1,612	0	0
94.00	1,612	806	806

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
92.50	1,612	0	0
93.50	1,612	1,612	1,612

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
92.00	1,612	0	0
92.50	1,612	806	806

POST

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Type III 24-hr 25-year Rainfall=5.80"

Printed 3/1/2019

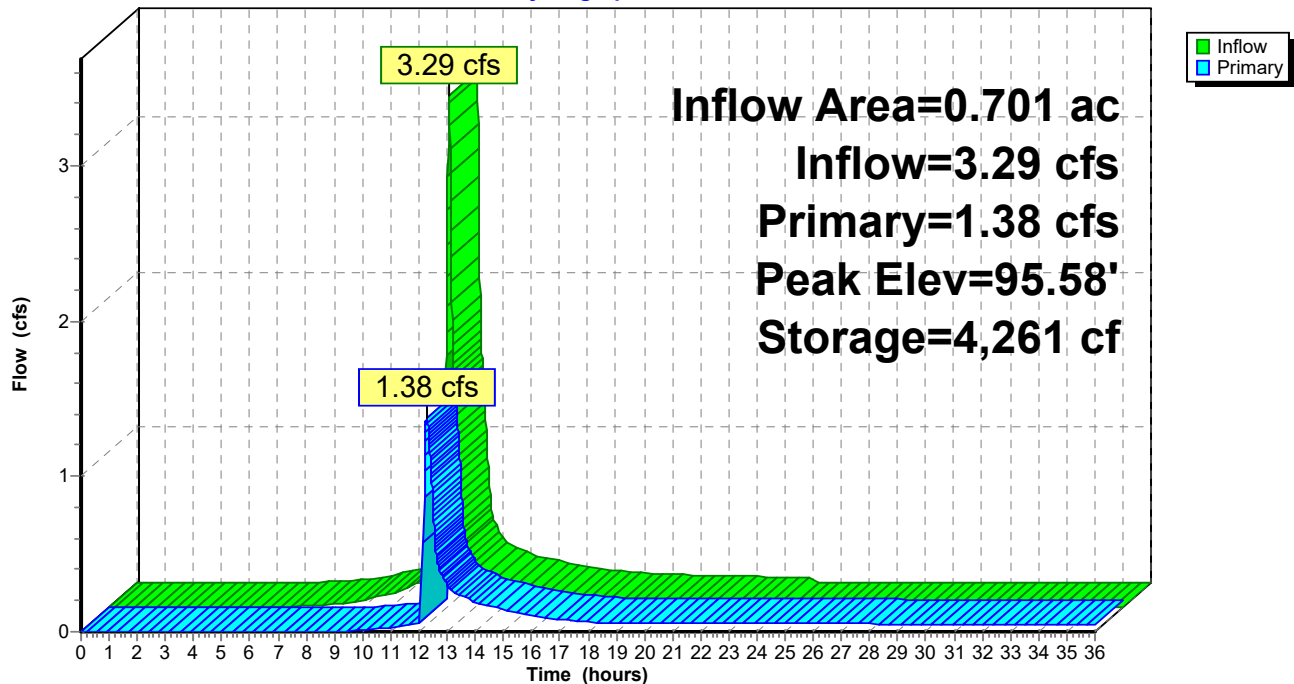
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Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
91.00	1,612	0	0
92.00	1,612	1,612	1,612

Device	Routing	Invert	Outlet Devices
#1	Primary	90.05'	12.0" Round 12" SDR L= 34.8' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 90.05' / 89.30' S= 0.0216 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf
#2	Device 1	95.50'	2.0" x 2.0" Horiz. CB OVERFLOW X 6.00 columns X 6 rows C= 0.600 Limited to weir flow at low heads
#3	Device 1	91.33'	1.0" Vert. WQV C= 0.600

Primary OutFlow Max=1.46 cfs @ 12.27 hrs HW=95.58' (Free Discharge)

- 1=12" SDR (Passes 1.46 cfs of 6.70 cfs potential flow)
- 2=CB OVERFLOW (Orifice Controls 1.40 cfs @ 1.40 fps)
- 3=WQV (Orifice Controls 0.05 cfs @ 9.88 fps)

Pond 1P: VUSF/CB #4**Hydrograph**

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Summary for Pond 2P: CB #1

Inflow Area = 0.056 ac, 7.71% Impervious, Inflow Depth = 0.66" for 25-year event
Inflow = 0.02 cfs @ 12.12 hrs, Volume= 0.003 af
Outflow = 0.02 cfs @ 12.12 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.0 min
Primary = 0.02 cfs @ 12.12 hrs, Volume= 0.003 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Peak Elev= 95.79' @ 12.12 hrs

Flood Elev= 99.50'

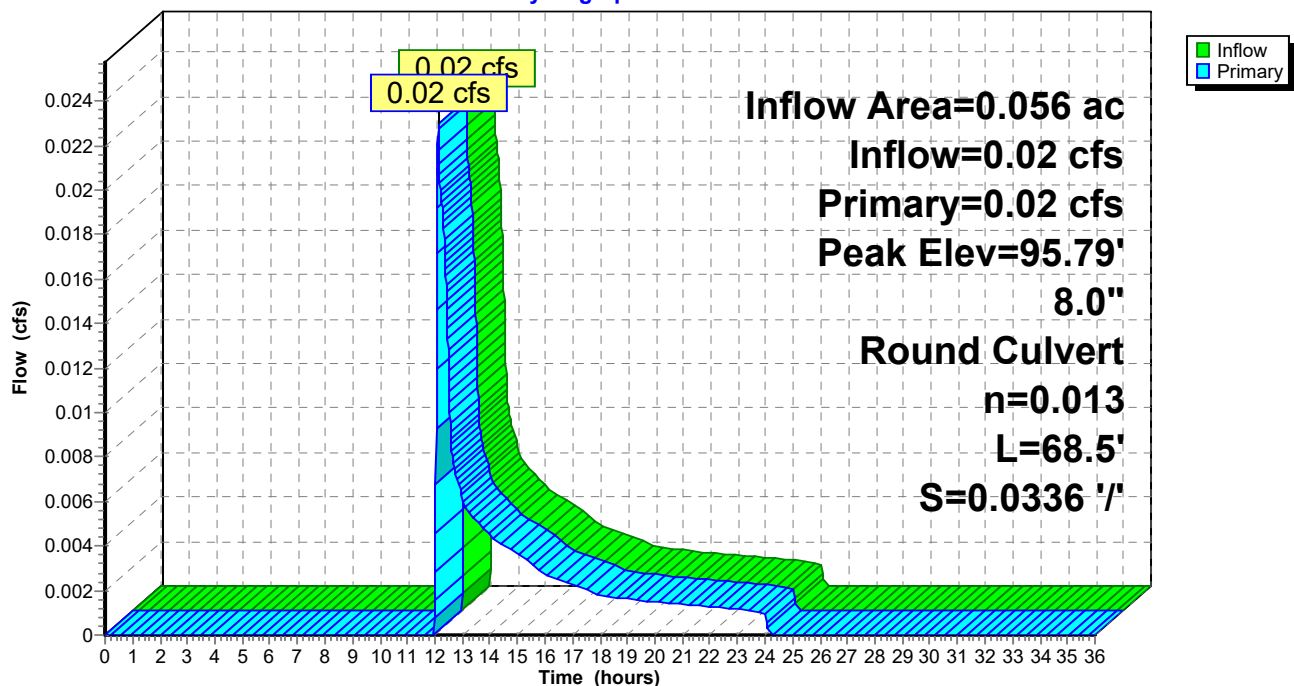
Device	Routing	Invert	Outlet Devices
#1	Primary	95.70'	8.0" Round HDPE L= 68.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 95.70' / 93.40' S= 0.0336 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.02 cfs @ 12.12 hrs HW=95.79' (Free Discharge)

1=HDPE (Inlet Controls 0.02 cfs @ 0.80 fps)

Pond 2P: CB #1

Hydrograph



POST

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Pond 3P: CB #2

Inflow Area = 0.048 ac, 0.00% Impervious, Inflow Depth = 0.39" for 25-year event
Inflow = 0.01 cfs @ 12.35 hrs, Volume= 0.002 af
Outflow = 0.01 cfs @ 12.35 hrs, Volume= 0.002 af, Atten= 0%, Lag= 0.0 min
Primary = 0.01 cfs @ 12.35 hrs, Volume= 0.002 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Peak Elev= 93.45' @ 12.35 hrs

Flood Elev= 97.00'

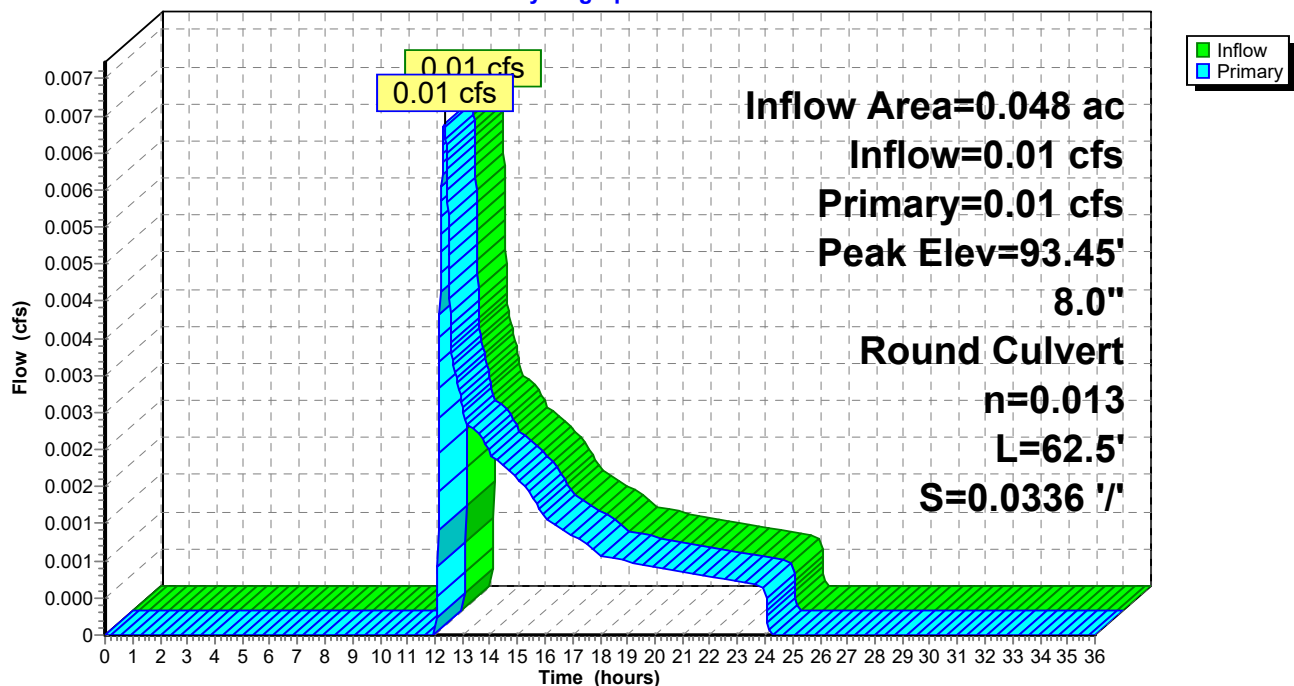
Device	Routing	Invert	Outlet Devices
#1	Primary	93.40'	8.0" Round HDPE L= 62.5' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 93.40' / 91.30' S= 0.0336 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

Primary OutFlow Max=0.01 cfs @ 12.35 hrs HW=93.45' (Free Discharge)

↑1=HDPE (Inlet Controls 0.01 cfs @ 0.58 fps)

Pond 3P: CB #2

Hydrograph



POST

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Type III 24-hr 25-year Rainfall=5.80"

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Summary for Pond 4P: CB #3

Inflow Area = 0.040 ac, 0.00% Impervious, Inflow Depth = 0.39" for 25-year event
Inflow = 0.01 cfs @ 12.38 hrs, Volume= 0.001 af
Outflow = 0.01 cfs @ 12.38 hrs, Volume= 0.001 af, Atten= 0%, Lag= 0.0 min
Primary = 0.01 cfs @ 12.38 hrs, Volume= 0.001 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Peak Elev= 91.36' @ 12.38 hrs

Flood Elev= 95.10'

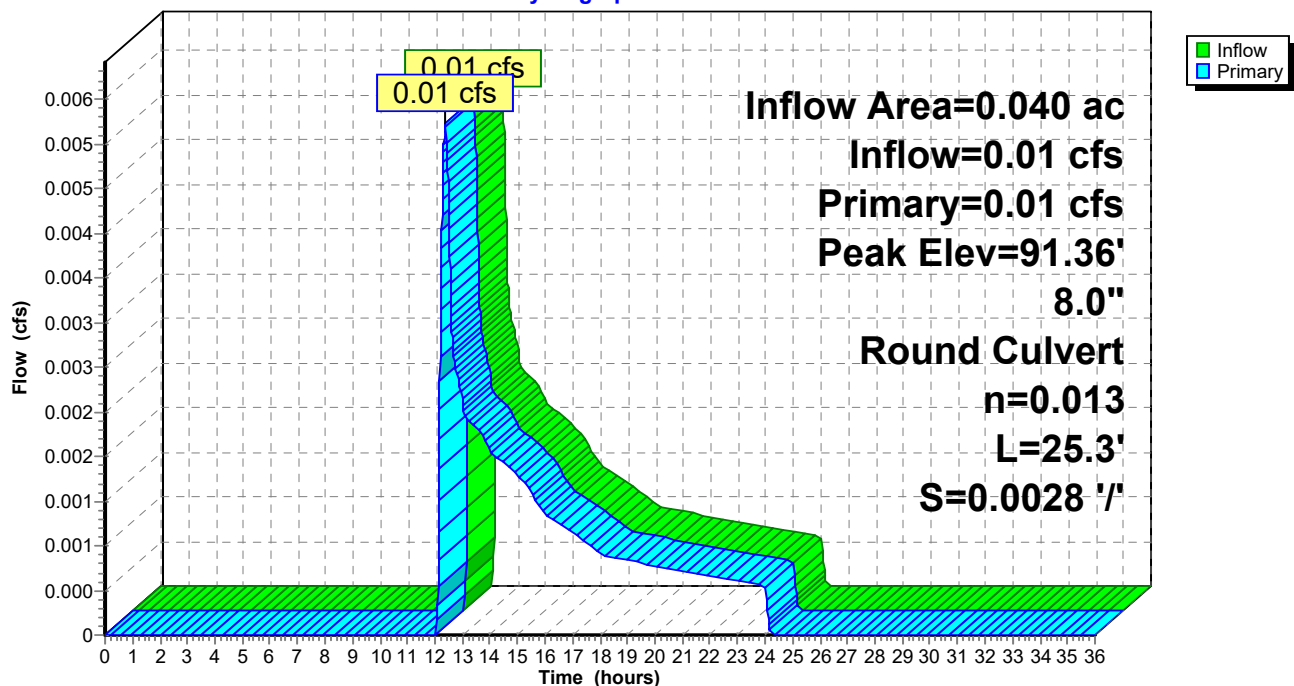
Device	Routing	Invert	Outlet Devices
#1	Primary	91.30'	8.0" Round HDPE L= 25.3' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 91.30' / 91.23' S= 0.0028 '/ Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf

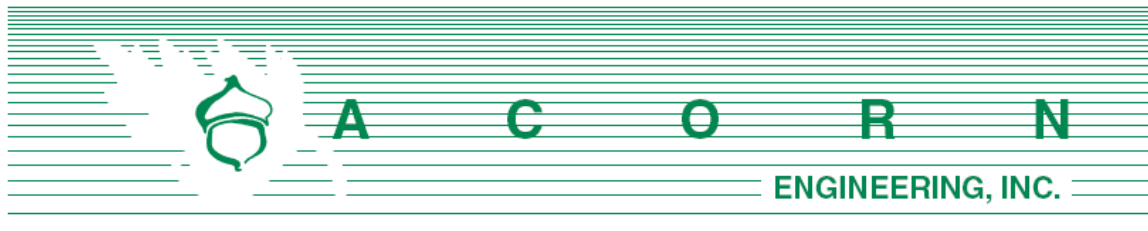
Primary OutFlow Max=0.01 cfs @ 12.38 hrs HW=91.36' (Free Discharge)

1=HDPE (Barrel Controls 0.01 cfs @ 0.56 fps)

Pond 4P: CB #3

Hydrograph





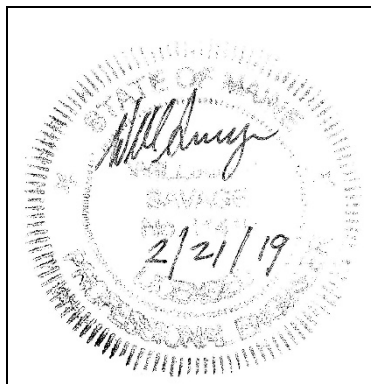
K. EROSION & SEDIMENTATION **CONTROL REPORT**

Prepared For:

**Portland Museum of Art
Seven Congress Square
Portland, Maine 04101**

Prepared By:

**Acorn Engineering, Inc.
65 Hanover Street
Portland, Maine 04102**



March 2019

INTRODUCTION

Acorn Engineering, Inc. has been retained by the Portland Museum of Art to provide civil engineering services for the proposed visitor parking lot redevelopment at 87 Spring Street. The project proposes improvements to existing pavement, expansion of parking spaces, reuse of existing landscaping features and new stormwater management.

The following Erosion and Sedimentation Control Report was developed in accordance with Section 5, Portland Stormwater Management Standards, of the City of Portland Technical Manual and the Maine DEP Chapter 500 Stormwater Management Appendix A and B (1), Amended August 12, 2015. This narrative also meets the standards required in the Maine DEP's Erosion & Sediment Control BMP's Manual, revised in 2016.

1.0 EXISTING CONDITIONS

The proposed project is located at 87 Spring Street. A boundary plan has been prepared by Spurwink Surveying, Inc. of Scarborough, Maine dated February 7, 2019.

The site resides within the B-3 Business and Downtown Entertainment Overlay zones. Approximately 39% of the site is impervious in the form of pavement, brick or concrete.

1.1 Existing Soils

Onsite soil information has been gathered from the following resource:

- United States Department of Agriculture (USDA) Web Soil Survey (WSS)

The area within and surrounding the project includes the soil type listed in Table 1 below. The susceptibility of soils to erosion is indicated on a relative "Kw" scale of values over a range of 0.02 to 0.69. Higher "Kw" values indicate more erodible soils. The Kw value listed was derived from the Revised Universal Soil Loss Equation (RUSLE), identified in the attachment at the end of the Stormwater Management Report from the USDA's WSS. The soil type used in design was also derived from the USDA's WSS and is also attached in the Stormwater Management Report.

Table 1		
Soils Type	Depth	Kf Value
Hinckley loamy sand	Whole soil	0.1

The "Kw" value for the soil, listed above, shows a low susceptibility to erosion; however, the implementation of the proposed Erosion & Sedimentation Measures by the contractor will be of the utmost importance given the urban environment.

1.2 Existing Erosion Problems

There are no signs of erosion.



1.3 Critical Areas

Critical areas that would require special attention during construction include, but are not limited to, the existing structures, the drainage system within Spring Street, and slope stabilization located within the vicinity during earthwork and foundation construction.

1.4 Protected Natural Resource

The client is not aware of the presence of any existing significant natural features located on the site as listed in Section 14-526 (b) 1. of the Land Use Code. The project is not located within a watershed classified as an Urban Impaired Stream by the Maine DEP.

1.5 Previous Construction Activity (5 years)

Acorn Engineering, Inc. is not aware of any construction related activities within the project limits within the past 5 years.

1.6 Timber Harvesting

Acorn Engineering, Inc. is not aware of any timber harvesting within the past five years.

2.0 EROSION CONTROL MEASURES AND SITE STABILIZATION

As part of the site development, the following temporary and permanent erosion and sedimentation control devices shall be implemented. Devices shall be installed as described in this report or within the plan set. See the Maine Erosion and Sediment Control Handbook for Construction: Best Management Practices for further reference.

2.1 Temporary Erosion Control Measures

The following temporary erosion and sedimentation control measures are planned for the project's construction period:

- 2.1.1 Crushed stone stabilized construction entrances shall be placed at all access points to the project site where there are disturbed areas. The following specifications shall be followed at a minimum:
- Stone size shall be 2-3 inches of reclaimed or recycled concrete equivalent.
 - The thickness of the entrance stone layer shall be no less than 6 inches.
 - The entrance shall not be less than 20 feet wide, however not less than the full width of points where ingress or egress occurs. The length shall not be less than 50 feet in length.



- Geotextile fabric (woven or non-woven) shall be placed over the entire entrance area.
 - The entrance/exit shall be maintained to the extent that it will prevent sediment tracking onto public road ways.
- 2.1.2 Siltation fence or erosion control berm shall be installed down gradient of any disturbed areas to trap runoff borne sediment until permanent stabilization is achieved. The silt fence or erosion control berm shall be installed per the details provided in the plan set and inspected before and immediately following each rainfall and a daily minimum during prolonged rainfall. Repairs shall be made if there are any signs of erosion or sedimentation below the fence line or berm. If there are signs of undercutting at the center or the edges or impounding of large volumes of water behind the fence or berm, the barrier shall be replaced with a stone check dam.
- 2.1.3 Hay mulch including hydro seeding is intended to provide cover for denuded or seeded areas until revegetation is established. Mulch placed between April 15th and November 1st on slopes of less than 15 percent shall be covered by fabric netting and anchored with staples in accordance with the manufacturer's recommendation. Mulch placed between November 1st and April 15th on slopes equal to or greater than 8 percent and equal to or flatter than 2:1 shall use mats or fabric netting anchored with staples in accordance with the manufacturer's recommendation.
- 2.1.4 At any time of year, all slopes greater than 3:1 shall be stabilized with Double Net Erosion Control Blanket Bionet SC150BN by North American Green (or approved equal) or Erosion Control Berm as detailed within the plans.
- 2.1.5 Spring Street shall be swept to control mud and dust from the construction site as necessary. Add additional stone to the stabilized construction entrance to minimize tracking material offsite and onto surrounding roadways.
- 2.1.6 During demolition, clearing and grubbing operations, stone check dams shall be installed at any areas of concentrated flow. The maximum height of the check dam shall not exceed 2 feet. The center of the check dam shall be 6 inches below the outer edges of the dam. The contractor shall mulch the side slopes and install stone check dams for all newly excavated ditch lines within 24 hours of their creation.
- 2.1.7 Silt fence stake spacing shall not exceed 6 feet unless the fence is supported with 14-gauge wire in which case the maximum spacing shall not exceed 10 feet. The silt fence shall be "toed" into the ground.
- 2.1.8 Storm drain inlet protection shall be provided to storm drains using any of the following: hay bale drop inlet structures, silt fence drop inlet sediment filter, gravel and wire mesh drop inlet sediment filter, or curb inlet sediment filter. Barriers shall be inspected following every rainfall event and repaired as necessary. Sediments shall be removed when accumulation has reached $\frac{1}{2}$ the design height.



- 2.1.9 Dust control shall be accomplished using either water, calcium chloride, stone, or an approved MDEP product. Dust control measures shall be applied as needed to provide dust control.
- 2.1.10 Temporary loam, seed, and mulching shall be used in areas where no other erosion control measure is used. Application rates for seeding are provided at the end of this report.
- 2.1.11 Stockpiles shall be stabilized within 7 days of formation unless a scheduled rain event occurs prior to the 7-day window, in which case the stockpile shall be stabilized prior to the rain event. Methods of stabilization shall be mulch, erosion control mix, or erosion control blankets/mats. Silt fence or a wood waste compost filter berm shall be placed downhill of any soil stockpile location.
- 2.1.12 For disturbance between November 1 and April 15, please refer to winter stabilization plan in this report and the Maine Erosion and Sediment Control BMP manual for further information.
- 2.1.13 It is of the utmost importance that stormwater runoff and potential sediment from the construction site be diverted around the proposed foundation drains until the trench is backfilled.

2.2 Permanent Erosion Control Measures

The following permanent erosion control measures are intended for post disturbance areas of the project.

- 2.2.1 During construction, all disturbed areas, not subject to other proposed conditions, shall receive a minimum 4" of loam, limed and mulched. Erosion control blankets or mats shall be placed over the mulch in areas noted in section 4.1 of this report.
- 2.2.2 All stormwater devices shall be installed, and tributary areas stabilized prior receiving stormwater.
- 2.2.3 Refer to the Maine Erosion and Sediment Control BMP manual for additional information.

3.0 EROSION AND SEDIMENTATION CONTROL PLAN

- 3.1 The Erosion and Sedimentation Control Plan is included within the plan set.

4.0 DETAILS AND SPECIFICATIONS

- 4.1 Erosion Control Details and Specifications are included in the plan set.

5.0 STABILIZATION PLAN FOR WINTER CONSTRUCTION



Winter Construction consists of earthwork disturbance between the dates of November 1 and April 15. If a construction site is not stabilized with pavement, a road gravel base, 75% mature vegetation cover or riprap by November 15, then the site shall be protected with over-winter stabilization. Any area not stabilized with pavement, vegetation, mulching, erosion control mix, erosion control mats, riprap, or gravel base on a road shall be considered open.

The contractor shall limit the disturbance areas to locations that work will occur in during the subsequent 15 days and so that it can be mulched one day prior to a snow event. The contractor shall stabilize work areas prior to opening additional work areas to minimize areas without erosion control measures.

The following measures shall be implemented during winter construction periods:

5.1 Sediment Barriers

During frozen conditions, sediment barriers may consist of erosion control mix berms or any other recognized sediment barriers as frozen soil prevents the proper installation of hay bales or silt fences.

5.2 Mulching

All areas shall be considered denuded until seeded and mulched. Hay and straw mulch shall be applied at a rate of 150 lb. per 1,000 square feet or 3 tons/acre (twice the normal accepted rate of 75-lbs./1,000 s.f. or 1.5 tons/acre) and shall be properly anchored. Erosion control mix must be applied with a minimum 4-inch thickness. Mulch shall not be spread on top of snow. The snow shall be removed down to a one-inch depth or less prior to application. After each day of final grading, the area shall be properly stabilized with anchored hay or straw or erosion control matting. An area shall be considered to have been stabilized when exposed surfaces have been either mulched or adequately anchored so that ground surface is not visible through the mulch. Between the dates of November 1 and April 15, all mulch shall be anchored by either mulch netting, tracking or wood cellulose fiber. The cover will be considered sufficient when the ground surface is not visible through the mulch. After November 1st, mulch and anchoring of all exposed soil shall occur at the end of each final grading workday.

5.3 Soil Stockpiling

Stockpiles of soil or subsoil shall be mulched for over winter protection with hay or straw at twice the normal rate or with a four-inch layer of erosion control mix. This shall be done within 24 hours of stocking and re-established prior to any rainfall or snowfall.

5.4 Seeding

Between the dates of October 15th and April 1st, loam or seed shall not be required. During periods of above freezing temperatures, finished areas shall be fine graded and either protected with mulch or temporarily seeded and mulched until the final



treatment can be applied. After November 1st and if the exposed area has not been loamed, final grading with a uniform surface, then the area may be dormant seeded at a rate of 3 times higher than specified for permanent seed and then mulched.

Dormant seeding may be placed prior to the placement of mulch or erosion control blankets. If dormant seeding is used for the site, all disturbed areas shall receive 4" of loam and seed at an application rate of 5 lbs./1,000 s.f. All areas seeded during the winter shall be inspected in the spring for adequate catch. All areas insufficiently vegetated (less than 75% catch) shall be revegetated by replacing loam, seed and mulch. If dormant seeding is not used for the site, all disturbed areas shall be revegetated in the spring.

5.5 Over winter stabilization of disturbed soils

By September 15th, all disturbed soils on areas having a slope less than 15% shall be seeded and mulched. If the disturbed areas are not stabilized by this date, then one of the following actions shall be taken to stabilize the soil for late fall and winter:

- Stabilize the soil with temporary vegetation – By October 1st, seed the disturbed soil with winter rye at a seeding rate of 3lbs per 1,000 s.f., lightly mulch the seeded soil with hay or straw at 75 lbs per 1,000 s.f., and anchor the mulch with plastic netting. Monitor growth of the rye over the next 30 days. If the rye fails to grow at least three inches or fails to cover at least 75% of the disturbed soil before November 1st, then mulch the area for over-winter protection.
- Stabilize the soil with sod – Stabilize the disturbed soil with properly installed sod by October 1st. Proper installation includes pinning the sod onto the soil with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, and watering the sod to promote root growth into the disturbed soil.
- Stabilize the soil with mulch – By November 15th, mulch the disturbed soil by spreading hay or straw at a rate of at least 150 lbs per 1,000 s.f. on the area so no soil is visible through the mulch. Immediately after applying the mulch, anchor the mulch with plastic netting to prevent wind from moving mulch off the disturbed soil.

5.6 Over winter stabilization of disturbed slopes

All stone-covered slopes shall be constructed and stabilized by November 15th. All slopes to be vegetated shall be seeded and mulched by September 1st. A slope is considered a grade steeper than 15%. If a slope to be vegetated is not stabilized by September 1st, then one of the following actions shall be taken to stabilize the slope for late fall and winter:

- Stabilize the soil with temporary vegetation and erosion control mats – By October 1st the disturbed slope shall be seeded with winter rye at a seeding rate of 3 lbs per 1,000 s.f. and then install erosion control mats or anchored mulch over the seeding. If the rye fails to grow at least three inches or fails to cover at least 75%



of the slope by November 1st, then the contractor shall cover the slope with a layer of erosion control mix or with stone riprap.

- Stabilize the soil with sod – The disturbed slope shall be stabilized with properly installed sod by October 1st. Proper installation includes the contractor pinning the sod onto the slope with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, and watering the sod to promote root growth into the disturbed soil. The contractor shall not use late-season sod installation to stabilize slopes having a grade greater than 3H:1V or having groundwater seeps on the slope face.
- Stabilize the soil with erosion control mix – Erosion control mix shall be properly installed by November 15th. The contractor shall not use erosion control mix to stabilize slopes having grades greater than 2H:1V or having groundwater seeps on the slope face.
- Stabilize the soil with stone riprap – Place a layer of stone riprap on the slope by November 15th. A registered professional engineer shall be hired to determine the stone size needed for stability on the slope and to design a filter layer for underneath the riprap.

6.0 INSPECTION AND MAINTENANCE

A person with knowledge of erosion and stormwater control, including the standards and conditions in the permit, shall conduct periodic visual inspections of installed erosion control measures. The frequency of inspection shall occur at least once every two weeks, as well as after a “storm event”. A “storm event” shall consist 0.5 inches of rain within a 24-hour period. The following Erosion and Sediment Control - Best Management Practices (BMP's) shall be inspected in the manner as described.

6.1 Sediment Barriers

Hay bale barriers, silt fences and filter berms shall be inspected and repaired for the following if there are any signs of erosion or sedimentation below them. If there are signs of undercutting at the center or the edges of the barrier, or impounding of large volumes of water behind them, sediment barriers shall be replaced with a temporary check dam. Should the fabric on a silt fence or filter barrier decompose or become ineffective prior to the end of the expected usable life and the barrier is still necessary, the fabric shall be replaced promptly. Sediment deposits should be removed when deposits reach approximately one-half the height of the barrier. Filter berms should be reshaped as needed. Any sediment deposits remaining in place after the silt fence or filter barrier is no longer required should be dressed to conform to the existing grade, prepared and seeded.

6.2 Stabilized Stone Construction Entrances

The entrance shall be maintained in a condition that will prevent tracking of sediment onto public rights-of-way. When the control pad becomes ineffective, the stone shall



be removed along with the collected soil material and redistributed on site in a stable manner. The entrance should then be reconstructed. The contractor shall sweep or wash pavement at entrances, which have experienced mud-tracking on to the pavement or traveled way. When washing is required, it shall be done on an area stabilized with aggregate that drains into an approved sediment trapping device. All sediment shall be prevented from entering storm drains, ditches, or waterways.

