

PLANNING BOARD PACKET

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**LEGAL ADVERTISEMENT
PORTLAND PLANNING BOARD MEETING**

The Portland Planning Board will hold a meeting on March 18, 2014, City Council Chambers, 2nd Floor, City Hall, 389 Congress Street. **Public comments will be taken at the workshop.**
The agenda includes the following items:

There is no Public Hearing portion of this meeting.

WORKSHOP – 5:00 p.m.

- i. Amended Conditional Rezoning Agreement; 76 St. Lawrence Street; St. Lawrence Arts Center, Applicant. The Planning Board will consider proposed amendments to a conditional zoning agreement for the St. Lawrence Arts Center. The amendments have been proposed by the Friends of the St. Lawrence Church to allow an addition to their existing performance arts venue, including a 401 seat theater, lobby area, support spaces, and function rooms, on the site of the former St. Lawrence Church sanctuary.
- ii. Level III Preliminary Site Plan : 421 Warren Ave.; 7 unit Commercial Complex – PH Warren Avenue, LLC, Applicant. The Board will consider a proposal to construct a 28,000 sq. ft. single level building to create 7 commercial units. Vehicle access would share the existing access for 429 Warren Ave. The project is located on a 9.6 acre lot that was formerly part of the site known as "Warren Green".

STUART O'BRIEN, CHAIR - PORTLAND PLANNING BOARD

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AGENDA
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STUART O'BRIEN, CHAIR - PORTLAND PLANNING BOARD

Memorandum

Planning and Urban Development Department

Planning Division

To: Chair O'Brien and Members of the Portland Planning Board
From: Nell Donaldson, Planner
Date: March 15, 2014
Re: Amendments to Conditional Rezoning Agreement, St. Lawrence Arts Center
CBL: 003-L-001
Meeting Date: March 18, 2014

I. INTRODUCTION

The Friends of the St. Lawrence Arts Center has requested a Planning Board workshop to review draft amendments to a conditional zoning agreement for their property at 76 Congress Street, formerly the St. Lawrence Congregational Church. The original agreement, adopted by the City Council in November 2010, was written to allow the Friends of the St. Lawrence to reconstruct the church sanctuary, a portion of the historic landmark structure that had recently been demolished. The sanctuary reconstruction was to provide an additional performing arts venue on site.

In the years since the original conditional zoning agreement, however, the reconstruction plans were never realized. Instead, the Friends of the St. Lawrence shifted their vision for the proposed addition, focusing on what has now evolved into a contemporary expansion rather than a reconstruction of the original church sanctuary. In this vein, the applicant applied for amendments to their original conditional zoning agreement in late January of 2014. The fundamental elements of the agreement remain unchanged – the applicant continues to desire to build an addition on the site of the former church sanctuary for the purposes of live theater. However, the original agreement requires modifications in order to allow the proposed addition in its new form.

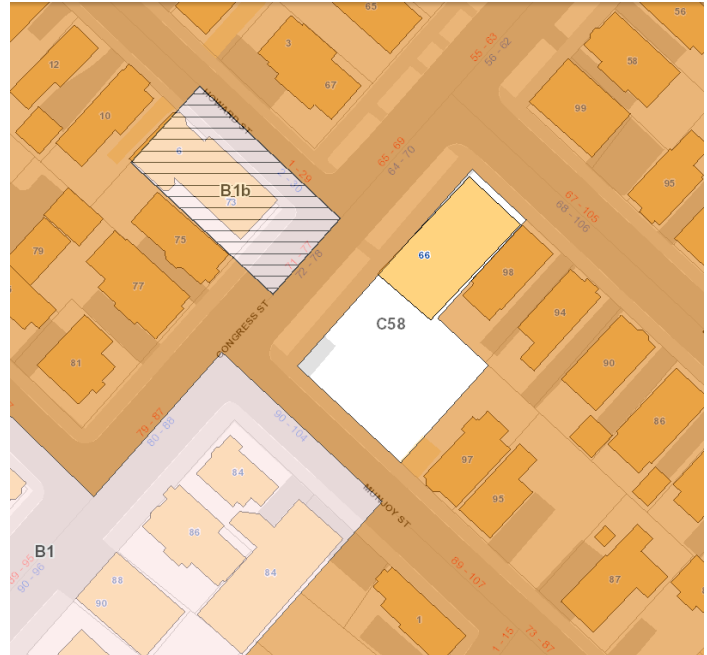


Figure 1: St. Lawrence Arts Center, zoning context

Applicant: Friends of the St. Lawrence Church
Consultants: David Lloyd, Archetype; Tom Gorrill, Gorrill-Palmer, Inc.

II. REQUIRED REVIEWS

Review	Applicable Statute
Conditional Zoning Agreement	MSRA Section 4352(8) City of Portland Code of Ordinances, Chapter 14, Division 1.5

III. PROJECT DATA

Existing Zoning	R-6 Residential with Conditional Zoning Agreement
Existing Use	Place of Assembly – Community Hall
Proposed Use	Place of Assembly – Community Hall
Parcel Size	10,565 SF (.24 acres)



Figures 2 & 3: St. Lawrence Arts Center (existing Parish Hall theater) at present (top) and with rendering of proposed addition (bottom)

V. CONTEXT

The St. Lawrence Arts Center sits on Congress Street in the heart of Munjoy Hill. While the site technically lies in an R-6 Residential zone, it abuts a B-1 Neighborhood Business zone, and lies directly across from an active restaurant use in a B-1b zone (Figure 1). The Rosemont Market and Hilltop Coffee sit on the Congress Street block immediately west. Residential uses surround the site to the north, east, and south. The site lies three blocks from the Eastern Promenade. As a historic property on the National Register of Historic Places, development on the site is subject to Historic Preservation review.

IV. BACKGROUND

The Saint Lawrence Arts Center building was initially comprised of two sections – the Parish Hall and the sanctuary, which were constructed simultaneously in 1897. The building served as a congregational church for almost a hundred years until its closure in 1986. In 2001, the Friends of

the St. Lawrence renovated the Parish Hall into a live theatre/ auditorium space under the zoning provisions for a community hall; the sanctuary portion of the building, however, was left vacant as the Friends of St. Lawrence sought the means for renovation. Ultimately, the sanctuary fell into disrepair. In 2006, the primary roof trusses partially collapsed; shortly thereafter, the sanctuary was deemed unsalvageable. It was dismantled in 2009, leaving the remainder of the Congress Street frontage of this Munjoy Hill block vacant. The Friends of the St. Lawrence recovered significant architectural features during the demolition with the intent of someday reconstructing the sanctuary building.

In 2010, the Friends of the St. Lawrence approached the city's Planning Division with the intent of doing just that – rebuilding the former church sanctuary in much its original form for use as a 402 seat performance venue. The applicant proposed a plan for the sanctuary that included many of the historic details of the old church building, down to the curbing, rose windows, and stone work. In order to rebuild such a structure, the applicant required relief from several provisions of the underlying R-6 zone, including the dimensional requirements, and relief from the city's of-street parking requirements as well.

Following adoption of the resulting conditional zoning agreement in 2010, the applicant embarked on a feasibility study with the intent of determining the extent of possible funding for the reconstruction project. It shortly became clear that the proposed reconstruction was likely cost prohibitive, and as a result, the Friends of the St. Lawrence changed plans; instead of rebuilding the church sanctuary in its former likeness, they now propose a lower cost contemporary addition.

IV. PROPOSED DEVELOPMENT

The major change in design is largely related to the style of the addition's exterior, which the Friends of St. Lawrence has modified to reflect a "contemporary building with an economically achievable budget" (*Attachment D*). The design, as depicted in the elevations referenced in the conditional zoning agreement, is marked by strong rectilinear elements and geometric forms. While contemporary, the architect has designed the building to reference the lines and materials of the existing Parish Hall. Thus the geometry of the proposed addition generally aligns with elements of the existing Parish Hall façade, and the architect has chosen a material palette which alludes to elements of the Parish Hall as well. The height of the addition is generally consistent with the former reconstruction plans. The main entrance is oriented towards Congress Street.

The development program remains much the same as in the previous reconstruction plan(*Table 1*). The plans include:

1. A 401-seat auditorium in the new sanctuary space;
2. The renovation of the existing Parish Hall auditorium to increase the seating capacity to 120 and add office spaces and a meeting room;
3. A new lobby to serve both the sanctuary and Parish Hall venues;
4. New support spaces including a catering kitchen, concession area, green room, dressing room, and bathrooms; and
5. A new function room, the Promenade Room, on the upper level.

The renovation will make the entire facility ADA accessible.

Table 1: Development Program, St. Lawrence Arts Center, Past, Existing, and Proposed

	<i>St. Lawrence Church</i>	<i>Parish Hall Theater</i>	<i>2010 Reconstruction Plan, as proposed</i>	<i>Current Plan, as proposed</i>
<i>Footprint</i>		3,360 SF	Existing parish hall + 5,460 addition = 8,820 SF total	3,360 existing parish hall + 5,715 addition + 710 SF porch addition = 9,785 SF total
<i>Floor Area</i>	24,794 SF	8,714 SF	28,188 SF	14,745 SF (addition only)/23,459 total ¹
<i>Height</i>			53 ft. 1 in. + 89 ft. steeple	54 ft.
<i>Development Program</i>		110 seats	120 seats in Parish Hall 402 seats in sanctuary New lobby New support space (concession, kitchen, green room, workshop) New conference and office space New Promenade Room	120 seats in Parish Hall 401 seats in sanctuary New lobby New support space (green rooms, dressing rooms, bathroom, storage) New conference and office space New Promenade Room (to serve as lobby break area during performances, meeting space at other times)(200 person capacity)
<i>Bike Parking</i>		0	12	12 ¹
<i>Off-Street Car Parking</i>	0	0	0	0

¹To be verified in subsequent submittals.

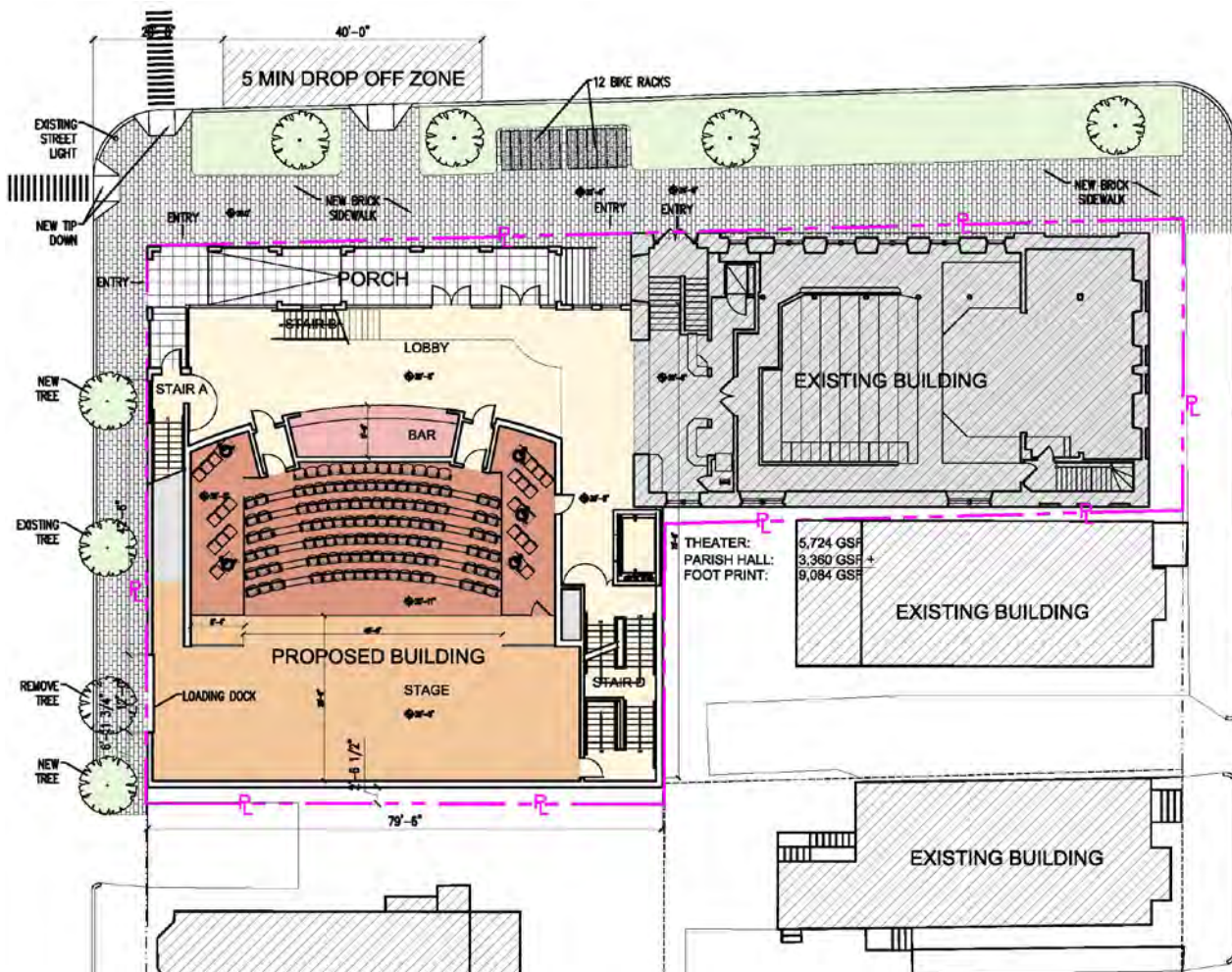


Figure 4: St. Lawrence Arts Center addition, conceptual site plan

According to figures assembled from previous Planning Division records, when compared to the original St. Lawrence Church, the proposed design decreases the gross square footage of the facility from 24,794 SF to 23,459 SF. The new plans also represent considerably less gross square footage than the 2010 reconstruction plans. Per the applicant's narrative, the proposed footprint is identical to the original church sanctuary on the Congress Street and Munjoy Street facades. On the southern and eastern property lines, small modifications to the former footprint are proposed. Ultimately, the proposed footprint is larger than that under the original conditional zoning agreement by approximately 1,000 SF.

Under the current plans, the height of the addition is proposed at 54'; the bell tower element of the 2010 plans has been eliminated. Regarding the current plans, the applicant's narrative stresses that "the major roof element of the performance hall is at approximately 41 feet 4 inches, which is below the maximum allowed by zoning. The Promenade Room, which is set back, gives the height increase to 54 feet but visually from the street the overall mass looks to be at the 41 foot height" (*Attachment D*).

V. CONDITIONAL REZONING AGREEMENT

In most terms, the amended conditional zoning agreement as currently proposed by the Friends of St. Lawrence has remained relatively unchanged:

- *Occupancy restriction:* The agreement continues to include an occupancy restriction limiting the maximum number of attendees at any single event in the St. Lawrence Arts facility to 485 persons. The occupancy clause restricts the Parish Hall theater to 120 persons, the sanctuary auditorium to 401 persons (representing a slight decrease from 405 in the original agreement), and prevents separate

audience events from being held in the Parish Hall and sanctuary auditorium at the same time. The provision, it should be noted, does allow simultaneous events to occur in the Promenade Room and either the Parish Hall or sanctuary. It also allows one event to occur in all three spaces, again provided that such an event is limited to 485 attendees total.

- *Maintenance*: The agreement continues to incorporate language stating that the property owner shall be responsible for ongoing maintenance, including snowplowing, salting, sanding, and sweeping.
- *Sidewalks*: The agreement also continues to include language requiring new brick sidewalks along Munjoy Street, Beckett Street, and Congress Street and the resetting of existing pink granite curbing on these frontages.
- *Street Trees*: As previously, the agreement requires two street trees along the Munjoy Street, Beckett Street, and Congress Street frontages or a contribution to the City of Portland Tree Fund in their stead.
- *Street Lights*: Likewise, the agreement continues to require two street lights meeting the specifications of the Downtown Lighting District along the Congress Street frontage.
- *Pedestrian Connections*: The agreement still includes language requiring the applicant to construct remaining pedestrian connections and sidewalk ramps at Congress Street and Eastern Promenade “on both sides of the street” and Moody Street and Eastern Promenade “on both sides of the street” and includes language noting that pedestrian connections to Cutter Street parking lots, as described in the Eastern Promenade Master Plan, may be required. It should be noted that some of these connections have been completed since the 2010 agreement was adopted.
- *Buses*: The agreement continues to require that the property owner ensure that tour buses, vans, and trucks serving the site unload and then relocate to a remote, off-street parking location.
- *Legal terms*: All legal terms, including terms of applicability, expiration, enforcement, and validity, remain fundamentally unchanged.

There are, however, some basic changes proposed to the language of the agreement. In keeping with the design changes, the agreement now includes references to a “new structure which will respect the character-defining features of the historic property” (*Attachment F*). The revised language also more explicitly states the functions to be housed in the proposed addition, including “a performance arts hall on the site of the former sanctuary to provide a full basement for ‘back of house’ green rooms, ADA toilets and storage, a lobby that serves both the auditorium and theater space, a top floor ‘promenade room’/additional lobby, and a new four hundred and one (401) seat auditorium.”

As with the 2010 reconstruction proposal, the new plans do not conform with most of the dimensional standards of the underlying R-6 zone, and as such, modifications to these standards are necessary in the conditional zoning agreement (*Table 2*). The revised agreement increases the allowable lot coverage to 95% (up from 90%) to account for a larger footprint. The amendments likewise reduce the allowable height to 54 feet (from 65 ft.).

The amendments also change the procedure for reporting parking and traffic complaints. In the adopted agreement, the language requires the property owner to institute a review process upon hearing five or more complaints regarding parking or traffic. The revised language modifies this arrangement slightly such that, if any complaints are received within a one-year timeframe, those will be reported to the Planning Division as part of an annual transportation demand management (TDM) review. It should be noted that this review process is institutionalized in the proposed TDM program, where monitoring is planned one month after opening and thereafter on an annual basis.

Site Plan, Floor Plans, and Elevations

The conditional zoning agreement incorporates a site plan, floor plans, and elevations by reference (*Plans 1-9*). The site plan includes a number of site improvements, including street trees, brick sidewalks, crosswalks, and bike racks, associated with the language of the conditional zoning agreement. Some modifications to the on-street parking schedule are implied. As with the original reconstruction plans, no off-street parking is proposed. The architectural drawings reflect the design modifications as described above.

Table 2: Conditional Zoning Agreement Amendments, Comparison to Original CZA and R-6 Zone

	R-6	2010 CZA	CZA Amendments
Use	Places of assembly conditional use	Notwithstanding section 14-137(b)(6)(e)(i), the use shall be a place of assembly/community hall	No change
Min. Lot Size ¹	Large (unlim.) - 30 KSF Medium (<4,500 SF) – 15 KSF Small (<2,250 SF) - 7,500 SF	10,500 SF	No change
Min. Front yard	10 feet	0 ft.	No change
Min. Rear Yard	20 ft. (for structures >100SF)	0 ft.	No change
Min. Side Yard	10 – 15 ft. (based on height)		No change
Min. Side Yard on Side St.	10 ft.	0 ft.	No change
Max. Lot Coverage	40% (> 20 units) 50% (< 20 units)	90%	95%
Max. Tower Height	45 ft. (max structure height)	90 ft.	N/A
Max. Sanctuary Structure Height	45 ft. (max structure height)	65 ft.	54 ft.
Open Space Ratio	20%	0%	No change
Min. Lot Width	40 ft.	50 ft	No change
Off-Street Parking Requirement ²	1/125 SF of building area used for assembly purposes; no additional required for structures subject to HP ordinance	Requirement of TDM plan shall supersede any and all parking requirements of the land use code	No change

Parking Management/Transportation Demand Management (TDM) Plan

The agreement also incorporates a transportation demand management plan by reference. The applicant has elected to depart entirely from the parking/TDM plan associated with the 2010 agreement and draft a new plan, this one developed by Gorrill-Palmer Consulting Engineers (*Attachment G*). The new parking/TDM plan includes a parking analysis which calculates a parking ratio based on survey data gathered during a sample of two St. Lawrence shows and validated with observed parking counts and national best practice. The rate used, .45 vehicles/attendee, is more than forecasted by the Institute for Traffic Engineers for a “live theater” and falls between the ratios derived from the two shows’ survey data. Using this rate, the analysis calculates a demand under the peak proposed condition (e.g. a 485 attendee occupancy) of 218 spaces for visitors. When added to a presumed 10 parking spaces for employees, a total peak parking demand of 228 spaces results.

Regarding supply, the study relies on a parking count from a typical weekday night (i.e. a night without a show) at midnight, when the cars on the street are likely to represent those of neighborhood residents, rather than visitors. This count showed 179 available on-street spaces within a five minute walk (900 feet) of the St. Lawrence Arts Center. The parking count also found a capacity of 95 off-street spaces at the Cutter Street parking lots on the Eastern Promenade. Assuming the use of the Cutter Street lots and all available on-street parking spaces, the parking study calculates a total parking supply, then, of 274 spaces, exceeding the peak demand.

¹ For places of assembly on a collector or arterial road. (Maximum Floor Area)

² The off-street parking requirement for places of assembly in Division 20 of the city’s land use ordinance is 1 space/125 SF used for assembly purposes. Division 20 includes an exception for historic structures subject to the Historic Preservation ordinance (*Section 14-332.2*).

Regardless of the adequacy of the on- and off-street parking supply surrounding the St. Lawrence Arts Center, a transportation demand management plan is a requirement of the original conditional zoning agreement. The draft TDM plan includes a number of mechanisms designed to minimize the use of single-occupancy vehicles and thus reduce parking needs:

- A \$1 ticket discount for traveling METRO, whose Route #1 provides twice an hour service to within a block of the St. Lawrence Arts Center until 8 p.m. Monday – Saturday, with limited service extending to 11 p.m. Limited service is also provide on Sunday afternoons;
- Van shuttle service to remote parking in the Cutter Street parking lots, with shuttle signage at both ends of the service route;
- Bicycle parking; and
- The development of promotional materials to encourage carpooling, transit ridership, and use of remote parking;

The plan also includes the designation of a TDM coordinator. Monitoring is proposed to begin one month following opening of the St. Lawrence addition, with annual monitoring thereafter. The Friends of St. Lawrence would monitor mode choice and parking supply through employee and attendee surveys as well as parking counts before and during events.

VI. PUBLIC COMMENT

The Planning Division has received a number of written comments regarding the project (*PC-1-5*). In addition, two neighborhood meetings were held on the conditional zoning agreement amendments, one hosted by the Friends of St. Lawrence (*PC-6*) and one hosted by the Planning Division (*PC-7*). Many of the residents commenting through these outlets expressed support for the mission of the St. Lawrence Arts Center and the role it fills in the community. However, many also expressed concerns, primarily regarding the scale of the proposal, the building's design, parking impacts, and the viability of the planned transportation demand management program.

A. Scale and Massing

Members of the public have raised concerns regarding the dimensional standards represented in the contract zone language, questioning the height and massing of the building in particular. Residents have stated that they consider the building out of scale with its surroundings and have expressed concerns about shadow impacts. Some residents have also stated that they find the architecture of the addition inconsistent with both the existing Parish Hall and the neighborhood.

B. Capacity

Members of the public have also raised concerns regarding the content of the conditional zoning agreement as it relates to capacity figures. These questions have focused mainly on the clause which limits the combined occupancy to 485 people. As noted above, this clause, to which minor amendments are proposed, is designed to preclude events from occurring in the Parish Hall and sanctuary auditoriums at the same time, but to allow events to occur in the Promenade Room at the same time as an event in either of the auditorium facilities and to allow a single event using all three spaces so long as it does not exceed 485 attendees. Neighbors have questioned the clarity of the agreement language with respect to this occupancy limit, and have further questioned the ability of the city to enforce such a limit. Related to this concern, some residents have expressed a desire to “scale down” the proposed development to simply reflect a venue of smaller size.

C. Parking Supply

The Planning Division has also fielded numerous concerns regarding the adequacy of the on-street parking supply. At a fundamental level, some residents have raised questions about the parking study methodology, calling into question the validity of the parking counts. Neighbors have repeatedly stated that insufficient on-street parking supply currently exists and have questioned the capacity of the on-street network to absorb more vehicles, particularly during winter conditions. Related to these concerns, neighbors have expressed fears regarding traffic safety and congestion resulting from visitors searching for on-street parking. It should be

noted that other residents have suggested possible solutions to the parking supply concern, such as building a garage on Munjoy Hill or instituting a residential parking permit program. Others have stated that they see no parking problem under the proposed plans. Residents have also requested information as to the likely frequency of shows, implying that, if infrequent, some parking congestion might be deemed manageable.

D. TDM Plan

Neighbors have also raised concerns with respect to specific components of the TDM plan. Chief among these are questions regarding the viability of the remote parking system at the Cutter Street lots. Residents have suggested that the logistics of this system need more careful planning, and that there are obstacles (e.g. the presence of boat trailers) that could prevent the functioning of such a remote parking system. Councilor Donoghue has suggested that the enhancement of existing METRO service should be emphasized in lieu of the remote parking system, stating that improved transit service “can mitigate baseline residential and commercial parking demand in the neighborhood all while providing a tangible neighborhood benefit that the equally costly shuttle does not” (PC-5). (It should be noted that staff anticipates a more thorough discussion of specific transportation demand management strategies at a subsequent workshop. A third party review of the TDM plan will be available at that time.)

E. Safety & Noise

Lastly, residents have expressed concerns regarding safety, particularly as it relates to snow and ice conditions during the winter. Residents have stressed the importance of sidewalk maintenance in the success of the parking/TDM plan, and have also noted that winter conditions, with congested on-street parking, might make passage of neighboring streets more dangerous for cars, pedestrians, and public safety personnel. Residents also expressed concerns regarding the noise impacts of the facility on the neighborhood.

VII. REGULATORY CONSIDERATIONS

Consideration of the request for conditional rezoning is guided by both state statute and the city’s land use ordinance. The state statute (Title 30-A Section 4352(8)) requires that all conditional or contract zoning must:

- *Be consistent with the growth management program adopted under this chapter;*
- *Establish rezoned areas that are consistent with the existing and permitted uses within the original zones; and*
- *Only include conditions and restrictions that relate to the physical development or operation of the property.*

The city’s ordinance (Section 14-60) further states:

Pursuant to 30-A M.R.S.A. Section 4503(9), conditional or contract zoning is hereby authorized for rezoning of property where, for reasons such as the unusual nature or unique location of the development proposed, the city council finds it necessary or appropriate to impose, by agreement with the property owner or otherwise, certain conditions or restrictions in order to ensure that the rezoning is consistent with the city's comprehensive plan. Conditional or contract zoning shall be limited to where a rezoning is requested by the owner of the property to be rezoned. Nothing in this division shall authorize either an agreement to change or retain a zone or a rezoning which is inconsistent with the city's comprehensive plan.

The applicant has provided narrative elements relating to this regulatory framework (*Attachment D*), making the argument that the conditional zoning agreement as amended is necessary and appropriate in this instance, is consistent with the city’s comprehensive plan, and that it establishes rezoned areas consistent with the uses of the underlying zone. A summary of the applicant’s arguments follow:

A. Necessity of Conditional Zoning Agreement

The applicant has essentially argued in their narrative that unique conditions exist which make the conditional zoning agreement as amended necessary. Most explicitly, they link the conditional zoning agreement directly to the long-term viability of the historic landmark structure on site, stating that the

agreement is needed to allow modifications in the R-6 dimensional standards in order to permit an expansion of the scale required to provide long-term financial sustainability for the St. Lawrence Arts Center, including the funding to maintain the historic Parish Hall. The narrative states, “to be a responsible steward, SLA needs to find a way to obtain funds to properly maintain this distinctive 19th century stone structure [the Parish Hall]...The Parish Hall Theater does not have the capacity to generate significantly more revenue by itself; the potential of the currently vacant part of the site needs to be harnessed...The stream of revenue from the new performance hall will enable SLA to cover operating expenses and to generate the additional funds which are necessary to maintain the landmark Parish Hall” (*Attachment D*).

B. Consistency with the Comprehensive Plan

Likewise, the applicant has made the case that the conditional zoning agreement is consistent with the comprehensive plan. In their narrative, the applicant writes, “the link between the Comprehensive Plan goals and policies to be advanced by this proposal are squarely on target and beyond question in the areas of arts and culture, neighborhood and sustainable development, and historic preservation” (*Attachment D*). The narrative cites numerous goals from the city’s comprehensive plan related to these domains, relying heavily on the city’s *Celebrating Community: A Cultural Plan for Portland, Maine* (1998), *Downtown Vision* (1991), *Plan for Portland’s Arts District* (1995), *Housing: Sustaining Portland’s Future* (2002), *Community Commercial Policies and Land Use Plan* (1988), and the Historic Preservation ordinance.

These goals include explicit references to creating “a citywide approach where both neighborhoods and the Arts District are venues for heritage, performing, visual, and public art projects;” promoting and enhancing “the cultural community by retaining and encouraging arts and cultural organizations,” and supporting “the cultural community by retaining and expanding performance and exhibition space, housing, studio space, and office/support space for artists, institutions, and organizations.” The applicant also cites the 2006 Creative Economy Summit, through which an explicit priority was placed on developing “publicly supported and/or affordable public space for artists,” with an action item related to “[f]inishing St. Lawrence Arts.”

C. Consistency with Underlying Uses

Lastly, the Friends of St. Lawrence Arts has argued that the conditional zoning agreement establishes areas which are consistent with the uses of the underlying zone. The applicant’s narrative states that the proposed use qualifies as a “community hall,” as a building or portion of a building built for institutional use and occupied for “social, recreational, artistic, civic, or educational community functions” (*Section 14-47*). The language of the conditional zoning agreement refers to the use of the property as such. The applicant actually argues in their narrative that the addition meets the conditional use standards for a community hall under *Section 14-137(b)e*, contending that portions of the structure were in existence and operating as a community hall as of January 4, 2010, the original structure was built for institutional purposes, the structure is operated by a non-profit entity, and that the TDM plan supplied here could apply. It should be noted that the existing conditional zoning agreement language essentially renders the question of the conditional use standards obsolete, given its explicit reference to the use of the property as a community hall “notwithstanding” these conditions.

More generally, while the R-6 zone is essentially residential in nature, the applicant notes that “the zoning ordinance recognizes that a broad range of complementary non-residential uses should be allowed [in the R-6 zone], such as cemeteries, parks, and municipal uses (permitted uses), and schools, intermediate and long-term care facilities, hospitals, colleges, and trade schools, professional offices, and places of assembly...(conditional uses)” (*Attachment D*). Places of assembly, and specifically community halls as a defined type of place of assembly, are listed as conditional uses in the R-6 zone. Further, the narrative states, “there are numerous other churches, places of assembly, and community halls on the peninsula in the R-6 zones.”

VIII. STAFF REVIEW

Staff has conducted a preliminary review of the conditional zoning agreement. Comments are as follows.

A. Zoning

Marge Schmuckal, zoning administrator, has reviewed the draft agreement and provides the following comments,

I have reviewed what was submitted by way of plans and text changes to the contract zone. I would like better clarification (list) as to the actual uses that would be held within the "Promenade Room". The conditional contract zone also states the minimum lot size is 10,500 feet. I have not seen anything in the documentation (not on site plan) as to the actual size of the lot in question. Please provide. The conditional/contract zone states that the maximum lot coverage be changed from 90% to 95%. I have not seen any documentation as to the specific lot coverage and how it meets the maximum 95%. Please provide.

Although the elevations give a height from some point (no other information given) to the top of the promenade room roof, there is not enough information submitted for me to determine the height based on definitions in the Land Use Zoning Ordinance. I will need to see the actual grades around the entire building (old and new are connected and are considered one building when completed) to determine what the average grade of the building will be. It will be from that point to the highest point as defined in the definitions of the Ordinance that will determine the actual height of the building. Please provide the appropriate information so compliance can be determined,.

Ms. Schmuckal has also asked that graphic scales be added to plans.

B. Site Plan/Floor Plans/Elevations

Staff has conducted a preliminary review of the conceptual site plan to be incorporated in the conditional zoning agreement by reference; the agreement language requires that, ultimately, the property be developed "substantially in accordance" with this plan. The current plan will require some minor modifications. In particular:

- Street lights and street trees as specified in the conditional zoning agreement should be shown on the plan;
- Clarification regarding the proposed footprint is needed, as the narrative implies some projecting elements which are not depicted on the site plan;

David Margolis-Pineo, of the city's Department of Public Services, has asked for clarification on the extent of sidewalk replacement work to be conducted. All areas of brick sidewalk should be shown on the plan. Mr. Margolis-Pineo has also suggested additional discussion with the applicant regarding proposed ramp layouts. Of the ramp layout, Thomas Errico, consulting traffic engineer, has written,

A handicapped ramp is illustrated at the proposed 5-minute parking space. This is not a typical design treatment and further review will be required.

A crosswalk across Congress Street is proposed. In addition to an ADA compliant ramp on the project side of the street, an ADA ramp will be required on the opposite side of the street. It is my recommendation that the applicant be responsible for all improvements necessary for the installation the crosswalk (e.g. pavement markings, signs, ramps, etc.). I would note that the design details will need to be reviewed and approved in the future, including the location of the crosswalk.

While this would be a new requirement, it may be offset by some of the work which has already been completed on the pedestrian connections at the Eastern Promenade, a component of the original conditional zoning agreement.

Regarding the on-street parking arrangement immediately surrounding the site, Mr. Errico adds,

Further evaluation of parking regulations and dimensions for the drop-off space will be required. The City would like to maximize the use of the curb space (when not in use during events) and additional review is required.

Given the historic landmark status of the existing structure, the applicant is required to obtain a certificate of appropriateness from the Historic Preservation Board. The Friends of the St. Lawrence has begun this review process, meeting several times over the last year with the city's Historic Preservation Board. The Board has provided guidance related to the design of the building in the context of the existing historic Parish Hall as well as the neighborhood more broadly. Following three workshops on the design proposal, Deb Andrews, the city's Historic Preservation Manager, has indicated the Board's general comfort with the design's evolving direction. The Historic Preservation review process has been temporarily put on hold as the Planning Board, and subsequently the City Council, review the amendments to the conditional zoning agreement.

C. Parking Study/TDM Plan

Staff has also conducted a very preliminary review of the applicant's parking management plan/transportation demand management plan. Generally, in its review, staff has found the transportation demand management plan underdeveloped. John Peverada, the city's parking manager, has stressed the importance of quantifying the impact of the TDM strategies in a revised version of the TDM plan. He has also observed that, in order for a shuttle system to operate on the Eastern Promenade, changes to the city's traffic schedule may be required. In a revised submittal, the applicant will be required to further detail many of the TDM strategies proposed, as well as further explain the process for managing public comments on the success of the TDM plan/parking management strategies.

It should be noted that the Planning Division has very recently contracted with a TDM specialist to review the TDM components of the plan in greater detail. The objective of this review is to gain a sense of the viability of the proposed TDM strategies and develop additional TDM concepts, informed by a national perspective, which might work in this context. Due to the timing of the contract negotiations, comments were not available in advance of the workshop. Again, following comments from the peer reviewer, the applicant will be required to provide a further developed TDM plan. A subsequent workshop on this topic is recommended.

IX. NEXT STEPS

1. Provide additional and/or revised materials as requested by staff and the Planning Board;
2. Hold second public workshop, with focus on parking study and transportation demand management plan.
3. Schedule public hearing

X. ATTACHMENTS

PLANNING BOARD REPORT ATTACHMENTS

1. Zoning administrator review (memo from Marge Schmuckal, 2/19/14)
2. Department of Public Services review (memo from David Margolis-Pineo, 2/26/14)
3. Consulting traffic engineer review (memo from Tom Errico, 3/13/14)

APPLICANT'S SUBMITTALS

- A. Conditional Zoning Agreement application
- B. Evidence of Right, Title, and Interest,
- C. Locator Map

- D. Executive Narrative
- E. Renderings from Congress Street
- F. Draft Conditional Zoning Agreement
- G. Draft Parking Management Plan

PUBLIC COMMENT

- PC-1. Email from Lynne Panico, 2/19/14
- PC-2. Email from Enoch Wenstrom, 2/26/14
- PC-3. Email from Ross Fields, 2/26/14
- PC-4. Handout from Concerned Citizens of Munjoy Hill
- PC-5. Email from Kevin Donoghue, 2/28/14
- PC-6. SLAC public meeting notes, 2/12/14
- PC-7. Planning Division public meeting notes, 2/27/14

PLANS

- Plan 1 Site Plan
- Plan 2 Basement Plan
- Plan 3 First Floor Plan
- Plan 4 Upper Theater Level
- Plan 5 Upper Theater Level Continued
- Plan 6 Promenade Floor Plan
- Plan 7 North Elevation
- Plan 8 West Elevation
- Plan 9 South Elevation
- Plan 10 East Elevation

MEMORANDUM

To: FILE
From: Nell Donaldson
Subject: Application ID: 2014-009
Date: 2/19/2014

Comments Submitted by: Marge Schmuckal/Zoning on 2/13/2014

Please add graphic scales as required by city standards

Comments Submitted by: Marge Schmuckal/Zoning on 2/13/2014

I have reviewed what was submitted by way of plans and text changes to the contract zone. I would like better clarification (list) as to the actual uses that would be held within the "Promenade Room". The conditional contract zone also states the minimum lot size is 10,500 feet. I have not seen anything in the documentation (not on site plan) as to the actual size of the lot in question. Please provide. The conditional/contract zone states that the maximum lot coverage be changed from 90% to 95%. I have not seen any documentation as to the specific lot coverage and how it meets the maximum 95%. Please provide.

Although the elevations give a height from some point (no other information given) to the top of the promenade room roof, there is not enough information submitted for me to determine the height based on definitions in the Land Use Zoning Ordinance. I will need to see the actual grades around the entire building (old and new are connected and are considered one building when completed) to determine what the average grade of the building will be. It will be from that point to the highest point as defined in the definitions of the Ordinance that will determine the actual height of the building. Please provide the appropriate information so compliance can be determined,.

Marge Schmuckal
Zoning Administrator
City of Portland, ME

February 26, 2014

Memo To: Helen Donaldson
Barbara Barhydt
From: David Margolis-Pineo, Dept. of Public Services
Re: Development Review Comments
76 Congress Street – St Lawrence Church Addition

The Department of Public Services has the following review comments on the above proposed project.

1. The applicant is required to submit property survey plan stamped by a registered professional surveyor. *Note: to be addressed under site plan review.*
2. Are any food preparation facilities proposed with this new expansion? If so, a means of removing grease from the waste stream needs to be discussed. *Note: to be addressed under site plan review.*
3. Congress Street in from of this proposed project is currently under moratorium and will be until September of 2017.
4. It appears the applicant is proposing to replace the concrete walk on both Congress and Munjoy St. with a new brick sidewalk, correct?
5. The proposed layout of the sidewalk ramp and the scope of work still needs to be reviewed and agreed upon.
6. Due to the increase of impervious area, stormwater treatment may be likely.

This Department has no further comments until more design detail is received.

From: Tom Errico <thomas.errico@tylin.com>
To: Helen Donaldson <HCD@portlandmaine.gov>
CC: Katherine Earley <KAS@portlandmaine.gov>, Jeremiah Bartlett <JBartlett@portlandmaine.gov>, David Margolis-Pineo <DMP@portlandmaine.gov>, Jeff Tarling <JST@portlandmaine.gov>
Date: 3/13/2014 8:38 AM
Subject: St. Lawrence Church Conditional Re-Zoning

Nell - I have reviewed the conceptual site plan prepared for the project and I generally find it to be acceptable from a traffic perspective with the following comments.

* A handicapped ramp is illustrated at the proposed 5-minute parking space. This is not a typical design treatment and further review will be required.

* A crosswalk across Congress Street is proposed. In addition to an ADA compliant ramp on the project side of the street, an ADA ramp will be required on the opposite side of the street. It is my recommendation that the applicant be responsible for all improvements necessary for the installation the crosswalk (e.g. pavement markings, signs, ramps, etc.). I would note that the design details will need to be reviewed and approved in the future, including the location of the crosswalk.

* Further evaluation of parking regulations and dimensions for the drop-off space will be required. The City would like to maximize the use of the curb space (when not in use during events) and additional review is required.

If you have any questions or comments, please contact me.

Best regards,

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

"One Vision, One Company"

Please consider the environment before printing.

City of Portland
Development Review Application
Planning Division Transmittal Form

Att. A

Application Number: 2014-009 **Application Date:** 01/23/2014
CBL: 003 L001001 **Application Type:** Zoning Contract/Conditional Rezon
Project Name: Conditional Re-zoning Amendment
Address: 66- CONGRESS ST
Project Description: Proposed first amendment to the Conditional Rezoning dated November 4 2010, to accommodate the substitution of a different structure.

Distribution List:

	Planner	Nell Donaldson		Parking	John Peverada
	Zoning	Marge Schmuckal		Design Review	Alex Jaegerman
	Traffic Engineer	Tom Errico		Corporation Counsel	Danielle West-Chuhta
	Civil Engineer	David Senus		Sanitary Sewer	John Emerson
	Fire Department	Chris Pirone		Inspections	Tammy Munson
	City Arborist	Jeff Tarling		Historic Preservation	Deb Andrews
	Engineering	David Margolis-Pineo		DRC Coordinator	Phil DiPierro
				Outside Agency	

PROJECT ADDRESS: 76 Congress Street, Portland, Maine

CHART/BLOCK/LOT: 3 - L - 1

DESCRIPTION OF PROPOSED ZONE CHANGE AND PROJECT:

Proposed first amendment to the Conditional Rezoning dated November 4, 2010,
to accommodate the substitution of a different structure.

CONTACT INFORMATION:

Applicant's Contact for electronic plans Name: Deirdre Nice e-mail Address deirdre.nice@stlawrencearts.org work # 207-347-7177	
Applicant – must be owner, Lessee or Buyer Name: Friends of the St. Lawrence Church Business Name, if applicable: Address: 76 Congress Street City/State : Portland, ME Zip Code: 04101	Applicant Contact Information Work # 207-347-7177 Home# Cell # Fax# e-mail: deirdre.nice@stlawrencearts.org
Owner – (if different from Applicant) Name: Address: City/State : Zip Code:	Owner Contact Information Work # Home# Cell # Fax# e-mail:
Agent/ Representative Name: Deirdre Nice, Executive Director Address: 76 Congress Street City/State : Portland, ME Zip Code: 04101	Agent/Representative Contact information Work # 207-347-7177 Cell # e-mail: deirdre.nice@stlawrencearts.org
Billing Information Name: Friends of the St. Lawrence Church Address: 76 Congress Street City/State : Portland, ME Zip Code: 04101	Billing Information Work # 207-347-7177 Cell # Fax# e-mail: deirdre.nice@stlawrencearts.org
Engineer Name: Address: City/State : Zip Code:	Engineer Contact Information Work # Cell # Fax# e-mail:

Surveyor Name: Address: City/State : Zip Code:	Surveyor Contact Information Work # Cell # Fax# e-mail:
Architect Name: David Lloyd, Archetype Address: 48 Union Wharf City/State : Portland, ME Zip Code: 04101	Architect Contact Information Work # 207 772-6022 Cell # Fax# 207 772-4056 e-mail: lloyd@archetypepa.com
Attorney Name: Barbara Vestal Address: 107 Congress St. City/State : Portland, ME Zip Code: 04101	Attorney Contact Information Work # 207 772-7426 Cell # Fax# 207 761-5822 e-mail: vestal@chesterandvestal.com

Right, Title, or Interest: Please identify the status of the applicant's right, title, or interest in the subject property:

Owner. Dee attached deed.

Provide documentary evidence, attached to this application, of applicant's right, title, or interest in the subject property. (For example, a deed, option or contract to purchase or lease the subject property.)

Vicinity Map: Attach a map showing the subject parcel and abutting parcels, labeled as to ownership and/or current use. (Applicant may utilize the City Zoning Map or Parcel Map as a source.)

Existing Use: Describe the existing use of the subject property:

The portion of the site currently occupied by the former parish hall is used for the Parish Hall Theater. The portion formerly occupied by the church sanctuary is currently vacant.

Current Zoning Designation(s):

The site is currently the subject of a conditional rezoning, approved by the City Council November 4, 2010 and recorded in Cumberland County Registry Book 28250, Page 201.

Proposed Use of Property: Please describe the proposed use of the subject property. If construction or development is proposed, please describe any changes to the physical condition of the property.

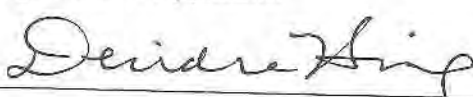
The proposed use of the property is an addition to the existing community hall located in the Parish Hall. The proposed new structure, to be built upon the vacant portion of the site, is to contain a 401 seat performance hall, a Promenade Room/additional lobby, and related facilities, as detailed in the executive narrative.

Site Plan: On a separate sheet, please provide a site plan of the property showing existing and proposed improvements, including such features as buildings, parking, driveways, walkways, landscape and property boundaries. This may be a professionally drawn plan, or a carefully drawn plan, to scale, by the applicant. (Scale to suit, range from 1" = 10' to 1' = 50'.) Contract and conditional rezoning applications may require additional site plans and written material that address physical development and operation of the property to ensure that the rezoning and subsequent development are consistent with the comprehensive plan, meet applicable land use regulations, and compatible with the surrounding neighborhood.

APPLICATION FEE:

Check the type of zoning review that applies. Payment may be made in cash or check payable to the City of Portland.

Zoning Map Amendment ___ \$2,000.00 (from ___ zone to ___ zone)	Fees Paid (office use) ___	The City invoices separately for the following: • Notices (\$.75 each) (notices are sent to neighbors upon receipt of an application, workshop and public hearing meetings for Planning Board and public hearing meeting for City Council) • Legal Ad (% of total Ad) • Planning Review (\$40.00 hour) • Legal Review (\$75.00 hour) Third party review is assessed separately.
Zoning Text Amendment ___ \$2,000.00 (to Section 14-___) (For a zoning text amendment, attach on a separate sheet the exact language being proposed, including existing relevant text, in which language to be deleted is depicted as crossed out (example) and language to be added is depicted as underline (example))	___	
Combination Zoning Text Amendment and Zoning Map Amendment ___ \$3,000.00	___	
Conditional or Contract Zone ☒ \$3,000.00 (A conditional or contract rezoning map be requested by an applicant in cases where limitations, conditions, or special assurances related to the physical development and operation of the property are needed to ensure that the rezoning and subsequent development are consistent with the comprehensive plan, meet applicable land use regulations, and compatible with the surrounding neighborhood. Please refer to Division 1.5, Sections 14-60 to 62.)	___	

Signature of Applicant: 	Date: 1/22/2014
---	---------------------------

Further Information

In the event of withdrawal of the zoning amendment application by the applicant, a refund of two-thirds of the amount of the zone change fee will be made to the applicant as long as the request is submitted to the Planning Division prior to the advertisement being submitted to the news paper.

BK13333PG009

056583

WARRANTY DEED

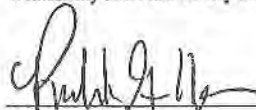
Know all Ye by these Presents,

That I, DEIRDRE E. NICE (Grantor) of 4 Glen Road, Falmouth, Maine 04105,
for consideration paid, do hereby grant unto the said FRIENDS OF THE ST.
LAWRENCE CHURCH (Grantee), of 76 Congress Street, Portland, Maine 04101, with
Warranty Covenants, the following real property situated at 66-76 Congress Street, City
of Portland, County of Cumberland, described as follows:

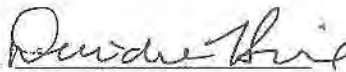
A certain lot or parcel of land with the buildings thereon, situated in said
Portland, and being more particularly described on Exhibit A attached
hereto and made a part hereof.

Meaning and intending to convey the same premises described in a
warranty deed from Stephen P. Sunenblich and Roger Conover to Grantor
and Grantee dated December 9, 1993, and recorded in the Cumberland
County Registry of Deeds in Book 11160, Page 21.

Witness my hand this 12 day of September, 1997.



Witness



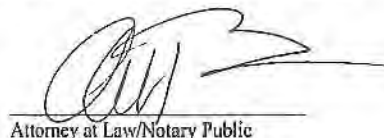
Deirdre E. Nice

STATE OF MAINE
CUMBERLAND, ss

September 12, 1997

Personally appeared the above Deirdre E. Nice, and acknowledged the foregoing
instrument to be her free act and deed.

Before me,



Attorney at Law/Notary Public

MAINE REAL ESTATE TAX PAID

EXHIBIT A

Three certain lots or parcels of land and the church edifice and buildings on the same situated at the corners of Congress, Munjoy and Beckett Streets, in the said City of Portland and more particularly bounded and described as follows:

FIRST: Beginning at the corner formed by the intersection of the southerly side line of said Congress Street and the westerly side line of said Beckett Street; thence southeasterly by said Beckett Street forty-five (45) feet to a point; thence westerly on a line at right angles to said Beckett Street eighty (80) feet to Lot No. 1 in Block marked E. on a plan recorded in the Cumberland Registry of Deeds in Plan Book No. 4, Page 18; thence northerly by said Lot No. 1, forty-five (45) feet to said Congress Street; thence easterly by said Congress Street eighty (80) feet to the point begun at.

SECOND: Beginning at the northeasterly corner as formed by the intersection of the Southeasterly line of said Congress Street and the northeasterly line of said Munjoy Street; thence southeasterly by said Munjoy Street a distance of forty three and $27/100$ (43.27) feet to a point; thence northeasterly at right angles to said Munjoy Street a distance of eighty (80) feet to a point; thence northwesterly at right angles to the last described line a distance of forty five and $69/100$ (45.69) feet to Congress Street; thence southwesterly by said Congress Street to the corner begun at. Said lot is further shown on a plan of the premises recorded in said Cumberland Registry of Deeds in Plan Book 4, Page 18, and is the lot number one (1) in Block E on said Plan. The two parcels above described are the same conveyed to the St. Lawrence Street Parish by Jacob H. Groves by his deed dated September 28, 1895, and recorded in the Cumberland Registry of Deeds, Book 630, Page 261.

THIRD: Beginning at a point on the easterly side of Munjoy Street which point is forty three and $27/100$ (43.27) feet southerly from the corner made by the intersection of the southerly line of Congress Street with the easterly line of Munjoy Street; thence southerly on said Munjoy Street forty three (43) feet to a point, and from these two points and keeping the same width extending back at right angles to Munjoy Street eighty (80) feet. Being the same premises conveyed to the Saint Lawrence Street Parish by John Cousens by his deed dated August 24, 1896 and recorded in said Registry, Book 639, Page 438. To the several deeds aforesaid and the records thereof reference is hereby made for further description of the premises hereby conveyed.

THIS CONVEYANCE IS MADE SUBJECT to an outstanding mortgage from the Grantor and Grantee herein to Fleet Bank of Maine, which mortgage the Grantee, as part of the consideration for this transaction, assumes and agrees to pay.

RECEIVED
RECORDED REGISTRY OF DEEDS

1991 SEP 19 PM 4:16

CUMBERLAND COUNTY

John B. O'Brien



- 1 - Property Location - 97 Munjoy St
Owner Information - McHugh Mary B & Theodore E Jrs
Land Use Type - Two Family
- 2 - Property Location - 98 Beckett St
Owner Information - Rodrigue Paul M
Land Use Type - Three Family
- 3 - Property Location - 99 Beckett St
Owner Information - Mullin Elaine V
Land Use Type - Residential Condo
- 4 - Property Location - 65 Congress St
Owner Information - Plini Llc
Land Use Type - Four Family
- 5 - Property Location - 67 Congress St
Owner Information - Hatt Yun Ok
Land Use Type - Four Family
- 6 - Property Location - 73 Congress St
Owner Information - Munjoy Hill Restorations Llc
Land Use Type - Mixed Res/comm
- 7 - Property Location - 75 Congress St
Owner Information - Corcoran Brendt
Land Use Type - Three Family
- 8 - Property Location - 77 Congress St
Owner Information - Baker, Susan
Land Use Type - Apartment/Garden
- 9 - Property Location - 84 Congress St
Owner Information - Breglia Augustine R Trustee
Land Use Type - Retail & Personal Service

Application for the First Amendment to the Conditional Rezoning for Property in Vicinity of St. Lawrence Arts/76 Congress Street, January 22, 2014.

EXECUTIVE NARRATIVE

Evolution of the Proposal

Friends of the St. Lawrence Church formed in February of 1996 to restore the church for renewed use as a performing arts center. Built in 1897, the St. Lawrence was listed on the National Register of Historic Places in 1979 and designated as a local landmark by the City of Portland in 1990. Despite such recognition, both halves of the building suffered decades of neglect.

An intense period of fundraising and volunteer labor coupled with a sound business plan resulted in the opening of the Parish Hall Theater in May of 2001. Since then, the 110-seat venue, St. Lawrence Arts (SLA), has provided a home to local theater companies, dance troupes, and artists, as well as national and international performers. Its state-of-the-art sight and sound capability make it the ideal setting for a multitude of performances.

In 2006, thanks to generous funding from Jane's Trust, the Friends of the St. Lawrence Church (FSLC) initiated an Adaptive Reuse study to develop conceptual plans and budgets for rehabilitation of the Sanctuary portion of the facility into a 400-seat performance hall. The original Sanctuary seated just over 500. Mills Whitaker Architects, LLC was retained to review existing conditions, prepare measured drawings, develop program requirements, review regulatory issues, prepare conceptual plans, and determine preliminary budgets for the project.

The Sanctuary, unoccupied since 1986, exhibited extensive deferred maintenance issues resulting in water infiltration through various roof and wall areas. In 2004, prior to commencement of this study, the deteriorated conditions of the Sanctuary were addressed through the provision of temporary shoring. In 2006 there was a partial collapse of the primary roof trusses which lead to additional stabilization measures. Upon further assessment, it was determined that the integrity of the structure was severely compromised and, as a result, the Sanctuary portion of the facility was dismantled in 2008. The rehabilitation project was, thus, transformed into a reconstruction project.

The program for the Sanctuary, developed in 2006 through discussion with the FSLC board of directors, included a 400-seat performance hall, a lobby serving both the Sanctuary Performance Hall and the Parish Hall Theater, an upper function room integrated with the roof and providing views to the ocean, and support spaces such as concessions, catering kitchen, green room, and workshop space. The plan called for the Parish Hall Theater to be modified to allow a slight increase in seating capacity to 120 (now at 110) with more flexibility to allow for a variety of uses. The plan called for the facility to have a well-integrated, accessible entrance, and an elevator to serve all public areas of the building.

The preliminary project budget to reconstruct the Sanctuary was approximately \$17 million. That would have provided a mid-size, community-based venue for the arts and returned a reconstruction of the original structure to the fabric of Munjoy Hill. This reconstruction plan received wide-spread support, culminating in a November 2010 unanimous City Council approval of a 10-year conditional rezoning. The subsequent feasibility study found funders to be enthusiastic about the mission-related programming. Unfortunately, however, funders were not as enthusiastic about the very expensive reconstruction of the original structure; they seemed to be more receptive to containing that same programming in a more economically-feasible new structure.

To provide space for its well-received program, FSLC decided to shift its plan toward reconstruction through new construction rather than reconstruction through the exceedingly expensive reassembly of the original Sanctuary. The resulting current proposal reflects a need and desire to design a contemporary building with an economically achievable budget. In August of 2012, FSLC selected Archetype Architects and Principal David Lloyd to design a new structure. Archetype Architects brings over 25 years' experience with industrial, historic, and residential design. Mr. Lloyd's projects have been lauded for demonstrating great sensitivity to the urban fabric and employing finely-honed skills to integrate contemporary additions within historical contexts.

Mission of Friends of the St. Lawrence Church

For the last 18 years, the mission of FSLC has incorporated three parts: **arts and culture**, **neighborhood and community**, and **historic preservation**. From its inception in 1996, FSLC understood that creating a performance arts center that fostered creativity and implemented a sound business plan was the key to the long-term success of the organization and fulfillment of its mission. FSLC first began work on the far less deteriorated Parish Hall to begin the transformation from a vacant and structurally compromised historic church to a dynamic arts center. Over the past 12 years, the Parish Hall Theater has brought commerce, vitality, and arts to Munjoy Hill. With only 110-seats and a commitment to affordability for patrons, long-term sustainability and the ability to make the capital investment necessary for the long-term preservation of the historic Parish Hall is contingent upon growth. This expansion will increase the highly positive economic impact that St. Lawrence Arts (SLA) has had on the Parish Hall, the Munjoy Hill neighborhood, the City of Portland, and Southern Maine.

Mission #1: Arts and Culture

SLA directly serves two distinct populations: theater and performing arts groups, many of whom regularly use the Parish Hall Theater, and the thousands of patrons who attend performances each year. Both populations will be well-served by the new facility. Many theater and performing arts groups will welcome the opportunity to perform in a larger, 401-seat venue. More patrons will be able to enjoy events in the facility, furthering SLA's mission to promote arts and culture.

FSLC research of venues and performance trends within the Greater Portland area indicates that the creation of a mid-sized auditorium with the versatility to accommodate *all forms* of

performance and visual art will fill a need in the City of Portland that at present is not being met. Portland has venues that have much larger capacity; for example, Merrill Auditorium seats 1900 and State Theater seats 2036. There are also several smaller venues; for example, Portland Stage Company seats 274, One Longfellow Square seats 200, and several recently developed venues accommodate fewer than 100. Hannaford Lecture Hall at the University of Southern Maine seats 520, but does not have the capability for a wide range of performances. There is no venue in the Greater Portland area that fulfills the need of a medium-sized venue larger than 300 seats but smaller than 1,900 seats. Further distinguishing it from other venues in Portland, the new Performance Hall will be a non-profit space available for use by hundreds of performing arts groups and other non-profits. Moreover, many of the more beautiful non-profit spaces in Portland, like the Portland Museum of Art, The Victoria Manson and others do not allow other non-profits to fundraise in their spaces. St. Lawrence Arts stands out as venue that has always allowed other non-profits to fundraise in its space.

Mission #2: Neighborhood and Community

Mindful of SLA's mission to promote neighborhood and community, SLA remains committed to working with neighborhood institutions, such as schools, to provide cultural experiences for children who might not otherwise be exposed to the arts. For example, before they moved, SLA was host to the Adam's School annual Spring theater presentations, offering the building and its professional equipment and stage for free. We continue to donate the building and host The East End Community Schools annual Portland Children's Film Festival. We have been and continue to encourage the East End Community School to use the St. Lawrence for productions and programs and believe the bigger Performance Hall will enhance their arts programming. The St. Lawrence also plays host to the SMCC's annual music recital as well as many neighborhood meetings, civic meetings, and non-profit fundraisers. For example, last summer, we helped Garbage to Garden raise \$1000 in their first big fundraiser. Each year Konbit Sante raises \$4000-\$5000 in their annual holiday sale in the Parish Hall Theater.

In addition to the performances, members of the community will be able to host small events in the Promenade Room, a breathtaking space with sweeping views of Casco Bay, the city, and Mt. Washington. The space will flexibly lend itself to a variety of events such as memorial services for neighborhood residents, non-profit fundraising events, children's art shows, and additional lobby space for events in the Performance Hall and Parish Hall Theater.

SLA will continue to bring vitality to the Munjoy Hill neighborhood, as it has for the last 12 years. This has been important for neighborhood businesses, and contributed to the renaissance of the East End as a magnet for residents in search of a diverse urban experience. At the same time as it contributes to economic activity, it will also be mending a visual tear in the urban fabric by filling a vacant lot on Congress Street with a well-designed building, in harmony with the Parish Hall and its surrounding neighbors.

SLA is very conscious of the need to manage its performing arts center so that it complements and does not detract from the neighborhood. It has been acting as a responsible neighbor for twelve years, managing performers and performances so that they do not negatively impact the neighborhood. It plans to continue to be a good neighbor as it enters this next phase. As

indicated in the proposed amended conditional rezoning, SLA is willing to limit itself to using only the Parish Hall Theater OR the Performance Hall for audience events at one time, thus precluding simultaneous performances in both spaces. Similarly, in the rare instance in which it will use multiple parts of the building for one single event, it is willing to limit the total number of attendees to 485 people. It has committed to continue to be a good neighbor, properly maintaining its property and ensuring that tour buses, vans and trucks affiliated with an event unload and then relocate to a remote, off-street location away from the venue. SLA has agreed to make specified sidewalk and sidewalk connection improvements in the immediate and broader neighborhood, plant or contribute to the planting of street trees, and improve adjacent street lighting. Similarly, SLA has developed a transportation demand management plan as part of its commitment to be proactive about managing traffic and parking, to minimize neighborhood impacts from those patrons who do not live within walking distance. As part of its core mission, SLA is committed to continuing to fulfill its responsibility to the neighborhood and creative community.

Mission #3: Historic Preservation

The third part of SLA's mission is historic preservation. Unfortunately, before the property came under the ownership of the Friends of the St. Lawrence Church, the Sanctuary had deteriorated too far for it to be reclaimed. Structural deficiencies, compounded by water intrusion and repeated freezing due to lack of heat, rendered it unsafe. However, through the efforts of many, the less spectacular but equally historic Parish Hall has, so far, been spared a similar fate. But the future is by no means assured. Maintenance of an historic structure is challenging and expensive. The income generated from the 110-seat Parish Hall Theater covers ongoing operations, but it does not generate any excess funds to pay for expensive maintenance or capital investment. FSLC has had to rely on grants and foundations to obtain the funds to perform historic preservation maintenance. Over the years, it has successfully applied for and received significant grants from the Davis Family Foundation, the City of Portland, the National Trust for Historic Preservation, and others. But these funds are increasingly scarce and highly competitive.

To be a responsible steward, SLA needs to find a way to obtain sufficient funds to properly maintain this distinctive 19th century stone structure. The site needs to generate more revenue. The Parish Hall Theater does not have the capacity to generate significantly more revenue by itself; the potential of the currently vacant part of the site needs to be harnessed. FSLC's historic preservation mission, based on a sound business plan, is to be furthered by constructing a green building on the site of the former Sanctuary using durable materials and a creative design intended to keep operating costs low. The construction of a medium-size performance hall that can accommodate a wider variety of arts events will allow SLA to increase the number of patrons who will attend events at SLA. The stream of revenue from the new Performance Hall will enable SLA to cover operating expenses and to generate the additional funds which are necessary to maintain the landmark Parish Hall.

Professional Capacity

FSLC is in a unique position to undertake this project, in furtherance of all three parts of its mission. SLA has successfully created and managed the Parish Hall Theater over the past 12 years. SLA has ended each year in the black and has forged excellent relationships as a place for collaboration and celebration of art in all forms as a dynamic, professional arts center.

Rental of Parish Hall is at capacity each year. SLA frequently must refer performance groups to other venues. Also, due to our small seating capacity, we are unable to host performers that sell-out larger venues. The Performance Hall would tremendously enhance SLA's offerings, and broaden and increase our audience while fulfilling our mission in the areas of Arts and Culture, Neighborhood and Community, and Historic Preservation.

FSLC is governed by an all-volunteer Board of Directors from this community, who bring considerable and diverse professional and personal experience to their role. That Board oversees a staff of four, including an Executive/Artistic Director, Development Director, and Theater Manager. The Board and staff have consistently demonstrated great enthusiasm and commitment as they have positioned the Parish Hall Theater to become a heavily-used venue. It has already had an enormous positive impact on Munjoy Hill and the City of Portland. The fact that we are poised to complete the vision of St. Lawrence Arts Center, adding a contemporary Performance Hall and related support spaces to an improved Parish Hall Theater, is hugely exciting for all involved.

Project Data

BUILDING AREA:

The new proposed addition will be 14,745 gross square feet.

Yard requirements:

Previously approved footprint was 5,460 SQ. FT. The current proposed footprint is 5,715 SQ. FT., not including a porch which is 710 SQ. FT. The existing Parish Hall has a footprint of 3,360 SQ. FT. The combined total lot coverage is 95%

Building Height:

The building height as determined by calculating average grade to top of steel roof beam is 54 feet. It should be noted that the major roof element of the performance hall is at approximately 41 feet 4 inches, which is below the maximum allowed by zoning. The Promenade Room, which is set back, gives the height increase to 54 feet but visually from the street the overall mass looks to be at the 41 foot height. The previously approved building had a height of 53 feet 1 inch not including a steeple which went to 89 feet above average grade.

Proposed uses of building:

1. The proposed new addition will seat 401 patrons. The previously approved addition was designed to seat 400 patrons. The proposed addition, while being modern in materials and design, is also being designed with the architecture of the existing Parish Hall in mind. New roof lines of the porch will line up with horizontal elements on the Parish Hall. Granite stone materials will be used in the new addition to reflect those in the Parish Hall. A porch element off Congress Street will give an inviting feeling to the patrons and to neighbors passing by. This porch element will also act as a vehicle to demonstrate the celebration of theater to the street as patrons wait or meet there during intermission. The Architect has already met with the Historic Preservation Board on three occasions. The Architect has incorporated many of the design elements suggested by the Board into the current design. The Board has indicated that the architect is heading in the right direction, and it is anticipated that with a few more meetings, there will be agreement on design which meets the historic preservation standards for new construction.

2: The new addition will be fully ADA accessible and make the existing Parish Hall fully ADA accessible.

3: The building is being designed to meet and exceed the latest energy codes. It will be a highly efficient building in regards to mechanical design and create a healthy interior environment

4: The addition will include space in the lower level for "back of house" green rooms, ADA toilets, and storage.

5: The Promenade Room on the upper level is set back from the street, to help reduce the massing of the building, and has a face primarily of glass. This room will function during performances as a lobby break area, and as a meeting space when there are no performances. Providing views across Casco Bay, it will offer groups a spectacular gathering space unlike anything which is presently available in the Munjoy Hill neighborhood.

APPLICABLE LAND USE ORDINANCES:**Regulatory Considerations:**

Chapter 14, Land Use, of Portland's Code of Ordinances regulates the construction of the Performance Hall. In particular, three Articles from Chapter 14 provide the regulatory framework for the design and review process: Article III Zoning, Article V Site Plan, and Article IX Historic Preservation.

The new structure will be a 14,745 gross square foot addition to the existing Parish Hall. A structure of that size requires Major Development Site Plan review and approval by the Planning Board.

Similarly, the structure will be an addition to an existing structure which has been designated as a local Landmark pursuant to the Historic Preservation ordinance. Thus Section 14-634(a) (1) in

Article IX Historic Preservation, requires the applicant to obtain a Certificate of Appropriateness for any exterior alteration to the Parish Hall and new construction adjacent to it.

Finally, as it is not precisely allowed as a permitted use or conditional use in the R-6, and as the site is already subject to a conditional rezoning, the applicant needs to receive approval of an amendment to the 2010 conditional rezoning.

Consistency with the R-6 Zone:

The property is located in an R-6 Residential zone. The building's use is as a place of assembly, specifically a "Community Hall" per zoning definition (Section 14-47, Definitions) since it is occupied for "social, recreational, artistic, civic, or educational community functions." A place of assembly, including a Community Hall, is a Conditional Use in the R-6 zone (Section 14-137(b) (e) provided that the structure was built for institutional or other non-residential uses, the structure is operated by a not-for-profit entity, and a parking management plan is submitted for review and approval by the Planning Board. When the sanctuary portion of the building was dismantled for safety reasons in 2008, the Parish Hall remained, and continued as a community hall in a structure built for religious use, operated by a not-for-profit entity. As a significant portion of the structure was still remaining as of January 4, 2010, it is asserted that the addition of a rebuilt performance hall and related facilities could be treated as a Conditional Use. However, as the prior project to reassemble the Sanctuary required and obtained a conditional rezoning for this site, the applicant is seeking to further amend that conditional rezoning to allow for the same uses in a contemporary building.

This use is harmonious with the applicable R-6 zoning. In Section 14-135, the purpose of the R-6 Residential Zone's is stated, "To set aside areas on the peninsula for housing characterized primarily by multifamily dwellings at a high density providing a wide range of housing for differing types of households; and to conserve the existing housing stock and residential character of neighborhoods by controlling the scale and external impacts of professional offices and other nonresidential uses." While R-6 is to be "primarily" for high density residential development, the zone recognizes that should not be the exclusive use. The zoning ordinance recognizes that a broad range of complementary non-residential uses should be allowed, such as cemeteries, parks and municipal uses (permitted uses), and schools, intermediate and long-term care facilities, hospitals, colleges and trade schools, professional offices, and places of assembly including community halls, neighborhood centers, private and fraternal organizations, and places of religious assembly (conditional uses). Since 1897, the former sanctuary and the adjacent Parish Hall have had a highly positive impact on the Munjoy Hill neighborhood and, the City of Portland, first as a religious institution and later as a non-religious cultural institution, providing places of assembly for neighbor residents and participants from the broader community. This non-residential structure, located on Congress Street, a major arterial, close to the neighborhood business district which is also centered on Congress Street, has made a significant contribution to the character and diverse activities of the neighborhood, while being respectful of the residential scale of Munjoy Hill.

Transportation Demand Management:

Were this application being reviewed as a Conditional Use in accordance with Section 14-137(b) (e), an approved parking management plan would be required. That same requirement was incorporated into the prior conditional rezoning. The current facility serves 10,000 patrons annually. It is reasonable to expect that the number of activities and patrons served will increase when the Performance Hall is constructed. FSLC has commissioned an updated study to review traffic and parking and its impacts on the neighborhood. That study and its recommendations are being submitted with this application.

Yard Requirements:

The former footprint of the building provided the template for establishing the proposed footprint. The former footprint, however, did not conform to current dimensional regulations in terms of minimum yard requirements. On the two principal facades at Congress Street to the north and Munjoy Street to the west, the proposed footprint will be identical to the original footprint.

On the south side yard and east rear yard, there are variations from the original footprint as delineated below:

Side Yard at South: The former footprint at the side yard to the south consisted of an approximate yard of 3'-3" for the majority of the façade's length while the rear apse at the altar area reduced the side yard to 0" where the building met the property line. Current zoning, absent a conditional rezoning, stipulates a side yard of 10' with a possible reduction to no less than 5' (per Section 14-437). The proposed design follows the former side yard setback with variations that increase its nonconformity in two locations: 1) A low areaway projection of approximately 39 SF is proposed to extend from the south facade to the lot line. This vents interior mechanical equipment that would normally be placed outside the building or on the roof. Projections such as this are allowed if they are no more than 2' in height (Section 14-425); 2) A westward extension of the rear apse of about 34 SF and 20' in height is proposed to be coincident with the lot line. This extension will provide space for an interior circular stair that will serve the green room, stage, and catwalk without encroaching upon the original interior volume of the auditorium.

Rear Yard at East: The former footprint at the rear yard to the east consisted of a wall containing the rear apse and chimney. The former wall jogged between the lot line and about 2'-9" from the lot line. The proposed design follows the rear lot line, adding approximately 64 SF to the footprint. This area will be used to provide two interior stairs, one to connect the stage down to the green room below, and the other to connect the lobby to the upper room above. These variations may be permitted as part of the conditional rezoning.