6.3 Mulched Areas

All mulches must be inspected periodically, in particular after rainstorms, to check for rill erosion. If less than 90% of the soil surface is covered by mulch, additional mulch shall be immediately applied. Nets must be inspected after rain events for dislocation or failure. If washouts or breakage occur, re-install the nets as necessary after repairing damage to the slope. Where mulch is used in conjunction with ornamental plantings, inspect periodically throughout the year to determine if mulch is maintaining coverage of the soil surface. Repair as needed.

6.4 Dust Control

When temporary dust control measures are used, repetitive treatment shall be applied as needed to accomplish control.

6.5 Stormwater Appurtenances

All underdrains, storm drains, and catch basins need to be operating effectively and free of debris.

6.6 Erosion and Sedimentation Control Inspections:

Acorn Engineering has personnel qualified to conduct Erosion and Sedimentation Control Inspections. For further information, contact:

Contact: Will Savage, PE
Telephone: (207) 775-2655

Qualifications:

- Maine Professional Engineering License #11419
- Maine DEP - Certified in Maintenance & Inspection of Stormwater BMP's Cert #14
- Certified Erosion, Sediment and Storm Water Inspector (CESSWI) Cert #0293
- Certified Professional in Erosion and Sediment Control (CPESC) Cert. #4620

The Contractor has sole responsibility for complying with the Erosion and Sedimentation Report/Plan, including control of fugitive dust. The Contractor shall be responsible for any monetary penalties resulting from failure to comply with these standards.



7.0 IMPLEMENTATION SCHEDULE

The following implementation sequence is intended to maximize the effectiveness of the above described erosion control measures. Contractors should avoid overexposing disturbed areas and limit the amount of stabilization area.

1. Install a stabilized construction entrance in all locations where construction traffic will enter and exit the site.
2. Install perimeter silt fence or erosion control berm.
3. Commence installation of drainage infrastructure.
4. Install all other erosion control devices as necessary throughout the remainder of this schedule.
5. Commence installation of utilities.
6. Continue earthwork and grading to subgrade as necessary for construction.
7. Complete installation of drainage infrastructure, as well as other utility work.
8. Complete remaining earthwork operations.
9. Install sub-base and base gravels in paved areas.
10. Install paving, curbing and brickwork.
11. Loam, lime, fertilize, seed and mulch disturbed areas and complete all landscaping.
12. Once the site is stabilized, 90% catch of grass has been obtained, or mulching of landscape areas is complete, remove all temporary erosion control measures.
13. Touch up areas without a vigorous catch of grass with loam and seed.
14. Complete site signage and striping.
15. Execute proper maintenance of all temporary and permanent erosion control measures throughout the project.

The above implementation sequence should be generally followed by the site contractor. However, the contractor may construct several items simultaneously. The contractor shall submit a schedule of the completion of the work to the owner. If the contractor is to commence the construction of more than one item above, they shall limit the amount of exposed areas to those in which work is expected to be undertaken during the following 30 days.

The contractor shall re-vegetate disturbed areas as rapidly as possible. All areas shall be permanently stabilized within 7 days of final grading or before a storm event. The contractor shall incorporate planned inlets and drainage systems as early as possible into the construction phase.

8.0 CONCLUSION

The above erosion control narrative is intended to minimize the development impact by implementing temporary and permanent erosion control measures. The contractor shall also refer to the Maine Erosion and Sediment Control BMP manual for additional information.

9.0 ATTACHMENTS

- Temporary Seeding Plan
- Permanent Seeding Plan



TEMPORARY SEEDING PLAN

Site Preparation

The seeded areas shall be feasibly graded to provide the use of equipment for seedbed preparation, seeding, mulch application, and mulch anchoring. If necessary, the site may require additional temporary erosion control measures outlined in the Erosion Control report.

Seedbed Preparation

Fertilizer shall be applied to the site at a rate of 13.8 pounds per 1,000 square feet. The composition of the fertilizer shall be 10-10-10 (N-P₂O₅-K₂O) or equivalent.

Limestone shall be applied to the site at a rate of 138 pounds per 1,000 square feet.

Seeding

The composition and amount of temporary seed applied to a site shall be determined by the following table:

Seed	Pounds / 1,000 S.F.	Recommended Seeding Dates
Winter Rye	2.57	Aug-15 to Oct-1
Oats	1.84	Apr-1 to Jul-1 Aug-15 to Sep-15
Annual Ryegrass	0.92	Apr-1 to Jul-1
Sudangrass	0.92	May-15 to Aug-15
Perennial	0.92	Aug-15 to Sep-15

Mulching

Mulch shall be applied at a rate of 70 lbs – 90 lbs per 1,000 square feet. The mulch shall be installed at a minimum depth of 4 inches. The seeded area shall be mulched immediately after seed is applied. Mulching during the winter season shall be double the normal amount.

Conclusion

Please refer to the Maine Erosion and Sediment Control BMP manual for additional information pertaining to temporary seeding and mulching.



PERMANENT SEEDING PLAN

Site Preparation

The seeded areas shall be feasibly graded to provide the use of equipment for seedbed preparation, seeding, mulch application, and mulch anchoring. If necessary, the site may require additional temporary erosion control measures outlined in the Erosion Control report.

Seedbed Preparation

Fertilizer shall be applied to the site at a rate of 13.8 pounds per 1,000 square feet. The composition of the fertilizer shall be 10-10-10 (N-P₂O₅-K₂O) or equivalent.

Limestone shall be applied to the site at a rate of 138 pounds per 1,000 square feet.

Seeding

The composition and amount of permanent seed applied to a site shall be determined by the following table:

Seed	Pounds / 1,000 S.F.
Kentucky Bluegrass	0.46
Creeping Red Fescue	0.46
Perennial Ryegrass	0.11
Total	1.03

Mulching

Mulch shall be applied at a rate of 70 lbs – 90 lbs per 1,000 square feet. The mulch shall be installed at a minimum depth of 4 inches. The seeded area shall be mulched immediately after seed is applied. Mulching during the winter season shall be double the normal amount.

Recommendations

Permanent seeding is recommended to be completed in the spring. Summer seeding is allowed if completed prior to September 1st. If permanent seeding cannot be accomplished during the recommended periods, then the contractor shall perform temporary seeding per the temporary seeding plan.

Conclusion

Please refer to the Maine Erosion and Sediment Control BMP manual for additional information pertaining to permanent seeding and mulching.



Section L

Lighting

L. Lighting

The proposed project intends to reuse the existing site and tree lighting fixtures. The site lighting has been retrofitted to LED compatibility since original installation. Please refer to the attached LED manufactures product sheets.



Section M

Utilities

M. Utilities

The proposed project includes the installation of a new electric line to feed electric vehicle charging stations.

UGE:

All new services will be run underground from the existing electrical manhole in the Spring Street right-of-way to a proposed meter/panel unit.

An ability to serve letter was sent to Central Maine Power on February 15, 2019 in accordance with the City of Portland Code of Ordinances Chapter 14 Land Use, Section 14-527(g)(7). The email response from the utility company can be found attached to this section.



Faith Thomas

From: Cough, Jamie <Jamie.Cough@cmpco.com>
Sent: Friday, February 15, 2019 11:42 AM
To: Faith Thomas
Cc: William Savage; Marc Bourgeois; Duperre, Paul
Subject: RE: PMA Ability to Serve
Attachments: Easement_Information_Worksheet.doc; Standard Easement Sample.pdf; 2July 2018 EDET.XLSX

Follow Up Flag: Follow up
Flag Status: Flagged

2/15/2019

Faith Thomas, E.I.
Acorn Engineering, Inc
PO Box 3372
Portland, Maine 04104
Sent via email to: fthomas@acorn-engineering.com

RE: Proposed PMA Project Charging Stations and lighting

Request for Ability to Serve Letter

Project Description:

The proposed expansion includes 4 Level II Car Charges plus additional lighting for PMA on Spring Street.

CMP has the ability to serve the proposed project in accordance with our CMP Handbook (web link below). We can provide you the desired pad or pole mounted transformers per your request and city approval, in accordance with our CMP Handbook of Standard Requirements. If you have any questions on the process, or need help in completion of the documents, **please contact me at 207-629-1489.**

Here is our typical process for getting your three phase or CT rated single phase service installed. If you have any questions, please let me know. The underlined links will redirect you to the appropriate site for additional information.

Service Milestones for Three Phase Services and CT Rated Single Phase Services. Please refer to CMP Installation Checklists for other installations.

- Call 1-800-565-3181 to establish a new account (if needed) and an SAP work order. Please provide both of these to me.
- Submit Load information. Please complete the attached EDET (excel file) using load information. . Please complete this and email back to me.
- Submit the easement information worksheet. Please complete this form and either email or fax back to me.
- Submit any electronic drawings (PDF (preferred) or DWG files) of the site layout and proposed electrical connections if you have them.
- Preliminary meetings with CMP Advisor and Engineer to determine details of job (I will need to schedule with your electrician/contractor-please let me know who this is)
- Field planner design appointment to cost out job and develop CMP Invoice. The invoice is typically generated 5-6 weeks after the design appointment. This expires after 90 days from the invoice date.

- CMP submits invoice to the customer for payment (typically via email). Payment received from customer.
- Easements (based on easement information worksheet) sent out, signed and originals returned to CMP.
- Job scheduled for completion after the electrical inspection has been received.

This process can take several months, depending upon several factors including transformer or materials delivery, return of completed paperwork, and other jobs in the system that may be ahead of yours. In addition, contact with the other utilities, including telephone and cable, should be commenced as soon as practical. They may have additional work or charges in addition to the CMP work required to bring your project on line.

Please complete the attached forms (the specific instructions are on each form) and email them back to me at your earliest convenience.

For your convenience, here is a link to the CMP Website which contains our Handbook with details on most service requirements: [CMP Handbook of Standard Requirements](#)

You will be responsible for installing the customer connections, conduits, and metering in accordance with the [CMP Handbook of Standard Requirements](#). The transformer will be sized based on your submitted load sheets.

Your deposit amount will be typically based on an estimated two month bill, calculated from your completed load sheet unless otherwise determined by CMP.

Metering:

All metering (including locations) must be preapproved by CMP.

Chapter 324 Interconnections:

Please be advised that if you plan to install solar/wind/hydro generation, you must complete an application under the MPUC mandated Chapter 324 Interconnection Standards. If you go to [Chapter 324 Interconnection Standards](#) and follow the instructions for the Small Generator Interconnection Procedures, CMP can do this work in parallel to your service request that will be handled by me. If your project is under 660 KW you will be able to have a Customer Net Energy Billing contract. Information concerning Customer Net Energy Billing can be accessed thru the Chapter 324 website or by clicking here: [Net Energy Billing](#).

Reallocation/Line Extensions:

Recently, changes were made to the three-phase construction policy, which require CMP to reallocate construction costs paid by customers. If applicable, those projects identified as “developments” do not qualify for reallocation of funds. Please see this document at our website for details about the reallocation conditions. Any reallocation charges will be specifically denoted on your invoice. The website address for this is: [PolyphaseLineExtension](#).

This line extension will be part of Central Maine Power’s distribution system. In the event the property served under this Agreement is sold or otherwise conveyed, all rights and obligations of the Agreement shall stay with the property. Please note that if you rent or lease this property to another and you want to receive the reimbursement payments, you must make special arrangements with the Central Maine Power Company. Otherwise, any reimbursement payments will be sent to the “Customer” taking service at the service location.

Electricity Supplier Information:

Central Maine Power Company (CMP) will provide your facility with electric delivery service. If you don’t already have a provider, you will need to make arrangements with a competitive electricity provider in order to receive electricity supply for your facility. In the event you fail to choose a competitive electricity provider, you will receive Standard Offer

service arranged by the Maine Public Utilities Commission. If you wish to be served by a competitive electricity provider immediately upon establishment of delivery service, you must arrange for this service directly through your chosen competitive electricity provider, who must enroll your account no later than 5 PM on the business day prior initiation of delivery service by CMP. An up-to-date list of competitive suppliers can be found at the:

- 1) Maine Public Utilities Commission (MPUC) web site- [Maine PUC](#)
- 2) By calling the MPUC at (207) 287-3831

Attachments:

Excel Load Sheet (EDET)
Easement Worksheet and Sample Standard Easement

Regards,

Regards,

Jamie

Jamie Cough
Energy Services Advisor
Central Maine Power Company
162 Canco Road
Portland, ME 04103
207-629-1489 office
207-626-4082 fax

From: Faith Thomas [mailto:faiththomas@acorn-engineering.com]
Sent: Friday, February 15, 2019 10:24 AM
To: Cough, Jamie; Duperre, Paul
Cc: William Savage; Marc Bourgeois
Subject: PMA Ability to Serve

*** EXTERNAL email. Please be cautious and evaluate before you click on links, open attachments, or provide credentials. ***

*** EXTERNAL email. Por favor, tenga precaución y evalúe el mensaje antes de hacer click en enlaces, abrir anexos o introducir credenciales. ***

Jamie & Paul,

We're requesting an Ability to Serve letter for a proposed project located at 87 Spring Street in Portland. Attached is a project overview, boundary survey, preliminary utility plan, electric vehicle charging station specs and anticipated CMP meter detail.

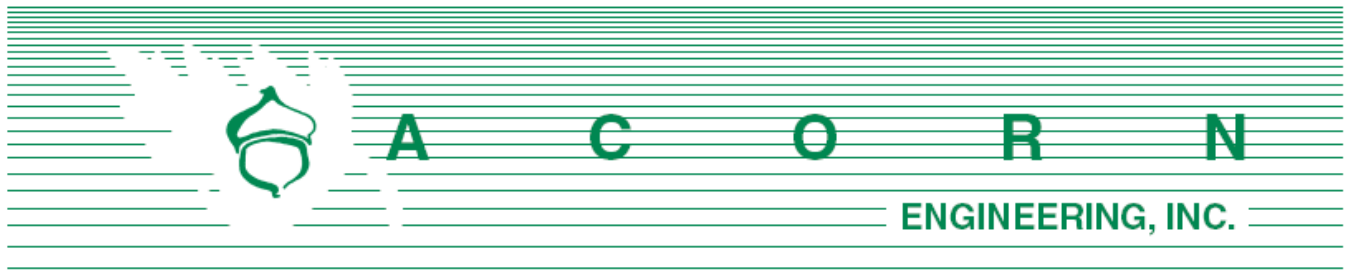
I'll follow up this email with a phone call if I don't hear anything.

Let me know if there's anything else you need from me.

Faith Thomas, E.I.

Section N

Construction Management
Report



N. Construction Management Plan

Project Address: 87 Spring Street

Project Description:

Acorn Engineering, Inc. has been retained by the Portland Museum of Art (PMA) to provide civil engineering services for the proposed visitor parking lot redevelopment at 87 Spring Street. The proposed improvements include the addition of both standard and ADA parking spaces, increased landscaping and increased stormwater management.

Project Team Summary:

Owner:	Portland Museum of Art
General Contractor (GC):	Wright-Ryan Construction, Inc.
Civil Engineer:	Acorn Engineering, Inc.

The Owner, GC and all subcontractors will work with the City of Portland and adjacent landowners to minimize any project impacts.

The GC will remain responsible for enforcement of all compliance with 1) all contract plans and specifications in their scope of work and 2) all site working conditions and safety requirements, day and night, for both persons and property, in each case for the duration of their work. These include OSHA, NIOSH, U.S. EPA, local ordinance and any other applicable governmental regulations. Both the Owner/GC and any subcontractors will remain responsible for safeguarding the general public.

The GC shall review all permits and conditions associated with the project. Refer to the Civil/Site Plan Set, Sheet C-03 Construction Management Plan for visual representation of measures to be taken during construction.

The following outline has been developed in accordance with the City of Portland Construction Management Plan General Template and shall be referenced by the GC during construction.

A. Construction Management Principles

The control of noise, vibrations, ground movement, truck traffic, and other construction related factors will be of utmost importance. Care shall be taken to minimize these effects in the best interest of neighbors and the general public. GC to ensure that work hours conform to the City of Portland's Ordinance.

B. Development Review of Construction Management Plan

Logistics and safety program 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 652.3.3.

C. Performance Guarantees, Inspection Fees, Preconstruction Meeting, and Permits

Guarantees and fees will be paid at the time of the respective application. All necessary permits will be obtained prior to work and compliance with Sections 14-530 and 14-532 is required.

1. Street Opening and Street Occupancy Permits:

Required permits regarding street opening and occupancy will be obtained from the Department of Public Works. The requests shall conform to the approved Construction Management Plan.

2. Blasting:

Although not anticipated, if blasting occurs, it shall conform with all measures of Article VIII. In Chapter 14 of the City Code and Section 3.7 in the City's Technical Manual.

3. Building Code:

Employ the best practices, as applicable, of Chapter 33 Safeguards During Construction, from the 2009 International Building Code.

D. 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. Communication in order to comply with all agreements, ordinances, and special permits will be of the utmost importance. Contractor contact information shall be posted on a sign on the construction fence along the Spring Street and Oak Street frontage. Additional signage necessary for communication shall be provided but will be temporary and removed upon completion of the project. The contact information for the project personnel is:

Nick Oliver
Building Manager
Portland Museum of Art
(207) 699-4850

GC and Subcontractor information will be posted along the Spring Street and Oak Street frontage once contracted.

E. Construction Schedule



The GC shall submit a construction timeline at or prior to the preconstruction meeting. Construction may occur during the daytime hours as defined in Section 17-18. Construction Activities for Building permit and City Code Section 25-129, Noise, dust and debris. Between September 1 and May 31, the following year, no person shall engage in construction activities generating noise exceeding 50 decibels, between the hours of 7 pm and 7 am of the following day within 500 feet of any buildings. From June 1 to August 31, construction activity may continue until 8 pm. No construction activity shall begin before 8 am on a Saturday, Sunday, or legal holiday. Extended hours or night work may be requested for special circumstances and street utility work if needed. These requests will be subject to approval by the Public Works Authority.

Due to the limited space within the project parcel, deliveries will need to be stored in an alternate location or deliveries must be small enough to fit within the property. Deliveries will be scheduled between 7 am and 5 pm.

The estimated timeframe of the proposed project is outlined below:

<u>Project Start Date:</u>	Spring 2019
<u>Project End Date:</u>	Summer 2019

A more detailed work schedule shall be provided by the GC at or before the pre-construction meeting with the City.

F. Security

1. The Construction Management Plan, Sheet C-03, depicts all proposed fencing and other barriers, with the intent of separating pedestrian and vehicle circulation from the construction site. Construction entrances per detail shall be installed.
2. Structures undergoing construction, alteration, or demolition operations, including those in underground locations, shall comply with NFPA 1 Chapter 16. *Safeguarding Construction, Alteration, and Demolition Operations*.
3. Fire Safety Program: Prior to construction, an overall construction and demolition fire safety program shall be developed. Essential items to be emphasized include the following:
 - o Good Housekeeping
 - o On-site security
 - o Installation of new fire protection systems as construction progresses
 - o Preservation of existing systems during demolition
 - o Organization and training of an on-site fire brigade
 - o Development of a pre-fire plan with the local fire department
 - o Rapid communication
 - o Consideration of special hazards resulting from previous occupancies
 - o Protection of existing structures and equipment from exposure fires resulting from construction, alteration, and demolition operations.
4. Blasting, if required, shall conform 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. Temporary security lighting shall be shown on the Construction Management Plan, and all fixtures shall be full cutoffs.

G. Construction Permitting and Traffic Control Plans

1. Construction Activity in Public Streets

Construction activity in the public right-of-way shall be compliant with Chapter 25 Article VII of the City Code. At no time will it be permissible for construction activity including delivery vehicle 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 system connections are controlled by 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 Washington Avenue.

3. Traffic Control Plans

Construction activity that impacts the existing public street system must be controlled to protect the safety of the construction workers and all modes of the traveling public. The contractor shall submit a satisfactory "Maintenance of Traffic" (MOT) plan prior to any street opening permit approval. This document shall contain all pertinent information from the Maine Department of Transportation's Traffic Control Plan Standard Specification 652.3.3.

The MOT will address the work required for utility connections in Spring Street. 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. It may be permissible to close a portion of Spring Street during utility connections and/or detour a mode of traffic when absolutely necessary for safety. All requests shall be subject to City approval. MOT plans shall employ the appropriate techniques and devices as 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 will be utilized when necessary.

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 bicycle 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 in all capacities 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.

H. Site Management and Controls

1. Regular trash and debris shall be managed appropriately and removal of such shall comply with all local, state, and federal regulations.
2. Street cleaning and sweeping shall be followed as outlined in the erosion and sedimentation control notes and report. Damage to the street shall be avoided and shall be the responsibility of the contractor.
3. Dust shall be controlled and shall comply with Section 25-129 and the erosion and sedimentation control notes, plan, and details.
4. Noise shall be controlled and shall comply with Section 17-18 and Section 25-129.
5. Rodent Control shall be provided, if applicable, by a professional exterminator and shall be consistent with Chapter 22 of the City Code.
6. Snow and Ice Removal shall be provided. Pursuant to Section 25-173, the Contractor shall ensure a safe means of travel within the work zone by the following steps:
 - a. Snow/ice removal or commence automatically from 1" or greater of snow or ice
 - b. Remove snow as needed within the work zone, including parking spaces. Driveways and site lines shall not be blocked by piles of snow.
 - c. Clear all walks and ramps within the work zone
 - d. Sand or salt as needed
 - e. Clear all basin or drainage to help snow melt
 - f. The above steps shall be carried out Sunday-Saturday including holidays.

I. Erosion & Sedimentation Control



1. The Contractor shall install all erosion and sedimentation controls as depicted on the approved Construction Management Plan, C-03, and the approved erosion and sedimentation control report, 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 storm events (0.5" or more in 24 hours). Additionally, temporary or permanent stormwater management systems shall be inspected and maintained to ensure 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. Due to the existing, sparse landscaping on site, no protection during construction will be necessary.
3. Stored materials shall be identified and avoid being located under/near trees.

J. Construction Staging Area

1. The Contractor shall submit a plan with locations depicted for material staging areas, on-site temporary construction trailers, on-site truck delivery holding areas, 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 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. Upon arrival to site, all vehicles will be brought within the fence line and will make every attempt to avoid queuing on public streets. If, for any reason, on-site holding of trucks is not feasible, an off-site location must be designated and shown on the submitted plan referenced above in J.1.
3. All deliveries for materials shall comply with the City's noise requirements.

K. Parking During Construction

1. Adequate parking for construction workers shall be provided along Spring Street or arrangements for off-street parking at an off-site location shall be provided.
2. Truck Routes and Volumes: The following quantities are estimated as part of the reconstruction:
 - Gravel & Cr. Stone – 750 CY. Earthwork subcontractor(s) pit to project site.
 - Hot Mix Asphalt – 120 Tons. Paving subcontractor pit to project site

L. Special Measures as Necessary



The neighboring buildings at 88 and 97 Spring Street, 110 Free Street and 7 Congress Square will be subject to a pre and post construction survey to monitor any effects from construction. The surveys shall consist of photographs of the foundation as viewed from outside and inside if granted permission.



Section 0

Transportation Analysis

O. Transportation Analysis

The parking requirement was calculated by applying the “Peak Period Demand Range” value for a museum, found in the *4th Edition Parking Generation from the Institute of Transportation Engineers*. The “Peak Period Demand Range” is 0.63-1.34 vehicles/1,000 SF of gross floor area. Per the Portland Tax Assessor’s Card, the gross floor area of the buildings located at PMA’s abutting parcels is 77,507 SF, which requires 49 to 104 spaces.

Building Description	Area (sf)
Portland Museum of Art	72,831
Charles Q. Clapp House	4,676
Total Floor Area	77,507

The proposed parking count of 69 spaces resides within the recommended range, improving upon a current parking count of 47 spaces, which is less than the recommended range.



Section P

Solid Waste Disposal

P. Solid Waste Disposal

The existing conditions concerning solid waste disposal is to remain unchanged and will continue to be stored at the adjacent Portland Museum of Art parcel.



CITY OF PORTLAND
Planning & Urban Development Department

**CONDITIONAL USE – PLANNING BOARD REVIEW
SUBMISSION CHECKLIST**

Please submit each document as a separate PDF file
Please confirm by electronically checking the boxes to the left

Conditional uses are listed in the Zoning Ordinance for each zone and these proposed uses must address the criteria contained in Section 14-474 in the written application. In addition to the criteria in Section 14-474, each application must address any applicable conditional use standards contained in the applicable zone for the proposed use.

GENERAL APPLICATION DOCUMENTS

Yes ☒	N/A	Project Description Cover Letter with detailed project description
Yes	N/A	Completed Checklist – Conditional Use (this document)
Yes	N/A	Right, Title and Interest Deeds, leases, or purchase and sales agreements

CONDITIONAL USE STANDARDS AND CRITERIA

Yes	N/A	Traffic Address volume and type of vehicle traffic to be generated, hours of operation, expanse of pavement, and number of parking spaces required are not substantially greater than would normally occur at surrounding uses or other allowable uses in the zone.
Yes	N/A	Environmental Impacts Address use will not create unsanitary or harmful conditions by reason of noise, glare, dust, sewage disposal, emissions to the air, odor, lighting, or litter.
Yes	N/A	Design and Operation Address the design and operation of the proposed use, including but not limited to landscaping, screening, signs, loading, deliveries, trash or waste generations, arrangement of structures, and materials storage that will not have a substantially greater effect; impact on surrounding properties than those associated with surrounding uses or other allowable uses in the zone.
Yes	N/A	Zone Specific Criteria Deeds, leases, or purchase and sales agreements

R. Conditional Use

The following outline is made in accordance with the City of Portland Code of Ordinances, Chapter 14 Land Use, Article V Section 14-474 and Zone Related Criteria.

c) Conditions for conditional uses

1) Authorized uses

a. *“A conditional use permit may be issued for any use denominated as a conditional use in the regulations applicable to the zone in which it is proposed to be located”*

- i. The lot is undergoing Level II Site Plan Review with no surface parking spaces, parking aisles, or vehicle lanes within thirty-five feet of any street, except for the existing driveway located perpendicular to the street and providing access to the site, which is indicated as a conditional use in the B-3 zone, per *Section 14-218(a)(5)(a)*.

2) Standards

a. *“The volume and type of vehicle traffic to be generated, hours of operation, expanse of pavement and the number of parking spaces required are not substantially greater than would normally occur at surrounding uses or other allowable uses in the same zone; and*

- i. Per *Sec. 14-216: Purpose* of the B-3 zone, the existing visitor parking fosters the role of downtown as the business and commercial center of the region as well as the presence and integration of the arts and cultural activities downtown. The proposed visitor lot expansion aims to enhance these roles as well as provide adequate parking and transportation facilities which promote accessibility, enhance and encourage development opportunity and enhance and protect the pedestrian environment where previously unavailable.

- ii. The required number of parking spaces for a museum is undefined, per *Sec 14-332*. The proposed parking lot expansion increases the parking spaces from the existing 47 to 69 (including 3 ADA accessible spaces). The proposed number of parking spaces resides within the “Peak Period Demand Range” of 49-104 spaces based upon the gross floor area of the adjacent Portland Museum of Art buildings (0.63 – 1.34 vehicles/1,000 SF of gross floor area from the *4th Edition Parking Generation from the Institute of Transportation Engineers*).

- 1. The number of spaces is not substantially greater than would normally occur at surrounding uses or other allowable uses in the B-3, Downtown Business Zone.
- 2. The type of traffic to be generated and hours of operation is anticipated to remain the same as existing conditions with a

minimal increase in volume.

- b. *“The proposed use will not create unsanitary or harmful conditions by reason of noise, glare, dust, sewage disposal, emissions to the air, odor, lighting, or litter; and”*
 - i. Acorn does not anticipate the creation of unsanitary or harmful conditions by reason of noise, glare, dust, sewage disposal, emissions to the air, odor, lighting, or litter. Stormwater quality treatment will be provided through the development of the vegetated underdrain soil filter best management practice.
- c. *“The design and operation of the proposed use, including but not limited to landscaping, screening, signs, loading, deliveries, trash or waste generation, arrangement of structures and materials storage will not have a substantially greater effect/impact on surrounding properties than those associated with surrounding uses or other allowable uses in the zone.”*
 - i. Screening will be provided through the relocation of existing site landscaping features, as shown on the Site and Landscape Plan, Sheet C-10 of Civil Plan Set. The client intends to reuse existing landscaping thereby increasing the density of the vegetated area, which will create a more substantial screening buffer along Spring Street and Oak Street.
 - ii. The existing private parking sign indicated on Construction Management Plan, Sheet C-03, is to be relocated as indicated on Site and Landscape Plan, Sheet C-10. The existing Portland Museum of Art sign at the intersection of Oak and Spring Street is to remain undisturbed. Acorn anticipates additional signage to consist of Barrier Free Parking Signs for the ADA parking spaces, as displayed on Site Details, Sheet C-40.
 - iii. The existing loading docks at the adjacent Portland Museum of Art parcel will remain unchanged.
 - iv. Deliveries will continue to use the existing driveway at Spring Street. The parking lot access point will be shifted slightly towards Spring Street to allow for vehicles to exit the parking lot when a tractor-trailer (WB-67) is parked at the existing loading dock, which is not feasible with the existing driveway location and width.
 - v. The existing conditions concerning solid waste disposal is to remain unchanged and will continue to be stored at the adjacent Portland Museum of Art parcel.
 - vi. Based on the information above, Acorn does not anticipate a greater effect/impact on surrounding properties than the existing conditions, surrounding uses or other allowable uses in the zone.





April 11, 2019

Mr. Andrew Tufts
Project Planner – City of Portland
Planning and Urban Development Department
389 Congress Street
Portland, Maine, 04101

Dear Mr. Tufts,

Portland is changing. Over the past 15 years the city has seen a marked increase in its national reputation, attracting attention for its award-winning food scene, creative economy, and quality of life. As Portland has moved forward, so has the PMA, reinventing itself to be more open, accessible, inclusive, and welcoming than ever before, through exhibitions and programs that reflect the full range of voices in our community and throughout the world, creating experiences with art that strengthen our bonds and bring us together.

In the last three years alone, attendance to the PMA has increased 30%, bringing more than 160,000 visitors annually to the heart of downtown Portland, who in turn shop, eat, and stay at businesses throughout the city. 35% of those visitors come in free of charge thanks to our Free Friday, Susie Konkel Pass, and School Tours programs. The museum is an active partner with Visit Portland, the Maine Art Museum Trail, the Maine Office of Tourism, and our business community to ensure arts and culture are top of mind for anyone visiting or living in our community.

With projected growth and nationally relevant, landmark exhibitions on the horizon in upcoming years, the PMA has recognized that we are no longer meeting the basic needs of our visitors and members to ensure that the art experience is as accessible as possible. In short, parking is a prohibitive barrier for visitors to the museum, resulting in unmet potential, not only for museum audiences, but for the economic impact those audiences have on the city, region, and state.

The PMA's proposed visitor parking lot project will enhance visitor and local experience, increase accessibility, and provide more opportunities to enjoy the museum and all that Portland offers.

Through survey data, the single biggest complaint that the PMA receives is about the lack of parking for our visitors. Here is an excerpt from a most recent survey the PMA has conducted in 2019:

What would make your visit to the Portland Museum of Art more comfortable?

- "We love the PMA! Getting there can be an issue with parking" - PMA Member
- "Accessibility for older folks - parking close is a challenge" – PMA Visitor
- "I am always thinking about parking. I am a senior and have a fear of falling. My participation is limited because of this" – PMA Member

- “The PMA needs better parking” – PMA Visitor

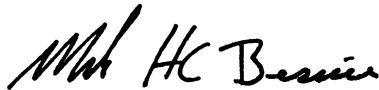
As stated in the Portland Museum of Art (PMA) Strategic Plan 2016-2021, the mission of the museum strives to “engage audiences in a dialogue about art and culture to our everyday lives...”. To do that, the PMA must remove this artificial barrier for visitors of our city.