Existing Use:

St. Lawrence Arts, founded in 1996, has played a significant role in the revitalization of Portland's Munjoy Hill neighborhood. The Arts Center is located in the former St. Lawrence Congregational Church, constructed in 1897 and abandoned in 1986. The building consisted of

two major portions that were constructed simultaneously – the Parish Hall and the Sanctuary. In 2001, the Parish Hall was renovated to house a 110-seat multi-use auditorium, green room, art studio workshops and staff offices.

Proposed Use of the Property:

SLA proposes to create an enhanced center for the arts which can accommodate all forms of performance and visual arts in small and medium size venues. Specifically, SLA will augment the existing Parish Hall Theater by building a 401-seat Performance Hall, topped by the Promenade Room, upon the former sanctuary portion of the building. The new structure will enhance the ADA accessibility, reweave the architectural fabric of one-half of a prominent city block on Munjoy Hill's portion of Congress Street, facilitate the sustainability of the landmark Parish Hall structure, contribute to the economic and cultural vitality of the neighborhood, and promote sustainability by utilizing energy-efficient building components and locating the facility on a site easily accessible to many by foot, bicycle or bus.

The proposed addition carefully employs good 21st century design for the new Performance Hall, to complement the existing Parish Hall Theater in its 19th century building. Highlights of the design are as follows:

Planned Uses:

Performance Hall: The addition will house a 401-seat space that functions well primarily for musical performances with either acoustical or amplified groups. Secondary uses include theater, dance, weddings, lectures, seminars, video showings, and other diverse assembly type occupancies. Stage space will be expandable or retractable in size to suit differing needs.

Parish Hall Theater: The addition will increase the flexibility of this space for existing functions, while maintaining its primary use for theater. Seating will be expanded slightly from 110 to 120 while still maintaining its intimacy. The fixed risers will be replaced with telescopic seating and the stage apron will be removable.

Offices & Conference: The design retains two office spaces and provides a meeting room that can serve a variety of uses and user groups.

Lobby: A large lobby space will be provided that is visible from the street and capable of serving both the Performance Hall and Parish Theater.

Concession: Concession space will be included in the lobby area. A catering kitchen and pantry storage area will be readily accessible to the concession area.

Green Room Area: A Green Room will be provided for the performers that will use the Performance Hall. This room will be flexible for other uses, such as rehearsal space. Makeup area, dressing rooms, toilet room, shower, and washer/dryer will be included.

Upper Room: A function room, called the Promenade Room, will be provided above the Performance Hall for mixed-use activities, capitalizing on views of the Eastern Promenade and Casco Bay.

Function and Design:

It is intended that the Performance Hall will have an intimate feeling, retaining the ambiance and nature of the original building, while also being uniquely contemporary and of its own style. The addition will provide adequate workshop space and storage areas, with the areas allotted to each of these functions to be further defined in subsequent phases.

The building will be an energy-efficient facility that utilizes environmentally friendly materials and technologies. The acoustics will take advantage of current technology. Variable acoustics that allow some adjustment of reverberation time will be provided for changing needs (speech, amplified music, acoustical music). Sound isolation will be provided so that simultaneous functions, such as rehearsals, meetings and performances can occur in the Lobby, Performance Hall, and Parish Theater areas without sound interference from adjacent spaces. Similarly, sound transmission to the exterior (neighboring residences) will be minimized to the greatest extent possible.

All public areas will be accessible to the disabled. Accessible features will be well-integrated with the historic character of the building.

CONSISTENCY WITH PORTLAND'S COMPREHENSIVE PLAN

By law, any conditional rezoning or amendment to an already-granted conditional rezoning must be consistent with the City's comprehensive plan. The Law Court has interpreted consistency to mean "in basic harmony with" the plan. *LaBonta v. City of Waterville*, 528 A.2d 1262, 1265 (Me. 1987). Typically, comprehensive plans contain many goals and policies, some of which may be somewhat inconsistent with each other. It is the responsibility of the Planning Board, and ultimately the City Council to determine how best to balance those goals in evaluating a proposed contract zone. It may approve a proposed contract zone amendment if it believes, on balance, that what is proposed is in basic harmony with identified comprehensive plan goals. If the City Council finds that a contract or conditional zone amendment is consistent with one or more identified goals in the comprehensive plan, in any appeal, the Court must defer to the judgment of the City Council, even though there might be different goals in the comprehensive plan that conflict with them. *Alderman v. Town of Baldwin*, 750 A.2d 577, 585 (Me. 2000)

Similarly, there must be a factual link between proposed development and the goals it is said to further. In other words, the goals to be advanced must be part of the comprehensive plan, and it must be reasonable to expect that the proposed development will contribute to moving the City toward the specific Council-identified goal(s). *Rommel v. City of Portland*, Cumberland Superior Court, CV-12-312, Order on Motion for Summary Judgment, December 31, 2013. Unlike the findings in the *Rommel* case, as discussed below, the link between the Comprehensive Plan goals and policies to be advanced by this proposal are squarely on target and beyond question in the areas of arts and culture, neighborhood and sustainable development, and historic preservation.

Maine law also requires that any conditional rezoning must be consistent with the existing and permitted uses within the original zones. 30 M.R.S. Sec. 4352(8)(B). In this case, there is no question that the proposed use is consistent, e.g., in basic harmony with, with existing and permitted uses within the original zones. Places of assembly are essentially permitted as a use in the R-6 zone, provided that certain conditions can be met. The existing Parish Theater is an example of one place of assembly in the R-6 zone. There are numerous other churches, places of assembly, and community halls on the peninsula in R-6 zones.

PORTLAND'S COMPREHENSIVE PLAN: ARTS AND CULTURE

There are a plethora of Portland Comprehensive Plan goals and policies which are advanced by the SLA proposal. The primary goals are in the area of **arts and culture**. SLA will be creating an affordable and accessible venue for a diverse offering of arts including but not limited to theater, dance, music, film, and workshops.

Portland's Comprehensive Plan (PCP) addresses the goals for and importance of the arts and creative economy in three important components of the plan, its Cultural Plan, its Downtown Vision, and its Plan for Portland's Arts District. Relevant sections are summarized below:

CELEBRATING COMMUNITY: A CULTURAL PLAN FOR PORTLAND, MAINE, 1998

Goal

- Build, sustain and expand audiences.

Policies

- Encourage broad audience participation by leveraging connections within the community.
- Increase opportunities for low-income individuals, students, and families to attend museums, concerts, and arts events.
- Assess the need for a 150 to 400-seat performance facility designed for traditional and contemporary performances.

Goal

- Encourage and safeguard artists' continuing presence in the community.

Goal

- Improve the vitality and civic support of arts and culture throughout the city.

Goal

- Strengthen neighborhood identity through cultural programming and create connections between neighborhoods and the Arts District.

Policies

- Create a Citywide approach where both neighborhoods and the Arts District are venues for heritage, performing, visual, and public art projects.
- Improve transportation access to arts and cultural venues throughout the City.

Goal

- Apply arts and cultural solutions to the community's social issues.

Policies

- Develop more opportunities outside school for youth, particularly low-income students and children with special needs, to see, experience, and participate in visual, performance, and heritage arts.

The above listed goals and policies of the 1998 Cultural Plan are obviously directly relevant to the contribution to be made by an expanded SLA. It has been making a contribution toward these goals through the Parish Theater; it proposes to scale up that contribution with the addition of a more flexible, 401 seat venue.

Even though this plan was prepared in 1998, it continues to be extremely relevant to the City's goals and development strategy today. According to Americans for the Arts, the non-profit arts industry attracts audiences, spurs business development, supports jobs, and generates government revenue. On May 31, 2006, in collaboration with Americans for the Arts, Portland's Creative Economy Summit was held in Merrill Auditorium Rehearsal Hall. Over 200 participants discussed the importance of the creative economy for Portland and developed the foundation of a plan to maintain and grow Portland's Creative Economy. After a day of discussion and many breakout groups, the entire summit regrouped for a final vote on what participants thought was most important for Portland's Creative Economy. The goal receiving the 2nd highest vote total (49) was to:

- "Develop publicly supported and/ or affordable public space for artists" Public space was defined to include performance space, office space, studio space, housing, and exhibition space. *The action items included "Finishing St. Lawrence Arts!"*

It is important to recognize earlier components of the City's Cultural Plan, because they illustrate the depth of the commitment and the City-wide importance placed upon the arts and cultural resources. The first formal recognition of the arts as an engine for revitalization and economic growth was Portland's Downtown Vision: A Celebration of Diversity, prepared in 1991. It specifically recognized the potentially large contribution of the arts to job opportunities and overall economic well-being:

IV. DOWNTOWN VISION -March, 1991

Downtown Vision: Arts and Culture Goals

- Promote and enhance the cultural community by retaining and encouraging arts and cultural organizations.
- Support the cultural community by retaining and expanding performance and exhibition space, housing, studio space, and office/support space for artists, institutions, and organizations.
- Promote the Downtown as the local, statewide and northern New England center for arts and culture.
- Enhance and promote accessibility to diverse arts and cultural opportunities for all segments of the community.

A few years later, in 1995, the City ratified that development strategy by formulating a more detailed plan which called for the creation of the Arts District as a permanent feature of downtown Portland. It was, however, explicit in recognizing that encouragement of the arts should not be limited to downtown, but should be city-wide. Among the goals and objectives were:

IV. A PLAN FOR PORTLAND'S ART DISTRICT - Goals and Objectives -1995

- Improve the economic performance of arts institutions in the Arts District *and throughout the city* (italics added) by:
 - increasing attendance; supporting efforts to develop subscribers, stabilize audiences and develop audience base; improving marketing communications; supporting better integration of arts institutions with the other major downtown interests; and encouraging arts-related businesses to establish in, or relocate to the Arts District.
- Enhance the economic impact of arts institutions in the city by: providing opportunities for expanded spending for goods and entertainment associated with arts attendance at museums, galleries, and performing arts events; extending the length of stay for all visitors in the downtown; and increasing the overall attractiveness of the city for tourists.
- Create a more favorable business climate in the District and in downtown Portland by: increasing pedestrian activity and total visitorship to the downtown; and improving the appearance and the occupancy rate of commercial properties in the Congress Street corridor.
- Support the creative efforts of individual artists and safeguard their continuing presence in the community.
- Contribute to the overall quality of life in the community.
- Establish an Arts District that is a permanent feature of downtown Portland.
- Build community trust and collaboration of broadly diverse groups as a way of fostering cross-cultural communication and understanding

The 1998 Cultural Plan, discussed above, continued the recognition of the appropriateness of encouraging arts venues throughout the City, not just downtown. SLA, and specifically the addition of the Performance Hall, is an important component of advancing that goal.

PORTLAND'S COMPREHENSIVE PLAN: NEIGHBORHOOD AND COMMUNITY

The second mission of SLA, to foster neighborhood and community, is clearly directly consistent with major components of the comprehensive plan as well. SLA describes its contribution to **Neighborhood & Community** as adding activity, entertainment, cultural enrichment, social interaction, renovation and investment that serve the surrounding neighborhood of Munjoy Hill as well as the residents of Greater Portland.

Portland has many goals for orderly growth and development. They generally encourage the creation of additional housing within Portland to maintain its proportion of the County's population. This goal serves a variety of smart growth/sustainability goals, including taking

maximum advantage of the already existing urban infrastructure, reducing energy wasted by commuting to more remote locations, and increasing the possibility of more efficient modes of transportation such as bicycle and mass transit. However, the City recognizes that maintaining neighborhoods which are lively, provide a variety of accessible services and amenities, and offer a good quality of life are key to making this strategy successful. Among the important neighborhood amenities are parks, open space, and cultural opportunities. SLA's contribution to enrichment of the Munjoy Hill neighborhood directly furthers these goals.

It should be noted that SLA is on the edge of Munjoy Hill's neighborhood business district, on the main street, Congress Street. It is centrally located, within relative easy walking distance for almost all of the residents of Munjoy Hill. It is served by Metro Bus #1, which stops within one block of the entrance to the proposed Performance Hall.

Excerpts of relevant goals and policies appear below:

PORTLAND'S GOALS AND POLICIES FOR THE FUTURE

STATE GOAL A: To encourage orderly growth and development in appropriate areas of each community, while protecting the State's rural character, making efficient use of public services and preventing development sprawl;

I. HOUSING: SUSTAINING PORTLAND'S FUTURE – November 18, 2002

Goal

- Portland's Comprehensive Plan encourages a manageable level of growth that will sustain the city as a healthy urban center in which to live and work and to achieve a shared vision for Portland. Portland should encourage sustainable development patterns and opportunities within the city by promoting efficient land use, conservation of natural resources, and easy access to public transportation, services, and public amenities.

Policies

- Encourage neighborhood business centers throughout the city to reduce dependence on the car and to make neighborhood life without a car more practical.

III. A TIME OF CHANGE: PORTLAND TRANSPORTATION PLAN - July 1993

Transportation Plan Guiding Principle

Provide maximum mobility in a balanced transportation system, which encompasses all modes, to support the economic vitality and quality of life of the Portland community.

Land Use and Transportation Link

Link the transportation plan with land use planning policies in the City and region to guide decision-making for development and infrastructure investment.

- Ensure that future growth does not foster auto dependency.

Transportation Policies

- Vibrant neighborhoods include nearby, small-scale commercial areas that provide both convenient services and natural meeting places. Provide routine, daily services within walking distance of residents of all neighborhoods, as long as the businesses providing the services are small-scale, are designed compatibly with residences, and fit into the fabric of the neighborhood.
- Encourage businesses to locate in established employment centers, including Downtown, that are served by public transportation or that have the critical mass necessary to support alternative modes of transportation.
- Allow development along transit corridors and near community commercial centers to evolve at a density sufficient to make public transit, walking, and biking viable options.

VII. COMMUNITY COMMERCIAL POLICES AND LAND USE PLAN -September 1987-1988

- Encourage the development of new commercial enterprises within the existing neighborhood centers and CBD.
- Maintain and promote a community, which is attractive to both existing and prospective families and homeowners to help support the neighborhood commercial district.

STATE GOAL D. To encourage and promote affordable, decent housing opportunities for all Maine citizens:

Goal

Maintain and enhance the livability of Portland's neighborhoods as the City grows and evolves through careful land use regulation, design and public participation that respects neighborhood integrity.

Policies

- Support Portland's livable neighborhoods by encouraging a mix of uses that provide goods and services needed and are within walking distance of most residents.
- Encourage new housing development in proximity to neighborhood assets such as open space, schools, community services and public transportation.
- Ensure the integrity and economic value of Portland's neighborhoods.

V. REGULATION OF INSTITUTIONAL USES IN RESIDENTIAL ZONES – 1983 (Planning Board Rep. #46-83)

Goals

Institutional uses, where they are to be allowed in residential zones, should be designated conditional uses with review before the Planning Board. Reasonable expansion of existing institutions should be accommodated, but effective use of existing lot area should be required.

Thus the location of the proposed St. Lawrence Arts facility is consistent with the vision of vibrant, densely developed, cohesive neighborhoods on the peninsula with easy access to a variety of services and amenities, including cultural amenities. It makes effective use of the lot, and does not encroach into the residential neighborhood. It is ideally located to promote transportation to it by a large portion of the patrons using modes other than private car.

PORTLAND'S COMPREHENSIVE PLAN: HISTORIC PRESERVATION

The third mission of SLA is historic preservation. Again, it is squarely consistent with the components of Portland's comprehensive plan dealing with historic preservation. The Friends of St. Lawrence Church will contribute to **Historic Preservation** by supporting the long-term maintenance of the historic Parish House through the construction of a sensitively-designed, complementary Performance Hall to generate additional revenue to help maintain the historic structure. The Parish House is a designated landmark structure. Any addition to the Parish House requires full review by the Historic Preservation Board under its new construction standards to receive a Certificate of Appropriateness. This assures the City and community that any new addition will meet the standards of the historic preservation ordinance.

Portland's historic preservation goals are articulated as part of the comprehensive plan through the Historic Preservation Ordinance, adopted in 1989. Relevant excerpts appear below:

I. HISTORIC PRESERVATION ORDINANCE, AN HISTORIC RESOURCE ELEMENT TO THE COMPREHENSIVE PLAN AND AN ORDINANCE PROTECTING HISTORIC RESOURCES IN THE CITY OF PORTLAND -1989

Goals

Preserve Portland's Architectural and Historic Heritage

- Some of America's most appealing cities are those which possess a distinct or unique flavor or appearance. An important element in a City's distinctiveness is its historic areas and architectural landmarks;
- Apply design standards in a reasonable and flexible manner to prevent the unnecessary loss of the community's historical features and to insure compatible construction and rehabilitation in historic districts while not stifling change and development or forcing modern recreations of historic styles;
- Foster civic pride in the city's history and development patterns as presented in such distinctive areas, sites, structures and objects;
- Protect and enhance neighborhood character;
- Stabilize and improve the values of designated properties and areas;
- Protect and enhance the attractiveness of the city to its home buyers, home owners, residents, tourists, visitors, businesses, and shoppers;
- Foster and encourage preservation, restoration, and rehabilitation that respect the historic, cultural, architectural, and archeological significance of distinctive areas, sites, structures, and objects.

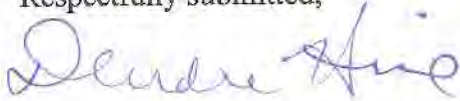
As discussed above, the sanctuary portion of the former church had been allowed to deteriorate too far beyond the point where it could be saved before the building came into the hands of FSLC. However, we have been able to stabilize and repurpose the Parish Hall for now. The maintenance of historic structures is a journey, not a destination. FSLC has determined that to continue on this journey, we need to use the currently vacant part of the lot to generate more revenue. Fortunately, we have developed a strategy to meet this financial need, tied to our

historic preservation mission, which is also consistent with the other parts of our mission – arts/culture and neighborhood/community.

SUMMARY:

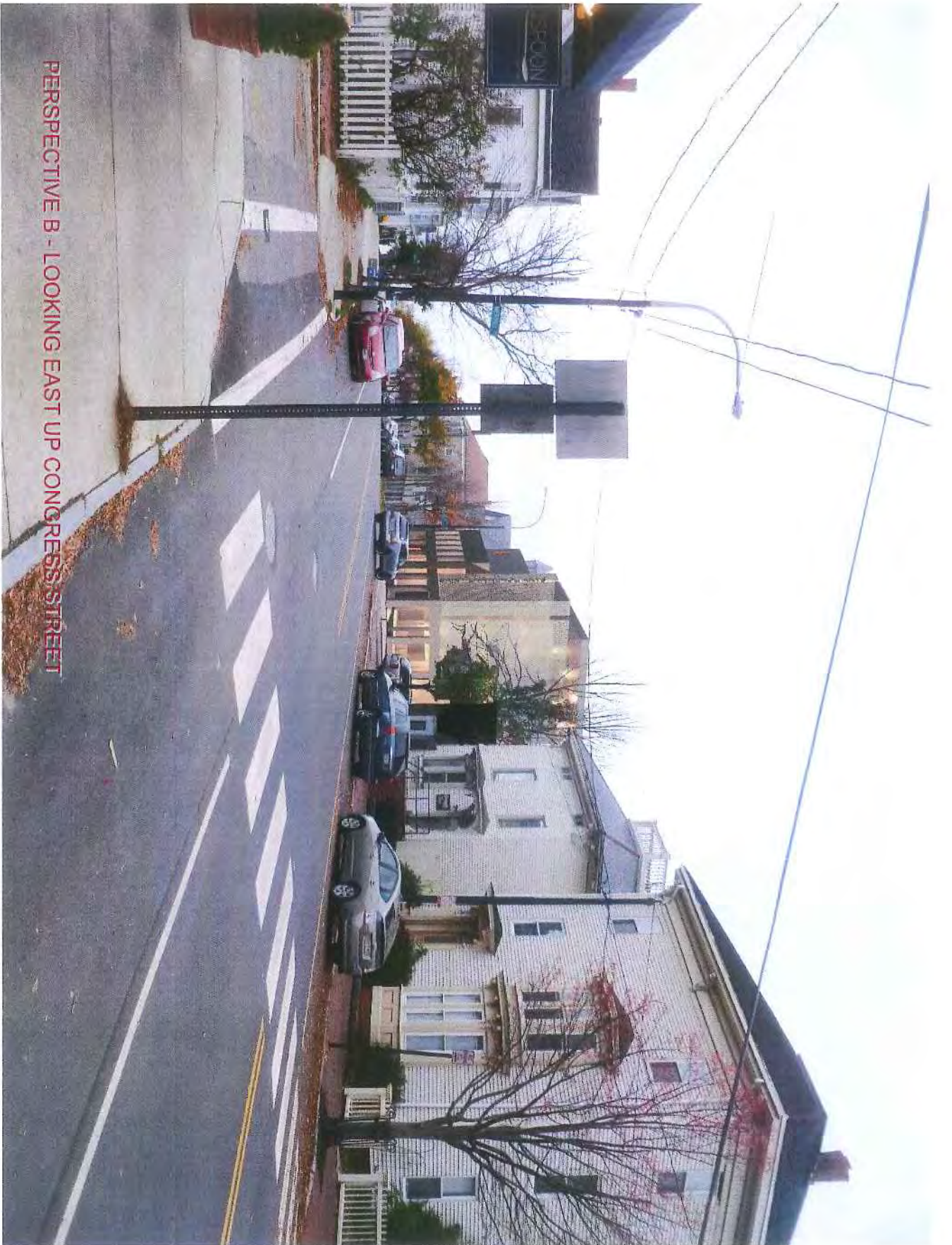
St. Lawrence Arts has proudly been serving the public as an open, affordable, and successful performing arts center in the ever-changing neighborhood of Munjoy Hill since 2001. We are enthusiastically looking forward to continuing this work on a slightly larger scale, but with the same dedication to the arts, our neighborhood, and the broader community. We are a non-profit organization with a dedicated Board, dogged staff, and large community of arts and neighborhood supporters. The project we are proposing will only get built if that community contributes the funds to make this happen. We are confident that the amended conditional rezoning will allow us to move forward with the activities approved in 2010 in a more affordable, contemporary structure which will complement the historic Parish Hall and be compatible with the neighborhood.

Respectfully submitted,



Deirdre Nice, Executive Director
St. Lawrence Arts





PERSPECTIVE B - LOOKING EAST UP CONGRESS STREET



PERSPECTIVE C - LOOKING WEST UP CONGRESS STREET

NICHOLAS M. MAVODONES (MAYOR)
KEVIN J. DONOGHUE (1)
DAVID A. MARSHALL (2)
DANIEL S. SKOLNIK (3)
CHERYL A. LEEMAN (4)

CITY OF PORTLAND
IN THE CITY COUNCIL

JOHN R. COYNE (5)
JOHN M. ANTON (A/L)
DORY RICHARDS WAXMAN (A/L)
JILL C. DUSON (A/L)

AMENDMENT TO CITY CODE
SEC. 14-49 (ZONING MAP AMENDMENT)
RE: FIRST AMENDMENT TO THE CONDITIONAL REZONING FOR
PROPERTY
IN VICINITY OF ST. LAWRENCE ARTS ~~CENTER~~/CONGRESS STREET

ORDERED, that the Zoning Map of the City of Portland, dated December 2000 as amended and on file in the Department of Planning & Development, and incorporated by reference into the Zoning Ordinance by Sec. 14-49 of the Portland City Code, which was amended by a Conditional Zone Agreement dated November 4, 2010 and recorded in the Cumberland County Registry of Deeds in Book 28250, Page 201. is hereby further amended to reflect an amended conditional rezoning as detailed below:

AMENDED CONDITIONAL ZONE AGREEMENT
RE:
ST. LAWRENCE CHURCH

AGREEMENT made this ____ day of _____, 20140 by Friends of the St. Lawrence Church, 76 Congress Street, Portland, Maine ("Developer"), and its successors and assigns.

W I T N E S S E T H

WHEREAS, the Developer owns land located at 76 Congress Street, and more particularly described in a deed from Deirdre E. Nice dated September 12, 1997 and recorded in the Cumberland County Registry of Deeds in Book 13333, Page 9 (the "Property"); and

WHEREAS, the existing building and a previously dismantled portion of the building -located on the Property whereas formerly used as the St. Lawrence Congregational Church until 1986; and

WHEREAS, in 1996, the St. Lawrence Arts Center was founded; and

WHEREAS, in 2001, the building located on the Property had~~s~~ two principal portions, the sanctuary and the parish hall; and

WHEREAS, in 2001, the parish hall portion of the building was renovated to house a one hundred and ten (110) seat theater, green room, art studio workshops and staff offices; and

WHEREAS, in 2008, the sanctuary portion of the building was dismantled due to structural failure; and

WHEREAS, a conditional rezoning was approved in 2010 which was based upon a reconstruction of the dismantled sanctuary, but that reconstruction proved to be economically infeasible, so the Developer is seeking an amendment to the 2010 conditional rezoning which retains the same programmatic functions as proposed and approved in 2010 but contains them in a new rather than a reconstructed structure; and

WHEREAS, the Developer, as in 2010, proposes and intends to renovate the parish hall theater in order to increase its seating capacity to one hundred and twenty (120) seats substantially in accordance with the plans submitted as Exhibit A attached hereto; and

WHEREAS, the Developer proposes and intends to ~~reconstruct~~ a performance arts hall on the site of the former sanctuary to provide a full basement for "back of house" green rooms, ADA toilets and storage; a lobby that serves both the auditorium and theater space, a top floor "promenade room"/additional lobby, and a new four hundred and one(4010) seat auditorium substantially in accordance with the plans submitted as Exhibit A attached hereto; and

WHEREAS, the Developer proposes and intends to develop the building on the Property as an energy efficient ~~and LEED-certified~~ facility; and

WHEREAS, the Developer intends to maintain the character of the original parish house, and construct a new structure which will respect the character-defining features of the historic-and Property and complement the adjacent residential neighborhood; and

WHEREAS, the existing zoning is R-6 which has dimensional requirements that the existing structure on the site does not meet; and

WHEREAS, the Developer has requested an amended rezoning of the Property in order to permit the proposed development of the Property; and

WHEREAS, the proposed community hall use of the Property is consistent with the existing and permitted uses in the neighborhood, which include a mix of residential, commercial and institutional uses including churches, schools, the Portland Observatory Museum and the Portland Company Marine Complex; and

WHEREAS, the City's Comprehensive Plan calls for strengthening neighborhood identity through cultural programming and creating connections between neighborhoods and the Arts District; and

WHEREAS, the City's Comprehensive Plan calls for the preservation of the Downtown's unique identity and historic fabric through the re-use of existing structures and the development of new construction that is respectful of the built and natural surroundings; and

WHEREAS, the City's Comprehensive Plan promotes the enhancement of Portland's cultural community through retaining and encouraging arts and cultural organizations and retaining and expanding performance and exhibition space, studio space and office/support space for artists, institutions and organizations; and

WHEREAS, the Planning Board, after notice and hearing and due deliberation thereon, recommended the rezoning of the Property as aforesaid, subject, however, to certain conditions contained in this Agreement; and

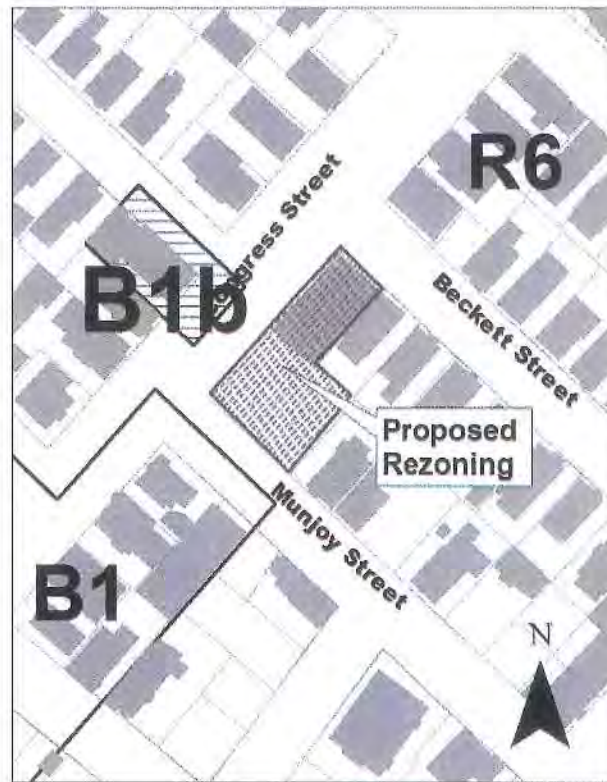
WHEREAS, the Portland City Council, pursuant to 30-A M.R.S.A. § 4352(8) and Portland City Land Use Code (the "Code") §§ 14-60 to 14-62, after notice, hearing and due deliberation thereon, has determined that because of the unusual nature and unique location of the proposed development, and its minimal impact on and compatibility with the surrounding community, it is necessary and appropriate to recommend the amended rezoning of the Property as aforesaid, with the following conditions and restrictions set forth in this Agreement; and

WHEREAS, the Portland City Council has on _____, 2014~~0~~, approved this Agreement in its entirety, by City Council Order No. _____, a true copy of which is attached hereto as Attachment 1 (the "Order");

NOW, THEREFORE, in consideration of the rezoning, the Developer covenants and agrees as follows:

1. Pursuant to the Order, the City shall amend the Zoning Map of the City of Portland, dated September, 2000 (as amended from time to time and on file in the Department of Planning and Urban Development, and incorporated by reference into the Zoning Ordinance by § 14-49 of the Code) by adopting the map change amendment shown below to zone the property conditional R-6, subject to the conditions contained below.

Image 1: Proposed Rezoning



Prepared by Department of Planning and Development based on GIS Workgroup Data

If this Agreement is not recorded within sixty (60) days after the effective date of the City Council's approval of the Order, then the first amendment to the conditional rezoning shall become null and void and the zoning of the Property shall revert to the pre-existing R-6 zone or the equivalent zone in effect at the time of reversion.

2. Notwithstanding section 14-137(b)(6)(e)(i), the use of the Property shall be considered and be operated as a place of assembly/community hall.

3. The underlying dimensional requirements of the R-6 zone shall apply and are modified as follows:

- a. Minimum lot Size: 10,500 square feet.
- b. Minimum Yard Dimensions:
 1. Front yard: 0 feet.
 2. Rear Yard: 0 feet.
 3. Side Yard on Side Streets: 0 feet.
- c. Maximum Lot Coverage: ~~90~~5%.
- d. Maximum Tower Height: ~~90 feet~~ NA.

c. Maximum Sanctuary Structure Height: ~~5465~~ feet.

f. Open Space Ratio: 0%.

g. Minimum Lot Width: 50 feet

h. The following plans and documents are attached hereto and incorporated into this agreement by reference. The Property will be developed substantially in accordance with these plans and documents, subject to such subsequent modifications as may be required by the Planning Board during site plan review and by the Historic Preservation Board during its review and approval: Site Plan and Floor Plans A1.00 through A1.04, all dated January 16, 2014, and Elevations A2.00 through A2.03, all dated January 21, 2014, St. Lawrence Arts Addition for Friends of the St. Lawrence Church by Archetype Architects.

~~g.~~

4. The proposed theater in the parish hall shall have no more than one hundred and twenty (120) seats, and the proposed auditorium ~~o~~in the former sanctuary site shall have no more than four hundred and ~~fiveone~~ (401~~5~~) seats. The Developer and its successors and assigns shall not be permitted to hold separate audience events in the parish hall and the sanctuary auditorium at the same time. The Developer shall be permitted to hold a separate event in the Promenade Room when another concurrent event is being held in the parish hall or the sanctuary auditorium. This does not preclude the Developer from using the parish hall, the Promenade Room and/or the sanctuary Auditorium for one (1) single event with the total number of attendees of said event not to exceed four hundred and eighty five (485) people.

5. The owner of the Property shall be responsible for ongoing maintenance of the Property, including snowplowing, salting, sanding, sweeping, lighting, trash removal (at least weekly), mowing, etc.

6. Prior to the issuance of a Certificate of Occupancy, the Developer shall install, according to City specifications, new brick sidewalk a along the Munjoy Street, Beckett Street and Congress Street property frontages and shall reset, as necessary, the existing pink granite curbing. If, at the time of site plan review, the Public Services Department determines that the curbing is in poor condition, the applicant shall replace it, as necessary.

7. Prior to the issuance of a Certificate of Occupancy, the Developer shall provide two (2) trees along each of the Munjoy Street, Beckett Street and Congress Street property frontages. If healthy street trees are already in place along any of these frontages, they may be counted towards this requirement. The size and type of trees to be planted shall be approved by the Portland City Arborist or their designee. If, due to site constraints, the Developer is unable to provide the two (2) required trees per street frontage, they shall contribute \$200.00 per tree or, if the required contribution is greater at the time of the application, that amount, to the City of Portland's Tree Fund. This

contribution, if necessary, is independent of any conditions which the Planning Board may lawfully require under site plan review. The Planning Board shall not be authorized, however, to waive this requirement.

8. Prior to the issuance of a Certificate of Occupancy, the Developer shall, at its own expense, install a minimum of two (2) municipal street lights along the Congress Street frontage of the property that meet the specifications and color designated for the Downtown Lighting District, as detailed in the Municipal Street Lighting Standards of the City of Portland Technical Manual, or of a type as may be specified by the City Lighting Plan at the time of the application or by the Planning Division.

9. Prior to the issuance of a Certificate of Occupancy, the Developer shall construct any remaining sidewalk connections and sidewalk ramps meeting City technical standards at the intersection of Congress Street and Eastern Promenade on both sides of the street and at the intersection of Moody Street and Eastern Promenade on both sides of the street, unless these improvements are already in place at the time of the application. This may include walkway connections to the Cutter Street parking lots as described in the Eastern Promenade Master Plan (2004).

10. The Developer shall submit a transportation demand management ("TDM") plan during site plan and conditional use review for review and approval by the Planning Board in a form substantially in accordance with Exhibit B attached hereto as a starting point subject to Planning Board and applicant modification during Site Plan Review (the terms of the attached TDM are incorporated by reference herein). The requirement of TDM plan shall supersede any and all parking requirements under the Land Use Code for the Property. During the site plan review process, the Planning Board shall provide a communication to the City Council that may include recommendations, if the Board deems it necessary, for additional on-street parking regulations in the vicinity of the project site. These may include but shall not be limited to two (2) hour parking limits and/or a residential parking program.

The TDM plan shall include monitoring provisions to periodically review the efficacy of the plan over time. The efficacy of the TDM plan shall be reviewed by the TDM plan administrator within three (3) months from the issuance of the certificate of occupancy. The results shall be promptly provided to the City for evaluation upon completion of the review. From that time forward, the TDM plan administrator shall review the TDM plan and report results to the City for evaluation on, at a minimum, an annual basis or in accordance with the TDM monitoring schedule outlined in the TDM plan.

If at the time of review (and/or at any time thereafter) the City and/or the Developer has received any five (5) or more complaints within a one (1) year period about traffic/parking generated by the use of the facility, the Developer shall report that information to, will be required to institute a review process, working in concert with the Planning Authority as part of the annual review, in accordance with sub-paragraph F of the attached TDM plan.

11. The Developer shall be responsible for ensuring that tour buses, vans and trucks affiliated with performances and events at the Property unload and then relocate to a remote, off street parking location away from the venue for the duration of the event.

12. The provisions of this Agreement are intended to replace and/or supersede the requirements of the underlying R-6 zone and the requirements of the 2010 conditional rezoning. As stated above, to the extent not otherwise altered herein, the zoning requirements for the R-6 zone shall otherwise apply to the Property.

13. In the event of a breach by the Developer or its successors or assigns of the zoning provisions contained herein (whether the Zoning Administrator, the Zoning Board of Appeals or a court determines such breach), the Planning Board, after notice and hearing, may recommend to the City Council that the conditional zone and this Agreement be amended, or be rescinded, such rescission to result in the termination of this Amended Agreement and a reversion of the Property to the R-6 zone requirements in place before the execution of this Agreement or its equivalent in effect at the time of the reversion.

14. The above stated restrictions, provisions, and conditions are an essential part of the rezoning, shall run with the Property, shall bind and benefit the Developer, any entity affiliated with the Developer that takes title to the Property, its successors and assigns, and any party in possession or occupancy of said Property or any part thereof, and shall inure to the benefit of and be enforceable by the City of Portland, by and through its duly authorized representatives. The Developer shall file a counterpart original of this Agreement in the Cumberland County Registry of Deeds.

15. This amended conditional rezoning shall become null and void and the Property shall revert to the pre-existing R-6 zone or its equivalent in effect at the time of the reversion in the event that the Developer fails to commence construction within ten (10) years from the date of the Council approval of this rezoning. This ten (10) year period shall be extended up to an additional one (1) year period if:

a. The Developer has applied for all required approvals but has not received all required approvals within the aforementioned ten (10) year period; or

b. Any other event beyond the control of the Developer has occurred which will delay the closing on some or all of the parcels and Developer has notified the City of such event.

If any required approval, including the Council's approval of this amended conditional rezoning, has been appealed, then this rezoning shall become null and void and shall revert to the underlying R-6 zoning or its equivalent in effect at the time of the reversion if the Developer fails to commence construction within one (1) year from the final disposition of such appeal or the above mentioned ten (10) year period, whichever occurs last.

16. This amended conditional rezoning agreement shall be enforced pursuant to the land use enforcement provisions of state law including, but not limited to, 30-A MRSA § 4452 and the Portland City Code.

17. If any of the restrictions, provisions, conditions, or portions thereof set forth herein is for any reason held invalid or unconstitutional by any court of competent jurisdiction, such portion shall be deemed as a separate, distinct, and independent provision and such determination shall not affect the validity of the remaining portions hereof.

18. Except as expressly modified herein, the development shall be governed by and comply with the provisions of the Portland City Code and any applicable amendments thereto or replacement thereof.

WITNESS: _____

FRIENDS OF THE ST. LAWRENCE CHURCH

____ BY: _____

STATE OF MAINE
CUMBERLAND, ss.
20104

Personally appeared before me the above-named _____, in his/her capacity as _____ of FRIENDS OF THE ST. LAWRENCE CHURCH, and acknowledged the foregoing instrument to be his/her free act and deed in his/her said capacity and the free act and deed of said corporation.

Before me,

Notary Public/Attorney at Law



PO Box 1237
15 Shaker Rd.
Gray, ME 04039

207-657-6910
FAX: 207-657-6912
E-Mail: mailbox@gorrillpalmer.com

January 8, 2014

Deirdre Nice, Executive and Artistic Director
St Lawrence Art Center
76 Congress Street
Portland, ME 04101

Subject: Parking Management Plan
 St. Lawrence Arts Center
 76 Congress Street Portland, Maine

Dear Ms Nice:

Gorrill-Palmer Consulting Engineers, Inc has completed an evaluation of the parking demand anticipated when the seating at the St Lawrence Arts Center on Congress Street in Portland is expanded from 110 to 485. While maximum the seating in the auditorium is 400, there are other rooms that could be occupied at the same time with an additional 85 seats. While this is unlikely, it will be the assumed case in our parking plan. The purpose of this letter is to present the estimated parking demand, summary of parking available in the vicinity, and to present a recommended parking management plan.

Estimate of Parking Demand

There are three potential sources to estimate the parking demand for the facility. Each of these sources is discussed below:

Institute of Transportation Engineers

The Institute of Transportation Engineers (ITE) publication, "Parking Generation, 4th Edition" presents parking rates for various land uses based on studies across the country. Land Use 441, Live Theater projects an average parking ratio of 0.38 vehicles per attendee with a range of 0.37 to 0.40 vehicles per attendee based on rural sites with an average of 800 attendees. The information was based on four studies. Since the St Lawrence Arts Center is only projected to have 485 attendees and the trip rate increases with fewer attendees, the rate would likely be closer to 0.40 vehicles per attendee.

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St Lawrence Survey Data

You have furnished our office with the results of surveys of attendees to two Friday night shows which started at 7:30 p.m. on October 25, 2013 and December 13, 2013. The results are summarized below:

DATE	ATTENDANCE	SURVEYS COMPLETED	PARKING RATIO	NO. OF VEHICLES
10-25-13	103	103	0.54	56
12-13-13	110	110	0.40	44

It is our understanding that the October show attracted an older crowd and therefore the number of people traveling by car may have been higher than other shows.

Staff Demand- Based on the number provided by you, an attendance of 485 people will require 10 staff members. Assuming each staff member commutes in their own vehicle results in a need for 10 staff parking spaces.

Parking Observations

A parking study was conducted by Gorrill-Palmer Consulting Engineers, Inc. on October 25th, the same night as the first survey was distributed to attendees. Two counts were conducted, the first was done before the show (5:45 p.m. to 7:00 p.m.) and the second was completed during the show (7:40 p.m. to 9:10 p.m.). Parked vehicles were counted on all surrounding streets within a half-mile radius of the St Lawrence Arts Center. However, vehicles parked in the vicinity of the St Lawrence Arts Center were the main focus. A walking radius was measured from a one minute walk to the St Lawrence Arts Center up to a four minute walk, assuming the average person walks 3 feet per second (180 feet per minute).

The increase in parked vehicles during the show is provided below:

LENGTH OF WALK	WALKING RADIUS	# OF VEHICLES BEFORE SHOW	# OF VEHICLES DURING SHOW	DIFFERENCE (+/-)
1 minute	180 feet	36	45	+ 9
2 minutes	360 feet	129	147	+ 18
3 minutes	540 feet	293	336	+ 43
4 minutes	720 feet	415	490	+ 75
5 minutes	900 feet	544	664	+ 120

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Although we might find these results informative and useful, we can't assume the entire difference of vehicles is representing the St Lawrence Arts Center. The Front Room is a local restaurant and bar located across the street from the St Lawrence Arts Center building, a popular spot on a Friday evening. Venues, like The Front Room, located near the St Lawrence Arts Center are not factored into the data results but are considered. Based on these considerations, the 56 vehicles based on the survey appear reasonable.

Comparing Estimates

This parking rate of 0.40 determined based on ITE coincides with the 0.40 ratio determined from the December show but is less than the 0.54 determined from the October show. However, as previously mentioned, the October show attracted an older crowd and therefore the number of people traveling by car may have been higher than other shows. In addition, as a general principal, parking ratio can be expected to decline as the number of seats increase.

Recommendation for Number of Spaces

After consideration of these variations, our office estimates a demand of 218 spaces (0.45 vehicles per attendee) for the site. This recommendation is more than forecast by ITE for a live theater and observed during the December show but less than the 0.54 ratio derived from October show which attracted an older crowd. We recommend an additional 10 spaces be available for employees.

Parking Supply

A count was also done of the total number of occupied parking spaces on each street within a 900 foot radius of the St Lawrence Arts Center on Tuesday evening, December 10th beginning at midnight. The purpose of the counts was to estimate the number of spaces used by the area residences and most of the parking that late at night should be associated with residences. The results of these parking observations are provided below.

<i>Length of Walk</i>	<i>Walking Radius</i>	<i># of Spaces</i>	<i># Occupied 12:00 midnight Tuesday</i>	<i>Available Spaces</i>
1 minute	180 feet	42	30	12
2 minutes	360 feet	144	107	37
3 minutes	540 feet	345	273	72
4 minutes	720 feet	551	436	115
5 minutes	900 feet	838	659	179

The Cutter Street parking lots located on the Eastern Promenade were vacant during our surveys and have a capacity of 95 vehicles. Results of the Cutter Street parking lots are provided on the following page.

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<i>Parking Area</i>	<i># of Spaces</i>
Lower Parking Lot	24
Middle Parking Lot	35
Upper Parking Lot	15
On-Street Parking	21
Total:	95

Combining the results of the available on-street parking and Cutter Street lot parking, a total of 274 spaces are available to attendees.

Parking Demand and Supply

As discussed in the parking calculations, based on survey parking calculations, the St Lawrence Arts Center will typically incur a parking demand of approximately 218 vehicles plus 10 employees during show events.

The available parking in the vicinity of the site is as follows:

- 179 on-street automobile parking spaces
- 95 Cutter Street automobile parking spaces

This will provide 274 automobile parking spaces for attendees of each show. The 179 on-street parking spaces are based on a 5 minute walk radius around the St Lawrence Arts Center.

Transportation Demand Management

Purpose of Plan

The City of Portland requires the creation of a Transportation Demand Management Plan for all projects in excess of 50,000 square feet, or with 100 or more employees or students. The St Lawrence Arts Center meets these requirements. However, in the case of this project, the TDM Plan serves a series of important needs:

- Make maximum use of existing transit infrastructure nearby the project
- Reduce peak hour trip impacts to adjacent roadway infrastructure
- Reduce the amount of needed parking on-site, especially as land is limited
- Encourage healthy activities

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It is important to note that this Plan should not be viewed as a series of fixed, or unchanging recommendations. It is a living document intended to be reviewed and updated on a regular basis as the St Lawrence Arts Center works with changes in local transportation patterns, preferences, and prices. Ultimately, the goal will be to make significant reductions in peak hour single-occupancy vehicle (SOV) activity on the local street networks as well as the need for on-site parking.

TDM Coordinator

The St Lawrence Arts Center has designated its Executive Director as the TDM Coordinator, charged with coordinating the TDM plan. The TDM coordinator will be responsible for the following:

- Coordinating and promoting rideshare opportunities
- Coordinating with and promoting Metro
- Monitoring parking usage
- Overseeing event scheduling
- Encouraging the greater use of bicycling, walking, and bus-based transit
- Overseeing ongoing monitoring and updating of the plan
- Filing annual reports with the City

Single Occupancy Reduction Strategies

The St Lawrence Arts Center will have a majority of guests attending their events but also a small group of staff members. Each strategy will focus on opportunities for both types of travelers but favoring the guests attending the show. The strategies follow below:

METRO Subsidies

The St Lawrence Arts Center is located on Munjoy Hill in Portland on Congress Street. It's location is nearby the following transit services:

- *Metro Route #1, Congress Street:* Portland METRO provides twice an hour service to the St Lawrence Arts Center with other major stops including Monument Square and the State Theatre. It also allows access to the Greyhound Bus Station and the Elm Street METRO facility. A limited service combining Routes 1 and 5 is provided on Sundays.

For those planning to stay in Portland, the St Lawrence Arts Center offers a \$1 discount when travel on the METRO Route 1 buses.

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- Primary User: Guests
- Responsibility: St Lawrence Arts Center, METRO

Cutter Street Shuttle

On nights with shows, the St Lawrence Arts Center will operate a van-based shuttle that will take guests from the Cutter Street parking lots to the St Lawrence Arts Center. After the show, the shuttle will transport guests back to the Cutter Street parking lots. The ride will be free of charge for all show attendees. The Cutter Street parking lots can potentially hold up to 95 vehicles creating upwards of 200 potential guests. The use of this service will be closely monitored and adjusted to meet the demand as necessary.

- Primary User: Guests
- Responsibility: St Lawrence Arts Center

Shuttle Signage

Signage should be provided to designate the drop off and pick up point in the Cutter Street lots.

- Primary User: Guests
- Responsibility: St Lawrence Arts Center

Carpooling

The TDM coordinator will be responsible for attaching carpool notices to all tickets and brochures that are sent out for guests. It should also be clearly stated on the website that carpooling is encouraged for both guests and staff members.

- Primary User: Guests
- Responsibility: St Lawrence Arts Center

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Bicycle Parking

The St Lawrence Arts Center will provide four bike racks outside the facility encouraging guests and staff members to ride a bike to the events. An additional 4 racks will be provided for areas which would benefit the neighborhood.

- Primary User: Guests
- Responsibility: St Lawrence Arts Center

Pedestrian Accommodations

Pedestrian connections are currently surrounding the St Lawrence Arts Center building. Congress Street provides sidewalks on both sides of the street for pedestrians walking from in-town Portland. A majority of side streets provide sidewalks for guests who are walking from local neighborhoods. Crosswalks are also provided to nearby streets including Beckett Street, Munjoy Street, and Howard Street as well as on the Eastern Promenade at Moody and Wilson Streets.

- Primary User: Guests
- Responsibility: City of Portland

Education for Visitors

As discussed, the St Lawrence Arts Center's TDM coordinator will provide route maps, schedules, and ticket information in packets along with convention reservations. Information about the METRO Route 1 and the St Lawrence Arts Center Shuttle will be provided. There will also be announcements before and after the show regarding the shuttle and bus schedules. It is important that this information also be provided on the St Lawrence Arts Center website along with a link to the METRO Route 1 webpage. A direct link to the parking information should be at the top of the St Lawrence Arts website, next to "Directions." This link should provide exact directions to parking and bus incentives encouraging attendees to carpool or use the transit system.

- Primary User: Guests
- Responsibility: St Lawrence Arts Center

Monitoring

Parking Counts

As part of its TDM Plan monitoring program, the St Lawrence Arts Center TDM Director will assess the use of its various operational components, starting one month after the opening of the expansion and annually thereafter. As the most critical component of the TDM program will be to

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reduce parking demand, the first part of each monitoring effort will include a parking count of the surrounding streets before and during an event. This count will include the Cutter Street parking lots on the Eastern Promenade.

Surveys - Employees

One month after the expansion of the facility, St Lawrence Arts Center employees will be surveyed regarding their transportation choices such as automobile/bicycle ownership, parking demand, and the frequency of trips using bicycle, walking carpool/vanpool, and the bus. The survey will be developed in consultation with the City's TDM manager and conform to overall City TDM modeling planning.

The surveys will be conducted to determine:

- Mode of travel to and from work (car/carpool/biking/walking/bus)
- Preferences or concerns with mode of travel
- An important component of the survey will be to determine the flexibility of employees to utilizing various travel modes to access the facility

Surveys - Attendees

For attendees to the St Lawrence Arts Center, surveys will also be included. These will be provided in pamphlets at each seat.

The surveys will be conducted to determine:

- Mode of travel to and from the show (car/carpool/walking/bus)
- Preferences or concerns with model of travel
- Specify as a driver or a passenger

The survey will consist of a single sheet of paper; it could be filled out at a show, or completed with a link on-line (such as Survey Monkey) to do it afterward. Various questions will be created in the survey to determine measures to encourage increased use of transit, for example, either via locating a space for parking or greater promotion of transit uses.

Submission of Monitoring Information/Updated TDM Plan

Based upon the results of the monitoring, the St Lawrence Arts Center will update the TDM Plan and submit a draft plan to the City's TDM Manager for review and comments. The primary goal of the initial year will be to reduce the parking demand five percent from the calculated demand.

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Closure

Our office recommends that 185 spaces be provided for the site based on the information furnished by your office. We recommend that you closely review the assumptions contained in this letter concerning the operational characteristics of the project.

Please contact us with any questions.

Sincerely,

Gorrill-Palmer Consulting Engineers, Inc.



Thomas L. Gorrill, P.E., PTOE
President

TLG/tlg/JN2818 / recommendations 12-3-13.doc

From: <lynne_panico@yahoo.com>
To: "hcd@portlandmaine.gov" <hcd@portlandmaine.gov>
Date: 2/19/2014 1:09 PM
Subject: Proposed St Lawrence Expansion

I work out of state during the week and am unable to attend the neighborhood meeting. However, I have two major objections to the proposed expansion:

One is that St Lawrence parking will take up the current on street parking used by area residents, and two is that the architecture is inconsistent with the existing building and area.

The goals of the St Lawrence Friends are worthy of supporting, but not until the issues raised above are addressed. I will strongly oppose the proposed expansion based on the two objections listed.

Lynne Panico

Sent from Windows Mail

From: ebw <eenebw@gmail.com>
To: <hcd@portlandmaine.gov>
Date: 2/26/2014 10:56 AM
Subject: st lawrence arts center
Attachments: IMG_20140223_144028.jpg; IMG_20140223_143355.jpg

I live on beckett street three houses down from the St Lawrence church. I wanted to attend today's meeting in person but am unable to so am writing this email. Overall, I am not against the project but I have concerns that the scale of it is too large for the neighborhood in terms of noise and parking congestion. I attended the last meeting at St. Lawrence and what I got from the meeting was there really is no parking issue and that the parking stock in the neighborhood is sufficient except for 20 or so spaces.

I would like to offer the following considerations:

1. Beckett Street is hit hard when a show occurs. Parking gets unmanageable with people parking over driveways, making 3 spaces out of two, etc... Refer to the pictures I included in this email that were taken last Sunday at around 2:30. Although illegal parking is not the responsibility of St Lawrence, increasing the size of a show from 100 people to up to 500 requires a better plan than "the neighborhood has sufficient parking stock". Last Sunday when the picture was taken I was barely able to drive down the street to my driveway because of the crowded parking basically blocking the street from passage.
2. Before a show the street is crowded by a constant stream of cars looking for parking places. This will only get 4 times worse.
3. After a show, people tend to converse outside their cars. While this is not a big deal normally, it is not a good thing in the summer at 10:30 pm when you are trying to get to sleep.
4. There may be a few parking spaces available occasionally on Beckett street but those really should be for residents.

Enoch Wenstrom
88 Beckett St





From: Ross Fields <ross.fields@munjoyhill.org>
To: Ralph Carmona <ralphcarmona@gmail.com>
CC: Jeff Levine <JLEVINE@portlandmaine.gov>, Barbara Barhydt <BAB@portlandmaine.gov>, Nell Donaldson <HCD@portlandmaine.gov>, Deirdre Nice <deirdre.nice@stlawrencearts.org>, Ann Landsberg <alandsberg@aol.com>, Tim Baehr <TBaehr@aol.com>, Nick Mavadones <NickM@cascobaylines.com>, David Marshall <dave@damfineart.com>, Stephen Gaal <Steve@gaal.com>, Joan Sheedy <joaniesheedy@gmail.com>, Kevin Donoghue <kjdonoghue@gmail.com>, Vana Carmona <vanacarmona@gmail.com>, Bobbi Keppel <bobbik@zwi.net>, Leslie Bailey <legato@zwi.net>, Jon Hinck <jhinck@lewissaul.com>, Tom Kelley <thomas.kelley@maine.edu>, Rita Yarnold <cbayrea1@maine.rr.com>, Erna Koch <ekoch4@maine.rr.com>, Jill Dusen <jdusen@maine.rr.com>, Peter Bass <pbass@maine.rr.com>, <vestal@maine.rr.com>, Alex Jaegerman <AQJ@portlandmaine.gov>, John Coyne <jcoyne@portlandmaine.gov>, Michael Brennan <mfpb@portlandmaine.gov>, Mark Rees <MHR@portlandmaine.gov>, Julia Kirby <julia.kirby@stlawrencearts.org>, Maia Greco <maiaagreco@verizon.net>, Cheryl Leeman <cal4161@yahoo.com>, Ed Suslovic <edsuslovic@yahoo.com>, Cliff Gallant <gallant.cliff555@yahoo.com>
Date: 2/26/2014 11:40 AM
Subject: St. Lawrence Arts Center - TDM and Parking input
Attachments: Parking Study Munjoy Hill-All Data.xlsx

Jeff,

I too extent my "Thank You" for meeting with me and Ralph yesterday on such short notice. As part of discussion concerning a success approach to this project here are some observations, questions and collected data (attached). These items are a blend of my own thoughts and discussions with members of the community and Concerned Citizens of Munjoy Hill (CCMH). The parking data is the result of the efforts of CCMH.

TDM - Suggestion for Success and Questions

The success of the TDM seems to hinge on the willingness of theater goers to park at the Cutter Street location and be shuttled to the theater. The current problem is that there is no real incentive or enforcement mechanism to make the Cutter Street parking with shuttle service a viable solution.

However, if ***Residential Parking Permits*** were required within the 3 block area around the theater, during performances, the odds of the Cutter Street parking - shuttle bus system increase dramatically. It now becomes the more convenient, almost only, choice, and much easier to monitor.

There has also been a suggestion that ***Handicapped Parking*** be put in on the streets, Congress, Munjoy and Beckett, to facilitate the ease of use for theater goers with special physical needs - 4 to 6 spaces.

For which performances will the TDM be in play?

- Only performances in the 401 seat theater?
- Only performances put on by St. Lawrence (i.e. for Good Theater, TDM not required)?
- Any and all events taking place at the newly established Arts Center.

What parking requirements do you see for private shuttle services such as school groups and retirement communities?

- Park anywhere they can find space?
- Required to park in one of the Cutter Street lots?

The impact on available residential and commercial street parking and traffic flow in the Munjoy Hill neighborhood will also depend on the frequency of performances needed for financial success.

- What is the projected performance frequency, 1 per week, 3 per week, 5 per week?

Example: If the 65,000 (approx.) residents living on the peninsula attended the proposed 401 seat theater, once per year, and each performance had 400 seats filled, 3 (3.125) performances per week would be required.

It would definitely be helpful to know and understand just how many performances in the 401 seat theater, given the claim that a 401 seat theater is required (the current 110 seat theater is not big enough) to accommodate acts/groups who aren't currently coming to Portland due to lack

of a properly sized venue, will be expected each day, week, month.

*Parking Data *- Exel Doc attached

Concerned Citizens of Munjoy Hill (CCMH) completed 11 parking counts
- 9 with performances at the current Parish Hall theater
- 2 counts with no performance.

Available Parking (ave) *WITH performance* - 9 samples

32 open spaces - 1 block in all directions from theater (yellow on diagram)
181 open spaces - 2 to 3 blocks, in all directions from theater (tan on diagram)
216 open spaces - 3 to 4 blocks, in all directions from theater (green on diagram)

Available Parking (ave) *NO** performance* - 2 samples

61 open spaces - 1 block in all directions (yellow)
182 open spaces - 2 to 3 blocks in all directions (tan)
202 open spaces - 3 to 4 blocks in all directions (green)

These figures support the concern that theater goers tend to search for and use parking as close to the theater as possible based on almost 50% decrease in available parking within the 1 block area during current performances.

Based on this data, all available parking in the 1 block, and 2 to 3 block, areas would be required during a performance where attendance was 400 to 485.

Thank you for your involvement with this proposed project. If you have any questions or comments please email or call me.

Sincerely,
Ross Fields
46 Turner Street
207-233-43 <207-233-4327>

Spaces Open		Spaces Open		Spaces Open		2/23/2013		S/O Perf. at St. L	
Melburn University Library North	222		199		47		SLAC		
	Emerson		Emerson		Emerson		Vesper		Vesper
			Howard		Howard		Beckett		
	Merrill		Merrill		Merrill		Munjoy		Munjoy
	Layfayette		Layfayette		Atlantic		Atlantic		Atlantic
	North		North		North		St. Lawrence		St. Lawrence
	Tot. Spaces Available								
	468								

Spaces Open		Spaces Open		Spaces Open		3/2/2013		No Performance	
Melbourne Library Board Union Registrar General	Eastern		Prom.						
	204	192							
	Emerson	Emerson	Emerson	Vesper	Vesper	Vesper	Vesper	Vesper	
		Howard	Howard	Beckett				O'Brian	
	Merrill	Merrill	Merrill	Munjoy	Munjoy	Munjoy	Munjoy	Munjoy	
	Layfayette	Layfayette	Layfayette	Atlantic	Atlantic	Atlantic	Atlantic	Atlantic	
	North	North	North	St. Lawrence	St. Lawrence	St. Lawrence	St. Lawrence	St. Lawrence	
	Tot. Spaces Available								
451									

	Spaces Open	Spaces Open	Spaces Open	3/9/2013	S/O Perf. at St. L	
			Eastern	Prom.		F
M	232	166				
e			Morning	C Morning	o Morning	V Morning
l	Emerson	e Emerson	r Emerson	n Vesper	d Vesper	I Vesper
b		b	n 31	g	y	s
o		e Howard	e Howard	r Beckett		o O'Brian
u		c	r	e SLAC		n
r	Merrill	Merrill	Merrill	s Munjoy	Munjoy	Munjoy
n			C	s	M	SL C
e		Layfayette	u Layfayette	Atlantic	o Atlantic	Atlantic
			m		n	Gi
	North	North	b North	St. Lawrence	u St. Lawrence	St. Lawrence
G	Tot. Spaces Available 429					

	Spaces Open	Spaces Open	Spaces Open	3/16/2013	S/O Perf. at St. L	
			Eastern	Prom.		F
M	212	160				
e			Morning	C Morning	o Morning	V Morning
l	Emerson	e Emerson	r Emerson	n Vesper	d Vesper	I Vesper
b		b	n 29	g	y	s
o		e Howard	e Howard	r Beckett		o O'Brian
u		c	r	e SLAC		n
r	Merrill	Merrill	Merrill	s Munjoy	Munjoy	Munjoy
n			C	s	M	SL C
e		Layfayette	u Layfayette	Atlantic	o Atlantic	Atlantic
			m		n	Gi
	North	North	b North	St. Lawrence	u St. Lawrence	St. Lawrence
H	Tot. Spaces Available 401					

Spaces Open	Spaces Open	Spaces Open	3/23/2013	S/O Perf. at St. L.	
		Eastern	Prom.		F
M 230	Q 184	T Morning	C Morning	M Morning	V Morning
Emerson	Emerson	Emerson	Vesper	Vesper	Vesper
	Howard	Howard	Beckett		O'Brian
Merrill	Merrill	Merrill	Munjoy	Munjoy	Munjoy
	Layfayette	Layfayette	Atlantic	Atlantic	Atlantic
North	North	North	St. Lawrence	St. Lawrence	St. Lawrence
Tot. Spaces Available 435					

Spaces Open	Spaces Open	Spaces Open	3/30/2013	Performance at St. L.	
		Eastern	Prom.		F
M 211	Q 194	T Morning	C Morning	M Morning	V Morning
Emerson	Emerson	Emerson	Vesper	Vesper	Vesper
	Howard	Howard	Beckett		O'Brian
Merrill	Merrill	Merrill	Munjoy	Munjoy	Munjoy
	Layfayette	Layfayette	Atlantic	Atlantic	Atlantic
North	North	North	St. Lawrence	St. Lawrence	St. Lawrence
Tot. Spaces Available 427					

Spaces Open	Spaces Open	Spaces Open	4/6/2013	Performanc e at St. L.	
M e l b o u r n e K	Eastern Prom.				
	215	167			
	Emerson	Emerson	Emerson	Vesper	Vesper
		Howard	Howard	Beckett	O'Brian
	Merrill	Merrill	Merrill	Munjoy	Munjoy
		Layfayette	Layfayette	Atlantic	Atlantic
	North	North	North	St. Lawrence	St. Lawrence
	Tot. Spaces Available 411				

Spaces Open	Spaces Open	Spaces Open	4/13/2013	Performanc e at St. L.	
M e l b o u r n e L	Eastern Prom.				
	167	161			
	Emerson	Emerson	Emerson	Vesper	Vesper
		Howard	Howard	Beckett	O'Brian
	Merrill	Merrill	Merrill	Munjoy	Munjoy
		Layfayette	Layfayette	Atlantic	Atlantic
	North	North	North	St. Lawrence	St. Lawrence
	Tot. Spaces Available 356				

Spaces Open		Spaces Open		Spaces Open		4/14/2013		No Performance	
Eastern Prom.									
M 201	Q 173	T Morning	C Morning	M Morning	V Morning				
Emerson	Emerson	Emerson	Vesper	Vesper	Vesper				
	Howard	Howard	Beckett						
Merrill	Merrill	Merrill	Munjoy	Munjoy	Munjoy				
	Layfayette	Layfayette	Atlantic	Atlantic	Atlantic				
North	North	North	St. Lawrence	St. Lawrence	St. Lawrence				
Tot. Spaces Available									
M 441									

CONCERNED CITIZENS OF MUNJOY HILL

Why you should be concerned about the St. Lawrence Arts Center's latest proposal

The most significant problem with this proposal is its PARKING plan.

- The proposal's TDM (Transportation Demand Management) plan includes a shuttle service to and from the Cutter Street lot to supplement on-street parking and accommodate the estimated 228 parking spaces needed for the 401-seat performance hall.
- The shuttle service seems unworkable, especially during a typical Maine winter.
 - Snow-clogged streets will decrease available on-street parking.
 - There are no shelters to protect those waiting for the bus in foul weather.
 - A parking ban will make the Cutter St. lot hard or impossible to use.
- The shuttle service in the TDM plan lacks important details that would have an impact on the surrounding neighborhood.
 - The size and number of buses
 - The frequency of trips
 - The time for loading, transporting, and unloading passengers
 - How much time will patrons need between parking in the Cutter Street lot and being seated in the performance hall?
 - How much time will patrons need to return to the Cutter Street lot when patrons are all leaving at the same time?
- The proposal is vague or unclear about the maximum number of patrons and how many of the three venues (theater, concert hall, promenade room) can be used at one time. The language of the proposal implies that there could be as many as 600 patrons, and their cars, to accommodate.
- Most troubling is that this proposal gives ongoing oversight of parking issues to the Center's Executive Director and chief promoter of the proposal.

Other concerns: Some people feel that the size and design of the new building are out of character with the neighborhood and the Parish Hall. The size has a direct impact on parking and traffic.

For more information, contact Ralph Carmona at 207-420-5916 or RalphCarmona@gmail.com

From: Kevin Donoghue <kjdonoghue@portlandmaine.gov>
To: Jeff Levine <JLEVINE@portlandmaine.gov>, Helen Donaldson <HCD@portlandmaine.gov>
Date: 2/28/2014 11:11 AM
Subject: SLAC Meeting

Hi Jeff and Nell,

My major takeaways from last night are:

Yes, we are willing accommodate the parking demand, but the impacts are acute in an inner radius of blocks. Whether as a companion to the TDM or part of it, we should be prepared to define options for a parking permit program which could be implemented once the SLAC begins operations or after a defined review period thereafter. Even though the impacts are real, if acute, there remains sufficient community support for the value the SLAC can provide to the neighborhood among established residents. This is my divination of Jeff's values vs. science approach. However, we must use some "science" to mitigate the impacts implicit in our acquiescence of "values." The science should inform our permit program design.

No, the shuttle service is not a viable technique to mitigate parking demand in and around the SLAC. If visitors are rational actors, it is a supremely unattractive option and compares unfavorably to parking two or three blocks deep into the neighborhood. Moreover, it's expensive and heavy on wasted administrative effort. Instead, a comparable amount should be applied to extending daytime frequencies of the METRO #1 into the evening, whether the SLAC is operating then or not. First, it can mitigate baseline residential and commercial parking demand in the neighborhood all while providing a tangible neighborhood benefit that the equally costly shuttle does not. Second, it provides more options for visitors than the shuttle. Virtually every parking space on the Congress Street corridor, including Downtown parking garages, is in play for patrons, encouraging multi-stop visits.

Finally, as much as I would see the building round to the new upper limit of 50 ft in the "Munjoy Hill B1," 118 dwarfs the visual impact of SLAC and, while I'm unhappy with the both the review process and recommended outcome of 118, what's good for the goose.. The generous setbacks of the Promenade Room, moreover, make the difference of having the SLAC being much more respectful of the Observatory.

Thanks for your facilitation last night,
Kevin

**Neighborhood Meeting for Friends of St. Lawrence Church
February 12, 2014
St. Lawrence Arts, 76 Congress Street, Portland, Maine
5:30 p.m.**

Present: See Attached Sign-in Sheet

Deirdre Nice, Executive Director of Friend of St. Lawrence Church (FSLC), opened the meeting by welcoming neighbors and made a short announcement about upcoming events in the Parish Hall Theater as well as alerting attendees that the City of Portland was also hosting a meeting about FSLC's project on Thursday, February 27, 2014 at 7:00 pm at the East End Community School.

David Lloyd, Principal, Archetype Architects, made a brief presentation about the project, updating attendees on the process stating that at present FSLC had gone through three workshops with the City of Portland Historic Preservation Board and had submitted its application for an amendment for its Conditional Rezoning Agreement (CZA). David brought images of the most current design of the exterior of the building, as well as a three-dimensional model of the blocks surrounding the FSCL property to show how the building will relate to the other adjacent buildings. David also showed an image of scale with the proposed FSLC building and the proposed condominium unit at 118 Congress. David gave an overview of the zoning codes in reference to height for this part of Congress Street and explained the height of the proposed Performance Hall for FSLC.

A question was asked about how the proposed Performance Hall compared to the former historic Sanctuary. David explained it has a similar footprint but it is smaller in height; furthermore, it is a smaller building cubic-feet wise.

A question was asked by a neighbor on Beckett Street about the proposed Promenade room in regards to noise and concerns about attendees in the room being able to stare down at neighbors. David addressed these concerns by stating that the Promenade Room is stepped back from the roof edge and will have thermal glazing, which is an excellent soundproofing material.

A question was asked about the use of the Promenade Room as a separate events space or potential for small events. Deirdre explained that it may be used for small events in conjunction with a larger event in the Performance Hall but that the space would not be equipped with lighting and sound for large concerts. Deirdre also stated that St. Lawrence Arts (SLA) ends all events end by 9:30 or 10:00 p.m. and adheres to all City noise ordinances.

A question was asked about the use of original materials on the building like stained glass, David explained that granite would be used on the façade to relate to the granite on the Parish Hall but that given its use as a Performance Hall, the new building would not incorporate stained glass or windows into the design except for glass on the front of the building and in the Promenade Room. Also, David stated that this is a contemporary building so the use of stained glass would not fit into the overall design scheme.

A question was asked about use of colored light on the front of the building and would it be similar to the light design in use on the exterior of the Portland Public Library. David explained that due to the residential nature of the setting, any light illuminating from the building would be very subtle.

Tom Gorrill of Gorrill-Palmer Consulting Engineers, Inc gave a presentation about the Transportation Demand Management (TDM) plan compiled by his firm. First Tom explained what is involved in a parking study, stating how demand is determined and then a review of the current supply, and finally a comparison between the two. The goal of a successful TDM plan is to not have demand exceed supply. Tom explained the formula used to determine the demand expected for the proposed 400-seat Performance Hall. The firm took the current number of people allowed in the building as stated in the CZA, which is 485, data compiled from 2 surveys conducted during sold-out performances of SLA, and national data to determine that FSLC would need to supply 228 spaces. Tom qualified that the Performance Hall only seats 400 people, so using the number of 485 made the study a very conservative estimate. Then it was determined that within a 5 minute walk of the building there are 179 available spaces. Further, by incorporating the Cutter Street lot an additional 95 spaces were available for a total of 274 spaces. Tom qualified his remarks about the Cutter Street lot stating that it is beyond a 5 minute walk and therefore his firm strongly recommends the use of a shuttle for patrons parking in this area. Tom stated that a successful TDM plan has careful management, promotes ride-sharing, public transportation, walking and biking to and from events. Tom stated that FSLC will provide four bike racks adjacent to the Performance Hall.

Tom concluded his presentation by stating that adjustments to the TDM plan will be made and that FSLC is required to file an annual report as a safety net.

A question was posed by a neighbor who disagreed with the number of spaces available and inquired exactly how this supply was determined. Tom said that the number of cars on the street are counted and subtracted by the number of cars it is pre-determined the street can accommodate if people are parked legally (i.e. not in front of driveways).

Jamie Parker stated in response that he counted 10 spaces on his way to SLA for the meeting and strongly disagreed with the comment by the person who said there are not even five spaces currently available around the St. Lawrence Church. Jamie stated that the parking problem is more perceived than real. Tom was asked if his firm could conduct another study and he replied that usually his firm only does one study but in this instance given the extreme concern and scrutiny anticipated about parking, FSLC asked for two surveys.