There are two areas within the PMA’s current strategic plan that speak to expanding the PMA’s existing parking lot to improve visitor amenities while also considering the museum’s campus for a sustainable future.

- *Engage and Grow PMA audiences:*
Attract new audiences and deepen our relationship with current visitors and members through expanded programming and improved access to the PMA experience.
- *Steward the PMA campus for the future in a sustainable manner:*
Protect and preserve the PMA’s existing physical assets through short-term, intermediate, and long-term planning for infrastructure investment; preparing for already-identified improvement projects and further campus and neighborhood development opportunities; and fostering a “greener” profile in our programs and physical resources

The PMA’s Visitor Parking lot project will ensure that the museum will provide an invaluable visitor amenity that our audience demands. In consideration of our biking community, the new design will include additional bike racks. To “foster a greener profile”, it also will include two electrical charging stations for electric vehicles. The PMA will only work with a professional, trusted, and reputable 3rd party operator which will maintain and monitor the lot on behalf of the museum.

Sincerely,

A handwritten signature in black ink, reading "Mark H.C. Bessire". The signature is fluid and cursive, with the first name "Mark" being the most prominent.

Mark H.C. Bessire
Judy and Leonard Lauder Director
Portland Museum of Art

1. THE CONTRACTOR SHALL CALL THE APPROPRIATE UTILITY COMPANIES AND DIG SAFE AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION FOR UTILITIES. OTHERWISE IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION OF UNDERGROUND UTILITIES AND LOCATE ANY POTENTIAL CONFLICTS WITH THE APPROVED PLANS PRIOR TO CONSTRUCTION.
2. THE CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE OF ALL EROSION CONTROL MEASURES SHOWN ON THE PLAN. IF DEEMED NECESSARY BY THE OWNER OR OWNER'S REPRESENTATIVE (IF APPLICABLE), ADDITIONAL EROSION CONTROL MEASURES SHALL BE INSTALLED AT NO ADDITIONAL COST TO THE OWNER.
3. THE CONTRACTOR SHALL PREPARE THEIR OWN MATERIAL SCHEDULE BASED ON THE PLANS AND FIELD VERIFICATION BY THE CONTRACTOR. ALL MATERIAL SCHEDULES SHOWN WITHIN THE PLAN SET ARE FOR GENERAL INFORMATION ONLY.
4. ALL CONSTRUCTION METHODS, TESTING AND MATERIALS SHALL CONFORM TO THE MAINE DEPARTMENT OF TRANSPORTATION SPECIFICATIONS, THE CITY OF PORTLAND AND SERVICING UTILITY REQUIREMENTS, IF ANY. IN CASES WHERE THESE CONFLICT THE MOST STRINGENT SPECIFICATION SHALL APPLY AT NO ADDITIONAL COST TO THE OWNER.
5. THE SITE CONTRACTOR SHALL MAINTAIN A SET OF PAPER AND CAD DRAWINGS WHICH SHALL RECORD THE ACTUAL LOCATION, DIMENSIONS, ELEVATIONS, MATERIALS OF THEIR WORK, INDICATING THEREON ALL VARIATIONS FROM THE CONTRACT DRAWINGS. THE CONTRACTOR SHALL PROVIDE THE OWNER WITH ONE COMPLETE SET OF REPRODUCIBLE RECORD DRAWINGS, IN AUTOCAD FORMAT AND PAPER, STAMPED "AS-BUILT". IF AUTOCAD CAPABILITY IS NOT AVAILABLE, EXCLUDE FROM BID IN WRITING.
6. THE CONTRACTOR WILL REMAIN SOLELY AND COMPLETELY RESPONSIBLE FOR ENFORCEMENT OF AND COMPLIANCE WITH 1) ALL CONTRACT PLANS AND SPECIFICATIONS, 2) APPLICABLE INTERNATIONAL BUILDING CODE REQUIREMENTS, AND 3) ALL SITE WORKING CONDITIONS AND SAFETY REQUIREMENTS, DAY AND NIGHT, FOR BOTH PERSONS AND PROPERTY, IN EACH CASE BOTH BY THE CONTRACTOR AND ITS SUBCONTRACTORS. THESE INCLUDE ALL OSHA, NIOSH, U.S. EPA AND ANY OTHER APPLICABLE GOVERNMENTAL REGULATIONS.
7. EXISTING CONDITIONS, BOUNDARY SURVEY, AND TOPOGRAPHY FROM THE PLAN TITLED EXISTING CONDITIONS SURVEY BY SPURWINK SURVEYING FOR PORTLAND MUSEUM OF ART, DATED 2/7/19.
8. NO SUBSURFACE DATA HAS BEEN OBTAINED. THE CONTRACTOR SHALL ALSO REVIEW THE REPORT PRIOR TO SUBMITTING A BID.
9. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING ACCESS TO THE SITE AND ALL ADJACENT PROPERTIES AT ALL TIMES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY MARKINGS, SIGNAGE AND INCIDENTALS TO MAINTAIN A SAFE VEHICLE AND PEDESTRIAN ACCESS THROUGH THE LIFE OF THE PROJECT. THE CONTRACTOR SHALL NOTIFY THE PORTLAND PUBLIC SAFETY DIVISION ROUTINELY REGARDING TEMPORARY IMPACTS OR CHANGES TO SITE ACCESS CONDITIONS.
10. CONSTRUCTION MANAGEMENT PLAN BY ACORN ON SHEET C-03 OF CIVIL PLAN SET SHALL BE REFERRED TO FOR ANTICIPATED PROJECT SCHEDULE AND CLOSURES. TRAFFIC CONTROL SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
11. CONTRACTOR TO DETERMINE SOIL CLASSIFICATION INDEPENDENTLY FOR TRENCH, SHORING, AND OTHER SIMILAR CONSTRUCTION MEANS AND METHODS APPLICATIONS.
12. NO HOLES, TRENCHES, OR STRUCTURES SHALL BE LEFT OPEN OR UNATTENDED OVERNIGHT IN ANY AREA ACCESSIBLE TO THE PUBLIC OR WITHIN THE PUBLIC RIGHT-OF-WAY.
13. THE CONTRACTOR SHALL CONDUCT A PRE-CONSTRUCTION SURVEY OF INTERIOR SUBGRADE AND ABOVE GRADE ACCESSIBLE WALLS, CEILINGS, FLOORS, ROOF AND VISIBLE EXTERIOR AS VIEWED FROM THE GRADE LEVEL. THIS SHALL BE COMPLETED AT A MINIMUM FOR ADJACENT STRUCTURES. A COPY OF THE SURVEY SHOULD BE PROVIDED TO THE OWNER. DOCUMENT WITH PICTURES AT A MINIMUM.
14. THE CONTRACTOR SHALL SURVEY ROCK SURFACE PRIOR TO EXCAVATION AND DEVELOP VOLUME CALCULATIONS TO SHARE WITH THE ENGINEER, ACORN ENGINEERING INC. (ACORN), IF ANY.

1. THE CONTRACTOR SHALL SUBMIT IN WRITING ANY REQUESTS TO ACORN TO MODIFY THE CONTRACT DOCUMENTS.
2. ALL SHOP AND CONSTRUCTION DRAWINGS SHALL BE CHECKED AND STAMPED BY THE GENERAL CONTRACTOR PRIOR TO SUBMISSION FOR ACORN'S REVIEW. ANY UNCHECKED OR NON-STAMPED SUBMITTALS WILL BE RETURNED WITHOUT REVIEW.
3. CONTRACTOR SHALL THOROUGHLY INSPECT AND SURVEY EXISTING STRUCTURES AND SITE TO VERIFY CONDITIONS THAT AFFECT THE WORK SHOWN ON THE DRAWINGS. CONTRACTOR TO NOTIFY ACORN OF ANY DISCREPANCIES PRIOR TO PROCEEDING.
4. DETAILS SHOWN APPLY TO ALL SIMILAR CONDITIONS UNLESS OTHERWISE INDICATED.
5. ALTHOUGH ALL DUE DILIGENCE HAS BEEN APPLIED TO MAKE THE DRAWINGS AS COMPLETE AS POSSIBLE, NOT ALL DETAILS ARE ILLUSTRATED, NOR IS EVERY EXCEPTION CONDITION ADDRESSED WITHIN THE CONTRACT DOCUMENTS.
6. ALL PROPRIETARY CONNECTIONS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
7. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR THE COORDINATION OF ALL WORK, INCLUDING DIMENSION AND LAYOUT VERIFICATION, MATERIALS COORDINATION, SHOP DRAWING REVIEW, AND THE WORK OF ANY SUBCONTRACTORS.
8. UNLESS OTHERWISE SPECIFICALLY INDICATED, THE DRAWINGS DO NOT DESCRIBE OR DIRECT MEANS OR METHODS OF CONSTRUCTION.
9. THE CONTRACTOR, IN THE PROPER SEQUENCE, SHALL PERFORM OR SUPERVISE ALL WORK NECESSARY TO ACHIEVE THE FINAL COMPLETED STRUCTURE, AND TO PROTECT THE STRUCTURE, WORKMEN, AND OTHERS DURING THE CONSTRUCTION. SUCH WORK SHALL INCLUDE, BUT NOT BE LIMITED TO, BRACING, SHORING FOR CONSTRUCTION EQUIPMENT, SHORING FOR EXCAVATION, FORMWORK, SCAFFOLDING, SAFETY DEVICES AND PROGRAMS OF ALL KINDS, SUPPORT AND BRACING FOR CRANES AND OTHER ERECTION EQUIPMENT.
10. DO NOT BACKFILL AGAINST RETAINING WALLS UNTIL SUPPORTING SLABS AND FLOOR FRAMING ARE IN PLACE AND SECURELY ANCHORED, UNLESS ADEQUATE BRACING IS PROVIDED.
11. TEMPORARY BRACING SHALL REMAIN IN PLACE UNTIL ALL FLOORS, WALLS, ROOFS AND OTHER SUPPORTING ELEMENTS ARE IN PLACE, IF APPLICABLE.
12. ALL PAVEMENT JOINTS SHALL BE SAWCUT AND APPLIED WITH TACK COAT PRIOR TO PAVING. PROVIDE A DURABLE AND UNIFORM JOINT BY SAWCUTTING A VERTICAL FACE.
13. ACORN BEARS NO RESPONSIBILITY FOR THE ABOVE ITEMS, AND SITE OBSERVATION VISITS DO NOT IN ANY WAY INCLUDE INSPECTION OF THEM.

1. NORMAL REVIEWS BY LOCAL BUILDING DEPARTMENT.
2. CONTRACTOR SHALL NOTIFY OWNER AND/OR BUILDING DEPARTMENT 48 HOURS PRIOR TO REQUIRED REVIEW.
3. REQUIRED BACKFILL COMPACTION TESTS PER I.B.C. SECTION 1705.6 EXCEPTION BY AN APPROVED SPECIAL INSPECTOR RETAINED BY OWNER. CONTRACTOR TO COORDINATE SPECIAL INSPECTIONS.
4. SPECIAL INSPECTOR WILL BE A QUALIFIED PERSON WHO SHALL DEMONSTRATE COMPETENCE, TO THE SATISFACTION OF THE BUILDING OFFICIAL, FOR INSPECTION OF THE PARTICULAR TYPE OF CONSTRUCTION OR OPERATION REQUIRING SPECIAL INSPECTION.
5. DUTIES AND RESPONSIBILITIES OF THE SPECIAL INSPECTOR SHALL BE TO OBSERVE AND/OR TEST THE WORK ASSIGNED AND OUTLINED ABOVE FOR CONFORMANCE WITH THE CONTRACT DOCUMENTS, ALL DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION.
6. THE SPECIAL INSPECTOR WILL FURNISH REGULAR REPORTS TO THE BUILDING OFFICIAL, THE ARCHITECT AND ENGINEER OF RECORD, AND OTHER DESIGNATED PERSONS. PROGRESS REPORTS FOR CONTINUOUS INSPECTIONS WILL BE FURNISHED WEEKLY. INDIVIDUAL REPORTS OF PERIODIC INSPECTIONS SHALL BE FURNISHED WITHIN ONE WEEK OF INSPECTION DATES. THE REPORTS WILL NOTE UNCORRECTED DEFICIENCIES, AND NET CHANGES TO THE APPROVED CONSTRUCTION DOCUMENTS AUTHORIZED BY THE ENGINEER OF RECORD.
7. THE SPECIAL INSPECTOR WILL SUBMIT A FINAL SIGNED REPORT WITHIN TEN DAYS OF THE FINAL INSPECTION STATING WHETHER THE WORK REQUIRING A SPECIAL INSPECTION WAS, TO THE BEST OF THE INSPECTOR'S KNOWLEDGE AND BELIEF, IN CONFORMANCE WITH THE APPROVED CONSTRUCTION DOCUMENTS AND THE APPLICABLE WORKMANSHIP PROVISIONS OF THE INTERNATIONAL BUILDING CODE. WORK NOT IN COMPLIANCE SHALL BE NOTED IN THE REPORT.
8. CONTRACTOR TO CORRECT DEFICIENCIES TO THE SATISFACTION OF THE INSPECTOR AND ENGINEER.

1. MONUMENTS DELINEATING PROPERTY LINES OR RIGHT OF WAYS SHALL NOT BE DISTURBED DURING CONSTRUCTION OPERATIONS. IN THE CASE A MONUMENT IS DISTURBED, AT THE CONTRACTOR'S EXPENSE, THE MONUMENT SHALL BE RESET TO ITS ORIGINAL LOCATION AND ELEVATION BY A REGISTERED LAND SURVEYOR.
2. ALL DIMENSIONS ON THE FOLLOWING SHEETS TAKE PRECEDENT OVER SCALED DIMENSIONS. EACH DRAWING WITH A BAR SCALE MEANS THAT THE DRAWING/DETAIL HAS BEEN SCALED AS ACCURATELY AS POSSIBLE, AND THE BAR SCALE IS FOR GENERAL REFERENCE ONLY. IF NO BAR SCALE IS PRESENT, THEN THERE IS NO SCALE TO THAT DRAWING/DETAIL. AT NO TIME SHOULD DRAWINGS BE SCALED FROM. ANY DISCREPANCIES BETWEEN DRAWINGS, DETAILS, SPECIFICATIONS AND THE FIELD CONDITION SHALL BE IMMEDIATELY REPORTED TO ACORN FOR FURTHER DIRECTIONS BEFORE ANY ADDITIONAL WORK PROCEEDS.
3. SIGNAGE, STRIPING, AND PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
4. ALL TRAFFIC CONTROL SIGNS INDICATED ON THE SITE LAYOUT PLAN ARE TO MEET ALL REQUIREMENTS & CONDITIONS OF THE CITY OF PORTLAND, MAINE DEPARTMENT OF TRANSPORTATION AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.
5. THE CONTRACTOR SHALL OBTAIN THE SERVICES OF A LICENSED PROFESSIONAL LAND SURVEYOR TO PROVIDE A MINIMUM OF TWO TEMPORARY BENCHMARKS WITHIN THE SITE AND TO LOCATE PROPOSED STRUCTURE CORNERS.
6. CONTRACTOR TO ENSURE THAT DRIVEWAYS AND MAILBOXES ADJACENT TO THE PROJECT REMAIN FUNCTIONAL AND IN USE AT ALL TIMES.

1. THIS PROJECT IS SUBJECT TO THE TERMS AND CONDITIONS OF SITE PLAN – LEVEL II SITE PLAN FROM THE CITY OF PORTLAND.
2. THE CONTRACTOR SHALL REVIEW THE ABOVE REFERENCED PERMITS PRIOR TO SUBMITTING A BID FOR THIS PROJECT, AND INCLUDE COSTS AS NECESSARY TO COMPLY WITH THE CONDITIONS OF THESE PERMITS.
3. ALL WORK WITHIN THE PUBLIC RIGHT-OF-WAY REQUIRES A STREET OPENING PERMIT FROM THE CITY OF PORTLAND. ADDITIONALLY, COORDINATE WITH THE DEPARTMENT OF PUBLIC WORKS.

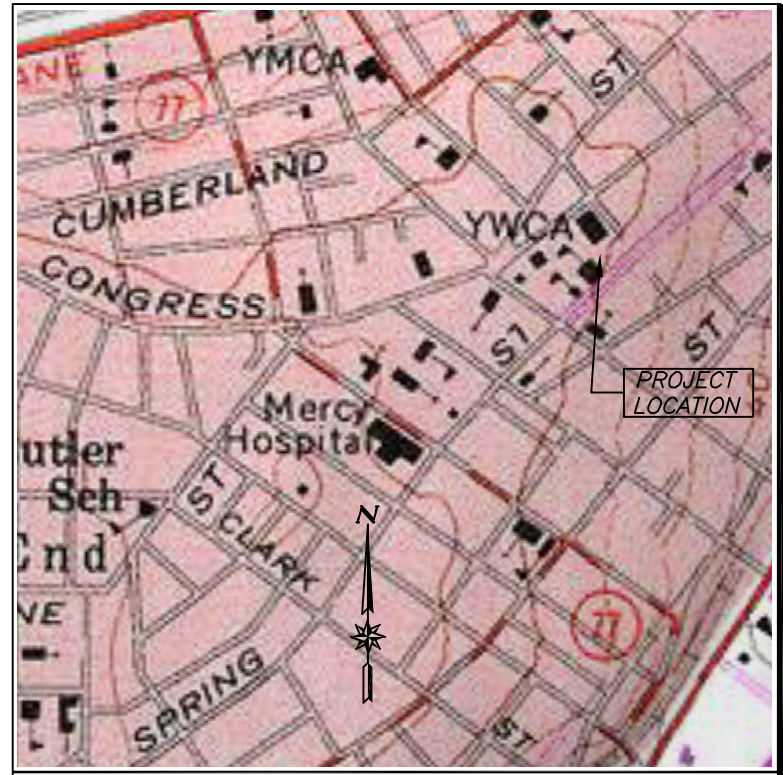
1. TOPSOIL STRIPPED FROM THE SITE THAT IS SUITABLE FOR REUSE AS LOAM SHALL BE STOCKPILED WITHIN THE PROPOSED LIMIT OF WORK AREA. THE CONTRACTOR SHALL NOT ASSUME THAT ANY LOAM WILL BE ACCEPTABLE FOR REUSE WITH THEIR ESTIMATE.
2. THE CONTRACTOR SHALL ANTICIPATE THAT GROUNDWATER WILL BE ENCOUNTERED DURING CONSTRUCTION AND SHALL INCLUDE SUFFICIENT COSTS WITHIN THEIR BID TO PROVIDE DEWATERING AS NECESSARY; NO SEPARATE PAYMENT SHALL BE MADE TO THE CONTRACTOR FOR DEWATERING.
3. THE OWNER SHALL BE RESPONSIBLE FOR OBTAINING ANY EASEMENT OR TEMPORARY CONSTRUCTION RIGHTS AS NECESSARY BY PRIVATE ADJACENT LAND OWNERS. THE CONTRACTOR SHALL NOT DISTURB ANY SOIL BEYOND THE PROPERTY LINE WITHOUT NOTIFYING AND OBTAINING SUCH EASEMENT OR TEMPORARY CONSTRUCTION RIGHT FROM THE ADJACENT LAND OWNERS. PRIOR TO THE CONTRACTOR PRICING THE WORK, THEY SHALL PROVIDE ACORN WITH PROOF OF SUCH EASEMENT OR TEMPORARY RIGHTS. SHOULD EASEMENTS OR TEMPORARY RIGHTS NOT BE AVAILABLE, THE CONTRACTOR SHALL INCLUDE COST FOR BRACING AND SHORING AS NECESSARY.
4. THE CONTRACTOR SHALL PROVIDE A FINISH PAVEMENT SURFACE FREE OF LOW SPOTS AND PONDING AREAS. THE MINIMUM SLOPE SHALL MEET OR EXCEED 0.5% IN ALL CASES. ALL SLOPES SHALL BE AWAY FROM BUILDINGS AND TOP OF PAVEMENT SHALL BE AT OR BELOW EXISTING FINISH FLOOR ELEVATIONS.
5. NO ADDITIONAL PAYMENT FOR UNSUITABLE MATERIALS.
6. ALL STORM DRAIN PIPE SHALL BE SMOOTH BORE INTERIOR PROVIDING A MANNINGS ROUGHNESS COEFFICIENT OF $N=0.012$ OR LESS.
7. ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE.
8. NATIVE SOILS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO LIMIT THE DISTURBANCE TO SUBGRADE SOILS. SHOULD THE SUBGRADE BECOME YIELDING OR DIFFICULT TO WORK, CONTACT ACORN. THE DISTURBED AREAS SHALL BE EXCAVATED AND BACKFILLED WITH COMPACTED SELECT FILL OR CRUSHED STONE AT NO ADDITIONAL EXPENSE TO THE OWNER. ALL SUBGRADE PREPARATION IS SUBJECT TO THE RECOMMENDATIONS OF THE PROJECT GEOTECHNICAL ENGINEER, IF APPLICABLE.

1. ALL ROUTINE MAINTENANCE ACTIVITIES SHALL BE CONDUCTED IN SUCH A WAY TO LIMIT THE AMOUNT OF DISTURBED AREA AT ONE TIME TO THE EXTENT PRACTICABLE.
2. PRIOR TO THE START OF ANY CLEARING/LAND DISTURBING ACTIVITIES, THE CONTRACTOR SHALL INSTALL APPLICABLE EROSION CONTROL DEVICES SUCH AS PERIMETER SILT FENCE, AND OTHER APPLICABLE MEASURES. IN THE EVENT THE CONTRACTOR IS NOT SURE A EROSION CONTROL MEASURE SHOULD BE IMPLEMENTED, THE CONTRACTOR SHALL CONTACT THE ENGINEER OF RECORD TO CONFIRM IMPLEMENTATION OF ANY EROSION CONTROL DEVICES.
3. ALL GROUND AREAS GRADED FOR CONSTRUCTION SHALL BE GRADED, LOADED, SEEDED AND MULCH SHALL BE APPLIED AS SOON AS POSSIBLE WITHIN 7 DAYS FOLLOWING THE COMPLETION OF ANY SOIL DISTURBANCE, AND PRIOR TO ANY STORM EVENT.
4. EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSTALLED TO THE SATISFACTION OF THE CITY. THE CONTRACTOR SHALL REFERENCE THE APPROVED EROSION AND SEDIMENTATION CONTROL REPORT FOR TEMPORARY AND PERMANENT EROSION AND SEDIMENTATION CONTROL DEVICES IN ADDITION TO THE PLAN SET. THE CONTRACTOR SHALL ALSO REFER TO THE MAINE D.E.P.'S PERMIT CONDITIONS, FINDINGS OF FACT AND ORDER (IF ANY), AND THE CURRENT MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL FOR ADDITIONAL INFORMATION.
5. PRIOR TO PAVING, THE CONTRACTOR SHALL REMOVE ALL SEDIMENT FROM STORM DRAINS, CATCH BASINS, AND APPURTENANCES.
6. REFER TO THE EROSION CONTROL DETAILS & NOTES FOR ADDITIONAL INFORMATION.

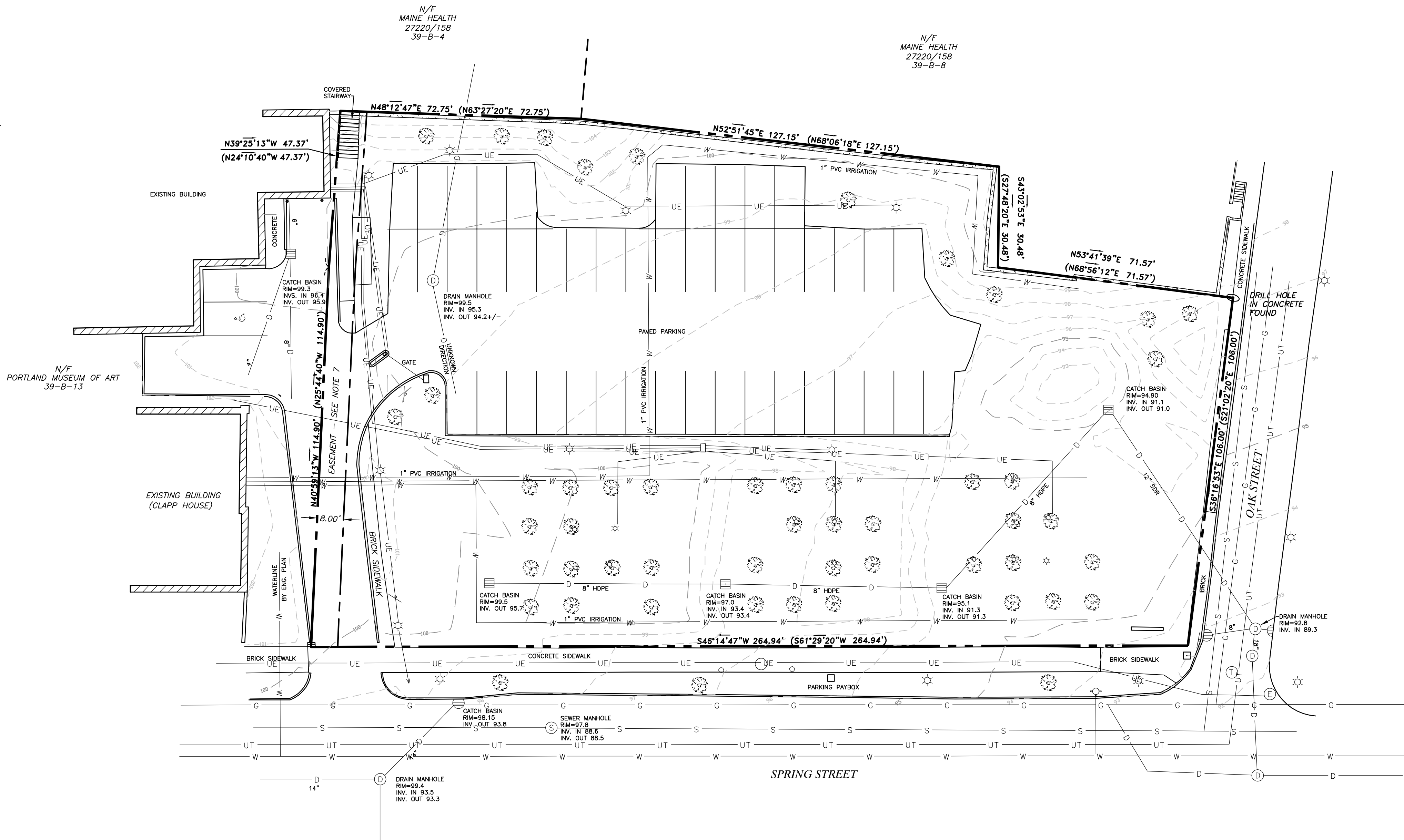
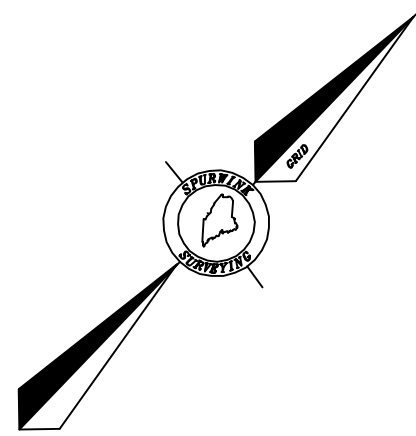
1. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND ELEVATION OF THE EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED UPON RECORDS OF VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THIS INFORMATION IS NOT TO BE RELIED UPON AS BEING EXACT OR COMPLETE. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO TEST PIT TO DETERMINE THE EXACT LOCATION AND ELEVATION OF UTILITIES TO COORDINATE WITH THE PROPOSED CONNECTIONS OR CROSSING. ANY DISCREPANCIES SHALL BE IMMEDIATELY REPORTED TO ACORN FOR FURTHER DIRECTIONS BEFORE ANY ADDITIONAL WORK PROCEEDS.
2. CONTRACTOR SHALL, AT NO ADDITIONAL COST TO THE OWNER, CONDUCT EXPLORATORY EXCAVATIONS AT LOCATIONS WHERE PROPOSED EXCAVATION WILL INTERSECT WITH EXISTING UTILITIES, PRIOR TO THE ORDERING OF STRUCTURES.
3. ALL NEW SANITARY MANHOLES SHALL BE VACUUM TESTED BEFORE BACKFILLING. TESTING SHALL BE COMPLETED IN ACCORDANCE WITH TECHNICAL REPORT #16 (CTR 16): GUIDES FOR THE DESIGN OF WASTEWATER TREATMENT WORKS, PREPARED BY THE NEW ENGLAND INTERSTATE WATER POLLUTION CONTROL COMMISSION.
4. SEWER MANHOLES SHALL BE 4' ID UNLESS OTHERWISE STATED ON THE PLANS.
5. CONTRACTOR TO PROVIDE 5' OF COVER FROM TOP OF PIPE TO FINISH GRADE FOR WATER MAINS.
6. WATER INFRASTRUCTURE SHALL BE TESTED IN ACCORDANCE WITH THE PORTLAND WATER DISTRICT DOCUMENT "WATER AND SEWER CONSTRUCTION SPECIFICATIONS AND PROCEDURE", MOST RECENT REVISION.
7. ALL REQUIRED FITTINGS FOR THE WATER MAIN ARE NOT SHOWN ON DRAWINGS. CONTRACTOR SHALL FURNISH AND INSTALL ALL NECESSARY FITTINGS REQUIRED TO CONSTRUCT THE WATER MAIN IN ACCORDANCE WITH CITY OF PORTLAND, STATE OF MAINE, AND AMERICAN WATER WORKS ASSOCIATION STANDARDS AND REGULATIONS.
8. CONTRACTOR SHALL COORDINATE WORK REGARDING ANY WATER MAIN CONNECTION AND WATER MAIN SHUTDOWN WITH THE PORTLAND WATER DISTRICT AT LEAST SEVEN (7) DAYS PRIOR TO CONSTRUCTION.

1. THE FOLLOWING ITEMS ARE TYPICAL OF MATERIAL WHICH MAY STILL REMAIN AFTER SITE DEMOLITION OCCURS:
 - ROCK AND CONCRETE FOUNDATIONS
 - CONCRETE SLABS
 - BITUMINOUS ASPHALT PAVEMENT
 - CONCRETE PADS AND BLOCKS
 - FENCE POST AND FENCING
 - UNDERGROUND UTILITY LINES
 - ABOVE AND OR BELOW FUEL OIL AND PROPANE GAS TANKS
 - STORM DRAIN PIPES AND APPURTENANCE STRUCTURES
 - OTHER TRASH & MISCELLANEOUS SOLID WASTES
2. THE CONTRACTOR IS ADVISED TO VISIT THE SITE TO CONFIRM DEMOLITION ITEMS SINCE THE LIST IS NOT INCLUSIVE OF THE SITE CONDITIONS WHICH MAY BE ENCOUNTERED.
3. ALL DISPOSAL OF DEMOLITION DEBRIS OR WASTE SHALL BE IN ACCORDANCE WITH ALL LOCAL, STATE, & FEDERAL REGULATIONS. CONTRACTORS SHALL PROVIDE OWNER WITH APPROPRIATE "BILLS OF LADING" DEMONSTRATING PROPER DISPOSAL OF ALL MATERIALS.
4. THE CLIENT HAS NOT REQUESTED NOR HAS ACORN COMPLETED A PHASE I – ENVIRONMENTAL SITE ASSESSMENT FOR THE PROPERTY.

		ISSUED FOR	BY
		DATE	
		LEVEL II SITE PLAN	WHS 3/7/19
DRAWING NAME:	GENERAL NOTES	PMA VISITOR PARKING LOT PROJECT	PORTLAND MUSEUM OF ART 7 CONGRESS SQUARE PORTLAND, MAINE 04101
PROJECT NAME:			
CLIENT:			
		THIS PLAN SHALL NOT BE MOVED, WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY ALTERATIONS AUTHORIZED BY THE CLIENT MUST BE MADE IN ALL PLANS AND SPECIFICATIONS WITHOUT LIABILITY TO ACORN ENGINEERING, INC.	
		ACORN ENGINEERING, INC. 65 HANOVER ST., PORTLAND, MAINE (4101) (207) 775-2655	
FILE:	1111_CIVIL		
JN:	1111		
SCALE:	AS NOTED		
DESIGNED BY:	FRT		
DRAWN BY:	FRT		
CHECKED BY:	WHS		
			
DRAWING NO.			
C-02			



VICINITY MAP
N.T.S.



LEGEND

- #5 REBAR WITH PLASTIC CAP STAMPED #2028
- FOUND IRON PIPE (SIZE & TYPE AS NOTED)
- FOUND PINCHED IRON PIPE
- FOUND MONUMENT (SIZE & TYPE AS NOTED)
- FOUND IRON ROD
- FOUND CAPPED IRON ROD (NUMBER AS NOTED)
- UTILITY POLE (NUMBER AS NOTED)
- GUY WIRE ANCHOR
- FIRE HYDRANT
- LIGHT POLE
- CATCH BASIN
- SEWER MANHOLE
- DRAIN MANHOLE
- TELEPHONE MANHOLE
- SIGN
- BOLLARD
- FOUND TREE (SIZE & TYPE AS NOTED)
- BOUNDARY LINE
- ABUTTER LINE
- SETBACK LINE
- EDGE OF GRAVEL
- EDGE OF PAVEMENT
- RIGHT-OF-WAY LINE
- STOCKADE FENCE
- OVERHEAD UTILITY
- SEWER LINE
- WATER LINE
- GAS LINE
- N/F
- 1234/567
- 12-3-45
- (123.45)
- NOW OR FORMERLY OWNED BY
- DEED BOOK AND PAGE (CCRD)
- TAX MAP-BLOCK-LOT
- PARENTHESIS DENOTE RECORD DATA

NOTES

- THE BASIS OF BEARING FOR THIS SURVEY IS MAINE STATE GRID, WEST ZONE. THE DEED BEARING ARE SHOWN IN PARENTHESES. ELEVATIONS AND CONTOURS ARE REFERENCED TO NGVD29 PER CITY OF PORTLAND REQUIREMENTS.
- DEED AND PLAN BOOK REFERENCES ARE TO THE CUMBERLAND COUNTY REGISTRY OF DEEDS.
- RECORD OWNERSHIP OF THE PARCEL SURVEYED CAN BE FOUND IN A DEED FROM THE YOUNG WOMAN'S CHRISTIAN ASSOCIATION OF PORTLAND, MAINE TO PORTLAND MUSEUM OF ART DATED JULY 10, 2007 AND RECORDED IN DEED BOOK 25275, PAGE 282.
- REFERENCE IS MADE TO THE FOLLOWING PLANS:
 - a. "ALTA/ACSM LAND TITLE SURVEY AT 87 SPRING STREET, PORTLAND, MAINE MADE FOR MAINE STATE HOUSING AUTHORITY" BY OWEN HASKELL, INC. DATED DECEMBER 1, 2008. REFERENCE TO FILE NUMBER 2008-248P.
 - b. "STANDARD BOUNDARY SURVEY FREE STREET, PORTLAND, MAINE, RECORDING PLAT, MUSEUM ROW" FOR MUSEUM ROW REALTY TRUST BY LAND USE CONSULTANTS DATED SEPTEMBER 16, 1996. ON FILE AT CITY OF PORTLAND ENGINEERING OFFICE.
 - c. "UNTITLED AS-BUILT PLAN BY R.E. COLEMAN EXCAVATION, INC. AND MOHR & SEREDIN DATED APRIL 15, 2008, ON FILE AT CITY OF PORTLAND ENGINEERING OFFICE.
 - d. "CITY OF PORTLAND, MAINE DEPARTMENT OF PUBLIC WORKS, AS-BUILT PLAN, SPRING-MIDDLE ARTERIAL" SHEET 4 OF 14 BY FAX, SPOFFORD & THORNDIKE, INC. ON FILE AT CITY OF PORTLAND ENGINEERING OFFICE, REFERENCE TO FILE #494/2.
 - e. "CITY OF PORTLAND, MAINE, DEPARTMENT OF PUBLIC WORKS, ENGINEERING DIVISION, STREET LINE SHEETS.
- THE SURVEYED PARCEL IS IDENTIFIED ON THE CITY OF PORTLAND TAX ASSESSOR'S MAP 39, BLOCK B, PARCEL 15.
- THE SURVEYED PARCEL CONTAINS 38,737 SQUARE FEET OR 0.89 ACRES.
- REFERENCE IS MADE FOR AN EASEMENT FOR ACCESS AND MAINTAINANCE PURPOSES CONVEYED FROM THE YOUNG WOMAN'S CHRISTIAN ASSOCIATION TO HARPER HOTELS DATED SEPTEMBER 30, 1992 AND RECORDED AT CUMBERLAND COUNTY REGISTRY OF DEEDS IN BOOK 10376, PAGE 112.
- THE UTILITIES SHOWN ON THIS PLAN WERE FROM FIELD OBSERVATION AND AN ASBUILT PLAN PROVIDED BY THE CITY OF PORTLAND ENGINEERING OFFICE ONLY. THERE MAY BE OTHER UTILITIES EXISTING THAT ARE NOT SHOWN. CONTACT DIG-SAFE (888)DIG-SAFE PRIOR TO ANY EXCAVATION WORK.

Revised:	By:	Date:	Change:
PROJECT: 201904	DRAWING NAME: PMA	DATE: JANUARY 24, 2019	SCALE: 1"=20'
FILED BY: J.A.M. & J.B.P.	FIELD DATE: JANUARY 2019	FB # 14	E. FB Y

BOUNDARY/EXISTING CONDITIONS SURVEY
87 SPRING STREET, PORTLAND, MAINE 04101

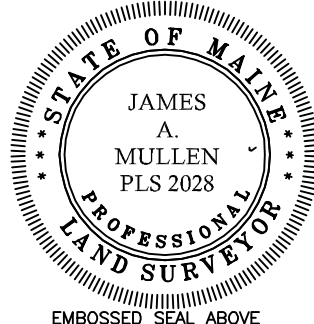
Owner:
PORTLAND MUSEUM OF ART
7 CONGRESS SQUIRE, PORTLAND, MAINE 04101

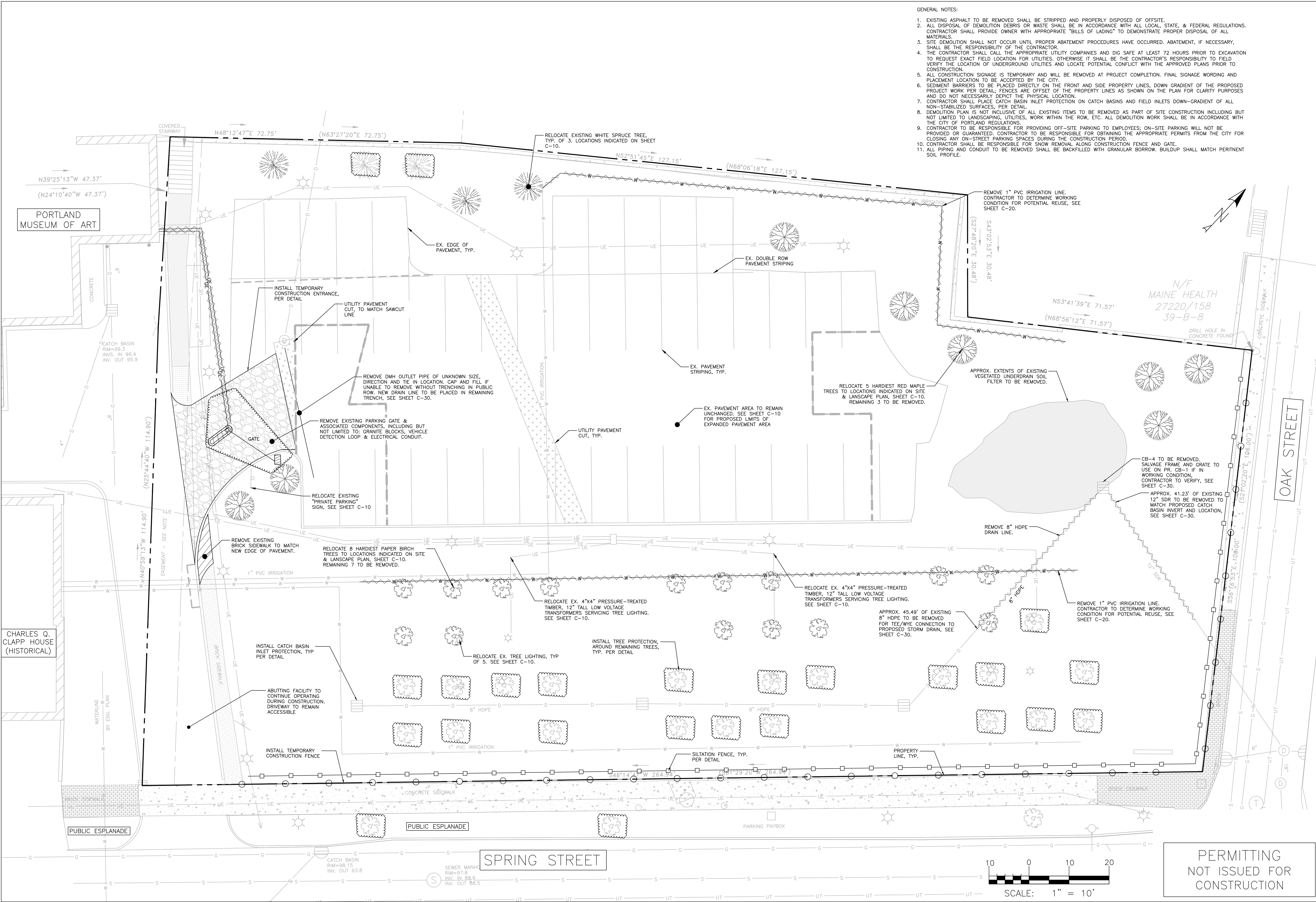
Prepared for:
PORTLAND MUSEUM OF ART
7 CONGRESS SQUIRE, PORTLAND, MAINE 04101

SURVEYING LAND PLANNING
Spurwink Surveying
INCORPORATED
182 SPURWINK ROAD, SCARBOROUGH, MAINE
tel 207.799.2654 cell 207.321.8966 e-mail spurwinksurveying@gmail.com
0 20' 40' 60'

STAMP AND SIGNATURE

James A. Mullen FEBRUARY 7, 2019
JAMES A. MULLEN MAINE P.L.S. No. 2028 DATE
IF THIS PLAN DOES NOT CONTAIN AN EMBOSSED SEAL, IT IS NOT AN ORIGINAL AND MAY BE VOID. EMBOSSED SEAL ABOVE





- GENERAL NOTES:
1. EXISTING ASPHALT TO BE REMOVED SHALL BE STRIPPED AND PROPERLY DISPOSED OF OFFSITE.
 2. ALL DISPOSAL OF DEMOLITION DEBRIS OR WASTE SHALL BE IN ACCORDANCE WITH ALL LOCAL, STATE, & FEDERAL REGULATIONS. CONTRACTOR SHALL PROVIDE OWNER WITH APPROPRIATE "BILLS OF LADING" TO DEMONSTRATE PROPER DISPOSAL OF ALL MATERIALS.
 3. SITE DEMOLITION SHALL NOT OCCUR UNTIL PROPER ABATEMENT PROCEDURES HAVE OCCURRED. ABATEMENT, IF NECESSARY, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
 4. THE CONTRACTOR SHALL CALL THE APPROPRIATE UTILITY COMPANIES AND DIG-SAFE AT LEAST 72 HOURS PRIOR TO EXCAVATION TO REQUEST EXACT FIELD LOCATION FOR UTILITIES. OTHERWISE IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION OF UNDERGROUND UTILITIES AND LOCATE POTENTIAL CONFLICT WITH THE APPROVED PLANS PRIOR TO CONSTRUCTION.
 5. ALL CONSTRUCTION SIGNAGE IS TEMPORARY AND WILL BE REMOVED AT PROJECT COMPLETION. FINAL SIGNAGE WORDING AND PLACEMENT LOCATION TO BE ACCEPTED BY THE CITY.
 6. SEDIMENT BARRIERS TO BE PLACED DIRECTLY ON THE FRONT AND SIDE PROPERTY LINES, DOWN GRADIENT OF THE PROPOSED PROJECT WORK PER DETAIL; FENCES ARE OFFSET OF THE PROPERTY LINES AS SHOWN ON THE PLAN FOR CLARITY PURPOSES AND DO NOT NECESSARILY DEPICT THE PHYSICAL LOCATION.
 7. CONTRACTOR SHALL PLACE CATCH BASIN INLET PROTECTION ON CATCH BASINS AND FIELD INLETS DOWN-GRADIENT OF ALL NON-STABILIZED SURFACES, PER DETAIL.
 8. DEMOLITION PLAN IS NOT INCLUSIVE OF ALL EXISTING ITEMS TO BE REMOVED AS PART OF SITE CONSTRUCTION INCLUDING BUT NOT LIMITED TO LANDSCAPING, UTILITIES, WORK WITHIN THE ROW, ETC. ALL DEMOLITION WORK SHALL BE IN ACCORDANCE WITH THE CITY OF PORTLAND REGULATIONS.
 9. CONTRACTOR TO BE RESPONSIBLE FOR PROVIDING OFF-SITE PARKING TO EMPLOYEES; ON-SITE PARKING WILL NOT BE PROVIDED OR GUARANTEED. CONTRACTOR TO BE RESPONSIBLE FOR OBTAINING THE APPROPRIATE PERMITS FROM THE CITY FOR CLOSING ANY ON-STREET PARKING SPACES DURING THE CONSTRUCTION PERIOD.
 10. CONTRACTOR SHALL BE RESPONSIBLE FOR SNOW REMOVAL ALONG CONSTRUCTION FENCE AND GATE.
 11. ALL PIPING AND CONDUIT TO BE REMOVED SHALL BE BACKFILLED WITH GRANULAR BORROW. BUILDUP SHALL MATCH PERTINENT SOIL PROFILE.

ISSUED FOR	BY
LEVEL II SITE PLAN	WHS
	3/2/19

DRAWING NAME:	CONSTRUCTION MANAGEMENT PLAN
PROJECT NAME:	PMA VISITOR PARKING LOT PROJECT
CLIENT:	PORTLAND MUSEUM OF ART
	7 CONGRESS SQUARE PORTLAND, MAINE 04101

FILE:	1111_CIVIL
JN:	1111
SCALE:	AS NOTED
DESIGNED BY:	FRT
DRAWN BY:	FRT
CHECKED BY:	WHS

DRAWING NO.	C-03
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1. CONTRACTOR TO MAINTAIN A ONE YEAR WARRANTY ON ALL PLANTINGS FOLLOWING INSTALLATION.
2. NO PLANTING TO BE INSTALLED UNTIL ALL GRADING AND CONSTRUCTION HAS BEEN COMPLETED IN THE IMMEDIATE AREA.
3. ANY SUBSTITUTIONS TO THE PLANTING SCHEDULE ARE TO BE REVIEWED FOR APPROVAL BY THE CITY ARBORIST.
4. ALL PROPOSED GREEN SPACE AND ASSOCIATED PLANT SPECIES ARE TO COMPLY WITH THE CITY OF PORTLAND TECHNICAL STANDARDS. ANY SUBSTITUTIONS WILL BE REVIEWED FOR APPROVAL BY THE CITY ARBORIST.
5. NO PLANTING SHALL BE INSTALLED UNTIL ALL GRADING AND CONSTRUCTION HAS BEEN COMPLETED IN THE IMMEDIATE AREA.
6. PRIOR TO VERIFYING ALL UTILITIES ARE PROTECTED AND TO PROTECT AND TO PROTECT ALL UTILITIES DURING EXCAVATION FOR PLANTS.
7. ALL CONTAINER MATERIAL TO BE GROWN IN CONTAINER - MINIMUM OF 6 MONTHS.
8. ALL MATERIAL SHALL COMPLY WITH THE LATEST EDITION OF THE AMERICAN STANDARD FOR NURSERY STOCK, AMERICAN ASSOCIATION OF NURSERYMAN.
9. THE CONTRACTOR SHALL REPAIR ALL DAMAGE TO EXISTING PLANTS FROM PLANTING OPERATIONS AND SHALL BE RESPONSIBLE FOR ANY DAMAGE TO EXISTING PLANTS.
10. THE PROPERTY OWNER IS RESPONSIBLE FOR THE CONTINUED CARE AND MAINTENANCE OF THE LANDSCAPED AREA. TRANSPLANTED PLANTINGS THAT SHOW SIGNS OF CONSTRUCTION DAMAGE WITHIN A ONE YEAR PERIOD FOLLOWING CONSTRUCTION SHALL BE REJECTED AND REPLACED PRIOR TO ANY DEFECT GUARANTEE AT NO COST TO THE OWNER.
11. THE ENGINEER MAY TAG ALL PLANTS AT THE NURSERY AND INSPECT THEM AFTER DELIVERY TO THE SITE; ALL PLANT MATERIALS SHALL BE INSPECTED BY THE ENGINEER ON SITE PRIOR TO INSTALLATION.
12. SEE PERMANENT SEEDING TABLE ON EROSION AND SEDIMENTATION CONTROL NOTES & DETAILS FOR LOAM AND SEED AREAS.
13. CURRENT LANDSCAPE SPECIES BASED UPON HISTORICAL MOHR & SEREDIN "LANDSCAPE AND PLANTING PLAN", DATED 3/28/08.

EXISTING = 47 SPACES
PROPOSED = 69 SPACES
8.5'X18', 90° SPACES (6)
STANDARD, 75° SPACES (50)
STANDARD, 75° ADA SPACES (3)
COMPACT, 9'X15' 75° SPACES (10)

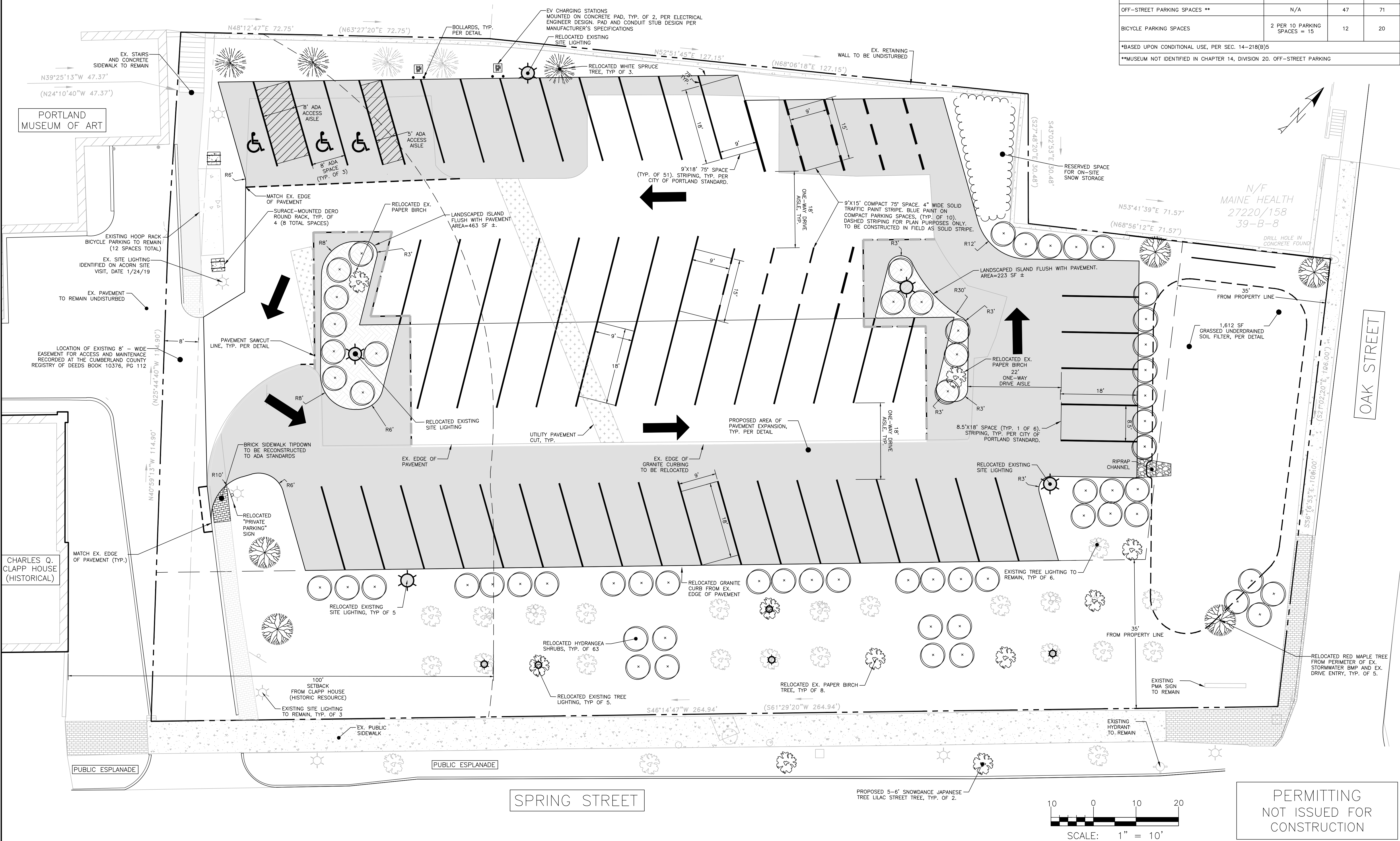
1. ALL BRICK SIDEWALK AND VERTICAL GRANITE CURB TO BE REPLACED SHALL BE
REBUILT TO CITY OF PORTLAND STANDARDS.
2. ALL PAVEMENT STRIPING AND MARKINGS SHALL COMPLY TO CITY OF PORTLAND
STANDARDS.
3. ANY ASPHALT TO BE REMOVED SHALL BE STRIPPED AND PROPERLY DISPOSED OF
OFFSITE.
4. CURB TO BE REMOVED, STOCKPILED AND RESET IN ACCORDANCE WITH DETAIL. BROKEN
CURB SHALL BE PROPERLY DISPOSED OF AND SHALL BE REPLACED AT THE
CONTRACTOR'S EXPENSE.
5. ALL RAMPS TO CONFORM TO ADA GUIDELINES. SLOPE SHALL NOT EXCEED 1 INCH PER
FOOT.
6. ALL SITE SIGNAGE TO COMPLY WITH MUTCD STANDARDS. CONTRACTOR TO COORDINATE
AND INSTALL.
7. FOLLOWING COMPLETION OF CONSTRUCTION, THE OWNER SHALL BE RESPONSIBLE FOR
THE MAINTENANCE AND MANAGEMENT OF DRIVEWAYS, SITE LIGHTING, TRASH REMOVAL
AND SNOW REMOVAL.

LOCATION	EXISTING (SF)	PROPOSED (SF)
PAVEMENT & CURBS	13,784	21,196
RETAINING WALL, WALKWAYS & BIKE HOOPS	1,203	1,190
GRANITE BLOCK & SIGN	13	10
TOTAL	15,000	22,396

ZONES: DOWNTOWN BUSINESS (B-3): DOWNTOWN ENTERTAINMENT OVERLAY ZONE (DEOZ)	REQUIRED	EXISTING	PROPOSED
MINIMUM LOT SIZE	NONE	38,737 SF	38,737 SF
MINIMUM STREET FRONTAGE	15 FT	106 FT	106 FT
MINIMUM YARD DIMENSIONS	NONE	N/A	N/A
MINIMUM LOT WIDTH	NONE	N/A	N/A
MAXIMUM LOT COVERAGE	100%	38.7%	57.8%
SURFACE PARKING SETBACK FROM STREET*	35 FT	63.8 FT	35 FT
OFF-STREET PARKING SPACES **	N/A	47	71
BICYCLE PARKING SPACES	2 PER 10 PARKING SPACES = 15	12	20

*BASED UPON CONDITIONAL USE, PER SEC. 14-218(B)5

**MUSEUM NOT IDENTIFIED IN CHAPTER 14, DIVISION 20. OFF-STREET PARKING

[illegible]

DRAWING NAME: SITE & LANDSCAPE PLAN

PROJECT NAME: PMA VISITOR PARKING LOT PROJECT

CLIENT: PORTLAND MUSEUM OF ART
7 CONGRESS SQUARE, PORTLAND, MAINE 04101

ACORN ENGINEERING, INC.
65 HANOVER ST., PORTLAND, MAINE 04101
(207) 775-2655

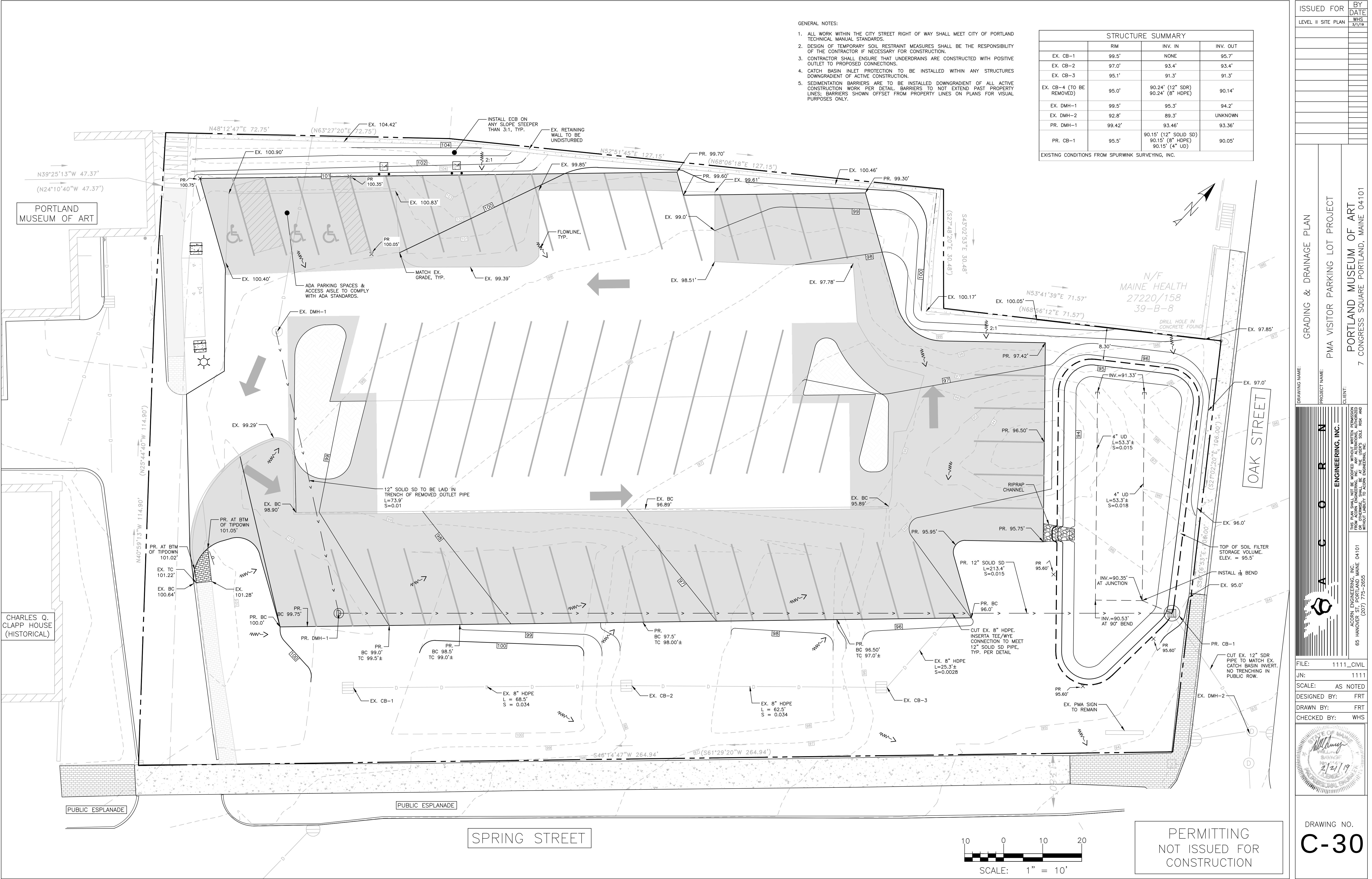
A C O R N

ENGINEERING, INC.

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY ALLEGATIONS, AUTHORIZED REPRESENTATIVES, OR ANY OTHER PARTY'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

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SCALE:	AS NOTED
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DRAWING NO.
C-10



- GENERAL NOTES:
1. ALL WORK WITHIN THE CITY STREET RIGHT OF WAY SHALL MEET CITY OF PORTLAND TECHNICAL MANUAL STANDARDS.
 2. DESIGN OF TEMPORARY SOIL RESTRAINT MEASURES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR IF NECESSARY FOR CONSTRUCTION.
 3. CONTRACTOR SHALL ENSURE THAT UNDERDRAINS ARE CONSTRUCTED WITH POSITIVE OUTLET TO PROPOSED CONNECTIONS.
 4. CATCH BASIN INLET PROTECTION TO BE INSTALLED WITHIN ANY STRUCTURES DOWNGRADIENT OF ACTIVE CONSTRUCTION.
 5. SEDIMENTATION BARRIERS ARE TO BE INSTALLED DOWNGRADIENT OF ALL ACTIVE CONSTRUCTION WORK PER DETAIL. BARRIERS TO NOT EXTEND PAST PROPERTY LINES; BARRIERS SHOWN OFFSET FROM PROPERTY LINES ON PLANS FOR VISUAL PURPOSES ONLY.

STRUCTURE SUMMARY			
	RIM	INV. IN	INV. OUT
EX. CB-1	99.5'	NONE	95.7'
EX. CB-2	97.0'	93.4'	93.4'
EX. CB-3	95.1'	91.3'	91.3'
EX. CB-4 (TO BE REMOVED)	95.0'	90.24' (12" SDR) 90.24' (8" HDPE)	90.14'
EX. DMH-1	99.5'	95.3'	94.2'
EX. DMH-2	92.8'	89.3'	UNKNOWN
PR. DMH-1	99.42'	93.46'	93.36'
PR. CB-1	95.5'	90.15' (12" SOLID SD) 90.15' (8" HDPE) 90.15' (4" UD)	90.05'

EXISTING CONDITIONS FROM SPURWINK SURVEYING, INC.

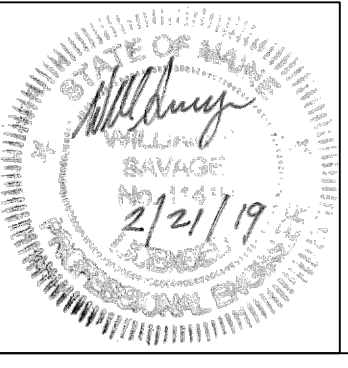
ISSUED FOR	BY
LEVEL II SITE PLAN	WHS
	3/2/19

DRAWING NAME: GRADING & DRAINAGE PLAN
PROJECT NAME: PMA VISITOR PARKING LOT PROJECT
CLIENT: PORTLAND MUSEUM OF ART
7 CONGRESS SQUARE PORTLAND, MAINE 04101

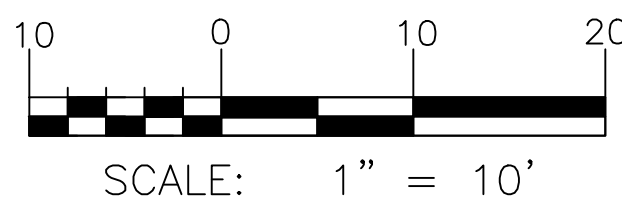
ACORN ENGINEERING, INC.
65 HANOVER ST. PORTLAND MAINE 04101
(207) 775-2655

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY ALTERATIONS, AUTHORIZED OR UNAUTHORIZED, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.