Vana Carmona stated that she has also gone out and conducted a parking study by counting cars and though she arrived at the same number of empty spaces as Gorrill-Palmer, she did not think there were enough spaces for 485 people. Vana stated that she didn't think it was realistic to think patrons of SLA would use alternate lots or other modes of transportation. Vana asked if Tom Gorrill would be advising on the shuttle, stating that the details are very important and if it is not convenient people would not use the service. Tom stated that the details of the shuttle were not a priority at this point but would be carefully scrutinized at the appropriate time. Vana Carmona then asked Tom to confirm that he was at present just determining supply and demand.

Deirdre Nice made a statement about how important the TDM plan is to FSLC, stating that we are committed to it being a workable and realistic plan that is carefully monitored.

A question was asked if FSLC had considered using the parking garage on India and Fore Streets. Deirdre explained that, at present, FSLC does not have a relationship with this garage but that we will look into making use of it for events via a shuttle as an option if the Cutter Street lot does not provide adequate parking.

Carl Loomis of Valet Services got up and made a brief presentation as an attendee of the meeting (not a formal presenter) on the benefits of valet services and how he feels it can greatly mitigate the effects of parking problems. He explained how he can handle a large influx of cars at one time.

A resident on North Street stated that North Street is not a far walk and that there is plenty of parking along it especially near the school and it should be considered as an option for parking. Another neighbor mentioned the use of residential parking stickers and how this system has worked well in the West End neighborhood with the addition of Maine Medical Center and its recent expansions. This person stated that even though the restaurants might not like the residential parking stickers, FSLC could work with the business to devise a joint parking plan.

Jamie Parker spoke again; encouraging attendees to think more progressively about parking and the creative opportunity to make the journey to the event part of the positive experience and that it can be achieved through outreach and communication.

A resident formerly from Beacon Hill stated that the FSLC has done a great job with its plan to build the Performance Hall and its TDM plan and stated that residential parking is a key way to solve the issue of parking.

Deirdre asked if there were more questions or comments and then invited attendees to take a closer look at David's three-dimensional model as well as the images of the current design. Some attendees took the opportunity to talk to David Lloyd and Tom Gorrill directly.

The meeting concluded at 6:35 p.m.

Respectfully Submitted,

Julia Kirby
Development Director
Friends of St. Lawrence Church

Friends of St. Lawrence Arts
Public Meeting for Contract Zone Amendment
February 12, 2014

Name (Please Print)

email (optional)

Signature

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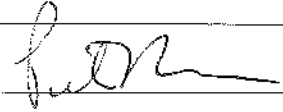
Friends of St. Lawrence Arts
Public Meeting for Contract Zone Amendment
February 12, 2014

Name (Please Print)

email (optional)

Signature

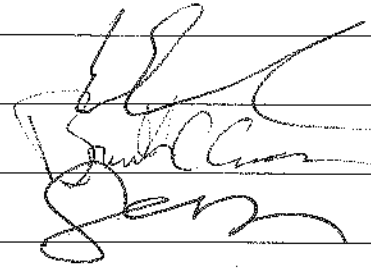
Peter BASS



BARBARA VESPA

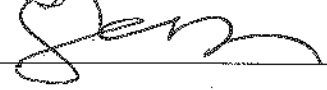
Eric Lessard

BRENDT CORCORAN



Sarah Gravity

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St. Lawrence Arts Center Conditional Zoning Agreement (CZA)
 Neighborhood Meeting
 2/27/14, 7 p.m., East End School

Jeff Levine, Director of the Planning Division, gave a brief introduction, explaining the purpose of the meeting. Nell Donaldson, Planner, added an overview of the history and current conditional zoning agreement application process.

Julia Kirby provided background on the current St. Lawrence Arts Center proposal, with David Lloyd of Archetype Architects and Tom Gorrill of Gorrill-Palmer Consulting Engineers offering detail on the design and parking/transportation elements of the current plan respectively.

The floor was then opened for questions and comments.

Process

How much influence does public input have on the Planning Board? <i>Jeff Levine</i> – Public comment is taken seriously by staff, the Planning Board, and the City Council and, ultimately, input is balanced with policy to arrive at a resolution.
What is the process for dealing with the details regarding parking concerns? When will a public discussion about this occur? <i>Jeff Levine</i> – The TDM plan includes annual reporting requirements. <i>Nell Donaldson</i> – In the conditional zoning agreement there is a draft parking study and TDM plan. This plan will be reviewed during this process.
Has the fire department been consulted?
The requests for further study are a way of opposing the project. The project should not be overburdened by unnecessary studies.

General

Munjoy Hill already has a 100-seat theater. Why is a 400-seat theater necessary?
The existing theater is an asset to Munjoy Hill and the greater community.
Is this theater expansion really necessary given the other facilities in the city?
Most people would support the expansion if it was a 300 seat addition. The project seems out of scale.

Design

How is the massing of the original sanctuary different from the new? <i>David Lloyd</i> - There is no bell tower in the current proposal and the total cubic volume is now smaller.
Concern regarding recent development pressure and the massing along Congress Street. Will there be shadows due to the proposed height?
The form and massing generally fit the character of Congress Street.
Like architecture.
The mass is overwhelming. Does it obscure the observatory?

Parking Study

The data in the parking analysis doesn't seem to be transparent enough and the arithmetic doesn't seem to work. There are only 179 spaces within a 5 minute walk, but 228 spaces are needed.
Concerned regarding the validity of the parking survey. Supply numbers do not seem accurate.
It appears that the parking study has been done with integrity.

Parking Supply

Never adequate parking on Munjoy Hill right now. Could there be some off-street facility for parking?

There is not enough on-street parking currently, and parking congestion under the new development will create traffic congestion. Encourage the Planning Board to conduct a more careful parking analysis. The two most discussed options present a false choice; is it really a matter of 485 people in the facility or the status quo? Could a smaller venue (with 200-250 seats) work instead?
A change in travel behavior is coming which will alleviate some of these parking concerns. How often does the St. Lawrence expect a sold out performance? Can live with some inconvenience if it's infrequent.
This neighborhood should be urban. Not worried about parking supply.
Parking is a real issue, but we live in a city. TDM strategies (shuttle, transit subsidies, education) could help, as could a residential parking program.
Parking issues can be resolved through public transportation and remote lots.
Is residential parking program needed?
People love to walk in the neighborhood; using on-street spaces farther than 5 minutes away should not be a problem.
How frequently will shows occur? How frequently must there be shows in order to provide sufficient revenue stream? Parking problem might be manageable if infrequent.
Not enough parking spaces now. How will you fit 400+ people into 200 spaces?
This facility is in the middle of a business district. Successful places don't have ample on-street parking.
Could a wrapped garage be built on Munjoy Hill?
A residential parking permit program needs to be instituted.
The parking competition is going to create issues for other businesses, like the restaurants.

Safety

Concern about safety issues with cars circling looking for on-street spots. Couldn't project be downsized to make this work?
Need to consider winter conditions, when snow and ice limit parking aisles and make sidewalks treacherous. Sidewalk maintenance should be part of the plan.
How will fire navigate the streets in the winter when In the winter when streets are tighter with snow, ice, and on-street parking? Will children be safe with all the on-street parking?
Need to look at sidewalk maintenance issue.
Could speed bumps help with traffic safety concerns?

Transportation Demand Management (TDM) Plan

The Cutter Street remote lots won't work in either the summer or winter.
Putting too much stock in the Cutter Street lots. What about the boat trailers that are parked there in the summer?
Need more analysis of TDM strategies. Evaluate demographics of audience and base TDM plan on those demographics.
The shuttle bus to Cutter Street needs more study. The numbers don't work and the logistics have not been thought through carefully enough.

Building Occupancy

The capacity figures in the conditional zoning agreement are ambiguous.
Issue of enforcing capacity. How do you limit the number of occupants to 485?

The meeting concluded at approximately 8:30.

City of Portland - Public Meeting, 2/27/14, East End School
 St. Lawrence Arts Center Conditional Rezoning Amendments, 66 Congress Street

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Joanne Vandermost	53 Bantrey Ave Portland	vanderj@andvahoo.com
Carol McElahan	1 North St.	carol@ckenehl.com

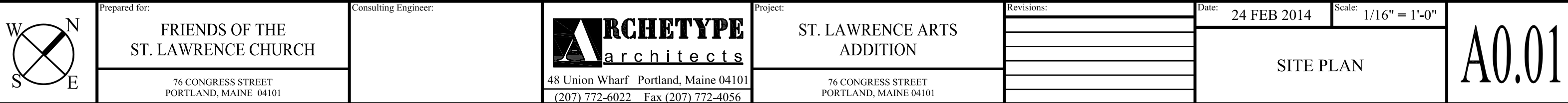
or

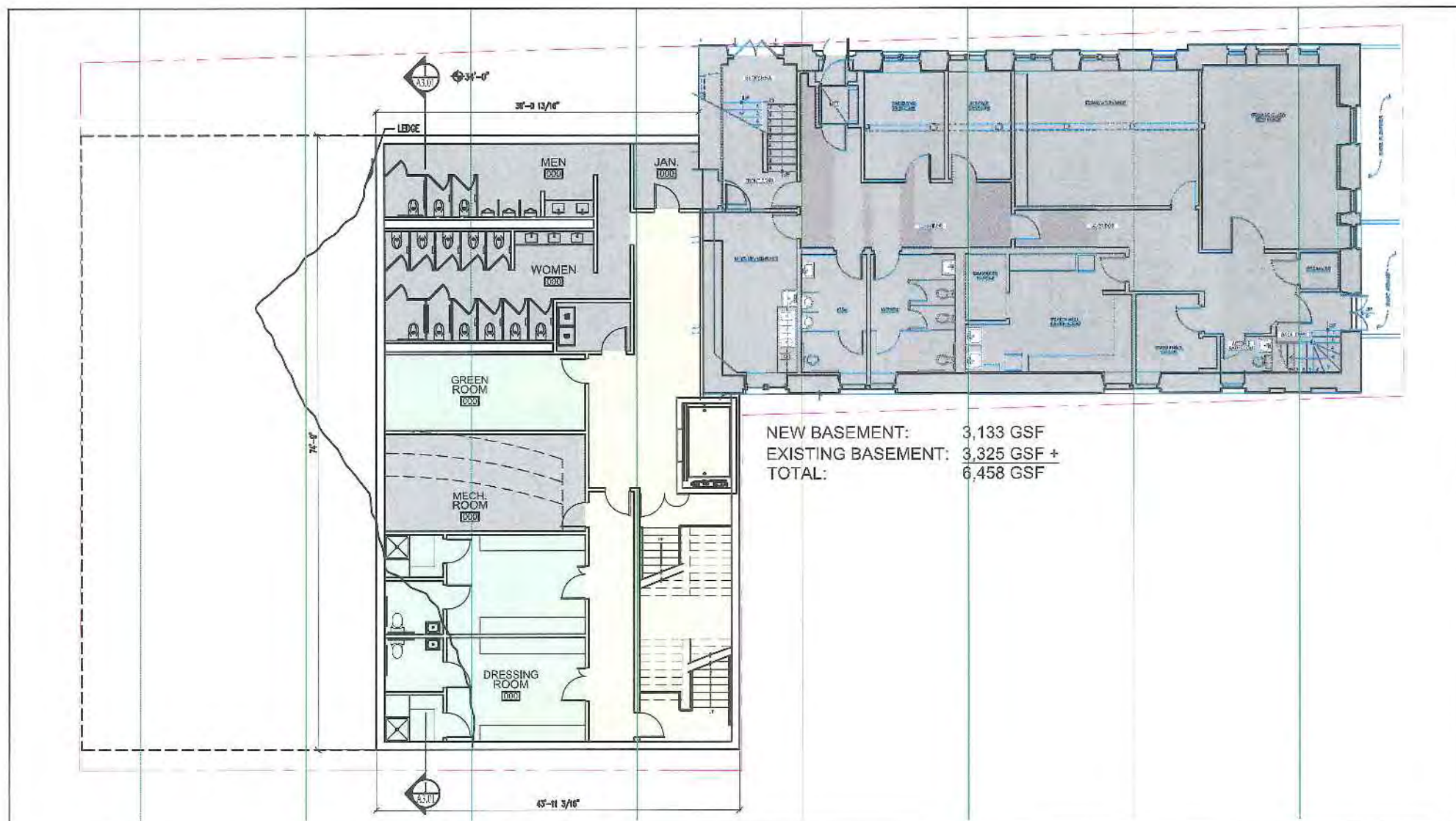
City of Portland - Public Meeting, 2/27/14, East End School
 St. Lawrence Arts Center Conditional Rezoning Amendments, 66 Congress Street

Name	Address	Email
Paula Robinson	83 St. Lawrence St. Portland, ME	paula@me.com
Cynthia B. Young	135 SHERIDAN #201 04101	cbyrd@MAINE.RR.COM
Jenny Skene Jodi Motte	158 North St. #109-PTD 559 Morning St. Port.	jenniesk@me.com jenniesk@me.com
Tina Douglas	11 Munjoy St.	mdouglas@dougden.com
Barbara Keppel	141 North St. 04101	bobbike@me.com
Robert W. Smith Frank Cloutier	11 Morningside St. 04101 54 E. Port.	
Andree Mykawa	12 North	andree.mykawa@monmouth.org
James Parker	73 Atlantic	james@trails.org

An aerial map of a city block, rotated 45 degrees. The map shows various buildings, streets, and green spaces. A specific building, located in the upper right quadrant of the map, is highlighted with a red shaded area. This building has a distinctive triangular roof structure. The map is oriented with a north arrow in the top right corner.

1. *Journal of the American Medical Association*, 2000; 283: 2689-2696.





Prepared for:
**FRIENDS OF THE
 ST. LAWRENCE CHURCH**
 76 CONGRESS STREET
 PORTLAND, MAINE 04101

Consulting Engineer:

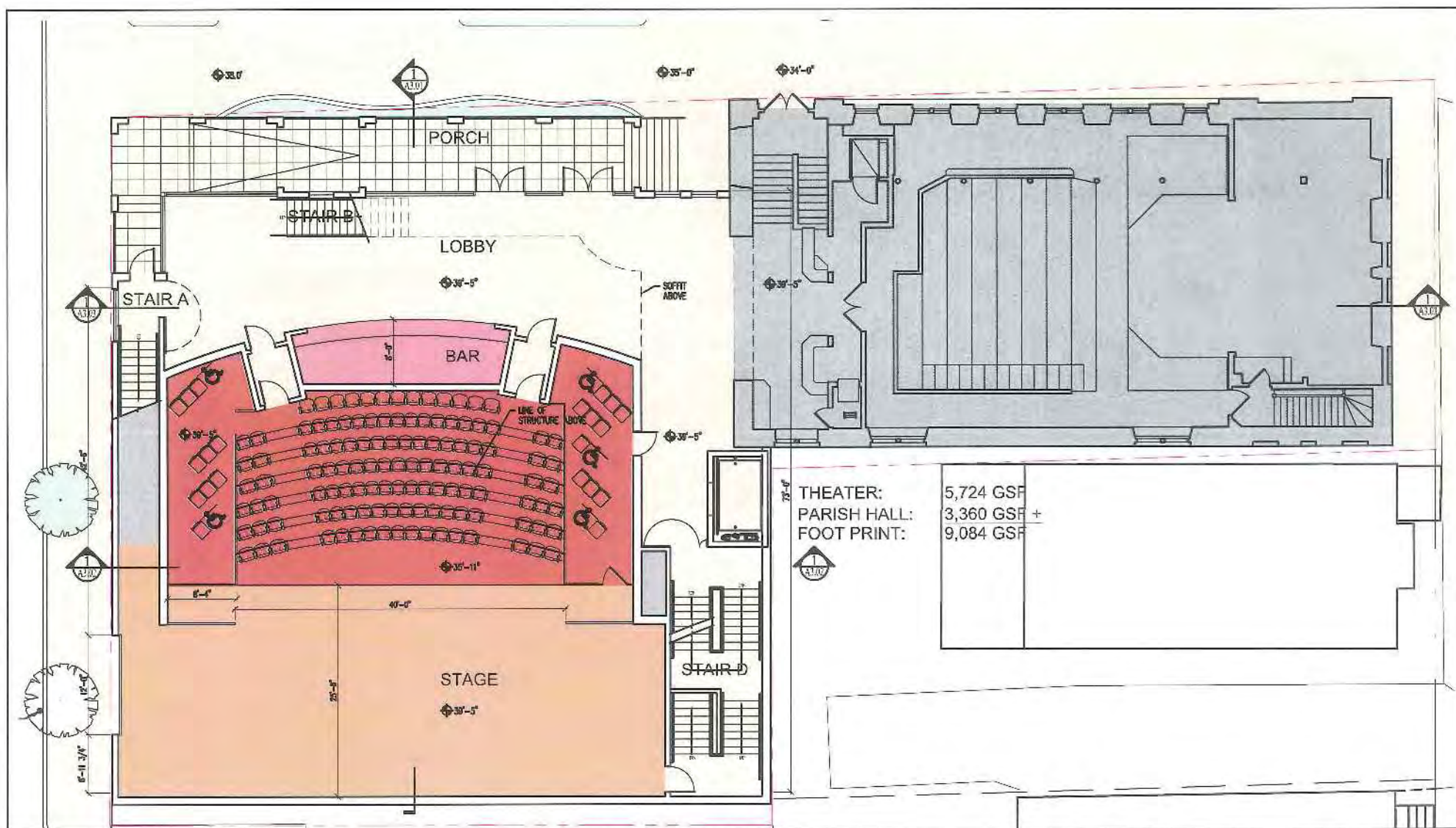
ARCHETYPE
 architects
 48 Union Wharf Portland, Maine 04101
 (207) 772-6022 Fax (207) 772-4056

Project:
**ST. LAWRENCE ARTS
 ADDITION**
 76 CONGRESS STREET
 PORTLAND, MAINE 04101

Revisions:

Date: 16 January 2014 Scale: $\frac{3}{32}'' = 1'-0''$
BASEMENT PLAN

A1.00



Prepared for:
**FRIENDS OF THE
ST. LAWRENCE CHURCH**
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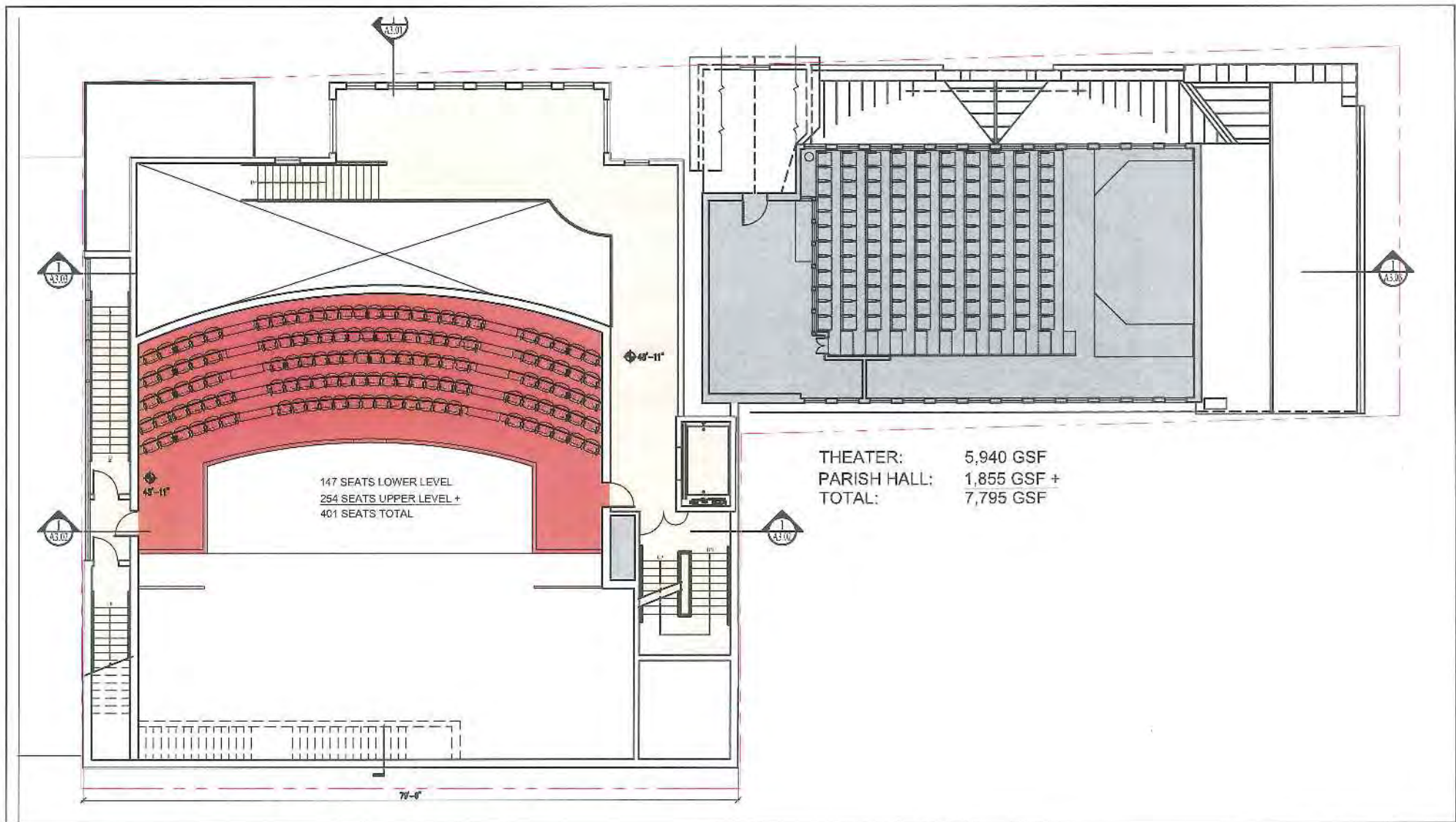
Project:
**ST. LAWRENCE ARTS
ADDITION**
76 CONGRESS STREET
PORTLAND, MAINE 04101

Revisions:

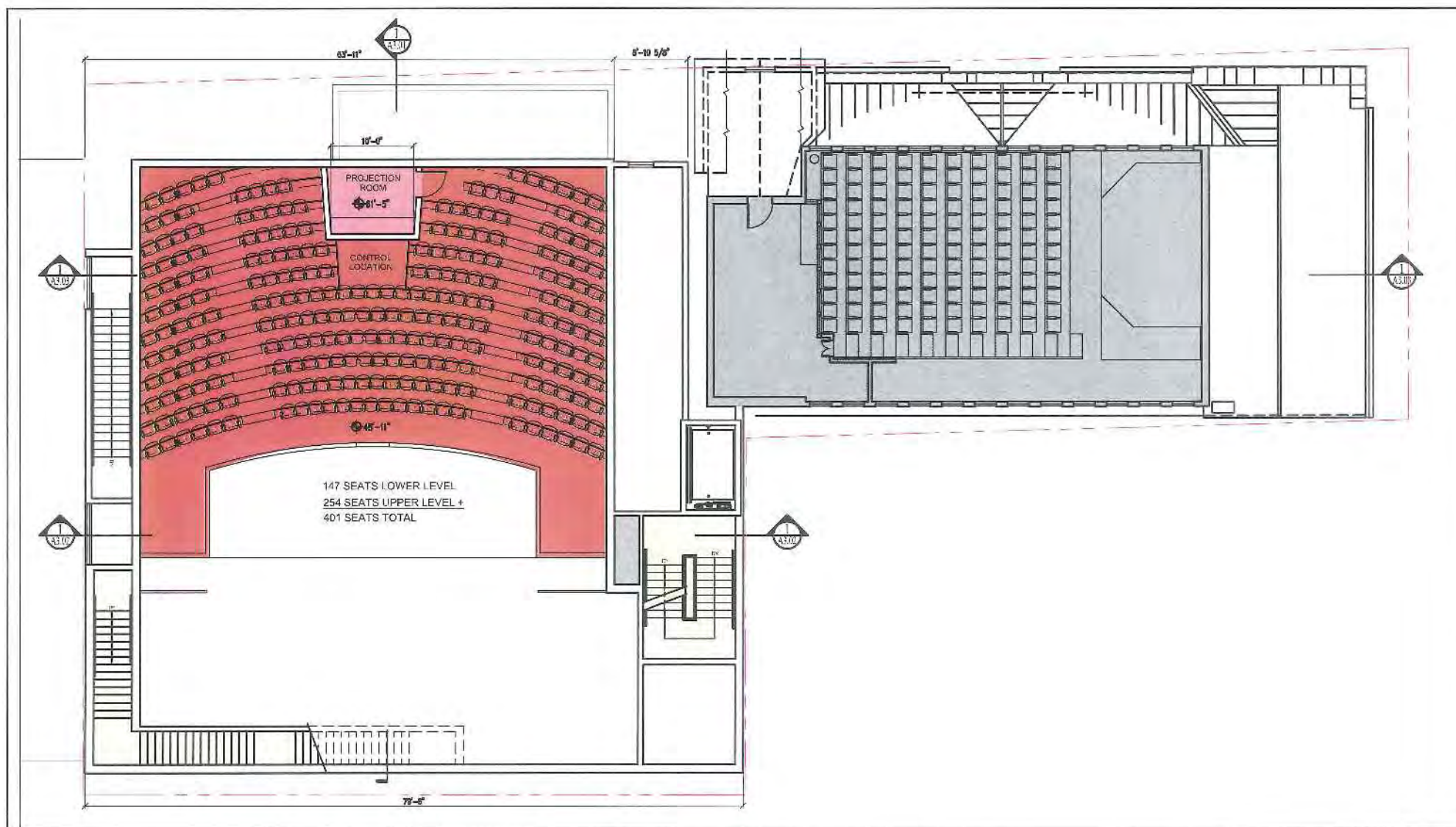
Date: 16 January 2014 Scale: 1/8" = 1'-0"

FIRST FLOOR PLAN

A1.01



	Prepared for: FRIENDS OF THE ST. LAWRENCE CHURCH 76 CONGRESS STREET PORTLAND, MAINE 04101	Consulting Engineer: 	 48 Union Wharf Portland, Maine 04101 (207) 772-6022 Fax (207) 772-4056	Project: ST. LAWRENCE ARTS ADDITION 76 CONGRESS STREET PORTLAND, MAINE 04101	Revisions: 	Date: 16 January 2014 Scale: $\frac{3}{32}" = 1'-0"$ UPPER THEATER LEVEL	A1.02
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Prepared for:
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ST. LAWRENCE CHURCH**

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PORTLAND, MAINE 04101

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Project:
**ST. LAWRENCE ARTS
ADDITION**

76 CONGRESS STREET
PORTLAND, MAINE 04101

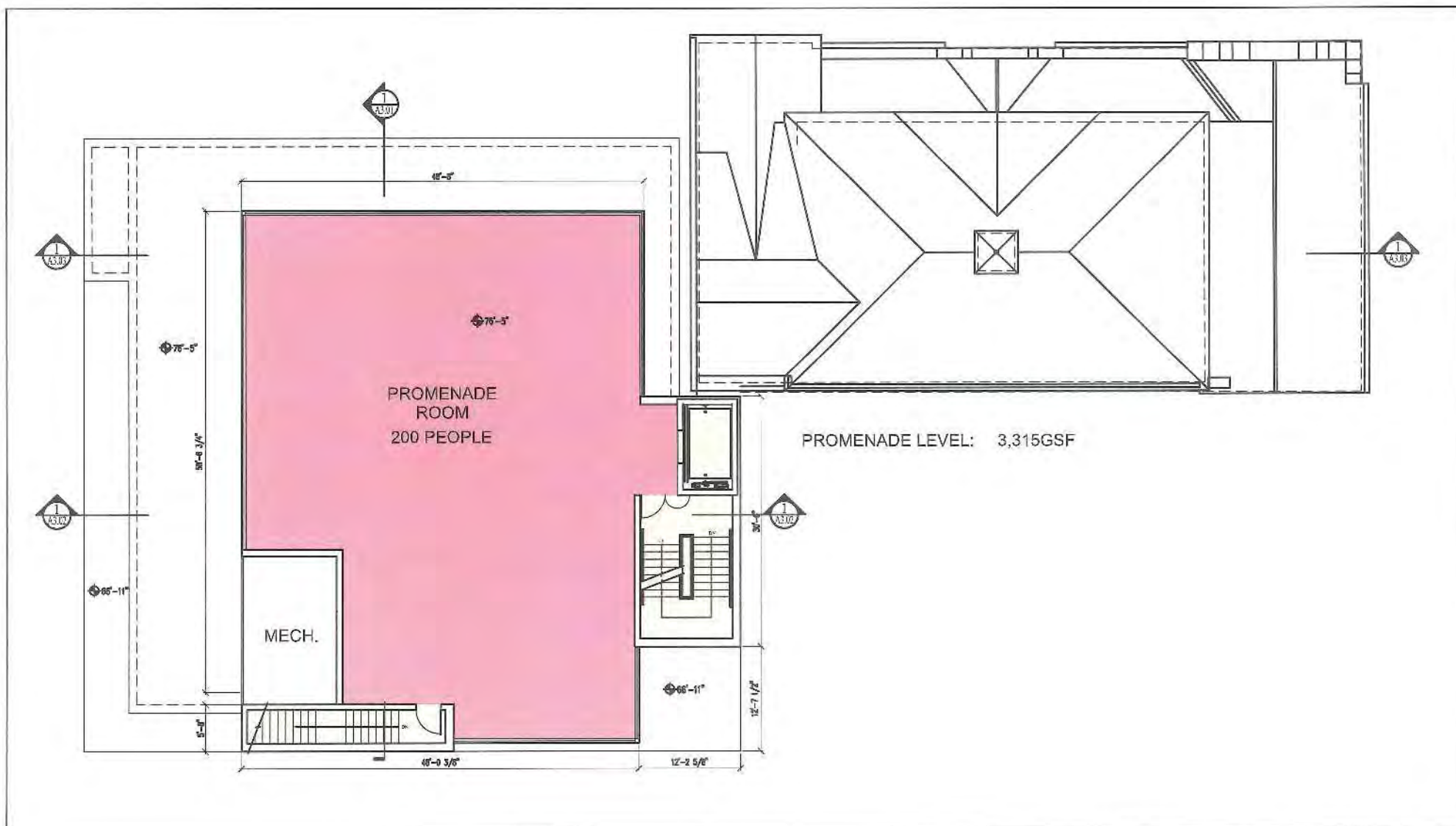
Revisions:

Date: 16 January 2014

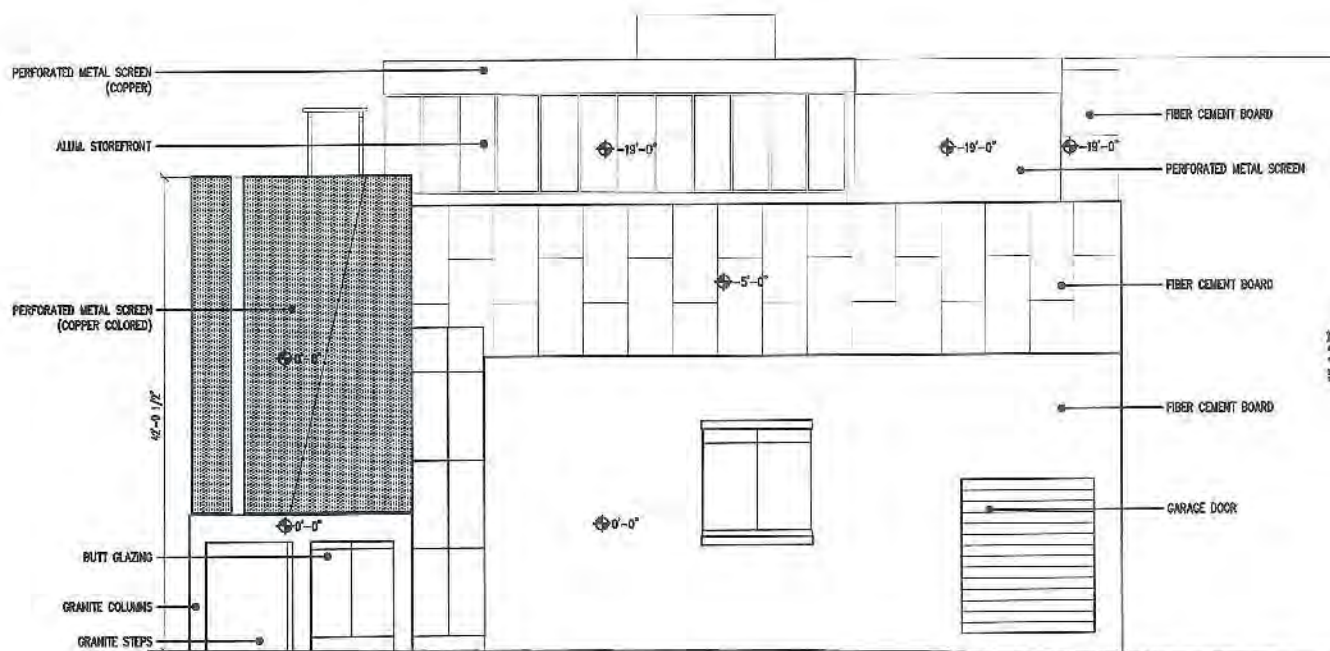
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**UPPER THEATER LEVEL
CONTINUED**

A1.03



	Prepared for:	Consulting Engineer:	 48 Union Wharf Portland, Maine 04101 (207) 772-6622 Fax (207) 772-4056	Project:	Revisions:	Date:	Scale:	A1.04
	FRIENDS OF THE ST. LAWRENCE CHURCH 76 CONGRESS STREET PORTLAND, MAINE 04101						16 January 2014	



Prepared for:

**FRIENDS OF THE
ST. LAWRENCE CHURCH**

76 CONGRESS STREET
PORTLAND, MAINE 04101

Consulting Engineer:



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(207) 772-6022 Fax (207) 772-4056

Project:

**ST. LAWRENCE ARTS
ADDITION**

76 CONGRESS STREET
PORTLAND, MAINE 04101

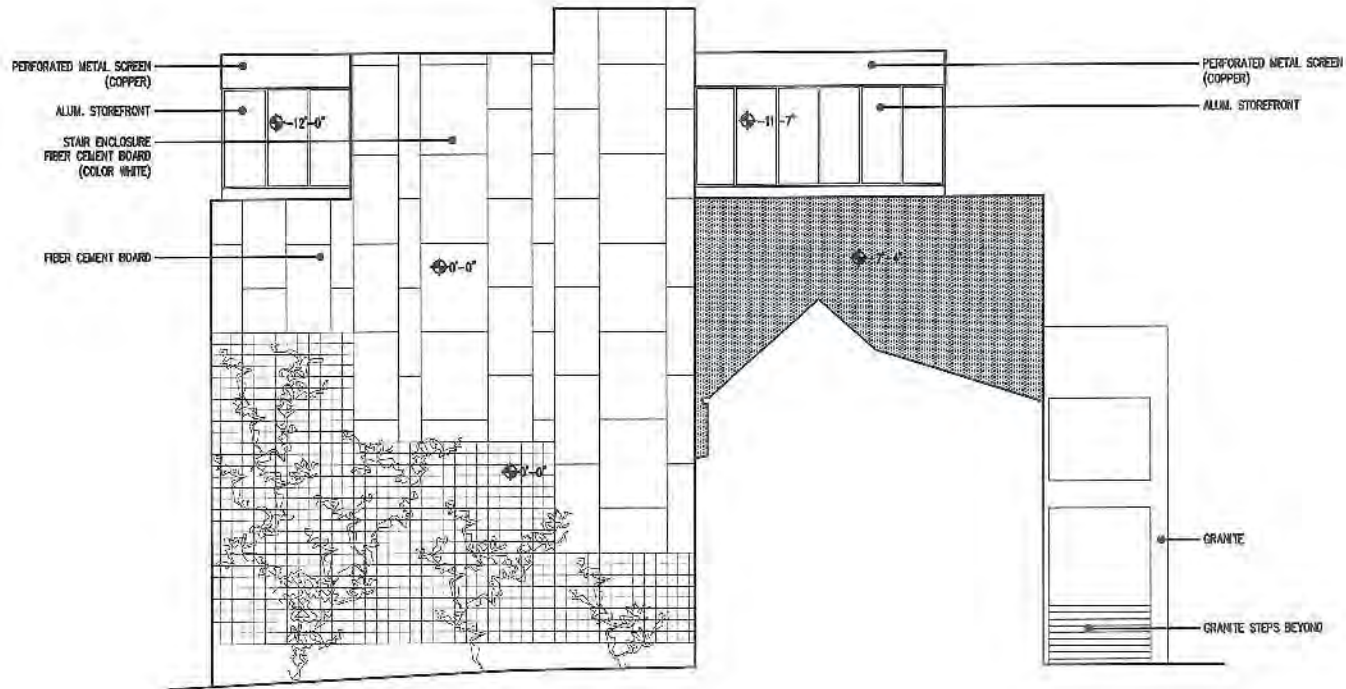
Revisions:

Date: 21 January 2014

Scale: $\frac{3/8" = 1'-0"$

WEST ELEVATION

A2.01



Prepared for:

**FRIENDS OF THE
ST. LAWRENCE CHURCH**

76 CONGRESS STREET
PORTLAND, MAINE 04101

Consulting Engineer:

ARCHETYPE
architects

48 Union Wharf Portland, Maine 04101
(207) 772-6022 Fax (207) 772-4056

Project:

**ST. LAWRENCE ARTS
ADDITION**

76 CONGRESS STREET
PORTLAND, MAINE 04101

Revisions:

Date: 21 January 2014

Scale: $\frac{3}{16}'' = 1'-0''$

EAST ELEVATION

A2.03



Memorandum

Department of Planning and Development

Planning Division

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

FROM: Jean Fraser, Planner

DATE: March 14th, 2014

RE: **Multi-unit Commercial Building**
421 Warren Avenue
PH Warren Avenue, LLC, Applicant
Project #: 2014-016 CBL 296-A006001

MEETING DATE: March 18th, 2014

I. INTRODUCTION

Steve Bushey of Fay, Spoffard & Thorndike, on behalf of P H Warren Avenue, LLC, has requested a Preliminary Level III Site Plan review for a proposed 28,000 sq ft single story industrial building to create a 7 unit commercial complex with 41 parking spaces. It is proposed to be accessed via an existing drive that currently serves 429 Warren Avenue (also owned by the applicant).

The building is located on a 9.6 acre lot that was formerly part of the 48+ acre site known as "Warren Green". The applicant has purchased the whole of the "Warren Green" site (see [Plan P1](#) and [Attachment 7](#)) and is currently in discussions regarding the possible sale of part or all of the remainder of this larger site to the City to preserve water resources. The applicant also owns the properties abutting both sides of the project on the Warren Avenue frontage.

The proposal does not constitute a subdivision as the 9.6 acre parcel is the first split of the overall "Warren Green" site since at least 2008, and the proposed 7 commercial units do not create a subdivision under State law or City ordinance (as both relate to dwelling units only).



A total of 116 notices of this Workshop were sent to property owners within 500 feet and to interested citizens. The applicant held a public information meeting on March 17, 2014 regarding the associated MDEP application to fill in wetlands on part of the site, which was noticed widely. A Neighborhood Meeting will also be held, date/time to be confirmed. To date the Planning office has not received any public comments

Required reviews: The site plan is being reviewed under the Land Use Code provision 14-526 (Site Plan). The project is located within the Capisic Brook Watershed District and must obtain a Stormwater Permit from the City of Portland (delegated review). The project requires a Natural Resources Protection Act (NRPA) approval from the Maine DEP (Tier III permit for wetland fill).

The waivers required by the project are still under review, but staff suggest that the following would be required for the project as currently designed. The preliminary submission has not addressed the tree preservation ordinance and waivers may be requested in the context of that requirement.

<i>Requested Waiver</i>	<i>Standard and any waiver provisions</i>
Driveway Design: the access driveway into the proposal site is 60 feet in width and exceeds the maximum in order to allow for the large vehicles anticipated to require regular access to the site and to avoid conflict with the existing turning movements and traffic flows on the joint access drive.	<i>Technical Manual Section 1.7.1.4</i> which specifies a maximum of 36 feet wide for a major commercial driveway. (Note: the driveway is off of a private drive jointly serving the project not directly off of a public street)
Parking Lot and Parking Space Design: The parking aisles are up to 65 feet in width to allow for circulation by large truck vehicles and therefore exceed the maximum width.	<i>Technical Manual Section 1.14</i> which specifies a maximum of 24 feet for parking aisles.

II. PROJECT DATA

<i>DATA</i>	<i>Proposal</i>
Total Site Area	418,393 sq ft
Existing Zoning	B4
Existing Use	Vacant, flat gravel
Proposed Uses	Commercial units for rent
Proposed structure height	21 feet
Total Disturbed Area	110,207 sq ft
Existing impervious areas	0
Proposed impervious areas	82,764 sq ft
Increase in impervious area	82,764 st ft
Existing wetland	3.5 to 4 acres (2.1 acres of this is delineated in detail in vicinity of development)
Proposed wetland fill	25,093 sq ft
Existing building footprint	0
Proposed building footprint	28,000 sq ft
Proposed floorspace	28,000 sq ft
Proposed parking as required by zoning	41 proposed; 28 required by zoning
Proposed bicycle parking	4 (4 required by Ordinance)
Estimated Cost of Project:	\$1.5 million
Uses in Vicinity:	Mixed commercial along Warren Avenue; undeveloped at rear

III. EXISTING CONDITIONS

The part of the site nearest to Warren Avenue, where the new building is proposed, is about half cleared with gravel and the remainder is wetland mixed with vegetation, including many trees. The rear part of the lot (approximately 7 acres) is mostly fingers of wetland which are part of a much larger area of wetland (Attachment 7 shows wetland over the wider “Warren Green” site).

Photo submitted by applicant:



The lot is bounded on the west and east (nearest Warren Avenue) by commercial developments similar to the proposed project and owned by the applicant. The commercial development to the west is 429 Warren Avenue (2 buildings totaling about 35,000 sq ft) in the same ownership as the proposal site. It is served by an existing 36 foot wide access drive from Warren Avenue, and this is proposed as a shared access for the new commercial building.

There are bituminous sidewalks along the frontage and a former (now unused) curb cut on the site.

IV. PROPOSAL

The proposal plans (Plans P3. to P17.) show the layout and physical site work on the southern part of the lot where the new development is proposed, with the building elevations in Plan P18. The development comprises a new single story 70 foot by 400 foot building containing 7 commercial units: 5 units at 3,500 sq ft each; and 2 units of 5,250 sq ft each, to total 28,000 q ft. Each unit will have an overhead door and pedestrian door and initially have an open interior to be leased and modified by small business users.

The 41 parking spaces are largely located near the front of the units with some around the periphery of a large paved area accessed by a 60 foot wide drive onto the joint access drive to Warren Avenue. Drainage will be managed by gravel wetlands, and just over 25,000 sq ft of existing meadow and tree wetland will be filled in to accommodate the development.

The proposals include the provision of three street trees in the Warren Avenue ROW but no other tree planting or reinstatement planting is proposed. Where the new access is created from the joint access drive, a few shrubs and boulders are proposed.

V. Staff Review

- a. **Zoning:** Comments from Marge Schmuckal, Zoning Administrator, were not received in time for inclusion in this Memorandum.
- b. **Staff Review:** Site Plan 14-526 Site Plan Level III Final Plan Requirements

The submitted information for a preliminary plan has addressed most of the relevant Site Plan requirements. The comments below highlight areas where staff consider the Site Plan requirements need to be addressed for the final plan review.

A. Transportation

1. Impact on Surrounding Street system

The proposed development utilizes an existing access that currently serves the commercial units at 429 (aka 424 Warren) Warren Avenue (understood to be just over 35,000 sq ft warehouse/commercial plus ancillary offices). Tom Errico, the Consultant Traffic Engineer, has requested that the applicant provide a traffic generation estimate for the proposed project as well as for the two existing buildings serviced by the shared driveway, in order to determine whether a Traffic Movement Permit is necessary (Attachment 3).

2. Access and circulation, loading and servicing

The access into the new site is proposed to be via a 60 foot wide curb cut from the existing access drive from Warren Avenue that currently serves 429 Warren (two existing warehouse /industrial /commercial buildings) (See Plan P6). The 60 foot wide curb cut opens immediately into an area of pavement that extends about 100 feet out from the new building in the central area, narrowing to 80 feet from the new building at the north and south ends and partially wrapping around the building (over 50,000 sq ft in area). This area provides access to the units by large vehicles, including tractor-trailers, and includes parking around the periphery, although it is not clear why the pavement is around the north end when there are no doors at that location (Plan P18).

The applicant has described the dimensions of these areas as being needed to avoid conflicts with existing turning movements and traffic flows (understood to mean in the joint access drive) and to allow for the occasional movement of tractor –trailers. (Attachment E)

This area requires the infilling of substantial areas of wetland and this concern is discussed below. Tom Errico, the Traffic Engineering reviewer, has questioned the functional necessity for such large areas (Attachment 3):

- a. *The proposed driveway entrance exceeds City standards and a waiver will be required. The applicant shall provide an Auto-Turn analysis documenting the need for the wide driveway.*
- b. *The aisle widths in the internal parking/circulation area do not meet City standards and a waiver will be required. The applicant shall provide an Auto-Turn analysis documenting the need for the expanded pavement areas.*

3. Pedestrian Access

Each of the proposed 7 units have a pedestrian entrance from the central paved area which also provides parking spaces (Plan P6). Although the south end of the building is about 50 feet from the existing Warren Avenue sidewalk, the current proposals do not include any pedestrian link from the sidewalk to the building entrances. The Site Plan Ordinance includes a standard that states (14-526 (a) 2. c. (iii):

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

Tom Errico has provided the following comments, which need to be addressed as part of the final submissions (Attachment 3):

- *A sidewalk connection from the proposed building to Warren Avenue shall be provided.*
- *An area along the building frontage on the parking area shall be marked such that pedestrians have a direct routing to Warren Avenue.*

4. Parking Requirements

The proposal includes 41 parking spaces, distributed around the perimeter of the central access area to serve the units. The zoning requirement would be 28 spaces (1 per 1000 sq ft). The applicant has indicated that the total spaces, including 13 above the zoning requirement, are appropriate for the anticipated uses. As with the expanse of pavement, the submission does not include any explanation of the need. The final submissions should include further information to support the scale of the paved area and parking provision.

5. Bicycle Parking Requirements

The ordinance standard for this development is 2 bicycle parking spaces for every 10 required vehicle parking spaces, ie 4 bicycle parking spaces. The applicant has provided 4 bicycle [parking spaces in 2 racks, one near Warren Avenue and one near the central two units.

6. Snow Storage

The site plan (Plan P6.) does not specifically call out snow storage. The proposed paved area is likely to provide adequate area for snow storage, but the proposed wetland cells, swales and erosion control features about the paved area and a Snow Storage Plan is required to ensure that these areas are not used for snow storage.

Note: Public Transit Access and TDM requirements do not apply to this project.

B. Environmental Quality

1. Landscape Preservation

Preservation of a percentage of large trees within the setbacks is an Ordinance requirement. The proposed building and the extensive paved area surrounding the building result in the loss of most of the existing vegetation, so the final submissions should include an assessment of the trees within the setback and include a “tree save” plan, as confirmed by the City Arborist ([Attachment 4](#)).

2. Site Landscaping and Street Trees

The Site Plan ([Plan P.6](#)) shows three street trees and a few shrubs and boulders near the new access from the joint drive. The Site Plan requirements for parking areas also apply to the B4 zone and additional planting/replacement planting is required to meet this standard, particularly in view of the likely impact on the existing trees in the northern part of the site. ([Attachment 4](#))

Planting is also needed for the proposed gravel wetlands and staff suggest a separate Landscape Plan for this, along with parking lot landscaping and replacement trees.

3. Stormwater Management

The proposals result in creation of new impervious areas that total 82,764 sq ft, of which the new commercial building accounts for about a third (28,000 sq ft). The need for over 50,000 sq ft of paved area, which exceeds parking and drive aisle and curb cut standards, is unclear and further information has been requested in the staff comments.

The project also results in the filling of 25,093 sq ft of wetlands and the applicant has applied for a Tier III Permit under NRPA. The site is within the Capisic Pond Impaired Watershed. Again, the need for this scale of wetland fill is not clear in the application and further justification is requested.

The applicant has submitted a preliminary Stormwater Management Report ([Attachment F](#)) but the calculations that underpin the Report have been questioned by Dave Senus, the Consulting Engineer reviewer ([Attachment 1](#)). The review also notes that some information has not been submitted at this stage as it is a preliminary application (eg gravel wetland and other details, capacity to serve letters, construction management plan, and the Stormwater Inspection and Maintenance manual) and confirms that these would need to be included in the final submissions.

It is also noted that the project is required to comply with the Urban Impaired Stream Standard and the final submittal should present either a fee calculation or a design approach /plans that show how the project will meet this standard.

C. Public Infrastructure and Community Safety Standards

1. Consistency with City Master Plans

The Department of Public Services (David Margolis-Pineo) has commented ([Attachment 2](#)):

Since the curb cut on Warren Ave in front of this project is not proposed to be used, the applicant is requested to close the curb cut. The curbing shall be set in concrete to match the abutting curb work... Warren Ave in this area is currently under a pavement moratorium until October 26, 2014. However as long as the applicant does not encroach the pavement more than two feet from the face of curb, no moratorium repair will be requested if the work is done before this date. A Street Opening Permit will be required.

He has also noted that some corrections/amendments are needed to the submitted survey for the site ([Plan P2.](#)). An easement for the use of the joint access should be included in the final submission.

2. Public safety

This will be reviewed following the submission of plans showing a pedestrian link to the Warren Avenue sidewalk, and the submission of information regarding the existing lighting near the joint access drive.

3. Fire prevention

Comments were not received at the time this Memorandum was prepared.

D. Site Design Standards1. Site Lighting

The proposed lighting fixtures are included in Attachment E (at end) and the Photometric Plan is included in Plan P7; both meet the City's Technical Standards. There are two existing lights (Plan P6) shown near the site entrance and details of these lights should be submitted as part of the final submissions to ensure these also meet Technical Standards.

The pedestrian link to the Warren Avenue sidewalk (as requested above) should have lighting provided along it.

2. Construction Management Plan

This has not been included and needs to be part of the final submission.

VI. NEXT STEPS

The proposal appears generally acceptable, subject to further information and final revisions for final plan review, to address a number of issues as identified in the staff comments and in this Memorandum. These are summarized below:

- Provide traffic generation estimate for the existing development at 429 Warren and for the proposal;
- Submit turning templates and other information to explain the need for the curb cut, drive aisle and parking proposals;
- Submit further information to clarify any impacts on the wooded area on this site, as per the tree preservation standards;
- Address issues raised by the Consulting Engineer Reviewer, including regarding the Urban Impaired Stream Standards;
- Revise the proposals to address pedestrian accommodations; snow storage; landscaping; ROW curb cut removal; and extent of paved area;
- Provide capacity letters; submit the easement for joint access; submit Tier III permit;
- Planning Board comments.

ATTACHMENTS:**Staff Review comments and background information**

1. Engineering Review (David Senus, Woodard & Curran) comments 3.3.2014
2. DPS (David Margolis-Pineo) comments 3.11.2014
3. Traffic Engineering Review (Tom Errico, T Y Lin), comments 3.13.2014
4. City Arborist (Jeff Tarling) comments 3.13.2014
5. Zoning Administrator (Marge Schmuckal) comments
6. Fire Department (Captain Chris Pirone) comments
7. Wider Warren Green Wetlands Plan (2007) (from rezoning files)

Public comments (none at the time PB Memo completed)

Applicant's Submittal

- A. Cover letter
- B. Application and Fire Code analysis
- C. Development Description
- D. RTI and Financial Capability
- E. Conformity with Standards and Lighting
- F. (Prelim) Stormwater Management Report

Plans

- P1. Boundary Survey Wider Area
- P2. Site Boundary survey (C2.0)
- P3. Cover sheet
- P4. General Notes and Legend
- P5. Existing conditions
- P6. Site Layout and Utility Plan
- P7. Lighting and Photometric
- P8. Grading and Drainage
- P9. Gravel Wetland #1 Plan
- P10. Gravel Wetland #2 Plan
- P11. Erosion and Sedimentation Control
- P12. Details (C4.3)
- P13. Details (C6.0)
- P14. Details (C6.1)
- P15. Details (C6.2)
- P16. Predevelopment Watershed
- P17. Post-Development Watershed
- P18. Building Elevations

MEMORANDUM



TO: Jean Fraser, Planner
FROM: David Senus, P.E. & Ashley Auger, E.I.T.
DATE: March 3, 2014
RE: 421 Warren Avenue, Preliminary Level III Site Plan Application

Woodard & Curran has reviewed the Preliminary Level III Site Plan Application for the proposed 7-unit commercial complex located at 421 Warren Avenue in Portland, Maine. The project consists of constructing a single-level 28,000 SF industrial building along with associated site improvements. The project is being reviewed for compliance with City of Portland Level III Site Plan requirements and under the City's delegated review authority for Chapter 500, Stormwater Management Law.

Documents Reviewed by W&C

- Preliminary Level III Site Plan Application and attachments dated February 12, 2014, prepared by FST Engineers on behalf of PH Warren Avenue, LLC.
- Engineering Plans, Sheets C-1.0, C-1.1, C-2.0, C-2.1, C-3.0, C-3.1, C-4.0, C-4.1, C-4.2, C-4.3, C-5.0, C-6.0, C-6.1, C-6.2, C-7.0, and C-7.1, dated February 10, 2014, prepared by FST Engineers on behalf of PH Warren Avenue, LLC.

Comments

- 1) In accordance with the City of Portland Preliminary Level III Site Plan Submissions Checklist, the Applicant is required to provide evidence of state approvals. The Applicant should forward the following approvals to the City upon receipt:
 - a) The Applicant has noted that the project requires a MaineDEP NRPA Tier III permit for approximately 25,093 SF of wetland impacts, which is being submitted concurrently with the City Site Plan Application. Evidence of receipt of this permit shall be required prior to the start of construction.
 - b) The Applicant is proposing to disturb more than one acre (approximately 110,207 SF); therefore a Maine Construction General Permit (MCGP) from the MaineDEP is required prior to the start of construction.
- 2) The application is preliminary. As such, we anticipate that additional documents will be submitted with the final application, including missing or incomplete gravel wetland details, confirmation of capacity to serve the development from utility companies, and a Construction Management Plan. Additionally, the Site Layout and Utility Plan, Sheet C-3.0, indicates several utility details that are TBD, such as outlet control structure elevations, sewer service invert elevations, natural gas pipe size, and electrical duct bank size; these details should be coordinated with the appropriate utilities prior to approval. Woodard & Curran will perform a review of the Final Application submittal upon receipt of those documents.
- 3) In accordance with Section 5 of the City of Portland Technical Manual, a Level III development project is required to submit a stormwater management plan pursuant to the regulations of MaineDEP Chapter 500 Stormwater Management Rules, including conformance with the Basic, General, and Flooding Standards. In addition, the project is being reviewed under the City's delegated review authority for Chapter 500 Stormwater Management Law. We offer the following comments:
 - a) Basic Standards: The Applicant has provided a plan, notes and details to address erosion and sediment control requirements, inspection and maintenance requirements, and good housekeeping practices in general accordance with Appendix A, B, & C of MaineDEP Chapter 500. Erosion Control Note 3 on Sheet C-1.1 states that silt barriers shall be inspected, repaired, and cleaned as noted in the erosion control notes shown on the erosion control detail sheet; however, it does not appear that these notes have been provide at this time. The Applicant should clarify. Additionally, details should be provided for proposed erosion control blanket installations and rip-rap slope and spillway protection.



- b) **General Standards:** The project will result in an increase in impervious area of approximately 82,764 square feet. As such, the project is required to include specific stormwater management features for stormwater quality control. The Applicant has proposed gravel wetlands near the front and rear of the development area in addition to a gravel drip strip. The Applicant has provided sufficient documentation demonstrating compliance with this standard; however, it should be noted that the design plans, calculations, and the HydroCAD model may be subject to change based on the comments contained herein, and shall be reviewed for compliance again upon receipt of the final submission package.
- c) **Flooding Standard:** The project will result in an increase in impervious area of approximately 82,764 square feet. As such, the project is required to include specific stormwater management features to control the rate of stormwater runoff from the site. The Applicant has provided sufficient documentation demonstrating compliance with this standard; however, it should be noted that the design plans, calculations, and the HydroCAD model may be subject to change based on the comments contained herein, and shall be reviewed for compliance again upon receipt of the final submission package.
- 4) **Urban Impaired Stream Standard:** The project is located within the Capisic Brook Watershed, which is identified as an Urban Impaired Stream by the Maine DEP. Section 5 of the City of Portland Technical Manual requires that all development within the Capisic Brook watershed, except single and two family homes, comply with the Urban Impaired Stream Standard pursuant to MaineDEP Chapter 500 Rules. To meet the Urban Impaired Stream standard, the Applicant must either pay a compensation fee or mitigate project impacts by treating, reducing, or eliminating an off-site or on-site pre-development impervious stormwater source. The Applicant has not provided information on how they plan to meet the Urban Impaired Stream standard with the preliminary submittal; the final submittal should present either a fee calculation or a design approach / plans on how the project will meet this standard.
- 5) **HydroCAD Model Review Comments:**
 - a) The pre- and post-development areas used in the HydroCAD model and provided in the summary tables on the watershed maps are not equal, specifically subcatchments 1 & 2 on the Post-Development plan. The Applicant should revise accordingly.
 - b) Subcatchment 1 is a very large area that remains largely unchanged from the pre- to post-development conditions; relocating POI 1 closer to the outfall of gravel wetland #2 will provide a better indication of the change in flow rates from the proposed development. The Applicant should consider revising the model accordingly.
 - c) It is unclear why the Applicant has chosen to model subcatchments 3A, 3B, and 3C, as they are not part of the proposed development and remain largely unchanged from the pre- to post-development condition. The Applicant should remove these subcatchments from the model.
 - d) The model includes storage within a 40% void space of the gravel wetlands between elevation 68.17 and 68.50; please clarify where this storage volume exists in the gravel wetland section.
 - e) As noted on the plans, the Applicant intends to add outlet elevation information to the outlet control structure details for both gravel wetlands as part of the final submittal. Without this information we cannot verify the routing or model inputs for Pond 4P (GW2) or Pond 5P (GW1). When the outlet control structure elevations are incorporated into the final submittal, please revisit or provide explanation on the routing methodology for GW1 & GW2 in the HydroCAD model; we are unable to follow the routing as currently presented.
- 6) **Gravel Wetland Design Comments:**
 - a) On Sheet C-4.2, the titles for the plan view and section view incorrectly note Gravel Wetland #1; these should state Gravel Wetland #2.
 - b) The Applicant has submitted drawdown calculations for sizing the gravel wetlands' outlet control structure orifice control devices; however, the orifices do not appear to be specified on the design plans/details. The Applicant should clarify with the final design package.
 - c) The Applicant should include outlet protection measures for the Gravel Wetland #2 outfall.



- d) The Applicant should specify appropriate plantings for the proposed gravel wetlands, per the UNH Stormwater Center Subsurface Gravel Wetland Design Specifications.
 - e) The pervious and impervious area treated numbers contained in Table 11 of the Stormwater Management Report do not appear to agree with those utilized in the HydroCAD model or noted on the Post Development Watershed Map (C-7.1); the Applicant should clarify.
- 7) The Stormwater Management Report refers to Appendix H for a Separate Stormwater Inspection & Maintenance Manual, and notes that it has not been included with this submission. The stormwater inspection and maintenance plan should be developed in accordance with and in reference to the UNH Stormwater Center Subsurface Gravel Wetland Design Specifications, Section 7.6 of Volume III of the MaineDEP Stormwater BMP Manual, MaineDEP Chapter 500 guidelines and Chapter 32 of the City of Portland Code of Ordinances.

March 11, 2014

Memo To: Barbara Barhydt
Jean Fraser
From: David Margolis-Pineo
Re: 421 Warren Av
Commercial Site
PH Warren Avenue, LLC

On behalf of the Department of Public Services, the following comments are offered for the above mentioned project.

1. Since the curb cut on Warren Ave in front of this project is not proposed to be used, the applicant is requested to close the curb cut. The curbing shall be set in concrete to match the abutting curb work. Please contact Rhonda Zazzara for details. 874-8831
Warren Ave in this area is currently under a pavement moratorium until October 26, 2014. However as long as the applicant does not encroach the pavement more than two feet from the face of curb, no moratorium repair will be requested if the work is done before this date. A Street Opening Permit will be required.
2. It would be desirable for the applicant to tap for the 2" domestic water service behind the sidewalk to avoid cutting into the sidewalk.
3. Please note on survey plan that Saville Street and Newcomb Street are Continued Paper Streets as per City Council Order #84 in September 1997.
4. Please add State Plane Coordinates for four (4) corners; at both ends of the rear 657.94' line and at both ends of the 140.51' line along Warren Ave.

This department has no further comments at this time.

From: Tom Errico <thomas.errico@tylin.com>
To: Jean Fraser <JF@portlandmaine.gov>
CC: David Margolis-Pineo <DMP@portlandmaine.gov>, Katherine Earley <KAS@port...>
Date: 3/12/2014 6:46 PM
Subject: 421 Warren Avenue

Jean - I have reviewed the application materials and conducted a field review of the site and offer the following preliminary comments.

- * The applicant shall provide a traffic generation estimate for the proposed project as well as for the two existing buildings serviced by the shared driveway. Following a review of the requested information, I will make a determination on the need for a Traffic Movement Permit.
- * The proposed driveway entrance exceeds City standards and a waiver will be required. The applicant shall provide an Auto-Turn analysis documenting the need for the wide driveway.
- * The aisle widths in the internal parking/circulation area do not meet City standards and a waiver will be required. The applicant shall provide an Auto-Turn analysis documenting the need for the expanded pavement areas.
- * A sidewalk connection from the proposed building to Warren Avenue shall be provided.
- * An area along the building frontage on the parking area shall be marked such that pedestrians have a direct routing to Warren Avenue.

If you have any questions, please contact me.

Best regards,

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

"One Vision, One Company"

Please consider the environment before printing.

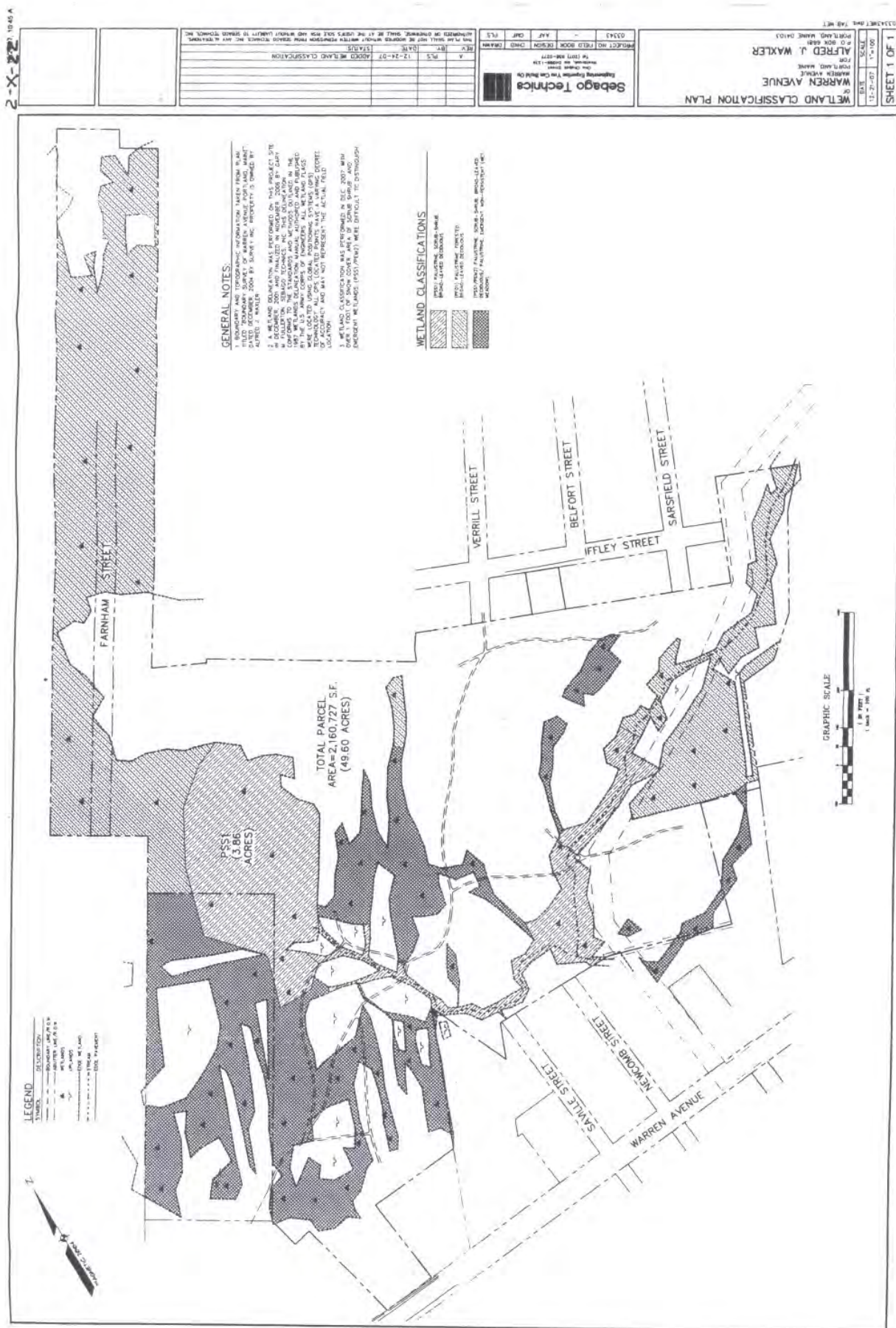
From: Jeff Tarling
To: Jean Fraser
Date: 3/13/2014 8:48 AM
Subject: Re: Need comments now for PB Workshop Memo- 421 Warren (2014-016)

Hi Jean -

The proposed 421 Warren Avenue project is in need of a 'tree save' plan. Hopefully, trees along the edge of the proposed development could be saved and if not the project should show replacement planting plans per city standards.

Thanks

Jeff Tarling





February 12, 2014

Ms. Barbara Barhydt
Development Review Services Manager
Planning and Development Department
City of Portland
389 Congress Street
Portland, Maine 04101-3509

**Subject: 421 Warren Avenue
Preliminary Site Plan Application/Delegated Review Stormwater**

Dear Ms. Barhydt:

On behalf of PH Warren Avenue, LLC, we are pleased to provide the accompanying package of submission materials related to a 7-unit commercial complex at 421 Warren Avenue. This submission package is intended to meet the City's Preliminary Submission Requirements as outlined in the Level III Application procedures. These materials represent the ongoing design development for the proposed commercial complex on what is currently undeveloped land. The applicant has purchased approximately 48.71 AC. of property from JMC Warren Ave, LLC, with approximately 140.51 LF of frontage on Warren Avenue. The applicant is proposing a 70' x 400' (28,000 SF) industrial building similar in styling to the applicant's buildings at 429 Warren Avenue. The rectangular building will be oriented perpendicular to Warren Avenue and the lot access will be off the applicant's existing drive that serves 429 Warren Avenue. The applicant is seeking Planning Board Approval to allow commencement of construction as soon as possible.

Accompanying this cover letter are the following materials:

- Site Plan Application
- Section 1: Written Description of Project
- Section 2: Evidence of Right, Title and Interest
- Section 3: Written Assessment of Proposed Project's Compliance with Applicable Zoning and Land Use Requirements
- Section 4: Stormwater Management Report
- Reduced Sized Plans

You will find in the accompanying materials, information including the Preliminary Site Layout Plan and various site plans that provide greater detail for the site development activities. We have also included preliminary building elevations for the proposed building. Preliminary information pertaining to the project's utilities needs and statements regarding compliance with the City's Standards are contained within this submission.

The Development Team expects to continue to work with City Officials/Representatives on both the onsite and offsite components including, but not limited to:

Ms. Barbara Barhydt
February 12, 2014
Page 2

- Completion of the Neighborhood Meeting; and
- Coordination with Public Services representatives on new service connections for the proposed building.

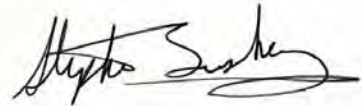
In addition, the project requires a Maine Department of Environmental Protection Natural Resources Protection Act (NRPA) Tier III permit for wetland impacts of approximately 25,093 SF.

On behalf of the Design Team, we look forward to your assistance on the project and we look forward to the nearest available workshop meeting with the Planning Board. Please find one (1) hard copy of the application materials including one set each of 11 x 17 and full size plans, along with a diskette containing PDF files for all submitted materials.

If you have any questions regarding these materials please contact this office.

Sincerely,

FAY, SPOFFORD & THORNDIKE



Stephen R. Bushey, P.E.
Senior Engineer

SRB/cmd/smk

c: Peter Holmes
Jim Biskup, Biskup Construction

Attachments

Site Plan Application

Section 1: Written Description of Project

Section 2: Evidence of Right, Title and Interest

Section 3: Written Assessment of Proposed Project's Compliance with Applicable Zoning and Land Use Requirements

Section 4: Stormwater Management Report

Reduced Sized Plans



Level III – Preliminary and Final Site Plans Development Review Application Portland, Maine

Planning and Urban Development Department
Planning Division

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

Level III: Site Plan Development includes:

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

The Land Use Code (including Article V), the Technical Manual, and the Design Manual are available on the City's web site at <http://www.portlandmaine.gov/planning/default.asp>

Planning Division

Fourth Floor, City Hall
389 Congress Street
(207) 874-8721 or 874-8719

Office Hours

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

PROJECT NAME: 421 Warren Avenue Commercial Complex

PROPOSED DEVELOPMENT ADDRESS:

421 Warren Avenue, Portland, Maine

PROJECT DESCRIPTION:

New construction of a single level, multi-unit commercial complex consisting of 7 units.