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JN: 1111
SCALE: AS NOTED
DESIGNED BY: FRT
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CHECKED BY: WHS



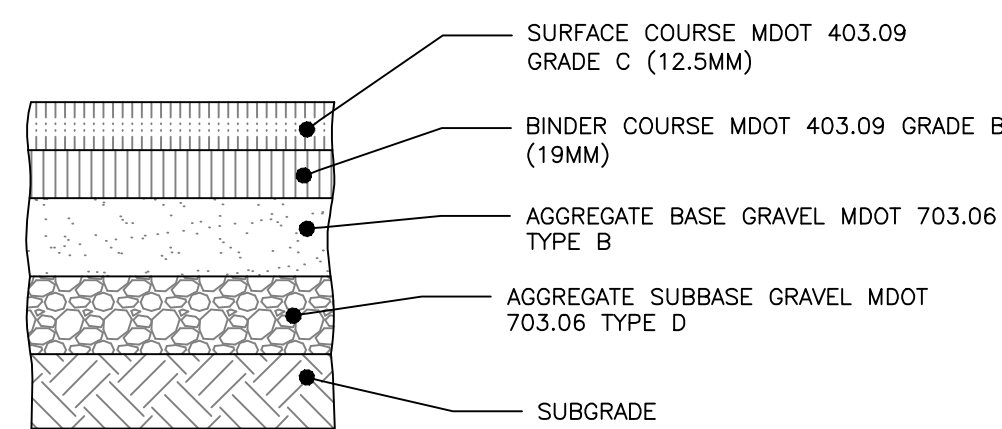
DRAWING NO.
C-30



PERMITTING
NOT ISSUED FOR
CONSTRUCTION

1. SAWCUT EXISTING PAVEMENT AND REMOVE 2' STRIP OF EXISTING PAVEMENT. APPLY BITUMINOUS TACK COAT PRIOR TO PLACEMENT OF NEW BITUMINOUS PAVEMENT.
2. THE NEW PAVEMENT SECTION SHALL MEET THE BITUMINOUS PAVEMENT: INTERNAL PARKING LOT DETAIL AT A MINIMUM OR THE EXISTING PAVEMENT AND AGGREGATE BASE AND SUBBASE DEPTH WHICHEVER IS GREATER.

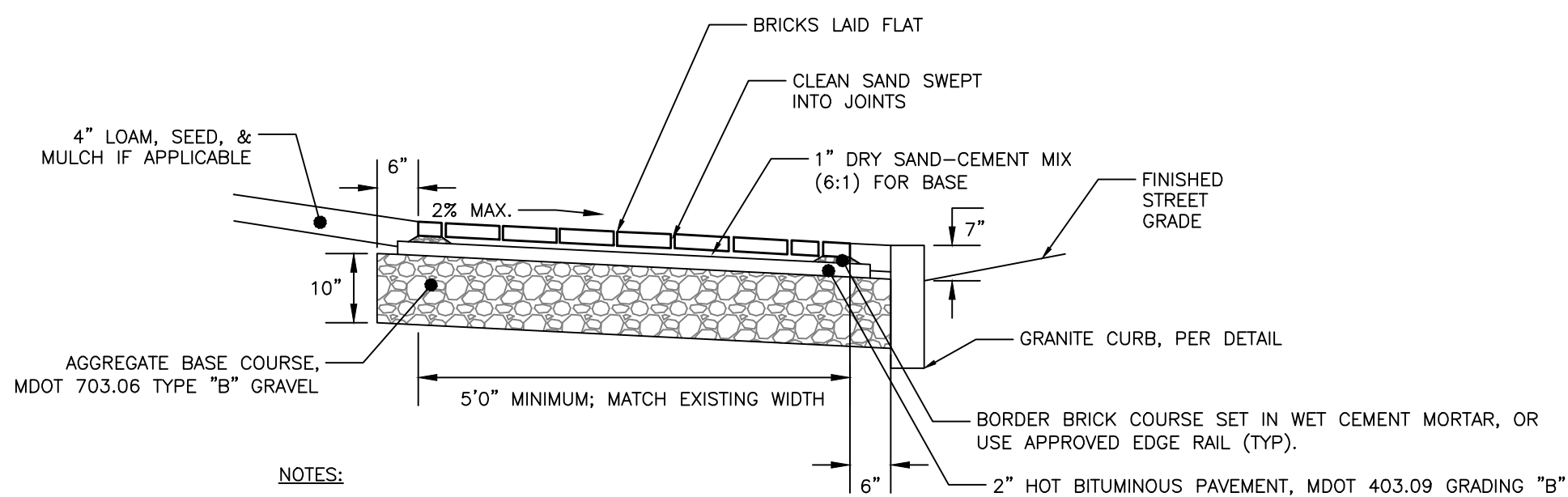
PAVEMENT SAWCUT DETAIL
NOT TO SCALE



NOTE:
COMPACT SUBGRADE TO 95% MAXIMUM DRY
DENSITY IN ACCORDANCE WITH ASTM D-1557

THICKNESS OF LAYERS	
STANDARD	LAYERS
1-1/2"	SURFACE COURSE MDOT 403.09 GRADE C (12.5mm)
2"	BINDER COURSE MDOT 403.09 GRADE B (19mm)
3"	AGGREGATE BASE GRAVEL MDOT 703.06 TYPE B
15"	AGGREGATE SUBBASE GRAVEL MDOT 703.06 TYPE D

BITUMINOUS PAVEMENT PROFILE:
INTERNAL PARKING LOT
NOT TO SCALE



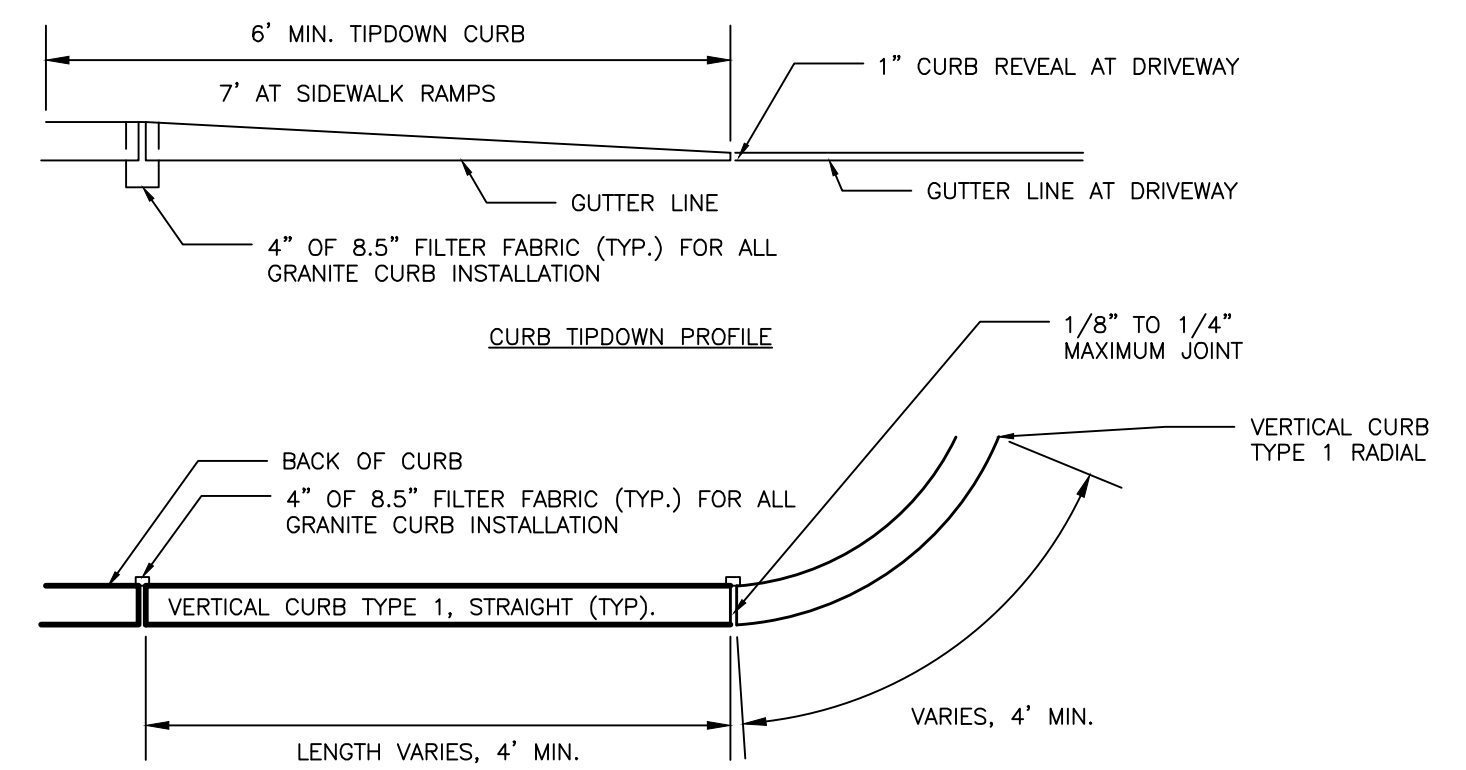
NOTES:

1. BRICKS TO BE USED:

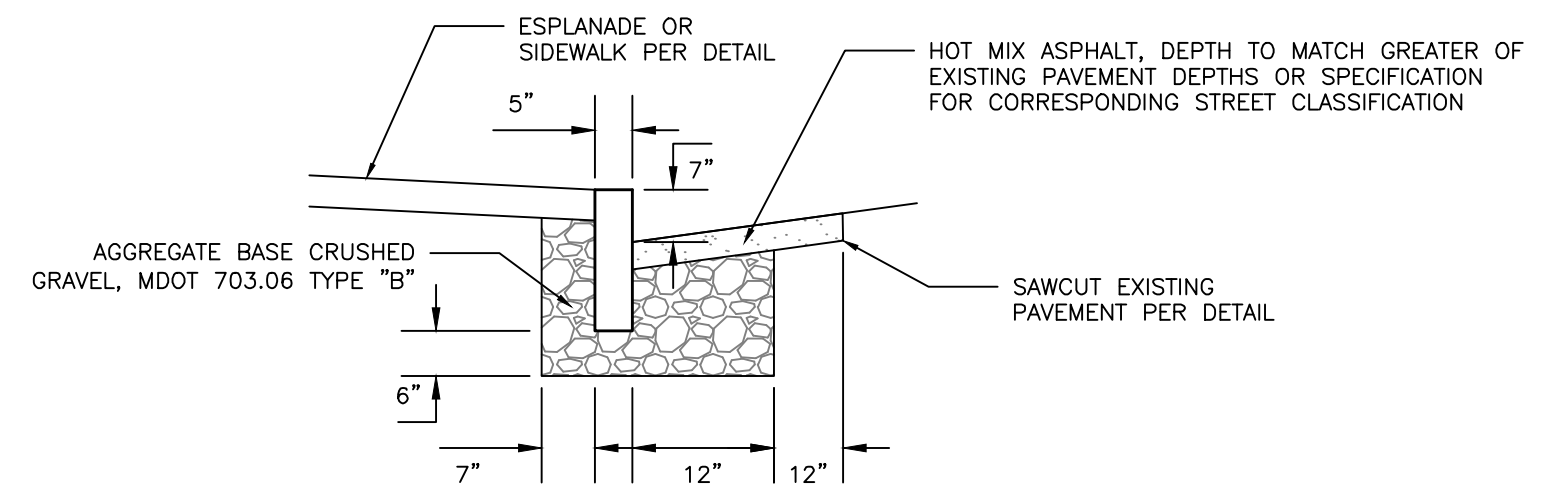
NEW CONSTRUCTION:
4"x8" PINE HALL PATHWAY PAVER BRICK; MFG. BY PINE HALL BRICK CO., MADISON, NORTH CAROLINA. LACHANCE ITEM #193623;. PINE HALL PATHWAY PAVER BRICK.

2. INSTALL BRICK FLUSH UP TO BUILDING, PAVEMENT, STAIRS, CONCRETE SURFACES, CURB OR LANDSCAPED AREAS.

BRICK SIDEWALK WITH BITUMINOUS BASE DETAIL
NOT TO SCALE



VERTICAL GRANITE CURB PLAN VIEW

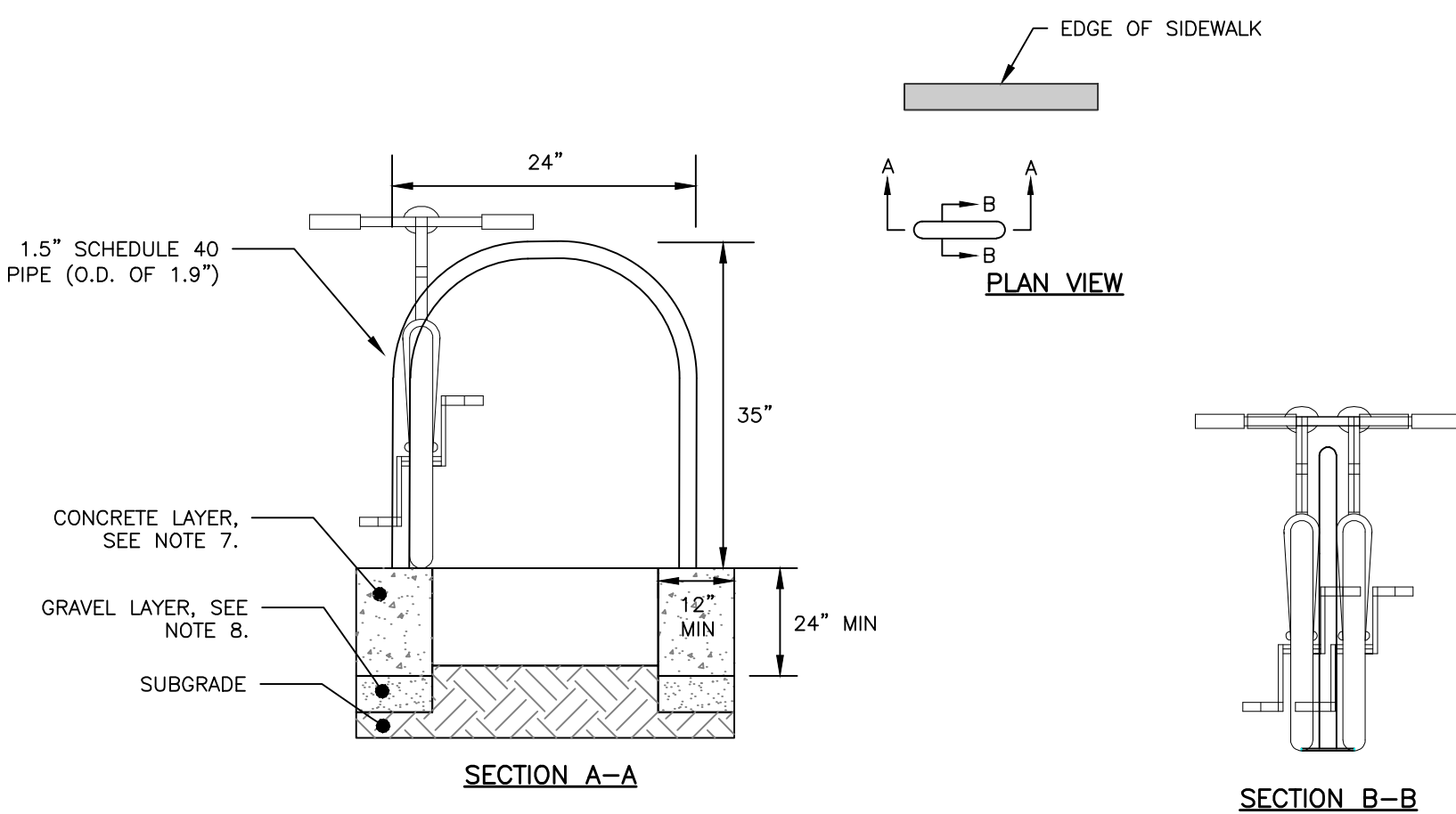


VERTICAL GRANITE CURB CROSS SECTION

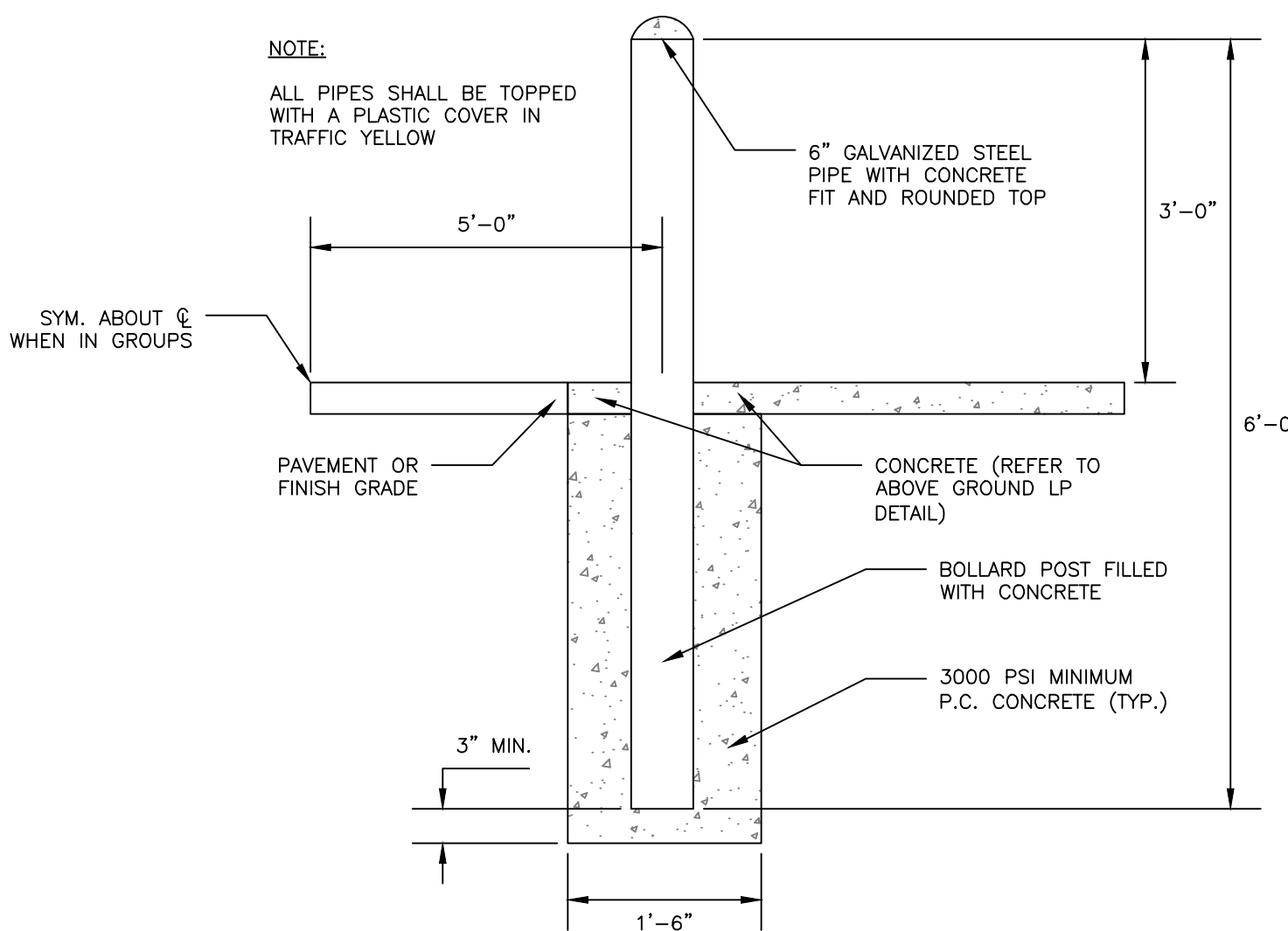
VERTICAL GRANITE CURB AND TIPDOWN INSTALLATION
NOT TO SCALE

NOTES:

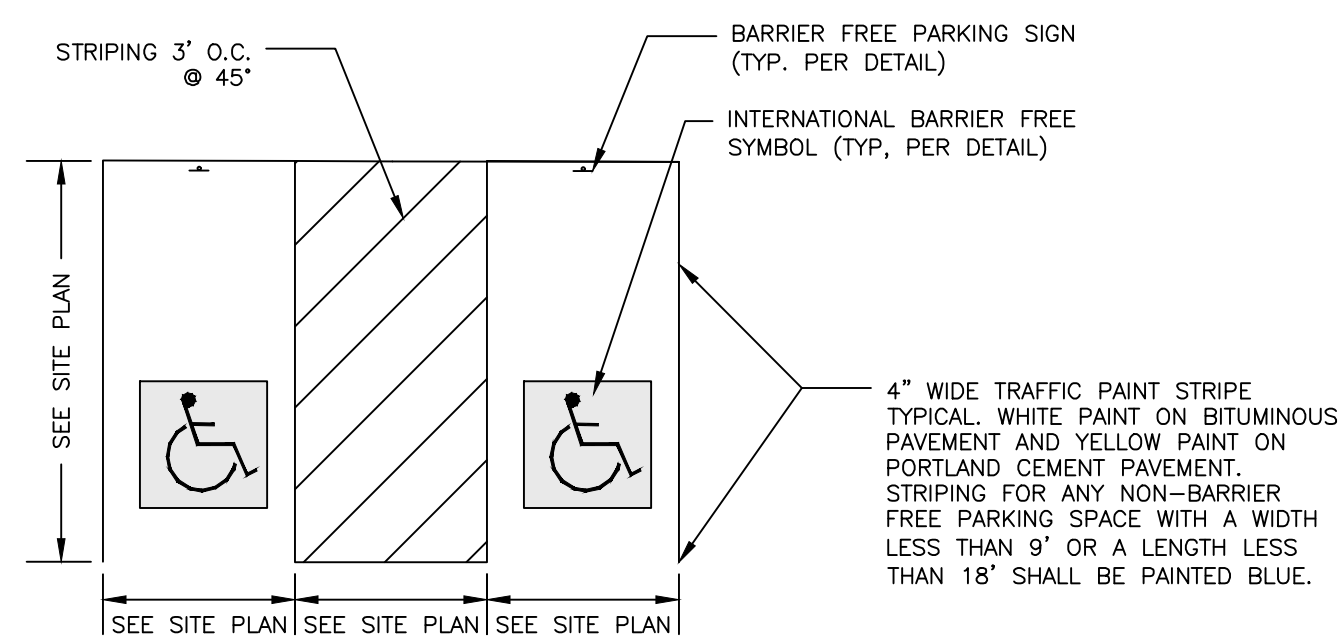
1. BICYCLE RACK PARTS SHALL BE OF UNIFORM COLOR AND SHALL BE FINISHED IN ACCORDANCE WITH PRODUCT SPECIFICATION. PER CITY OF PORTLAND TECHNICAL STANDARDS ALL BICYCLE RACKS WITHIN THE RIGHT-OF-WAY SHALL MATCH THE FURNITURE COLOR FOR THAT LOCATION AS DESCRIBED IN THE MUNICIPAL LIGHTING STANDARDS; IF NO DESIGNATED COLOR FOR THAT AREA EXISTS, BICYCLE RACKS SHALL BE BLACK.
2. BICYCLE RACK SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S MOST RECENT INSTALLATION RECOMMENDATIONS, AND SHALL BE INSTALLED WITH AN IN-GROUND MOUNT UNLESS OTHERWISE APPROVED BY ENGINEER.
3. BICYCLE RACK SHALL BE "DERO HOOP RACK", AS MANUFACTURED BY DERO BIKE RACKS. RACK HAS CAPACITY FOR 2 BIKES PER HOOP.
4. MANUFACTURER'S RECOMMENDED OFFSETS SHALL BE ENFORCED WHERE POSSIBLE.
5. CONCRETE SHALL BE 4000 PSI AT BOTTOM OF RACK. RACK SHALL BE AT TOP OF GRAVEL ELEVATION.
6. GRAVEL LAYER SHALL BE INSTALLED IN ACCORDANCE WITH BITUMINOUS BASE DETAIL, AND SHALL BE MAINTAINED 73.6 TYPE B.



BICYCLE RACK DETAIL
NOT TO SCALE



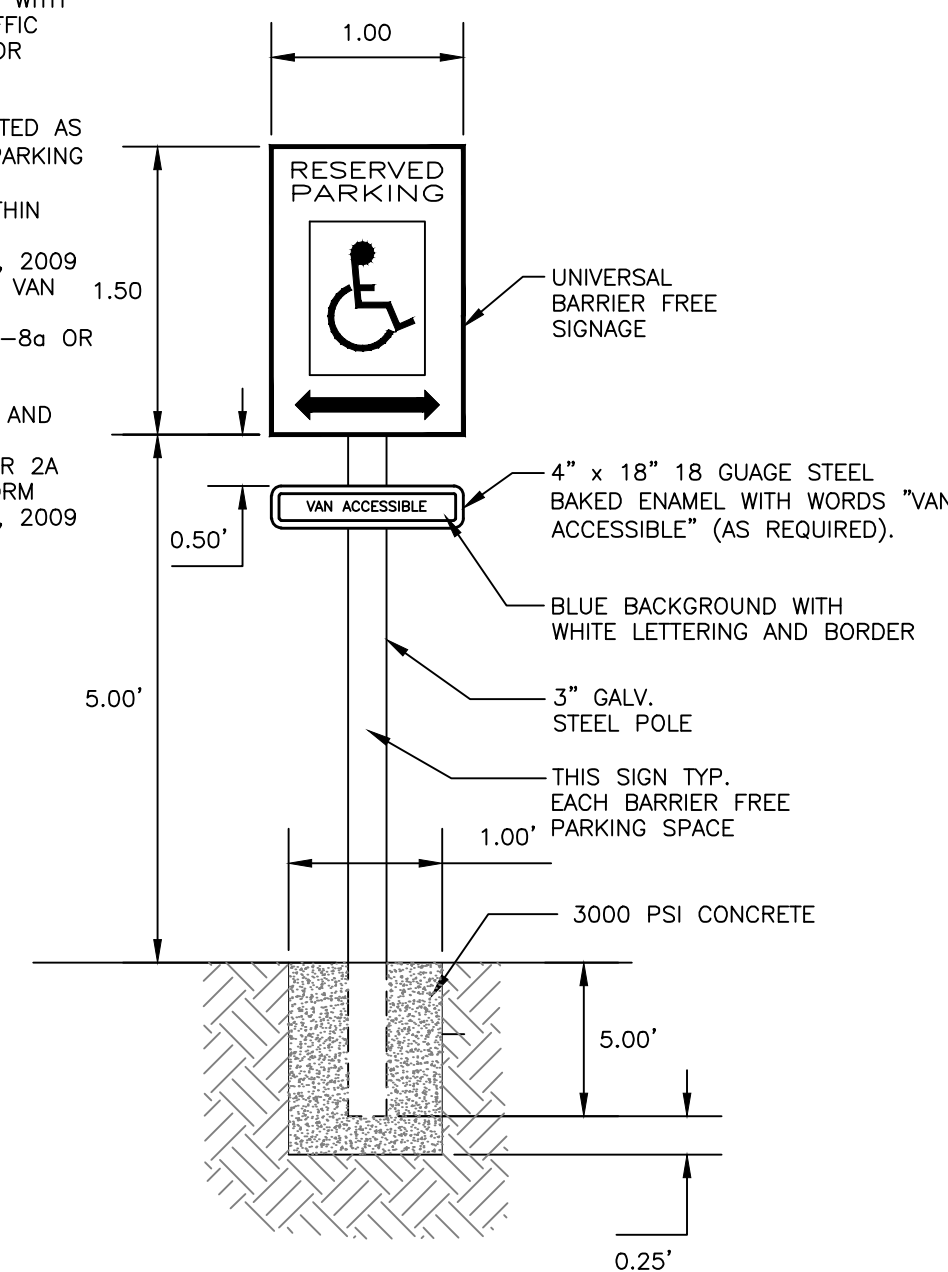
PIPE BOLLARD
NOT TO SCALE



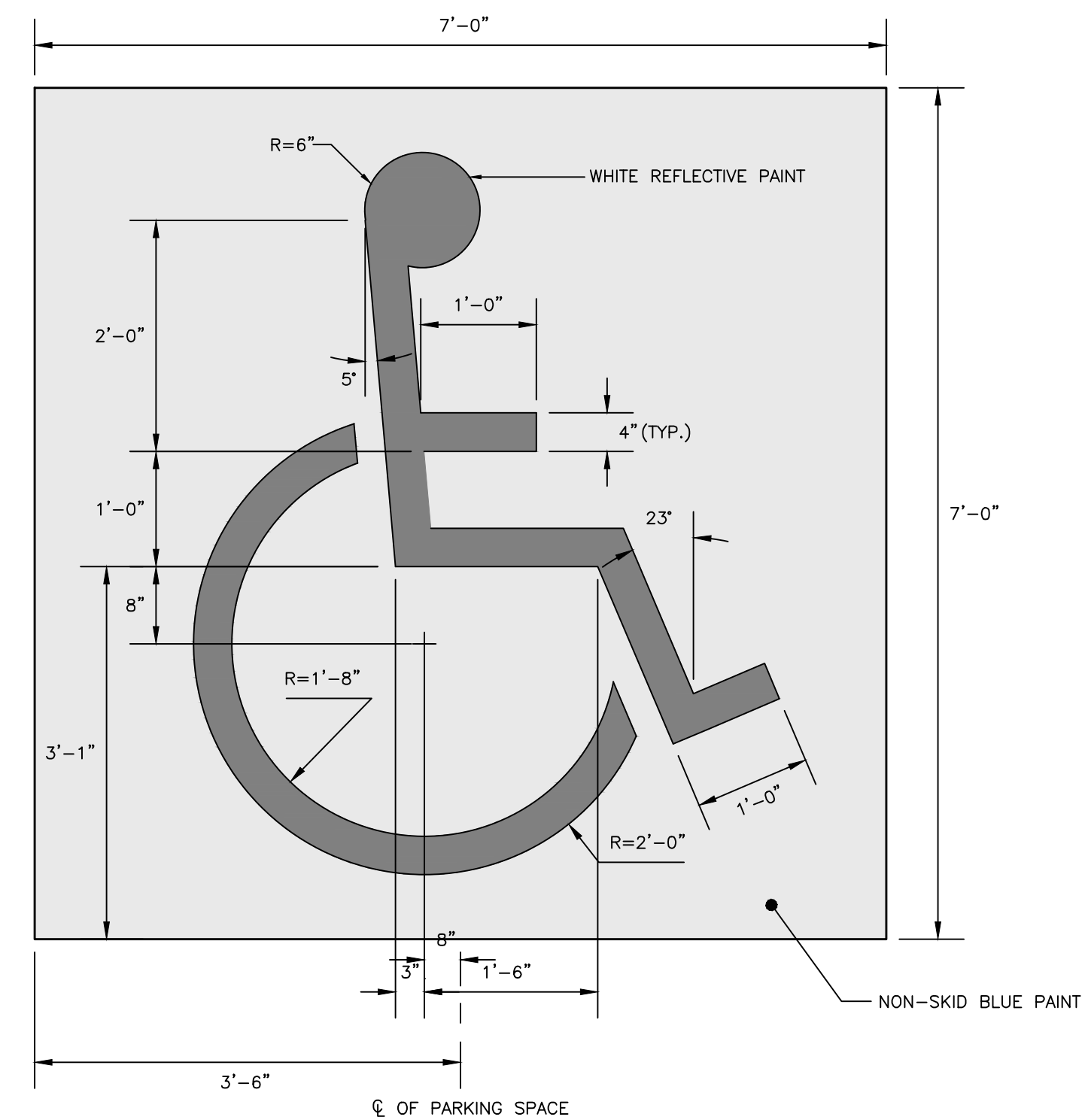
ADA PARKING SPACE DIMENSIONS
NOT TO SCALE

NOTES:

1. ALL ASPECTS OF RESERVED PARKING SIGN CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, 2009 OR MOST RECENT EDITION.
2. SIGN SHALL BE CONSTRUCTED AS SIGN R7-8 UNDER THE "PARKING AND STANDING SIGNS AND PLAQUES" (R7 SERIES) WITHIN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, 2009 OR MOST RECENT EDITION. VAN ACCESSIBILITY SHALL BE CONSTRUCTED AS SIGN R7-8a OR R7-8b.
3. SIGN POST CONSTRUCTION AND MOUNTING SHALL BE IN ACCORDANCE WITH CHAPTER 2A OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, 2009 OR MOST RECENT EDITION.



BARRIER FREE PARKING SIGN
NOT TO SCALE



INTERNATIONAL BARRIER FREE SYMBOL
NOT TO SCALE

PERMITTING
NOT ISSUED FOR
CONSTRUCTION

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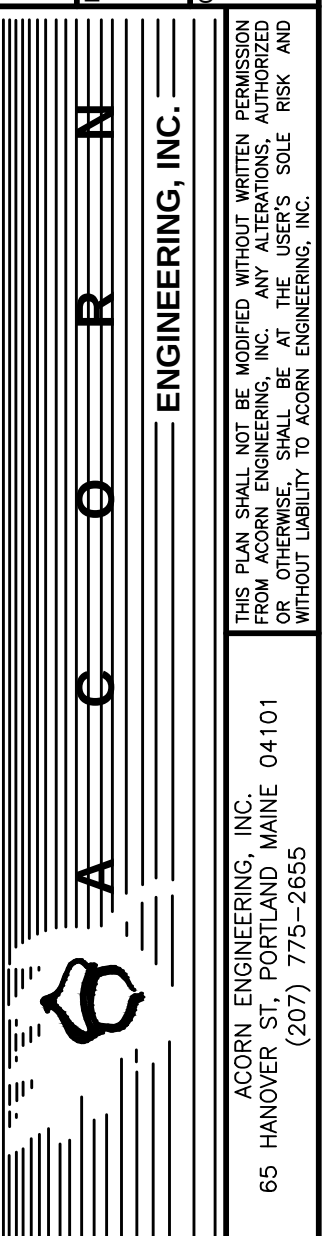
SITE DETAILS

CPMA VISITOR PARKING LOT PROJECT

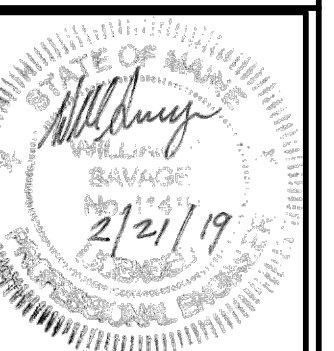
PORTLAND MUSEUM OF ART
7 CONGRESS SQUARE PORTLAND, MAINE 04101

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1. **Introduction**



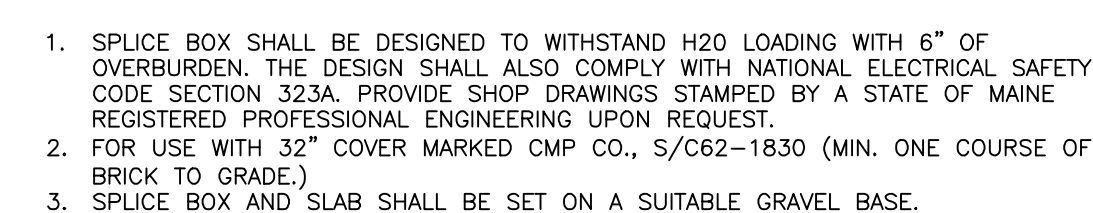
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DRAWING NO.

C-40

1. DIG HOLE AT LEAST 2 TIMES THE DIAMETER OF THE ROOT BALL AND AS DEEP AS THE ROOT BALL (NO DEEPER). SET ROOT BALL CENTERED, WITH THE TOP AT DOWNHILL EDGE OF THE HOLE.
2. TOPSOIL BACKFILL SHALL BE NATURAL FRIABLE, FERTILE, FINE LOAMY SOIL POSSESSING THE CHARACTERISTICS OF THE SOIL FOUND IN THE VEGGIE BED.
3. TOPSOIL BACKFILL SHALL NOT CONTAIN MORE THAN 5% ORGANIC MATTER. TOPSOIL SHALL HAVE A PH CONTAIN NOT LESS THAN 6.5 OR MORE THAN 7.0% ORGANIC MATTER. TOP SOIL SHALL HAVE A PH NOT LESS THAN 6.5 OR MORE THAN 7.0.
4. CONTAINER GROWN STOCK – REMOVE CONTAINER PROTECTING THE ROOT BALL. GENTLY COMB OUT THE ROOTS, PRUNE DAMAGED ROOTS.
5. WATER THE HOLE. WATER TO A DEPTH NOT TO EXCEED 8" THEN WATER SUFFICIENTLY TO SETTLE TOPSOIL. REPEAT SOIL BACKFILL, WATER, DRAIN. TOPSOIL SHALL BE TAMPED UNDER EDGES OF THE BALLED PLANTS. BACKFILL TO FINISH GRADE AND CREATE AN EARTHEN SAUCER. SOAK PLANTS TWICE DAILY FOR THE FIRST TWO WEEKS OF PLANTING.



CMP 4' X 6' SPLICE BOX
NOT TO SCALE

PERMITTING
NOT ISSUED FOR
CONSTRUCTION

[illegible]

LANDSCAPE & UTILITY DETAILS

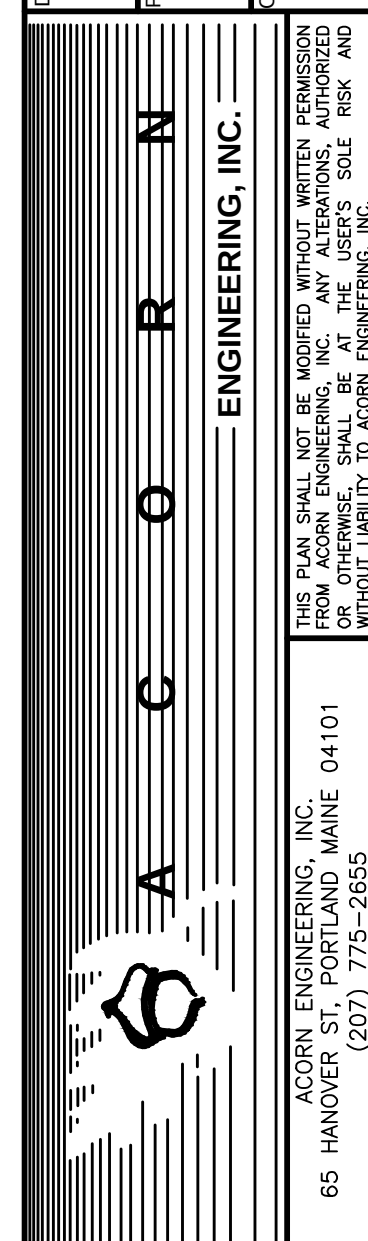
PMA VISITOR PARKING LOT PROJECT

PORTLAND MUSEUM OF ART
7 CONGRESS SQUARE PORTLAND, MAINE 04101

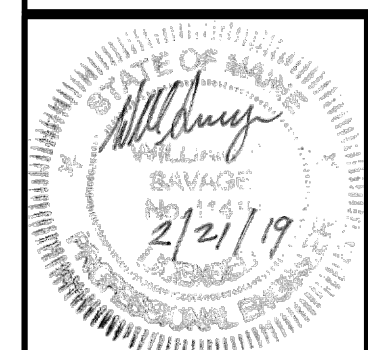
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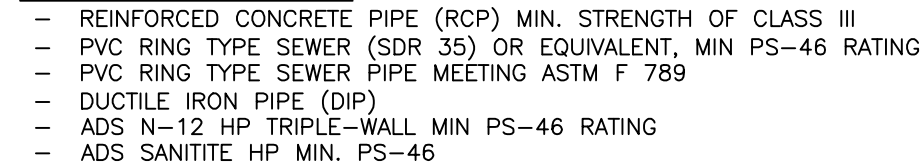


DRAWING NO.

C-41

1. ANY ALTERNATE TRENCHING METHODS SHALL BE APPROVED IN ADVANCE BY THE CITY.
2. ALL CONSTRUCTION METHODS SHALL CONFORM TO THE CITY OF PORTLAND TECHNICAL STANDARDS FIGURE 2.1.
3. BRACING & SHEETING OR OTHER TRENCH PROTECTION TO BE PROVIDED TO MEET APPLICABLE STATE AND FEDERAL SAFETY STANDARDS. ALL SUCH TRENCH PROTECTION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
4. WHERE APPLICABLE, PERFORATIONS IN STORM DRAIN (PERF-SID) SHALL BE ORIENTED UP.
5. ALL STORM DRAINS SHALL BE 18" MIN PERFORATION WITH 1/2" MIN SPACING, IN ACCORDANCE WITH CITY OF PORTLAND TECHNICAL MANUAL - SECTION 2 - SANITARY SEWER AND STORM DRAIN - PART 2.5.2
6. IN PAVED AREAS, DEPTHS OF GRAVEL AND HOT MIX ASPHALT PAVEMENT SHALL MATCH THE GREATER OF THE EXISTING CONDITIONS OR THE CITY OF PORTLAND TECHNICAL MANUAL - SECTION 2.5.2.1. VERIFICATION OF THIS DETAIL SHALL BE APPLIED ONLY TO PIPE TRENCHES WITHIN OF THE CITY OF PORTLAND ROW. STORM DRAIN COVER BETWEEN 2' AND 3' SHALL INCLUDE 4" OF RIGID INSULATION, COVER BETWEEN 3' AND 4' SHALL INCLUDE 2" RIGID INSULATION, UTILITIES, AND 2" OF RIGID INSULATION FOR EACH FOOT ABOVE MINIMUM DEPTH.

PAVED AREAS	UNPAVED AREAS
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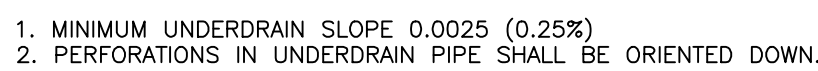


NOT TO SCALE

1. ALL CONCRETE TO HAVE A MIN. OF 4,000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
2. DESIGN LOAD FOR H-20 WHEEL LOAD.
3. CATCH BASIN TO CONFORM TO ASTM-C478 SPECIFICATIONS.
4. REINFORCE TO 0.12 IN SQ./LF.
5. JOINTS SEALED WITH BUTYL RUBBER.
6. POLYPROPYLENE STEPS 12" O.C.
7. CASCO TRAPS SHALL BE PROVIDED ON ALL PIPES 12" OR LESS.
8. ALL PIPES TO HAVE A WATERIGHT SEAL.

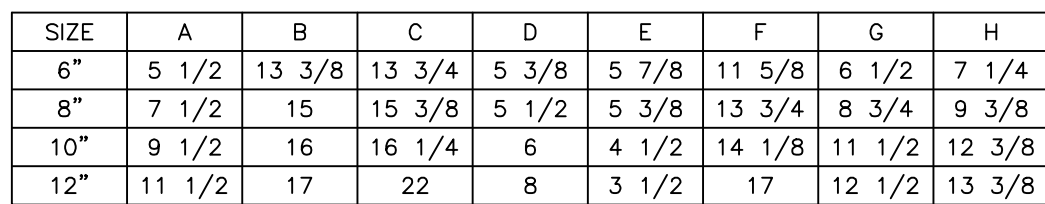


1. BRACING AND SHEETING OR OTHER TRENCH PROTECTION TO BE PROVIDED TO MEET APPLICABLE STATE AND O.S.H.A. SAFETY STANDARDS. ALL SUCH TRENCH PROTECTION TO BE THE RESPONSIBILITY OF THE CONTRACTOR.
2. STORM DRAIN COVER BETWEEN 2' AND 3' SHALL INCLUDE 4" OF RIGID INSULATION, COVER BETWEEN 3' AND 4' SHALL INCLUDE 2" OF RIGID INSULATION, OTHER THAN 2' TO 4' RIGID INSULATION FOR EACH FOOT ABOVE MINIMUM DEPTH.
3. INSTALL WARNING TAPE DIRECTLY ABOVE UTILITIES AT THE TOP OF SUBGRADE.
4. MINIMUM COVER
 - 4.1. 2'-0" - STORM DRAIN
 - 4.2. 5'-0" - SEWER
5. NO TREES SHALL BE PLANTED WITHIN 5' OF A SEWER PIPE OR SERVICE
6. THIS DETAIL SHALL BE APPLIED ONLY TO DRAINAGE PIPE LOCATED OUTSIDE OF THE CITY OF PORTLAND ROW.
7. THICKNESS AS NOTED BY SURFACE DETAILS.



NOT TO SCALE

1. INSTALL "CASCO TRAP" AS MANUFACTURED BY THE ETHERIDGE FOUNDRY, OR APPROVED EQUIVALENT AS SUPPLIED BY THE LEBARON FOUNDRY, MODEL #L 202 "STANDARD CATCH-BASIN TRAP". INSTALL TRAP IN ALL CATCH BASINS WITH A 12" OR 15" OUTLET PIPE.
2. THE CASCO TRAP IS AN ETHERIDGE STYLE DESIGNED TO ELIMINATE CEMENTING OF THE TRAP.
3. TO INSTALL, THE CASCO TRAP IS INSERTED INTO THE PIPE WITH THE HOOD DOWN.



(AS MANUFACTURED BY THE ETHERIDGE FOUNDRY IN PORTLAND, ME)

NOT TO SCALE



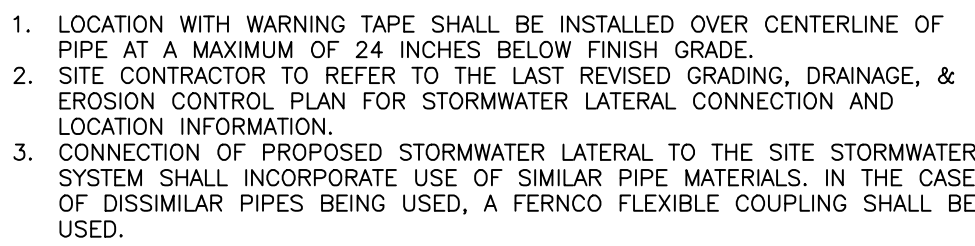
SOIL FILTER DETAIL

1. THE SIDESLOPES SHALL BE STABILIZED WITH A MIN. OF 4" LOAM, EROSION CONTROL BLANKETS SC150BN BY NORTH AMERICAN GREEN OR APPROVED EQUAL AND A CONSERVATION SEED MIX. THE BOTTOM OF THE VEGETATED UNDERDRAIN SHALL BE STABILIZED WITH EROSION CONTROL BLANKETS SC150BN BY NORTH AMERICAN GREEN OR APPROVED EQUAL AND A CONSERVATION SEED MIX.
2. LIGHT COMPACTION SOIL FILTER AND PIPE BEDDING MATERIAL. (90 TO 92% STANDARD PROCTOR). TESTING SHALL BE PERFORMED BY A QUALIFIED MATERIAL TESTING FIRM.
3. THE SOIL FILTER MEDIA SHALL NOT BE CONSTRUCTED UNTIL THE AREA DRAINING TO THE BASIN HAS BEEN PERMANENTLY STABILIZED.
4. THE SEDIMENT FOREBAY SHALL BE CONSTRUCTED PRIOR TO CONSTRUCTION OF THE SOIL FILTER AND INSPECTED AND MAINTAINED DURING CONSTRUCTION. MAINTENANCE SHALL INCLUDE REMOVAL OF ANY ACCUMULATED SEDIMENT.
5. MINIMUM UNDERDRAIN SLOPE 0.0025 TOWARDS THE EXISTING CATCH BASIN.
6. TESTING: SIEVE ANALYSIS INCLUDING HYDROMETER TESTING FOR CLAY CONTENT FOR EACH LAYER SHALL BE PERFORMED BY A QUALIFIED SOIL TESTING LABORATORY AND SUBMITTED TO THE PROJECT ENGINEER FOR APPROVAL. 2 WEEKS PRIOR TO CONSTRUCTION OF THE SOIL FILTER AND SUBMITTALS SHALL BE IN ACCORDANCE WITH THE MAIN DEPT. TECHNICAL DESIGN MANUAL SECTION 7.2.5 TESTING AND SUBMITTALS.

SOIL FILTER BED – TRANSITION ZONE (TYPE B)	
SIEVE SIZE	% PASSING BY WEIGHT
1"	90–100
1/2"	75–100
#4	50–100
#20	15–80
#50	0–15
#200	0–5

SOIL FILTER BED – UNDERDRAIN BEDDING (TYPE C)	
SIEVE SIZE	% PASSING BY WEIGHT
1"	100
3/4"	90–100
3/8"	0–75
#4	0–25
#10	0–5

NOT TO SCALE



PERMITTING
NOT ISSUED FOR
CONSTRUCTION

[illegible]

DRAINAGE DETAILS

PMA VISITOR PARKING LOT PROJECT

PORTLAND MUSEUM OF ART

PORTLAND MUSEUM OF ART
7 CONGRESS SQUARE PORTLAND, MAINE 04101

DRAWING NAME:

PROJECT NAME:

CLIENT:



A C O R N
ENGINEERING, INC.

FILE: 1111_CIVIL

JN:	1 1 1 1
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SCALE: AS NOTED

DESIGNED BY: FRT

DRAWN BY: FRT

CHECKED BY: WHS



DRAWING NO.

C-42

1.0 EROSION CONTROL MEASURES AND SITE STABILIZATION

AS PART OF THE SITE DEVELOPMENT, THE FOLLOWING TEMPORARY AND PERMANENT EROSION AND SEDIMENTATION CONTROL DEVICES SHALL BE IMPLEMENTED. DEVICES SHALL BE INSTALLED AS DESCRIBED IN THIS REPORT OR WITHIN THE PLAN SET. SEE THE MAINE EROSION AND SEDIMENT CONTROL HANDBOOK FOR CONSTRUCTION BEST MANAGEMENT PRACTICES FOR FURTHER REFERENCE.

1.1 TEMPORARY EROSION CONTROL MEASURES

THE FOLLOWING TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES ARE PLANNED FOR THE PROJECT'S CONSTRUCTION PERIOD:

- 1.1.1 CRUSHED STONE STABILIZED CONSTRUCTION ENTRANCES SHALL BE PLACED AT ALL ACCESS POINTS TO THE PROJECT SITE WHERE THERE ARE DISTURBED AREAS. THE FOLLOWING SPECIFICATIONS SHALL BE FOLLOWED AT A MINIMUM:
 - STONE SIZE SHALL BE 2-3 INCHES, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
 - THE THICKNESS OF THE ENTRANCE STONE LAYER SHALL BE NO LESS THAN 6 INCHES.
 - THE ENTRANCE SHALL NOT BE LESS THAN 20 FEET WIDE, HOWEVER NOT LESS THAN THE FULL WIDTH OF POINTS WHERE INGRESS OR EGRESS OCCURS. THE LENGTH SHALL NOT BE LESS THAN 50 FEET IN LENGTH.
 - GEOTEXTILE FABRIC (WOVEN OR NON-WOVEN) SHALL BE PLACED OVER THE ENTIRE ENTRANCE AREA.
- 1.1.2 THE ENTRANCE/EXIT SHALL BE MAINTAINED TO THE EXTENT THAT IT WILL PREVENT THE TRACKING OF SEDIMENT ONTO PUBLIC ROADWAYS. THE SILTATION FENCE OR EROSION CONTROL BERM SHALL BE INSTALLED DOWN GRADIENT OF ANY DISTURBED AREAS TO TRAP RUNOFF BORNE SEDIMENTS UNTIL PERMANENT STABILIZATION IS ACHIEVED. THE SILT FENCE OR EROSION CONTROL BERM SHALL BE INSTALLED PER THE DETAILS PROVIDED IN THE PLAN SET AND INSPECTED BEFORE AND IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. REPAIRS SHALL BE MADE IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BEHIND THE FENCE LINE OR BERM IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OR THE EDGES, OR IMPOUNDING OF LARGE VOLUMES OF WATER BEHIND THE FENCE OR BERM, THE BARRIER SHALL BE REPLACED WITH A STONE CHECK DAM.
- 1.1.3 HAY MULCH INCLUDING HYDRO SEEDING IS INTENDED TO PROVIDE COVER FOR DENuded OR SEEDED AREAS UNTIL REVEGETATION IS ESTABLISHED. MULCH PLACED BETWEEN APRIL 15TH AND NOVEMBER 1ST ON SLOPES OF LESS THAN 15 PERCENT SHALL BE COVERED BY FABRIC NETTING AND ANCHORED WITH STAPLES IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION. MULCH PLACED BETWEEN NOVEMBER 1ST AND APRIL 15TH ON SLOPES EQUAL TO OR STEEPER THAN 8 PERCENT AND EQUAL TO OR FLATTER THAN 2:1 SHALL USE MATS OR FABRIC NETTING AND ANCHORED WITH STAPLES IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATION.
- 1.1.4 AT ANY TIME OF THE YEAR, ALL SLOPES GREATER THAN 3:1 SHALL BE STABILIZED WITH DOUBLE NET EROSION CONTROL BLANKET BIONET SC150BN BY NORTH AMERICAN GREEN OR APPROVED EQUAL, OR EROSION CONTROL MIX SLOPE PROTECTION AS DETAILED WITHIN THE PLANS.
- 1.1.5 OAK STREET AND SPRING STREET SHALL BE SWEEPED TO CONTROL MUD AND DUST FROM THE CONSTRUCTION SITE AS NECESSARY. ADD ADDITIONAL STONE TO THE STABILIZED CONSTRUCTION ENTRANCE TO MINIMIZE THE TRACKING OF MATERIAL OFF THE SITE AND ONTO THE SURROUNDING ROADWAYS.
- 1.1.6 DURING DEMOLITION, CLEARING OPERATIONS, STONE CHECK DAMS SHALL BE INSTALLED AT ANY AREAS OF CONCENTRATED FLOW. THE MAXIMUM HEIGHT OF THE CHECK DAM SHALL NOT EXCEED 2 FEET. THE CENTER OF THE CHECK DAM SHALL BE 6 INCHES BELOW THE OUTER EDGES OF THE DAM. THE CONTRACTOR SHALL MULCH THE SIDE SLOPES AND INSTALL STONE CHECK DAMS FOR ALL NEWLY EXCAVATED DITCH LINES WITHIN 24 HOURS OF THEIR CREATION.
- 1.1.7 SILT FENCE STAKE SPACING SHALL NOT EXCEED 6 FEET UNLESS THE FENCE IS SUPPORTED WITH 14 GAUGE WIRE IN WHICH CASE THE MAXIMUM SPACING SHALL NOT EXCEED 10 FEET. THE SILT FENCE SHALL BE "TOED" INTO THE GROUND.
- 1.1.8 STORMDRAIN INLET PROTECTION SHALL BE PROVIDED TO STORMDRAINS THROUGH THE USE OF ANY OF THE FOLLOWING: HAY BALE DROP INLET STRUCTURES, SILT FENCE DROP INLET SEDIMENT FILTER, GRAVEL AND WIRE MESH DROP INLET SEDIMENT FILTER, OR CURB INLET SEDIMENT FILTER. BARRIERS SHALL BE INSPECTED AFTER EVERY RAINFALL EVENT AND REPAIRED AS NECESSARY. SEDIMENTS SHALL BE REMOVED WHEN ACCUMULATION HAS REACHED 1/2 THE DESIGN HEIGHT.
- 1.1.9 DUST CONTROL SHALL BE ACCOMPLISHED BY THE USE OF ANY OF THE FOLLOWING: WATER, CALCIUM CHLORIDE, STONE, OR AN APPROVED MDEP PRODUCT. DUST CONTROL SHALL BE APPLIED AS NEEDED TO ACCOMPLISH DUST CONTROL.
- 1.1.10 TEMPORARY LOAM, SEED, AND MULCHING SHALL BE USED IN AREAS WHERE NO OTHER EROSION CONTROL MEASURE IS USED. APPLICATION RATES FOR SEEDING ARE PROVIDED AT THE END OF THIS REPORT.
- 1.1.11 STOCKPILES SHALL BE STABILIZED WITHIN 7 DAYS OF FORMATION UNLESS A SCHEDULED RAIN EVENT OCCURS PRIOR TO THE 7 DAY WINDOW, IN WHICH CASE THE STOCKPILE SHALL BE STABILIZED PRIOR TO THE RAIN EVENT. METHODS OF STABILIZATION SHALL BE MULCH, EROSION CONTROL MIX, OR EROSION CONTROL BLANKETS/MATS. SILT FENCE OR A WOOD WASTE COMPOST FILTER BERM SHALL BE PLACED DOWNHILL OF ANY SOIL STOCKPILE LOCATION.
- 1.1.12 FOR DISTURBANCE BETWEEN NOVEMBER 1 AND APRIL 15, PLEASE REFER TO WINTER STABILIZATION PLAN IN THIS REPORT AND THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL FOR FURTHER INFORMATION.
- 1.1.13 IT IS OF THE UTMOST IMPORTANCE THAT STORMWATER RUNOFF AND POTENTIAL SEDIMENT FROM THE CONSTRUCTION SITE BE DIVERTED AROUND THE PROPOSED UNDERDRAINS UNTIL THE TRENCH IS BACKFILLED.

1.2 PERMANENT EROSION CONTROL MEASURES

THE FOLLOWING PERMANENT EROSION CONTROL MEASURES ARE INTENDED FOR POST DISTURBANCE AREAS OF THE PROJECT.

- 1.2.1 ALL DISTURBED AREAS DURING CONSTRUCTION, NOT SUBJECT TO OTHER PROPOSED CONDITIONS, SHALL RECEIVE A MINIMUM 4" OF LOAM, LIMED, AND MULCHED. EROSION CONTROL BLANKETS OR MATS SHALL BE PLACED OVER THE MULCH IN AREAS NOTED IN PARAGRAPH 4.1 OF THIS REPORT.
- 1.2.2 ALL STORMWATER DEVICES SHALL BE INSTALLED AND TRIBUTARY AREAS STABILIZED PRIOR RECEIVING STORMWATER.
- 1.2.3 REFER TO THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL FOR ADDITIONAL INFORMATION.

2.0 EROSION AND SEDIMENTATION CONTROL PLAN

- 2.1 THE EROSION AND SEDIMENTATION CONTROL PLAN IS INCLUDED WITHIN THE PLAN SET.

3.0 DETAILS AND SPECIFICATIONS

- 3.1 EROSION CONTROL DETAILS AND SPECIFICATIONS ARE INCLUDED IN THE PLAN SET.

4.0 STABILIZATION PLAN FOR WINTER CONSTRUCTION

WINTER CONSTRUCTION CONSISTS OF EARTHWORK DISTURBANCE BETWEEN THE DATES OF NOVEMBER 1 AND APRIL 15. IF A CONSTRUCTION SITE IS NOT STABILIZED WITH PAVEMENT, A ROAD GRAVEL BASE, 75% MATURE VEGETATION COVER OR RIPRAP BY NOVEMBER 15, THEN THE SITE SHALL BE PROTECTED WITH OVER-WINTER STABILIZATION. ANY AREA NOT STABILIZED WITH PAVEMENT, VEGETATION, MULCHING, EROSION CONTROL MIX, EROSION CONTROL MATS, RIPRAP, OR GRAVEL BASE ON A ROAD SHALL BE CONSIDERED OPEN.

THE CONTRACTOR SHALL LIMIT THE WORK AREA TO AREAS THAT WORK WILL OCCUR IN DURING THE SUBSEQUENT 15 DAYS AND SO THAT IT CAN BE MULCHED ONE DAY PRIOR TO A SNOW EVENT. THE CONTRACTOR SHALL STABILIZE WORK AREAS PRIOR TO OPENING ADDITIONAL WORK AREAS TO MINIMIZE AREAS WITHOUT EROSION CONTROL MEASURES.

THE FOLLOWING MEASURES SHALL BE IMPLEMENTED DURING WINTER CONSTRUCTION PERIODS:

4.1 SEDIMENT BARRIERS

DURING FROZEN CONDITIONS, SEDIMENT BARRIERS MAY CONSIST OF EROSION CONTROL MIX BERMS OR ANY OTHER RECOGNIZED SEDIMENT BARRIERS AS FROZEN SOIL PREVENTS THE PROPER INSTALLATION OF HAY BALES OR SILT FENCES.

4.2 MULCHING

ALL AREAS SHALL BE CONSIDERED TO BE DENUDDED UNTIL SEEDED AND MULCHED. HAY AND STRAW MULCH SHALL BE APPLIED AT A RATE OF 150 LB. PER 1,000 SQUARE FEET OR 3 TONS/ACRE. TWO TONS/ACRE OR 1.5 TONS/ACRE) AND SHALL BE PROPERLY ANCHORED. EROSION CONTROL MIX MUST BE APPLIED WITH A MINIMUM 4 INCH THICKNESS. MULCH SHALL NOT BE SPREAD ON TOP OF SNOW. THE SNOW SHALL BE REMOVED DOWN TO A ONE-INCH DEPTH OR LESS PRIOR TO APPLICATION. AFTER EACH DAY OF FINAL GRADING, THE AREA SHALL BE PROPERLY STABILIZED WITH ANCHORED HAY OR STRAW OR EROSION CONTROL MATTING. AN AREA SHALL BE CONSIDERED TO HAVE BEEN STABILIZED WHEN EXPOSED SURFACES HAVE BEEN EITHER MULCHED OR ADEQUATELY ANCHORED SO THAT GROUND SURFACE IS NOT VISIBLE THROUGH THE MULCH. BETWEEN THE DATES OF NOVEMBER 1 AND APRIL 15, ALL MULCH SHALL BE ANCHORED BY EITHER MULCH NETTING, TRACKING OR WOOD CELLULOSE FIBER. THE COVER WILL BE CONSIDERED SUFFICIENT WHEN THE GROUND SURFACE IS NOT VISIBLE THROUGH THE MULCH. AFTER NOVEMBER 1ST, MULCH AND ANCHORING OF ALL EXPOSED SOIL SHALL OCCUR AT THE END OF EACH FINAL GRADING WORKDAY.

4.3 SOIL STOCKPILING

STOCKPILES OF SOIL OR SUBSOIL SHALL BE MULCHED FOR OVER WINTER PROTECTION WITH HAY OR STRAW AT TWICE THE NORMAL RATE OR WITH A FOUR-INCH LAYER OF EROSION CONTROL MIX. THIS SHALL BE DONE WITHIN 24 HOURS OF STOCKING AND RE-ESTABLISHED PRIOR TO ANY RAINFALL OR SNOWFALL.

4.4 SEEDING

BETWEEN THE DATES OF OCTOBER 15TH AND APRIL 1ST, LOAM OR SEED SHALL NOT BE REQUIRED. DURING PERIODS OF ABOVE FREEZING TEMPERATURES FINISHED AREAS SHALL BE FINE GRADED AND EITHER PROTECTED WITH MULCH OR TEMPORARILY SEEDED AND MULCHED UNTIL SUCH TIME AS THE FINAL TREATMENT CAN BE APPLIED. IF THE DATE IS AFTER NOVEMBER 1ST AND IF THE EXPOSED AREA HAS NOT BEEN LOAMED, FINAL GRADING WITH A UNIFORM SURFACE, THEN THE AREA MAY BE DORMANT SEEDED AT A RATE OF 3 TIMES HIGHER THAN SPECIFIED FOR PERMANENT SEED, AND THEN MULCHED.

DORMANT SEEDING MAY BE PLACED PRIOR TO THE PLACEMENT OF MULCH OR EROSION CONTROL BLANKETS. IF DORMANT SEEDING IS USED FOR THE SITE, ALL DISTURBED AREAS SHALL RECEIVE 4" OF LOAM AND SEED AT AN APPLICATION RATE OF 5 LBS/1,000 S.F. ALL AREAS SEEDED DURING THE WINTER SHALL BE INSPECTED IN THE SPRING FOR ADEQUATE CATCH. ALL AREAS INSUFFICIENTLY VEGETATED (LESS THAN 75% CATCH) SHALL BE REVEGETATED BY REPLACING LOAM, SEED AND MULCH. IF DORMANT SEEDING IS NOT USED FOR THE SITE, ALL DISTURBED AREAS SHALL BE REVEGETATED IN THE SPRING.