CHART/BLOCK/LOT: Map 303/Lot A010
Map 304/Lot B028

PRELIMINARY PLAN
FINAL PLAN

02/12/2014 (date)

 (date)

CONTACT INFORMATION:

Applicant – must be owner, Lessee or Buyer Name: PH Warren Avenue, LLC c/o Peter F. Holmes Business Name, if applicable: Address: 401 Warren Avenue City/State : Portland, ME Zip Code: 04101	Applicant Contact Information Work # (207) 878-4496 Home# Cell # (207) 347-3398 Fax# e-mail: dick\harbour@maine.rr.com
Owner – (if different from Applicant) Name: SAME AS ABOVE Address: City/State : Zip Code:	Owner Contact Information Work # SAME AS ABOVE Home# Cell # Fax# e-mail:
Agent/ Representative Stephen Bushey, P.E. Name: Fay, Spofford & Thorndike Address: 778 Main Street, Suite 8 City/State : South Portland, ME Zip Code: 04106	Agent/Representative Contact information Work # 207-775-1121 Cell # 207-756-9359 e-mail: sbushey@fstinc.com
Billing Information Name: PH Warren Avenue, LLC c/o Peter F. Holmes Address: 421 Warren Avenue City/State : Portland, ME Zip Code: 04101	Billing Information Work # (207) 878-4496 Cell # (207) 347-3398 Fax# e-mail: dick\harbour@maine.rr.com

Engineer Stephen Bushey, P.E. Name: Fay, Spofford & Thorndike Address: 778 Main Street, Suite 8 City/State : South Portland, ME Zip Code: 04106	Engineer Contact Information Work # 207-775-1121 Cell # 207-756-9359 Fax# 207-879-0896 e-mail: sbushey@fstinc.com
Surveyor Name: Nadeau Land Surveys Attn: Jim Nadeau Address: 918 Brighton Avenue City/State : Portland, ME Zip Code: 04102	Surveyor Contact Information Work # (207) 878-7870 Cell # Fax# (207) 878-7871 e-mail: jim@nadeaulandsurveys.com
Architect Name: Biskup Construction Attn: Jim Biskup Address: 16 Danielle Drive City/State : Windham, ME Zip Code: 04062	Architect Contact Information Work # 207-892-9800 Cell # Fax# (207) 892-9895 e-mail: jim@biskupconstruction.com
Attorney Name: NOT APPLICABLE Address: City/State : Zip Code:	Attorney Contact Information Work # Cell # Fax# e-mail:

APPLICATION FEES:

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

Level III Development (check applicable reviews) ☒ Less than 50,000 sq. ft. (\$500.00) ☐ 50,000 - 100,000 sq. ft. (\$1,000) ☐ 100,000 – 200,000 sq. ft. (\$2,000) ☐ 200,000 – 300,000 sq. ft. (\$3,000) ☐ over \$300,00 sq. ft. (\$5,000) ☐ Parking lots over 11 spaces (\$1,000) ☐ After-the-fact Review (\$1,000.00 plus applicable application fee) Plan Amendments (check applicable reviews) ☐ Planning Staff Review (\$250) ☐ Planning Board Review (\$500) The City invoices separately for the following: • Notices (\$.75 each) • Legal Ad (% of total Ad) • Planning Review (\$40.00 hour) • Legal Review (\$75.00 hour) Third party review fees are assessed separately. Any outside reviews or analysis requested from the Applicant as part of the development review, are the responsibility of the Applicant and are separate from any application or invoice fees.	Other Reviews (check applicable reviews) ☐ Traffic Movement (\$1,000) ☒ Stormwater Quality (\$250) ☐ Subdivisions (\$500 + \$25/lot) # of Lots ___ x \$25/lot = ____ ☐ Site Location (\$3,000, except for residential projects which shall be \$200/lot) # of Lots ___ x \$200/lot = ____ ☐ Other _____ ☐ Change of Use ☐ Flood Plain ☐ Shoreland ☐ Design Review ☐ Housing Replacement ☐ Historic Preservation
--	---

APPLICATION SUBMISSION:

1. All site plans and written application materials must be submitted electronically on a CD or DVD with each plan submitted as separate files, with individual file names (see submittal requirements document attached).
2. In addition, one (1) paper set of the plans (full size), one (1) paper set of plans (11 x 17), paper copy of written materials, and the application fee must be submitted to the Planning Division Office to start the review process.

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

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

Refer to the application checklist for a detailed list of submission requirements.

Portland's development review process and requirements are outlined in the Land Use Code (Chapter 14), which includes the Subdivision Ordinance (Section 14-491) and the Site Plan Ordinance (Section 14-521). Portland's Land Use Code is on the City's web site <http://www.portlandmaine.gov/citycode/chapter014.pdf>

APPLICANT SIGNATURE:

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

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

Signature of Applicant:  Stephen R. Bushey, P.E.	Date: 2/12/14
--	-------------------------

Date: 2/4/14

**Subject: 421 Warren Avenue Multi Unit Commercial Building
Agent Authorization Letter**

To Whom It May Concern:

PH Warren Avenue, LLC has retained Fay, Spofford & Thorndike, LLC to prepare requisite local, state and federal permit applications for the above referenced project. FST is authorized to act as an agent for PH Warren Avenue, LLC in matters related to these permits.

Sincerely,

Peter Holmes

Owner
Title

PROJECT DATA

The following information is required where applicable, in order to complete the application.

Total Area of Site	418,393	sq. ft. +/- *
Proposed Total Disturbed Area of the Site	110,207	sq. ft. +/-
If the proposed disturbance is greater than one acre, then the applicant shall apply for a Maine Construction General Permit (MCGP) with DEP and a Stormwater Management Permit, Chapter 500, with the City of Portland		
Impervious Surface Area		
Impervious Area (Total Existing)	0	sq. ft.
Impervious Area (Total Proposed)	82,764	sq. ft.
Building Ground Floor Area and Total Floor Area		
Building Footprint (Total Existing)	0	sq. ft.
Building Footprint (Total Proposed)	28,000	sq. ft.
Building Floor Area (Total Existing)	0	sq. ft.
Building Floor Area (Total Proposed)	28,000	sq. ft.
Zoning		
Existing	B4	
Proposed, if applicable	B4	
Land Use		
Existing	Undeveloped	
Proposed	7 Unit Multiplex - Commercial	
Residential, If applicable		
# of Residential Units (Total Existing)	0	
# of Residential Units (Total Proposed)	0	
# of Lots (Total Proposed)	0	
# of Affordable Housing Units (Total Proposed)	0	
Proposed Bedroom Mix		
# of Efficiency Units (Total Proposed)	N/A	
# of One-Bedroom Units (Total Proposed)		
# of Two-Bedroom Units (Total Proposed)		
# of Three-Bedroom Units (Total Proposed)		
Parking Spaces		
# of Parking Spaces (Total Existing)	0	
# of Parking Spaces (Total Proposed)	41	
# of Handicapped Spaces (Total Proposed)	2	
Bicycle Parking Spaces		
# of Bicycle Spaces (Total Existing)	0	
# of Bicycle Spaces (Total Proposed)	4	
Estimated Cost of Project	\$1.5 million	

*Part of broader 48.71 acre parcel - Applicant is seeking to divest approximately 39 acres of remaining land to City of Portland.

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

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

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

- Continued on next page -

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



February 11, 2014

Captain Chris Pirone
City of Portland Fire Department
380 Congress Street
Portland, ME 04101

**Subject: 421 Warren Avenue
7 Unit Commercial Building
Fire Department Site Review Checklist**

Dear Captain Pirone:

In accordance with instructions in the City's Site Plan Review packet, please find enclosed the drawing necessary for your review of the proposed 421 Warren Avenue project in Portland. We have listed each item in your checklist below, followed by our response.

1. *Name, address, telephone number of applicant.*

PH Warren Avenue, LLC
c/o Peter F. Holmes – Harbor Auto Body
401 Warren Avenue
Portland, ME 04101
c/o Fay, Spofford & Thorndike
207-775-1121

2. *Name, address, telephone number of architect.*

Project Architect: Biskup Construction
16 Danielle Drive
Windham, ME 04062
Attn: Jim Biskup
207-892-9800

3. *Proposed uses of any structures (NFPA and IBC classification).*

Building	IBC Code	NFPA Code
Commercial	VB	V (000)

4. *Square footage of all structures (total and per story).*

Single Story – Industrial 28,000 SF

Captain Chris Pirone
February 11, 2014
Page 2

5. *Elevation of all structures.*

The first floor elevation is expected to be approximately 73.5 feet. Architectural building elevations accompany this letter and they show the various locations of door openings, etc. around the building perimeter.

6. *Proposed fire protection of all structures.*

The building will have a sprinkler system with additional protection per code. Fire flows and requirements for system storage or booster pumping are subject to the fire system design which will be performed prior to the request for a building permit.

7. *Hydrant locations.*

A fire hydrant is currently located on Warren Avenue less than 500 feet from the site.

8. *Water main(s) size and location.*

The site will be served by a 6" sprinkler service to be extended into the building off an existing 8" main stub into the site. A 2" domestic service will also be extended to the building. The building is expected to have internal sprinkler risers and a Siamese fire pump connection on the Warren Avenue side of the building.

9. *Access to all structures (min. 2 sides).*

The accompanying site plan depicts the site access conditions from Warren Avenue.

10. *A code summary shall be included referencing NFPA 1 and all fire department technical standards.*

NFPA 1 – Chapter 18 Fire Department Access and Water Supply

18.2 Fire Department Access:

The project site is located in a commercial developed area and is fronted by a public street. The following street width is currently available:

<u>Street</u>	<u>Width</u>
Warren Avenue	40 FT

Per NFPA 1 – Chapter 18.2.3.3.1, there will be public street access within 50 ft. of at least one exterior door. Per NFPA 1 – Chapter 18.2.3.2.2.1, all first story floors shall be located not more than 450 ft. from a Fire Department access road.

Captain Chris Pirone
February 11, 2014
Page 3

City of Portland Technical Manual – Section 3 Public Safety

3.4.1 Every dead-end roadway more than one hundred fifty (150') feet in length shall provide a turnaround at the closed end. Turnarounds shall be designed to facilitate future street connectivity and shall always be designed to the right (refer to Figure I-5).

Supporting Evidence: Not applicable

3.4.2 Where possible, developments shall provide access for Fire Department vehicles to at least two sides of all structures. Access may be from streets, access roads, emergency access lanes, or parking areas.

Supporting Evidence: As depicted on the site plan, the proposed building layout provides for minimum two sided access to the structure.

3.4.3 Building setbacks, where required by zoning, shall be adequate to allow for emergency vehicle access and related emergency response activities and shall be evaluated based on the following factors:

- *Building Height.*
- *Building Occupancy.*
- *Construction Type.*
- *Impediments to the Structures.*
- *Safety Features Provided.*

Supporting Evidence: The proposed development layout has contemplated emergency access conditions and provides for safe and efficient access along the public street for emergency vehicles.

3.4.4. Fire Dept. access roads shall extend to within 50' of an exterior door providing access to the interior of the structure.

Supporting Evidence: The building will be provided with an exterior door that will be within 50' of a Fire Department access route, namely Warren Avenue and the site entrance at 429 Warren Avenue.

3.4.5. Site access shall provide a minimum of nine (9) feet clearance height to accommodate ambulance access.

Supporting Evidence: A minimum of 9 ft. vertical clearance will be provided below any overhead signage or utilities entering the site.

3.4.6. Elevators shall be sized to accommodate an 80 x 24 inch stretcher.

Captain Chris Pirone
February 11, 2014
Page 4

Supporting Evidence: The building does not require an elevator.

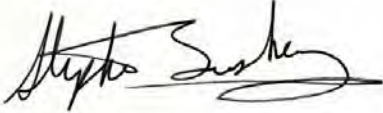
3.4.7. All structures are required to display the assigned street number. Numbers shall be clearly visible from the public right of way.

Supporting Evidence: The applicant will work with the City's Public Services Division to assign street addresses and numbering to meet City Standards.

If you need any further information, please contact our office.

Sincerely,

DeLUCA-HOFFMAN ASSOCIATES, INC.

A handwritten signature in black ink, appearing to read "Stephen R. Bushey", is written over a light gray rectangular background.

Stephen R. Bushey, P.E., C.P.E.S.C.
Senior Principal Engineer

SRB/cmd

Attachments: Drawing C-3.0 Site Layout & Utility Plan

c: Peter Holmes
Jim Biskup



February 11, 2014

Mr. Frank Brancely
City of Portland
Department of Public Services
55 Portland Street
Portland, Maine 04101-2991

**Subject: 421 Warren Avenue Multi Unit Commercial Building
Wastewater Capacity Application**

Dear Mr. Brancely:

Our office is working as a consultant to PH Warren Avenue, LLC on the 7 Unit Commercial Building project at 421 Warren Avenue in Portland. The project site is located on Map 304/Block B/Lot 28 and Map 303/Block A/Lot 10 according to the City of Portland Tax Assessor's Maps. On behalf of the developer, we are requesting a letter affirming that the proposed project can be served by the municipal wastewater treatment system.

The project will consist of the new construction of a single level, seven-unit commercial/industrial complex. Tenant spaces will vary in size from 3,500 SF to 5,250 SF.

The projected water use using the typical City of Portland flows information is as follows:

Use	Design Flow
7 units at 180 gpd/unit = 41 parking spaces at 1 gpd/space =	1,260 GPD 41 GPD
Total Water Usage Required:	1,301 GPD

The property is currently undeveloped so there is no historic wastewater generation for the site.

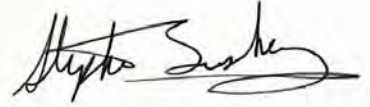
Based on this modest amount of flow, we trust that the existing wastewater collection and treatment system has adequate capacity to serve this project. We are in the process of completing the Site Plan Application for a submission to the City Planning Staff and would appreciate your response to the Planning Department.

Mr. Frank Brancely
February 11, 2014
Page 2

If you have any questions concerning this request, please contact me.

Sincerely,

FAY, SPOFFORD & THORNDIKE

A handwritten signature in black ink, appearing to read "Stephen R. Bushey", is written over a light yellow rectangular background.

Stephen R. Bushey, P.E.
Senior Engineer

SRB/cmd

c: Peter Holmes
Jim Biskup

Attachment

CITY OF PORTLAND WASTEWATER CAPACITY APPLICATION

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



Mr. Frank J. Brancely,
Senior Engineering Technician,
Phone #: (207) 874-8832,
Fax #: (207) 874-8852,
E-mail: fjb@portlandmaine.gov

Date: 02/072014

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

Site Address: 421 Warren Avenue

Map 303/Lot A010

Map 304/Lot B028

Chart Block Lot Number: _____

Proposed Use: 7-Unit Commercial Complex

Previous Use: Undeveloped

Existing Sanitary Flows: 0 GPD

Existing Process Flows: 0 GPD

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

Site Category | Commercial (see part 4 below)
Industrial (complete part 5 below)
Governmental
Residential
Other (specify)

X

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

2. Please, Submit Contact Information.

City Planner's Name: Barbara Barhydt Phone: 207-874-8699

Owner/Developer Name: PH Warren Avenue, LLC Attn: Peter F. Holmes

Owner/Developer Address: 401 Warren Avenue - Portland, ME 04101

Phone: 207-347-3398 Fax: _____ E-mail: dicklharbour@maine.rr.com

Engineering Consultant Name: Fay, Spofford & Thorndike, Attn: Stephen Bushey, P.E.

Engineering Consultant Address: 778 Main Street, Suite 8, South Portland, ME 04106

Phone: 207-775-1121 Fax: 207-879-0896 E-mail: sbushey@fstinc.com

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

3. Please, Submit Domestic Wastewater Design Flow Calculations.

Estimated Domestic Wastewater Flow Generated: 1301 GPD

Peaking Factor/ Peak Times: X6

Specify the source of design guidelines: (i.e. X "Handbook of Subsurface Wastewater Disposal in Maine,"
Plumbers and Pipe Fitters Calculation Manual," Portland Water District Records, Other (specify)

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

4. Please, Submit External Grease Interceptor Calculations.

Total Drainage Fixture Unit (DFU) Values:

Not Applicable

Size of External Grease Interceptor:

Retention Time:

Peaking Factor/ Peak Times:

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

5. Please, Submit Industrial Process Wastewater Flow Calculations

Estimated Industrial Process Wastewater Flows Generated:

Not Applicable

GPD

Do you currently hold Federal or State discharge permits?

Yes

No

Is the process wastewater termed categorical under CFR 40?

Yes

No

OSHA Standard Industrial Code (SIC):

<http://www.osha.gov/oshstats/sicser.html>

Peaking Factor/Peak Process Times:

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

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

Notes, Comments or Calculation

4 Units at 180 gpd/unit = 1,260 gpd

Plus 1 gpd/parking space = 41 gpd

TOTAL 1,301 gpd

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Attachment B – Figures
- Section 2: Attachment A – Deeds
Attachment B – Financial Capacity Letter
- Section 3: Attachment A – Turning Template Figures

LIST OF PLANS

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C-1.0	COVER SHEET
C-1.1	GENERAL NOTES AND LEGEND
C-2.0	PARTIAL BOUNDARY SURVEY AND TOPO PLAN BY NADEAU LAND SURVEYORS
C-2.1	EXISTING CONDITIONS
C-3.0	SITE LAYOUT AND UTILITY PLAN
C-3.1	LIGHTING AND PHOTOMETRICS PLAN
C-4.0	GRADING AND DRAINAGE PLAN
C-4.1	GRAVEL WETLAND #1 PLAN VIEW AND SECTIONS
C-4.2	GRAVEL WETLAND #2 PLAN VIEW AND SECTIONS
C-4.3	DETAILS
C-5.0	EROSION AND SEDIMENT CONTROL PLAN
C-6.0	DETAILS
C-6.1	DETAILS
C-6.2	DETAILS
C-7.0	PREDEVELOPMENT WATERSHED PLAN
C-7.1	POSTDEVELOPMENT WATERSHED PLAN

1. DEVELOPMENT DESCRIPTION

1.1 PROJECT OVERVIEW

PH Warren Avenue LLC has acquired an approximately 48.71 acre parcel located between Warren Avenue, Lane Avenue, and Iffley Street. The parcel is undeveloped and is highlighted by low-lying wetlands scattered throughout the interior. The applicant owns the adjacent properties at 401 Warren Avenue (Harbor Auto Body) and at 429 Warren Avenue (two fully occupied commercial/industrial buildings). The applicant is proposing a similar development within the site area closest to Warren Avenue and they propose to share the 429 Warren Avenue access. The applicant is seeking a Level III Site Plan Approval and Stormwater Permit.

The applicant's proposal will be within a 9.6 acre site area. It is the applicant's intent to work with City officials for the transfer of as much as 39 acres to the City as part of a land exchange/preservation opportunity.

1.2 PROJECT PURPOSE AND NEED

The proposed project is considered a unique opportunity to continue similar commercial development as is currently adjacent the property. The owner/applicant has enjoyed success with their properties at 401 and 429 Warren Avenue and the proposed site development looks to expand the number of rental units available at this location. The project's community benefits include the following:

- Enhanced commercial space opportunity within an area of similar commercial uses.
- A net increase in commercial units.
- Furtherance of the purposes of the B-4 zone as articulated in the Land Use Ordinance to "To provide appropriate locations for large-scale commercial uses and commercial uses that require larger land areas to accommodate their operations."

1.3 EXISTING CONDITIONS

The site conditions are undeveloped and are primarily characterized by flat grade near Warren Avenue. Towards the middle and rear of the parcel, the land is characterized by low-lying meadow wetlands and a natural drainageway that forms the headwaters of Capisic Brook.

Public utilities including water, sewer, natural gas, power and communications are readily available along Warren Avenue. New services will be extended into the site. Power to the site will be installed underground from an existing utility pole in front of the site.

The street conditions in front of the site are described as follows:

Street Name	Description	On-street Parking	Condition	Other
Warren Avenue	Approximately 40 foot wide paved way with two-way traffic and a center two-way left turn lane.	None	Bituminous sidewalk is in moderate condition with several areas that require improvement.	Existing drainage system on site side of street.

1.4 PROPOSED DEVELOPMENT

The applicant proposes to develop the property to its highest and best use. The development program includes the following components:

1.4.1 ON-SITE

A proposed 70' x 400' rectangular industrial building is proposed. The structure will contain seven (7) units. Five units will be 3,500 SF and two units will be 5,250 SF for a total of 28,000 SF of tenant space. Each unit will be provided with an overhead door and a man door entry. Each space will generally be open with only enclosed restrooms within each space. Tenant fit up may ultimately include some interior office space, storage or related type uses. The applicant expects to lease the spaces in a similar manner as to their buildings at 429 Warren Avenue, which includes multiple small business operators.

The project developer is not seeking LEED designation, but the building will conform to the most current International Energy Conservation Code.

The proposed project consists of new building construction for the 7-unit complex. The building will be oriented perpendicular to Warren Avenue and the access will be off the 429 Warren Avenue driveway. The existing 429 Warren Avenue driveway consists of a 36' wide paved surface containing separate left and right turn exiting lanes and a single entering lane.

The yard area will include a paved surface in front of the building where 41 parking spaces will be provided. The pavement area has been designed to allow larger tractor-trailers to enter and maneuver as many tenants will need occasional tractor-trailer vehicle access. The yard area will include provisions for a solid waste enclosure. Drainage systems including gravel wetlands will be constructed near the front and rear of the development area. The development will occupy approximately 2.5 acres of the site.

1.4.2 OFF-SITE

Site access is proposed via Warren Avenue. No offsite improvements are expected based on the condition of Warren Avenue and the existing site entrance at 429 Warren Avenue. Utilities are currently stubbed into the site.

1.5 LAND ORDINANCE REVIEW

1.5.1 OVERVIEW

The property currently lies within the City of Portland B-4 Zoning District. The following dimensional requirements will apply in the B-4 Zone all of which will be met by the project:

Dimensional Standard	Requirement
Minimum Lot Size	10,000 SF
Minimum Frontage	Sixty (60) Feet
Front yard setback	20 Feet
Side Yard Setback/Side Yard on a Street	10 feet/10 Feet
Rear Yard Setback	20 Feet
Minimum Lot Width	60 Feet
Maximum Impervious Surface	80%
Maximum Building height	65 Feet

1.5.2 SHORELAND ZONING

The site is not located within the Shoreland Zoning District.

1.6 STATE AND FEDERAL PERMITS

The project requires a Natural Resources Protection Act (NRPA) approval from the Maine Department of Environmental Protection. A NRPA Tier II Permit Application for wetland impacts will be filed with the MaineDEP concurrently with the City Site Plan Application. The site also requires a Stormwater Permit, which we are requesting be reviewed by the City of Portland under their delegated review authority. The development is subject to Site Plan and Subdivision approval by the City of Portland and Building Permit(s) are also required.

1.7 EASEMENTS OR OTHER BURDENS

According to the survey map prepared by Nadeau Land Survey and Survey Inc. there is an easement to CMP (CCRD 7320/57) as well as various access rights across the 429 Warren Avenue access drive serving other parties. See the Boundary Survey by Nadeau Land Survey accompanying this submission for further details.

1.8 TRAFFIC

The proposed project will not result in significant impacts to the surrounding street system. Based on ITE Land Use 110 Light Industrial, the project will result in fewer than 28 new AM or PM peak hour trips. Given the nature of the two-way conditions of Warren Avenue along with the existing two-way center left turn lane, we foresee no major impact to the capacity conditions on the street. Site lines and street conditions at the site entrance appear to be favorable. No further traffic analysis is currently proposed.

1.9 SOILS/GEOTECHNICAL REVIEW

1.9.1 OVERVIEW

S.W. Cole Engineering conducted a preliminary geotechnical investigation of the project site and their findings were presented to the development team. The site is generally characterized by layers of the following materials:

- Topsoil/Fill Cover
- Glaciomarine sands, silts and clay

Aggregate materials for foundation backfill, pavement base and subbase gravels and all trench backfilling will be primarily imported from off-site sources. The project earthwork will involve minor cutting and filling. In general, the building will be supported by traditional concrete spread footing and foundation wall systems.

1.10 NATURAL FEATURES

The development site does contain areas of wetlands as identified by Albert Frick Associates. A drainage way also exists towards the middle of the site, well away from the proposed development zone. The applicant is not proposing any further development beyond the limits currently depicted on the permitting documents. The site does not contain any vernal pools or other significant natural resources.

1.11 UTILITIES AND STORMWATER

The site will be served by existing utilities in the street including water, sewer, natural gas, and power. A 20" water main is located in Warren Avenue and an 8" water main has been previously stubbed into the property. A 6" sewer stub has also been installed onto the lot. Overhead power and communications are currently located on the opposite side of Warren Avenue with a crossover pole located on the site. An underground service extension into the building is proposed from a new pole mounted transformer.

The site is currently undeveloped and the runoff conditions consist of sheet flow directed either towards Warren Avenue or towards the middle of the site where a drainage way forms the headwaters of the Capisic Brook Watershed. Both of the applicant's adjacent properties at 401 Warren Avenue and 429 Warren Avenue have their own stormwater management facilities. The current proposal seeks to use the Best Management Practice identified as a Gravel Wetland. The advantage of the gravel wetland is the minimal vertical area needed for it to function. Based on the flat nature of the development site, the gravel wetland approach seems well suited to the project.

1.12 ATTACHMENTS

Attachment A – Existing Site Photographs

Attachment B – Figures

ATTACHMENT A

Existing Site Photographs



PHOTO 1



PHOTO 2



**FAY, SPOFFORD &
THORNDIKE**
778 Main Street, Suite 8
South Portland, ME 04106
Toll Free: 800.835.8666
Main: 207.775.1121
Fax: 207.879.0896

**421 Warren Ave – Portland, Maine
Existing Site Photographs
(FST JN SP-M104)**



PHOTO 3



PHOTO 4

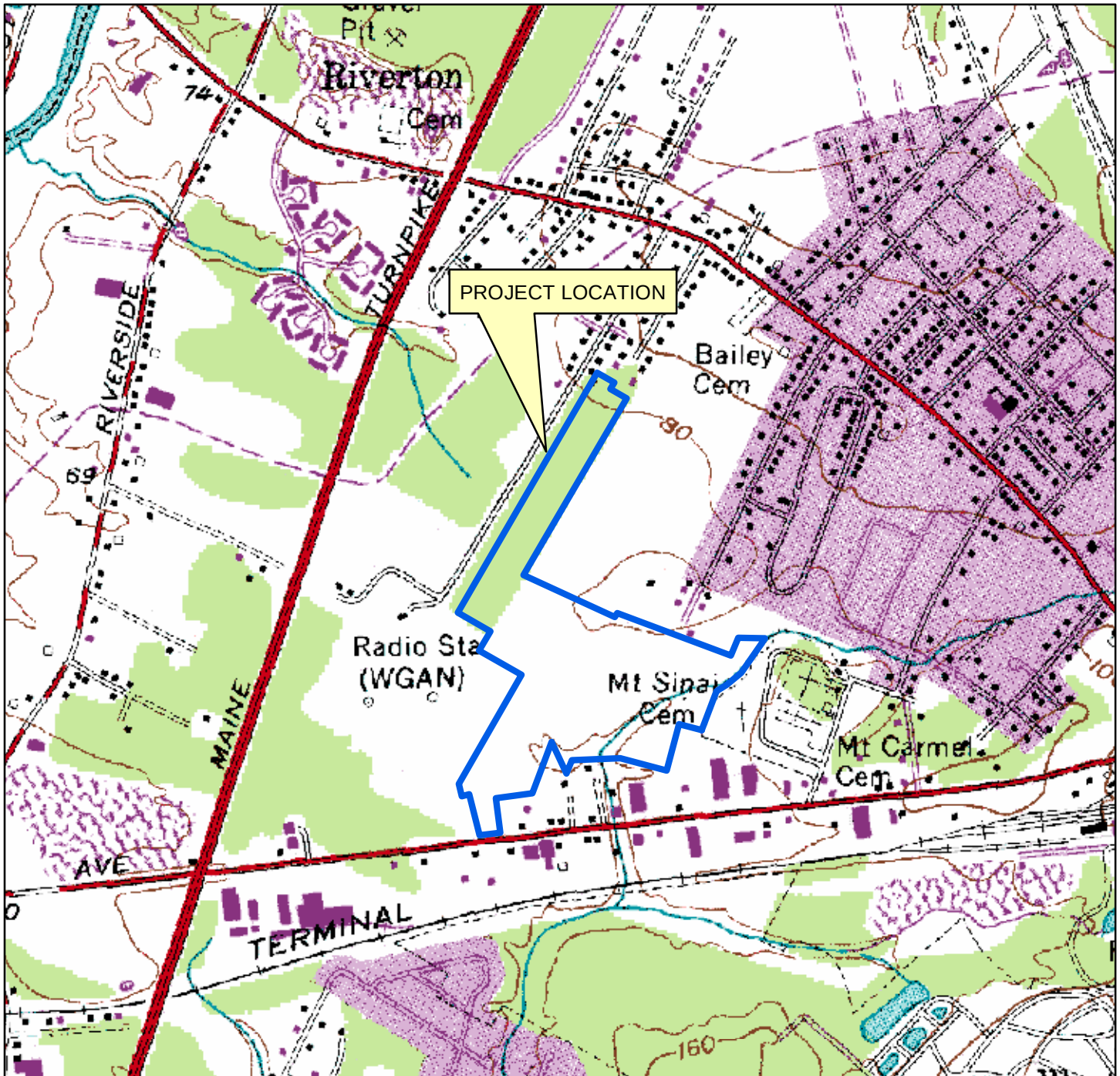


FAY, SPOFFORD &
THORNDIKE
778 Main Street, Suite 8
South Portland, ME 04106
Toll Free: 800.835.8666
Main: 207.775.1121
Fax: 207.879.0896

**421 Warren Ave – Portland, Maine
Existing Site Photographs
(FST JN SP-M104)**

ATTACHMENT B

Figures



USGS LOCATION MAP PETER HOLMES COMMERCIAL SITE - WARREN AVENUE PORTLAND, MAINE

SOURCE: MAINE OFFICE OF GIS - MAPS

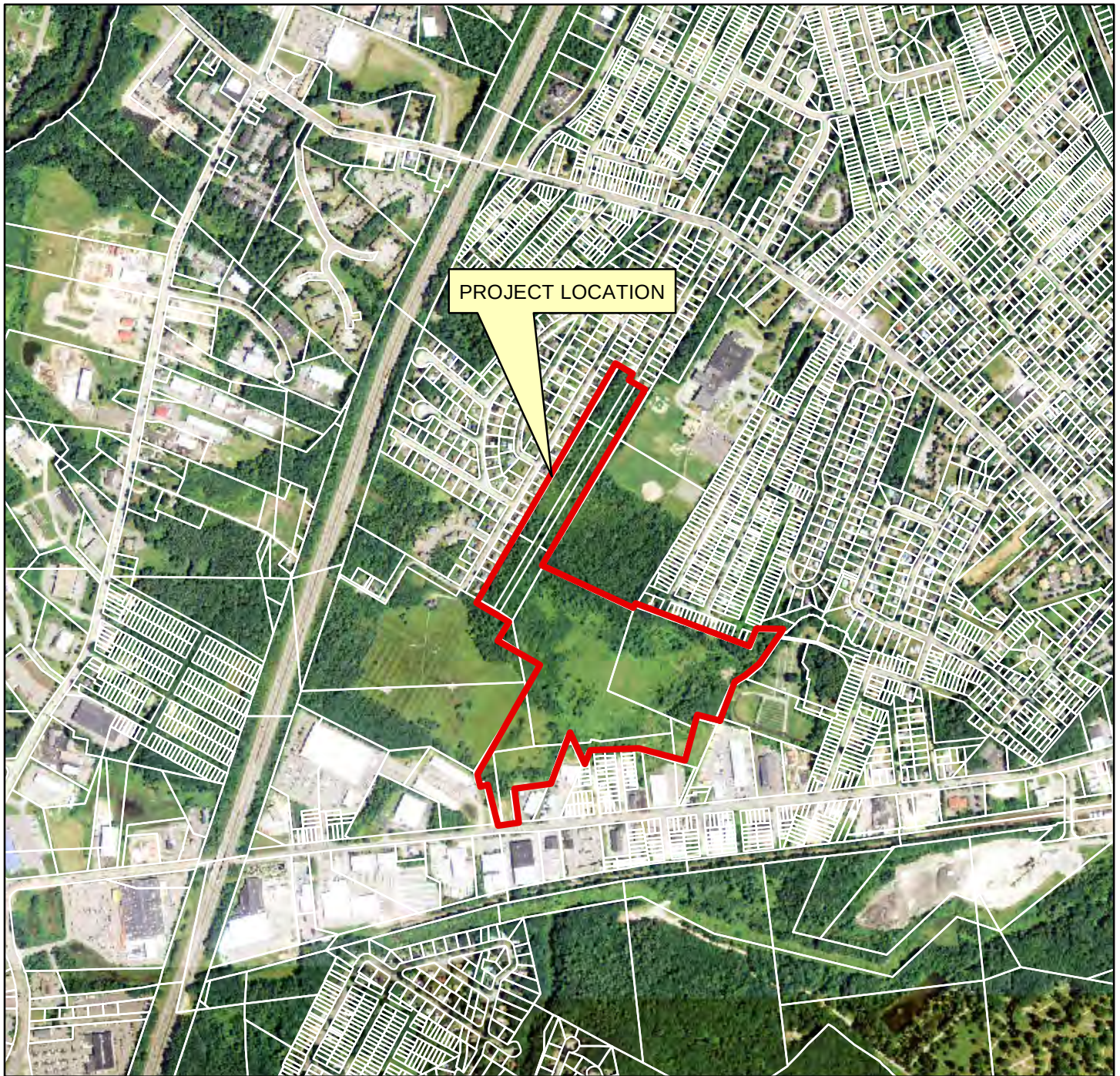


FAY, SPOFFORD & THORNDIKE, INC.
 ENGINEERS • PLANNERS • SCIENTISTS
 778 MAIN ST, SUITE 8, SOUTH PORTLAND, ME 04106

DRAWN: DED
 CHECKED: SRB
 DATE: OCT 2013
 FILENAME: SP-M104_USGS
 SCALE: 1 inch = 1,000 feet

FIGURE

1



TAX MAP
PETER HOLMES COMMERCIAL SITE - WARREN AVENUE
PORTLAND, MAINE
SOURCE: CITY OF PORTLAND

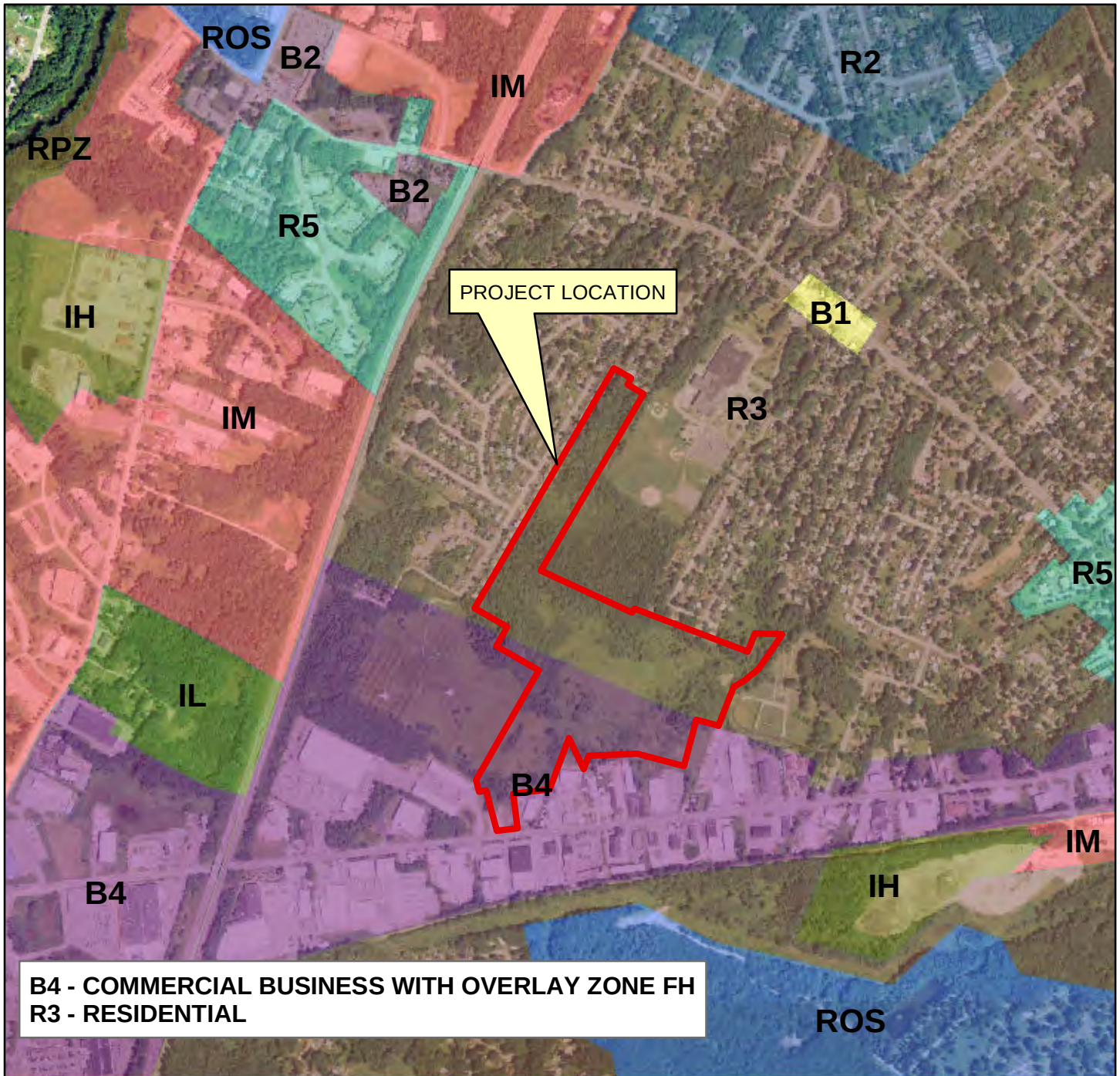


FAY, SPOFFORD & THORNDIKE, INC.
ENGINEERS • PLANNERS • SCIENTISTS
775 MAIN ST, SUITE 8, SOUTH PORTLAND, ME 04106

DRAWN: DED
CHECKED: SRB
DATE: OCT 2013
FILENAME: SP-M104_TAX MAP
SCALE: 1 inch = 1,000 feet

FIGURE

3



ZONING
PETER HOLMES COMMERCIAL SITE - WARREN AVENUE
PORTLAND, MAINE
 SOURCE: CITY OF PORTLAND



FAY, SPOFFORD & THORNDIKE, INC.
 ENGINEERS • PLANNERS • SCIENTISTS
 775 MAIN ST, SUITE 8, SOUTH PORTLAND, ME 04106

DRAWN: DED
 CHECKED: SRB
 DATE: OCT 2013
 FILENAME: SP-M104_ZONING
 SCALE: 1 inch = 1,000 feet

FIGURE

4



AERIAL PHOTOGRAPH PETER HOLMES COMMERCIAL SITE - WARREN AVENUE PORTLAND, MAINE

SOURCE: MAINE OFFICE OF GIS - MAPS



FAY, SPOFFORD & THORNDIKE, INC.
 ENGINEERS • PLANNERS • SCIENTISTS
 775 MAIN ST, SUITE 8, SOUTH PORTLAND, ME 04106

DRAWN: DED
 CHECKED: SRB
 DATE: OCT 2013
 FILENAME: SP-M104_AERIAL
 SCALE: 1 inch = 1,000 feet

FIGURE

5



FLOOD MAP

PETER HOLMES COMMERCIAL SITE - WARREN AVENUE
PORTLAND, MAINE

SOURCE: MAINE OFFICE OF GIS - MAPS

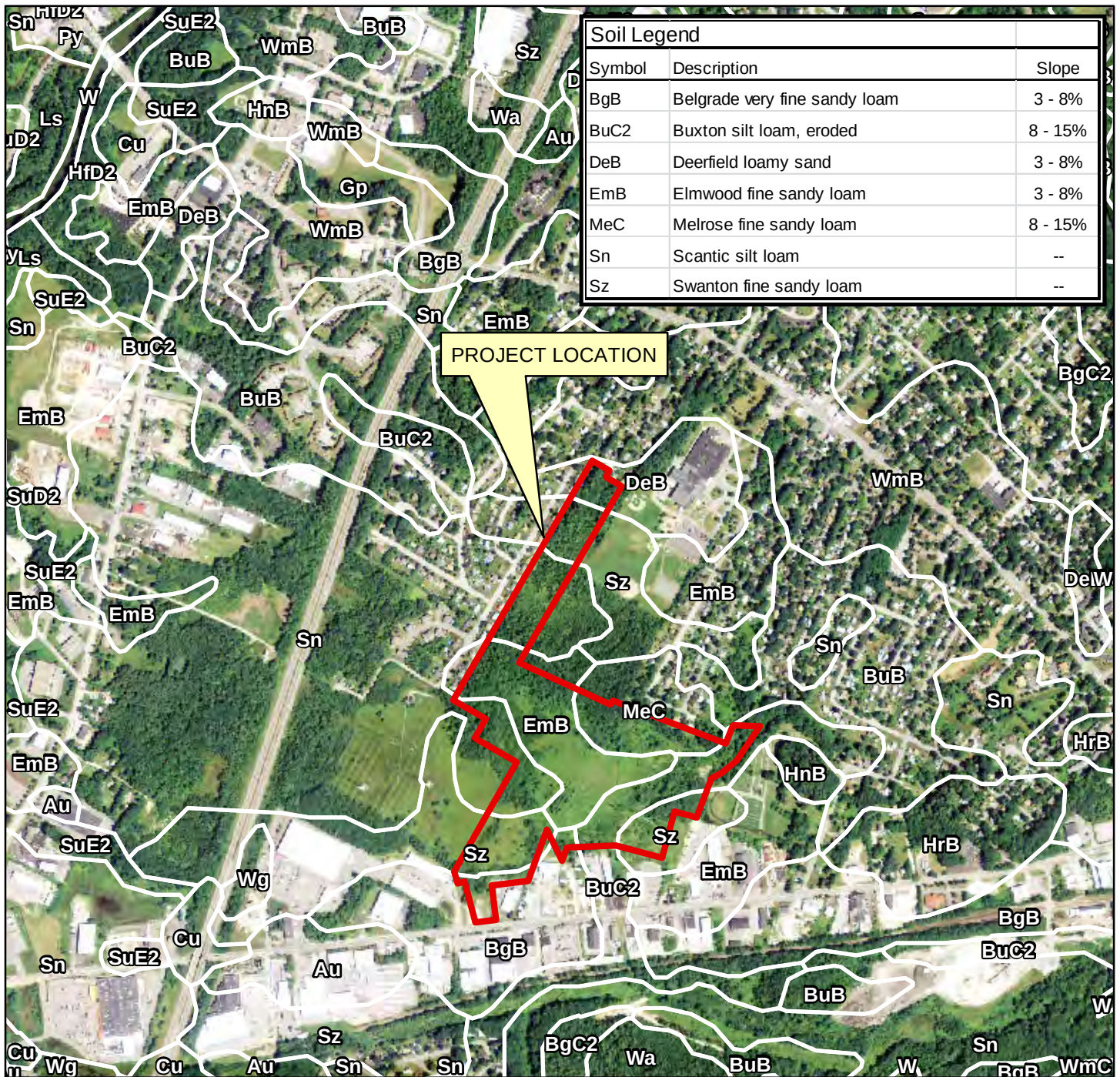


FAY, SPOFFORD & THORNDIKE, INC.
ENGINEERS • PLANNERS • SCIENTISTS
77B MAIN ST, SUITE 8, SOUTH PORTLAND, ME 04106

DRAWN: DED
CHECKED: SRB
DATE: OCT 2013
FILENAME: SP-M104_FLOOD
SCALE: 1 inch = 1,000 feet

FIGURE

7



SOILS MAP

PETER HOLMES COMMERCIAL SITE - WARREN AVENUE PORTLAND, MAINE

SOURCE: MAINE OFFICE OF GIS - MAPS

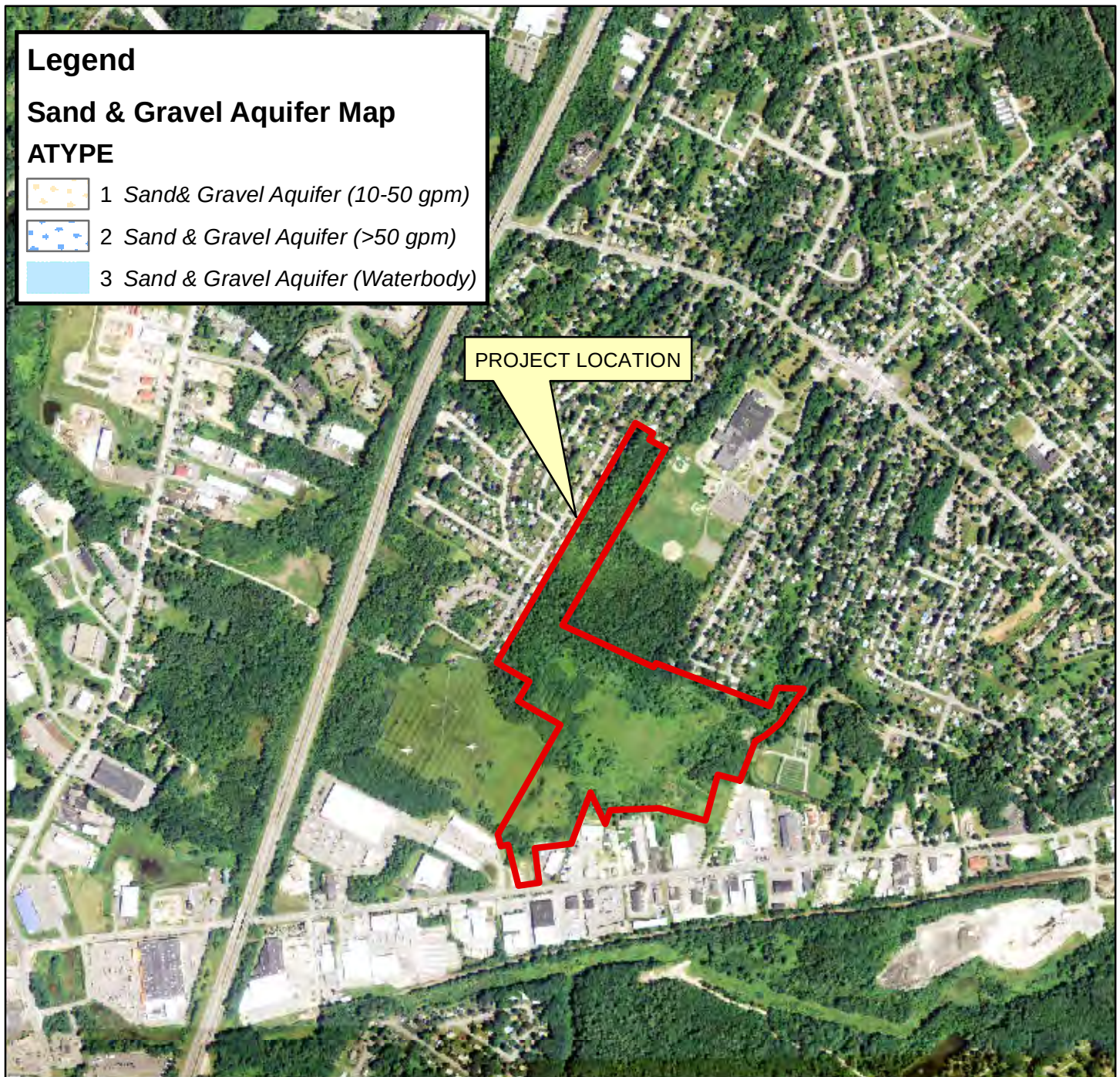


FAY, SPOFFORD & THORNDIKE, INC.
ENGINEERS • PLANNERS • SCIENTISTS
77B MAIN ST, SUITE 8, SOUTH PORTLAND, ME 04106

DRAWN: DED
CHECKED: SRB
DATE: OCT 2013
FILENAME: SP-M104_SOILS
SCALE: 1 inch = 1,000 feet

FIGURE

8



SAND AND GRAVEL AQUIFER MAP **PETER HOLMES COMMERCIAL SITE - WARREN AVENUE** **PORTLAND, MAINE**

SOURCE: MAINE OFFICE OF GIS - MAPS



FAY, SPOFFORD & THORNDIKE, INC.
 ENGINEERS • PLANNERS • SCIENTISTS
 775 MAIN ST, SUITE 8, SOUTH PORTLAND, ME 04106

DRAWN: DED
 CHECKED: SRB
 DATE: OCT 2013
 FILENAME: SP-M104_AQUIFER
 SCALE: 1 inch = 1,000 feet

FIGURE

9



SURFICIAL GEOLOGY MAP PETER HOLMES COMMERCIAL SITE - WARREN AVENUE PORTLAND, MAINE

SOURCE: MAINE OFFICE OF GIS - MAPS

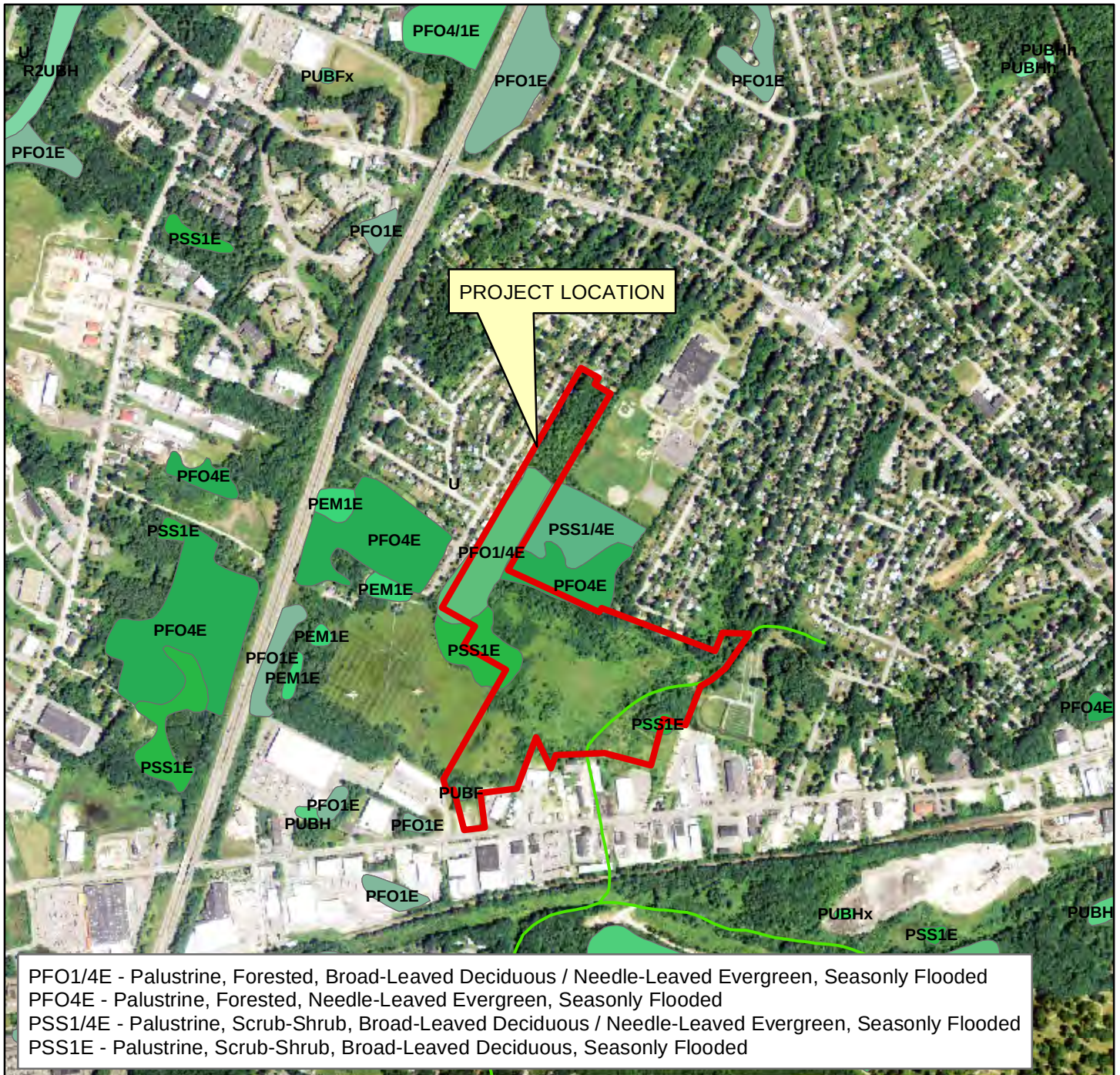


FAY, SPOFFORD & THORNDIKE, INC.
 ENGINEERS • PLANNERS • SCIENTISTS
 775 MAIN ST, SUITE 8, SOUTH PORTLAND, ME 04106

DRAWN: DED
 CHECKED: SRB
 DATE: OCT 2013
 FILENAME: SP-M104_GEOLOGY
 SCALE: 1 inch = 1,000 feet

FIGURE

10



NWI MAP PETER HOLMES COMMERCIAL SITE - WARREN AVENUE PORTLAND, MAINE

SOURCE: MAINE OFFICE OF GIS - MAPS



FAY, SPOFFORD & THORNDIKE, INC.
ENGINEERS • PLANNERS • SCIENTISTS
775 MAIN ST, SUITE 8, SOUTH PORTLAND, ME 04106

DRAWN: DED
CHECKED: SRB
DATE: OCT 2013
FILENAME: SP-M104_NWI
SCALE: 1 inch = 1,000 feet

FIGURE

11

2. TECHNICAL AND FINANCIAL CAPACITY

2.0 TITLE, RIGHT AND INTEREST

The applicant currently owns the site as evidenced by the accompanying deed contained in Attachment A to this section.

2.1 TECHNICAL CAPACITY

The applicant has assembled a highly qualified team of professionals to plan, permit, and develop construction documents for the project.

The Team services will be provided by the following companies and their respective team leaders:

2.2 CONSULTANT TEAM

<i>Civil Engineer</i>	Stephen R. Bushey, P.E. Fay, Spofford & Thorndike 778 Main Street, Suite 8 South Portland, ME 04106 (207) 775-1121 – Work (207) 879-0896 – Fax (207) 756-9359 – Cell sbushey@fstinc.com
<i>Surveyor</i>	Jim Nadeau Nadeau Land Surveys 918 Brighton Avenue Portland, Maine 04102 207-878-7870 – Work 207-878-7871 – Fax jim@nadeaulandsurveys.com
<i>Architect</i>	Jim Biskup Biskup Construction 16 Danielle Drive Windham, ME 04062 207-892-9800 – Work 207-892-9895 – Fax jim@biskupconstruction.com
<i>Wetland Scientist</i>	Jim Logan Albert Frick Associates 95A County Road Gorham, ME 04038 207-839-5563 – Work 207-839-5564 – Fax afa@maine.rr.com
<i>Geotechnical</i>	Timothy Boyce, P.E. S.W. Cole Engineering, Inc. 286 Portland Road Gray, ME 04039 207-657-2866 – Work 207-657-2840 – Fax tboyce@swcole.com

2.3 EXPERIENCE OF PROJECT TEAM

The team of consultants retained by developer has expertise and experience in the design of similar commercial projects. Resumes of key personnel for development team can be provided upon request.

2.4 FINANCIAL CAPACITY

The applicant has the means at its disposal for financing the proposed Warren Avenue project, as evidenced by the letter from Machias Savings Bank accompanying this section in Attachment B.

2.5 CONSTRUCTION COST ESTIMATE

A breakdown of the preliminary project cost includes the following:

- Site work \$250,000-\$500,000
- Structure \$1.0-\$1.2 million

These values are considered preliminary and approximate and are subject to change as building design and project layout is refined.

2.6 ATTACHMENTS

Attachment A – Deed

Attachment B – Financial Capacity Letter

ATTACHMENT A

Deed

QUITCLAIM DEED WITH COVENANT

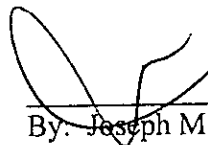
JMC Warren Ave, LLC, a Maine limited liability company with a mailing address of 247 Commercial Street, Suite A, Rockport, ME 04856, hereby grants to PH Warren Ave, LLC, Maine limited liability company with a mailing address of 401 Warren Avenue, Portland, ME 04103, with quitclaim covenant, the following real estate, with all improvements on it and all easements appurtenant to it, on Warren Avenue, Farnham Street, and Iffley Street, in the City of Portland, Cumberland County, Maine, further described as follows:

Please see attached Exhibit A

Meaning and intending to convey and hereby conveying the same premises described in a Quitclaim Deed with Covenant from Alfred J. Waxler to JMC Warren Ave, LLC dated May 31, 2006 and recorded at the Cumberland County Registry of Deeds in Book 24014, Page 149.

Dated: June 26, 2013.

JMC Warren Ave, LLC



By: Joseph M. Cloutier, Manager of
JMC Warren Ave, LLC
Duly Authorized Thereto

State of Maine
County of Cumberland, ss

June 26, 2013

Then personally appeared the above-named Joseph M. Cloutier, in his capacity as Manager of JMC Warren Ave, LLC and acknowledged the foregoing instrument to be his free act and deed and the free act and deed of JMC Warren Ave, LLC.

Before me,

Carley A. Anderson

Notary Public/Attorney at Law

my commission expires
2/6/14

SEAL

MAINE REAL ESTATE TAX PAID

EXHIBIT A

Beginning at a 5/8" rebar on the northerly sideline of Warren Avenue, said rebar marking the southwest corner of land now or formerly of Holmes as described in deed book 6918, page 53 Cumberland County Registry of Deeds;

thence north 77° 50' 09" west along the northerly sideline of Warren Avenue, 140.45 feet to a 5/8" rebar at land now or formerly of 424 Warren Avenue, LLC as described in deed book 17326, page 340 Cumberland County Registry of Deeds;

thence north 04° 49' 52" east along land of 424 Warren Avenue, LLC 285.79, feet to a no. 5 rebar;

thence north 85° 10' 08" west continuing along land of 424 Warren Avenue, LLC, 50.00 feet to a 5/8" rebar;

thence north 04° 49' 52" east continuing along land of 424 Warren Avenue, LLC, 84.64 feet to a point at land now or formerly of SAGA Communications of New England, Inc. as described in deed book 12543, page 308 Cumberland County Registry of Deeds;

thence north 49° 15' 54" east along land of SAGA Communications of New England, Inc., 851.18 feet to a no. 5 rebar; thence north 40° 44' 06" west continuing along land of SAGA Communications of New England, Inc., 328.39 feet to a no. 5 rebar;

thence north 49° 24' 48" east continuing along land of SAGA Communications of New England, Inc., 149.18 feet to an iron pipe; thence north 40° 29' 12" west continuing along land of SAGA Communications of New England, Inc., 254.52 feet to an iron pipe at land now or formerly of Bigelman as described in deed book 16291, page 92 Cumberland County Registry of Deeds;

thence north 49° 33' 05" east along land now or formerly of Bigelman, land now or formerly of Hoglund as described in deed book 16262, page 1, land now or formerly of Hoglund as described in deed book 16127, page 117, land now or formerly of Hoglund as described in deed book 19425, page 256, land now or formerly of Loranger as described in deed book 18832, page 241, land now or formerly of Legage as described in deed book 19393, page 66, land now or formerly of Nguyen as described in deed book 16474, page 83, land now or formerly of St. Joseph's Convent and Hospital as described in deed book 15551, page 194, land now or formerly of Vujanic as described in deed book 15874, page 260, land now or formerly of Sutton as described in deed book 7673, page 220, land now or formerly of Lam as described in deed book 7613, page 211, land now or formerly of Harmon as described in deed book 13217, page 321, land now or formerly of Cook as described in deed book 17702, page 26, land now or formerly of Ortiz as described in deed book 22187, page 170, land now or formerly of Lappin as described in deed book 21479, page 39, land now or formerly of Lam as described in deed book 10539, page 173, land now or formerly of Charles as described in deed book 15834, page 303, land now or formerly of Murray as described in deed book 21978, page 15, land now or formerly of Quinn as described in deed book 15009, page 333, land now or formerly of Saucier as described in deed book 7300, page 285, land now or formerly of Herrick as described in deed book 21200, page

150, land now or formerly of Libby as described in deed book 14389, page 142, land now or formerly of Vose as described in deed book 16527, page 203 and land now or formerly of Robey as described in deed book 13204, page 1 Cumberland County Registry of Deeds, 1872.78 feet to a no. 5 rebar at land now or formerly of Steele as described in deed book 14287, page 55 Cumberland County Registry of Deeds;

thence south 40° 18' 34" east along land now or formerly Steele and crossing a portion of Farnham Street, a paper street, 135.98 feet to a point at the center of Farnham Street, a paper street;

thence south 49° 41' 26" west along the center of Farnham Street, a paper street, 50.00 feet to a point at the center of Farnham Street, a paper street;

thence south 40° 18' 34" east crossing Farnham Street, a paper street and along land now or formerly of Mahaphanit as described in deed book 21338, page 304 Cumberland County Registry of Deeds, 125.00 feet to a 4"x4" granite monument at land now or formerly of City of Portland as described in deed book 3552, page 154 Cumberland County Registry of Deeds;

thence south 49° 41' 26" west along land now or formerly of City of Portland, 1379.34 feet to an iron pipe; thence south 45° 43' 10" east continuing along land now or formerly of City of Portland, 679.97 feet to an iron pipe;

thence north 49° 44' 52" east continuing along land now or formerly of City of Portland, 32.87 feet to a 5/8" rebar at land now or formerly of Kerley as described in deed book 11010, page 136 Cumberland County Registry of Deeds, thence south 49° 51' 29" east along land now or formerly of Kerley, along the terminus of Verrill Street and land now or formerly of Huynh as described in deed book 20307, page 40 Cumberland County Registry of Deeds, 302.31 feet to a point;

thence north 40° 08' 31" east along land now or formerly of Huynh, 110.00 feet to a no. 5 rebar on the southerly sideline of Iffley Street; thence south 49° 51' 29" east along the southerly sideline of Iffley Street, 89.43 feet to a point at land now or formerly of Franklin as described in deed book 15675, page 154 Cumberland County Registry of Deeds;

thence south 40° 08' 31" west along land now or formerly of Franklin, 110.00 feet to a point;

thence south 49° 51' 29" east along lands now or formerly of Franklin, Standish as described in deed book 13797, page 5, Barkhuff as described in deed book 3859, page 6, the terminus of Sarsfield Street, and land now or formerly of Jensen, 425.97 feet to an iron pipe;

thence north 41° 43' 08" east along land now or formerly of Jensen and the terminus of Iffley Street, 131.89 feet to a no. 5 rebar at land now or formerly of Hanson as described in deed book 2185, page 195 Cumberland County Registry of Deeds; thence south 68° 56' 53" east along land now or formerly of Hanson, 182.00 feet to a no. 5 rebar at land now or formerly of Mt. Sinai Cemetery Association as described in deed book 1219, page 386 Cumberland County Registry of Deeds;

thence south 52° 10' 31" west along land now or formerly of Mt. Sinai Cemetery Association, 31.10 feet to a no. 5 rebar at land now or formerly of Mt. Sinai Cemetery Association as described in deed book 610, page 424 Cumberland County Registry of Deeds;

thence south 54° 07' 31" west along land now or formerly of Mt. Sinai Cemetery Association, 252.00 feet to a no. 5 rebar at land now or formerly of Mt. Sinai Cemetery Association as described in deed book 1219, page 386 Cumberland County Registry of Deeds;

thence south 70° 03' 31" west along land now or formerly of Mt. Sinai Cemetery Association, 125.40 feet to a no. 5 rebar at land now or formerly of Mt. Sinai Cemetery Association as described in deed book 1558, page 209 Cumberland County Registry of Deeds;

thence south 78° 57' 03" west along land occupied now or formerly by Mt. Sinai Cemetery Association, 82.44 feet to a fence post; thence south 40° 23' 22" west along land occupied now or formerly by Mt. Sinai Cemetery Association and land now or formerly of Lead MT, LLC as described in deed book 17401, page 180 Cumberland County Registry of Deeds, 283.03 feet to a no. 5 rebar at land now or formerly of O'Connor Buick GMC Corp. as described in deed book 20997, page 83 Cumberland County Registry of Deeds;

thence north 55° 40' 47" west along land now or formerly of O'Connor Buick GMC Corp., 156.33 feet to a no. 5 rebar;

thence south 34° 19' 13" west along land now or formerly of O'Connor Buick GMC Corp. 322.34 feet to a no. 5 rebar at land now or formerly of Portland Rink Realty as described in deed book 7031, page 126 Cumberland County Registry of Deeds; thence north 55° 40' 47" west along land now or formerly of Portland Rink Realty and land now or formerly of Giroux Oil Co. Inc. as described in deed book 4342, page 31, deed book 3070, page 628 and deed book 3798, page 15 Cumberland County Registry of Deeds, 324.53 feet to an iron pipe;

thence north 72° 51' 29" west along land now or formerly of Giroux Oil Co. Inc., the terminus of Newcomb Street, land now or formerly of Bennett as described in deed book 15814, page 287 Cumberland County Registry of Deeds, the terminus of Saville Street, and land now or formerly of Vance as described in deed books 3080, page 873, deed book 3205, page 559, deed book 2833, page 190, deed book 2595, page 255, and deed book 2755, page 1 Cumberland County Registry of Deeds, 329.05 feet to a no. 5 rebar;

thence south 39° 50' 19" west along land now or formerly of Vance, 82.74 feet to a no. 5 rebar;

thence north 06° 04' 10" west continuing along land of Vance, 220.40 feet to a 5/8" rebar;

thence north 77° 50' 09" west continuing along land now or formerly of Vance, 12.27 feet to a no. 5 rebar;

thence south 39° 50' 52" west continuing along land now or formerly of Vance, 369.42 feet to a 5/8" rebar at land now or formerly of Holmes as previously described; thence north 77° 48' 43" west along land now or formerly of Holmes, 248.17 feet to a 5/8" rebar;

thence south 12° 11' 17" west continuing along land now or formerly of Holmes, 234.84 feet to the point of beginning.

This parcel contains 48.64 acres.

Bearings herein are based upon magnetic north 2002.

The real estate described above is a portion of the land conveyed to Alfred J. Waxler by two April 27, 1988 deeds from Your Home, Inc. recorded in Book 8261, Pages 269 and 273, and the December 31, 2005 deed from Your Home, Inc. recorded in Book 23556, Page 131.

Together with all rights described in the 2004 Affidavit recorded in Book 20828, Page 3.

Received
Recorded Register of Deeds
Jun 27, 2013 02:26:01P
Cumberland County
Pamela E. Lovley

ATTACHMENT B

Financial Capacity Letter



Experienced people. Exceptional service.

February 4, 2014

City of Portland
Planning Board
389 Congress Street 4th Floor
Portland, ME 04101

To whom it may concern:

Please accept this letter as confirmation that Peter Holmes is a customer of Machias Savings Bank. He has the financial capacity to complete the Warren Avenue project.

If you should have any questions, please feel free to contact me at 207-461-6160.

Sincerely,

A handwritten signature in cursive script that reads 'James O. Donnelly'. Below the signature, the name 'Cam' is written in a smaller, simpler script.

James O. Donnelly
Executive Vice President

4 Center Street, PO Box 318 | Machias, ME 04654-0318

(T) 800-339-3347 | (I) 207-255-2347 | (W) machiassavings.com

Member FDIC | Equal Housing Lender

3. CONFORMITY WITH APPLICABLE DESIGN STANDARDS

The following statement is made in accordance with the City of Portland Code of Ordinances, Chapter 14 Land Use, Article V Section 14-526.

3.1 OVERVIEW

This project conforms with all the applicable design standards of Section 14-526 as demonstrated in the following narrative.

(a) Transportation Standards

1. Impact on Surrounding Street Systems:

The development will fit in with the existing street system as it will use an existing 36' wide driveway off Warren Avenue. Based on the number of commercial units the project is expected to have an insignificant impact on traffic in the neighborhood.

2. Access and Circulation:

a. Site Access and Circulation.

- (i) The development provides access via Warren Avenue. Door controlled access will be provided at each end of the building and ample turning movement is provided at the street entrance. Internal circulation allows for the occasional movement of tractor-trailer vehicles.
- (ii) Access and egress have been designed to avoid conflicts with existing turning movements and traffic flows.
- (iii) The site does not feature drive up services as mentioned in this requirement.

b. Loading and Servicing.

- (i) At grade overhead doors are provided into each of the units. The units are envisioned as small business spaces that may involve tenants who require storage or operations space.

c. Sidewalks.

- (i) Sidewalks currently exist on both sides of Warren Avenue in front of the site. All sidewalk improvements shall conform to the City of Portland Technical Manual as shown on the project design drawings.
- (ii) The sidewalk on Warren Avenue appears to be in satisfactory condition and does not require any major improvements.

3. Access and Circulation:

- a. The development consists of greater than 20,000 SF of commercial area therefore it is subject to Public Transit Standards. However, there are no transit routes that use Warren Avenue at this time.
- b. A new Transit stop is not proposed.
- c. A new transit stop is not proposed.
- d. Waiver: The applicant requests a waiver of the transit facility requirement, if necessary.

4. Parking:

a. Location and Required Number of Vehicle Parking Spaces:

- (i) The applicant is providing parking greater than a 1 space per 1,000 SF ratio which satisfies Section 14-332 (l) of the code.
- (ii) The applicant has not prepared a TDM strategy.
- (iii) The applicant proposes the amount of parking which is appropriate for the anticipated uses of this site.
- (iv) Parking spaces and aisles have been designed to meet the dimensional requirements of the Technical Manual.
- (v) The parking lot has been designed with an asphalt surface for long-term durability.

b. Location and Required Number of Bicycle Parking Spaces:

- (i) The project will include two bike racks. The applicant is requesting a waiver to provide less than the required number of bicycle racks based on the anticipation that the site tenants will likely store bicycles in their units.

c. Motorcycles and Scooter Parking:

- (i) The project does not provide designated motorcycle/scooter parking.

d. Snow Storage:

- (i) Snow storage management will employ two strategies;
 - 1. On-site snow storage around the perimeter of the site.
 - 2. Snow removal and offsite storage. Generally speaking the nature of the proposed site use precludes the need for significant snow removal.

5. Transportation Demand Management (TDM):

- a. A TDM plan is not required for the project.

(b) Environmental Quality Standards

1. Preservation of Significant Natural Features:

- a. The existing site retains no prominent significant natural features therefore no issue related to the preservation of these features applies. Much of the site's wetland area will be preserved.
- b. The applicant is not requesting a waiver from this standard.

2. Landscaping and Landscaping Preservation:

a. Landscape Preservation.

- (i) The site's existing tree population is limited so there is no formal tree preservation proposed.
- (ii) Not applicable
- (iii) Not applicable
- (iv) The applicant will require a waiver from this standard, if applicable.

b. Site Landscaping.

(i) Landscaped Buffers:

- (a) There are no observable service or loading areas.
- (b) The development is located in a commercial zone therefore minimizing the requirements for landscaping needs.
- (c) Not applicable.

(ii) Parking Lot Landscaping:

- a) The landscape plan includes perimeter tree plantings around the edge of the proposed pavement surface.
- b) Not applicable.
- c) Not applicable.

(iii) Not applicable.