4.5 OVER WINTER STABILIZATION OF DISTURBED SOILS

BY SEPTEMBER 15TH, ALL DISTURBED SOILS ON AREAS HAVING A SLOPE LESS THAN 15% SHALL BE SEEDED AND MULCHED. IF THE DISTURBED AREAS ARE NOT STABILIZED BY THIS DATE, THEN ONE OF THE FOLLOWING ACTIONS SHALL BE TAKEN TO STABILIZE THE SOIL FOR LATE FALL AND WINTER:

- STABILIZE THE SOIL WITH TEMPORARY VEGETATION - BY OCTOBER 1ST, SEED THE DISTURBED SOIL WITH WINTER RYE AT A SEEDING RATE OF 3LBS PER 1,000 S.F., LIGHTLY MULCH THE SEEDED SOIL WITH HAY OR STRAW AT 75 LBS PER 1,000 S.F., AND ANCHOR THE MULCH WITH PLASTIC NETTING. MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR FAILS TO COVER AT LEAST 75% OF THE DISTURBED SOIL BEFORE NOVEMBER 1ST, THEN MULCH THE AREA FOR OVER-WINTER PROTECTION.
- STABILIZE THE SOIL WITH SOD - STABILIZE THE DISTURBED SOIL WITH PROPERLY INSTALLED SOD BY OCTOBER 1ST. PROPER INSTALLATION INCLUDES PINNING THE SOD ONTO THE SOIL WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL.
- STABILIZE THE SOIL WITH MULCH - BY NOVEMBER 15TH, MULCH THE DISTURBED SOIL BY SPREADING HAY OR STRAW AT A RATE OF AT LEAST 150 LBS PER 1,000 S.F. ON THE AREA SO THAT NO SOIL IS VISIBLE THROUGH THE MULCH. IMMEDIATELY AFTER APPLYING THE MULCH, ANCHOR THE MULCH WITH PLASTIC NETTING TO PREVENT WIND FROM MOVING THE MULCH OFF THE DISTURBED SOIL.

4.6 OVER WINTER STABILIZATION OF DISTURBED SLOPES

ALL STONE-COVERED SLOPES SHALL BE CONSTRUCTED AND STABILIZED BY NOVEMBER 15TH. ALL SLOPES TO BE VEGETATED SHALL BE SEEDED AND MULCHED BY SEPTEMBER 1ST. A SLOPE IS CONSIDERED A GRADE GREATER THAN 15%. IF A SLOPE TO BE VEGETATED IS NOT STABILIZED BY SEPTEMBER 1ST, THEN ONE OF THE FOLLOWING ACTION SHALL BE TAKEN TO STABILIZE THE SLOPE FOR LATE FALL AND WINTER:

- STABILIZE THE SOIL WITH TEMPORARY VEGETATION AND EROSION CONTROL MATS - BY OCTOBER 1ST THE DISTURBED SLOPE SHALL BE SEEDED WITH WINTER RYE AT A SEEDING RATE OF 3 LBS PER 1,000 S.F. AND THEN INSTALL EROSION CONTROL MATS OR ANCHORED MULCH OVER THE SEEDING. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR FAILS TO COVER AT LEAST 75% F THE SLOPE BY NOVEMBER 1ST, THEN THE CONTRACTOR SHALL COVER THE SLOPE WITH A LAYER OF EROSION CONTROL MIX OR WITH STONE RIPRAP.
- STABILIZE THE SOIL WITH SOD - THE DISTURBED SLOPE SHALL BE STABILIZED WITH PROPERLY INSTALLED SOD BY OCTOBER 1ST. PROPER INSTALLATION INCLUDES THE CONTRACTOR PINNING THE SOD ONTO THE SLOPE WITH WIRE PINS, ROLLING THE SOD TO GUARANTEE CONTACT BETWEEN THE SOD AND UNDERLYING SOIL, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL. THE CONTRACTOR SHALL NOT USE LATE-SEASON SOD INSTALLATION TO STABILIZE SLOPES HAVING A GRADE GREATER THAN 3H:1V OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.
- STABILIZE THE SOIL WITH EROSION CONTROL MIX - EROSION CONTROL MIX SHALL BE PROPERLY INSTALLED BY NOVEMBER 15TH. THE CONTRACTOR SHALL NOT USE EROSION CONTROL MIX TO STABILIZE SLOPES HAVING GRADES GREATER THAN 2H:1V OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.
- STABILIZE THE SOIL WITH STONE RIPRAP - PLACE A LAYER OF STONE RIPRAP ON THE SLOPE BY NOVEMBER 15TH. A REGISTERED PROFESSIONAL ENGINEER SHALL BE HIRED TO DETERMINE THE STONE SIZE NEEDED FOR STABILITY ON THE SLOPE AND TO DESIGN A FILTER LAYER FOR UNDERNEATH THE RIPRAP.

5.0 INSPECTION AND MAINTENANCE

A PERSON WITH KNOWLEDGE OF EROSION AND STORMWATER CONTROL, INCLUDING THE STANDARDS AND CONDITIONS IN THE PERMIT, SHALL CONDUCT PERIODIC VISUAL INSPECTIONS OF INSTALLED EROSION CONTROL MEASURES. THE FREQUENCY OF INSPECTION SHALL OCCUR AT LEAST ONCE EVERY TWO WEEKS, AS WELL AS AFTER A "STORM EVENT". A "STORM EVENT" SHALL CONSIST OF 0.5 INCHES OF RAIN WITHIN A 24 HOUR PERIOD. THE FOLLOWING EROSION AND SEDIMENT CONTROL - BEST MANAGEMENT PRACTICES (BMP'S) SHALL BE INSPECTED IN THE MANNER AS DESCRIBED.

5.1 SEDIMENT BARRIERS

HAY BALE BARRIERS, SILT FENCES AND FILTER BERMS SHALL BE INSPECTED AND REPAIRED FOR THE FOLLOWING IF THERE ARE ANY SIGNS OF EROSION OR SEDIMENTATION BELOW THEM. IF THERE ARE SIGNS OF UNDERCUTTING AT THE CENTER OR THE EDGES OF THE BARRIER, OR IMPOUNDING OF LARGE VOLUMES OF WATER BEHIND THEM, SEDIMENT BARRIERS SHALL BE REPLACED WITH A TEMPORARY CHECK DAM. SHOULD THE FABRIC ON A SILT FENCE OR FILTER BARRIER DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE BARRIER IS STILL NECESSARY, THE FABRIC SHALL BE REPLACED PROMPTLY. SEDIMENT DEPOSITS SHOULD BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE-HALF THE HEIGHT OF THE BARRIER. FILTER BERMS SHOULD BE RESHAPED AS NEEDED. ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT FENCE OR FILTER BARRIER IS NO LONGER REQUIRED SHOULD BE DRESSED TO CONFORM TO THE EXISTING GRADE, PREPARED AND SEEDED.

5.2 STABILIZED STONE CONSTRUCTION ENTRANCES

THE EXIT SHALL BE MAINTAINED IN A CONDITION THAT WILL PREVENT TRACKING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. WHEN THE CONTROL PAD BECOMES INEFFECTIVE, THE STONE SHALL BE REMOVED ALONG WITH THE COLLECTED SOIL MATERIAL AND REDISTRIBUTED ON SITE IN A STABLE MANNER. THE ENTRANCE SHOULD THEN BE RECONSTRUCTED. THE CONTRACTOR SHALL SWEEP OR WASH PAVEMENT AT EXITS, WHICH HAVE EXPERIENCED MUD-TRACKING ON TO THE PAVEMENT OR TRAVELED WAY. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH AGGREGATE, WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE. ALL SEDIMENT SHALL BE PREVENTED FROM ENTERING STORM DRAINS, DITCHES, OR WATERWAYS.

5.3 MULCHED AREAS

ALL MULCHES MUST BE INSPECTED PERIODICALLY, IN PARTICULAR AFTER RAINSTORMS, TO CHECK FOR RILL EROSION. IF LESS THAN 90% OF THE SOIL SURFACE IS COVERED BY MULCH, ADDITIONAL MULCH SHALL BE IMMEDIATELY APPLIED. NETS MUST BE INSPECTED AFTER RAIN EVENTS FOR DISLOCATION OR FAILURE. IF WASHOUTS OR BREAKAGE OCCUR, RE-INSTALL THE NETS AS NECESSARY AFTER REPAIRING DAMAGE TO THE SLOPE. WHERE MULCH IS USED IN CONJUNCTION WITH ORNAMENTAL PLANTINGS, INSPECT PERIODICALLY THROUGHOUT THE YEAR TO DETERMINE IF MULCH IS MAINTAINING COVERAGE OF THE SOIL SURFACE. REPAIR AS NEEDED.

5.4 DUST CONTROL

WHEN TEMPORARY DUST CONTROL MEASURES ARE USED, REPETITIVE TREATMENT SHALL BE APPLIED AS NEEDED TO ACCOMPLISH CONTROL.

5.5 STORMWATER APPURTENANCES

ALL UNDERDRAINS, STORM DRAINS, AND CATCH BASINS NEED TO BE OPERATING EFFECTIVELY AND FREE OF DEBRIS.

5.6 EROSION AND SEDIMENTATION CONTROL INSPECTIONS:

ACORN ENGINEERING HAS PERSONNEL QUALIFIED TO CONDUCT EROSION AND SEDIMENTATION CONTROL INSPECTIONS. FOR FURTHER INFORMATION CONTACT:

CONTACT: WILL SAVAGE, PE
TELEPHONE: (207) 775-2655

QUALIFICATIONS:

- o MAINE PROFESSIONAL ENGINEERING LICENSE #11419
- o MAINE DEP - CERTIFIED IN MAINTENANCE & INSPECTION OF STORMWATER BMP'S CERT #14
- o CERTIFIED EROSION, SEDIMENT AND STORM WATER INSPECTOR (CESSWI) CERT #0293
- o CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (CPESC) CERT. #4620

THE CONTRACTOR HAS SOLE RESPONSIBILITY FOR COMPLYING WITH THE EROSION AND SEDIMENTATION REPORT/PLAN, INCLUDING CONTROL OF FUGITIVE DUST. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY MONETARY PENALTIES RESULTING FROM FAILURE TO COMPLY WITH THESE STANDARDS.

6.0 IMPLEMENTATION SCHEDULE

THE FOLLOWING IMPLEMENTATION SEQUENCE IS INTENDED TO MAXIMIZE THE EFFECTIVENESS OF THE ABOVE DESCRIBED EROSION CONTROL MEASURES. CONTRACTORS SHOULD AVOID OVEREXPOSING DISTURBED AREAS AND LIMIT THE AMOUNT OF STABILIZATION AREA.

1. INSTALL A STABILIZED CONSTRUCTION ENTRANCE IN ALL LOCATIONS WHERE CONSTRUCTION TRAFFIC WILL ENTER AND EXIT THE SITE.
2. INSTALL PERIMETER SILT FENCE OR EROSION CONTROL BERM.
3. INSTALL ALL OTHER EROSION CONTROL DEVICES AS NECESSARY THROUGHOUT THE REMAINDER OF THIS SCHEDULE.
4. COMMENCE INSTALLATION OF DRAINAGE INFRASTRUCTURE.
5. PRIORITIZE THE DOWNHILL SIDE TO CONTAIN RUNOFF WITHIN THE SITE WHILE PROVIDING AN ENGINEERED OUTLET WITH SILTATION BARRIER TO THE MUNICIPAL STORMWATER SYSTEM WITHIN OAK STREET.
6. COMMENCE EARTHWORK OPERATIONS, WALL AND FOUNDATION INSTALLATION.
7. COMMENCE INSTALLATION OF UTILITIES.
8. CONTINUE EARTHWORK AND GRADING TO SUBGRADE AS NECESSARY FOR CONSTRUCTION.
9. COMPLETE INSTALLATION OF DRAINAGE INFRASTRUCTURE, AS WELL AS OTHER UTILITY WORK.
10. COMPLETE REMAINING EARTHWORK OPERATIONS.
11. INSTALL SUB-BASE AND BASE GRAVELS IN PAVED AREAS.
12. INSTALL PAVING, CURBING AND BRICKWORK.
13. LOAM, LIME, FERTILIZE, SEED AND MULCH DISTURBED AREAS AND COMPLETE ALL LANDSCAPING.
14. ONCE THE SITE IS STABILIZED, 90% CATCH OF GRASS HAS BEEN OBTAINED, OR MULCHING OF LANDSCAPE AREAS IS COMPLETE REMOVE ALL TEMPORARY EROSION CONTROL MEASURES.
15. TOUCH UP AREAS WITHOUT A VIGOROUS CATCH OF GRASS WITH LOAM AND SEED.
16. COMPLETE SITE SIGNAGE AND STRIPING.
17. EXECUTE PROPER MAINTENANCE OF ALL TEMPORARY AND PERMANENT EROSION CONTROL MEASURES THROUGHOUT THE PROJECT.

THE ABOVE IMPLEMENTATION SEQUENCE SHOULD BE GENERALLY FOLLOWED BY THE SITE CONTRACTOR. HOWEVER, THE CONTRACTOR MAY CONSTRUCT SEVERAL ITEMS SIMULTANEOUSLY. THE CONTRACTOR SHALL SUBMIT TO THE OWNER A SCHEDULE OF THE COMPLETION OF THE WORK. IF THE CONTRACTOR IS TO COMMENCE THE CONSTRUCTION OF MORE THAN ONE ITEM ABOVE, THEY SHALL LIMIT THE AMOUNT OF EXPOSED AREAS TO THOSE AREAS IN WHICH WORK IS EXPECTED TO BE UNDERTAKEN DURING THE FOLLOWING 30 DAYS.

THE CONTRACTOR SHALL RE-VEGETATE DISTURBED AREAS AS RAPIDLY AS POSSIBLE. ALL AREAS SHALL BE PERMANENTLY STABILIZED WITHIN 7 DAYS OF FINAL GRADING OR BEFORE A STORM EVENT. THE CONTRACTOR SHALL INCORPORATE PLANNED INLETS AND DRAINAGE SYSTEMS AS EARLY AS POSSIBLE INTO THE CONSTRUCTION PHASE.

7.0 SEEDING PLAN

7.1 SITE PREPARATION

THE SEEDED AREAS SHALL BE FEASIBLY GRADED OUT TO PROVIDE THE USE OF EQUIPMENT FOR SEEDBED PREPARATION, SEEDING, MULCH APPLICATION, AND MULCH ANCHORING. IF NECESSARY, THE SITE MAY REQUIRE ADDITIONAL TEMPORARY EROSION CONTROL MEASURES OUTLINED IN THE EROSION CONTROL REPORT.

7.2 SEEDBED PREPARATION

FERTILIZER SHALL BE APPLIED TO THE SITE AT A RATE OF 13.8 POUNDS PER 1,000 SQUARE FEET. THE COMPOSITION OF THE FERTILIZER SHALL BE 10-10-10 (N-P205-K20) OR EQUIVALENT.

LIMESTONE SHALL BE APPLIED TO THE SITE AT A RATE OF 138 POUNDS PER 1,000 SQUARE FEET.

7.3 SEEDING

THE COMPOSITION AND AMOUNT OF TEMPORARY SEED APPLIED TO A SITE SHALL BE DETERMINED BY THE FOLLOWING TABLE:

TEMPORARY SEED APPLICATION RATES		
SEED	LBS / ACRE	RECOMMENDED SEEDING DATES
WINTER RYE	2.57	8/15 TO 10/1
OATS	1.84	4/1 TO 7/1 8/15 TO 9/15
ANNUAL RYGRASS	0.92	4/1 TO 7/1
SUDANGRASS	0.92	5/15 TO 8/15
PERENNIAL	0.92	8/15 TO 9/15
TOTAL	7.17 LBS/ACRE	

PERMANENT SEED APPLICATION RATES	
SEED	LBS / ACRE
KENTUCKY BLUEGRASS	20.00
CREeping RED FESCUE	20.00
PERENNIAL RYEGRASS	4.80
TOTAL	44.8 LBS/ACRE

7.4 MULCHING

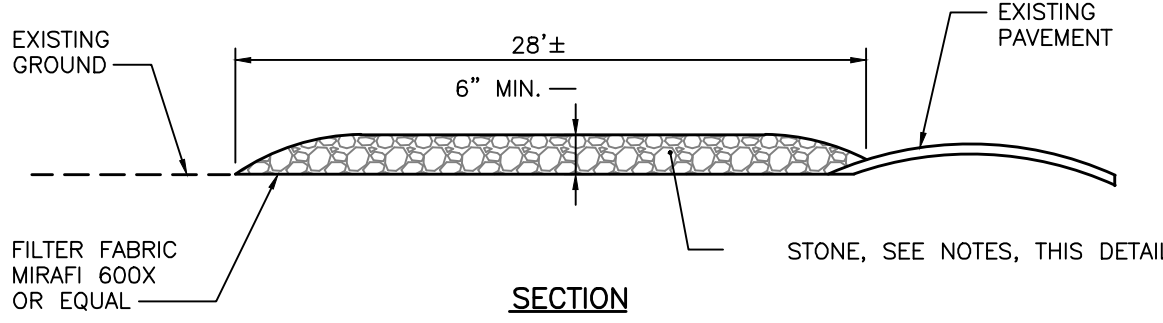
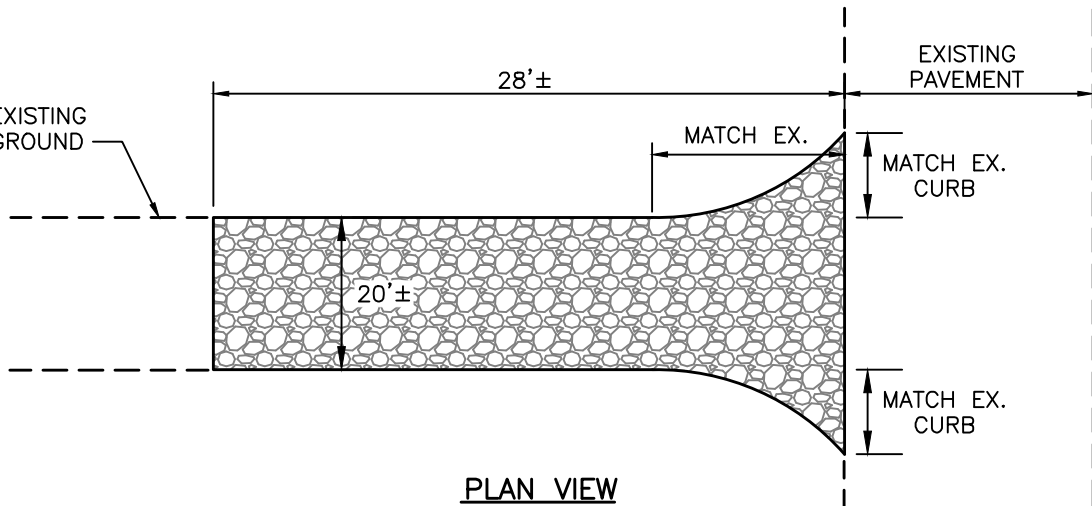
MULCH SHALL BE HARDWOOD AND APPLIED AT A RATE OF 70 LBS - 90 LBS PER 1,000 SQUARE FEET. THE MULCH SHALL BE INSTALLED AT A MINIMUM DEPTH OF 4 INCHES. THE SEEDED AREA SHALL BE MULCHED IMMEDIATELY AFTER SEED IS APPLIED. MULCHING DURING THE WINTER SEASON SHALL BE DOUBLE THE NORMAL AMOUNT. REFER TO DETAIL FOR MORE INFORMATION.

8.0 CONCLUSION

THE ABOVE EROSION CONTROL NARRATIVE IS INTENDED TO MINIMIZE THE DEVELOPMENT IMPACT BY IMPLEMENTING TEMPORARY AND PERMANENT EROSION CONTROL MEASURES. THE CONTRACTOR SHALL ALSO REFER TO THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL FOR ADDITIONAL INFORMATION.

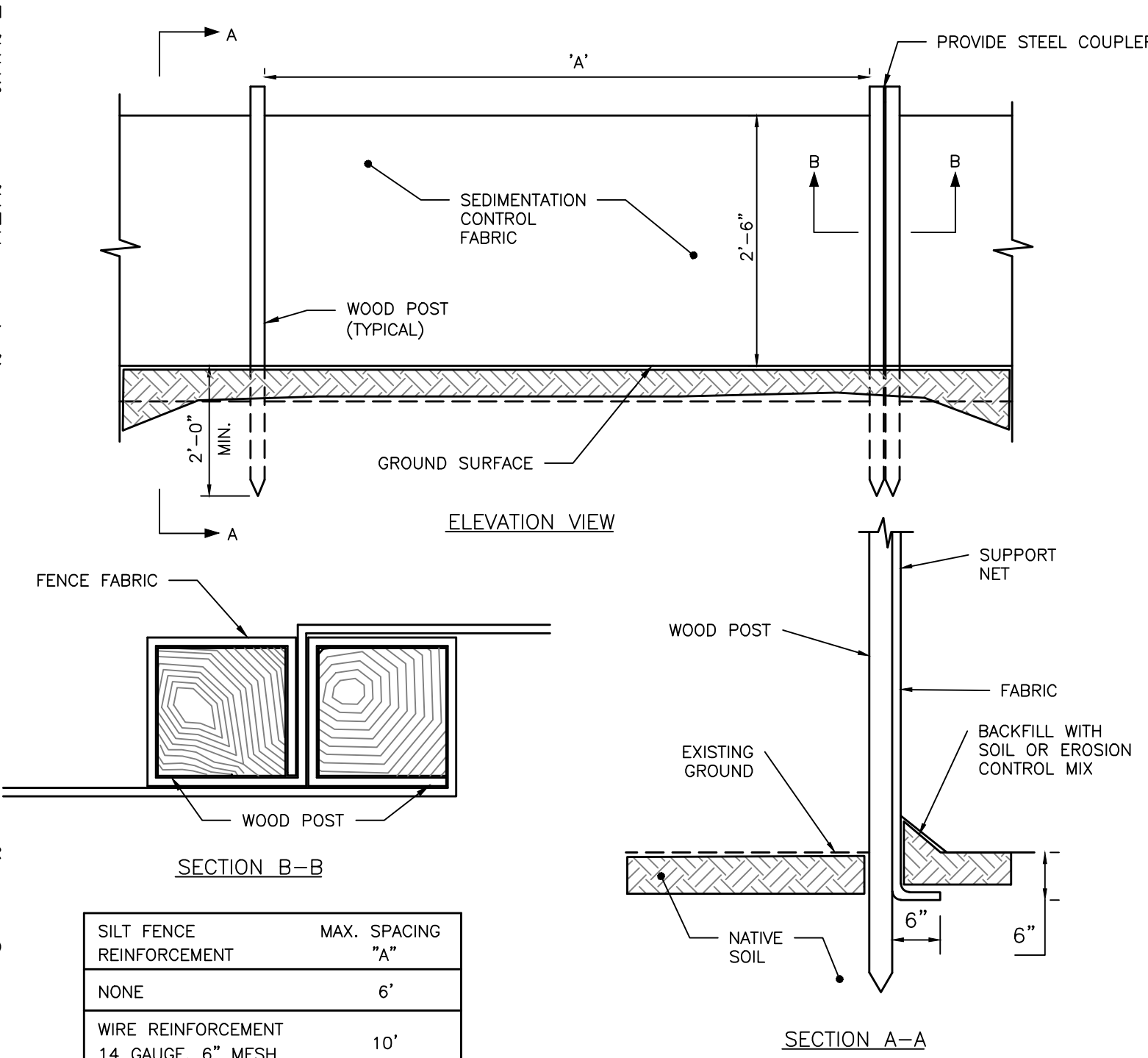
NOTES:

1. CONTRACTOR SHALL ADD STONE TO ENTRANCE AS MUD/SILT MATERIAL ACCUMULATES
2. STONE SHALL BE 2"-3" COARSE AGGREGATE
3. CONSTRUCTION ENTRANCE SHALL BE GRADED TO NOT ALLOW ANY STORMWATER TO BE CONVEYED OFF SITE. IN SITUATIONS WHERE THIS IS NOT POSSIBLE, ANY STORMWATER CONVEYED OFFSITE SHALL BE TREATED OR RETAINED IN A MANNER APPROVED BY ENGINEER.
4. WHEN NECESSARY, ON-SITE VEHICLES SHALL HAVE THEIR WHEELS CLEANED PRIOR TO LEAVING SITE.
5. CONSTRUCTION ENTRANCE SHALL BE GRADED IN A MANNER THAT PREVENTS TRACKING OF SEDIMENTS ONTO PUBLIC RIGHT-OF-WAY



STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE



SILTATION FENCE DETAIL

NOT TO SCALE

NOTES:

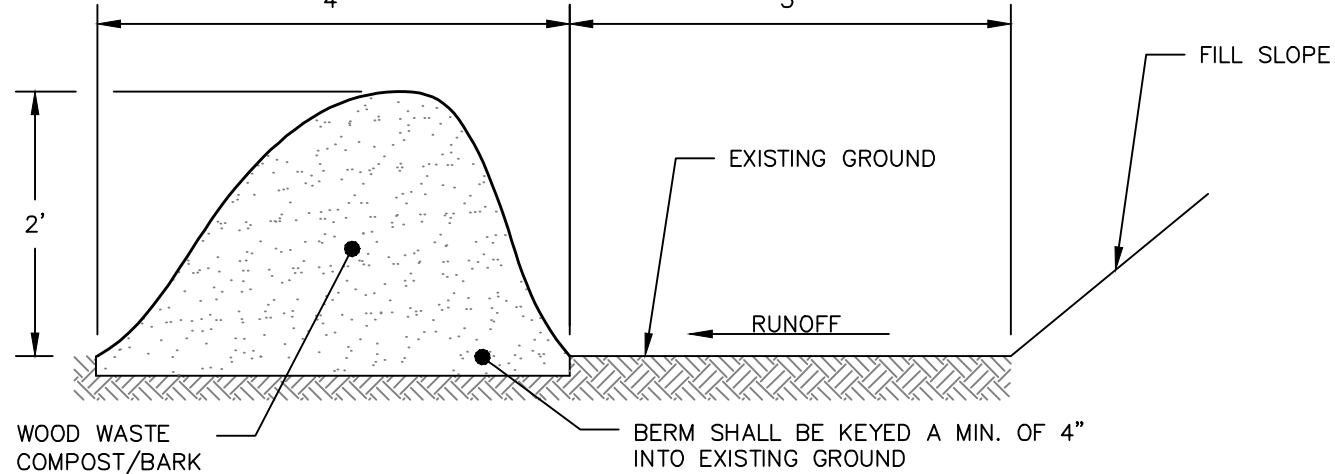
1. THE EROSION CONTROL MIX SHALL CONFORM TO THE FOLLOWING STANDARDS AND IN ACCORDANCE WITH THE MAINE DOT CHAPTER 700, SECTION 717.04(D):

- 1.1. pH BETWEEN 5.0 - 8.0
- 1.2. PARTICLE SIZE (BY WEIGHT):
 - 1.2.1. 100% PASSING A 150 MM (6 IN) SCREEN
 - 1.2.2. 75 TO 85% PASSING A 19 MM (0.75 IN) SCREEN
- 1.3. SOLUBLE SALTS CONTENT < 4.0 MMHOS/CM
- 1.4. ORGANIC MATTER 20 TO 100% , DRY WEIGHT BASIS

2. THE BERM SHOULD BE PLACED, UNCOMPACTED, ALONG A RELATIVELY LEVEL CONTOUR, WHEN NECESSARY THE BERM MAY BE PLACED PERPENDICULAR TO THE SLOPE ALONG THE PROPERTY LINE TO CONTAIN THE SEDIMENT PROVIDED A BERM IS LOCATED AT THE BASE OF THE SLOPE.

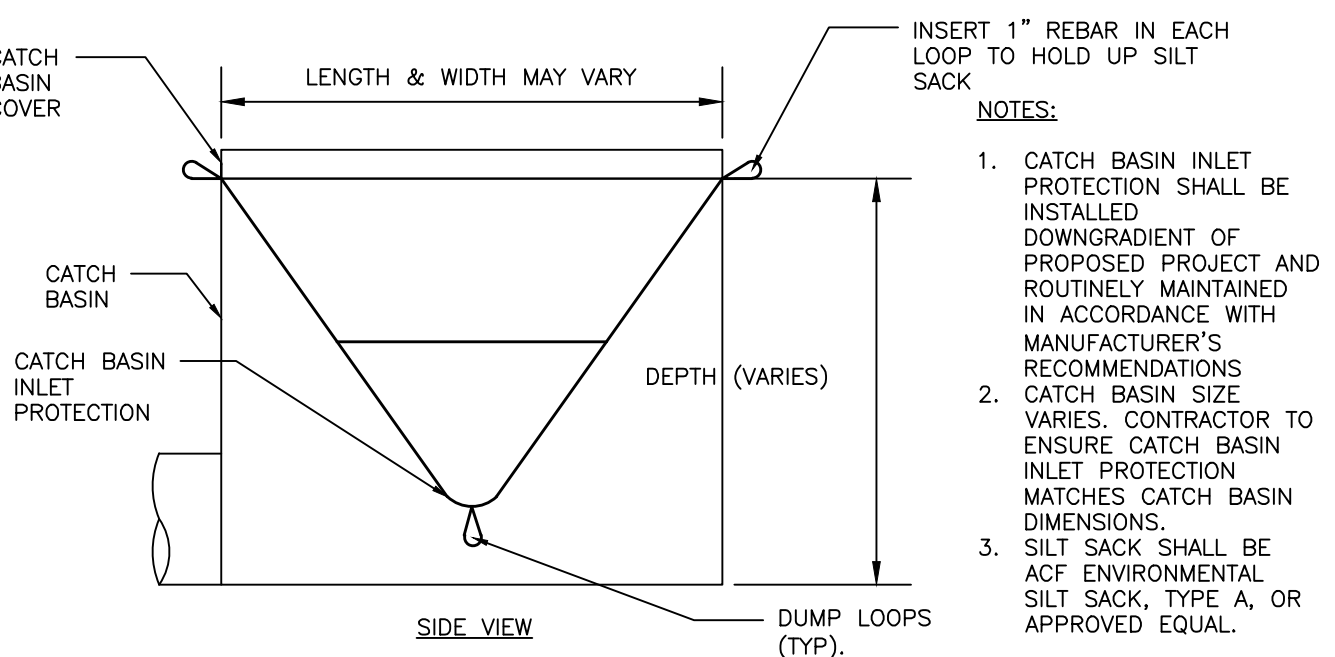
3. THE BERM MAY BE USED IN LIEU OF SILTATION FENCE, AT THE TOE OF SHALLOW SLOPES, ON FROZEN GROUND, LEDGE OUT CROPS, VERY ROOTED FORESTED AREA OR AT THE EDGE OF GRAVEL PARKING AREAS.

4. BERMS SHALL REMAIN IN PLACE UNTIL UPSTREAM AREA IS STABILIZED OR 90% CATCH OF VEGETATION IS ATTAINED. BERMS SHALL BE REMOVED OFFSITE OR BY SPREADING SUCH THAT NATIVE EARTH CAN BE SEEN BELOW.



EROSION CONTROL MIX BERM DETAIL

NOT TO SCALE



CATCH BASIN INLET PROTECTION

NOT TO SCALE

PERMITTING
NOT ISSUED FOR
CONSTRUCTION

ISSUED FOR
LEVEL II SITE PLAN

BY
DATE
WHS
3/2/19

EROSION & SEDIMENTATION CONTROL NOTES & DETAILS

PMA VISITOR PARKING LOT PROJECT

PORTLAND MUSEUM OF ART

7 CONGRESS SQUARE PORTLAND, MAINE 04101

DRAWING NAME

PROJECT NAME

CLIENT

ACORN ENGINEERING, INC.

65 HANOVER ST. PORTLAND MAINE 04101

(207) 775-2655

FILE: 1111_CIVIL

JN: 1111

SCALE: AS NOTED

DESIGNED BY: FRT

DRAWN BY: FRT

CHECKED BY: WHS

ACORN ENGINEERING, INC.