3. Water Quality, Stormwater Management and Erosion Control:

a. Stormwater:

- (i) Stormwater draining onto the site from adjacent properties is very limited. No changes to these offsite flow regimes is anticipated.
- (ii) The project will not adversely impact adjacent lots or the City street system.
- (iii) The project will not adversely impact adjacent lots or the City street system.
- (iv) The project will not adversely impact adjacent lots or the City street system.

b. The Stormwater Management Plan will meet the requirements and goals stated in Section 5 of the Technical Manual.

c. The project is located in the Capisic Brook watershed which is listed as an urban impaired stream by the MeDEP. The implementation of the gravel wetland BMP will allow the project to comply with the urban impaired stream standards.

d. N/A

e. The project is serviced by both a public wastewater system and public drainage system. The project will not pose a risk of groundwater contamination.

f. The project will be connected to the public sanitary sewer system which is adequately sized for the project flows.

(c) Public Infrastructure and Community Safety Standards.

1. Consistency with City Master Plans:

- a. The project has been designed to be consistent with the City's Zoning Ordinance and off-site infrastructure.
- b. Not applicable.

2. Public Safety and Fire Prevention:

- a. The site has been designed to promote safe and inviting commercial access.
- b. No changes to emergency access conditions within the surrounding streets is proposed.
- c. Fire hydrants are located within the adjacent street system. The new building will be fully sprinklered.

3. Availability and Adequate Capacity of Public Utilities:

- a. The applicant will secure letters from all applicable utilities stating their ability to serve this project. The project will require new onsite utility service infrastructure to serve the new building.
- b. All on site electrical lines will be underground.
- c. All new utility infrastructure will meet the provisions of the Technical Manual.
- d. The project will require a service connection to an existing stub that ties into the sewer system in Warren Avenue.
- e. The sanitary sewer collection system will be designed to meet all applicable sections of the Technical Manual. A stormwater management system is proposed that will comply with the Technical standards.
- f. The project will use an outside solid waste enclosure and waste removal services will be contracted to a private waste hauler as it currently performed at the applicant's properties at 401 and 429 Warren Avenue.

(d) Site Design Standards.

1. Massing, Ventilation and Wind Impact:

- a. The bulk, location and height of the proposed building have been designed to not result in adverse impacts to abutting properties.
- b. HVAC venting is proposed to be directed to the building roof and directed away from public spaces.

2. Shadows:

- a. The development is located in the B-4 Zone and this standard is not applicable.

3. Snow and Ice Loading:

- a. The proposed building will be designed and located such that accumulated snow and ice will not fall onto adjacent properties or public ways.

4. View Corridors:

- a. The project site is located outside the Downtown Vision View Corridor Protection Plan.

5. Historic Resources:

- a. The development is not located in a historic district, historic landscape district or City designated landmark.
- b. The development is not located adjacent to or within 100 ft. of a designated landmark, historic district, or historic landscape district.

c. There are no known archaeological resources on the site.

6. Exterior Lighting:

a. Site Lighting.

(i) Exterior lighting will be designed to meet the requirements of Section 12 of the Technical Manual.

7. Noise and Vibration:

The project noise levels will be designed to meet the permitted levels as outlined in the zoning ordinance. All HVAC and mechanical equipment is proposed to be ground mounted.

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) Proposed commercial signage is still being designed and subject to a condition of approval.

(iii) All street and wayfinding signage shall meet the requirements of the Manual on Uniform Traffic Devices (MUTCD) and Division 22 of the City Code.

9. Zoning Related Design Standards:

a. The project is designed to be a high density commercial development with a single story building, adequate parking and related infrastructure.

ATTACHMENT A

Sight Lighting Information

WPLEDFC52

LED 52W Wallpacks. 3 cutoff options. Patent Pending thermal management system. 100,000 hour L70 lifespan. 5 Year Warranty.

Color: Bronze

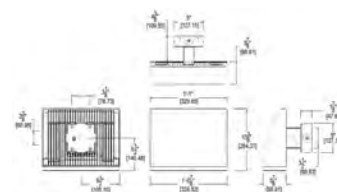
Weight: 17.6 lbs

LED Info

Watts: 52W
Color Temp: 5000K (Cool)
Color Accuracy: 65
L70 Lifespan: 100000
LM79 Lumens: 5,905
Efficacy: 97 LPW

Driver Info

Type: Constant Current
120V: 0.51A
208V: 0.33A
240V: 0.29A
277V: 0.24A
Input Watts: 61W
Efficiency: 86%



Technical Specifications

UL Listing:

Suitable for wet locations.

Lumen Maintenance:

100,000-hour LED lifespan based on IES LM-80 results and TM-21 calculations.

LEDs:

Two (2) multi-chip, high-output, long-life LEDs.

Drivers:

Two drivers, constant current, 720mA, Class 2, 100 - 277V, 50 - 60 Hz, 100 - 277VAC .8 Amps

THD:

8.3% at 120V, 11% at 277V

Ambient Temperature:

Suitable for use in 40°C ambient temperatures.

Surge Protection:

6kV

Cold Weather Starting:

The minimum starting temperature is -40°F/-40°C.

Thermal Management:

Cast aluminum Thermal Management system for optimal heat sinking. The WPLED is designed for cool operation, most efficient output and maximum LED life by minimizing LED junction temperature.

Housing:

Precision die cast aluminum housing, lens frame.

Mounting:

Die-cast aluminum wall bracket with (5) 1/2" conduit openings with plugs. Two-piece bracket with tether for ease of installation and wiring.

Arm:

Die-cast aluminum with wiring access plate.

Color Consistency:

7-step MacAdam Ellipse binning to achieve consistent fixture-to-fixture color.

Color Stability:

LED color temperature is warrantied to shift no more than 200K in CCT over a 5 year period.

Color Uniformity:

RAB's range of CCT (Correlated color temperature) follows the guidelines of the American National Standard for Specifications for the Chromaticity of Solid State Lighting (SSL) Products, ANSI C78.377-2008.

Reflector:

Specular vacuum-metallized polycarbonate

Gaskets:

High temperature silicone.

Finish:

Our environmentally friendly polyester powder coatings are formulated for high-durability and long-lasting color, and contains no VOC or toxic heavy metals.

Green Technology:

WPLEDs are Mercury and UV free.

IESNA LM-79 & IESNA LM-80 Testing:

RAB LED luminaires have been tested by an independent laboratory in accordance with IESNA LM-79 and 80, and have received the Department of Energy "Lighting Facts" label.

Replacement:

The WPLED52 replaces 250W HID Wallpacks.



California Title 24:

WPLED complies with California Title 24 building and electrical codes.

Warranty:

RAB warrants that our LED products will be free from defects in materials and workmanship for a period of five (5) years from the date of delivery to the end user, including coverage of light output, color stability, driver performance and fixture finish. See our full warranty .

Patents:

The WPLED design is protected by patents in the U.S. Pat D653,377, Canada Pat. 142252, China Pat. ZL201130356930.8, and Mexico Pat. 36921 and pending patent in TW.

DLC Listed:

This product is on the Design Lights Consortium (DLC) Qualified Products List and is eligible for rebates from DLC Member Utilities.

For use on LEED Buildings:

IDA Dark Sky Approval means that this fixture can be used to achieve LEED Credits for Light Pollution Reduction.

Dark Sky Approved:

The International Dark Sky Association has approved this product as a full cutoff, fully shielded luminaire.

Country of Origin:

Designed by RAB in New Jersey and assembled in the USA by RAB's IBEW Local 3 workers.

Buy American Act Compliant:

This product is a COTS item manufactured in the United States, and is compliant with the Buy American Act.

Recovery Act (ARRA) Compliant:

This product complies with the 52.225-21 "Required Use of American Iron, Steel, and Manufactured Goods-- Buy American Act-- Construction Materials (October 2010).

Trade Agreements Act Compliant:

This product is a COTS item manufactured in the United States, and is compliant with the Trade Agreements Act.

GSA Schedule:

Suitable in accordance with FAR Subpart 25.4.



**STORMWATER MANAGEMENT REPORT
(BASIC, GENERAL, FLOODING, AND
URBAN IMPAIRED STREAM STANDARDS)**

**421 WARREN AVENUE
COMMERCIAL COMPLEX**

PREPARED FOR:

**PH WARREN AVENUE, LLC
401 WARREN AVENUE
PORTLAND, MAINE 04101**

PREPARED BY:

**FAY, SPOFFORD & THORNDIKE, INC.
778 MAIN STREET, SUITE 8
SOUTH PORTLAND, MAINE 04106
(207) 775-1121**

FEBRUARY 2014

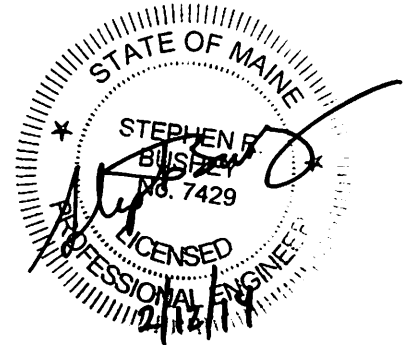


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APPENDICES

A – Figures (Refer to Section 1 of the Site Plan Application)

B – Predevelopment Computations (2, 10 and 25-year Storm Event HydroCAD Computations)

C – Postdevelopment Computations (2, 10 and 25-year Storm Event HydroCAD Computations)

D – Water Quality Summary Chart and Computations

E – Orifice Drawdown Computations

F – Geotechnical Exploration Test Pit Logs

G – Erosion & Sediment Control Report

H – Inspection & Maintenance Manual for Stormwater Management and Related Stormwater Facilities –
(Not Included with this Submission)

STORMWATER MANAGEMENT REPORT

1.0 INTRODUCTION

Fay, Spofford & Thorndike (FST) has been retained by Peter Holmes to assist on the preparation of site design and site permitting for a proposed 28,000 SF footprint multi-unit building in Portland, Maine. The development will include a new multi-unit building, 41 space parking lot and related infrastructure improvements.

The project's primary stormwater management measure will be the construction of two gravel wetlands. Gravel wetlands are a relatively new BMP measure that offers higher storage volumes on sites with low hydraulic head. The gravel wetland section is intended to provide sufficient capacity to meet the Chapter 500 Flooding and Water Quality treatment standards. In addition to the gravel wetlands, the project's stormwater management will include a gravel drip strip for water quality treatment of runoff from the building roof.

This proposed project will create a total of 2.53 ac of developed area of which 1.90 ac will be new structure area (building and other impervious surfaces) within the approximately 7.95 acre project watershed area analyzed. The land owner of this site also owns an approximate additional 40 acres surrounding this site. The 7.95 acre area that was analyzed was area determined to be relevant to the two project hydrologic points of interest impacted by the new developed area. This project meets the thresholds which require a MaineDEP Stormwater Permit. The stormwater management design presented herein will show that it meets the criterion of the City of Portland Stormwater Requirements and the MaineDEP Chapter 500 Regulations. The applicant is requesting the City of Portland complete the MaineDEP Stormwater review under their delegated review authority.

The development site is located on the north side of Warren Avenue between Interstate 95 and Forest Avenue in Portland. The site is owned by PH Warren Avenue, LLC. A large portion of this site currently drains to a drainage way in the northeast quadrant of the site. Part of the southerly tip of the site drains into Warren Avenue and is collected by the City's municipal drainage system. A second part of the southerly end drains across to Harbour Auto-Body and is collected in a small detention pond before being routed into the city drainage system.

The use of two gravel wetlands will allow the capture and treatment of the required water quality volume derived from a 1" rainfall as well as up to the 25 year storm event. The Stormwater Management devices on site will also meet the chapter 500 flooding requirements up to a 100-year storm.

USGS, aerial photographs, and related maps are appended to this report in Appendix A.

On behalf of the applicant, Fay, Spofford & Thorndike has prepared this report to show the proposed Stormwater Management Plan meets the MeDEP's General Stormwater Standards and City of Portland's Technical Standards.

2.0 EXISTING SITE CONDITIONS

The proposed site lies within a 7.95 acre analyzed watershed area. Area that represents analyzed represents a portion of area that lies within a larger property. FST decided to only analyze watershed area in which the proposed development would impact the chosen points of interest. The site is currently undeveloped with the following land cover:

TABLE 1 – LAND COVER	
Current Land Cover	Area (acre)
Woods/Meadow	5.75
Roof	0.28
Lawn	0.46
Pavement	0.67
Gravel	0.79
Total	7.95

The existing site is comprised of mostly undeveloped woods, meadows, lawn and gravel areas.

Topography is relatively flat within the site. A large portion of the site drains over a flat wetland area towards a tributary in the northeast quadrant of the site. About half of the area in the southern portion of the site drains towards Warren Avenue and is picked up by the City of Portland Municipal Stormwater System through a catch basin in the street. The other half flows towards an existing detention pond adjacent to Harbour Auto Body shop, which is located on property owned by the applicant. Flow is released from this detention pond and is discharged to the City of Portland Stormwater System.

The preliminary geotechnical explorations by S.W. Cole Engineering in December 2013 show that the site contains fill soils over a layer of relic topsoil underlain by glaciomarine sands, silts and clays.

The site is in the B-4 Zone and is considered by the City of Portland as a permitted use.

The site is not located in a mapped 100-year floodplain and is denoted as Zone X based upon the Portland FEMA mapping as depicted on Figure 7 containing an excerpt of the MGIS Firm Panel #2300510006B.

Figures 8, 9, and 10 appended to the report provide the USDA medium intensity soils, sand and gravel aquifers maps, and surficial geology map for the site. A copy of the geotechnical findings for the site is contained in Appendix F.

3.0 PROPOSED PROJECT

The proposed project is generally described below and is shown on the Post Development Watershed Map. The project will develop 2.53 acres including 1.90 acres of impervious area.

The proposed project includes parking areas surrounding an approximately 28,000 SF building footprint. The site access will be off the existing Warren Avenue drive serving 429 Warren Avenue and this will consist of a 60' wide two-lane driveway positioned directly in front of the building's southerly entrance. The parking areas include 41 spaces on the south and west sides of the building.

The proposed land use for the site after development will be as follows:

TABLE 2 – POSTDEVELOPMENT LAND USE		
Proposed Land Cover	Area (acre)	Change from Current (acre)
Woods/Meadow	4.38	-1.37
Roof	0.92	+0.64
Lawn/Landscaped Planting Areas	0.66	+0.20
Pavement	1.77	+1.17
Gravel	0.22	-0.57
Total	7.95	

The Erosion & Sediment Control Report contained in Appendix G of this section outlines the erosion control measures which will be required for the project (Basic Stormwater Standards).

4.0 WATERSHED DELINEATION METHOD

The following resources were used for watershed delineation:

- USGS Topographic Mapping
- Field Reconnaissance
Justin Pellerin, Design Engineer, Fay, Spofford & Thorndike
Reviewed by Stephen Bushey, P.E., Fay, Spofford & Thorndike
- Site Topographic Survey
Nadeau Land Survey Dated December 2013
- Hydrologic Soil Group Information
Medium Intensity Soils Survey by Albert Frick & Associates, Inc.

5.0 REFERENCES

- Urban Hydrology for Small Watersheds from the USDA SCC Technical Release SS, dated 1986
- Erosion and Sediment *Maine Erosion and Sediment Control BMPs”, published by the MeDEP in 2003* <http://www.maine.gov/dep/blwg/docstand/escbmps/index.htm>
- City of Portland – Code of Ordinances
- Stormwater Management for Maine Volume III – BMP Technical Design Manual
- Chapter 500 MaineDEP Rules, Revision December 2011
- City of South Portland Stormwater Manual – Gravel Wetland
- Modeling SoftwareHydroCAD Stormwater Modeling System, Version 8.5, Applied Microcomputer Systems – used for modeling underground storage facilities
- Microsoft Excel 2010, Microsoft Corporation – used for spreadsheet computations.

6.0 DESIGN STORMS

TABLE 3 – RAINFALL	
Rainfall Amount (inches)	
2-Year Storm	3.0
10-Year Storm	4.7
25-Year Storm	5.5
100-Year Storm	6.7

Hydrologic Parameters: Cumberland County SE Type III Distribution: Antecedent Moisture Condition 2, SCS 24 Hour Distribution as per MeDEP Stormwater Best Management Practices (page 25).

7.0 PRESENTATION OF ANALYSIS

The stormwater analysis has been performed for the project to determine the requirements of the City of Portland and the MeDEP Chapter 500 Stormwater Rules and to show a plan which will generally meet the requirements with any exceptions noted herein. The analysis is documented with supporting HydroCAD models appended to this narrative.

8.0 MODELING ASSUMPTIONS

- The gravel wetlands were modeled as ponds to capture and store up to the 100 year storm event rainfall volume. The gravel wetland section includes an 8” thick wetland soil layer underlain by a 3” pea stone and permanently saturated 24” layer of crushed stone. The crushed stone layer will be tied into outlet control structures that will contain weirs/orifices that will control the rate of flow passing horizontally through the crushed stone system as well as control the overall peak discharge to the two points of analysis studied for the post development conditions.
- Analysis was run with pipe lengths (modeled as culvert outlets). Pipe sizes were generated using the HydroCAD modeling flow computations.
- The Tc flow paths were assumed to be a min. of 6 minutes as recommended in the TR-55 technical manual. In instances where flow paths were computed to be less than 6 minutes a direct entry command was used.

9.0 PREDEVELOPMENT ANALYSIS

Runoff from the site flows to two points of analysis (POA). These consist of the following:

- Point of Analysis #1 is an inlet into a drainage way that abuts the northeast end of the site. Presently a majority of the site drains into this drainage way through multiple wetland fingers. The drainage way stream captures 5.72 acres relevant to the project site, although its broader watershed area is much larger.
- Point of Analysis #2 is an existing City of Portland catch basin where flows from the southerly tip of the site drain and connect into the city drainage system. Currently flow drains from the proposed development site and a portion of Harbour Auto Body into an existing detention pond that discharges into the municipal system. Currently 2.23 acres are tributary to this point of analysis from the proposed site.

The Predevelopment Peak flows at the two POI's are as follows:

TABLE 4 PREDEVELOPMENT FLOWS (PEAK DISCHARGE RATES) AT POI			
POI #	2 Yr Storm Event (CFS)	10 Yr Storm Event (CFS)	25 Yr Storm Event (CFS)
1	3.53	7.44	9.36
2	3.72	6.94	8.23

10.0 POSTDEVELOPMENT ANALYSIS

The postdevelopment analysis considers the two gravel wetlands and the proposed roof drain gravel drip strip treatment systems for their storage capacity and controls to detain runoff volumes up to the 100 year storm event. Runoff passing through the gravel wetland section will be captured and stored within the pond reservoir. The outflow from each gravel wetland will be controlled through a control structure that will contain an orifice control mechanism to regulate the flow rate discharging from the system. The outlet pipes from the water storage system will discharge to stabilized ground conditions and this flow will travel overland or via pipe to each Point of Interest. The following post development peak flows have been computed for each POI:

TABLE 5 POST DEVELOPMENT FLOWS (PEAK DISCHARGE RATES) AT POI			
POI #	2 Yr Storm Event (CFS)	10 Yr Storm Event (CFS)	25 Yr Storm Event (CFS)
1	3.04	6.98	8.91
2	2.72	5.63	6.46

11.0 STORMWATER MANAGEMENT OBJECTIVES

The goal of the Stormwater Management Plan is to design, operate, and maintain the development to avoid downstream erosion or significant water quality impairment.

This goal will be achieved by:

- Designing the project to meet the Portland Stormwater Management Standards and the MeDEP Chapter 500 Basic Standards, General Standards, and Flooding Standards (revised October 2010).
- Designing water quality measures to provide long-term removal of non-point contaminants.
- Implementing a plan to control erosion, sedimentation, or fugitive dust emissions during construction.
- Maintenance of the Stormwater Management System in accordance with the Stormwater O&M Manual (provided as a separate document).

The plan has been designed in accordance with the City of Portland Stormwater Rules.

12.0 STORMWATER MANAGEMENT QUANTITY SUMMARY

To meet the Flooding Standards of the MaineDEP Chapter 500 Stormwater Rules the project has been designed to store runoff in the two gravel wetlands and a roof drip strip system. Based on the storage volume provided by these reservoirs, there will be sufficient capacity to store greater than the 100 year storm event rainfall amount. For runoff from the building roof, the plans include the installation of a gravel drip strip system.

Flows and storage characteristics of the each gravel wetland and gravel drip strip are contained in Appendix D. A summary of the systems is as follows:

TABLE 6 SUMMARY OF GRAVEL WETLAND 1				
Storm Event Interval	Peak Flows In (CFS)	Peak Flows Out (CFS)	Storage (CF)	Peak Elevation (FT)
2-Year	1.13	0.36	1,534	69.10
10-Year	2.07	1.22	2,034	69.31
25-Year	2.51	1.47	2,348	69.41
100-Year	3.18	1.80	2,714	69.53

TABLE 7 SUMMARY OF GRAVEL WETLAND 2				
Storm Event Interval	Peak Flows In (CFS)	Peak Flows Out (CFS)	Storage (CF)	Peak Elevation (FT)
2-Year	2.87	1.05	3,949	69.11
10-Year	4.98	3.90	4,927	69.27
25-Year	5.97	4.88	5,198	69.31
100-Year	7.44	6.21	5,540	69.36

The following table summarizes the pre and post development comparison at each point of analysis:

TABLE 8 PRE AND POST COMPARISON (POI)						
Description	2 Year		10 Year		25 Year	
	Pre	Post	Pre	Post	Pre	Post
POI #1	3.53	3.04	7.44	6.98	9.56	8.91
POI #2	3.72	2.72	6.94	5.63	8.23	6.46

TABLE 9 SUMMARY OF GRAVEL DRIP STRIP				
Storm Event Interval	Peak Flows In (CFS)	Peak Flows Out (CFS)	Storage (CF)	Peak Elevation (FT)
2-Year	2.10	1.15	438	70.27
10-Year	3.35	1.27	1,426	70.88
25-Year	3.93	1.33	2,009	71.24
100-Year	4.81	1.43	2,955	71.83

The post development flows are lower than those in predevelopment conditions at each point of analysis and therefore the Flooding Standard Goal has been met. Postdevelopment computations are contained in Appendix C.

13.0 STORMWATER MANAGEMENT QUALITY SUMMARY

Approach

To meet the General Standards, our office has reviewed the implementation of the 4 approved treatment strategies listed below. Our findings are as follows:

- **Wetpond** – Wetponds were considered for part of the project’s stormwater management strategy; however, due to physical and natural resource site constraints and the required limits of proposed development, there is insufficient vertical and horizontal space to utilize this method of water quality treatment. Generally speaking, the development area would require a wet pond of approximately 0.5 to 0.75 acres in size; thus this option is not feasible.
- **Filter** – Filters cover a broad range of techniques including pre-approved proprietary stormwater treatment devices and a porous surface treatment. The development site has very flat relief and is not conducive to the use of filters which generally require at least 5’ of vertical space to an outlet.
- **Infiltration** – Our office has reviewed the Geotechnical Report about the site and the USDA medium intensity soil survey. The medium intensity soil survey maps the site as predominantly Scantic Silt loam. These soils are commonly found to be poorly drained. The limiting factor to effective infiltration is the restrictive layer (i.e. bedrock, depth to groundwater, and infiltration rates of receiving soils. The presence of a restrictive layer (high groundwater table and Glacial marine soils) will make infiltration very difficult to incorporate into this site. Geotechnical explorations show that glacial marine soils are present within 3 to 5 feet below existing grade and seasonally high groundwater table approximately 5 feet below existing grade. Due to the proximity to the groundwater table and marine soils our office is not recommending the use of infiltration for the purposes of water quality treatment.
- **Buffers** – Buffers were not considered as part of the site’s stormwater management due to insufficient space. As an example, a minimum forested or meadow buffer width needs to be 75 feet, 100 feet or 150 feet with a slope of 0% - 8%, none of which is attainable on the site. Additionally, buffers are required to be encumbered by a conservation easement and deed restrictions.

Implementation

Our office has laid out a plan which utilizes two gravel wetlands that will treat the entire developed parking area. We have also implemented a gravel drip strip system to treat runoff from the proposed building. Gravel wetlands are horizontal flow retention and filter systems. These systems maintain a saturated gravel bed and provide treatment by stormwater movement through the gravel bed and plant/soil processes. These systems are suited to the project site due to poorly draining subsoils and limited availability of hydraulic head (vertical space).

A water quality summary chart of the project is appended with this application in Appendix D. The basis of design of gravel wetlands and gravel drip strip are as follows:

- **Gravel Drip Strip** – The intent of a gravel drip strip is to collect and provide treatment for runoff from a building roof area. The gravel drip strip for this project was designed based on the following considerations from the MeDEP Chapter 7 Stormwater manual:

Stone layer is assumed to have 40 % void space and be able to retain 1” of runoff over the entire building area.

For example, a 70’ deep building roof must be able to holds: $(70') \cdot (1/12) \cdot (1') = 5.83 \text{ CF}$,
Per Foot of Building Length

For this project, there was 28,000 SF of building area, which requires a capacity of 2,333 CF of storage.

Complete gravel drip strip computations can be found in Appendix B.

- **Gravel Wetlands** – The gravel wetland treatment reservoirs have been designed to treat at least 95% of the new structure area and 80 % of the developed area along with the gravel drip strip to capture building roof runoff.

To meet Chapter 500, the Channel Protection Volume provided must be equal to or greater than the following:

$$WQV = (P1) \cdot (Rv) \cdot (A)$$

Where P1=90% rainfall event assumed to be 1”

Where A = total tributary area within the sub-catchment

Where Rv= $.05 + .09 \cdot (I)$

Where I = the percentage of impervious Area within the sub-catchment.

Typically, gravel wetlands are broken into three zones:

1. First, the forebay must hold 10% of the desired WQV. The purpose of the sediment forebay is to settle solids from storm water before it reaches the two gravel wetland cells.
2. Two wetland cells shall hold approximately 45% of desired WQV each. These cells provide a majority of the water treatment.

3. The water quality volume provided is equal to 3,579 cubic feet in the two gravel wetland systems. Gravel wetlands water quality computations can be found in Appendix B.

Based on University of New Hampshire Design Specifications, the gravel wetlands shall be sized to treat the entire water quality volume in 24 hours with a discharge rate that is controlled by an orifice on the under drain system. The orifice drawdown computations are appended in Appendix F.

For gravel Wetland 1 located nearer to Warren Avenue, the discharge from larger storm events overflows over a broad crested weir contained in a precast concrete outlet control structure set at Elevation 69.00 (i.e. the basin stage when water quality volume has been reached). The overflow piping network is sized to handle runoff from a 25-year storm event.

For gravel Wetland 2, located at the rear of site, the discharge from larger storm events will overflow over a weir spill-way set at Elevation 69.00. The overflow will flow into the undeveloped sub-catchment and eventually drain into a drainage way in the northeast quadrant of the site.

Therefore, water quality goals for the gravel wetland system meet the General Stormwater Standards of the November 2005 Chapter 500 Rules of MeDEP (rev. December 2011). As well as City of Portland Technical Standards.

14.0 **CHAPTER 500 TREATMENT PERCENT COMPLIANCE**

The proposed development project creates 1.90 acres of newly constructed impervious area and .63 acres of pervious area for a total disturbed area of about 2.53 acres.

Of the 1.90 acres of impervious area the proposed Stormwater Management Plan provides treatment for all 1.90 acres or 100% percent. The disturbed area as part of this redevelopment is approximately 2.53 acres. Of the 2.53 acres the proposed Stormwater Management Plan provides treatment for 2.40 acres or 94.6% percent. Hence, the strategies proposed herein meets the minimum requirements stated in the General Standards.

TABLE 10 WATER QUALITY SUMMARY				
	Impervious Area (ac)	Treated Impervious (ac)	Developed Area (ac)	Treated Developed (ac)
	1.90	1.90	2.53	2.40
PERCENTAGE		100%		94.6 %

A summary of the water quality treatment values is as follows:

- **Gravel Wetlands:** There are two gravel wetland areas proposed to treat runoff from the site's developed area. The design and treatment parameters are as follows:

TABLE 11 GRAVEL WETLAND		
Gravel Wetland Subcatchment	2*	4*
Impervious Area Treated (sf)	13,583	20,942
Pervious Area Treated (sf)	1,682	1616
Required Sediment Forebay Water Quality Volume (cf)	108	283
Required Wetland Cell Water Quality Volume (cf) Each Cell Approximately 45%	487	1273
Bottom Elevation (ft)	68.50	68.50
Elevation Where Water Quality Volume is Achieved	69.00	69.00
Depth at Water Quality Volume (in.)	0.5	0.5
Controlling Orifice Size (in.)	1.1	1.5
Controlling Orifice Elevation (ft)	68.17	68.17
100 Year Storm Stage Elevation (ft)	69.61	69.36
Major Storm Event Control Devices	WEIR	WEIR
Freeboard (ft)	.39	.64
Surface Area Provided (sf)	1,670	4,800

See HydroCAD Computations – Appendix C

- **Gravel Drip Strip:** The rooftop will sheet runoff into a gravel drip strip system. The design results are summarized below.

TABLE 12 GRAVEL DRIP STRIP	
Water Quality Volume required= (1")*(roof area) (cf)	2,333
Proposed Stone Layer Volume (sf)	2340
Bottom Elevation of Storage Layers (ft)	70.50
Top of Elevation of Stone Layer (ft)	72.00
Elevation Where Water Quality Volume is Achieved (ft)	72.00
Depth of Water Quality (ft)	1.5
Freeboard – 100-Year Storm (ft)	0.17
Maximum Volume Stone Reservoir (cf)	2,955
Proposed Surface Elevation (ft)	72.00

15.0 **EROSION CONTROL**

An Erosion Control Narrative, Plan, and Details have been prepared for the project and accompany this submission in Appendix G.

16.0 **OPERATIONS AND MAINTENANCE**

An Operations & Maintenance Manual has been prepared and accompanies this application in Appendix H.

17.0 **PERMIT REQUIREMENTS**

City of Portland review and permitting of the Stormwater Management Plan is required and will be completed with the review of the Site Plan Application submitted to the City of Portland Planning Department.

18.0 DRAINAGE NETWORK PIPE SIZING

The drainage network has been sized using the flows computed using HydroCad modeling software. The pipe sizes are noted on the drawings.

19.0 APPENDICES

- A – Figures (Refer to Section 1 of the Site Plan Application)
- B – Predevelopment Computations (2, 10 and 25-year Storm Event HydroCAD Computations)
- C – Postdevelopment Computations (2, 10 and 25-year Storm Event HydroCAD Computations)
- D – Water Quality Summary Chart and Computations
- E – Orifice Drawdown Computations
- F – Geotechnical Exploration Test Pit Logs
- G – Erosion & Sediment Control Report
- H – Inspection & Maintenance Manual for Stormwater Management and Related Stormwater Facilities

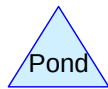
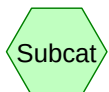
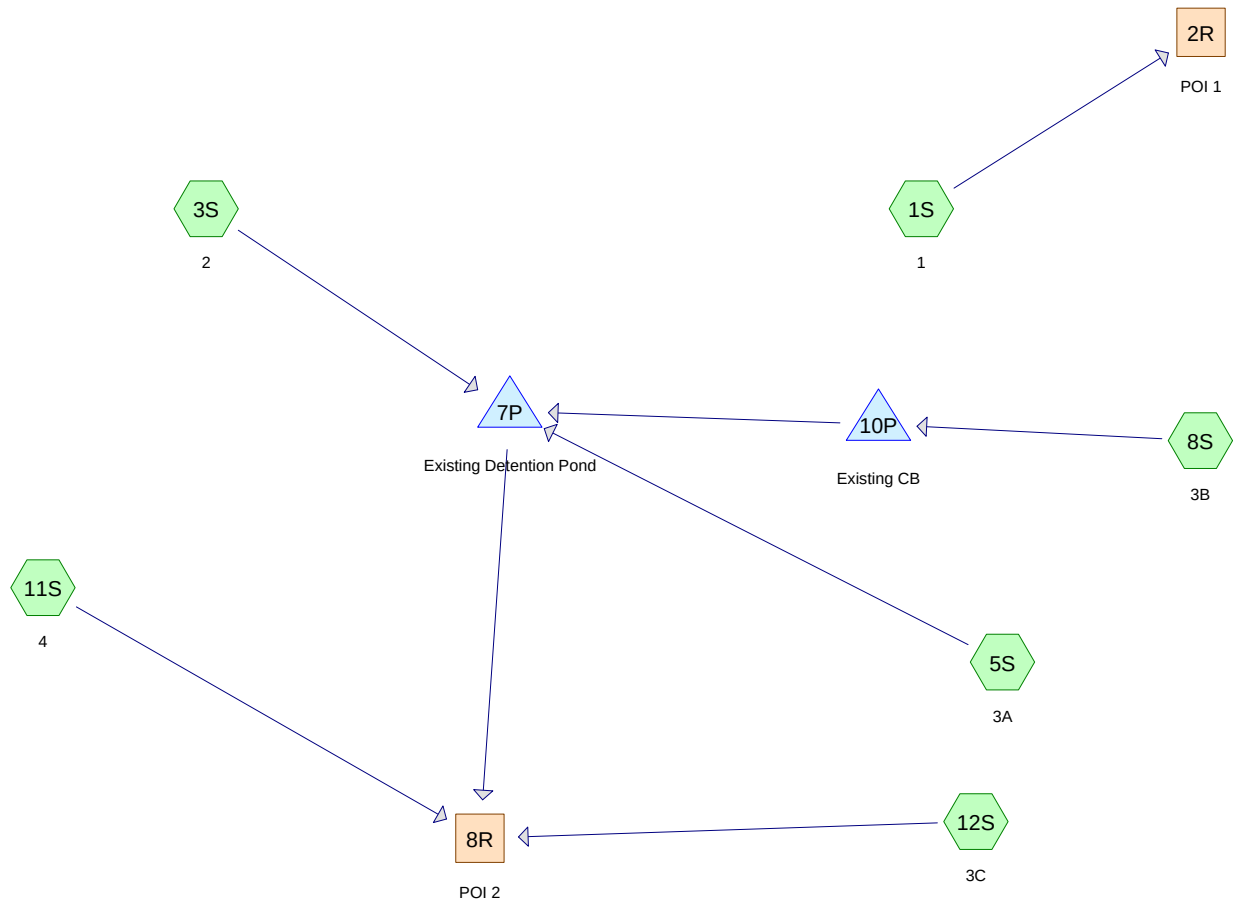
APPENDIX A

FIGURES

(Refer to Section 1 of the Site Plan Application)

APPENDIX B

PREDEVELOPMENT COMPUTATIONS (2, 10 AND 25-YEAR STORM EVENT HYDROCAD COMPUTATIONS)



Drainage Diagram for SP-M104 2-3-14 PRE DEVELOPMENT
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SP-M104 2-3-14 PRE DEVELOPMENT

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Page 2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.180	73	Woods, Fair, HSG C (3S)
0.017	74	Existing Land Scaped Area (5S)
0.078	74	Pervious Pond Area (5S)
0.363	79	50-75% Grass cover, Fair, HSG C (3S,11S)
3.924	79	Pasture/grassland/range, Fair, HSG C (1S)
1.658	84	Pasture/grassland/range, Fair, HSG D (1S)
0.791	89	Gravel Pavement (1S,3S,11S)
0.469	98	Impervious (8S,12S)
0.428	98	Impervious Pavement (3S,5S)
0.028	98	Pavement (11S)
0.017	98	Smaller Building (5S)
7.952		TOTAL AREA

SP-M104 2-3-14 PRE DEVELOPMENT

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Soil Listing (all nodes)

Area (acres)	Soil Goup	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
4.467	HSG C	1S, 3S, 11S
1.658	HSG D	1S
1.826	Other	1S, 3S, 5S, 8S, 11S, 12S
7.952		TOTAL AREA

SP-M104 2-3-14 PRE DEVELOPMENT*Type III 24-hr 2-YR Rainfall=3.00"*

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Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: 1Runoff Area=248,944 sf 0.00% Impervious Runoff Depth=1.31"
Flow Length=704' Tc=56.7 min CN=81 Runoff=3.53 cfs 0.626 af**Subcatchment3S: 2**Runoff Area=20,578 sf 8.11% Impervious Runoff Depth=1.25"
Flow Length=305' Tc=6.0 min CN=80 Runoff=0.68 cfs 0.049 af**Subcatchment5S: 3A**Runoff Area=21,816 sf 81.20% Impervious Runoff Depth=2.25"
Tc=6.0 min CN=93 Runoff=1.28 cfs 0.094 af**Subcatchment8S: 3B**Runoff Area=4,298 sf 100.00% Impervious Runoff Depth=2.77"
Tc=6.0 min CN=98 Runoff=0.29 cfs 0.023 af**Subcatchment11S: 4**Runoff Area=34,630 sf 3.52% Impervious Runoff Depth=1.74"
Tc=6.0 min CN=87 Runoff=1.62 cfs 0.115 af**Subcatchment12S: 3C**Runoff Area=16,117 sf 100.00% Impervious Runoff Depth=2.77"
Tc=6.0 min CN=98 Runoff=1.07 cfs 0.085 af**Reach 2R: POI 1**Inflow=3.53 cfs 0.626 af
Outflow=3.53 cfs 0.626 af**Reach 8R: POI 2**Inflow=3.72 cfs 0.331 af
Outflow=3.72 cfs 0.331 af**Pond 7P: Existing Detention Pond**Peak Elev=67.72' Storage=2,525 cf Inflow=2.25 cfs 0.166 af
12.0" x 190.0' Culvert Outflow=1.39 cfs 0.131 af**Pond 10P: Existing CB**Inflow=0.29 cfs 0.023 af
Primary=0.29 cfs 0.023 af**Total Runoff Area = 7.952 ac Runoff Volume = 0.992 af Average Runoff Depth = 1.50"**
88.16% Pervious = 7.010 ac 11.84% Impervious = 0.942 ac

SP-M104 2-3-14 PRE DEVELOPMENT

Type III 24-hr 2-YR Rainfall=3.00"

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Summary for Subcatchment 1S: 1

Runoff = 3.53 cfs @ 12.79 hrs, Volume= 0.626 af, Depth= 1.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Type III 24-hr 2-YR Rainfall=3.00"

	Area (sf)	CN	Description
*	5,793	89	Gravel Pavement
	72,222	84	Pasture/grassland/range, Fair, HSG D
	170,929	79	Pasture/grassland/range, Fair, HSG C
	248,944	81	Weighted Average
	248,944		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
40.5	137	0.0030	0.06		Sheet Flow, AB Grass: Dense n= 0.240 P2= 3.00"
14.1	420	0.0050	0.49		Shallow Concentrated Flow, BC Short Grass Pasture Kv= 7.0 fps
2.1	147	0.0270	1.15		Shallow Concentrated Flow, CD Short Grass Pasture Kv= 7.0 fps
56.7	704	Total			

Summary for Subcatchment 3S: 2

Runoff = 0.68 cfs @ 12.09 hrs, Volume= 0.049 af, Depth= 1.25"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Type III 24-hr 2-YR Rainfall=3.00"

	Area (sf)	CN	Description
*	4,035	89	Gravel Pavement
	7,035	79	50-75% Grass cover, Fair, HSG C
*	1,668	98	Impervious Pavement
	7,840	73	Woods, Fair, HSG C
	20,578	80	Weighted Average
	18,910		Pervious Area
	1,668		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	90	0.0167	1.21		Sheet Flow, AB Smooth surfaces n= 0.011 P2= 3.00"
2.3	215	0.0090	1.53		Shallow Concentrated Flow, BC Unpaved Kv= 16.1 fps
3.5	305	Total, Increased to minimum Tc = 6.0 min			

SP-M104 2-3-14 PRE DEVELOPMENT

Type III 24-hr 2-YR Rainfall=3.00"

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Summary for Subcatchment 5S: 3A

Runoff = 1.28 cfs @ 12.09 hrs, Volume= 0.094 af, Depth= 2.25"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Type III 24-hr 2-YR Rainfall=3.00"

	Area (sf)	CN	Description
*	3,377	74	Pervious Pond Area
*	725	74	Existing Land Scaped Area
*	16,973	98	Impervious Pavement
*	741	98	Smaller Building
	21,816	93	Weighted Average
	4,102		Pervious Area
	17,714		Impervious Area

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

Summary for Subcatchment 8S: 3B

Runoff = 0.29 cfs @ 12.08 hrs, Volume= 0.023 af, Depth= 2.77"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Type III 24-hr 2-YR Rainfall=3.00"

	Area (sf)	CN	Description
*	4,298	98	Impervious
	4,298		Impervious Area

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

Summary for Subcatchment 11S: 4

Runoff = 1.62 cfs @ 12.09 hrs, Volume= 0.115 af, Depth= 1.74"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Type III 24-hr 2-YR Rainfall=3.00"

	Area (sf)	CN	Description
*	24,611	89	Gravel Pavement
	8,799	79	50-75% Grass cover, Fair, HSG C
*	1,220	98	Pavement
	34,630	87	Weighted Average
	33,410		Pervious Area
	1,220		Impervious Area

SP-M104 2-3-14 PRE DEVELOPMENT

Type III 24-hr 2-YR Rainfall=3.00"

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

Summary for Subcatchment 12S: 3C

Runoff = 1.07 cfs @ 12.08 hrs, Volume= 0.085 af, Depth= 2.77"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Type III 24-hr 2-YR Rainfall=3.00"

Area (sf)	CN	Description
* 16,117	98	Impervious
16,117		Impervious Area

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

Summary for Reach 2R: POI 1

Inflow Area = 5.715 ac, 0.00% Impervious, Inflow Depth = 1.31" for 2-YR event

Inflow = 3.53 cfs @ 12.79 hrs, Volume= 0.626 af

Outflow = 3.53 cfs @ 12.79 hrs, Volume= 0.626 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Summary for Reach 8R: POI 2

Inflow Area = 2.237 ac, 42.10% Impervious, Inflow Depth = 1.78" for 2-YR event

Inflow = 3.72 cfs @ 12.11 hrs, Volume= 0.331 af

Outflow = 3.72 cfs @ 12.11 hrs, Volume= 0.331 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Summary for Pond 7P: Existing Detention Pond

Inflow Area = 1.072 ac, 50.72% Impervious, Inflow Depth = 1.86" for 2-YR event

Inflow = 2.25 cfs @ 12.09 hrs, Volume= 0.166 af

Outflow = 1.39 cfs @ 12.19 hrs, Volume= 0.131 af, Atten= 38%, Lag= 6.2 min

Primary = 1.39 cfs @ 12.19 hrs, Volume= 0.131 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Peak Elev= 67.72' @ 12.19 hrs Surf.Area= 1,549 sf Storage= 2,525 cf

Plug-Flow detention time= 156.9 min calculated for 0.131 af (79% of inflow)

Center-of-Mass det. time= 76.9 min (881.9 - 805.0)

SP-M104 2-3-14 PRE DEVELOPMENT

Type III 24-hr 2-YR Rainfall=3.00"

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Volume	Invert	Avail.Storage	Storage Description
#1	65.00'	4,848 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
65.00	432	0	0
66.00	740	586	586
67.00	1,171	956	1,542
68.00	1,693	1,432	2,974
69.00	2,056	1,875	4,848

Device	Routing	Invert	Outlet Devices
#1	Primary	67.00'	12.0" x 190.0' long Culvert CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 66.05' S= 0.0050 '/' Cc= 0.900 n= 0.012

Primary OutFlow Max=1.39 cfs @ 12.19 hrs HW=67.72' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 1.39 cfs @ 2.28 fps)**Summary for Pond 10P: Existing CB**

Inflow Area = 0.099 ac, 100.00% Impervious, Inflow Depth = 2.77" for 2-YR event
 Inflow = 0.29 cfs @ 12.08 hrs, Volume= 0.023 af
 Primary = 0.29 cfs @ 12.08 hrs, Volume= 0.023 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

SP-M104 2-3-14 PRE DEVELOPMENT*Type III 24-hr 10-YR Rainfall=4.70"*

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Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: 1Runoff Area=248,944 sf 0.00% Impervious Runoff Depth=2.72"
Flow Length=704' Tc=56.7 min CN=81 Runoff=7.44 cfs 1.296 af**Subcatchment3S: 2**Runoff Area=20,578 sf 8.11% Impervious Runoff Depth=2.63"
Flow Length=305' Tc=6.0 min CN=80 Runoff=1.46 cfs 0.104 af**Subcatchment5S: 3A**Runoff Area=21,816 sf 81.20% Impervious Runoff Depth=3.90"
Tc=6.0 min CN=93 Runoff=2.16 cfs 0.163 af**Subcatchment8S: 3B**Runoff Area=4,298 sf 100.00% Impervious Runoff Depth=4.46"
Tc=6.0 min CN=98 Runoff=0.45 cfs 0.037 af**Subcatchment11S: 4**Runoff Area=34,630 sf 3.52% Impervious Runoff Depth=3.29"
Tc=6.0 min CN=87 Runoff=3.01 cfs 0.218 af**Subcatchment12S: 3C**Runoff Area=16,117 sf 100.00% Impervious Runoff Depth=4.46"
Tc=6.0 min CN=98 Runoff=1.70 cfs 0.138 af**Reach 2R: POI 1**Inflow=7.44 cfs 1.296 af
Outflow=7.44 cfs 1.296 af**Reach 8R: POI 2**Inflow=6.94 cfs 0.623 af
Outflow=6.94 cfs 0.623 af**Pond 7P: Existing Detention Pond**Peak Elev=68.24' Storage=3,389 cf Inflow=4.07 cfs 0.303 af
12.0' x 190.0' Culvert Outflow=2.57 cfs 0.268 af**Pond 10P: Existing CB**Inflow=0.45 cfs 0.037 af
Primary=0.45 cfs 0.037 af**Total Runoff Area = 7.952 ac Runoff Volume = 1.955 af Average Runoff Depth = 2.95"**
88.16% Pervious = 7.010 ac 11.84% Impervious = 0.942 ac

SP-M104 2-3-14 PRE DEVELOPMENT

Type III 24-hr 10-YR Rainfall=4.70"

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Summary for Subcatchment 1S: 1

Runoff = 7.44 cfs @ 12.78 hrs, Volume= 1.296 af, Depth= 2.72"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Type III 24-hr 10-YR Rainfall=4.70"

	Area (sf)	CN	Description
*	5,793	89	Gravel Pavement
	72,222	84	Pasture/grassland/range, Fair, HSG D
	170,929	79	Pasture/grassland/range, Fair, HSG C
	248,944	81	Weighted Average
	248,944		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
40.5	137	0.0030	0.06		Sheet Flow, AB Grass: Dense n= 0.240 P2= 3.00"
14.1	420	0.0050	0.49		Shallow Concentrated Flow, BC Short Grass Pasture Kv= 7.0 fps
2.1	147	0.0270	1.15		Shallow Concentrated Flow, CD Short Grass Pasture Kv= 7.0 fps
56.7	704	Total			

Summary for Subcatchment 3S: 2

Runoff = 1.46 cfs @ 12.09 hrs, Volume= 0.104 af, Depth= 2.63"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Type III 24-hr 10-YR Rainfall=4.70"

	Area (sf)	CN	Description
*	4,035	89	Gravel Pavement
	7,035	79	50-75% Grass cover, Fair, HSG C
*	1,668	98	Impervious Pavement
	7,840	73	Woods, Fair, HSG C
	20,578	80	Weighted Average
	18,910		Pervious Area
	1,668		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	90	0.0167	1.21		Sheet Flow, AB Smooth surfaces n= 0.011 P2= 3.00"
2.3	215	0.0090	1.53		Shallow Concentrated Flow, BC Unpaved Kv= 16.1 fps
3.5	305	Total, Increased to minimum Tc = 6.0 min			

SP-M104 2-3-14 PRE DEVELOPMENT

Type III 24-hr 10-YR Rainfall=4.70"

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Summary for Subcatchment 5S: 3A

Runoff = 2.16 cfs @ 12.08 hrs, Volume= 0.163 af, Depth= 3.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Type III 24-hr 10-YR Rainfall=4.70"

	Area (sf)	CN	Description
*	3,377	74	Pervious Pond Area
*	725	74	Existing Land Scaped Area
*	16,973	98	Impervious Pavement
*	741	98	Smaller Building
	21,816	93	Weighted Average
	4,102		Pervious Area
	17,714		Impervious Area

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

Summary for Subcatchment 8S: 3B

Runoff = 0.45 cfs @ 12.08 hrs, Volume= 0.037 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Type III 24-hr 10-YR Rainfall=4.70"

	Area (sf)	CN	Description
*	4,298	98	Impervious
	4,298		Impervious Area

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

Summary for Subcatchment 11S: 4

Runoff = 3.01 cfs @ 12.09 hrs, Volume= 0.218 af, Depth= 3.29"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Type III 24-hr 10-YR Rainfall=4.70"

	Area (sf)	CN	Description
*	24,611	89	Gravel Pavement
	8,799	79	50-75% Grass cover, Fair, HSG C
*	1,220	98	Pavement
	34,630	87	Weighted Average
	33,410		Pervious Area
	1,220		Impervious Area

SP-M104 2-3-14 PRE DEVELOPMENT

Type III 24-hr 10-YR Rainfall=4.70"

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

Summary for Subcatchment 12S: 3C

Runoff = 1.70 cfs @ 12.08 hrs, Volume= 0.138 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-YR Rainfall=4.70"

Area (sf)	CN	Description
* 16,117	98	Impervious
16,117		Impervious Area

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

Summary for Reach 2R: POI 1

Inflow Area = 5.715 ac, 0.00% Impervious, Inflow Depth = 2.72" for 10-YR event
 Inflow = 7.44 cfs @ 12.78 hrs, Volume= 1.296 af
 Outflow = 7.44 cfs @ 12.78 hrs, Volume= 1.296 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Summary for Reach 8R: POI 2

Inflow Area = 2.237 ac, 42.10% Impervious, Inflow Depth = 3.34" for 10-YR event
 Inflow = 6.94 cfs @ 12.10 hrs, Volume= 0.623 af
 Outflow = 6.94 cfs @ 12.10 hrs, Volume= 0.623 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Summary for Pond 7P: Existing Detention Pond

Inflow Area = 1.072 ac, 50.72% Impervious, Inflow Depth = 3.40" for 10-YR event
 Inflow = 4.07 cfs @ 12.09 hrs, Volume= 0.303 af
 Outflow = 2.57 cfs @ 12.18 hrs, Volume= 0.268 af, Atten= 37%, Lag= 5.9 min
 Primary = 2.57 cfs @ 12.18 hrs, Volume= 0.268 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 68.24' @ 12.18 hrs Surf.Area= 1,780 sf Storage= 3,389 cfPlug-Flow detention time= 110.2 min calculated for 0.268 af (88% of inflow)
Center-of-Mass det. time= 55.3 min (846.9 - 791.5)

SP-M104 2-3-14 PRE DEVELOPMENT

Type III 24-hr 10-YR Rainfall=4.70"

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Volume	Invert	Avail.Storage	Storage Description
#1	65.00'	4,848 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
65.00	432	0	0
66.00	740	586	586
67.00	1,171	956	1,542
68.00	1,693	1,432	2,974
69.00	2,056	1,875	4,848

Device	Routing	Invert	Outlet Devices
#1	Primary	67.00'	12.0" x 190.0' long Culvert CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 66.05' S= 0.0050 '/' Cc= 0.900 n= 0.012

Primary OutFlow Max=2.57 cfs @ 12.18 hrs HW=68.24' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 2.57 cfs @ 3.27 fps)**Summary for Pond 10P: Existing CB**

Inflow Area = 0.099 ac, 100.00% Impervious, Inflow Depth = 4.46" for 10-YR event
 Inflow = 0.45 cfs @ 12.08 hrs, Volume= 0.037 af
 Primary = 0.45 cfs @ 12.08 hrs, Volume= 0.037 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

SP-M104 2-3-14 PRE DEVELOPMENT*Type III 24-hr 25-YR Rainfall=5.50"*

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Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: 1Runoff Area=248,944 sf 0.00% Impervious Runoff Depth=3.43"
Flow Length=704' Tc=56.7 min CN=81 Runoff=9.36 cfs 1.634 af**Subcatchment3S: 2**Runoff Area=20,578 sf 8.11% Impervious Runoff Depth=3.33"
Flow Length=305' Tc=6.0 min CN=80 Runoff=1.84 cfs 0.131 af**Subcatchment5S: 3A**Runoff Area=21,816 sf 81.20% Impervious Runoff Depth=4.69"
Tc=6.0 min CN=93 Runoff=2.57 cfs 0.196 af**Subcatchment8S: 3B**Runoff Area=4,298 sf 100.00% Impervious Runoff Depth=5.26"
Tc=6.0 min CN=98 Runoff=0.53 cfs 0.043 af**Subcatchment11S: 4**Runoff Area=34,630 sf 3.52% Impervious Runoff Depth=4.04"
Tc=6.0 min CN=87 Runoff=3.67 cfs 0.268 af**Subcatchment12S: 3C**Runoff Area=16,117 sf 100.00% Impervious Runoff Depth=5.26"
Tc=6.0 min CN=98 Runoff=1.99 cfs 0.162 af**Reach 2R: POI 1**Inflow=9.36 cfs 1.634 af
Outflow=9.36 cfs 1.634 af**Reach 8R: POI 2**Inflow=8.23 cfs 0.765 af
Outflow=8.23 cfs 0.765 af**Pond 7P: Existing Detention Pond**Peak Elev=68.49' Storage=3,848 cf Inflow=4.94 cfs 0.370 af
12.0' x 190.0' Culvert Outflow=2.86 cfs 0.335 af**Pond 10P: Existing CB**Inflow=0.53 cfs 0.043 af
Primary=0.53 cfs 0.043 af**Total Runoff Area = 7.952 ac Runoff Volume = 2.434 af Average Runoff Depth = 3.67"**
88.16% Pervious = 7.010 ac 11.84% Impervious = 0.942 ac

SP-M104 2-3-14 PRE DEVELOPMENT

Type III 24-hr 25-YR Rainfall=5.50"

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Summary for Subcatchment 1S: 1

Runoff = 9.36 cfs @ 12.78 hrs, Volume= 1.634 af, Depth= 3.43"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YR Rainfall=5.50"

	Area (sf)	CN	Description
*	5,793	89	Gravel Pavement
	72,222	84	Pasture/grassland/range, Fair, HSG D
	170,929	79	Pasture/grassland/range, Fair, HSG C
	248,944	81	Weighted Average
	248,944		Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
40.5	137	0.0030	0.06		Sheet Flow, AB Grass: Dense n= 0.240 P2= 3.00"
14.1	420	0.0050	0.49		Shallow Concentrated Flow, BC Short Grass Pasture Kv= 7.0 fps
2.1	147	0.0270	1.15		Shallow Concentrated Flow, CD Short Grass Pasture Kv= 7.0 fps
56.7	704	Total			

Summary for Subcatchment 3S: 2

Runoff = 1.84 cfs @ 12.09 hrs, Volume= 0.131 af, Depth= 3.33"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YR Rainfall=5.50"

	Area (sf)	CN	Description
*	4,035	89	Gravel Pavement
	7,035	79	50-75% Grass cover, Fair, HSG C
*	1,668	98	Impervious Pavement
	7,840	73	Woods, Fair, HSG C
	20,578	80	Weighted Average
	18,910		Pervious Area
	1,668		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.2	90	0.0167	1.21		Sheet Flow, AB Smooth surfaces n= 0.011 P2= 3.00"
2.3	215	0.0090	1.53		Shallow Concentrated Flow, BC Unpaved Kv= 16.1 fps
3.5	305	Total, Increased to minimum Tc = 6.0 min			

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Type III 24-hr 25-YR Rainfall=5.50"

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Summary for Subcatchment 5S: 3A

Runoff = 2.57 cfs @ 12.08 hrs, Volume= 0.196 af, Depth= 4.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Type III 24-hr 25-YR Rainfall=5.50"

	Area (sf)	CN	Description
*	3,377	74	Pervious Pond Area
*	725	74	Existing Land Scaped Area
*	16,973	98	Impervious Pavement
*	741	98	Smaller Building
	21,816	93	Weighted Average
	4,102		Pervious Area
	17,714		Impervious Area

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

Summary for Subcatchment 8S: 3B

Runoff = 0.53 cfs @ 12.08 hrs, Volume= 0.043 af, Depth= 5.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Type III 24-hr 25-YR Rainfall=5.50"

	Area (sf)	CN	Description
*	4,298	98	Impervious
	4,298		Impervious Area

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

Summary for Subcatchment 11S: 4

Runoff = 3.67 cfs @ 12.09 hrs, Volume= 0.268 af, Depth= 4.04"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Type III 24-hr 25-YR Rainfall=5.50"

	Area (sf)	CN	Description
*	24,611	89	Gravel Pavement
	8,799	79	50-75% Grass cover, Fair, HSG C
*	1,220	98	Pavement
	34,630	87	Weighted Average
	33,410		Pervious Area
	1,220		Impervious Area

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Type III 24-hr 25-YR Rainfall=5.50"

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

Summary for Subcatchment 12S: 3C

Runoff = 1.99 cfs @ 12.08 hrs, Volume= 0.162 af, Depth= 5.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YR Rainfall=5.50"

Area (sf)	CN	Description
* 16,117	98	Impervious
16,117		Impervious Area

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

Summary for Reach 2R: POI 1

Inflow Area = 5.715 ac, 0.00% Impervious, Inflow Depth = 3.43" for 25-YR event
 Inflow = 9.36 cfs @ 12.78 hrs, Volume= 1.634 af
 Outflow = 9.36 cfs @ 12.78 hrs, Volume= 1.634 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Summary for Reach 8R: POI 2

Inflow Area = 2.237 ac, 42.10% Impervious, Inflow Depth = 4.10" for 25-YR event
 Inflow = 8.23 cfs @ 12.09 hrs, Volume= 0.765 af
 Outflow = 8.23 cfs @ 12.09 hrs, Volume= 0.765 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Summary for Pond 7P: Existing Detention Pond

Inflow Area = 1.072 ac, 50.72% Impervious, Inflow Depth = 4.14" for 25-YR event
 Inflow = 4.94 cfs @ 12.09 hrs, Volume= 0.370 af
 Outflow = 2.86 cfs @ 12.20 hrs, Volume= 0.335 af, Atten= 42%, Lag= 6.8 min
 Primary = 2.86 cfs @ 12.20 hrs, Volume= 0.335 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Peak Elev= 68.49' @ 12.20 hrs Surf.Area= 1,871 sf Storage= 3,848 cfPlug-Flow detention time= 97.8 min calculated for 0.335 af (90% of inflow)
Center-of-Mass det. time= 50.8 min (837.8 - 787.1)

SP-M104 2-3-14 PRE DEVELOPMENT

Type III 24-hr 25-YR Rainfall=5.50"

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Volume	Invert	Avail.Storage	Storage Description
#1	65.00'	4,848 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
65.00	432	0	0
66.00	740	586	586
67.00	1,171	956	1,542
68.00	1,693	1,432	2,974
69.00	2,056	1,875	4,848

Device	Routing	Invert	Outlet Devices
#1	Primary	67.00'	12.0" x 190.0' long Culvert CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 66.05' S= 0.0050 '/' Cc= 0.900 n= 0.012

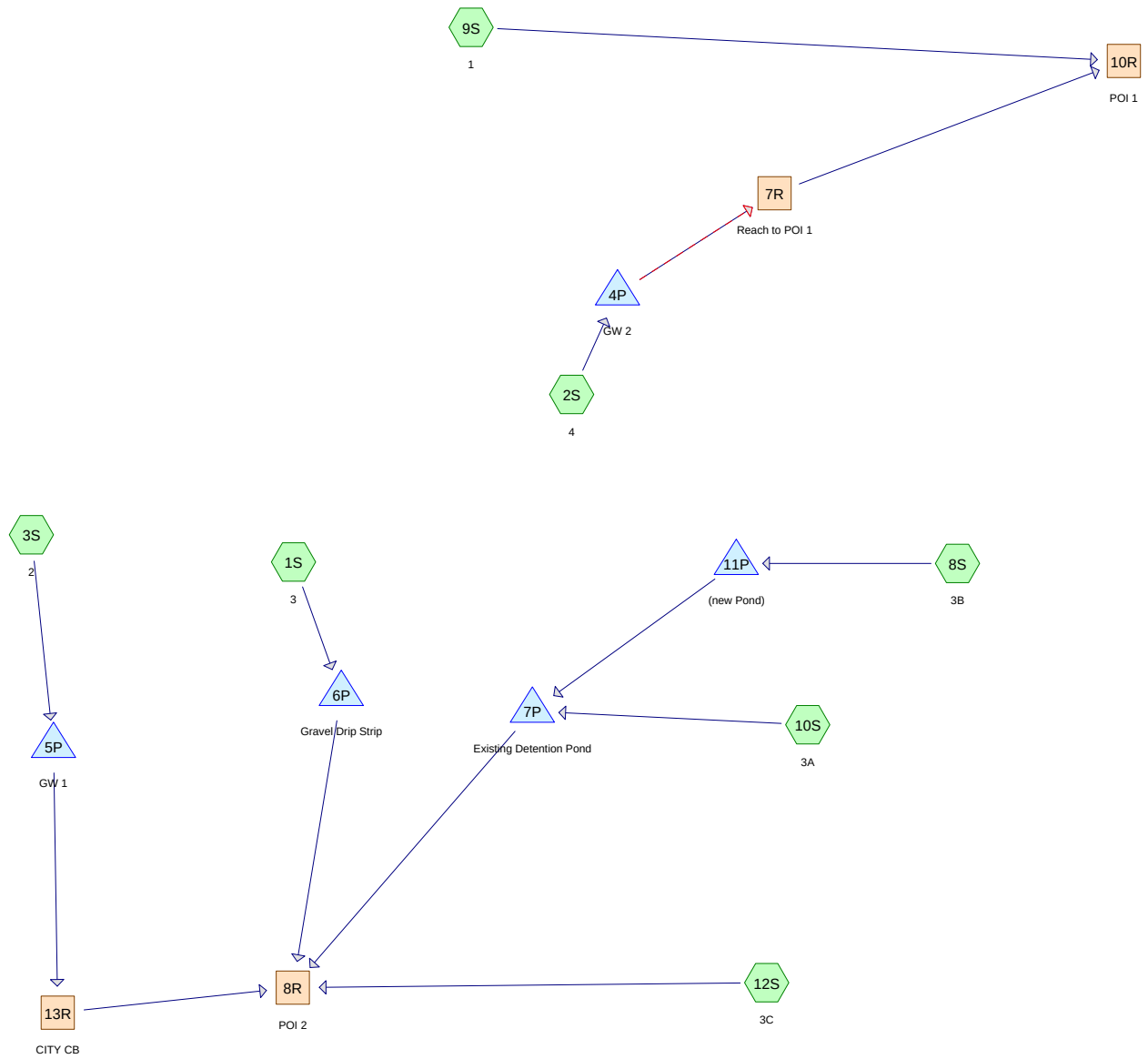
Primary OutFlow Max=2.86 cfs @ 12.20 hrs HW=68.49' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 2.86 cfs @ 3.64 fps)**Summary for Pond 10P: Existing CB**

Inflow Area = 0.099 ac, 100.00% Impervious, Inflow Depth = 5.26" for 25-YR event
 Inflow = 0.53 cfs @ 12.08 hrs, Volume= 0.043 af
 Primary = 0.53 cfs @ 12.08 hrs, Volume= 0.043 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

APPENDIX C

POSTDEVELOPMENT COMPUTATIONS (2, 10 AND 25-YEAR STORM EVENT HYDROCAD COMPUTATIONS)



Drainage Diagram for SP-M104-1-31-14 POST DEVELOPMENT MODEL

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SP-M104-1-31-14 POST DEVELOPMENT MODEL

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.337	74	>75% Grass cover, Good, HSG C (2S)
0.017	74	Existing Land Scaped Area (10S)
0.078	74	Pervious Pond Area (10S)
0.227	74	Proposed Land Scape (3S)
3.256	79	Pasture/grassland/range, Fair, HSG C (9S)
1.121	84	Pasture/grassland/range, Fair, HSG D WETLAND (9S)
0.093	89	Gravel Drip Strip Area (1S)
0.133	89	Gravel Pavement (9S)
0.469	98	Impervious (8S,12S)
0.407	98	Impervious Pavement (10S)
1.170	98	Pavement (2S,3S)
0.643	98	Proposed Building (1S)
7.948		TOTAL AREA

SP-M104-1-31-14 POST DEVELOPMENT MODEL

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Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
3.593	HSG C	2S, 9S
1.121	HSG D	9S
3.234	Other	1S, 2S, 3S, 8S, 9S, 10S, 12S
7.948		TOTAL AREA

SP-M104-1-31-14 POST DEVELOPMENT MODEL*Type III 24-hr 2-YR Rainfall=3.00"*

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Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: 3	Runoff Area=32,040 sf 87.39% Impervious Runoff Depth=2.66" Tc=6.0 min CN=97 Runoff=2.10 cfs 0.163 af
Subcatchment2S: 4	Runoff Area=52,272 sf 71.92% Impervious Runoff Depth=2.07" Flow Length=455' Tc=6.0 min CN=91 Runoff=2.87 cfs 0.207 af
Subcatchment3S: 2	Runoff Area=23,229 sf 57.51% Impervious Runoff Depth=1.82" Flow Length=190' Tc=6.0 min CN=88 Runoff=1.13 cfs 0.081 af
Subcatchment8S: 3B	Runoff Area=4,298 sf 100.00% Impervious Runoff Depth=2.77" Tc=6.0 min CN=98 Runoff=0.29 cfs 0.023 af
Subcatchment9S: 1	Runoff Area=196,458 sf 0.00% Impervious Runoff Depth=1.31" Flow Length=704' Tc=56.7 min CN=81 Runoff=2.79 cfs 0.494 af
Subcatchment10S: 3A	Runoff Area=21,816 sf 81.20% Impervious Runoff Depth=2.25" Tc=6.0 min CN=93 Runoff=1.28 cfs 0.094 af
Subcatchment12S: 3C	Runoff Area=16,113 sf 100.00% Impervious Runoff Depth=2.77" Tc=6.0 min CN=98 Runoff=1.07 cfs 0.085 af
Reach 7R: Reach to POI 1	Avg. Depth=0.05' Max Vel=0.06 fps Inflow=1.05 cfs 0.207 af n=0.400 L=364.0' S=0.0140 ' /' Capacity=3.26 cfs Outflow=0.28 cfs 0.205 af
Reach 8R: POI 2	Inflow=2.72 cfs 0.410 af Outflow=2.72 cfs 0.410 af
Reach 10R: POI 1	Inflow=3.04 cfs 0.699 af Outflow=3.04 cfs 0.699 af
Reach 13R: CITY CB	Inflow=0.36 cfs 0.081 af Outflow=0.36 cfs 0.081 af
Pond 4P: GW 2	Peak Elev=69.11' Storage=3,949 cf Inflow=2.87 cfs 0.207 af Primary=0.99 cfs 0.078 af Secondary=0.06 cfs 0.129 af Outflow=1.05 cfs 0.207 af
Pond 5P: GW 1	Peak Elev=69.10' Storage=1,534 cf Inflow=1.13 cfs 0.081 af Outflow=0.36 cfs 0.081 af
Pond 6P: Gravel Drip Strip	Peak Elev=70.27' Storage=438 cf Inflow=2.10 cfs 0.163 af 6.0" x 51.0' Culvert Outflow=1.15 cfs 0.163 af
Pond 7P: Existing Detention Pond	Peak Elev=67.52' Storage=2,223 cf Inflow=1.57 cfs 0.117 af 12.0" x 190.0' Culvert Outflow=0.80 cfs 0.081 af
Pond 11P: (new Pond)	Inflow=0.29 cfs 0.023 af Primary=0.29 cfs 0.023 af

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Type III 24-hr 2-YR Rainfall=3.00"

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Total Runoff Area = 7.948 ac Runoff Volume = 1.147 af Average Runoff Depth = 1.73"
66.19% Pervious = 5.261 ac 33.81% Impervious = 2.688 ac

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Type III 24-hr 2-YR Rainfall=3.00"

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Summary for Subcatchment 1S: 3

Runoff = 2.10 cfs @ 12.08 hrs, Volume= 0.163 af, Depth= 2.66"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Type III 24-hr 2-YR Rainfall=3.00"

	Area (sf)	CN	Description
*	28,000	98	Proposed Building
*	4,040	89	Gravel Drip Strip Area
	32,040	97	Weighted Average
	4,040		Pervious Area
	28,000		Impervious Area

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

Summary for Subcatchment 2S: 4

Runoff = 2.87 cfs @ 12.09 hrs, Volume= 0.207 af, Depth= 2.07"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Type III 24-hr 2-YR Rainfall=3.00"

	Area (sf)	CN	Description
*	37,592	98	Pavement
	14,680	74	>75% Grass cover, Good, HSG C
	52,272	91	Weighted Average
	14,680		Pervious Area
	37,592		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	135	0.0111	1.12		Sheet Flow, AB Smooth surfaces n= 0.011 P2= 3.00"
1.2	130	0.0077	1.78		Shallow Concentrated Flow, BC Paved Kv= 20.3 fps
2.6	190	0.0068	1.24		Shallow Concentrated Flow, CD Grassed Waterway Kv= 15.0 fps
5.8	455	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 3S: 2

Runoff = 1.13 cfs @ 12.09 hrs, Volume= 0.081 af, Depth= 1.82"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Type III 24-hr 2-YR Rainfall=3.00"

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Type III 24-hr 2-YR Rainfall=3.00"

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	Area (sf)	CN	Description
*	13,358	98	Pavement
*	9,871	74	Proposed Land Scape
	23,229	88	Weighted Average
	9,871		Pervious Area
	13,358		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	85	0.0222	1.34		Sheet Flow, AB
					Smooth surfaces n= 0.011 P2= 3.00"
1.1	105	0.0058	1.55		Shallow Concentrated Flow, BC
					Paved Kv= 20.3 fps
2.2	190	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 8S: 3B

Runoff = 0.29 cfs @ 12.08 hrs, Volume= 0.023 af, Depth= 2.77"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YR Rainfall=3.00"

	Area (sf)	CN	Description
*	4,298	98	Impervious
	4,298		Impervious Area

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

Summary for Subcatchment 9S: 1

Runoff = 2.79 cfs @ 12.79 hrs, Volume= 0.494 af, Depth= 1.31"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YR Rainfall=3.00"

	Area (sf)	CN	Description
*	5,796	89	Gravel Pavement
	141,841	79	Pasture/grassland/range, Fair, HSG C
*	48,821	84	Pasture/grassland/range, Fair, HSG D WETLAND
	196,458	81	Weighted Average
	196,458		Pervious Area

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Type III 24-hr 2-YR Rainfall=3.00"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
40.5	137	0.0030	0.06		Sheet Flow, AB Grass: Dense n= 0.240 P2= 3.00"
14.1	420	0.0050	0.49		Shallow Concentrated Flow, BC Short Grass Pasture Kv= 7.0 fps
2.1	147	0.0272	1.15		Shallow Concentrated Flow, CD Short Grass Pasture Kv= 7.0 fps
56.7	704	Total			

Summary for Subcatchment 10S: 3A

Runoff = 1.28 cfs @ 12.09 hrs, Volume= 0.094 af, Depth= 2.25"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YR Rainfall=3.00"

Area (sf)	CN	Description
* 3,377	74	Pervious Pond Area
* 725	74	Existing Land Scaped Area
* 17,714	98	Impervious Pavement
21,816	93	Weighted Average
4,102		Pervious Area
17,714		Impervious Area

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

Summary for Subcatchment 12S: 3C

Runoff = 1.07 cfs @ 12.08 hrs, Volume= 0.085 af, Depth= 2.77"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 2-YR Rainfall=3.00"

Area (sf)	CN	Description
* 16,113	98	Impervious
16,113		Impervious Area

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

Summary for Reach 7R: Reach to POI 1

Inflow Area = 1.200 ac, 71.92% Impervious, Inflow Depth > 2.07" for 2-YR event
 Inflow = 1.05 cfs @ 12.35 hrs, Volume= 0.207 af
 Outflow = 0.28 cfs @ 13.17 hrs, Volume= 0.205 af, Atten= 73%, Lag= 49.0 min

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Type III 24-hr 2-YR Rainfall=3.00"

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Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Max. Velocity= 0.06 fps, Min. Travel Time= 108.0 min

Avg. Velocity = 0.02 fps, Avg. Travel Time= 287.2 min

Peak Storage= 1,820 cf @ 13.17 hrs, Average Depth at Peak Storage= 0.05'

Bank-Full Depth= 0.20', Capacity at Bank-Full= 3.26 cfs

100.00' x 0.20' deep channel, n= 0.400 Sheet flow: Woods+light brush

Side Slope Z-value= 100.0 '/' Top Width= 140.00'

Length= 364.0' Slope= 0.0140 '/'

Inlet Invert= 68.10', Outlet Invert= 63.00'

**Summary for Reach 8R: POI 2**

Inflow Area = 2.238 ac, 81.52% Impervious, Inflow Depth = 2.20" for 2-YR event

Inflow = 2.72 cfs @ 12.13 hrs, Volume= 0.410 af

Outflow = 2.72 cfs @ 12.13 hrs, Volume= 0.410 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Summary for Reach 10R: POI 1

Inflow Area = 5.710 ac, 15.11% Impervious, Inflow Depth > 1.47" for 2-YR event

Inflow = 3.04 cfs @ 12.80 hrs, Volume= 0.699 af

Outflow = 3.04 cfs @ 12.80 hrs, Volume= 0.699 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Summary for Reach 13R: CITY CB

Inflow Area = 0.533 ac, 57.51% Impervious, Inflow Depth > 1.82" for 2-YR event

Inflow = 0.36 cfs @ 12.42 hrs, Volume= 0.081 af

Outflow = 0.36 cfs @ 12.42 hrs, Volume= 0.081 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Summary for Pond 4P: GW 2

Inflow Area = 1.200 ac, 71.92% Impervious, Inflow Depth = 2.07" for 2-YR event

Inflow = 2.87 cfs @ 12.09 hrs, Volume= 0.207 af

Outflow = 1.05 cfs @ 12.35 hrs, Volume= 0.207 af, Atten= 64%, Lag= 16.0 min

Primary = 0.99 cfs @ 12.35 hrs, Volume= 0.078 af

Secondary = 0.06 cfs @ 12.35 hrs, Volume= 0.129 af

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Type III 24-hr 2-YR Rainfall=3.00"

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Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Peak Elev= 69.11' @ 12.35 hrs Surf.Area= 10,847 sf Storage= 3,949 cf

Plug-Flow detention time= 493.0 min calculated for 0.206 af (100% of inflow)

Center-of-Mass det. time= 492.0 min (1,296.9 - 804.9)

Volume	Invert	Avail.Storage	Storage Description
#1	68.50'	8,618 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2	68.17'	634 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
			1,584 cf Overall x 40.0% Voids
			9,252 cf Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
68.50	4,800	0	0
69.00	5,866	2,667	2,667
69.90	7,360	5,952	8,618

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
68.17	4,800	0	0
68.50	4,800	1,584	1,584

Device	Routing	Invert	Outlet Devices
#1	Primary	69.00'	10.0' 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
#2	Secondary	68.17'	6.0" x 20.0' long Culvert CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 68.10' S= 0.0035 '/' Cc= 0.900 n= 0.012
#3	Device 2	68.17'	1.5" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.99 cfs @ 12.35 hrs HW=69.11' TW=68.12' (Dynamic Tailwater)↑**1=Broad-Crested Rectangular Weir** (Weir Controls 0.99 cfs @ 0.91 fps)**Secondary OutFlow** Max=0.06 cfs @ 12.35 hrs HW=69.11' TW=68.12' (Dynamic Tailwater)↑**2=Culvert** (Passes 0.06 cfs of 0.62 cfs potential flow)↑**3=Orifice/Grate** (Orifice Controls 0.06 cfs @ 4.51 fps)**Summary for Pond 5P: GW 1**

Inflow Area = 0.533 ac, 57.51% Impervious, Inflow Depth = 1.82" for 2-YR event
 Inflow = 1.13 cfs @ 12.09 hrs, Volume= 0.081 af
 Outflow = 0.36 cfs @ 12.42 hrs, Volume= 0.081 af, Atten= 68%, Lag= 19.6 min
 Primary = 0.36 cfs @ 12.42 hrs, Volume= 0.081 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Peak Elev= 69.10' @ 12.42 hrs Surf.Area= 4,764 sf Storage= 1,534 cf

Plug-Flow detention time= 406.5 min calculated for 0.081 af (100% of inflow)

Center-of-Mass det. time= 405.5 min (1,223.3 - 817.7)

SP-M104-1-31-14 POST DEVELOPMENT MODEL

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Volume	Invert	Avail.Storage	Storage Description
#1	68.50'	3,573 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2	68.17'	307 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
			767 cf Overall x 40.0% Voids
			3,880 cf Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
68.50	1,670	0	0
69.00	2,325	999	999
69.90	3,396	2,574	3,573

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
68.17	2,325	0	0
68.50	2,325	767	767

Device	Routing	Invert	Outlet Devices
#1	Device 4	68.17'	6.0" x 18.0' long Culvert CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 68.10' S= 0.0039 '/' Cc= 0.900 n= 0.012
#2	Device 1	68.17'	1.1" Vert. Orifice/Grate C= 0.600
#3	Device 5	68.50'	12.0" x 18.0' long Culvert CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 68.50' S= 0.0000 '/' Cc= 0.900 n= 0.012
#4	Primary	67.00'	12.0" x 140.0' long Culvert CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 66.30' S= 0.0050 '/' Cc= 0.900 n= 0.012
#5	Device 4	69.00'	4.0' 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=0.36 cfs @ 12.42 hrs HW=69.10' TW=0.00' (Dynamic Tailwater)

4=Culvert (Passes 0.36 cfs of 3.55 cfs potential flow)
 1=Culvert (Passes 0.03 cfs of 0.61 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 0.03 cfs @ 4.52 fps)
 5=Broad-Crested Rectangular Weir (Weir Controls 0.33 cfs @ 0.85 fps)
 3=Culvert (Passes 0.33 cfs of 0.54 cfs potential flow)

Summary for Pond 6P: Gravel Drip Strip

Inflow Area = 0.736 ac, 87.39% Impervious, Inflow Depth = 2.66" for 2-YR event
 Inflow = 2.10 cfs @ 12.08 hrs, Volume= 0.163 af
 Outflow = 1.15 cfs @ 12.21 hrs, Volume= 0.163 af, Atten= 45%, Lag= 7.3 min
 Primary = 1.15 cfs @ 12.21 hrs, Volume= 0.163 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
 Peak Elev= 70.27' @ 12.21 hrs Surf.Area= 4,040 sf Storage= 438 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 1.3 min (769.0 - 767.7)

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Type III 24-hr 2-YR Rainfall=3.00"

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Volume	Invert	Avail.Storage	Storage Description
#1	70.50'	2,424 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 6,060 cf Overall x 40.0% Voids
#2	70.00'	808 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 2,020 cf Overall x 40.0% Voids
		3,232 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
70.50	4,040	0	0
72.00	4,040	6,060	6,060

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
70.00	4,040	0	0
70.50	4,040	2,020	2,020

Device	Routing	Invert	Outlet Devices
#1	Primary	67.17'	6.0" x 51.0' long Culvert CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 66.92' S= 0.0049 '/' Cc= 0.900 n= 0.012

Primary OutFlow Max=1.15 cfs @ 12.21 hrs HW=70.27' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 1.15 cfs @ 5.86 fps)**Summary for Pond 7P: Existing Detention Pond**

Inflow Area = 0.599 ac, 84.29% Impervious, Inflow Depth = 2.34" for 2-YR event
 Inflow = 1.57 cfs @ 12.09 hrs, Volume= 0.117 af
 Outflow = 0.80 cfs @ 12.23 hrs, Volume= 0.081 af, Atten= 49%, Lag= 8.5 min
 Primary = 0.80 cfs @ 12.23 hrs, Volume= 0.081 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Peak Elev= 67.52' @ 12.23 hrs Surf.Area= 1,443 sf Storage= 2,223 cf

Plug-Flow detention time= 197.3 min calculated for 0.081 af (70% of inflow)

Center-of-Mass det. time= 104.1 min (891.8 - 787.7)

Volume	Invert	Avail.Storage	Storage Description
#1	65.00'	4,848 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
65.00	432	0	0
66.00	740	586	586
67.00	1,171	956	1,542
68.00	1,693	1,432	2,974
69.00	2,056	1,875	4,848

Device	Routing	Invert	Outlet Devices
#1	Primary	67.00'	12.0" x 190.0' long Culvert

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CPP, projecting, no headwall, $K_e = 0.900$ Outlet Invert= 66.05' $S = 0.0050$ ' $C_c = 0.900$ $n = 0.012$ **Primary OutFlow** Max=0.80 cfs @ 12.23 hrs HW=67.52' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 0.80 cfs @ 1.94 fps)**Summary for Pond 11P: (new Pond)**

Inflow Area = 0.099 ac, 100.00% Impervious, Inflow Depth = 2.77" for 2-YR event

Inflow = 0.29 cfs @ 12.08 hrs, Volume= 0.023 af

Primary = 0.29 cfs @ 12.08 hrs, Volume= 0.023 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

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Runoff by SCS TR-20 method, UH=SCS

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: 3	Runoff Area=32,040 sf 87.39% Impervious Runoff Depth=4.35" Tc=6.0 min CN=97 Runoff=3.35 cfs 0.267 af
Subcatchment2S: 4	Runoff Area=52,272 sf 71.92% Impervious Runoff Depth=3.69" Flow Length=455' Tc=6.0 min CN=91 Runoff=4.98 cfs 0.369 af
Subcatchment3S: 2	Runoff Area=23,229 sf 57.51% Impervious Runoff Depth=3.38" Flow Length=190' Tc=6.0 min CN=88 Runoff=2.07 cfs 0.150 af
Subcatchment8S: 3B	Runoff Area=4,298 sf 100.00% Impervious Runoff Depth=4.46" Tc=6.0 min CN=98 Runoff=0.45 cfs 0.037 af
Subcatchment9S: 1	Runoff Area=196,458 sf 0.00% Impervious Runoff Depth=2.72" Flow Length=704' Tc=56.7 min CN=81 Runoff=5.87 cfs 1.023 af
Subcatchment10S: 3A	Runoff Area=21,816 sf 81.20% Impervious Runoff Depth=3.90" Tc=6.0 min CN=93 Runoff=2.16 cfs 0.163 af
Subcatchment12S: 3C	Runoff Area=16,113 sf 100.00% Impervious Runoff Depth=4.46" Tc=6.0 min CN=98 Runoff=1.70 cfs 0.138 af
Reach 7R: Reach to POI 1	Avg. Depth=0.11' Max Vel=0.10 fps Inflow=3.90 cfs 0.369 af n=0.400 L=364.0' S=0.0140 '/' Capacity=3.26 cfs Outflow=1.18 cfs 0.367 af
Reach 8R: POI 2	Inflow=5.63 cfs 0.719 af Outflow=5.63 cfs 0.719 af
Reach 10R: POI 1	Inflow=6.98 cfs 1.390 af Outflow=6.98 cfs 1.390 af
Reach 13R: CITY CB	Inflow=1.22 cfs 0.150 af Outflow=1.22 cfs 0.150 af
Pond 4P: GW 2	Peak Elev=69.27' Storage=4,927 cf Inflow=4.98 cfs 0.369 af Primary=3.84 cfs 0.228 af Secondary=0.06 cfs 0.141 af Outflow=3.90 cfs 0.369 af
Pond 5P: GW 1	Peak Elev=69.31' Storage=2,082 cf Inflow=2.07 cfs 0.150 af Outflow=1.22 cfs 0.150 af
Pond 6P: Gravel Drip Strip	Peak Elev=70.88' Storage=1,426 cf Inflow=3.35 cfs 0.267 af 6.0" x 51.0' Culvert Outflow=1.27 cfs 0.267 af
Pond 7P: Existing Detention Pond	Peak Elev=67.87' Storage=2,761 cf Inflow=2.61 cfs 0.200 af 12.0" x 190.0' Culvert Outflow=1.82 cfs 0.164 af
Pond 11P: (new Pond)	Inflow=0.45 cfs 0.037 af Primary=0.45 cfs 0.037 af

SP-M104-1-31-14 POST DEVELOPMENT MODEL

Type III 24-hr 10-YR Rainfall=4.70"

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Total Runoff Area = 7.948 ac Runoff Volume = 2.146 af Average Runoff Depth = 3.24"
66.19% Pervious = 5.261 ac 33.81% Impervious = 2.688 ac

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Type III 24-hr 10-YR Rainfall=4.70"

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Summary for Subcatchment 1S: 3

Runoff = 3.35 cfs @ 12.08 hrs, Volume= 0.267 af, Depth= 4.35"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-YR Rainfall=4.70"

	Area (sf)	CN	Description
*	28,000	98	Proposed Building
*	4,040	89	Gravel Drip Strip Area
	32,040	97	Weighted Average
	4,040		Pervious Area
	28,000		Impervious Area

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

Summary for Subcatchment 2S: 4

Runoff = 4.98 cfs @ 12.08 hrs, Volume= 0.369 af, Depth= 3.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-YR Rainfall=4.70"

	Area (sf)	CN	Description
*	37,592	98	Pavement
	14,680	74	>75% Grass cover, Good, HSG C
	52,272	91	Weighted Average
	14,680		Pervious Area
	37,592		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	135	0.0111	1.12		Sheet Flow, AB Smooth surfaces n= 0.011 P2= 3.00"
1.2	130	0.0077	1.78		Shallow Concentrated Flow, BC Paved Kv= 20.3 fps
2.6	190	0.0068	1.24		Shallow Concentrated Flow, CD Grassed Waterway Kv= 15.0 fps
5.8	455	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 3S: 2

Runoff = 2.07 cfs @ 12.09 hrs, Volume= 0.150 af, Depth= 3.38"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-YR Rainfall=4.70"

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Type III 24-hr 10-YR Rainfall=4.70"

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	Area (sf)	CN	Description
*	13,358	98	Pavement
*	9,871	74	Proposed Land Scape
	23,229	88	Weighted Average
	9,871		Pervious Area
	13,358		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	85	0.0222	1.34		Sheet Flow, AB Smooth surfaces n= 0.011 P2= 3.00"
1.1	105	0.0058	1.55		Shallow Concentrated Flow, BC Paved Kv= 20.3 fps
2.2	190	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 8S: 3B

Runoff = 0.45 cfs @ 12.08 hrs, Volume= 0.037 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-YR Rainfall=4.70"

	Area (sf)	CN	Description
*	4,298	98	Impervious
	4,298		Impervious Area

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

Summary for Subcatchment 9S: 1

Runoff = 5.87 cfs @ 12.78 hrs, Volume= 1.023 af, Depth= 2.72"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-YR Rainfall=4.70"

	Area (sf)	CN	Description
*	5,796	89	Gravel Pavement
	141,841	79	Pasture/grassland/range, Fair, HSG C
*	48,821	84	Pasture/grassland/range, Fair, HSG D WETLAND
	196,458	81	Weighted Average
	196,458		Pervious Area

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Type III 24-hr 10-YR Rainfall=4.70"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
40.5	137	0.0030	0.06		Sheet Flow, AB Grass: Dense n= 0.240 P2= 3.00"
14.1	420	0.0050	0.49		Shallow Concentrated Flow, BC Short Grass Pasture Kv= 7.0 fps
2.1	147	0.0272	1.15		Shallow Concentrated Flow, CD Short Grass Pasture Kv= 7.0 fps
56.7	704	Total			

Summary for Subcatchment 10S: 3A

Runoff = 2.16 cfs @ 12.08 hrs, Volume= 0.163 af, Depth= 3.90"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-YR Rainfall=4.70"

Area (sf)	CN	Description
* 3,377	74	Pervious Pond Area
* 725	74	Existing Land Scaped Area
* 17,714	98	Impervious Pavement
21,816	93	Weighted Average
4,102		Pervious Area
17,714		Impervious Area

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

Summary for Subcatchment 12S: 3C

Runoff = 1.70 cfs @ 12.08 hrs, Volume= 0.138 af, Depth= 4.46"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 10-YR Rainfall=4.70"

Area (sf)	CN	Description
* 16,113	98	Impervious
16,113		Impervious Area

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

Summary for Reach 7R: Reach to POI 1

Inflow Area = 1.200 ac, 71.92% Impervious, Inflow Depth = 3.69" for 10-YR event

Inflow = 3.90 cfs @ 12.15 hrs, Volume= 0.369 af

Outflow = 1.18 cfs @ 12.59 hrs, Volume= 0.367 af, Atten= 70%, Lag= 26.5 min

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Type III 24-hr 10-YR Rainfall=4.70"

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Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Max. Velocity= 0.10 fps, Min. Travel Time= 63.6 min

Avg. Velocity = 0.02 fps, Avg. Travel Time= 257.5 min

Peak Storage= 4,497 cf @ 12.59 hrs, Average Depth at Peak Storage= 0.11'

Bank-Full Depth= 0.20', Capacity at Bank-Full= 3.26 cfs

100.00' x 0.20' deep channel, n= 0.400 Sheet flow: Woods+light brush

Side Slope Z-value= 100.0 '/' Top Width= 140.00'

Length= 364.0' Slope= 0.0140 '/'

Inlet Invert= 68.10', Outlet Invert= 63.00'

**Summary for Reach 8R: POI 2**

Inflow Area = 2.238 ac, 81.52% Impervious, Inflow Depth = 3.85" for 10-YR event

Inflow = 5.63 cfs @ 12.12 hrs, Volume= 0.719 af

Outflow = 5.63 cfs @ 12.12 hrs, Volume= 0.719 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Summary for Reach 10R: POI 1

Inflow Area = 5.710 ac, 15.11% Impervious, Inflow Depth > 2.92" for 10-YR event

Inflow = 6.98 cfs @ 12.77 hrs, Volume= 1.390 af

Outflow = 6.98 cfs @ 12.77 hrs, Volume= 1.390 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Summary for Reach 13R: CITY CB

Inflow Area = 0.533 ac, 57.51% Impervious, Inflow Depth = 3.38" for 10-YR event

Inflow = 1.22 cfs @ 12.20 hrs, Volume= 0.150 af

Outflow = 1.22 cfs @ 12.20 hrs, Volume= 0.150 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Summary for Pond 4P: GW 2

Inflow Area = 1.200 ac, 71.92% Impervious, Inflow Depth = 3.69" for 10-YR event

Inflow = 4.98 cfs @ 12.08 hrs, Volume= 0.369 af

Outflow = 3.90 cfs @ 12.15 hrs, Volume= 0.369 af, Atten= 22%, Lag= 3.8 min

Primary = 3.84 cfs @ 12.15 hrs, Volume= 0.228 af

Secondary = 0.06 cfs @ 12.15 hrs, Volume= 0.141 af

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Type III 24-hr 10-YR Rainfall=4.70"

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Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Peak Elev= 69.27' @ 12.15 hrs Surf.Area= 11,110 sf Storage= 4,927 cf

Plug-Flow detention time= 308.5 min calculated for 0.368 af (100% of inflow)

Center-of-Mass det. time= 308.1 min (1,097.0 - 788.9)

Volume	Invert	Avail.Storage	Storage Description
#1	68.50'	8,618 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2	68.17'	634 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
		1,584 cf Overall	x 40.0% Voids
		9,252 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
68.50	4,800	0	0
69.00	5,866	2,667	2,667
69.90	7,360	5,952	8,618

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
68.17	4,800	0	0
68.50	4,800	1,584	1,584

Device	Routing	Invert	Outlet Devices
#1	Primary	69.00'	10.0' 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
#2	Secondary	68.17'	6.0" x 20.0' long Culvert CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 68.10' S= 0.0035 '/' Cc= 0.900 n= 0.012
#3	Device 2	68.17'	1.5" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=3.82 cfs @ 12.15 hrs HW=69.27' TW=68.16' (Dynamic Tailwater)↑**1=Broad-Crested Rectangular Weir** (Weir Controls 3.82 cfs @ 1.44 fps)**Secondary OutFlow** Max=0.06 cfs @ 12.15 hrs HW=69.27' TW=68.16' (Dynamic Tailwater)↑**2=Culvert** (Passes 0.06 cfs of 0.69 cfs potential flow)↑**3=Orifice/Grate** (Orifice Controls 0.06 cfs @ 4.90 fps)**Summary for Pond 5P: GW 1**

Inflow Area = 0.533 ac, 57.51% Impervious, Inflow Depth = 3.38" for 10-YR event
 Inflow = 2.07 cfs @ 12.09 hrs, Volume= 0.150 af
 Outflow = 1.22 cfs @ 12.20 hrs, Volume= 0.150 af, Atten= 41%, Lag= 6.7 min
 Primary = 1.22 cfs @ 12.20 hrs, Volume= 0.150 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Peak Elev= 69.31' @ 12.20 hrs Surf.Area= 5,018 sf Storage= 2,082 cf

Plug-Flow detention time= 258.4 min calculated for 0.150 af (100% of inflow)

Center-of-Mass det. time= 257.8 min (1,057.9 - 800.1)

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Volume	Invert	Avail.Storage	Storage Description
#1	68.50'	3,573 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2	68.17'	307 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
			767 cf Overall x 40.0% Voids
			3,880 cf Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
68.50	1,670	0	0
69.00	2,325	999	999
69.90	3,396	2,574	3,573

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
68.17	2,325	0	0
68.50	2,325	767	767

Device	Routing	Invert	Outlet Devices
#1	Device 4	68.17'	6.0" x 18.0' long Culvert CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 68.10' S= 0.0039 '/' Cc= 0.900 n= 0.012
#2	Device 1	68.17'	1.1" Vert. Orifice/Grate C= 0.600
#3	Device 5	68.50'	12.0" x 18.0' long Culvert CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 68.50' S= 0.0000 '/' Cc= 0.900 n= 0.012
#4	Primary	67.00'	12.0" x 140.0' long Culvert CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 66.30' S= 0.0050 '/' Cc= 0.900 n= 0.012
#5	Device 4	69.00'	4.0' 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=1.22 cfs @ 12.20 hrs HW=69.31' TW=0.00' (Dynamic Tailwater)

4=Culvert (Passes 1.22 cfs of 3.76 cfs potential flow)
 1=Culvert (Passes 0.03 cfs of 0.70 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 0.03 cfs @ 5.03 fps)
 5=Broad-Crested Rectangular Weir (Passes 1.18 cfs of 1.92 cfs potential flow)
 3=Culvert (Barrel Controls 1.18 cfs @ 2.37 fps)

Summary for Pond 6P: Gravel Drip Strip

Inflow Area = 0.736 ac, 87.39% Impervious, Inflow Depth = 4.35" for 10-YR event
 Inflow = 3.35 cfs @ 12.08 hrs, Volume= 0.267 af
 Outflow = 1.27 cfs @ 12.32 hrs, Volume= 0.267 af, Atten= 62%, Lag= 13.9 min
 Primary = 1.27 cfs @ 12.32 hrs, Volume= 0.267 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
 Peak Elev= 70.88' @ 12.32 hrs Surf.Area= 8,080 sf Storage= 1,426 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 4.7 min (761.7 - 757.1)

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Volume	Invert	Avail.Storage	Storage Description
#1	70.50'	2,424 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 6,060 cf Overall x 40.0% Voids
#2	70.00'	808 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 2,020 cf Overall x 40.0% Voids
		3,232 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
70.50	4,040	0	0
72.00	4,040	6,060	6,060

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
70.00	4,040	0	0
70.50	4,040	2,020	2,020

Device	Routing	Invert	Outlet Devices
#1	Primary	67.17'	6.0" x 51.0' long Culvert CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 66.92' S= 0.0049 '/' Cc= 0.900 n= 0.012

Primary OutFlow Max=1.27 cfs @ 12.32 hrs HW=70.88' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 1.27 cfs @ 6.46 fps)**Summary for Pond 7P: Existing Detention Pond**

Inflow Area = 0.599 ac, 84.29% Impervious, Inflow Depth = 4.00" for 10-YR event
 Inflow = 2.61 cfs @ 12.08 hrs, Volume= 0.200 af
 Outflow = 1.82 cfs @ 12.17 hrs, Volume= 0.164 af, Atten= 30%, Lag= 4.8 min
 Primary = 1.82 cfs @ 12.17 hrs, Volume= 0.164 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Peak Elev= 67.87' @ 12.17 hrs Surf.Area= 1,626 sf Storage= 2,761 cf

Plug-Flow detention time= 146.3 min calculated for 0.164 af (82% of inflow)

Center-of-Mass det. time= 75.5 min (849.9 - 774.4)

Volume	Invert	Avail.Storage	Storage Description
#1	65.00'	4,848 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
65.00	432	0	0
66.00	740	586	586
67.00	1,171	956	1,542
68.00	1,693	1,432	2,974
69.00	2,056	1,875	4,848

Device	Routing	Invert	Outlet Devices
#1	Primary	67.00'	12.0" x 190.0' long Culvert

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CPP, projecting, no headwall, $K_e = 0.900$ Outlet Invert= 66.05' $S = 0.0050$ ' $C_c = 0.900$ $n = 0.012$ **Primary OutFlow** Max=1.82 cfs @ 12.17 hrs HW=67.87' TW=0.00' (Dynamic Tailwater)↑ **1=Culvert** (Inlet Controls 1.82 cfs @ 2.51 fps)**Summary for Pond 11P: (new Pond)**

Inflow Area = 0.099 ac, 100.00% Impervious, Inflow Depth = 4.46" for 10-YR event

Inflow = 0.45 cfs @ 12.08 hrs, Volume= 0.037 af

Primary = 0.45 cfs @ 12.08 hrs, Volume= 0.037 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

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Time span=0.00-72.00 hrs, dt=0.02 hrs, 3601 points

Runoff by SCS TR-20 method, UH=SCS

Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment1S: 3	Runoff Area=32,040 sf 87.39% Impervious Runoff Depth=5.15" Tc=6.0 min CN=97 Runoff=3.93 cfs 0.315 af
Subcatchment2S: 4	Runoff Area=52,272 sf 71.92% Impervious Runoff Depth=4.47" Flow Length=455' Tc=6.0 min CN=91 Runoff=5.97 cfs 0.447 af
Subcatchment3S: 2	Runoff Area=23,229 sf 57.51% Impervious Runoff Depth=4.15" Flow Length=190' Tc=6.0 min CN=88 Runoff=2.51 cfs 0.184 af
Subcatchment8S: 3B	Runoff Area=4,298 sf 100.00% Impervious Runoff Depth=5.26" Tc=6.0 min CN=98 Runoff=0.53 cfs 0.043 af
Subcatchment9S: 1	Runoff Area=196,458 sf 0.00% Impervious Runoff Depth=3.43" Flow Length=704' Tc=56.7 min CN=81 Runoff=7.39 cfs 1.290 af
Subcatchment10S: 3A	Runoff Area=21,816 sf 81.20% Impervious Runoff Depth=4.69" Tc=6.0 min CN=93 Runoff=2.57 cfs 0.196 af
Subcatchment12S: 3C	Runoff Area=16,113 sf 100.00% Impervious Runoff Depth=5.26" Tc=6.0 min CN=98 Runoff=1.99 cfs 0.162 af
Reach 7R: Reach to POI 1	Avg. Depth=0.14' Max Vel=0.11 fps Inflow=4.88 cfs 0.446 af n=0.400 L=364.0' S=0.0140 ' /' Capacity=3.26 cfs Outflow=1.69 cfs 0.445 af
Reach 8R: POI 2	Inflow=6.46 cfs 0.866 af Outflow=6.46 cfs 0.866 af
Reach 10R: POI 1	Inflow=8.91 cfs 1.734 af Outflow=8.91 cfs 1.734 af
Reach 13R: CITY CB	Inflow=1.47 cfs 0.184 af Outflow=1.47 cfs 0.184 af
Pond 4P: GW 2	Peak Elev=69.31' Storage=5,198 cf Inflow=5.97 cfs 0.447 af Primary=4.82 cfs 0.302 af Secondary=0.06 cfs 0.144 af Outflow=4.88 cfs 0.446 af
Pond 5P: GW 1	Peak Elev=69.41' Storage=2,348 cf Inflow=2.51 cfs 0.184 af Outflow=1.47 cfs 0.184 af
Pond 6P: Gravel Drip Strip	Peak Elev=71.24' Storage=2,009 cf Inflow=3.93 cfs 0.315 af 6.0" x 51.0' Culvert Outflow=1.33 cfs 0.316 af
Pond 7P: Existing Detention Pond	Peak Elev=67.99' Storage=2,962 cf Inflow=3.10 cfs 0.239 af 12.0" x 190.0' Culvert Outflow=2.10 cfs 0.204 af
Pond 11P: (new Pond)	Inflow=0.53 cfs 0.043 af Primary=0.53 cfs 0.043 af

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Type III 24-hr 25-YR Rainfall=5.50"

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Total Runoff Area = 7.948 ac Runoff Volume = 2.637 af Average Runoff Depth = 3.98"
66.19% Pervious = 5.261 ac 33.81% Impervious = 2.688 ac

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Type III 24-hr 25-YR Rainfall=5.50"

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Summary for Subcatchment 1S: 3

Runoff = 3.93 cfs @ 12.08 hrs, Volume= 0.315 af, Depth= 5.15"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Type III 24-hr 25-YR Rainfall=5.50"

	Area (sf)	CN	Description
*	28,000	98	Proposed Building
*	4,040	89	Gravel Drip Strip Area
	32,040	97	Weighted Average
	4,040		Pervious Area
	28,000		Impervious Area

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

Summary for Subcatchment 2S: 4

Runoff = 5.97 cfs @ 12.08 hrs, Volume= 0.447 af, Depth= 4.47"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Type III 24-hr 25-YR Rainfall=5.50"

	Area (sf)	CN	Description
*	37,592	98	Pavement
	14,680	74	>75% Grass cover, Good, HSG C
	52,272	91	Weighted Average
	14,680		Pervious Area
	37,592		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.0	135	0.0111	1.12		Sheet Flow, AB Smooth surfaces n= 0.011 P2= 3.00"
1.2	130	0.0077	1.78		Shallow Concentrated Flow, BC Paved Kv= 20.3 fps
2.6	190	0.0068	1.24		Shallow Concentrated Flow, CD Grassed Waterway Kv= 15.0 fps
5.8	455	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 3S: 2

Runoff = 2.51 cfs @ 12.09 hrs, Volume= 0.184 af, Depth= 4.15"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Type III 24-hr 25-YR Rainfall=5.50"

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Type III 24-hr 25-YR Rainfall=5.50"

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	Area (sf)	CN	Description
*	13,358	98	Pavement
*	9,871	74	Proposed Land Scape
	23,229	88	Weighted Average
	9,871		Pervious Area
	13,358		Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	85	0.0222	1.34		Sheet Flow, AB Smooth surfaces n= 0.011 P2= 3.00"
1.1	105	0.0058	1.55		Shallow Concentrated Flow, BC Paved Kv= 20.3 fps
2.2	190	Total, Increased to minimum Tc = 6.0 min			

Summary for Subcatchment 8S: 3B

Runoff = 0.53 cfs @ 12.08 hrs, Volume= 0.043 af, Depth= 5.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YR Rainfall=5.50"

	Area (sf)	CN	Description
*	4,298	98	Impervious
	4,298		Impervious Area

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

Summary for Subcatchment 9S: 1

Runoff = 7.39 cfs @ 12.78 hrs, Volume= 1.290 af, Depth= 3.43"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YR Rainfall=5.50"

	Area (sf)	CN	Description
*	5,796	89	Gravel Pavement
	141,841	79	Pasture/grassland/range, Fair, HSG C
*	48,821	84	Pasture/grassland/range, Fair, HSG D WETLAND
	196,458	81	Weighted Average
	196,458		Pervious Area

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Type III 24-hr 25-YR Rainfall=5.50"

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
40.5	137	0.0030	0.06		Sheet Flow, AB Grass: Dense n= 0.240 P2= 3.00"
14.1	420	0.0050	0.49		Shallow Concentrated Flow, BC Short Grass Pasture Kv= 7.0 fps
2.1	147	0.0272	1.15		Shallow Concentrated Flow, CD Short Grass Pasture Kv= 7.0 fps
56.7	704	Total			

Summary for Subcatchment 10S: 3A

Runoff = 2.57 cfs @ 12.08 hrs, Volume= 0.196 af, Depth= 4.69"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YR Rainfall=5.50"

Area (sf)	CN	Description
* 3,377	74	Pervious Pond Area
* 725	74	Existing Land Scaped Area
* 17,714	98	Impervious Pavement
21,816	93	Weighted Average
4,102		Pervious Area
17,714		Impervious Area

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

Summary for Subcatchment 12S: 3C

Runoff = 1.99 cfs @ 12.08 hrs, Volume= 0.162 af, Depth= 5.26"

Runoff by SCS TR-20 method, UH=SCS, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
Type III 24-hr 25-YR Rainfall=5.50"

Area (sf)	CN	Description
* 16,113	98	Impervious
16,113		Impervious Area

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

Summary for Reach 7R: Reach to POI 1

Inflow Area = 1.200 ac, 71.92% Impervious, Inflow Depth = 4.46" for 25-YR event

Inflow = 4.88 cfs @ 12.14 hrs, Volume= 0.446 af

Outflow = 1.69 cfs @ 12.53 hrs, Volume= 0.445 af, Atten= 65%, Lag= 23.2 min

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Type III 24-hr 25-YR Rainfall=5.50"

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Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Max. Velocity= 0.11 fps, Min. Travel Time= 56.0 min

Avg. Velocity = 0.02 fps, Avg. Travel Time= 248.8 min

Peak Storage= 5,675 cf @ 12.53 hrs, Average Depth at Peak Storage= 0.14'

Bank-Full Depth= 0.20', Capacity at Bank-Full= 3.26 cfs

100.00' x 0.20' deep channel, n= 0.400 Sheet flow: Woods+light brush

Side Slope Z-value= 100.0 '/' Top Width= 140.00'

Length= 364.0' Slope= 0.0140 '/'

Inlet Invert= 68.10', Outlet Invert= 63.00'

**Summary for Reach 8R: POI 2**

Inflow Area = 2.238 ac, 81.52% Impervious, Inflow Depth = 4.64" for 25-YR event

Inflow = 6.46 cfs @ 12.12 hrs, Volume= 0.866 af

Outflow = 6.46 cfs @ 12.12 hrs, Volume= 0.866 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Summary for Reach 10R: POI 1

Inflow Area = 5.710 ac, 15.11% Impervious, Inflow Depth > 3.65" for 25-YR event

Inflow = 8.91 cfs @ 12.74 hrs, Volume= 1.734 af

Outflow = 8.91 cfs @ 12.74 hrs, Volume= 1.734 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Summary for Reach 13R: CITY CB

Inflow Area = 0.533 ac, 57.51% Impervious, Inflow Depth = 4.14" for 25-YR event

Inflow = 1.47 cfs @ 12.20 hrs, Volume= 0.184 af

Outflow = 1.47 cfs @ 12.20 hrs, Volume= 0.184 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Summary for Pond 4P: GW 2

Inflow Area = 1.200 ac, 71.92% Impervious, Inflow Depth = 4.47" for 25-YR event

Inflow = 5.97 cfs @ 12.08 hrs, Volume= 0.447 af

Outflow = 4.88 cfs @ 12.14 hrs, Volume= 0.446 af, Atten= 18%, Lag= 3.4 min

Primary = 4.82 cfs @ 12.14 hrs, Volume= 0.302 af

Secondary = 0.06 cfs @ 12.14 hrs, Volume= 0.144 af

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Type III 24-hr 25-YR Rainfall=5.50"

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Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
 Peak Elev= 69.31' @ 12.14 hrs Surf.Area= 11,180 sf Storage= 5,198 cf

Plug-Flow detention time= 263.0 min calculated for 0.446 af (100% of inflow)
 Center-of-Mass det. time= 262.2 min (1,045.9 - 783.8)

Volume	Invert	Avail.Storage	Storage Description
#1	68.50'	8,618 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2	68.17'	634 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
			1,584 cf Overall x 40.0% Voids
			9,252 cf Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
68.50	4,800	0	0
69.00	5,866	2,667	2,667
69.90	7,360	5,952	8,618

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
68.17	4,800	0	0
68.50	4,800	1,584	1,584

Device	Routing	Invert	Outlet Devices
#1	Primary	69.00'	10.0' 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
#2	Secondary	68.17'	6.0" x 20.0' long Culvert CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 68.10' S= 0.0035 '/' Cc= 0.900 n= 0.012
#3	Device 2	68.17'	1.5" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=4.81 cfs @ 12.14 hrs HW=69.31' TW=68.18' (Dynamic Tailwater)

↑ **1=Broad-Crested Rectangular Weir** (Weir Controls 4.81 cfs @ 1.55 fps)

Secondary OutFlow Max=0.06 cfs @ 12.14 hrs HW=69.31' TW=68.18' (Dynamic Tailwater)

↑ **2=Culvert** (Passes 0.06 cfs of 0.70 cfs potential flow)

↑ **3=Orifice/Grate** (Orifice Controls 0.06 cfs @ 5.00 fps)

Summary for Pond 5P: GW 1

Inflow Area = 0.533 ac, 57.51% Impervious, Inflow Depth = 4.15" for 25-YR event
 Inflow = 2.51 cfs @ 12.09 hrs, Volume= 0.184 af
 Outflow = 1.47 cfs @ 12.20 hrs, Volume= 0.184 af, Atten= 42%, Lag= 6.7 min
 Primary = 1.47 cfs @ 12.20 hrs, Volume= 0.184 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
 Peak Elev= 69.41' @ 12.20 hrs Surf.Area= 5,133 sf Storage= 2,348 cf

Plug-Flow detention time= 220.7 min calculated for 0.184 af (100% of inflow)
 Center-of-Mass det. time= 220.3 min (1,014.8 - 794.5)

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Volume	Invert	Avail.Storage	Storage Description
#1	68.50'	3,573 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
#2	68.17'	307 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
			767 cf Overall x 40.0% Voids
			3,880 cf Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
68.50	1,670	0	0
69.00	2,325	999	999
69.90	3,396	2,574	3,573

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
68.17	2,325	0	0
68.50	2,325	767	767

Device	Routing	Invert	Outlet Devices
#1	Device 4	68.17'	6.0" x 18.0' long Culvert CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 68.10' S= 0.0039 '/' Cc= 0.900 n= 0.012
#2	Device 1	68.17'	1.1" Vert. Orifice/Grate C= 0.600
#3	Device 5	68.50'	12.0" x 18.0' long Culvert CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 68.50' S= 0.0000 '/' Cc= 0.900 n= 0.012
#4	Primary	67.00'	12.0" x 140.0' long Culvert CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 66.30' S= 0.0050 '/' Cc= 0.900 n= 0.012
#5	Device 4	69.00'	4.0' 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=1.47 cfs @ 12.20 hrs HW=69.41' TW=0.00' (Dynamic Tailwater)

4=Culvert (Passes 1.47 cfs of 3.85 cfs potential flow)
 1=Culvert (Passes 0.03 cfs of 0.74 cfs potential flow)
 2=Orifice/Grate (Orifice Controls 0.03 cfs @ 5.25 fps)
 5=Broad-Crested Rectangular Weir (Passes 1.43 cfs of 2.92 cfs potential flow)
 3=Culvert (Barrel Controls 1.43 cfs @ 2.52 fps)

Summary for Pond 6P: Gravel Drip Strip

Inflow Area = 0.736 ac, 87.39% Impervious, Inflow Depth = 5.15" for 25-YR event
 Inflow = 3.93 cfs @ 12.08 hrs, Volume= 0.315 af
 Outflow = 1.33 cfs @ 12.36 hrs, Volume= 0.316 af, Atten= 66%, Lag= 16.3 min
 Primary = 1.33 cfs @ 12.36 hrs, Volume= 0.316 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs
 Peak Elev= 71.24' @ 12.36 hrs Surf.Area= 8,080 sf Storage= 2,009 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 6.7 min (760.5 - 753.8)

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Volume	Invert	Avail.Storage	Storage Description
#1	70.50'	2,424 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 6,060 cf Overall x 40.0% Voids
#2	70.00'	808 cf	Custom Stage Data (Prismatic) Listed below (Recalc) 2,020 cf Overall x 40.0% Voids
		3,232 cf	Total Available Storage

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
70.50	4,040	0	0
72.00	4,040	6,060	6,060

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
70.00	4,040	0	0
70.50	4,040	2,020	2,020

Device	Routing	Invert	Outlet Devices
#1	Primary	67.17'	6.0" x 51.0' long Culvert CPP, projecting, no headwall, Ke= 0.900 Outlet Invert= 66.92' S= 0.0049 '/' Cc= 0.900 n= 0.012

Primary OutFlow Max=1.33 cfs @ 12.36 hrs HW=71.24' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 1.33 cfs @ 6.79 fps)**Summary for Pond 7P: Existing Detention Pond**

Inflow Area = 0.599 ac, 84.29% Impervious, Inflow Depth = 4.78" for 25-YR event
 Inflow = 3.10 cfs @ 12.08 hrs, Volume= 0.239 af
 Outflow = 2.10 cfs @ 12.17 hrs, Volume= 0.204 af, Atten= 32%, Lag= 5.1 min
 Primary = 2.10 cfs @ 12.17 hrs, Volume= 0.204 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

Peak Elev= 67.99' @ 12.17 hrs Surf.Area= 1,689 sf Storage= 2,962 cf

Plug-Flow detention time= 132.5 min calculated for 0.203 af (85% of inflow)

Center-of-Mass det. time= 69.5 min (839.8 - 770.2)

Volume	Invert	Avail.Storage	Storage Description
#1	65.00'	4,848 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
65.00	432	0	0
66.00	740	586	586
67.00	1,171	956	1,542
68.00	1,693	1,432	2,974
69.00	2,056	1,875	4,848

Device	Routing	Invert	Outlet Devices
#1	Primary	67.00'	12.0" x 190.0' long Culvert

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CPP, projecting, no headwall, $K_e = 0.900$ Outlet Invert= 66.05' $S = 0.0050$ ' $C_c = 0.900$ $n = 0.012$ **Primary OutFlow** Max=2.10 cfs @ 12.17 hrs HW=67.99' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 2.10 cfs @ 2.68 fps)**Summary for Pond 11P: (new Pond)**

Inflow Area = 0.099 ac, 100.00% Impervious, Inflow Depth = 5.26" for 25-YR event

Inflow = 0.53 cfs @ 12.08 hrs, Volume= 0.043 af

Primary = 0.53 cfs @ 12.08 hrs, Volume= 0.043 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.02 hrs

APPENDIX D

WATER QUALITY SUMMARY CHART AND COMPUTATIONS

Water Quality Calculations

	Treatment Approach	Total Developed Area	Total Treated Area	Total Impervious Area	Total Treated Impervious Area
SUB CATCHMENT 1	NONE	3470	0	0	0
SUB CATCHMENT 2	Gravel Wetland 1	32040	32040	32040	32040
SUB CATCHMENT 3	Drip Strip	20229	20229	13358	13358
SUB CATCHMENT 4	Gravel Wetland 2	52236	52236	37577	37577
Area outside Property subcatchments	NONE	2603	0	0	0

Percentage of developed Area Treated	94.51%
Percentage of Impervious Area Treated	100.00%

**SUBSURFACE GRAVEL WETLAND #1
DESIGN COMPUTATIONS**

GRAVEL WETLAND 1						
TRIBUTARY AREA:						
	16,568	SF				
TRIBUTARY IMPERVIOUS AREA:			13,583	SF	0.31	AC
TRIBUTARY LANDSCAPED AREA:			1,682	SF	0.04	AC
TOTAL TRIBUTARY AREA:			15,265	SF	0.35	AC
GRAVEL WETLAND SIZING						
WQV = (P1)(Rv)(A)			1,082	CF		
P1 = 90% RAINFALL EVENT			1	IN		
Rv = 0.05 + 0.90 (I)			0.850831969			
I = % IMPERVIOUS AREA			89%			
FOREBAY VOLUME (10% WQV)			108	CF		
WETLAND CELL VOLUME (45% WQV)			487	CF		
STAGE - STORAGE (EACH WETLAND CELL)						
	STAGE, FT	SURFACE AREA (SF)	INCREMENTAL VOLUME (CF)	CUMULATIVE VOLUME (CF)	NOTES	
Cell 3	68.5	835	0	0	BOTTOM	
	69	1,111	487	487		
Cell4	68.5	853	0	0		
	69	1126	495	495		
Total Storage Both cells				981	CF	
Total Storage Required				974.10	CF	
STAGE-STORAGE (SEDIMENT FOREBAY)						
	STAGE, FT	SURFACE AREA (SF)	INCREMENTAL VOLUME (CF)	CUMULATIVE VOLUME (CF)	NOTES	
	69	100	0	0		
	69.9	383	217	217		
Design Check						
Required volume:				108 CF		
Volume Design				217		

**SUBSURFACE GRAVEL WETLAND #2
DESIGN COMPUTATIONS**

	GRAVEL WETLAND 2					
	TRIBUTARY AREA:					
		39,891	SF			
	TRIBUTARY IMPERVIOUS AREA:		35,489	SF	0.81	AC
	TRIBUTARY LANDSCAPED AREA:		4,402	SF	0.10	AC
	TOTAL TRIBUTARY AREA:		39,891	SF	0.92	AC
	GRAVEL WETLAND SIZING					
	WQV = (P1)(Rv)(A)		2,828	CF		
	P1 = 90% RAINFALL EVENT		1	IN		
	Rv = 0.05 + 0.90 (I)		0.850684365			
	I = % IMPERVIOUS AREA		89%			
	FOREBAY VOLUME (10% WQV)		283	CF		
	WETLAND CELL VOLUME (45% WQV)		1,273	CF		
	STAGE - STORAGE (EACH WETLAND CELL)					
	STAGE, FT	SURFACE AREA (SF)	INCREMENTAL VOLUME (CF)	CUMULATIVE VOLUME (CF)	NOTES	
Cell 1	68.5	2,400	0	0	BOTTOM	
	69	2,795	1,299	1,299		
Cell 2	68.5	2400	0	0		
	69	2795	1,299	1,299		
Total Storage Both cells				2,598	CF	
Total Storage Required				2545.10	CF	
	STAGE-STORAGE (SEDIMENT FOREBAY)					
	STAGE, FT	SURFACE AREA (SF)	INCREMENTAL VOLUME (CF)	CUMULATIVE VOLUME (CF)	NOTES	
	69	276	0	0		
	69.9	487	343	343		
				Design Check		
				Required volume:	283	
				Volume Design	343	

APPENDIX E

ORIFICE DRAWDOWN COMPUTATIONS

ORIFICE DIAMETER FOR GRAVEL WET LAND 1

Elevation	Surface Area (sq.ft)	Area End (sq.ft)	Area End Depth (ft)	Volume (c.f)	Head (ft)	Orifice Flow (cfs)	Drawdown Time (secs)	Drawdown Time (hours)
69.00	3,396.00	2860.50	0.50	1430.25	0.83	0.0289	49424.40	13.729
68.50	2,325.00	2325.00	0.33	767.25	0.33	0.0182	42048.30	11.680
68.17	2,325.00	0.00	0.00	0.00	0.00	0.0000	0.00	0.000
TOTAL							0.00	25.409

$CA (2gh)^{1/2}$

Orifice Diameter	1.1	inch
Area	0.0066	sq.ft
Head	2.53	feet
g	32.174	ft/s ²
C	0.6	Orifice/Grate

ORIFICE DIAMETER FOR GRAVEL WETLAND 2

Depth (ft)	Surface Area (sq.ft)	Area End (sq.ft)	Area End Depth (ft)	Volume (c.f)	Head (ft)	Orifice Flow (cfs)	Drawdown Time (secs)	Drawdown Time (hours)
69.00	5,866.00	5333.00	0.50	2666.50	0.83	0.0538	49553.45	13.765
68.50	4,800.00	4800.00	0.33	1584.00	0.33	0.0339	46684.16	12.968
68.17	4,800.00	0.00	0.00	0.00	0.00	0.0000	0.00	0.000
TOTAL							26.733	

$CA (2gh)^{1/2}$

Orifice Diameter	1.5	inch
Area	0.0123	sq.ft
Head	2.53	feet
g	32.174	ft/s ²
C	0.6	Orifice/Grate

APPENDIX F

GEOTECHNICAL EXPLORATION TEST PIT LOGS

R E P O R T

December 27, 2013
13-1392 S

Geotechnical Engineering Services

Proposed Pre-Engineered Building
424 Warren Avenue
Portland, Maine

PREPARED FOR:

Peter F. Holmes
c/o Harbour Auto Body
401 Warren Avenue
Portland, Maine 04103

PREPARED BY:

S. W. Cole Engineering, Inc.
286 Portland Road
Gray, Maine 04039
207-657-2866



S.W.COLE
ENGINEERING, INC.

- *Geotechnical Engineering*
- *Construction Materials Testing*
- *GeoEnvironmental Services*
- *Ecological Services*

www.swcole.com

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Sheet 9	Key to the Notes and Symbols
Sheet 10	Underdrain Detail

13-1392 S

December 27, 2013

Peter F. Holmes
c/o Harbour Auto Body
401 Warren Avenue
Portland, Maine 04103

Subject: Geotechnical Engineering Services
Proposed Pre-Engineered Building
424 Warren Avenue
Portland, Maine

Dear Peter:

In accordance with our Proposal dated December 12, 2013, we have performed subsurface explorations for the subject project in Portland, Maine. This report presents our findings and geotechnical recommendations and its contents are subject to the limitations set forth in Attachment A.

1.0 INTRODUCTION

1.1 Scope and Purpose

The purpose of our work was to obtain subsurface information at the site in order to develop geotechnical recommendations relative to foundations and earthwork associated with the proposed construction. Our scope of work included the making of thirteen test pit explorations, a geotechnical analysis of the subsurface findings and preparation of this report.

1.2 Proposed Construction

Based on the information provided by FST, Inc. (project civil engineer), we understand development plans call for construction of a new L-Shaped, pre-engineered steel building with associated paved and stormwater management areas. We understand the building will occupy a plan area of about 38,500 SF and is proposed at a finished floor

elevation of 72.0 feet, requiring about 1 to 3 feet of tapered fill over the building pad. Proposed and existing site features are shown on the "Exploration Location Plan" attached as Sheet 1.

2.0 EXPLORATION AND TESTING

2.1 Explorations

Thirteen test pits (TP-101 through TP-109 and TP-ST-1 through TP-ST-4) were made at the site on December 20, 2013, by Eastern Excavation, Inc. of Westbrook, Maine working under subcontract to S. W. Cole Engineering, Inc. (S.W.COLE). The exploration locations were selected and established by S.W.COLE using taped measurements from existing site features.

The approximate exploration locations are shown on the "Exploration Location Plan" attached as Sheet 1. Logs of the explorations are attached as Sheets 2 through 8. A key to the notes and symbols used on the log is attached as Sheet 9. The ground surface elevations shown on the logs were estimated based on topographic information shown on Sheet 1.

2.2 Testing

The soils were visually classified as they were encountered at the explorations. Pocket Penetrometer Tests (PPT) were performed on some cohesive soils encountered at the test pits. PPT results are shown on the test pit logs.

3.0 SITE AND SUBSURFACE CONDITIONS

3.1 Surficial Conditions

The site is located at 424 Warren Avenue in Portland, Maine. The site consists of an open gravel lot adjacent to Warren Avenue transitioning to a lightly wooded area and open grassed field area to the north and to the rear of the existing Harbour Auto Body Facility. The site is relatively flat and level with existing grades varying from about elevation 68 to 70 feet within the proposed building footprint.

Existing site features are shown on the "Exploration Location Plan" attached as Sheet 1.

3.2 Subsurface Conditions

Underlying a surficial layer of topsoil, the test pits encountered a soils profile generally consisting of fill and/or reworked soils overlying a layer of relic topsoil overlying glaciomarine sands, silts, and clays. The principal strata encountered are summarized below. Refer to the attached logs for more detailed descriptions of the subsurface findings.

Fill and Reworked Soils: Each test pit encountered a layer of fill and/or reworked soils extending to depths varying from 0.8 to 3.2 feet below ground surface. The fill generally consisted of sand or clay with varying portions of silt, gravel, cobbles, organics and miscellaneous debris such as bricks and plastic. The reworked soils generally consisted of disturbed silt and clay with varying portions of sand and organics.

Relic Topsoil: Underlying the fill and/or reworked soils, test pits TP-105 through TP-109 encountered a layer of relic topsoil up to about 1 foot in thickness. The relic topsoil generally consisted of dark brown silty sand with organics. A layer of reworked, disturbed silty sandy clay was encountered below the relic topsoil at test pit TP-105 to a depth of about 3.5 feet.

Glaciomarine Soils: Underlying the fill, reworked soils, and/or relic topsoil, the test pits encountered glaciomarine soils generally consisted of brown to gray-brown sands, silts, and relatively stiff silty clays. The test pits were terminated in the glaciomarine soils at depths varying from 4.0 to 6.2 feet below the ground surface.

3.3 Groundwater Conditions

The soils encountered at the explorations were generally moist to wet. Groundwater seepage was encountered at some of the explorations at depths varying from 3.1 to 5.5 feet. Groundwater likely becomes perched on the relatively impervious glaciomarine silts and clays encountered beneath the site. It should be anticipated that seasonal groundwater levels will fluctuate, especially during periods of snowmelt and precipitation.

3.4 Seismic and Frost Conditions

The 25-year Air Freezing Index for the Portland, Maine area is about 1,250-Fahrenheit degree-days, which corresponds to a frost penetration depth on the order of 4.5 feet.

Based on the findings at the explorations and our experience on adjacent sites, we interpret the site soils to correspond to Seismic Soil Site Class E according to 2009 IBC.

4.0 EVALUATION AND RECOMMENDATIONS

4.1 General Findings

Based on the subsurface findings, the proposed construction appears feasible from a geotechnical standpoint. The principle geotechnical considerations are:

- The existing fill, relic topsoil, and reworked/disturbed soils must be completely removed beneath the proposed building footprint and replaced with compacted Granular Borrow.
- Spread footing foundations and on-grade floor slabs bearing on properly prepared subgrades appear appropriate for the proposed construction.
- A 6-inch thick layer of crushed stone wrapped in geotextile fabric is recommended beneath the perimeter building foundations. Interior footings may bear on compacted Granular Borrow or stable, native non-organic soils.
- Perimeter foundation underdrains should be provided for the proposed building.
- Imported Granular Borrow, Structural Fill and Crushed Stone will be needed for construction. The existing fills and native soils are unsuitable for reuse below the proposed building or as backfill for foundations.

4.2 Site and Subgrade Preparation

We recommend that site preparation begin with the construction of an erosion control system to protect adjacent drainage ways and areas outside the construction limits. As much vegetation as possible should remain outside the construction areas to lessen the potential for erosion and site disturbance.

All organics, existing fills, relic topsoil, and reworked/disturbed soils must be completely removed from beneath the proposed building and entrance slabs until undisturbed native non-organic soils are encountered. Overexcavation of existing unsuitable materials should

extend 1-foot horizontally outward from outer edge of perimeter footings for each foot of excavation depth (1H:1V bearing splay). Overexcavations should be backfilled to grade with properly compacted Structural Fill (over wet subgrades and during wet/cold weather conditions) or with properly compacted Granular Borrow (over dry subgrades and during non-freezing, dry conditions).

At least 6-inches of Crushed Stone wrapped in non-woven geotextile, such as Mirafi 160N or equivalent, should be provided below perimeter foundations. The crushed stone and geotextile should overlay undisturbed native glaciomarine soils and/or properly compacted Structural Fill or Granular Borrow overlying undisturbed native glaciomarine soils.

We recommend that excavations be completed with a smooth-edged bucket to help lessen disturbance of native soils and foundation bearing surfaces. S.W.COLE should observe exposed subgrades prior to placement of compacted fills and geotextile wrapped crushed stone mats below the footings.

4.3 Excavation and Dewatering

Excavation work will generally encounter existing fills, relic topsoil, reworked native soils and native glaciomarine sands, silts, and clays. Care must be exercised during construction to minimize disturbance of the bearing soils. Final cuts to subgrade elevation should be performed with a smooth-edged bucket to help minimize soil disturbance.

Sumping and pumping dewatering techniques should be adequate to control groundwater in excavations. The layer of geotextile wrapped Crushed Stone recommended below foundations will provide a media from which to sump and pump, as needed. Controlling the water levels to below planned excavation depths will help stabilize subgrades during construction.

Excavations must be properly shored and/or sloped in accordance with OSHA Regulations to prevent sloughing and caving of the sidewalls during construction. The contractor is ultimately responsible for dewatering and stability of excavations.

4.4 Foundations

We recommend the proposed building be supported on spread footings bearing on properly prepared subgrades. We recommend the following geotechnical parameters for design consideration:

- Design Frost Depth = 4.5 feet
- Allowable Soil Bearing Pressure = 1.5 ksf or less
- Seismic Site Soil Class = E (IBC 2009)
- Base Friction Factor = 0.40
- Lateral Earth Pressure = 65 pcf (equivalent fluid pressure)
- Unit Weight of Backfill = 130 pcf (compacted Structural Fill)
- At-Rest Lateral Earth Pressure Coefficient = 0.5 (compacted Structural Fill)
- Internal Friction Angle of Backfill = 30° (compacted Structural Fill)

Footings should be at least 18-inches in width regardless of bearing pressure.

4.5 Foundation Drainage

We recommend an underdrain system be installed along the exterior side of the perimeter foundations. The underdrain system should consist of a 4-inch diameter, perforated SDR-35 foundation drain pipe surrounded by at least 6-inches of Crushed Stone, fully enveloped in non-woven geotextile, such as Mirafi 160N or equivalent. The underdrain pipe must be connected to a positive gravity outlet protected from freezing, clogging and backflow. Surface grades should be sloped away from the building for positive drainage. General underdrain details are illustrated on Sheet 10.

If a drip strip is used, S.W.COLE should be consulted to provide recommendations for frost protection.

4.6 Slab-On-Grade

On-grade floor slabs in heated areas may be designed using a subgrade reaction modulus of 120 pci (pounds per cubic inch) provided the slab is underlain by at least 12-inches of compacted Structural Fill overlying properly prepared subgrades. The structural engineer or concrete consultant must design steel reinforcing and joint spacing appropriate to slab thickness and function.

We recommend a sub-slab vapor retarder particularly in areas of the building where the concrete slab will be covered with an impermeable surface treatment or floor covering that may be sensitive to moisture vapors. The vapor retarder must have a permeance that is less than the floor cover or surface treatment that is applied to the slab. The vapor retarder must have sufficient durability to withstand direct contact with the sub-slab base material and construction activity. The vapor retarder material shall be placed according to the manufacturer's recommended method, including the taping and lapping of all joints and wall connections. The architect and/or flooring consultant should select the vapor retarder products compatible with flooring and adhesive materials.

The floor slab should be appropriately cured using moisture retention methods after casting. Typical floor slab curing methods should be used for at least 7 days. The architect or flooring consultant should assign curing methods consistent with current applicable American Concrete Institute (ACI) procedures with consideration of curing method compatibility to proposed surface treatments, flooring and adhesive materials.

4.7 Entrance Slabs

Entrance slabs adjacent to buildings must be designed to reduce the effects of differential frost action between adjacent pavement, doorways, and sidewalks. We recommend that clean, non-frost susceptible sand and gravel meeting the requirements of Structural Fill be provided to a depth of at least 4.5 feet below the top of entrance slabs. This thickness of Structural Fill should extend the full width of the entrance slabs and outward at least 4.5 feet, thereafter transitioning up to the bottom of the adjacent sidewalk or pavement subbase gravel at a 3H:1V or flatter slope. General details of this frost transition zone are illustrated on Sheet 10.

4.8 Backfill and Compaction

We recommend the following fill and backfill materials for use during construction:

Granular Borrow: Sand or silty sand meeting the requirements of MDOT Standard Specification 703.19 Granular Borrow. Granular Borrow is recommended for use as:

- Fill to raise site grades and backfill overexcavations (dry and non-freezing conditions and over dry subgrades)

Structural Fill: Clean, non-frost susceptible sand and gravel meeting the gradation requirements for Structural Fill as given below.

Structural Fill	
Sieve Size	Percent Finer by Weight
4 inch	100
3 inch	90 to 100
¾ inch	25 to 90
#40	0 to 30
#200	0 to 5

Structural Fill is recommended for use as:

- Fill to raise site grades and backfill overexcavations (wet and cold weather conditions and over wet subgrades)
- Backfill for building foundations and below entrance slabs
- Slab-on-grade base material

Crushed Stone: Crushed Stone used below footings and around underdrains should consist of crushed rock meeting the gradation requirements of MDOT Standard Specifications 703.22 "Underdrain Backfill Type C".

Placement and Compaction: Fill should be placed in horizontal lifts and compacted such that the desired density is achieved throughout the lift thickness with 3 to 5 passes of the compaction equipment. Loose lift thicknesses for grading, fill and backfill activities should not exceed 12 inches. We recommend that fill and backfill in building areas be compacted to at least 95 percent of its maximum dry density as determined by ASTM D-1557. Crushed Stone should be compacted in loose lifts not exceeding 12-inches with 2 to 3 passes of a vibratory plate compactor with a static weight of at least 600 lbs.

4.9 Weather Considerations

Construction activity should be limited during wet weather and the site soils may require drying before construction activities may continue. The contractor should anticipate the need for water to temper fills in order to facilitate compaction during dry weather. If construction takes place during cold weather, subgrades, foundations and floor slabs must be protected during freezing conditions. Concrete and fill must not be placed on frozen

soil; and once placed, the concrete and soil beneath the structure must be protected from freezing.

4.10 Design Review and Construction Testing

S.W.COLE should be retained to review the foundation and earthwork construction documents to determine that our geotechnical recommendations have been properly interpreted and implemented.

A soils and concrete testing program should also be implemented during construction to observe compliance with the design concepts, plans, and specifications. S.W.COLE is available to provide earthwork observations as well as testing services for soils, concrete, asphalt, steel and spray-applied fireproofing construction materials.

5.0 CLOSURE

It has been a pleasure to be of assistance to you with this phase of your project. We look forward to working with you during the construction phase of the project.

Sincerely,

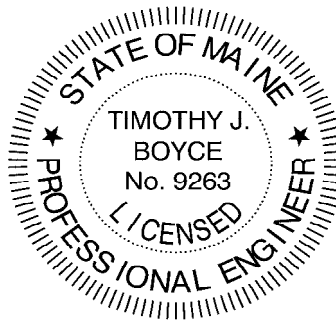
S. W. Cole Engineering, Inc.

Evan M. Walker, P.E.
Geotechnical Engineer



Timothy J. Boyce, P.E.
Senior Geotechnical Engineer

EMW:tjb



Attachment A Limitations

This report has been prepared for the exclusive use of Peter F. Holmes for specific application to the proposed Pre-Engineered Building at 424 Warren Avenue in Portland, Maine. S. W. Cole Engineering, Inc. (S.W.COLE) has endeavored to conduct the work in accordance with generally accepted soil and foundation engineering practices. No warranty, expressed or implied, is made.

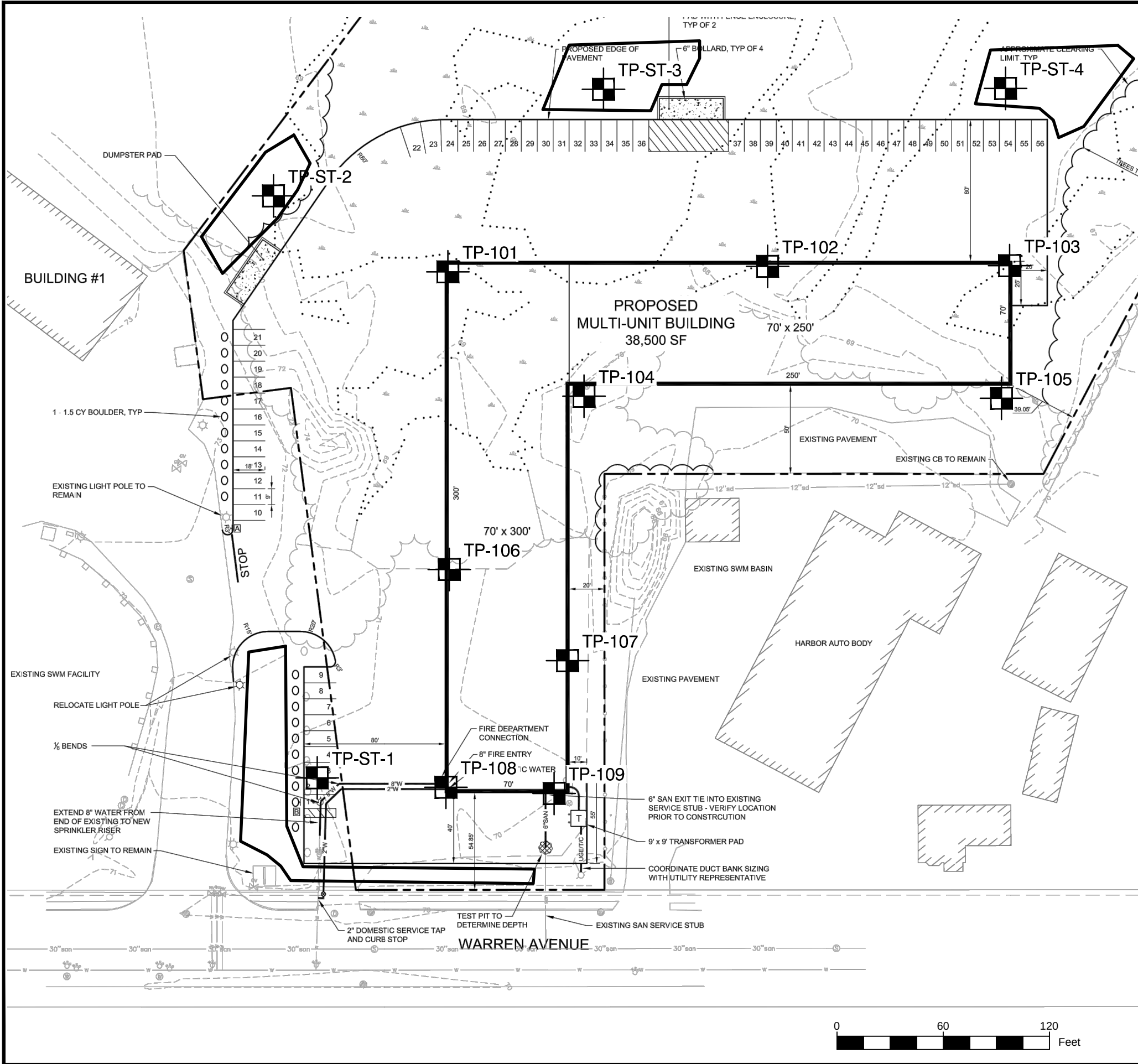
The soil profiles described in the report are intended to convey general trends in subsurface conditions. The boundaries between strata are approximate and are based upon interpretation of exploration data and samples.

The analyses performed during this investigation and recommendations presented in this report are based in part upon the data obtained from subsurface explorations made at the site. Variations in subsurface conditions may occur between explorations and may not become evident until construction. If variations in subsurface conditions become evident after submission of this report, it will be necessary to evaluate their nature and to review the recommendations of this report.

Observations have been made during exploration work to assess site groundwater levels. Fluctuations in water levels will occur due to variations in rainfall, temperature, and other factors.

S.W.COLE's scope of work has not included the investigation, detection, or prevention of any Biological Pollutants at the project site or in any existing or proposed structure at the site. The term "Biological Pollutants" includes, but is not limited to, molds, fungi, spores, bacteria, and viruses, and the byproducts of any such biological organisms.

Recommendations contained in this report are based substantially upon information provided by others regarding the proposed project. In the event that any changes are made in the design, nature, or location of the proposed project, S.W.COLE should review such changes as they relate to analyses associated with this report. Recommendations contained in this report shall not be considered valid unless the changes are reviewed by S.W.COLE.



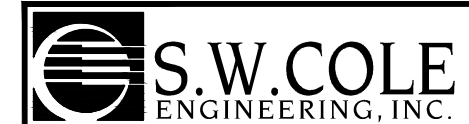
LEGEND:



APPROXIMATE TEST PIT LOCATION

NOTES:

1. EXPLORATION LOCATION PLAN WAS PREPARED FROM A 1"=30' SCALE PLAN OF THE SITE ENTITLED "SITE LAYOUT AND UTILITY PLAN," PREPARED BY FAY, SPOFFORD & THORNDIKE, INC., DATED NOVEMBER 2013.
2. THE TEST PITS WERE LOCATED IN THE FIELD BY TAPED MEASUREMENTS FROM EXISTING SITE FEATURES.
3. THIS PLAN SHOULD BE USED IN CONJUNCTION WITH THE ASSOCIATED S.W. COLE ENGINEERING, INC. GEOTECHNICAL REPORT.
4. THE PURPOSE OF THIS PLAN IS ONLY TO DEPICT THE LOCATION OF THE EXPLORATIONS IN RELATION TO THE EXISTING CONDITIONS AND PROPOSED CONSTRUCTION AND IS NOT TO BE USED FOR CONSTRUCTION.