65 HANOVER ST. PORTLAND MAINE 04101

(207) 775-2655

ACORN ENGINEERING, INC.

65 HANOVER ST. PORTLAND MAINE 04101

(207) 775-2655

DRAWING NO.

C-43

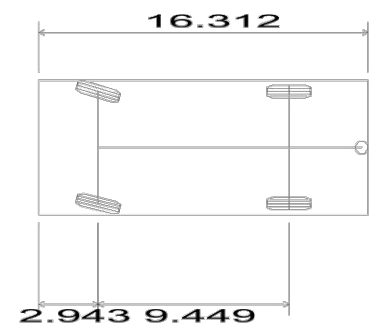
Ref: 100019

Luxury 4x4 (2006)
 Passenger car
 Autodesk
 Autodesk

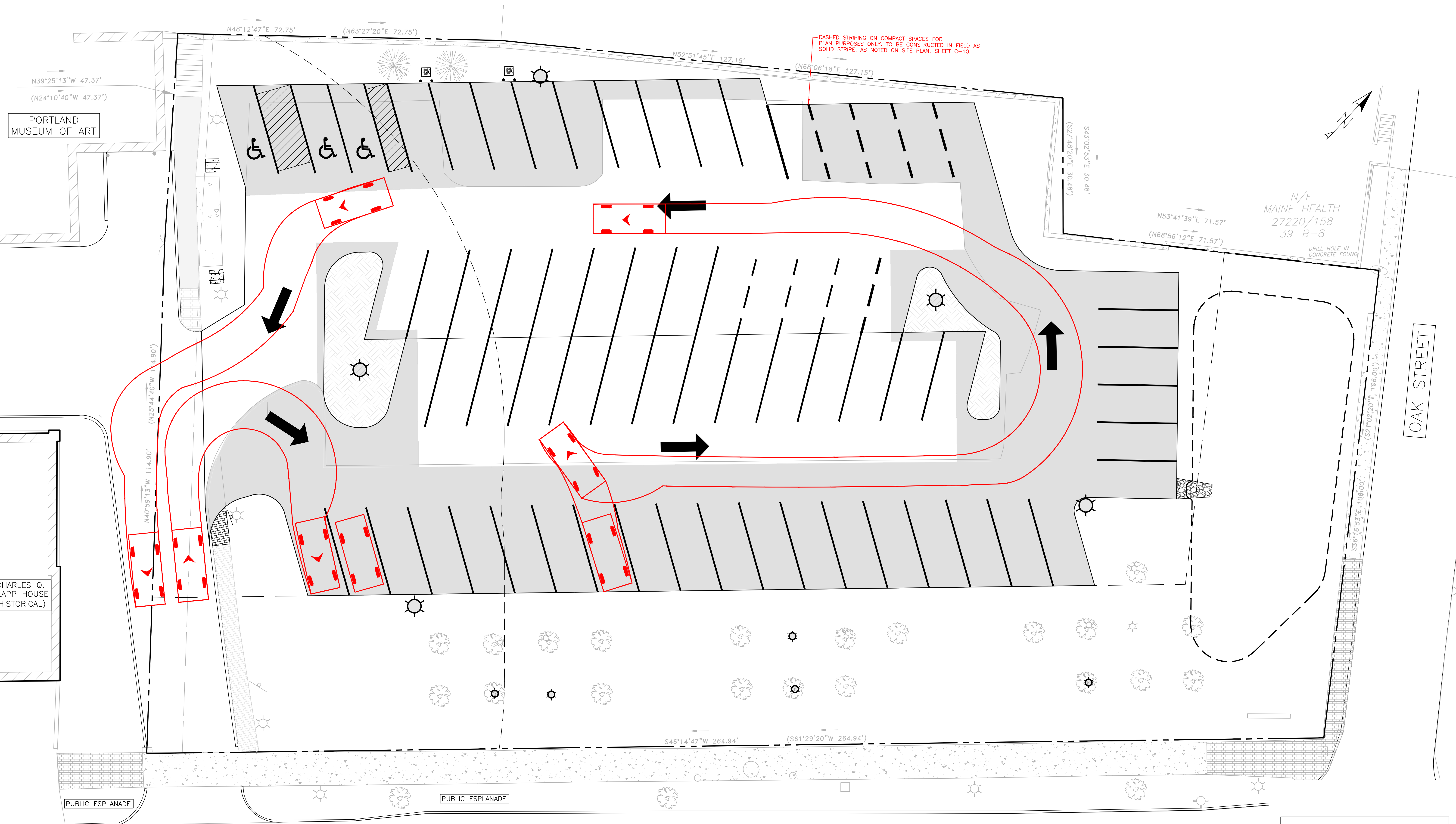


AutoTrader.co.uk

4x4 based upon the 2006 Range Rover 4.2



1. VEHICLE PATH DISPLAYED CREATED BY CIVIL 3D 2019 VEHICLE TRACKING CATALOG. EXTERIOR LINE INDICATES MODEL VEHICLE OVERHANG.
2. 2006 LAND ROVER RANGE ROVER SUV EDITION IMAGE OBTAINED FROM EDMUNDS.COM ON 4/11/19.



10 0 10 20

SCALE: 1" = 10'

PERMITTING
NOT ISSUED FOR
CONSTRUCTION

[illegible]

CIRCULATION PLAN - 1

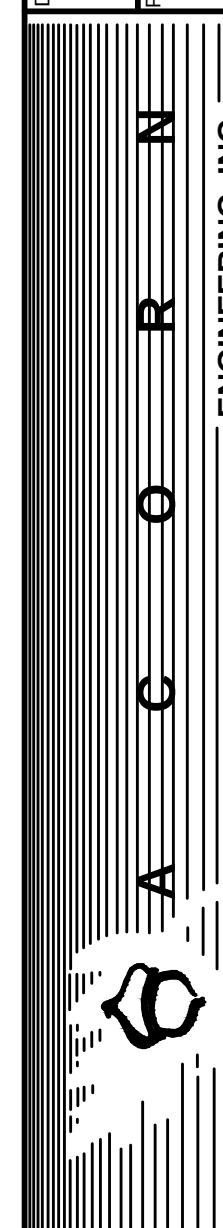
PMA VISITOR PARKING LOT PROJECT

PORTLAND MUSEUM OF ART
7 CONGRESS SQUARE PORTLAND, MAINE 04101

DRAWING NAME:

PROJECT NAME:

CLIENT:



ACORN ENGINEERING, INC.
355 HANOVER ST, PORTLAND MAINE 04101
(207) 775-2655

FILE:	1111_CIVIL
JN:	1111
SCALE:	AS NOTED
DESIGNED BY:	FRT
DRAWN BY:	FRT
CHECKED BY:	WHS

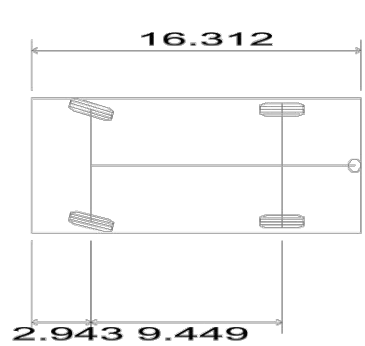
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EX-1

Ref: 100019

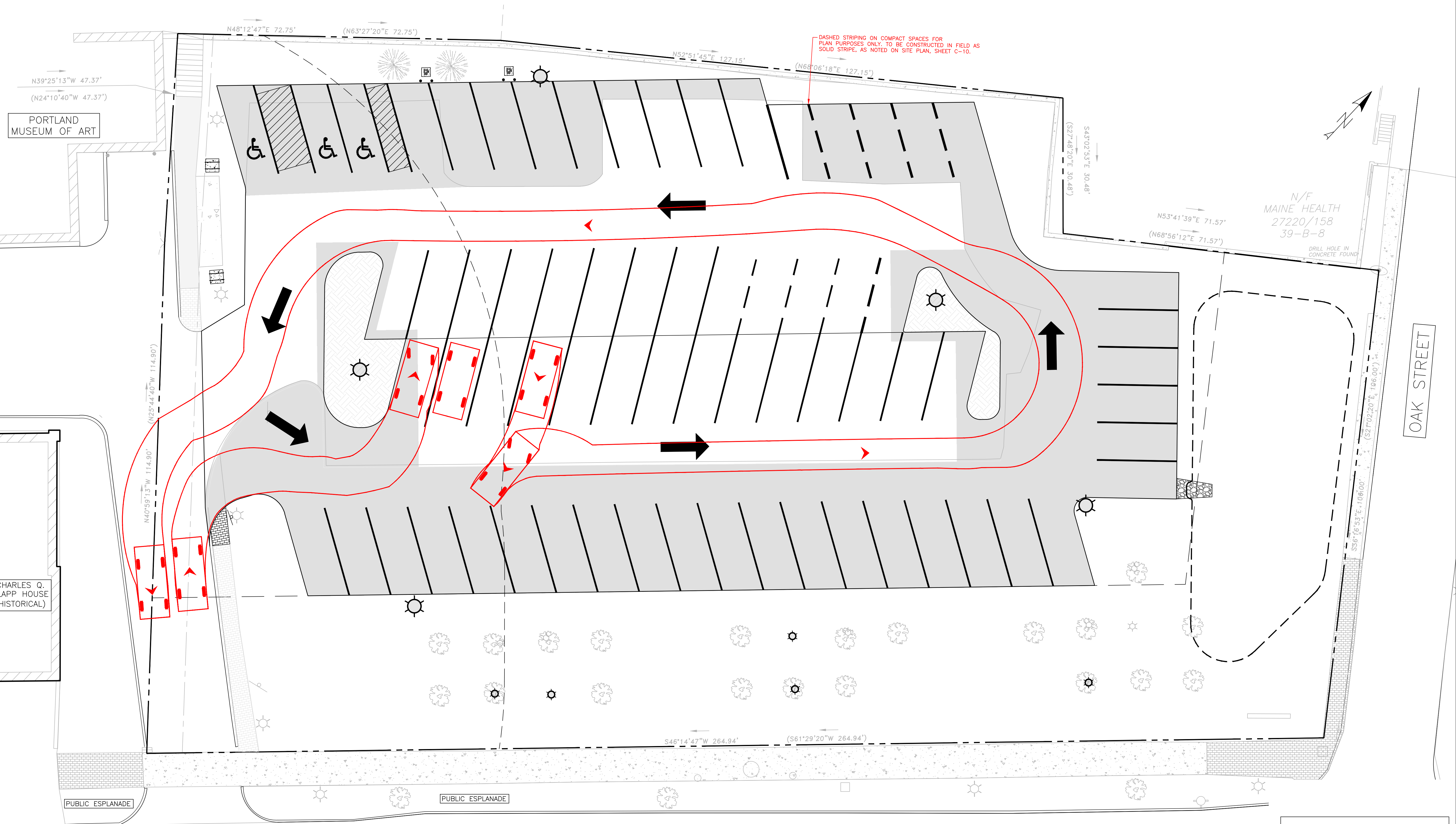
Description:

4x4 based upon the 2006 Range Rover 4.2



GENERAL NOTES:

1. VEHICLE PATH DISPLAYED CREATED BY CIVIL 3D 2019 VEHICLE TRACKING CATALOG. EXTERIOR LINE INDICATES MODEL VEHICLE OVERHANG.
2. 2006 LAND ROVER RANGE ROVER SUV EDITION IMAGE OBTAINED FROM EDMUNDS.COM ON 4/11/19.



SCALE: 1" = 10'

PERMITTING
NOT ISSUED FOR
CONSTRUCTION

[illegible]

CIRCULATION PLAN – 2

PMA VISITOR PARKING LOT PROJECT

PORTLAND MUSEUM OF ART
7 CONGRESS SQUARE PORTLAND, MAINE 04101

 A C O R N	ENGINEERING, INC.	
	ACORN ENGINEERING, INC. 65 HANCOCK AVENUE (307) 775-2859	04101
THIS PLAN MAY NOT BE MOVED WITHOUT WRITTEN PERMISSION FROM ACORN ENGINEERING, INC. ANY REVISIONS, ALTERATIONS OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO ACORN ENGINEERING, INC.		
DRAWING NAME:		
PROJECT NAME:		
CLIENT:		

FILE:	1111_CIVIL
JN:	1111
SCALE:	AS NOTED
DESIGNED BY:	FRT
DRAWN BY:	FRT
CHECKED BY:	WHS

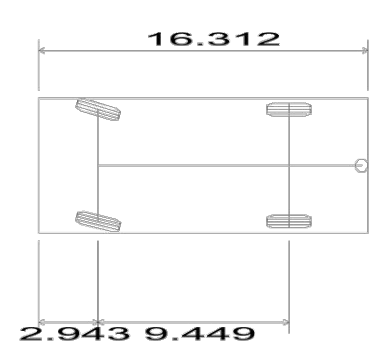
DRAWING NO.
EX-2

Ref: 100019

Luxury 4x4 (2006)
 Passenger car
 Autodesk
 Autodesk

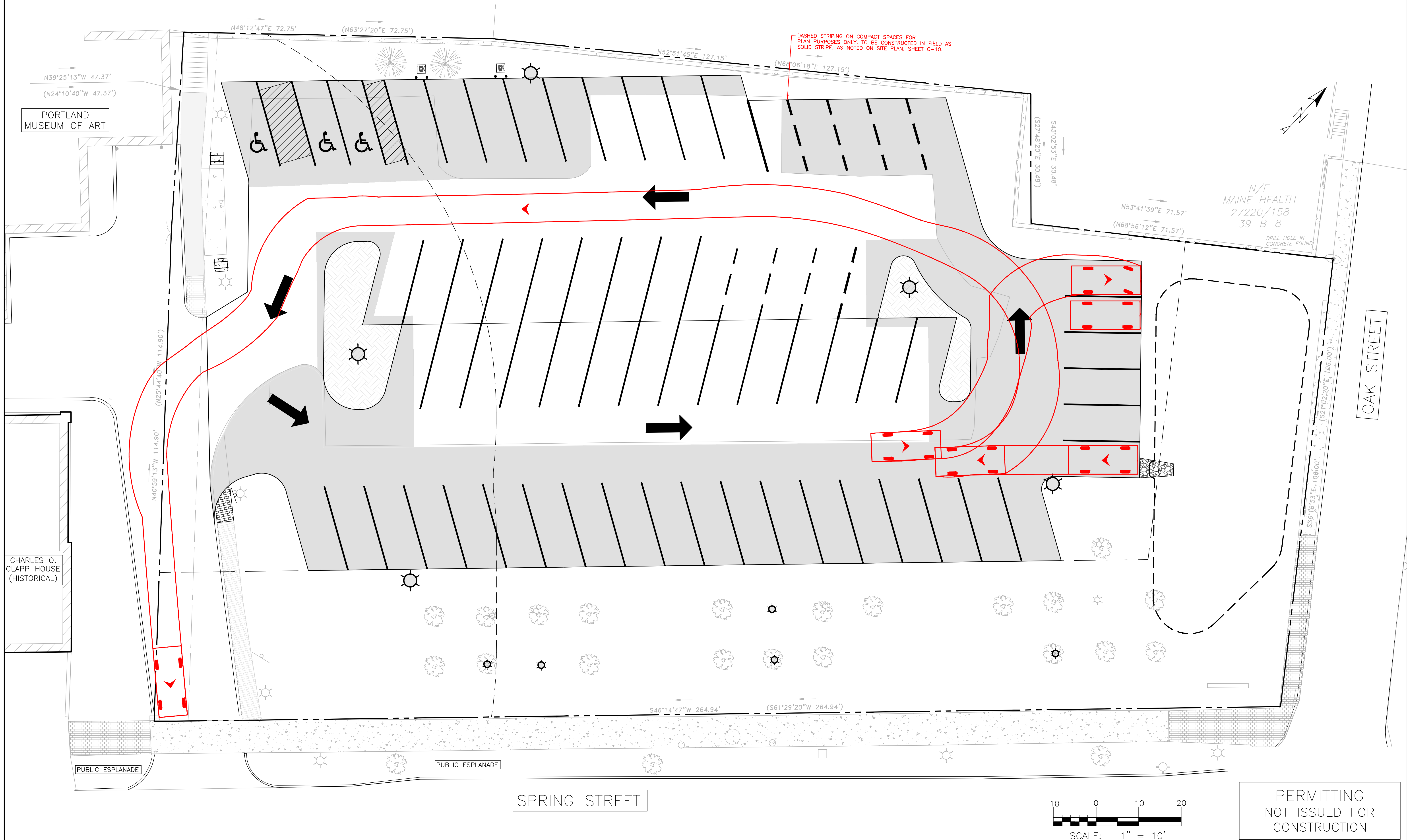


Source:	AutoTrader.co.uk
Description:	4x4 based upon the 2006 Range Rover 4.2



GENERAL NOTES:

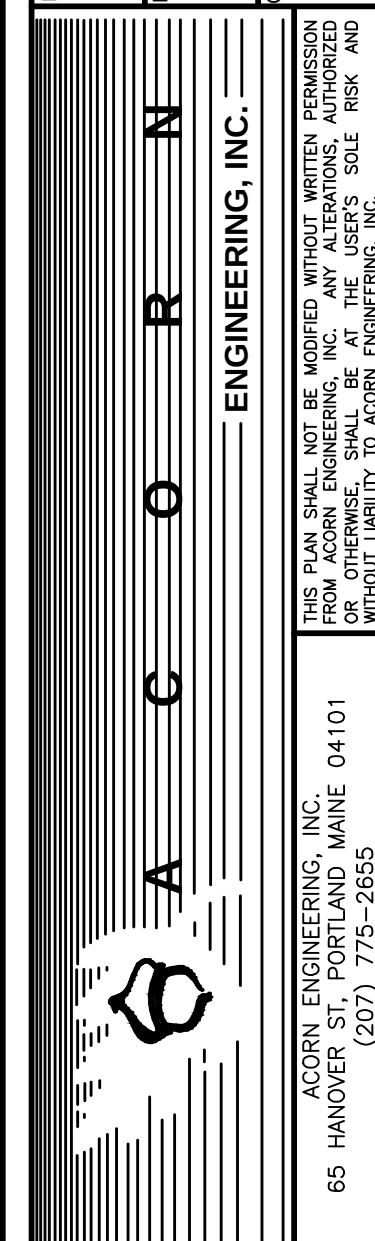
1. VEHICLE PATH DISPLAYED CREATED BY CIVIL 3D 2019 VEHICLE TRACKING CATALOG. EXTERIOR LINE INDICATES MODEL VEHICLE OVERHANG.
2. 2006 LAND ROVER RANGE ROVER SUV EDITION IMAGE OBTAINED FROM EDMUNDS.COM ON 4/11/19.

[illegible]

DRAWING NAME: CIRCULATION PLAN - 3

PROJECT NAME: PMA VISITOR PARKING LOT PROJECT

CLIENT: PORTLAND MUSEUM OF ART
7 CONGRESS SQUARE, PORTLAND, MAINE 04101



FILE:	1111_CIVIL
JN:	1111
SCALE:	AS NOTED
DESIGNED BY:	FRT
DRAWN BY:	FRT
CHECKED BY:	WHS

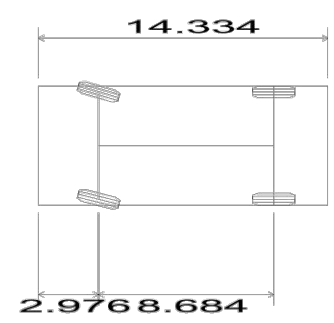
DRAWING NO.
EX-3

Vehicle Name:
Type:
Category
Classification

Source:

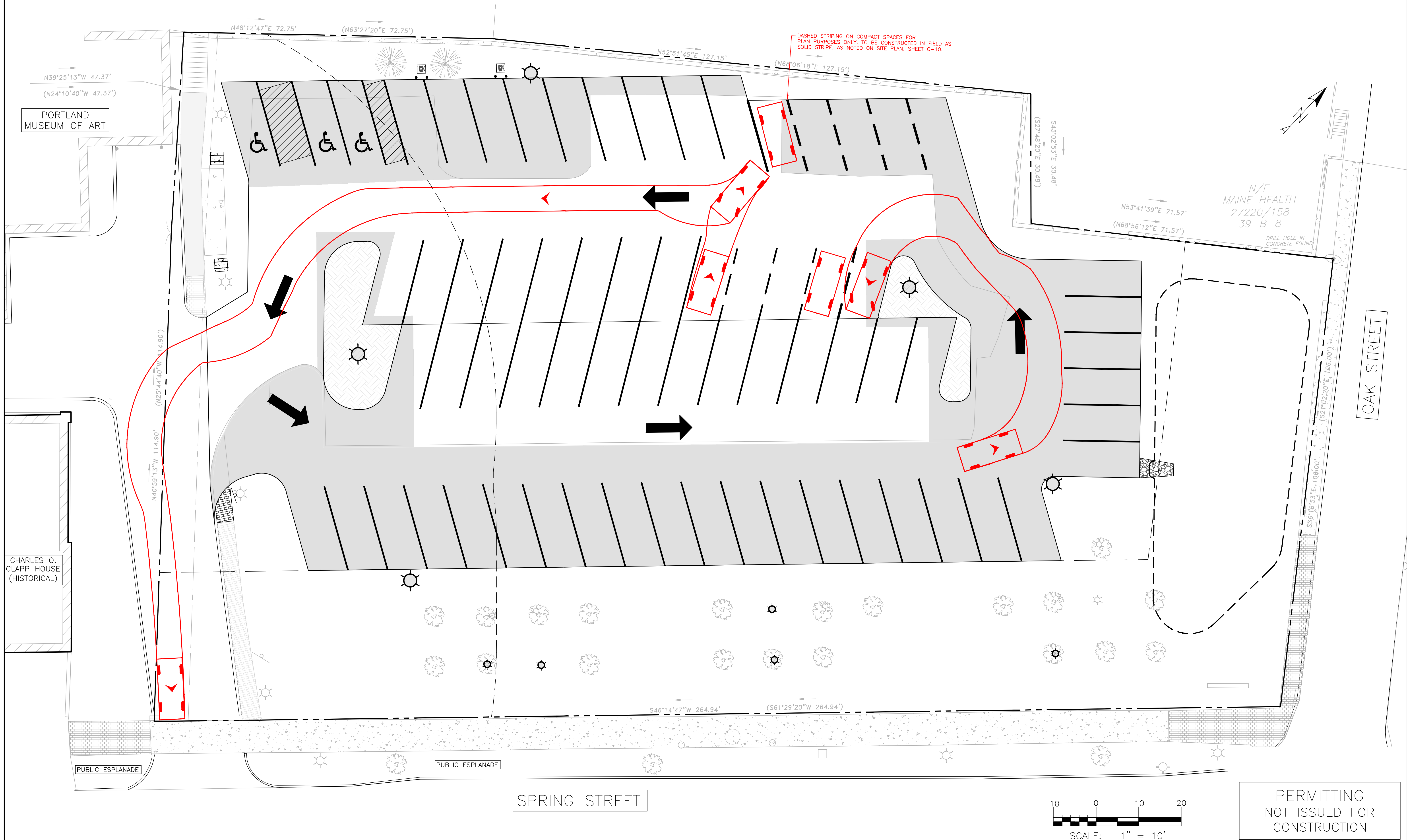
Description:

Volvo V 40
Passenger car
(Unspecified)
(Unspecified)

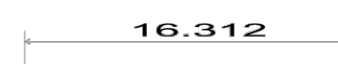


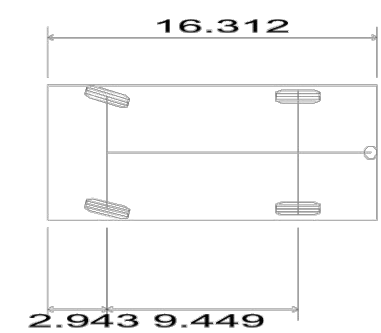
GENERAL NOTES:

1. VEHICLE PATH & DIMENSIONS DISPLAYED CREATED BY CIVIL 3D 2019 VEHICLE TRACKING CATALOG. EXTERIOR LINE INDICATES MODEL VEHICLE OVERHANG.
2. VOLVO V40 "CROSS COUNTRY" EDITION IMAGE OBTAINED FROM VOLVOCARS.COM ON 4/11/19.

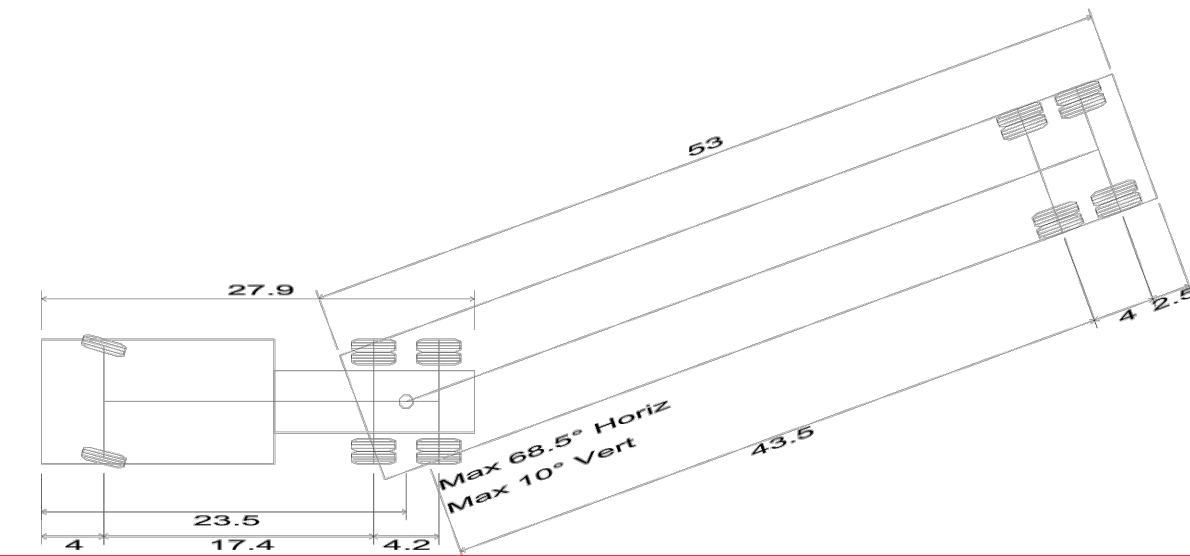


 ACORN ENGINEERING, INC. 65 HANOVER ST., PORTLAND MAINE 04101 (207) 775-2855	PROJECT NAME:		CIRCULATION PLAN - 4		ISSUED FOR:		BY:
	CLIENT:		PMA VISITOR PARKING LOT PROJECT		DATE:		WHS
			PORTLAND MUSEUM OF ART				4/11/24
			7 CONGRESS SQUARE, PORTLAND, MAINE 04101				
FILE: 1111_CIVIL		SCALE: AS NOTED		DESIGNED BY: FRT		DRAWN BY: FRT	
CHECKED BY: WHS							
DRAWING NO.							
EX-4							

Vehicle Tracking Vehicle Details		Ref: 100019
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Source: Description:	AutoTrader.co.uk 4x4 based upon the 2	
		

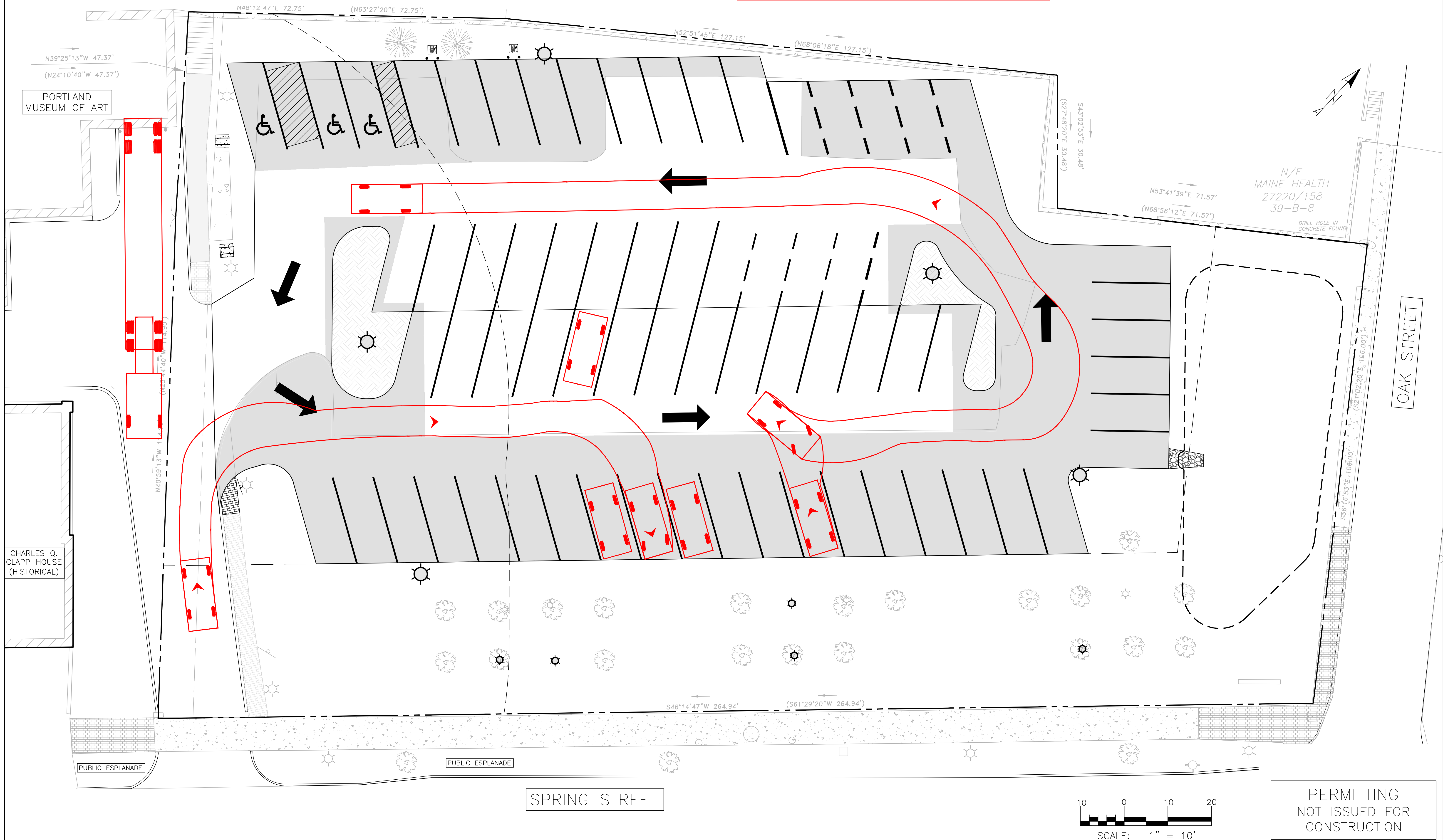


Vehicle Tracking Vehicle Details	Ref: 100033	
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Type:	Articulated vehicle	
Category	Autodesk	
Classification	Autodesk	
Source:	AASHTO handbook 2011	
Description:	Design vehicle	



GENERAL NOTES:

1. VEHICLE PATH DISPLAYED CREATED BY CIVIL 3D 2019 VEHICLE TRACKING CATALOG. EXTERIOR LINE INDICATES MODEL VEHICLE OVERHANG.
2. 2006 LAND ROVER RANGE ROVER SUV EDITION IMAGE OBTAINED FROM EDMUNDS.COM ON 4/11/19.



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	65 HANOVER ST. PORTLAND MAINE 04101 (207) 775-2855			
DRAWING NAME: CIRCULATION PLAN — 5				
PROJECT NAME: PMA VISITOR PARKING LOT PROJECT				
CLIENT: PORTLAND MUSEUM OF ART 7 CONGRESS SQUARE, PORTLAND, MAINE 04101				
FILE: 1111_CIVIL				
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SCALE: AS NOTED				
DESIGNED BY: FRT				
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DRAWING NO. EX-5				