PETER F. HOLMES

EXPLORATION LOCATION PLAN

PROPOSED PRE-ENGINEERED BUILDING
424 WARREN AVENUE
PORTLAND, MAINE

Job No.: 13-1392

Date: 12/24/2013

Scale: 1" = 60'

Sheet: 1

PROJECT / CLIENT: PROPOSED PRE-ENGINEERED BUILDING / PETER F. HOLMES
 LOCATION: 424 WARREN AVENUE, PORTLAND, MAINE
 EXCAVATOR: EASTERN EXCAVATION, INC. / KOMATSU PC 50 MR

SWC REP.: EMW
 PROJECT NO.: 13-0912

TEST PIT <u>TP-101</u>			
DATE: <u>12/20/13</u>		SURFACE ELEVATION: <u>69' +/-</u>	LOCATION: <u>SEE SHEET 1</u>
SAMPLE NO.	DEPTH (FT)	STRATUM DESCRIPTION	TEST RESULTS
	0.5	VEGETATION / BROWN CLAYEY SILTY SAND WITH ORGANICS (TOPSOIL)	
	1.5	REWORKED DARK GRAY AND BROWN SILTY SAND CLAYEY WITH ORGANICS (FILL / DISTURBED SOILS)	
	5.5	BROWN SILTY FINE SAND WITH SILT SEAMS	
COMPLETION DEPTH: <u>5.5'</u>		DEPTH TO WATER: <u>SEEPAGE/CAVING @ 4.6'</u>	

TEST PIT <u>TP-102</u>			
DATE: <u>12/20/13</u>		SURFACE ELEVATION: <u>68' +/-</u>	LOCATION: <u>SEE SHEET 1</u>
SAMPLE NO.	DEPTH (FT)	STRATUM DESCRIPTION	TEST RESULTS
	0.2	VEGETATION / DARK BROWN CLAYEY SILTY SAND WITH ORGANICS (TOPSOIL)	@ 4' : q _p = 7 KSF
	0.8	DARK GRAY-BROWN AND BLACK SANDY SILTY CLAY WITH BRICK, ORGANICS (FILL)	
	3.6	GRAY-BROWN WITH RUST-BROWN STAINING SILTY FINE SAND WITH SILT LAYERS	
	5.3	BROWN SILTY CLAY WITH SAND SEAMS ~ VERY STIFF ~	
COMPLETION DEPTH: <u>5.3'</u>		DEPTH TO WATER: <u>SEEPAGE @ 3.9', SOILS MOIST ABOVE 3.9'</u>	



SWC REP.: EMW
PROJECT NO. 13-0912

TEST PIT TP-103				
DATE: 12/20/13		SURFACE ELEVATION: 68' +/-		LOCATION: SEE SHEET 1
SAMPLE		DEPTH (FT)	STRATUM DESCRIPTION	TEST RESULTS
NO.	DEPTH			
		0.3	VEGETATION / BROWN CLAYEY SILTY SAND WITH ORGANICS (TOPSOIL)	
		2.0	REWORKED BROWN SILTY CLAY WITH SAND SEAMS WITH ORGANICS (FILL / DISTURBED SOILS)	
		4.8'	LAYERED BROWN SILTY FINE SAND, CLAYEY SILT AND SILTY CLAY	
COMPLETION DEPTH: 4.8'		DEPTH TO WATER: SEEPAGE @ 3.1'		

TEST PIT TP-104				
DATE: 12/20/13		SURFACE ELEVATION: 70' +/-		LOCATION: SEE SHEET 1
SAMPLE		DEPTH (FT)	STRATUM DESCRIPTION	TEST RESULTS
NO.	DEPTH			
		2.0	DARK BROWN SILTY SAND WITH COBBLES, ORGANICS, BRICKS, PLASTIC DEBRIS (FILL)	
		2.5	ORANGE-BROWN SILTY FINE SAND	
		6.0	LAYERED GRAY-BROWN SILTY CLAY WITH SILTY FINE SAND LAYERS	
COMPLETION DEPTH: 6.0'		DEPTH TO WATER: SEEPAGE @ 5.5'. SOILS MOIST ABOVE 5.5'		

PROJECT / CLIENT: PROPOSED PRE-ENGINEERED BUILDING / PETER F. HOLMES
 LOCATION: 424 WARREN AVENUE, PORTLAND, MAINE
 EXCAVATOR: EASTERN EXCAVATION, INC. / KOMATSU PC 50 MR

SWC REP.: EMW
 PROJECT NO.: 13-0912

TEST PIT <u>TP-105</u>				
DATE: <u>12/20/13</u>		SURFACE ELEVATION: <u>69' +/-</u>	LOCATION: <u>SEE SHEET 1</u>	
SAMPLE		DEPTH (FT)	STRATUM DESCRIPTION	TEST RESULTS
NO.	DEPTH			
		0.3	VEGETATION / BROWN SILTY SAND WITH ORGANICS (TOPSOIL)	@ 4' : q _p = 6 KSF
		1.1	YELLOW-BROWN SILTY SAND TRACE ORGANICS (FILL)	
		2.1	DARK BROWN SILTY SAND WITH ORGANICS (RELIC TOPSOIL)	
		3.5	REWORKED GRAY-BROWN WITH RUST-BROWN STAINING SILTY SANDY CLAY (DISTURBED SOILS)	
		6.2'	LAYERED BROWN SILTY FINE SAND, SILTY CLAY, AND CLAYEY SILT	
COMPLETION DEPTH: <u>6.2'</u>		DEPTH TO WATER: <u>SEEPAGE @ 5.5', SOILS MOIST ABOVE 5.5'</u>		

TEST PIT <u>TP-106</u>				
DATE: <u>12/20/13</u>		SURFACE ELEVATION: <u>70' +/-</u>	LOCATION: <u>SEE SHEET 1</u>	
SAMPLE		DEPTH (FT)	STRATUM DESCRIPTION	TEST RESULTS
NO.	DEPTH			
		2.0	DARK GRAY-BROWN SILTY SAND SOME GRAVEL WITH COBBLES, ORGANICS, BRICK (FILL)	
		3.2	BROWN SAND SOME SILT, SOME GRAVEL (FILL)	
		3.6	DARK BROWN AND BLACK SILTY SAND WITH ORGANICS (RELIC TOPSOIL)	
		5.6	GRAY WITH BROWN MOTTLING CLAYEY SILT AND FINE SAND WITH SAND LAYERS	
COMPLETION DEPTH: <u>5.6'</u>		DEPTH TO WATER: <u>ALL SOILS MOIST</u>		

PROJECT / CLIENT: PROPOSED PRE-ENGINEERED BUILDING / PETER F. HOLMES
 LOCATION: 424 WARREN AVENUE, PORTLAND, MAINE
 EXCAVATOR: EASTERN EXCAVATION, INC. / KOMATSU PC 50 MR

SWC REP.: EMW
 PROJECT NO.: 13-0912

TEST PIT <u>TP-107</u>				
DATE: <u>12/20/13</u>		SURFACE ELEVATION: <u>69' +/-</u>	LOCATION: <u>SEE SHEET 1</u>	
SAMPLE		DEPTH (FT)	STRATUM DESCRIPTION	TEST RESULTS
NO.	DEPTH			
		1.5	BROWN GRAVELLY SAND SOME SILT WITH COBBLES ORGANICS IN UPPER 6" +/- (FILL)	
		2.0	DARK BROWN SILTY SAND WITH ORGANICS (RELIC TOPSOIL)	
		5.0	LAYERED GRAY-BROWN SILTY SAND AND SILTY CLAY	

COMPLETION DEPTH: 5 DEPTH TO WATER: ALL SOILS MOIST TO WET

TEST PIT <u>TP-108</u>				
DATE: <u>12/20/13</u>		SURFACE ELEVATION: <u>70' +/-</u>	LOCATION: <u>SEE SHEET 1</u>	
SAMPLE		DEPTH (FT)	STRATUM DESCRIPTION	TEST RESULTS
NO.	DEPTH			
		0.6	BROWN GRAVELLY SAND SOME SILT WITH COBBLES (FILL)	@ 4.5' : q _p = 7 KSF
		1.4	DARK BROWN AND BLACK SILTY SAND WITH ORGANICS (RELIC TOPSOIL)	
		1.7	ORANGE-BROWN SILTY SAND	
		3.5	LIGHT GRAY-BROWN SILTY SAND	
		6.0	GRAY-BROWN CLAYEY SANDY SILT WITH SAND LAYERS	

COMPLETION DEPTH: 6.0' DEPTH TO WATER: ALL SOILS MOIST

PROJECT / CLIENT: PROPOSED PRE-ENGINEERED BUILDING / PETER F. HOLMES
 LOCATION: 424 WARREN AVENUE, PORTLAND, MAINE
 EXCAVATOR: EASTERN EXCAVATION, INC. / KOMATSU PC 50 MR

SWC REP.: EMW
 PROJECT NO.: 13-0912

TEST PIT <u>TP-109</u>				
DATE: <u>12/20/13</u>		SURFACE ELEVATION: <u>70' +/-</u>	LOCATION: <u>SEE SHEET 1</u>	
SAMPLE		DEPTH (FT)	STRATUM DESCRIPTION	TEST RESULTS
NO.	DEPTH			
			BROWN SILTY GRAVELLY SAND WITH COBBLES (FILL)	
		1.9		
		2.1	DARK BROWN SILTY SAND WITH ORGANICS (TOPSOIL)	
		4.0	GRAY SILTY FINE SAND WITH SILT AND SILTY CLAY SEAMS TRACE ROOTLETS	
		6.2	GRAY-BROWN WITH RUST-BROWN MOTTLING SILTY SANDY CLAY	
COMPLETION DEPTH: <u>6.2'</u>			DEPTH TO WATER: <u>ALL SOILS MOIST</u>	

PROJECT / CLIENT: PROPOSED PRE-ENGINEERED BUILDING / PETER F. HOLMES
 LOCATION: 424 WARREN AVENUE, PORTLAND, MAINE
 EXCAVATOR: EASTERN EXCAVATION, INC. / KOMATSU PC 50 MR

SWC REP.: EMW
 PROJECT NO.: 13-0912

TEST PIT <u>TP-ST-1</u>			
DATE: <u>12/20/13</u>		SURFACE ELEVATION: <u>71' +/-</u>	LOCATION: <u>SEE SHEET 1</u>
SAMPLE NO.	DEPTH (FT)	STRATUM DESCRIPTION	TEST RESULTS
	0.9	DARK BROWN SILTY SAND SOME GRAVEL WITH ORGANICS (FILL)	
	4.0	BROWN SILTY FINE TO MEDIUM SAND WITH SILT SEAMS	
	4.3	BROWN CLAYEY SILT AND SAND	
		NOTE: TEST PIT ALSO LOGGED BY ALBERT FRICK ASSOCIATES	
COMPLETION DEPTH: <u>4.3'</u> DEPTH TO WATER: <u>ALL SOILS MOIST</u>			
TEST PIT <u>TP-ST-2</u>			
DATE: <u>12/20/13</u>		SURFACE ELEVATION: <u>69' +/-</u>	LOCATION: <u>SEE SHEET 1</u>
SAMPLE NO.	DEPTH (FT)	STRATUM DESCRIPTION	TEST RESULTS
	0.5	VEGETATION / DARK BROWN CLAYEY SILTY SAND WITH ORGANICS (TOPSOIL)	
	2.0	REWORKED GRAY-BROWN CLAYEY SANDY SILT (FILL / DISTURBED SOILS)	
	3.5	GRAY-BROWN CLAYEY SILT AND SAND WITH FINE SAND LAYERS	
	4.2	BROWN SILTY FINE SAND	
		NOTE: TEST PIT ALSO LOGGED BY ALBERT FRICK ASSOCIATES	
COMPLETION DEPTH: <u>4.2'</u> DEPTH TO WATER: <u>HEAVY SEEPAGE @ 4'</u>			

PROJECT / CLIENT: PROPOSED PRE-ENGINEERED BUILDING / PETER F. HOLMES
 LOCATION: 424 WARREN AVENUE, PORTLAND, MAINE
 EXCAVATOR: EASTERN EXCAVATION, INC. / KOMATSU PC 50 MR

SWC REP.: EMW
 PROJECT NO. 13-0912

TEST PIT <u>TP-ST-3</u>			
DATE: <u>12/20/13</u>		SURFACE ELEVATION: <u>69' +/-</u>	LOCATION: <u>SEE SHEET 1</u>
SAMPLE	DEPTH (FT)	STRATUM DESCRIPTION	TEST RESULTS
NO. DEPTH			
	0.3	VEGETATION / BROWN SILTY SAND WITH ORGANICS (TOPSOIL)	
	1.8	REWORKED GRAY-BROWN CLAYEY SANDY SILT WITH ORGANICS (FILL / DISTURBED SOILS)	
	4.5	GRAY-BROWN CLAYEY SILT, SOME SAND	
		NOTE: TEST PIT ALSO LOGGED BY ALBERT FRICK ASSOCIATES	
COMPLETION DEPTH: <u>4.5'</u> DEPTH TO WATER: <u>HEAVY SEEPAGE @ 4'</u>			
TEST PIT <u>TP-ST-4</u>			
DATE: <u>12/20/13</u>		SURFACE ELEVATION: <u>68' +/-</u>	LOCATION: <u>SEE SHEET 1</u>
SAMPLE	DEPTH (FT)	STRATUM DESCRIPTION	TEST RESULTS
NO. DEPTH			
	0.5	VEGETATION / BROWN CLAYEY SILT SAND WITH ORGANICS (TOPSOIL)	
	2.5	REWORKED CLAYEY SILT AND SAND WITH ORGANICS (FILL / DISTURBED SOILS)	
	4.0'	GRAY-BROWN WITH BROWN MOTTLING CLAYEY SILT AND SAND WITH SAND SEAMS	
		NOTE: TEST PIT ALSO LOGGED BY ALBERT FRICK ASSOCIATES	
COMPLETION DEPTH: <u>4.0'</u> DEPTH TO WATER: <u>ALL SOILS MOIST</u>			



KEY TO THE NOTES & SYMBOLS

Test Boring and Test Pit Explorations

All stratification lines represent the approximate boundary between soil types and the transition may be gradual.

Key to Symbols Used:

w	-	water content, percent (dry weight basis)
q _u	-	unconfined compressive strength, kips/sq. ft. - based on laboratory unconfined compressive test
S _v	-	field vane shear strength, kips/sq. ft.
L _v	-	lab vane shear strength, kips/sq. ft.
q _p	-	unconfined compressive strength, kips/sq. ft. based on pocket penetrometer test
O	-	organic content, percent (dry weight basis)
W _L	-	liquid limit - Atterberg test
W _p	-	plastic limit - Atterberg test
WOH	-	advance by weight of hammer
WOM	-	advance by weight of man
WOR	-	advance by weight of rods
HYD	-	advance by force of hydraulic piston on drill
RQD	-	Rock Quality Designator - an index of the quality of a rock mass. RQD is computed from recovered core samples.
γ _T	-	total soil weight
γ _B	-	buoyant soil weight

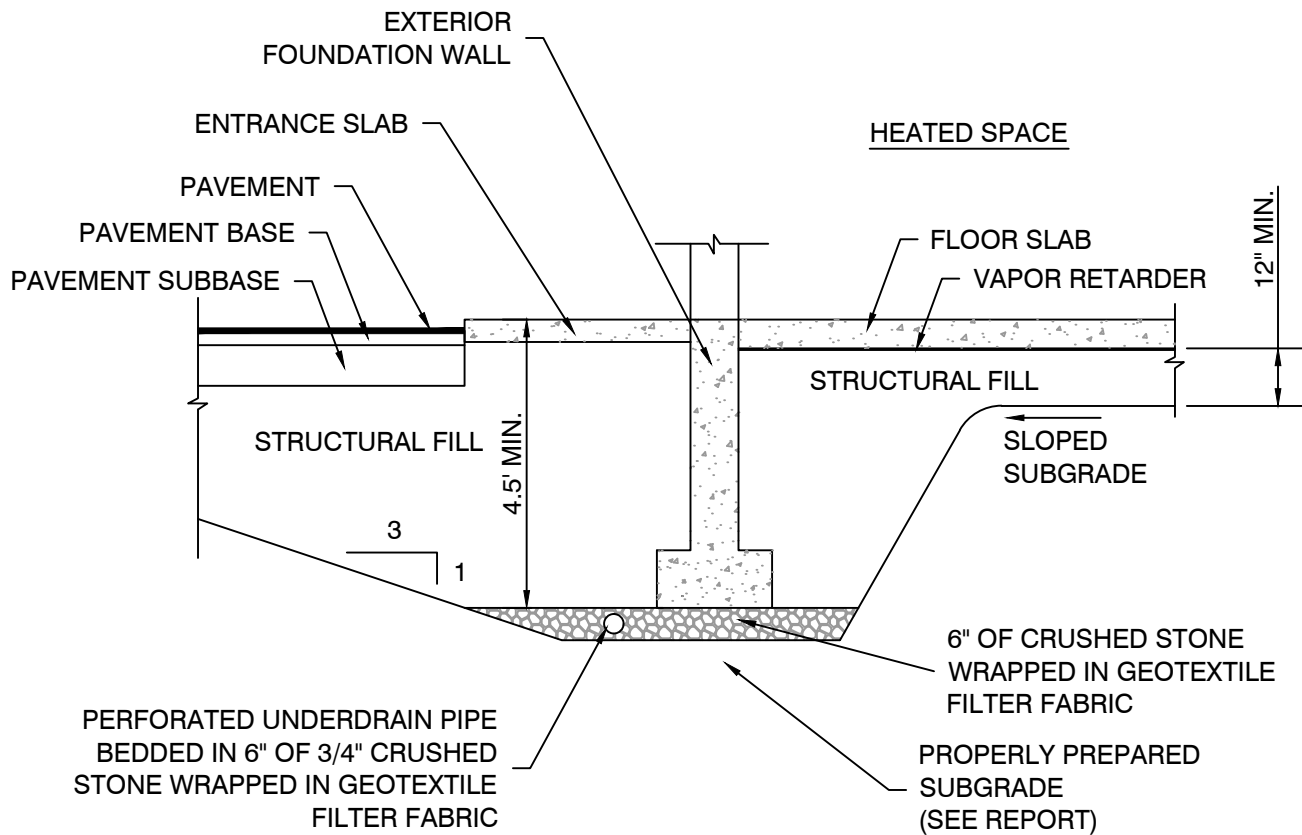
Description of Proportions:

0 to 5% TRACE
5 to 12% SOME
12 to 35% "Y"
35+% AND

REFUSAL: Test Boring Explorations - Refusal depth indicates that depth at which, in the drill foreman's opinion, sufficient resistance to the advance of the casing, auger, probe rod or sampler was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

REFUSAL: Test Pit Explorations - Refusal depth indicates that depth at which sufficient resistance to the advance of the backhoe bucket was encountered to render further advance impossible or impracticable by the procedures and equipment being used.

Although refusal may indicate the encountering of the bedrock surface, it may indicate the striking of large cobbles, boulders, very dense or cemented soil, or other buried natural or man-made objects or it may indicate the encountering of a harder zone after penetrating a considerable depth through a weathered or disintegrated zone of the bedrock.



NOTE:

1. UNDERDRAIN INSTALLATION AND MATERIAL GRADATION RECOMMENDATIONS ARE CONTAINED WITHIN THIS REPORT.
2. DETAIL IS PROVIDED FOR ILLUSTRATIVE PURPOSES ONLY, NOT FOR CONSTRUCTION.



S.W. COLE
ENGINEERING, INC.

PETER F. HOLMES

UNDERDRAIN DETAIL

PROPOSED PRE-ENGINEERED BUILDING
424 WARREN AVENUE
PORTLAND, MAINE

Job No.: 13-1392
Date : 12/24/2013

Scale: Not to Scale
Sheet: 10

Town, City, Plantation
PORTLAND

Street, Road Subdivision
WARREN AVENUE

Owner's Name
PETER HOLMES

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP ST-1 ☒ Test Pit ☐ Boring
" Depth of Organic Horizon Above Mineral Soil

Texture	Consistency	Color	Mottling
GRAVELLY LOAMY SAND (FILL)	FROZEN	VARIABLE BROWN	
SANDY LOAM		DARK BROWN 10YR3/3	
LOAMY SAND	FRIABLE	YELLOWISH BROWN 10YR5/6	
FINE SAND W/ SILT LENSES		MIXED OLIVE BROWN	FEW FAINT
	SOMEWHAT FIRM TO FIRM	LIGHT OLIVE BROWN	
	(NO SATURATION)		
SILTY CLAY LOAM	FIRM	OLIVE GRAY	COMMON DISTINCT
	(LIMIT OF EXCAVATION @ 52")		

Soil Classification Slope Limiting Factor ☒ Ground Water
Profile Condition % 23 " ☐ Restrictive Layer
☐ Bedrock
☐ Pit Depth

Soil Series Name: FILL OVER ELDRIDGE (ELMWOOD) Drainage Class: Hydrologic Group:

Observation Hole TP ST-2 ☒ Test Pit ☐ Boring
" Depth of Organic Horizon Above Mineral Soil

Texture	Consistency	Color	Mottling
SILT LOAM	FRIABLE	DARK BROWN	
			COMMON DISTINCT
SILTY CLAY LOAM	SOMEWHAT FIRM	OLIVE GRAY	
LOAMY FINE SAND	FRIABLE	LIGHT OLIVE BROWN	
SILTY CLAY LOAM	FIRM	OLIVE	△△△ FREE WATER
	(LIMIT OF EXCAVATION @ 56")		

Soil Classification Slope Limiting Factor ☒ Ground Water
Profile Condition % 7 " ☐ Restrictive Layer
☐ Bedrock
☐ Pit Depth

Soil Series Name: STRIPPED LAMOINE Drainage Class: Hydrologic Group:

SOIL DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole TP ST-3 ☒ Test Pit ☐ Boring
" Depth of Organic Horizon Above Mineral Soil

Texture	Consistency	Color	Mottling
SILT LOAM	FRIABLE	DARK BROWN 10YR3/3	
SILTY CLAY (FILL/ OVERBURDEN)	FIRM	OLIVE	RELIC
SILTY CLAY LOAM		OLIVE BROWN	
W/ SILT & LOAMY FINE SAND IN LENSES			
			△△△ FREE WATER

Soil Classification Slope Limiting Factor ☒ Ground Water
Profile Condition % 46 " ☐ Restrictive Layer
☐ Bedrock
☐ Pit Depth

Soil Series Name: STRIPPED/REGRADED LAMOINE Drainage Class: Hydrologic Group:

Observation Hole TP ST-4 ☒ Test Pit ☐ Boring
" Depth of Organic Horizon Above Mineral Soil

Texture	Consistency	Color	Mottling
SILTY CLAY (REGRADED & OVERBURDEN)	FROZEN	VARIABLE OLIVE BROWN & OLIVE GRAY	
	SOMEWHAT FIRM		MANY PROMINENT (RELIC)
SILTY CLAY LOAM W/LOAMY FINE SAND AND SILT LENSES	FIRM	VARIABLE OLIVE BROWN AND DARK YELLOWISH BROWN	COMMON DISTINCT
			NOTE: NO FREE WATER IN TEST PIT
	(LIMIT OF EXCAVATION @ 55")		

Soil Classification Slope Limiting Factor ☒ Ground Water
Profile Condition % 9 " ☐ Restrictive Layer
☐ Bedrock
☐ Pit Depth

Soil Series Name: STRIPPED/REGRADED LAMOINE Drainage Class: Hydrologic Group:

Site Evaluator / Soil Scientist Signature

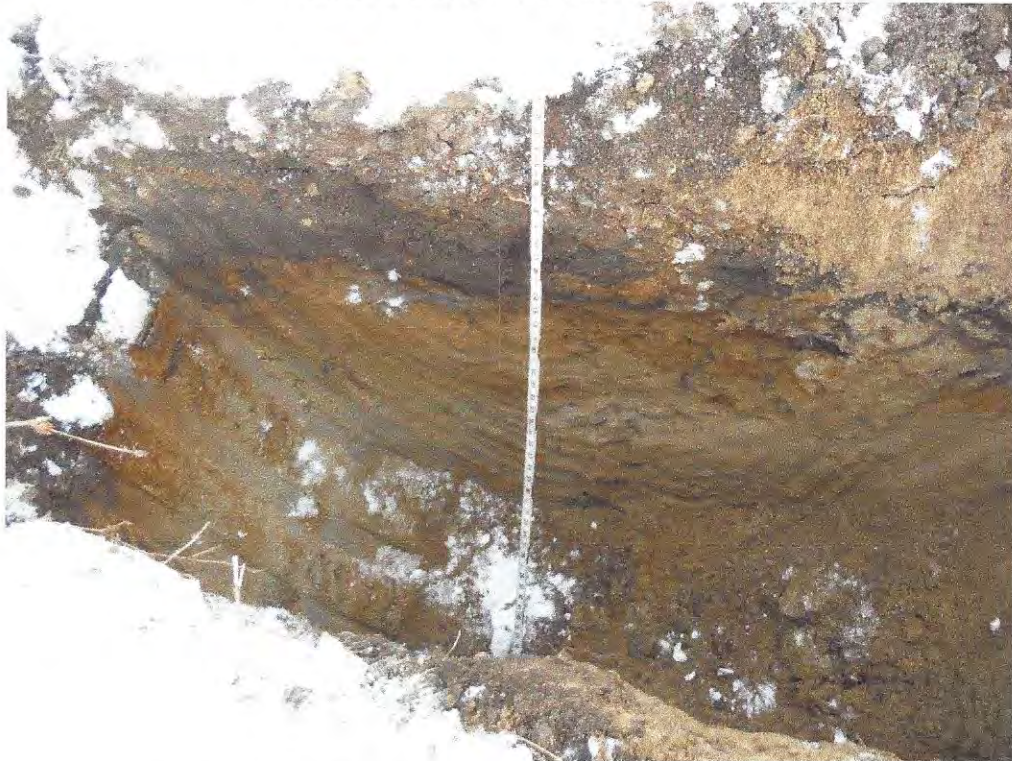
237/213
SE/CSS #

12-20-13
Date

Peter Holmes Site
off Warren Avenue
Portland, Maine



View of excavator near edge of upland



View of typical non-hydric, regraded soils on site (TP ST-4)

APPENDIX G

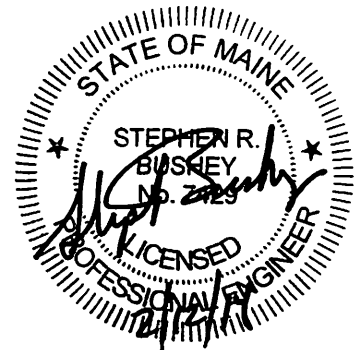
EROSION CONTROL PLAN

**BASIC STANDARDS
EROSION AND SEDIMENTATION CONTROL REPORT**

**421 WARREN AVENUE
COMMERCIAL COMPLEX**

PREPARED FOR:

**PH WARREN AVENUE, LLC
421 WARREN AVENUE
PORTLAND, MAINE 04101**



PREPARED BY:

**FAY, SPOFFORD & THORNDIKE, INC.
778 MAIN STREET, SUITE 8
SOUTH PORTLAND, MAINE 04106
(207) 775-1121**

FEBRUARY 2014

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Figures and Photographs

Please refer to Section 1 of the Site Plan Application for Figures and Photographs

Appendices

- Appendix A – Seeding Plan
- Appendix B – Sample Erosion Control Compliance Certification and Inspection Forms
- Appendix C – DirtGlue™ Application and Use Requirements

1.0 INTRODUCTION

Fay, Spofford & Thorndike (FST) has been retained by Peter Holmes to assist on the preparation of site design and site permitting for a proposed 28,000 SF footprint multi-unit building in Portland, Maine. The development will include a new multi-unit building, 41 space parking lot and related infrastructure improvements. This proposed project will create a total of 2.53 ac of developed area of which 1.90 ac will be new structure area (building and other impervious surfaces) within the approximately 7.95 acre project watershed area analyzed. The landowner of this site also owns an approximate additional 40 acres surrounding this site.

The development site is located on the north side of Warren Avenue between Interstate 95 and Forest Avenue in Portland. The site is owned by PH Warren Avenue, LLC. A large portion of this site currently drains to a drainage way in the northeast quadrant of the site. Part of the southerly tip of the site drains into Warren Avenue and is collected by the City's municipal drainage system. A second part of the southerly end drains across to Harbour Auto-Body and is collected in a small detention pond before being routed into the city drainage system.

A USGS Map, Zoning, Aerial Photographs, Flood, Soils, figures are included in Section 1 of the Site Plan Application. The accompanying plan set includes erosion control details and overall erosion control plan.

This section of the permit application presents the Erosion Sediment Control Plan designed for the project. The erosion control plans will be contained in the contract documents for implementation by the Contractor who is awarded the bid for the project. This project is coordinated with the MeDEP erosion control requirements. The Contract documents will require that turbid discharges from the site do not occur. Fugitive dust emissions will be controlled and the requirements of this erosion control plan, and all permit requirements will be fulfilled. Winter construction may be required. Specific erosion controls stipulated by the plan and this report are minimum requirements.

2.0 EXISTING SITE CONDITIONS

The current site cover conditions are summarized in the table below:

SUMMARY OF LAND USE COVER	
Current Land Cover	Area (acre)
Woods/Meadow	5.75
Roof	0.28
Lawn	0.46
Pavement	0.67
Gravel	0.79
Total	7.95

3.0 EXISTING DRAINAGE FEATURES

The existing site is comprised of undeveloped woods, meadow and lawn area associated and gravel areas.

Topography is relatively flat within the site. A large portion of the site drains over a flat wetland area towards a tributary in the northeast quadrant of the site. About half of the area in the southern portion of the site drains towards Warren Avenue and is picked up by the City of Portland Municipal Stormwater System through a catch basin in the street. The other half flows towards an existing detention pond adjacent to Harbour Auto Body shop, which is located on property owned

by the applicant. Flow is released from this detention pond and is discharged to the City of Portland Stormwater System.

The preliminary geotechnical explorations by S.W. Cole Engineering in December 2013 show that the site contains fill soils over a layer of relic topsoil underlain by glaciomarine sands, silts and clays.

4.0 OVERVIEW OF SOIL EROSION AND SEDIMENTATION CONCERNS

The susceptibility of soils to erosion is indicated on a relative “K” scale of values over a range of 0.02 to 0.69. The “K” value is frequently used with the universal soil loss equation. The higher values are indicative of the more erodible soils. The relative K values of the underlying material at the site would be as follows:

Soil Symbol	Soil Description	“K” Value
Scantic	Silt Loam	0.49-0.64

The primary emphasis of the Erosion and Sedimentation Control Plan to be implemented for this project is as follows:

- **Temporary Measures:** Planning the project to have erosion resistant measures in place by implementing measures intended to prevent erosion from occurring.
- **Phasing Sequencing:** The plan includes measures to intercept and convey runoff to temporary sediment sumps and control devices as the construction of the project occurs. The use of small collection sumps with a clean sand filter above an underdrained discharge is recommended to supplement the principal sumps to help reduce turbidity.
- **Use of Type 1 Settling:** Installing sediment sumps and swales early in the construction sequence to provide secondary relief for erosion control measures within the site until late in the project when the sedimentation areas need to be removed for final restoration.
- **Restabilization:** Stabilization of areas denuded to underlying parent material must occur within stipulated time frame to minimize the period of soil exposure and stabilization of drainage paths to avoid rill and gully erosion.
- **Interim Entrapment:** The use of on-site measures to capture sediment (hay bales/silt fence, etc.) before it is conveyed to sediment sumps.
- **Long Term Site Protection:** The implementation of long-term measures for erosion/sediment and pollutant treatment through the construction of permanent water quality measures including gravel wetlands.
- **Special Winter Construction Measures:** These will be required for work between September 15 and April 15.

5.0 DESCRIPTION AND LOCATION OF LIMITS OF ALL PROPOSED EARTH MOVEMENTS

The construction of the project will disturb about 4 acres of land. The limit of disturbance is generally coincident with the limit of grading.

The earth moving will include trenching for underground utilities, excavation for the water quality measures, earthwork to reshape the perimeter of the site, earthwork to prepare and shape the parking lot, excavation attendant with the building, and excavation and borrow for the project improvements.

6.0 **PROPOSED DRAINAGE FEATURES**

The postdevelopment plan includes consideration and design for water quality treatment of stormwater runoff. These measures will also constitute the stormwater management provisions for the development.

Certain manholes on the project provide flow management by directing stormwater to different areas and by regulating the discharge rates for various points of analysis.

The proposed cover conditions for the site upon completion of the project will be as follows:

TABLE 2 – POSTDEVELOPMENT LAND USE		
Proposed Land Cover	Area (acre)	Change from Current (acre)
Woods/Meadow	4.38	-1.37
Roof	0.92	+0.64
Lawn/Landscaped Planting Areas	0.66	+0.20
Pavement	1.77	+1.17
Gravel	0.22	-0.57
Total	7.95	

7.0 **CRITICAL AREAS**

Critical resource areas include nearby wetlands to the north of the site. No special species habitats have been identified on the interior areas of the site. It is noted that the stormwater systems shall not be activated until the tributary areas have been stabilized and at least three weeks has passed subsequent to placement of bituminous concrete paving materials.

8.0 **EROSION/SEDIMENTATION CONTROL DEVICES**

As part of the site development, the Contractor will be obligated to implement the following erosion and sediment control devices. These devices shall be installed as indicated on the plans or as described within this report. For further reference on these devices, see the *Maine Department of Environmental Protection Erosion and Sediment Control BMPS Manual (March, 2003)*.

1. Siltation fence or an erosion control mix berm shall be installed down slope of any disturbed areas to trap runoff borne sediments until the site is revegetated. The silt fence shall be installed per the detail provided in the plan set and inspected immediately after each rainfall and at least daily during prolonged rainfall. The Contractor shall make repairs immediately if there are any signs of erosion or sedimentation below the fence line. If such erosion is observed, the Contractor shall take proactive action to identify the cause of the erosion and take action to avoid its reoccurrence. Typically, this requires that stabilization measures be undertaken. Proper placement of stakes and keying the bottom of the fabric into the ground is critical to the fence's effectiveness. If there are signs of undercutting at the center or the edges, or impounding of large volumes of water behind the fence, the barrier shall be replaced with a stone check dam and measures taken to avoid the concentration of flows not directed to the silt fence.

2. Straw or hay mulch including hydroseeding is intended to provide cover for denuded or seeded areas until revegetation is established. Mulching should be occurring several times per week when the site construction activity is high and at sufficient intervals to reduce the period of exposure of bare soils to the time limits set forth in this plan. Mulch placed on slopes of less than 10 percent shall be anchored by applying water; mulch placed on slopes steeper than 10 percent shall be covered with fabric netting as immediately after mulching as practicable and anchored with staples in accordance with the manufacturer's recommendations. Proposed drainage channels, which are to be revegetated, shall receive Curlex® blankets by American Excelsior Company selected for the slope, velocity, and whether the measure is temporary or intended to be in place for a sustained period. Mulch application rates are provided in Appendix A of this section. Hay mulch shall be available on site at all times in order to provide immediate temporary stabilization when necessary. Where necessary, a windrow of crushed stone and/or gravel shall be placed at the top of the slope and directed to a temporary stone channel or pipe sluice to convey runoff down slopes. A dissipation device such as stone or a plunge pool should be installed at the base of the slope and sluice outlet to dissipate the energy of the water from the sluice or channel.
3. Temporary sediment sumps will provide sedimentation control for stormwater runoff from disturbed areas during construction until stabilization has been achieved. The sediment sumps need to include a sand filter above an underdrain or a chemical coagulant to remove fine-grained sediment. Appropriate measures to reduce sediment suspended in discharges to less than 280 NTU's will be required.
4. Riprap slopes, ditch linings, stone check dams, hay bale barriers, and culvert outlet aprons are intended to stabilize and protect denuded soil surfaces or dissipate the energy and erosive forces from concentrated flows. Installation details and stone sizes are provided in the construction plan set on the erosion control detail sheets.
5. A construction entrance will be constructed at all access points onto the site to prevent tracking of soil onto adjacent local roads and streets and the existing driveway for 429 Warren Avenue.
6. Stone sediment traps or a premanufactured SiltSack™ and a sediment bag will be installed at catch basin inlets to prevent silt from entering the municipal storm drain system. Installation details are provided in the plan set on the erosion control detail sheets.
7. Dirtbags™ will be required to be on site and available for construction dewatering. The Contractor will be required to provide two Dirtbags™ with one prepared for operation prior to commencing any trenching operations. Dirtbags™ will need to be installed above filter sand and crushed stone in accordance with the details shown on the plan set will need to be installed.
8. Loam and seed is intended to serve as the primary permanent revegetative measure for all denuded areas not provided with other erosion control measures, such as riprap. Specific areas as shown on the landscape plan may receive sod. Application rates are provided in Appendix A of this section for temporary and permanent seeding.
9. Stone check dams will be installed in areas noted on the plan or as warranted, based upon observations during construction of the site.
10. Silt logs are an option for stone check dams and may be substituted provided the devices are well anchored.
11. DirtGlue™ is an acceptable means of temporary stabilization and is intended to form a "crust" on the surface that is resistant to erosion. However, applications where DirtGlue™ is used must be protected from traffic that would crack the "crust" and the DirtGlue™ has temperature

limitations that restrict the periods of use. Use of this material shall conform to the requirements of Appendix D.

12. Wattles (constructed of rice straw) are to be used for small areas where the surface is irregular and where an immediate measure is needed to protect downstream measures.

9.0 TEMPORARY EROSION/SEDIMENTATION CONTROL MEASURES

The following are planned as temporary erosion/sedimentation control measures during construction:

1. Crushed stone-stabilized construction entrances shall be placed at any construction access points from adjacent streets or the existing 429 Warren Avenue driveway. The location of the construction entrance shown on the drawings should be considered illustrative and will need to be adjusted as appropriate and located at any area where there is the potential for tracking of mud and debris onto existing roads or streets. Stone stabilized construction entrances will require the stone to be removed and replaced, as it becomes covered or filled with mud and material tracked by vehicles exiting the site.
2. Dirtbags™ shall be installed in accordance with the details in the plan set. The purpose of the Dirtbags™ is to receive any water pumped from excavations during construction. A Dirtbag™ shall be installed and prepared for operation prior to any trenching or foundation construction on site. When Dirtbags™ are observed to be at 50% capacity, they shall be cleaned or replaced. Stone and filter sand under the Dirtbag™ shall be removed and replaced concurrently with the replacement of the Dirtbag™.
3. Temporary stockpiles of common excavation will be protected as follows:
 - a) Temporary stockpiles shall not be located at least 50 feet upgradient of the perimeter silt barrier.
 - b) Inactive stockpiles shall be stabilized within 5 days by either temporarily seeding the stockpile with a hydroseed method containing an emulsified mulch tackifier or by covering the stockpile with mulch. If necessary, mesh shall be installed to prevent wind from removing the mulch.
4. All denuded areas except gravel areas shall receive mulch, erosion control mesh fabric, or other approved temporary erosion sediment measure within 7 days of initial disturbance of soil or before a predicted rain event of $>1/2"$ unless permanent measures are installed.
5. All soils disturbed between September 15 and April 15 will be covered with mulch within 5 days of disturbance, prior to any predicted storm event of the equivalent of $1/2"$ of rainfall in a 24-hour period, or prior to any work shutdown lasting more than 35 hours (including weekends and holidays). The mulch rate shall be double the normal rate.

For work that is conducted between September 15 and April 15 of any calendar year, all denuded areas will be covered with hay mulch, applied at twice the normal application rate, and (in areas over 10% grade) anchored with a fabric netting. The time period for applying mulch shall be limited to 5 days for all areas, or immediately in advance of a predicted rainfall event.
6. Stone check dams, silt logs, or hay bale barriers will be installed at any evident concentrated flow discharge points during construction and earthwork operations.
7. Silt fencing with a maximum stake spacing of 6 feet should be used, unless the fence is supported by wire fence reinforcement of minimum 14 gauge and with a maximum mesh spacing of 6 inches, in which case stakes may be spaced a maximum of 10 feet apart. The

bottom of the fence should be properly anchored a minimum of 6" per the plan detail and backfilled. Any silt fence identified by the owner or reviewing agencies as not being properly installed during construction shall be immediately repaired in accordance with the installation details.

8. Storm drain catch basin inlet protection shall be provided through the use of stone sediment barriers or a premanufactured SiltSack™. Stone sediment barrier installation details are provided in the plan set. The barriers or SiltSacks™ shall be inspected after each rainfall and repairs made as necessary, including the removal of sediment. Sediment shall be removed and the barrier or SiltSack™ restored to its original dimensions when the sediment has accumulated to one-half the design depth of the barrier. Sediment shall be removed from SiltSacks™ as necessary. Inlet protection shall be removed when the tributary drainage area has been stabilized.
9. All slopes steeper than 4:1 shall receive erosion control mesh.
10. Slopes steeper than 3:1 shall receive erosion control blanket.
11. Areas of visible erosion and the temporary sediment sumps shall be stabilized with crushed stone. The size of the stone shall be determined by the contractor's designated representative in consultation with the Owner.
12. Any flow from the site that is concentrated must be directed to a sump with sand filter and underdrained discharge.
13. Underground utilities must be installed in compliance with the following standards and other requirements of this erosion control plan:
 - No more than 500 linear feet of trench may be opened at one time;
 - Excavated materials shall be placed on the uphill side of trenches;
 - Dewatering of the trench shall be pumped through a Dirtbag™ and appropriate sediment control facilities to avoid a turbid discharge; and
 - Stabilization shall occur as soon as practicable.
14. Rice straw wattles shall be used to control localized erosion.
15. Maintenance of the erosion control, sedimentation facilities, and control of fugitive dust must occur until the site is stabilized with permanent erosion control measures. For turf areas, stabilization shall be defined to be the establishment of a 90 percent "catch of grass" with no areas larger than 2 square feet, and no spots that cumulatively add up to more than 5 square feet per 100 square feet.

10.0 STANDARDS FOR STABILIZING SITES FOR THE WINTER

The construction of the project will require winter construction. The project is anticipated to require about 11-12 months to construct. For permitted winter construction, the erosion control measures are substantially more stringent due to the cold temperatures and lack of weather conditions which aid in drying the subgrade soils through evaporation.

If construction activities involving earth disturbance continue past September 15 or begin before April 15, the following must be incorporated with the erosion control plan and implementation:

1. Enlarged access points must be stabilized to provide for snow stockpiling.

2. Limits of disturbance shall be reduced to the extent practicable.
3. A snow management plan including adequate storage and control of snowmelt, requiring cleared snow to be stored downgradient of all areas of disturbance shall be prepared by the contractor and submitted to the Owner for review and approval.
4. Snow shall not be stored in sediment basins or to preclude drainage structures from operating as intended.
5. A minimum 25-foot buffer maintained from perimeter controls such as silt fence shall be maintained on the “work area side” to allow for snow clearing and maintenance.
6. Drainage systems intended to operate during the winter shall be catalogued, shown on a plan, and inspected after each snow removal period to make sure the drainage structures are open and free of snow and ice dams.
7. To ensure cover of disturbed soil in advance of a melt event, areas of disturbed soil must be stabilized at the end of each work day, with the following exceptions:
 - If no precipitation within 24 hours is forecast and work will resume in the same disturbed area within 24 hours, daily stabilization is not necessary.
 - Disturbed areas that collect and retain runoff, such as house foundations or open utility trenches.
8. Standard for the timely stabilization of ditches and channels: The Contractor shall construct and stabilize all stone-lined ditches and channels on the site by September 15. The contractor shall construct and stabilize all grass-lined ditches and channels on the site by September 1. If the Contractor fails to stabilize a ditch or channel to be grass-lined by September 1, then the Contractor shall take one of the following actions to stabilize the ditch for late fall and winter.
 - i. Install a sod lining in the ditch. The contractor shall line the ditch with properly installed sod by September 15. Proper installation includes the applicant pinning the sod onto the soil with wire pins, rolling the sod to guarantee contact between the sod and underlying soil, watering the sod to promote root growth into the disturbed soil, and anchoring the sod with jute or plastic mesh to prevent the sod strips from sloughing during flow conditions.
 - ii. Install a stone lining in the ditch. The contractor shall line the ditch with stone riprap by September 15. The contractor shall hire a registered professional engineer to determine the stone size and lining thickness needed to withstand the anticipated flow velocities and flow depths within the ditch. If necessary, the Contractor shall regrade the ditch prior to placing the stone lining so as to prevent the stone lining from reducing the ditch’s cross-sectional area.
9. Standard for the timely stabilization of disturbed slopes: The Contractor shall construct and stabilize stone-covered slopes by September 15. The Contractor shall seed and mulch all slopes to be vegetated by September 1. The Department will consider any area having a grade greater than 15% (10H:1V) to be a slope. If the Contractor fails to stabilize any slope to be vegetated by September 1, then the Contractor shall take one of the following actions to stabilize the slope for late fall and winter.
 - i. Stabilize the soil with temporary vegetation and erosion control mesh. By September 15, the Contractor shall seed the disturbed slope with winter rye at a seeding rate of 3 pounds per 1,000 square feet and apply erosion control mats over the mulched slope. The contractor shall 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 slope by September 15,

then the Contractor shall cover the slope with a layer of wood waste compost as described in item iii of this standard or with stone rip rap as described in item iv of this standard.

- ii. Stabilize the slope with sod. The Contractor shall stabilize the disturbed slope with properly installed sod by September 15. 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 33% (3H:1V) or having groundwater seeps on the slope face.
 - iii. Stabilize the slope with wood waste compost. The Contractor shall place a six-inch layer of wood waste compost on the slope by September 15. Prior to placing the wood waste compost, the Contractor shall remove any snow accumulation on the disturbed slope. The contractor shall not use wood waste compost to stabilize slopes having grades greater than 50% (2H:1V) or having groundwater seeps on the slope face.
 - iv. Stabilize the slope with stone rip rap. The Contractor shall place a layer of stone riprap on the slope by September 15. The Contractor shall hire a registered professional engineer to determine the stone size needed for stability and to design a filter layer for underneath the riprap.
10. Standard for the timely stabilization of disturbed soil: By September 1, the Contractor shall seed and mulch all disturbed soils on areas having a slope less than 15%. If the Contractor fails to stabilize these soils by this date, then the Contractor shall take one of the following actions to stabilize the soil for late fall and winter.
- i. Stabilize the soil with temporary vegetation. By September 15, the Contractor shall seed the disturbed soil with winter rye at a seeding rate of 3 pounds per 1,000 square feet, lightly mulch the seeded soil with hay or straw at 75 pounds per 1,000 square feet, and anchor the mulch with plastic netting. The Contractor shall monitor the 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 September 15, then the Contractor shall mulch the area for over-winter protection as described in item iii of this standard.
 - ii. Stabilize the soil with sod. The Contractor shall stabilize the disturbed soil with properly installed sod by September 15. Proper installation includes the Contractor 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.
 - iii. Stabilize the soil with mulch. By September 15, the Contractor shall mulch the disturbed soil by spreading hay or straw at a rate of at least 150 pounds per 1,000 square feet on the area so that no soil is visible through the mulch. Prior to applying the mulch, the Contractor shall remove any snow accumulation on the disturbed area. Immediately after applying the mulch, the Contractor shall anchor the mulch with plastic netting to prevent wind from moving the mulch off the disturbed soil.
 - iv. Stabilize all stockpiles with mulch within 24 hours.

11.0 SPECIAL MEASURES FOR SUMMER CONSTRUCTION

The summer period is generally optimum for construction in Maine, but it is also the period when intense short duration storms are most common, making denuded areas very susceptible to erosion,

when dust control needs to be the most stringent, and when the potential to establish vegetation is often restricted by moisture deficit. During these periods, the Contractor must:

1. Implement a program to apply dust control measures on a daily basis except those days where the precipitation exceeds 0.25 inch. This program shall extend to and include adjacent streets used by construction vehicles.
2. Spray any mulches with water after anchoring to dampen the soil and encourage early growth. Spraying may be required several times. Temporary seed may be required until the late summer seeding season.
3. Mulch, cover, and moisten stockpiles of fine-grained materials, which are susceptible to erosion. In the summer months, the potential for wind erosion is of concern, as well as erosion from the intense, short-duration storms, which are more prevalent in the summer months.
4. Take additional steps needed to control fugitive dust emissions to minimize reductions in visibility and the airborne disbursement of fine-grained soils. This is particularly important along the adjacent streets.

These measures may also be required in the spring and fall during the drier periods of these seasons.

12.0 SEDIMENTATION SUMPS

The sediment sumps shall be sized in accordance with the plan and specifications. The bottom of the sumps is intended to be used for temporary infiltration.

Discharge must be through a sand filter over an underdrained outlet to aid in the control of turbidity levels in the discharge. An emergency bypass shall be included and shall be constructed of 6" of stone overlaying filter fabric and discharge to undisturbed turf.

13.0 PERMANENT EROSION CONTROL MEASURES

The following permanent erosion control measures have been designed as part of the Erosion/Sedimentation Control Plan:

1. The drainage conveyance systems have been designed to intercept and convey the 25-year storm. In the case of open channels or swales, this includes the design of measures to resist scour of the channel.
2. All storm drainpipes shall have stabilization at their outlet to protect the outlet and receiving channel of the culverts from scour and deterioration. Installation details are provided in the plan set. The aprons shall be installed and stabilized prior to directing runoff to the tributary pipe or culvert. Orifices in hydraulic control structures will be protected with a wire mesh screen with an opening of no more than 25 percent of the orifice size and a surface area of at least 25 times the area of the orifice.
3. All areas disturbed during construction, but not subject to other restoration (paving, riprap, etc.), will be loamed, limed, fertilized, mulched, and seeded. Fabric netting, anchored with staples, shall be placed over the mulch in areas where the finish grade slope is greater than 10 percent. Native topsoil and wetland soils shall be stockpiled and temporarily stabilized with seed and mulch and reused for final restoration when it is of sufficient quality.

4. Permanent seeding shall be conducted only in April through May and in late summer until September 15.
5. A riprap plunge pool will be installed at the stormwater management discharges at the wetland edge to disperse the flows.

14.0 TIMING AND SEQUENCE OF EROSION/SEDIMENTATION CONTROL MEASURES

The Contractor must control fugitive dust emissions respect and not impede the neighboring land uses while controlling sediment laden runoff to 280 NTU or less. For all grading activities, the Contractor shall exercise extreme caution not to overexpose the site by limiting the disturbed area and shall stabilize any steep slopes within 24 hours if final slope grading and stabilization will not be completed within 7 days. Any final slopes shall have the specified erosion control measures installed within 7 days of final stabilization.

The following construction sequence shall be required, (unless otherwise authorized in writing by the Owner's project manager or authorized permit agent).

The description of the work is:

- Mark the Phase 1 work limits.
- Install safety fence and security signs around the perimeter of the site.
- Establish and install construction entrances with gates.
- Install silt fence or equivalent sediment barrier along the perimeter and other designated areas requiring silt fence or equivalent sediment barrier.
- Establish Dirtbag® area and pump system for dewatering activities.
- Construct sedimentation facilities with riprap discharge locations.
- Construct a diversion swale(s) to direct as much of the site to the sedimentation basins as possible.
- Install temporary seed and mulch around the perimeter of the temporary sedimentation facilities.

There is more flexibility for the contractor to schedule the work provided once the erosion control measures are in place. The measures shown on the erosion control drawing of the plan set are the measures that need to be installed as soon as practicable during construction in subsequent phases.

The underground facilities and treatment units shall not be activated until authorized by the design engineer or a certified erosion control professional who has signed an affidavit indicating they have reviewed the plans, Stormwater Management, Erosion Sediment Control Plan, Stormwater O&M Manual, and any State and Local site permits issued for the project.

15.0 CONTRACTING PROCEDURE

The onsite components of the project will be constructed by a General Contractor under contract to the Developer. Offsite improvements may be constructed by a General Contractor under contract to the owner. The Contractor shall submit a schedule for the completion of the work, which will satisfy the following criteria:

1. The construction sequence of Section M should generally be completed in the specified order; however, several separate items may be constructed simultaneously. Work must also be scheduled or phased to prevent the duration of areas exposed or susceptible to erosion as specified below. The intent of this sequence is to provide for erosion control and to have structural measures such as sediment barriers and construction entrances in place before large areas of land are denuded.
2. The work shall be conducted in sections which will:
 - a) Limit the amount of exposed area to those areas in which work is expected to be undertaken during the preceding 30 days.
 - b) Revegetate disturbed areas as rapidly as possible. All areas shall be permanently stabilized within 7 days of final grading and temporarily stabilized within 7 days of initial disturbance or before a predicted storm event of over ½" of rain.
 - c) Incorporate planned inlets and drainage system as early as possible into the construction phase. The ditches shall be immediately lined or revegetated as soon as their installation is complete.
 - d) Achieve the parking space numbers indicated in the construction phasing.
3. Once final grade has been established, the Contractor may choose to dormant seed the disturbed areas prior to placement of mulch and placement of fabric netting anchored with staples.
 - a) If dormant seeding is used for the site, all disturbed areas shall receive 6" of loam and seed at an application rate of 5#/1,000 s.f.

All areas seeded during the winter months will be inspected in the spring for adequate catch. All areas insufficiently vegetated (less than 75 percent catch) shall be revegetated by replacing loam, seed, and mulch.
 - b) If dormant seeding is not used for the site, all disturbed areas shall be revegetated in the spring.
4. The area of denuded, non-stabilized construction shall be limited to the minimum area practicable. An area shall be considered to be denuded until the subbase gravel is installed in parking areas, or the areas of future loam and seed have been loamed, seeded, and mulched. The mulch rate shall be twice the rate specified in the seeding plan. [For example, 115#/1,000 s.f. x 2 = 230#/s.f.]
5. Within the exposed work area, temporary sedimentation sumps shall be provided any concentrated flow area with sand filter or chemical coagulation. Additional information is provided in prior sections of this narrative and on the Erosion Control Details of the plan set. Along the sedimentation sumps, barriers shall be provided at sufficient intervals to permit runoff to be accumulated to a maximum depth of 12" before overflowing.
6. The schedule shall be subject to the approval of the Owner.

7. The Contractor must maintain an accurate set of record drawings indicating the date when an area is first denuded, the date of temporary stabilization, and the date of final stabilization. On September 15 of any calendar year, the Contractor shall submit a detailed plan for stabilizing the site for the winter and a description of what activities are planned during the winter.
8. The Contractor must install any added measures which may be necessary to control erosion/sedimentation and fugitive dust emissions from the site, with adjustments made dependent upon forecasted and actual site and weather conditions.
9. The Contractor shall note that no area within 50 feet of a slope with a vertical drop of more than 3' in 50 feet shall remain denuded for a period of over 5 days before it is temporarily stabilized. Temporary stabilization shall be the installation of mulching. All other areas shall be stabilized within 7 days or before a predicted rain event. For construction between September 15 and April 15 of any calendar year, all areas shall be temporarily stabilized at the earlier time frames specified above.
10. Certain erosion control products (such as DirtGlue™) come in a form that a release could occur on the site or into the environs. The Contractor shall include MSDS information for all products that have the potential for release to the environment and shall be responsible for implementing a safety control program for proper handling of these materials on the site.
11. A notice and point of contact with cell phone number shall be posted at the trailer to permit access to the erosion records during normal work hours and in case of emergency at other times. All additions and construction records shall be copied via e-mail to the Owner.

The Owner reserves the right to add additional personnel to this list at the pre-construction conference or at reasonable intervals during the project.
12. The Owner will provide a copy of the Maine Construction General Permit Notice of Intent acceptance letter to the Contractor. This letter shall be maintained at the site with the Erosion Control Plan.
13. Any revisions to the Erosion Control Plan must be authorized in writing by the Preparer of the Plan (Fay, Spofford & Thorndike). The Preparer of the Plan shall be permitted reasonable time to review and notify the city and other agencies of said changes. Revisions to the Erosion Control Plan will be required:
 - a. Whenever the current provisions prove to be ineffective in minimizing pollutants in stormwater *discharges* from the site;
 - b. Whenever there is a change in design, construction, or operation at the construction site that has or could have an effect on the discharge of pollutants; and
 - c. To address issues or deficiencies identified during an inspection by the *qualified inspector*, the MaineDEP, City of Portland, or other regulatory authority.
14. Should the Owner notify the contractor that the activity on the site is in violation of the Erosion Control Plan, the Contractor shall at its sole cost correct the deficiencies and file a photographic log with a list of corrective actions with the Owner within 7 days of notification by the Owner.
15. The Contractor shall engage a qualified inspector to monitor the work. This inspector shall be approved by the Owner prior to the individual being engaged on the project. This inspection

shall be a part of the Contractor's Quality Control Plan for the project by the Contractor. The inspector's qualifications and duties that he shall perform are as follows:

- a. Licensed Professional Engineer or Certified Professional in Erosion Control
- b. Covered by Workman's Compensation Insurance
- c. Experienced in this type of work, the specific erosion controls applicable to this project with a resume approved by the engineer
- d. Compensated on a unit rate basis with no incentives for reduced costs or subject to any type of compensation for passing inspections
- e. Approved by the Owner and the preparer of this plan

The *qualified inspectors* shall conduct site inspections in accordance with the following timetable:

- a. Where soil disturbance activities are on-going, the *qualified inspector* shall conduct a site inspection at least once every seven (7) calendar days.
- b. Where soil disturbance activities have been temporarily suspended (e.g. winter shutdown) and temporary stabilization measures have been applied to all disturbed areas, the *qualified inspector* shall conduct a site inspection at least once every thirty (30) calendar days. The *owner or operator* shall notify the City's stormwater contact person or, in areas under the jurisdiction of a *regulated traditional land use control MS4*, the MS4 (provided the MS4 is not the *owner or operator* of the construction activity) in writing prior to reducing the frequency of inspections.
- c. Where soil disturbance activities have been shut down with partial project completion, the *qualified inspector* can stop conducting inspections if all areas disturbed as of the project shutdown date have achieved *final stabilization* and all post-construction stormwater management practices required for the completed portion of the project have been constructed in conformance with the Erosion Control requirements and are operational. The *owner or operator* shall notify the City's stormwater contact person in writing prior to the shutdown. If soil disturbance activities are not resumed within 2 years from the date of shutdown, the Contractor shall have the *qualified inspector* perform a final inspection and certify that all disturbed areas have achieved *final stabilization*, and all temporary, structural erosion and sediment control measures have been removed, and that all post-construction stormwater management practices have been constructed in conformance with the Erosion Control Plan by signing the "Final Stabilization" and "Post-Construction Stormwater Management Practice" certification statements on the Notice of Termination. The *owner or operator* shall then submit the completed Notice of Termination form to the City of Portland and MaineDEP.

At a minimum, the *qualified inspector* shall inspect all erosion and sediment control practices to ensure integrity and effectiveness, all post-construction stormwater management practices under construction to ensure that they are constructed in conformance with the Contract documents and Permit conditions, all areas of disturbance that have not achieved *final stabilization*, all points of discharge to natural surface water bodies located within, or immediately adjacent to, the property boundaries of the construction site, and all points of discharge from the construction site.

The *qualified inspector* shall prepare an inspection report subsequent to each and every inspection. At a minimum, the inspection report shall include and/or address the following:

- a. Date and time of inspection;
- b. Name and title of person(s) performing inspection;
- c. A description of the weather which shall be consistent with the National Weather Service Forecast Office, Portland-Gray, ME and soil conditions (e.g. dry, wet, saturated) at the time of the inspection;
- d. A description of the condition of the runoff at all points of discharge from the construction site and sampling to determine the turbidity in NTU's. This shall include identification of any *discharges* of sediment from the construction site. Include *discharges* from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;
- e. A description of the condition of all natural surface water bodies located within, or immediately adjacent to, the property boundaries of the construction site which received runoff from disturbed areas. This shall include identification of any *discharge* of sediment to the surface water body;
- f. Identification of all erosion and sediment control practices that need repair or maintenance;
- g. Identification of all erosion and sediment control practices that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;
- h. Description and sketch of areas that are disturbed at the time of the inspection and areas that have been stabilized (temporary and/or final) since the last inspection;
- i. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPPP and technical standards;
- j. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s); and
- k. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The *qualified inspector* shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.

Within one business day of the completion of an inspection, the *qualified inspector* shall notify the owner the appropriate contractor or subcontractor of any corrective actions that need to be taken. The contractor or subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame, at its sole cost.

All inspection reports shall be signed by the *qualified inspector*. The inspection reports shall be maintained on site.

16. The Owner reserves the right to have quality assurance monitoring of the work. The Contractor shall, at its sole cost, cooperate with the Owner and their quality assurance monitoring of the work including maintaining an accurate schedule for performing the work. The Owner will notify the contractor if any particular elements of the work should be uncovered or available for observation by the Quality Assurance Monitor selected by the Owner. The Owner reserves the right to conduct the quality assurance monitoring during working hours at any time during the project.

16.0 PROVISIONS FOR MAINTENANCE OF THE EROSION/SEDIMENTATION CONTROL FEATURES

The project will be contracted to a General Contractor. The project is subject to the requirements of the local permits, and a state regulated Construction General Permit and City of Portland Site Plan Approval.

This project requires the Contractor to prepare a list and designate by name, address and telephone number all individuals who will be responsible for implementation, inspection, and maintenance of all erosion control measures identified within this section and as contained in the Erosion and Sedimentation Control Plan of the contract drawings. Specific responsibilities of the inspector(s) will include:

1. Execution of the Contractor/Subcontractor Certification contained in Appendix B by any and all parties responsible for erosion control measures on the site as required by the permit authorities.
2. Assuring and certifying the Owner's construction sequence is in conformance with the specified schedule of this section. A weekly certification stating compliance, any deviations, and corrective measures necessary to comply with the erosion control requirements of this section shall be prepared and signed by the inspector(s).
3. In addition to the weekly certifications, the inspector(s) shall maintain written reports recording construction activities on site which include:
 - Dates when major grading activities occur in a particular areas.
 - Dates when major construction activities cease in a particular area, either temporarily or permanently.
 - Dates when an area is stabilized.
4. Inspection of this project work site on a weekly basis and after each significant rainfall event (0.5 inch or more within any consecutive 24-hour period) during construction until permanent erosion control measures have been properly installed and the site has been stabilized. Inspection of the project work site shall include:
 - Identification of proper erosion control measure installation in accordance with the erosion control detail sheet or as specified in this section.
 - Determine whether each erosion control measure is properly operating. If not, identify damage to the control device and determine remedial measures.
 - Identify areas which appear vulnerable to erosion and determine additional erosion control measures which should be used to improve conditions.

- Inspect areas of recent seeding to determine percent catch of grass. A minimum catch of 90 percent is required prior to removal of erosion control measures.
 - All erosion controls shall be removed within 30 days of permanent stabilization except for mulch and netting not detrimental to the project. Removals shall include but not be limited to all silt fence, hay bales, inlet protection, and stone check dams.
 - Accumulated silt/sediment should be removed when the depth of sediment reaches 50 percent of the barrier height. Accumulated silt/sediment should be removed from behind silt fencing when the depth of the sediment reaches 6 inches.
 - Silt sacks should be removed and replaced at least every three months and at any time where the weekly inspection reveals that siltation has significantly retarded the rate of flow through the silt sack.
 - Discharges should be measured during storm events to document the turbidity of stormwater discharge is <280 NTU.
5. If inspection of the site indicates a change should be made to the erosion control plan, to either improve effectiveness or correct a site-specific deficiency, the inspector shall immediately implement the corrective measure and notify the Owner of the change.
 6. Arranging for an on-site meeting prior to commencing winter construction to assure that all special winter construction measures will be implemented and to review the specific requirements of this plan for winter construction.

All certifications, inspection forms, and written reports prepared by the inspector(s) shall be filed with the Owner, and the Permit File contained on the project site. All written certifications, inspection forms, and written reports must be filed within one (1) week of the inspection date.

The Contractor has sole responsibility for complying with the erosion/sediment control report, including control of fugitive dust, and shall be responsible for any monetary penalties resulting from failure to comply with these standards.

Once construction has been completed, long-term maintenance of the stormwater management system will be the responsibility of the applicant. Inspection and Maintenance items with a list of maintenance requirements and frequency are described in a separate document. In the event of defective workmanship or any failure by the contractor and its subcontractors to adhere to the Standards set forth in these documents, the Contractor shall be responsible to correct, at its sole cost, any latent defects together with reimbursement of Owner for any expenses borne by the Owner up to the time of said correction. This provision shall remain in effect beyond any stated or implied warranty period.

17.0 PRECONSTRUCTION CONFERENCE

Prior to any construction at the site, representatives of the Contractor, the Owner, and the site design engineer and any personnel identified in the permit conditions shall meet to discuss the scheduling of the site construction and the designation of the responsible parties for implementing the plan. The Contractor shall be responsible for scheduling the meeting. Prior to the meeting, the Contractor will prepare a detailed schedule and a marked-up site plan indicating areas and components of the work and key dates showing date of disturbance and completion of the work. The Contractor shall conduct a meeting with employees and sub-contractors to review the erosion control plan, the construction techniques which will be employed to implement the plan, and provide a list of attendees and items

discussed at the meeting to the Owner. Three copies of the schedule, the Contractor's meeting minutes, and marked-up site plan shall be provided to the Owner.

18.0 APPENDICES

Appendix A – Seeding Plan

Appendix B –Sample Erosion Control Compliance Certification and Inspection Forms

Appendix C –DirtGlue™ Application and Use Requirements

19.0 PLAN REFERENCES

Drawings C-5.0 & C-6.0 to C-6.2 Erosion/Sediment Control Plan and Details

APPENDIX A

Seeding Plan

PERMANENT SEEDING PLAN (TURF AROUND PERIMETER)

Project: 421 Warren Avenue Commercial Complex

Site Location: Portland, Maine

X Permanent Seeding _____ Temporary Seeding

1. **Area to be Seeded:** Approximately 1.0 acre(s) or 40 /M. Sq. Ft.
2. **Instructions on Preparation of Soil:** Prepare a good seed bed for planting method use (do not overcompact).
3. **Apply Lime as Follows:** _____ #/acres or 138# /M Sq. Ft. or per soil test
4. **Fertilize:** pounds of _____ - _____ N-P-K/ac.
 20 pounds of 3-27-5 N-P-K/M Sq. Ft. or per soil test
5. **Method of Applying Lime and Fertilizer:** Spread and work into the soil before seeding.
6. **Seed with the following mixture:**
30% Perennial Rye
35% Kentucky Bluegrass
35% Penn Lawn Tall Fescue
7. **Mulching Instructions:** Apply at the rate of tons per acre or 115 pounds per M. Sq. Ft.
8. **Application:**

Type	Unit#	Tons, Etc.
Total Lime	138	#/1,000 s.f.
Total Fertilizer	20	#/1,000 s.f.
Total Seed	8.0	#/1,000 s.f.
Total Mulch	115	#/1,000 s.f.
Total Other	0	0

9. **Remarks:**

Seeding dates April 15 to May 31 and August 1 until September 1. Permanent seeding should be made prior to September 1 or as a dormant seeding after the first killing frost and before the first snowfall. If seeding cannot be done within these seeding dates, temporary seeding and mulching shall be used to protect the site. Permanent seeding shall be delayed until the next recommended seeding period.

Fertilizer requirements shall be subject to actual test results of the topsoil used for the project. The Contractor shall be responsible for providing topsoil test results for pH and recommended fertilizer application rates to the Owner.

Seed mixture shall be fresh, clean, new crop seed. Seed may be mixed by an appropriate method on the site or may be mixed by the dealer. If the seed is mixed on the site, each variety shall be delivered in the original containers bearing the dealer's guaranteed analysis.

Deep tine aerate if soil is compacted.

If seed is mixed by the dealer, the Seeding Contractor shall furnish to the Owner the dealer's guaranteed statement of the composition of the mixture and the percentage of purity and germination of each variety.

Seed shall be purchased from a recognized distributor and shall test to a minimum percentage of 95% for purity and 85% for germination.

All loam shall have compost or peat admixtures to raise the organic content to 6%.

TEMPORARY SEEDING PLAN (EROSION CONTROL MIX)

Project: 421 Warren Avenue Commercial Complex

Site Location: Portland, Maine

X Permanent Seeding X Temporary Seeding

1. **Area to be Seeded:** Approximately 0.5 acre(s) or ____/M. Sq. Ft.
2. **Instructions on Preparation of Soil:** Prepare a good seed bed for planting method used.
3. **Apply Lime as Follows:** ____ #/acres or 138#/M Sq. Ft. or per soil test
4. **Fertilize:** ____ pounds of _____ - _____ N-P-K/ac.
20 pounds of 10-10-10 N-P-K/M Sq. Ft. or per soil test
5. **Method of Applying Lime and Fertilizer:** Spread and work into the soil before seeding.
6. **Seed with the following mixture:**
Annual Rye-grass 50%
Timothy 25%
Winter Rye 25%
7. **Mulching Instructions:** Apply at the rate of ____ tons per acre or 230 pounds per M. Sq. Ft.
8. **Application:**

Type	Unit#	Tons, Etc.
Total Lime	138	#/1,000 s.f.
Total Fertilizer	20	#/1,000 s.f.
Total Seed	1	#/1,000 s.f.
Total Mulch	230	#/1,000 s.f.
Total Other		

9. Remarks:

For areas with slopes >10% and fall and winter erosion control areas, mulch netting shall be used per manufacturer's specifications.

Permanent seeding should be made prior to September 1 or as a dormant seeding after the first killing frost and before the first snowfall. If seeding cannot be done within these seeding dates, temporary seeding and mulching shall be used to protect the site. Permanent seeding shall be delayed until the next recommended seeding period.

Fertilizer requirements shall be subject to actual test results of the topsoil used for the project. The Contractor shall be responsible for providing topsoil test results for pH and recommended fertilizer application rates to the Owner.

Seed mixture shall be fresh, clean, new crop seed. Seed may be mixed by an appropriate method on the site or may be mixed by the dealer. If the seed is mixed on the site, each variety shall be delivered in the original containers bearing the dealer's guaranteed analysis. If seed is mixed by the dealer, the Seeding Contractor shall furnish to the Owner the dealer's guaranteed statement of the composition of the mixture and the percentage of purity and germination of each variety.

Seed shall be purchased from a recognized distributor and shall test to a minimum percentage of 95% for purity and 85% for germination.

All loam shall have compost or peat admixtures to raise the organic content to 6%.

APPENDIX B

Sample Erosion Control Compliance Certification and Inspection Forms

**MAINE CONSTRUCTION GENERAL PERMIT
CONTRACTOR/SUBCONTRACTOR CERTIFICATION**

PROJECT INFORMATION

Project Name: 421 Warren Avenue Commercial Complex
Address: Portland, Maine

CONTRACTOR/SUBCONTRACTOR INFORMATION

Firm Name:
Address:
Telephone:
Type of Firm:

CERTIFICATION STATEMENT

“I certify under penalty of law that I understand the terms and conditions of the Maine Construction General Permit (MCGP) permit that authorizes the stormwater discharges associated with construction activity from the project site identified as part of this certification.”

Signature

Typed Name

Title

Date

MAINE CONSTRUCTION GENERAL PERMIT

INSPECTION REPORT

PROJECT INFORMATION

Project Name: 421 Warren Avenue Commercial Complex
Address: Portland, Maine

INSPECTOR INFORMATION

Inspector Name: _____
Firm: _____
Title: _____
Qualifications: _____
Weather and Soil Conditions: _____

INSPECTION SUMMARY

Date of Inspection: _____
Major Observations: _____

1. Attach the following to the Report:

- a. A description of the condition of the runoff at all points of discharge from the construction site and sampling to determine the NTU. This shall include identification of any *discharges* of sediment from the construction site. Include *discharges* from conveyance systems (i.e. pipes, culverts, ditches, etc.) and overland flow;
- b. A description of the condition of all natural surface water bodies located within, or immediately adjacent to, the property boundaries of the construction site which received runoff from disturbed areas. This shall include identification of any discharge of sediment to the surface water body;
- c. Identification of all erosion and sediment control practices that need repair or maintenance.
- d. Identification of all erosion and sediment control practices that were not installed properly or are not functioning as designed and need to be reinstalled or replaced;
- e. Description and sketch of areas that are disturbed at the time of the inspection and areas that have been stabilized (temporary and/or final) since the last inspection;

- f. Current phase of construction of all post-construction stormwater management practices and identification of all construction that is not in conformance with the SWPP and technical standards;
 - g. Corrective action(s) that must be taken to install, repair, replace or maintain erosion and sediment control practices; and to correct deficiencies identified with the construction of the post-construction stormwater management practice(s); and
 - h. Digital photographs, with date stamp, that clearly show the condition of all practices that have been identified as needing corrective actions. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report being maintained onsite within seven (7) calendar days of the date of the inspection. The *qualified inspector* shall also take digital photographs, with date stamp, that clearly show the condition of the practice(s) after the corrective action has been completed. The *qualified inspector* shall attach paper color copies of the digital photographs to the inspection report that documents the completion of the corrective action work within seven (7) calendar days of that inspection.
2. Within one business day of the completion of an inspection, the *qualified inspector* shall notify the owner the appropriate contractor or subcontractor of any corrective actions that need to be taken. The contractor or subcontractor shall begin implementing the corrective actions within one business day of this notification and shall complete the corrective actions in a reasonable time frame.
 3. All inspection reports shall be signed by the *qualified inspector*. The inspection reports shall be maintained on site and distributed via email at the time of filing.

THE FACILITY IS IN COMPLIANCE WITH THE STORMWATER POLLUTION PREVENTION PLAN WITH THE FOLLOWING EXCEPTIONS:

ACTIONS NECESSARY TO BRING FACILITY INTO COMPLIANCE:

REQUIRED MODIFICATIONS TO STORMWATER POLLUTION PREVENTION PLAN (MUST BE SUBMITTED WITHIN 2 DAYS OF INSPECTION TO OWNER FOR APPROVAL):

CERTIFICATION STATEMENT:

“I certify under penalty of law that this document and all Appendices were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the systems, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”

Signature

Typed Name

Title

Date

APPENDIX C

DirtGlue™ Application and Use Requirements

DIRTGLUE™
APPLICATION INSTRUCTIONS FOR DUST CONTROL

METHODOLOGY

A. Heavy Duty Driving Surface

Application Rates (per surface acre)

<i>DirtGlue</i> ™ Polymer Emulsion:	2,400 gallons/acre
Water:	3,600 -14,400 gallons/acre

Application Process

1. Loosen the existing soil using a scarifying attachment mounted on a grader (or similar piece of equipment) or a tractor with an agriculture disk attachment. If additional soil is required, it should be applied and mixed into the existing soil at this time. It is important to loosen the soil to ensure penetration of the *DirtGlue*™/water mixture into the soil.
2. Apply *DirtGlue*™/water mixture to soil using a water truck equipped with a gravity feed drip bar, spray bar, or automated distributor truck. Multiple passes will be necessary to get the desired amount of *DirtGlue*™ polymer emulsion for the specific application. Multiple passes will also ensure gradual, thorough saturation of the soil.
3. Thoroughly blend the *DirtGlue*™/water mixture into the soil with a rototiller, “S” harrow, or similar attachment. The soil must be evenly mixed and saturated with the *DirtGlue*™/water mixture to a depth of four (4”) inches.
4. Grade the soil to finish grade with a grader, a small dozer or other suitable equipment.
5. Compact the soil with a vibratory roller. The final compaction should be greater than asphalt (Strive for 100% compaction, but always in excess of 95%).
6. Immediately after compacting, apply a topcoat of *DirtGlue*™ polymer emulsion to seal the road surface. In order to ensure a longer life and superior performance of the application, an additional coat should be applied between twenty four to forty eight hours after completion and then annually as an ongoing maintenance procedure. This topcoat should be applied at a rate of 250 gallons per surface acre.

B. Temporary Light Duty Driving Surface

This type of application will provide acceptable performance when used by cars and light trucks. It is not intended for constant use by heavy-duty trucks and/or tracked construction equipment. Areas that will be used by this type of equipment should be treated as a heavy-duty application as noted above.

Application Rates (per surface acre)

<i>DirtGlue</i> ™ Polymer Emulsion:	1,200 gallons/acre
Water:	3,600-6000 gallons/acre

Application Process:

1. Loosen the existing soil for a depth of two (2”) inches using a scarifying attachment mounted on a grader (or similar piece of equipment) or a tractor with a rototiller or agriculture disk attachment. If additional soil is required, it should be applied and mixed into the existing soil

at this time. It is important to loosen the soil to ensure penetration of the **DirtGlue™**/water mixture into the soil.

2. Apply **DirtGlue™**/water mixture to soil using a water truck equipped with gravity feed drip bar, spray bar, or automated distributor truck. Multiple passes will be necessary to get the desired amount of DirtGlue™ polymer emulsion for the specific application. Multiple passes will also ensure gradual, thorough saturation of the soil. Do not apply the **DirtGlue™**/water mixture so heavy as to create run-off.
3. Grade the soil to finish grade with a grader, a small dozer or other suitable equipment.
4. Compact with a vibratory roller. The final compaction should be greater than asphalt (Strive for 100% compaction, but always in excess of 95%).
5. Immediately after compacting, apply a topcoat of **DirtGlue™** polymer emulsion to seal the road surface. In order to ensure a longer life and superior performance of the application, an additional coat should be applied between twenty four to forty eight hours after completion and then again annually as an ongoing maintenance procedure.

C. **Dust & Erosion Control (Non-driving Areas)**

This type of application is intended for pedestrian use only. Vehicular use will break through the skin and adversely affect the performance of the application. Areas that will require any vehicular use should be treated as a light-duty application as noted above or retreated as traffic damage occurs.

Application Rates (per surface acre)

<i>DirtGlue™</i> Polymer Emulsion:	300 gallons (windblown dust control) 600 gallons (bank stabilization, erosion/silt, run-off control)
Water:	2,000-6,000 gallons

Application Process

1. Apply *DirtGlue™*/water mixture to existing soil using a water truck equipped with a gravity feed spray bar or tank and pump (i.e. hydro seeder).
2. Add *DirtGlue™* to water rather than water to *DirtGlue™* or place a fill hose at bottom of tank, underneath surface of liquid to prevent foaming.
3. When applying *DirtGlue™*/water mixture, dispense large droplets. Avoid any fine mist. The intent is to apply a sheet of liquid onto the soil.
4. It is important to determine the moisture content of the soil prior to starting an application. The moisture content will have an effect on the dilution ratio of the *DirtGlue™*/water mixture. Your *DirtGlue™* representative will assist you in determining the correct dilution ratio for the conditions on your site.
5. Temperature and, to a lesser extent, humidity have a significant effect on curing/drying time. Testing has shown that applications should be done only when the air temperature will be above 50° F for at least 72 hours following the application. Soil temperature must be above 40° F for several days.
6. The *DirtGlue™* application must be protected from the rain until the curing process has formed a skin on the surface. Uncured *DirtGlue™* is water soluble. If the application is exposed to rain before it has the opportunity to cure, the rainwater will dilute the polymer and wash it out of the soil. If this happens, the application will not be as strong.

**CONDITIONS FOR USE OF DIRTGLUE™ (REGISTERED TRADEMARK OF
DIRTGLUE™ ENTERPRISES)
APPROVED MATERIALS LIST**

Applicant: DirtGlue™ Enterprises

General Conditions

1. DirtGlue™ Enterprises shall ensure that every applicator of DirtGlue™ is provided a copy of these conditions.
2. These Conditions do not override the need for any applicator to obtain permits (including DEP permits) or approvals that may be required (e.g., use associated with activities in or near regulated wetlands, surface waters, or other regulated natural resources).
3. DirtGlue™ shall only be used as stated in these conditions and shall not be mixed with any other chemicals, including petroleum products.
4. No application shall be conducted when the National Weather Service forecasts greater than 25% probability of precipitation in the application area to occur within 24 hours, or the temperature will drop below 35° F anytime within 24 hours after the application.
5. Applications shall not be conducted when the ground is saturated (due to precipitation or wetting) as defined by visible pools of water at or in the vicinity of the application, in order to prevent movement of DirtGlue™ beyond the shoulder of the road.
6. DirtGlue™ must not be applied or handled in a manner that could result in spillage or application within 100 feet of a wetland regulated by New York State, or 50 feet of all other water bodies and bridges.
7. Any spill which could enter the waters of the state shall be reported to the DEC Spills Hotline within two hours (1-800-457-7362). Any required response (including any needed cleanup) in addition to that being conducted shall then be determined by the DEC regional office.
8. The time of application shall be chosen to take meteorological conditions into account, to avoid significant potential airborne or odor impacts.
9. Prior to application, DirtGlue™ Material Safety Data Sheet shall be provided to applicators and others who would come in proximity or contact with the material.

APPENDIX H

**INSPECTION & MAINTENANCE MANUAL
FOR STORMWATER MANAGEMENT AND
RELATED STORMWATER FACILITIES**

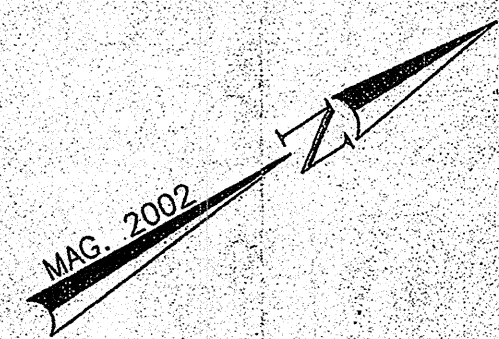
(NOT INCLUDED WITH THIS SUBMISSION)

BOUNDARY SURVEY

WARREN AVENUE
PORTLAND, ME

FOR:
REALTY RESOURCES, CHARTERED
247 COMMERCIAL STREET
ROCKPORT, ME 04856

ALFRED J. WAXLER
P.O. BOX 6681
PORTLAND, MAINE 04103
(OWNER OF RECORD)



N/F
SAGA COMMUNICATIONS OF
NEW ENGLAND, INC.
12543/308

N/F
SAGA COMMUNICATIONS OF
NEW ENGLAND, INC.
12543/308

N/F
424 WARREN AVENUE, LLC
17326/340
TAX MAP 304, BLOCK B, LOT 32
PLAN REF. 3(B)

N/F
PETER F. HOLMES
6918/53
TAX MAP 303, BLOCK A, LOT 11
PLAN REF. 3(D)

N/F
VANCE
3080/873, 3205/559, 2833/190
2595/255, 2755/1
TAX MAP 303, BLOCK A, LOTS 1-7, 9
TAX MAP 303, BLOCK B, LOTS 1, 6-8
PLAN REF. 3(C)

N/F
JOHN P. BENNETT
15814/87
TAX MAP 304, BLOCK C, LOTS 1-14-16
PLAN REF. 3(E)

N/F
GROUX
3070/828 & 3798/15
TAX MAP 303, BLOCK C, LOTS 1-14-16
TAX MAP 303, BLOCK D, LOT 1
PLAN REF. 3(F)

N/F
PORTLAND RINK REALTY
7031/126
TAX MAP 296, BLOCK A, LOT 7
TAX MAP, BLOCK D, LOT 15
PLAN REF. 3(A)

N/F
LEAD MT. LLC,
17401/180
TAX MAP 296, BLOCK A, LOT 1
PLAN REF. 3(N)

N/F
MT. SINAI CEMETERY
ASSOCIATION
1219/386 (LOT I)
TAX MAP 301, BLOCK 1, LOT 13

N/F
MT. SINAI CEMETERY
ASSOCIATION
610/424
TAX MAP 301, BLOCK 1, LOT 4

N/F
MT. SINAI CEMETERY
ASSOCIATION
1219/386 (LOT II)
TAX MAP 297, BLOCK C, LOT 28

N/F
MT. SINAI CEMETERY
ASSOCIATION
1425/371
TAX MAP 297, BLOCK C, LOT 28

LANE AVENUE
PLAN REF. 30(G)

FARNHAM STREET
(PAPER STREET)
PLAN REF. 3(H) & (Q)

PORTLAND PUBLIC WORKS
FILE NO. 9194
PLAN REF. 3(O)

P1

LOCATION MAP
(NOT TO SCALE)

1. DEED REFERENCES:
(A) DEED BOOK 8261, PAGE 269
(B) DEED BOOK 8261, PAGE 273
(C) DEED BOOK 2358, PAGE 131
CUMBERLAND COUNTY REGISTRY OF DEEDS (C.C.R.D.)

2. TAX MAP REFERENCES:
(A) TAX MAP 296 - BLOCK A, LOT 6
(B) TAX MAP 301 - BLOCK F, LOTS 4-6 & BLOCK 1, LOT 10
(C) TAX MAP 302 - BLOCK A, LOT 1
(D) TAX MAP 303 - BLOCK A, LOTS 8-10
(E) TAX MAP 304 - BLOCK B, LOT 28
(F) TAX MAP 305 - BLOCK C, LOT 1
(G) TAX MAP 307 - BLOCK E, LOT 19, & BLOCK 1, LOT 1
(H) TAX MAP 308 - BLOCK B, LOT 1, & BLOCK C, LOT 1
(I) TAX MAP 310 - BLOCK E, LOT 35, & BLOCK F, LOT 1

3. PLAN REFERENCES:

(A) PLAN OF PROPERTY
FOR: WILLIAM B. FAULKINGHAM
BY: H. & E. JORDAN
DATED: FEB. 26, 1973

(B) STANDARD BOUNDARY AND SITE PLAN
FOR: GIBBS & CO.
BY: SEBAGO TECHNIQUES, INC.
DATED: 7/16/87

(C) SITE PLAN
FOR: JOY VANCE
BY: SEBAGO TECHNIQUES, INC.
DATED: 9/17/94

(D) SITE PLAN
FOR: HARBOR AUTO BODY
BY: SEBAGO TECHNIQUES, INC.
DATED: 1/31/90

(E) STANDARD BOUNDARY & TOPOGRAPHIC SURVEY
FOR: DANIEL MORTON, INC.
BY: LEWIS & WASSON, INC.
DATED: 9/15/00

(F) STANDARD BOUNDARY SURVEY
FOR: EUGENIE AMBLER ASSOCIATES
BY: D.A. MARTEL, JR.
DATED: FEB. 1988

(G) STANDARD BOUNDARY SURVEY
FOR: EUGENIE AMBLER ASSOC.
BY: D.A. MARTEL, JR.
DATED: JAN. 1986
RECORDED: PLAN BOOK 154, PAGE 57 (C.C.R.D.)

(H) PLAN OF LOTS
FOR: MRS. ELL. CUSHMAN
BY: E.C. JORDAN & CO.
DATED: SEPT. 1916
RECORDED: PLAN BOOK 13, PAGE 61 (C.C.R.D.)

(I) EXISTING CONDITIONS SURVEY
FOR: 422 FARNHAM STREET
BY: PUBLIC WORKS DEPT., CITY OF PORTLAND
DATED: OCT. 1997

(J) FINAL SUBDIVISION PLAN
FOR: YOUR HOME, INC.
BY: BH24
DATED: JULY 1979

(K) HARKS DEPT. SURVEY PLAN
FOR: RIVINGTON SCHOOL SITE

(L) SUBDIVISION PLAN
FOR: VERRILL & WITT STREETS
BY: LAND USE CONSULTANTS
DATED: JULY 10, 1986
RECORDED: PLAN BOOK 184, PAGE 15 (C.C.R.D.)

(M) PORTLAND VILLA SITES
FOR: J.W. WILBER CO. INC.
BY: ERNEST W. BRANCH CIVIL ENGINEER
DATED: JULY 9, 1918
RECORDED: PLAN BOOK 14, PAGE 7 (C.C.R.D.)

(N) BOUNDARY & EXISTING CONDITIONS PLAN
FOR: NORTHEAST CIVIL SOLUTIONS
DATED: JULY 1, 2002

(O) FARNHAM STREET PUMPING STATION, FORCE MAIN,
GRAVITY SEWER & FUTURE STORM DRAIN RIGHT-OF-WAY

(P) PLAN OF HOMESTEAD ACRES EXTENSION
FOR: CHARLES H. HANSON
DATED: REVISED, MAY 1955
RECORDED: PLAN BOOK 44, PAGE 14 (C.C.R.D.)

(Q) PLAN OF LAND
FOR: MRS. C.S. FARNHAM
BY: E.C. JORDAN & CO.
DATED: JUNE 1910
RECORDED: PLAN BOOK 12, PAGE 16 (C.C.R.D.)

4. PARCEL DELINEATED ON CITY OF PORTLAND TAX ASSESSORS
MAP 31, BLOCK X. 20' WIDE RIGHT-OF-WAY DESCRIBED IN
DEED 1995/566. RIGHT-OF-WAY SHOWN AS PER ASSESSOR'S MAP.

5. PROPERTY IS SUBJECT TO EASEMENTS AND/OR
RIGHT-OF-WAYS OF RECORD

Survey, Inc.

P.O. Box 210
Winthrop, Maine 04092
Phone: 207/882-2266
Fax: 207/882-2267
Survey, Inc. Vermont

I CERTIFY THAT THIS SURVEY CONFORMS TO THE
STANDARDS OF THE MAINE BOARD OF LICENSES FOR
PROFESSIONAL LAND SURVEYORS AND IS CORRECT TO THE
BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL
OPINION.

ROBERT N. FARRINGTON FLS. 586

DRAWN BY: KLD JOB NAME: REALTY
RESOURCES PORTLAND
DATE: DECEMBER 2004 JOB NO. 04-131

- LEGEND:
- IRON PIN FOUND
 - NO. 5 REBAR SET
 - ⊕ UTILITY POLE
 - N/F NOW OR FORMERLY
 - 123/45 DEED BOOK/PAGE
 - EXISTING STRUCTURE
 - P.O.B. POINT OF BEGINNING
 - MAN HOLE
 - WETLANDS

100 0 50 100 200
GRAPHIC SCALE
1"=100'

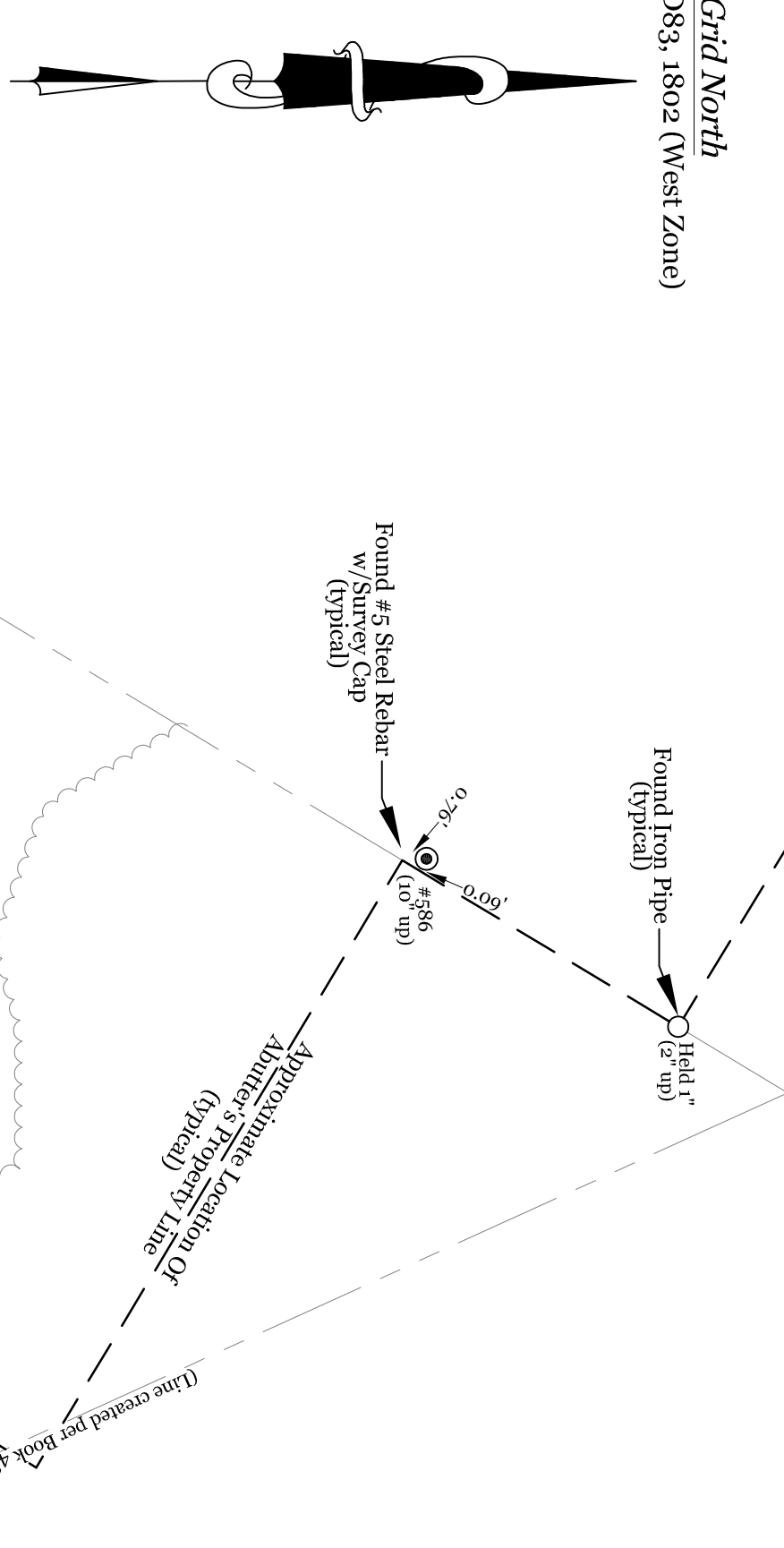
TOTAL PARCEL AREA
48.71 ACRES

Plan References:

- Warren Ave, Terrace, Portland, Maine Owned By: L.W. Willbur", dated April 1911 by Ernest W. French, Civil Engineer, Boston, Mass., recorded August 3, 1911 in CCRD Plan Book 12, Page 2.
- "Plan Of Property In Portland, Maine Made For William H. Foulkingham", dated February 26, 1973 by H.L. & E.C. Jordan - Surveyors, Portland, Maine.
- "Plan Of Property In Portland, Maine Made For Goodwill Of Maine Inc.", dated September 27, 1979, revised July 26, 1983 by H.L. & E.C. Jordan - Surveyors.
- "Plan Of Property In Portland, Maine Made For Standard Boundary Survey, Jordan Rise Home Improvement Co.", dated September 12, 1985 by H.L. & E.C. Jordan - Surveyors, Portland, Maine.
- "Warren Avenue Trade Center Condominiums, 329 Warren Avenue, Portland, Me.", dated March 1988, last revised October 19, 1988 by HTA OJST, recorded August 14, 1988 in CCRD Plan Book 158, Page 14.
- "117A, ACSN Land Title Survey For Saga Communications Limited Partnership, A Massachusetts Limited Partnership Lying Within The City Of Portland, County Of Cumberland, State Of Maine By Stevens, Morton, Rose & Thompson Inc., Linnetek, Maine", dated May 15, 1987, last revised April 3, 1991, recorded April 16, 1991 in CCRD Plan Book 156, Page 36.
- "Standard Boundary And Site Plan For Groux Oil, Warren Avenue, Portland, Maine", dated July 16, 1987, last revised August 10, 1993 by Sebago Technics, Inc., Westbrook, Maine, City of Portland Plan 982/36.
- "Plan Of Property In Portland, Maine Made For Brown Construction, Inc. Land Title Survey", dated May 27, 1988 by H.L. & E.C. Jordan - Surveyors, Portland, Maine.
- "B's Wholesale Club, Portland, Maine Land Title Survey And Site Conditions Plan", dated July 1989, last revised August 13, 1990 by E.C. Jordan Co. Consulting Engineers, recorded September 4, 1990 in CCRD Plan Book 187, Page 7.
- "Standard Boundary Survey Of: A Portion Of The John Vance Property, 383 Warren Avenue, Portland, ME", dated August 17, 1994 by Sebago Technics, Westbrook, Maine.
- "Sketch Plan Of Newcomb Street, Portland, Maine For Russ Gildner", dated October 19, 1994 by Bruce K. Bowring, Inc. Professional Land Surveyor, Cumberland, Maine.
- "Worksheet - Standard Boundary Survey For: Russell Gildner, Saville Street, Portland, Maine", dated August 1998 by H&M Engineers/Surveyors/Planners, Gorham, Maine.
- "Site Plan/Proposed Garage Made For John Bennett, 3 Newcomb Street, Portland, Maine", dated June 5, 2001 by Stephen C. Martin, F.S. Gorham, Maine.
- "City Of Portland, Maine Public Works Department Engineering Section Survey Plan Prepared For Damage Easement Located At #34, Warren Avenue On Property Now Of Formerly Of Groux Oil Company", dated November 27, 2001, City Plans 921/4 & 948/41.
- "Boundary And Existing Conditions Survey Of 329 Warren Avenue In City Of Portland, Cumberland County, Maine", dated July 1, 2002 by Northeast Civil Solutions Incorporated, Scarborough, Maine, City of Portland Plan 1007/3.
- "Existing Conditions, Warren Avenue Commercial, 424 Warren Avenue, Portland ME 04103", dated December 2002, last revised October 14, 2003 by STDDesign Consultants, Civil Engineers & Land Surveyors, Cumberland Center, Maine.
- "Topographic Survey, Warren Avenue, Portland, Cumberland County, State Of Maine For Record Owner: Delta Realty Co., Inc.", dated October 24, 2003, last revised November 5, 2003 by Lewis & Watson, Inc. - Surveyors - Engineers, Westbrook, Maine, recorded December 31, 2003 in CCRD Plan Book 203, Page 701.
- "Plan Of Boundaries Survey, O'Connor GMC, Inc., 279 Warren Avenue, Portland, Maine", dated September 30, 2004 by Thayer Engineering Company, Farmingdale, Maine, City of Portland Plan 1009/7.
- "Boundary Survey, Warren Avenue, Portland, ME For: Realty Resources, Chartered", dated December 2004 by Storey, Inc., Wintham, Maine.
- "State Of Maine Department Of Transportation Right Of Way Map, Warren Avenue, Portland, Cumberland County, Federal Aid Project No. STP-054(400)X, D.O.T. File No. 3-522", dated March 2006, recorded February 20, 2013 in CCRD Plan Book 213, Pages 32 - 39.
- "Plan Of Road From The Terminals Of Warren Street City Of Westbrook To Bridgton Street Town Of Deering As laid Out By Direction Of Commissioners Of The County Of Cumberland", surveyed November 1891 by H.W. Foster, City of Portland Plan 460/10, recorded in Cumberland County Commissioners Plan Book 3, Page 35.

Grid North

MSPC NAD83, 1802 (West Zone)



Saga Communications
Of New England, Inc.

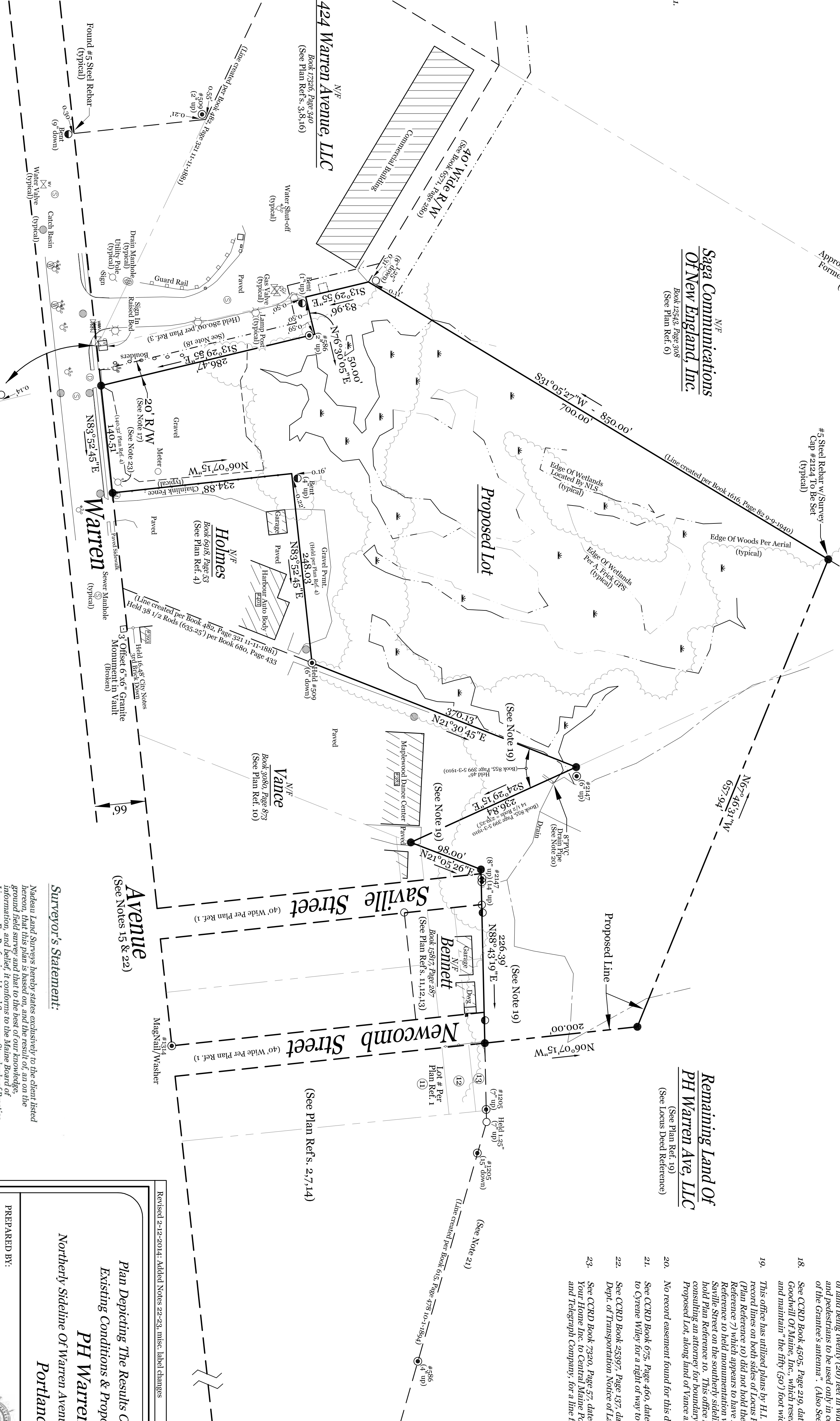
N/F
Box 1254, Page 308
(See Plan Ref. 6)

Remaining Land Of
PH Warren Ave, LLC

(See Plan Ref. 19)
(See Locus Deed Reference)

Remaining Land Of
PH Warren Ave, LLC

(See Plan Ref. 19)
(See Locus Deed Reference)



General Notes:

- This plan is not intended to depict limits or extent of fee title ownership. An opinion of title should be rendered by a title attorney.
- This office reserves the right to be held harmless by all 3rd party claims.
- This survey does not purport to reflect any of the following:
 - easements other than those that are visible or specifically stated in the referenced documents;
 - existing easements or restrictive covenants;
 - existing or proposed utility easements;
 - the location of any underground utilities or structures.
- This office reserves the right to be held harmless for unknown or undetectable private records which could affect the results of this survey. Reference is made to "Letter Of Agreement", dated October 1, 2013 between Nadeau Land Surveys and the below listed client(s), which shall be considered an integral part of this survey.
- N/F is an abbreviation for: Now or Formerly.
- All deeds referenced on this plan are recorded at the Cumberland County Registry of Deeds (CCRD).
- This office does not accept any liability for errors in the Plan References listed hereon.

Locus Parcel is shown as City of Portland Assessor's Map 296, Block A, Lot 6, 301-1-10, 302-1-1, 303-1-8-10, 304-1-28, and 305-1-4, and is listed as 411-423 Warren Avenue.

- Area of Locus Parcel is 418,393 square feet (9.60 acres).
- The apparent right of way lines depicted on this plan are based on the Plan References listed hereon and monumentation found in the field, and City of Portland Engineering Street Notes.
- The Locus Parcel does not scale in a Special Flood Hazard Area per FEMA Flood Insurance Rate Map Community-Panel Number 230091 0000C, Index dated December 8, 1998. The parcel scales in Zone X.
- All building corner offsets to boundary lines are from cornerboards and not building foundation, unless noted.
- Call 1-888-DIGSAFE at least three business days before performing ANY excavation.
- Per City of Portland Records Vol. 2, Page 20 and Cumberland County Commissioners Records Vol. 16, Page 561, Warren Avenue was laid out January 5, 1892 as 4 rods (66 feet) wide. Per City of Portland Records Vol. 2, Page 203 and City of Deering Records Vol. 1, Page 324, the County Road running from Morrill's Corner to Westbrook was named "Warren Avenue" by Order of the City Council, passed November 27, 1893.
- Vertical Datum is NGVD90. Benchmark established with GPS Static observations taken on October 28, 2013.
- See CCRD Book 616, Page 98, dated April 28, 1983, from Goodwill Of Maine, Inc. to City Gannett Broadcasting Services, for the right to enter a certain strip of land being twenty (20) feet in width for the purpose of the passage of vehicles of the Gannett's antenna." (Also See Plan Reference 6)
- See CCRD Book 4505, Page 219, dated October 2, 1979, from Your Home, Inc. to Goodwill Of Maine, Inc., which reserved to the Grantor the right to use, improve and maintain the Hwy (50') foot wide parcel for use as a public street.
- This office has utilized plans by H.L. & E.C. Jordan that appear to have tied into record lines on both sides of Locus Parcel. Sebago Technics plan for John Vance (Plan Reference 10) did not hold the Jordan plans or their previous plan (Plan Reference 7) which appears to have held the above mentioned Jordan plans. Plan Reference 7 held an unrecorded plan which appears to mark the location of a proposed driveway easement. This office recommends a boundary line agreement or consulting an attorney for boundary lines along the easterly line of Holmes and the proposed lot, along land of Vance and Bennett, to the northeast corner of Bennett.
- No record assessment found for this drain pipe.
- See CCRD Book 675, Page 460, dated June 28, 1899, from Thomas J. Ward to Cyrene Wiley for a right of way to Warren Avenue.
- See CCRD Book 35397, Page 137, dated May 16, 2007, for State of Maine Dept. of Transportation Notice of Layout and Filing. (See Plan Reference 20)
- See CCRD Book 7350, Page 27, dated May 27, 1986, for Easement Deed from Your Home Inc. to Central Maine Power Company and New England Telephone and Telegraph Company, for a line from CMP pole #39 to pole #39-1.

Plan Depicting The Results Of A Partial Boundary Survey,
Existing Conditions & Proposed Lot Division Made For
PH Warren Ave, LLC
Northerly Sideline Of Warren Avenue, Saville Street & Newcomb Street
Portland, Maine



RECEIVED 2-12-2014, Added Notes 22-23, misc. label changes	
PREPARED BY:	
Nadeau Land Surveys	
Professional Land Surveyors Certified Floodplain Managers	
RECORD OWNER: PH Warren Ave, LLC 60-401 Warren Avenue Portland, Maine 04103	PLAN DATE: 1/7/2014
DRAWN BY: TPB	SURVEY DATE: Oct.-Dec. 2013
CHECKED BY: JUN/MJC Topcon GPT-3000W & Topcon Hyper II GPS	SCALE: 1" = 80'
FIELD BOOK: PH 400 & Topcon Ranger	SHEET NO: 1 of 1

Surveyor's Statement:

Nadeau Land Surveys hereby states exclusively to the client listed herein that this plan was prepared by a duly Licensed Professional Land Surveyor who is duly qualified by education, training, and experience to perform the services herein stated. The survey was made by the undersigned or under his direct supervision and to the best of our knowledge, information, and belief, it conforms to the Maine Board of Licensure for Professional Land Surveyors Standards of Practice.

This plan is not valid without the original signature and seal of the below listed Professional Land Surveyor who prepared this plan as it may contain unauthorized alterations unknown to this office.

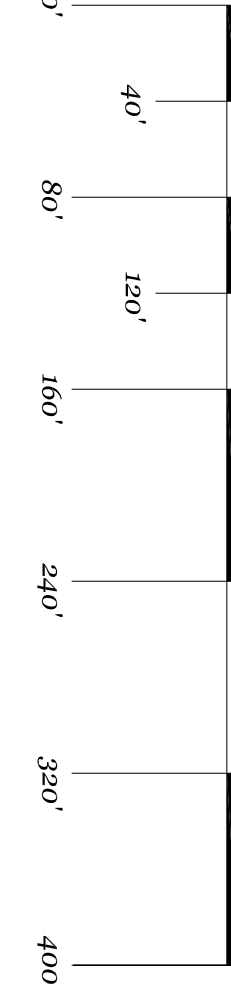
Nadeau Land Surveys
Nadeau, P.J.S. #2314 (6699) LAND SURVEYOR
STATE OF MAINE

PH Warren Ave, LLC
To
JMC Warren Ave, LLC
dated June 26, 2013 and recorded June 27, 2013 at the
Cumberland County Registry of Deeds in Book 30786, Page 74.

Locus Deed Reference:

JMC Warren Ave, LLC

Graphic Scale:



Detail

NOT TO SCALE

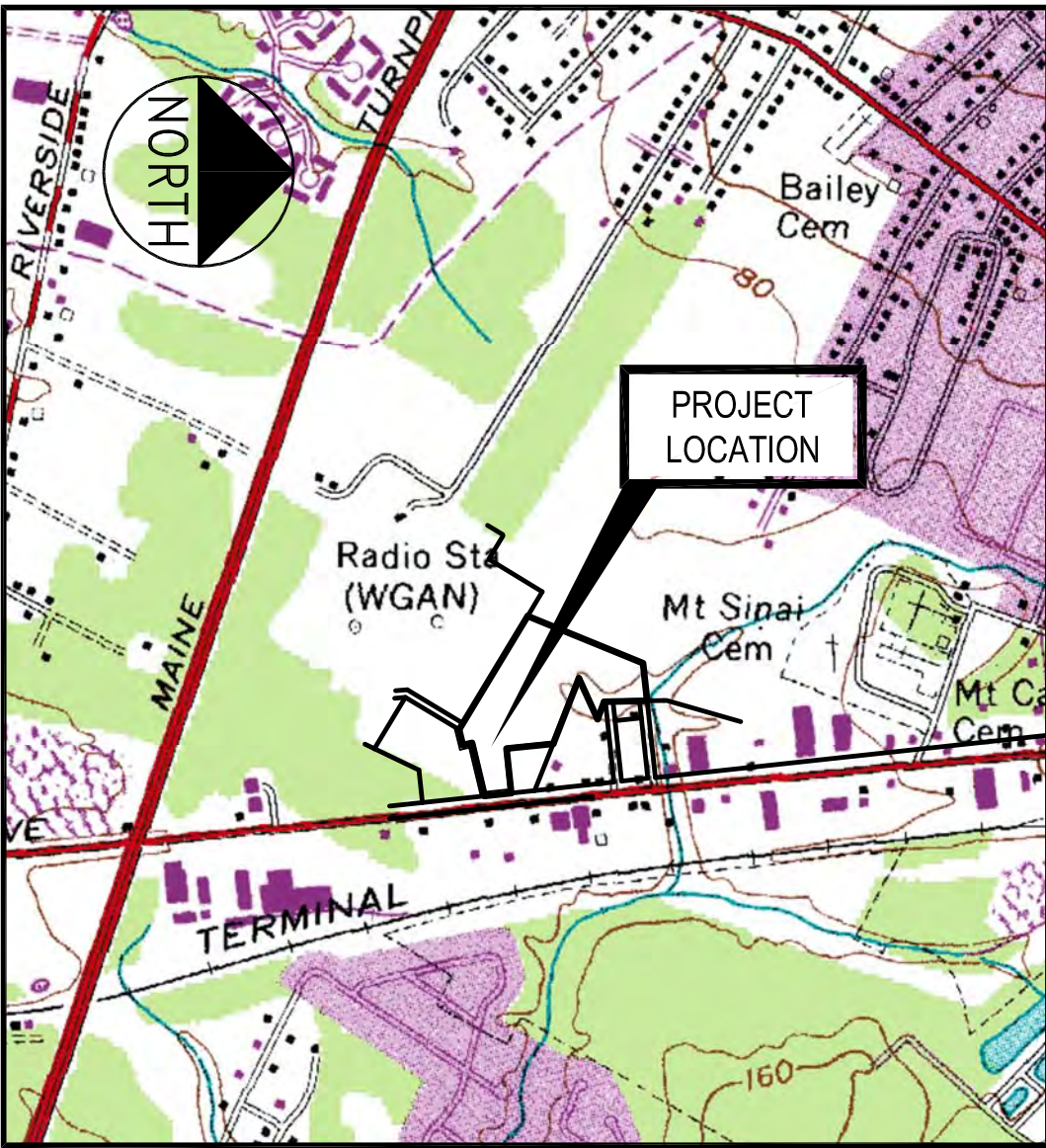
PROJECT PARCEL SITE CITY OF PORTLAND TAX MAP-BLOCK-LOT (ADDRESS)	
MAP-BLOCK-LOT	ADDRESS
296-A-6	421 WARREN AVE
303-A-8	421 WARREN AVE
302-A-1	421 WARREN AVE
303-A-10	421 WARREN AVE
301-J-10	421 WARREN AVE
304-B-28	421 WARREN AVE
305-D-1	421 WARREN AVE
299A-A-1	1592 FOREST AVE
310-E-35	0 FARNHAM ST
307-B-19	0 FARNHAM ST
308-B-2	0 FARNHAM ST
310-F-1	0 FARNHAM ST
307-J-1	0 FARNHAM ST
308-C-1	0 FARNHAM ST

OWNER
PH WARREN AVENUE, LLC C/O PETER F HOLMES 12 WILDWOOD LANE SCARBOROUGH, MAINE 04074 ATTN: PETER HOLMES
APPLICANT
PH WARREN AVENUE, LLC C/O PETER F HOLMES 12 WILDWOOD LANE SCARBOROUGH, MAINE 04074 ATTN: PETER HOLMES

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SITE DEVELOPMENT PLANS
FOR
MULTI-UNIT COMMERCIAL BUILDING
421 WARREN AVUNE
PORTLAND, MAINE
PERMITTING DOCUMENTS
FEBRUARY, 2014



LOCATION MAP
N.T.S.

PREPARED BY P3

CIVIL ENGINEER
FAY, SPOFFORD & THORNDIKE, INC.
778 MAIN STREET, SUITE 8
SOUTH PORTLAND, MAINE 04106
207.775.1121
ATTN: STEPHEN BUSHEY, P.E.
EMAIL: sbushey@fstinc.com

SURVEYOR
NADEAU LAND SURVEYS
918 BRIGHTON AVENUE
PORTLAND, MAINE 04102
207.878.7870
ATTN: JIM NADEAU
EMAIL: jim@nadeaulandsurveys.com

NATURAL RESOURCES
ALBERT FRICK ASSOCIATES
95A COUNTY ROAD
GORHAM, MAINE 04038
207.839.5563
ATTN: JIM LOGAN
EMAIL: afajames@maine.rr.com

DESIGN - BUILDER
BISKUP CONSTRUCTION
16 DANIELLE DRIVE
WINDHAM, MAINE 04062
207.892.9800
ATTN: JIM BISKUP
EMAIL: jim@biskupconstruction.com

GEOTECHNICAL ENGINEER
S.W. COLE ENGINEERING, INC.
286 PORTLAND ROAD
GRAY, MAINE 04039
207.657.2866
ATTN: TIM BOYCE, P.E.
EMAIL: tboyce@swcole.com

UTILITIES

SEWER
CITY OF PORTLAND
PUBLIC SERVICES ENGINEERING DEPARTMENT
55 PORTLAND STREET
PORTLAND, MAINE 04102
207.874.8840
ATTN: DAVID MARGOLIS-PINEO, P.E.

WATER
PORTLAND WATER DISTRICT
225 DOUGLAS STREET
P.O. BOX 3533
PORTLAND, MAINE 04104
207.761.8310
ATTN: RICO SPUGNARDI

POWER
CENTRAL MAINE POWER
162 CANCO ROAD
PORTLAND, MAINE 04103
207.791.1023
ATTN: JAMIE COUGH

TELEPHONE
FAIRPOINT COMMUNICATIONS
FIVE DAVIS FARM ROAD
PORTLAND, MAINE 04103
207.797.1842
ATTN: SUE SERRETTE

CABLE
TIME WARNER CABLE
118 JOHNSON ROAD
PORTLAND, MAINE 04102
877.546.0962
ATTN:

NATURAL GAS
UNITIL
1075 FOREST AVENUE
PORTLAND, MAINE 04103
207.797.8002 EXT 6620
ATTN: ALEX SMITH

CALL BEFORE YOU DIG
1.888.DIGSAFE
1.888.344.7233
DIG SAFE MAINE

PERMITS / APPROVALS

LOCAL

SITE PLAN SUBMISSION
APPROVAL
STORMWATER PERMIT

BUILDING PERMIT

UTILITY / STREET OPENING
PERMITS

STATE

NATURAL RESOURCES
PROTECTION ACT (NRPA) TIER II
WETLAND IMPACT PERMIT

GOVERNING BODY

CITY OF PORTLAND PLANNING AUTHORITY
CITY HALL
CONGRESS STREET
PORTLAND, MAINE 04103
207.874.8722
ATTN: BARBARA BARHYDT

CITY OF PORTLAND PLANNING AUTHORITY
CITY HALL
CONGRESS STREET
PORTLAND, MAINE 04103
207.874.8722
ATTN: BARBARA BARHYDT

CITY OF PORTLAND PUBLIC SERVICES DIVISION
55 PORTLAND STREET
PORTLAND, MAINE 04102
207.874.8801
ATTN: CAROL MERRIT

GOVERNING BODY

MAINE DEP
312 CANCO ROAD
PORTLAND, MAINE 04103

STATUS

PRELIMINARY SUBMISSION 02.10.14

STATUS

I HEREBY ACKNOWLEDGE THAT THESE PLANS AND SPECIFICATIONS WERE PREPARED UNDER MY DIRECT SUPERVISION, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MAINE AND THAT I AM COMPETENT TO PREPARE THIS DOCUMENT.

PRELIMINARY - NOT FOR CONSTRUCTION

				<table><tr><td>PROJECT</td><td>PH WARREN AVENUE, LLC COMMERCIAL SITE 421 WARREN AVENUE</td></tr><tr><td>SHEET TITLE</td><td>COVER SHEET</td></tr><tr><td>CLIENT</td><td>PH WARREN AVENUE, LLC C/O PETER HOLMES 12 WILDWOOD LANE SCARBOROUGH, ME 04074</td></tr></table>	PROJECT	PH WARREN AVENUE, LLC COMMERCIAL SITE 421 WARREN AVENUE	SHEET TITLE	COVER SHEET	CLIENT	PH WARREN AVENUE, LLC C/O PETER HOLMES 12 WILDWOOD LANE SCARBOROUGH, ME 04074	<table><tr><td colspan="2"> FAY, SPOFFORD & THORNDIKE, INC. ENGINEERS · PLANNERS · SCIENTISTS 778 MAIN ST, SUITE 8, SOUTH PORTLAND, ME 04106</td></tr><tr><td>DRAWN: CMW</td><td>DATE: NOVEMBER 2013</td></tr><tr><td>DESIGNED: SRB</td><td>SCALE: AS NOTED</td></tr><tr><td>CHECKED: SRB</td><td>JOB NO. SP-M104</td></tr><tr><td>FILE NAME: SP-M104-COV</td><td></td></tr><tr><td>SHEET</td><td>C-1.0</td></tr></table>	 FAY, SPOFFORD & THORNDIKE, INC. ENGINEERS · PLANNERS · SCIENTISTS 778 MAIN ST, SUITE 8, SOUTH PORTLAND, ME 04106		DRAWN: CMW	DATE: NOVEMBER 2013	DESIGNED: SRB	SCALE: AS NOTED	CHECKED: SRB	JOB NO. SP-M104	FILE NAME: SP-M104-COV		SHEET	C-1.0
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1	02.10.14	SUBMITTED TO CITY OF PORTLAND																					
REV	DATE	DESCRIPTION	P.E. STEPHEN BUSHEY																				
REVISIONS			LIC. # 7429																				

GENERAL NOTES

1.

THIS PROJECT IS SUBJECT TO THE TERMS AND CONDITIONS OF ALL REGULATIONS ADMINISTERED BY THE LOCAL UTILITY COMPANIES AND THE CITY OF PORTLAND.
2.

THE CONTRACTOR SHALL REFER TO THE ARCHITECTURAL PLANS FOR EXACT LOCATIONS AND DIMENSIONS OF THE ENTRANCES, EXITS, PRECISE BUILDING DIMENSIONS, AND EXACT BUILDING UTILITY ENTRANCE POINTS.
3.

ALL REQUIRED AND NECESSARY INSPECTIONS AND/OR CERTIFICATIONS REQUIRED BY CODES AND/OR UTILITY SERVICE COMPANIES SHALL BE PERFORMED PRIOR TO ANNOUNCED BUILDING POSSESSION AND THE FINAL SERVICE CONNECTIONS.
4.

THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR THE ELEVATION OF THE EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THIS INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AND DIG SAFE (1-888-DIGSAFE), IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS, AT NO EXTRA EXPENSE TO THE OWNER.
5.

MAINTENANCE OF EROSION CONTROL MEASURES IS OF PARAMOUNT IMPORTANCE TO THE OWNER AND THE CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH ALL EROSION CONTROL MEASURES SHOWN ON THE PLANS. ADDITIONAL EROSION CONTROL MEASURES SHALL BE INSTALLED IF DEEMED NECESSARY BY ONSITE INSPECTIONS OF THE OWNER OR THEIR REPRESENTATIVES AT NO ADDITIONAL COST TO THE OWNER.
6.

ALL MATERIAL SCHEDULES SHOWN ON THE PLANS ARE FOR GENERAL INFORMATION ONLY. THE CONTRACTOR SHALL PREPARE HIS OWN MATERIAL SCHEDULES BASED UPON HIS PLAN REVIEW. ALL SCHEDULES SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO ORDERING MATERIALS OR PERFORMING WORK.
7.

ALL MATERIALS AND CONSTRUCTION METHODS SHALL CONFORM TO PROJECT CONTRACT SPECIFICATIONS, AND THE CITY OF PORTLAND TECHNICAL STANDARDS, WHICHEVER IS MORE STRINGENT.
8.

TOPOGRAPHIC AND BOUNDARY SURVEY INFORMATION WAS PROVIDED BY NADEAU LAND SURVEY, DECEMBER 2013.
9.

FEMA MAP COMMUNITY PANEL NUMBER 2300510006C. THE SITE IS LOCATED IN A C ZONE.
10.

THE PROPERTY SHOWN ON THIS PLAN MAY BE DEVELOPED AND USED ONLY AS DEPICTED IN THIS APPROVED PLAN. ALL ELEMENTS AND FEATURES OF THE PLAN AND ALL THE PROPERTY WHICH APPEARS IN THE RECORD OF THE PLANNING BOARD PROCEEDINGS ARE CONDITIONS OF THE APPROVAL. NO CHANGE FROM THE CONDITIONS OF APPROVALS IS PERMITTED UNLESS AN AMENDED PLAN IS FIRST SUBMITTED TO AND APPROVED BY THE PLANNING AUTHORITY.
11.

ALL SIGNAGE SHALL CONFORM TO THE STANDARDS FOR SIZE, HEIGHT, LOCATION AND REFLECTIVITY SET FORTH IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
12.

ALL CURB SHALL CONFORM TO THE FOLLOWING SPECIFICATIONS AS NOTED ON THE PLANS:
GRANITE SLIPFORM CONCRETE AND BITUMINOUS CONCRETE CURB SHALL MEET THE REQUIREMENTS OF MAINE DEPARTMENT OF TRANSPORTATION SPECIFICATIONS 609.03 AND 609.04 AND CITY OF PORTLAND TECHNICAL STANDARDS.
13.

ALL DIMENSIONING UNLESS OTHERWISE NOTED IS TO THE FACE OF CURB OR FACE OF BUILDING.
14.

THE FACILITY WILL BE SERVICED BY PUBLIC WATER, SEWER, NATURAL GAS AND UNDERGROUND POWER.
15.

THE CONTRACTOR IS REQUIRED TO NOTIFY THE CITY OF PORTLAND PUBLIC WORKS INSPECTION SERVICES DIVISION (874-6300 EXT. 8838), CODE ENFORCEMENT OFFICE AND DEVELOPMENT REVIEW COORDINATOR IN WRITING THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION. A PRECONSTRUCTION MEETING MAY BE REQUIRED TO INCLUDE THE PUBLIC WORKS AUTHORITY OR DEVELOPMENT REVIEW COORDINATOR.
16.

AN APPROVED SET OF PLANS AND ALL APPLICABLE PERMITS MUST BE AVAILABLE AT THE CONSTRUCTION SITE.
17.

WARNING SIGNS, MARKERS, BARRICADES OR FLAGMEN MUST BE EMPLOYED ON ADJACENT STREETS AS NECESSARY.
18.

CONSTRUCTION DEBRIS SHALL BE CONTAINERIZED AND DISPOSED OF IN ACCORDANCE WITH THE CITY OF PORTLAND'S SOLID WASTE ORDINANCE CHAPTER 12. ALL DEMOLITION MATERIAL FROM THE PROJECT SITES SHALL BE TAKEN TO THE RIVERSIDE RECYCLING FACILITY OR AS OTHERWISE DIRECTED PENDING THE RESULTS OF A HAZARDOUS BUILDING MATERIALS SURVEY AS AUTHORIZED AND COORDINATED BY THE OWNER. ALL SALVAGED MATERIAL WITHIN THE PUBLIC R.O.W.(SIDEWALKS, BRICKS, GRANITE CURB) NOT REUSED SHALL BE DISPOSED OF AS DIRECTED BY THE PORTLAND PUBLIC SERVICES DEPARTMENT AT NO EXTRA COST TO THE OWNER.
19.

ANY DAMAGE TO PUBLIC OR PRIVATE PROPERTY RESULTING FROM CONSTRUCTION ACTIVITIES SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR EXPENSE.
20.

PROPERTY MARKERS AND STREET LINE MONUMENTS SHALL BE PROPERLY PROTECTED AT ALL TIMES DURING CONSTRUCTION TO INSURE INTEGRITY. IF DISTURBED THEY SHALL BE REPLACED BY A SURVEYOR REGISTERED IN THE STATE OF MAINE AT THE CONTRACTOR'S EXPENSE.
21.

THE OWNER SHALL BE RESPONSIBLE TO COORDINATE THE PERFORMANCE OF A HAZARDOUS MATERIALS INSPECTION OF THE EXISTING PROPERTY.
22.

A STREET OPENING PERMIT MUST BE OBTAINED FROM THE CITY OF PORTLAND PUBLIC WORKS DEPARTMENT PRIOR TO BEGINNING ANY WORK WITHIN THE CITY RIGHT-OF-WAY. ALL WORK WITHIN THE PUBLIC RIGHT OF WAY SHALL BE COMPLETED IN CONFORMANCE TO THE CITY'S RULES AND REGULATIONS FOR EXCAVATION ACTIVITIES IN PUBLIC RIGHT OF WAYS.
23.

CONTRACTOR MUST MAINTAIN THROUGH TRAFFIC ON WARREN AVENUE AT ALL TIMES.
24.

ALL METHODS AND MATERIALS USED IN THE CONSTRUCTION OF THE IMPROVEMENTS IDENTIFIED HEREIN SHALL CONFORM TO THE CITY OF PORTLAND CONSTRUCTION AND TECHNICAL STANDARDS AND SPECIFICATIONS AND/OR CURRENT MDOT STANDARDS AND SPECIFICATIONS, WHICHEVER IS MORE STRINGENT.
25.

SITE WORK FOR BUILDING SHALL INCLUDE GRADING THE BUILDING PAD AREA (DEFINED AS THE BUILDING FOOTPRINT PLUS 5'-0" BEYOND THE EXTERIOR WALL) TO A GRADE 18" BELOW THE GROUND FLOOR FINISH ELEVATION. ALL WORK SHALL INCLUDE EXCAVATION (INCLUDING ROCK REMOVAL AND EXISTING FOUNDATION DEMOLITION) AND BACKFILL OF ALL FOOTINGS AND FOUNDATIONS, INSTALLATION OF PERIMETER FOUNDATION DRAINS, EXCAVATION AND BACKFILL OF ALL UNDERSLAB UTILITIES AND PLACEMENT OF ALL AGGREGATES BELOW THE FLOOR SLAB AND ADJACENT THE FOUNDATION WALLS IN ACCORDANCE WITH THE CONTRACT PLANS AND SPECIFICATIONS.
26.

RECORD DRAWINGS REQUIRE ALL BURIED UTILITIES INCLUDING, BUT NOT LIMITED TO, BENDS, APPURTENANCES, AND OTHER FEATURES TO BE LOCATED BY COORDINATE INFORMATION TO BE RECORDED BY THE CONTRACTOR AND SUPPLIED TO THE OWNER AT THE END OF THE PROJECT.

EROSION CONTROL NOTES

1.

LAND DISTURBING ACTIVITIES SHALL BE ACCOMPLISHED IN A MANNER AND SEQUENCE THAT CAUSES THE LEAST PRACTICAL DISTURBANCE OF THE SITE.
2.

PRIOR TO BEGINNING ANY CLEARING/LAND DISTURBING ACTIVITIES, THE CONTRACTOR SHALL INSTALL THE PERIMETER SILT FENCES AND THE STABILIZED CONSTRUCTION ENTRANCES.
3.

SILT BARRIERS SHALL BE INSPECTED, REPAIRED AND CLEANED AS NOTED IN THE EROSION CONTROL NOTES SHOWN ON THE EROSION CONTROL DETAIL SHEET.
4.

THE CONTRACTOR SHALL REPAIR AND ADD STONE TO THE CONSTRUCTION ENTRANCES AS THEY BECOME SATURATED WITH MUD TO ENSURE THAT THEY WORK AS PLANNED DURING CONSTRUCTION AND SHALL KEEP ADJACENT STREETS CLEAR OF DIRT AND MUD.
5.

SILT REMOVED FROM AROUND INLETS AND BEHIND THE SILT FENCES SHALL BE PLACED ON A TOPSOIL STOCKPILE AND MIXED INTO IT FOR LATER USE IN LANDSCAPING OPERATIONS.
6.

CONTRACTORS SHALL NOTIFY OPERATORS WHO MAINTAIN UNDERGROUND UTILITIES IN THE AREA OF PROPOSED EXCAVATION OR BLASTING AT LEAST THREE (3) BUT NOT MORE THAN (30) DAYS PRIOR TO COMMENCEMENT OF EXCAVATION OR DEMOLITION. CONTRACTORS SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE REQUIREMENTS OF 23 MRSA 3360-A.
7.

IMMEDIATELY UPON COMPLETION OF CUTS/FILLS, THE CONTRACTOR SHALL STABILIZE DISTURBED AREAS IN ACCORDANCE WITH EROSION CONTROL NOTES AS SPECIFIED ON PLANS.
8.

ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH "MAINE EROSION AND SEDIMENTATION CONTROL HANDBOOK FOR CONSTRUCTION: BEST MANAGEMENT PRACTICES" PUBLISHED BY THE CUMBERLAND COUNTY SOIL AND WATER CONSERVATION DISTRICT AND MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION, MARCH 1991 OR LATEST EDITION. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO POSSESS A COPY OF THE EROSION CONTROL PLAN AT ALL TIMES.
9.

CONTRACTOR SHALL PERFORM WORK IN ACCORDANCE WITH THE EROSION AND SEDIMENT CONTROL REQUIREMENTS, INSPECTION AND MAINTENANCE REQUIREMENTS AND GOOD HOUSEKEEPING PRACTICES IN ACCORDANCE WITH APPENDIX A, B& C OF MAINE DEP CHAPTER 500.

GRADING AND DRAINAGE NOTES

1.

ALL STORM DRAIN PIPE SHALL BE SMOOTH BORE INTERIOR PROVIDING A MANNINGS ROUGHNESS COEFFICIENT OF n = 0.013 OR LESS. UNLESS A SPECIFIC PIPE MATERIAL IS CALLED FOR ON THE CONTRACT DRAWINGS, PVC PIPING SHALL NOT BE USED IN AREAS OF EXPOSED SUNLIGHT.
2.

SLOPE PROTECTION IS TO BE PROVIDED PER THE DESIGN PLANS AND MAY INCLUDE RIPRAP, SOD OR MULCH.
3.

THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION DURING EARTHWORK OPERATIONS TO INSURE THAT DISTURBANCE TO ANY STEEP SLOPE AREAS ARE MINIMIZED TO THE EXTENT PRACTICABLE.
4.

THE CONTRACTOR IS HEREBY CAUTIONED THAT ALL SITE FEATURES SHOWN ARE BASED ON FIELD OBSERVATIONS BY THE SURVEYOR AND BY INFORMATION PROVIDED BY OTHERS. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR SHALL CONTACT DIG SAFE (1-888-DIGSAFE) AT LEAST THREE (3) BUT NOT MORE THAN THIRTY (30) DAYS PRIOR TO COMMENCEMENT OF EXCAVATION OR DEMOLITION TO VERIFY HORIZONTAL AND VERTICAL LOCATION OF ALL UTILITIES.
5.

ALL PAVING WITHIN THE PUBLIC R.O.W. SHALL BE PERFORMED IN ACCORDANCE WITH THE CITY OF PORTLAND RULES AND REGULATIONS FOR EXCAVATION ACTIVITIES IN THE PUBLIC R.O.W.
6.

NO HOLES, TRENCHES OR STRUCTURES SHALL BE LEFT OPEN OVERNIGHT IN ANY EXCAVATION ACCESSIBLE TO THE PUBLIC OR IN PUBLIC RIGHTS-OF-WAY.
7.

THE CONTRACTOR SHALL TAKE FULL RESPONSIBILITY FOR ANY CHANGES AND DEVIATION OF APPROVED PLANS NOT AUTHORIZED BY THE ARCHITECT/ENGINEER AND/OR CLIENT/OWNER.
8.

CONTRACTOR SHALL INCORPORATE PROVISIONS AS NECESSARY IN CONSTRUCTION TO PROTECT EXISTING STRUCTURES AND PHYSICAL FEATURES THAT ARE OUTSIDE THE SCOPE OF WORK. THE CONTRACTOR SHALL MAINTAIN SITE STABILITY DURING CONSTRUCTION TO AVOID EROSION AND SEDIMENT TRANSPORT. CONTRACTOR SHALL RESTORE ALL AREAS TO A FINAL STABILIZED CONDITION AS DIRECTED BY DESIGN DRAWINGS.
9.

CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE ENGINEER.
10.

EXTERIOR GRADES AROUND PROPOSED STRUCTURE SHALL BE COORDINATED WITH FINAL BUILDING PLANS AND PROVIDE FOR ALL ACCESS OPENINGS.
11.

SUBGRADE FILL PLACED BENEATH ALL PERMANENT PAVEMENT, SIDEWALK OR CONCRETE SURFACES EXCLUDING ANY BUILDING AREAS, SHALL BE GRANULAR BORROW. SUBGRADE FILL PLACED BENEATH ALL LANDSCAPE AREAS EXCEPT THOSE ADJACENT THE FOUNDATION SYSTEMS MAY BE A COMMON BORROW MATERIAL SUITABLE FOR EMBANKMENT CONSTRUCTION, FREE FROM FROZEN MATERIAL, PERISHABLE RUBBLE, PEAT, ORGANICS, ROCKS LARGER THAN 12" IN DIAMETER, VEGETATION AND OTHER MATERIAL UNSUITABLE FOR ROADWAY AND SUBGRADE CONSTRUCTION. EXCAVATED ON-SITE MATERIALS MAY BE USED FOR FILL PROVIDED THE MATERIAL IS FREE FROM UNSUITABLE MATERIAL DESCRIBED IN THIS NOTE AND UPON APPROVAL OF THE ENGINEER. EXCAVATED ONSITE MATERIALS MAY NOT BE USED AS COMPACTED STRUCTURAL FILL BENEATH THE BUILDING AREAS OR AS FOUNDATION BACKFILL. GRANULAR BORROW AND COMMON BORROW SHALL COMPLY WITH THE MDOT SPECIFICATIONS.
12.

ALL FILLS SHALL BE PLACED IN LAYERS NOT MORE THAN 12" LOOSE DEPTH AND COMPACTED BY HEAVY COMPACTION EQUIPMENT. MINIMUM COMPACTION SHALL BE 95% OF MAXIMUM DENSITY ASTM 1557, MODIFIED AND FIELD DENSITY ASTM D2922 (NUCLEAR METHODS).

UTILITY NOTES

1.

ALL REQUIRED UTILITIES SERVING THE PROJECT SHALL BE COORDINATED BETWEEN THE SITE WORK CONTRACTOR AND DIVISION 22/26 CONTRACTOR(S). THE SITE WORK CONTRACTOR SHALL BE RESPONSIBLE TO EXTEND ALL PROPOSED UTILITIES TO WITHIN FIVE (5) FEET OF THE BUILDING TO A LOCATION COORDINATED WITH THE MECHANICAL AND ELECTRICAL SUBCONTRACTORS. THE BUILDING CONTRACTOR SHALL BE RESPONSIBLE FOR ALL UTILITIES WITHIN FIVE (5) FEET AND INSIDE THE BUILDING OR UNDER SLAB.
2.

THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF AND/OR RELOCATION OF OVERHEAD AND UNDERGROUND TELEPHONE WITH FAIRPOINT COMMUNICATIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR CONDUITS, PULL WIRES, TRENCHING AND BACKFILLING NECESSARY TO COMPLETE THE WORK.
3.

THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF ELECTRIC SERVICE WITH CENTRAL MAINE POWER; THE TELECOMMUNICATIONS SERVICE WITH FAIRPOINT COMMUNICATIONS AND CABLE SERVICE WITH TIME WARNER CABLE. ALL WORK SHALL CONFORM TO THE PROJECT SPECIFICATIONS OR UTILITY COMPANY STANDARDS, WHICHEVER IS MORE STRINGENT.
4.

ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE AT NO ADDITIONAL EXPENSE TO THE OWNER.
5.

ALL UNDERGROUND CONDUITS SHALL HAVE NYLON PULL ROPES TO FACILITATE PULLING CABLES.
6.

THE CONTRACTOR SHALL OBTAIN, PAY FOR, AND COMPLY WITH ALL REQUIRED PERMITS, ARRANGE FOR ALL INSPECTIONS, AND SUBMIT COPIES OF ACCEPTANCE CERTIFICATES TO THE OWNER PRIOR TO COMPLETION OF THE PROJECT.
7.

THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL BOXES, FITTINGS, CONNECTORS, COVER PLATES AND OTHER MISCELLANEOUS ITEMS NOT NECESSARILY DETAILED ON THE DRAWINGS TO RENDER INSTALLATION OF UTILITIES COMPLETE AND OPERATIONAL, AT NO EXTRA EXPENSE TO THE OWNER.
8.

A 10 FOOT MINIMUM EDGE TO EDGE HORIZONTAL SEPARATION SHALL BE PROVIDED BETWEEN ALL WATER AND SANITARY SEWER LINES. AN 18 INCH OUTSIDE TO OUTSIDE VERTICAL SEPARATION SHALL BE PROVIDED AT ALL WATER AND SANITARY SEWER CROSSINGS.
9.

THE CONTRACTOR SHALL PROVIDE TEMPORARY SERVICES AS REQUIRED TO PROVIDE CONTINUOUS SERVICE TO THE JOBSITE. TEMPORARY SERVICES SHALL COMPLY WITH ALL FEDERAL, STATE, LOCAL AND UTILITY COMPANY STANDARDS. COORDINATE ALL TEMPORARY SERVICES WITH UTILITY COMPANY, OWNER AND AFFECTED BUSINESSES.
10.

CONTRACTOR SHALL PROVIDE AND INSTALL ALL NECESSARY ELECTRICAL SERVICES IN CONDUIT TO SITE LIGHTING, COMPLYING WITH APPLICABLE CODES. COORDINATE WITH OWNER, SITE ELECTRICAL, ARCHITECTURAL AND CMP PLANS.
11.

ALL SANITARY SERVICES AND APPURTENANCES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT STANDARDS AND SPECIFICATIONS OF THE CITY OF PORTLAND PUBLIC WORKS DEPARTMENT. ALL SANITARY SERVICES AND APPURTENANCES TO BE ABANDONED SHALL BE PROPERLY RECORDED WITH PORTLAND PUBLIC WORKS ENGINEERING DEPARTMENT. A DIGITAL VIDEOTAPE SHALL BE MADE OF SANITARY SEWER SYSTEMS TO BE UTILIZED PRIOR TO CONSTRUCTION; UPSTREAM PIPES INTENDED FOR ABANDONMENT SHALL BE INSPECTED TO VERIFY THAT THEY NO LONGER SERVE OTHER FACILITIES.

DIMENSIONAL STANDARD	REQUIRED DIMENSION - B4	PROVIDED
MINIMUM LOT SIZE	10,000 SF	418,393 S.F.
MINIMUM STREET FRONTAGE	60 FEET	140.51 FEET
MINIMUM FRONT YARD	20 FEET OR THE AVERAGE DEPTH OF THE FRONT YARDS ON EITHER SIDE. AVERAGE DEPTH = 1 FOOT	54.85 FEET
MINIMUM REAR YARD	20 FEET	>20 FEET
MINIMUM SIDE YARD	1 OR 2 STORIES = 10 FEET 3 OR MORE STORIES = 12 FEET	20 FEET
MAXIMUM LOT COVERAGE	40% FOR LOTS CONTAINING 20 OR MORE UNITS; 50% FOR LOTS CONTAINING FEWER THAN 20 UNITS.	<40%
MINIMUM LOT WIDTH	60 FEET	>150 FEET
MAXIMUM STRUCTURE HEIGHT	65 FEET EXCEPT ON LOTS IN EXCESS OF 5 ACRES, 90 FEET IS PERMITTED IF EACH OF THE SETBACKS REQUIRED IS INCREASED BY 1 FOOT IN DISTANCE FOR EACH FOOT OF HEIGHT ABOVE 65 FEET	
IMPERVIOUS SURFACE RATIO	80%	<30%

LEGEND

PROPOSED

BUILDING

LANDSCAPING

WHEEL STOP

PARKING STRIPING

BARRIER FREE SYMBOL

TRAFFIC ARROW

EDGE OF PAVEMENT

SLIPFORM CONCRETE CURB

WETLAND IMPACT

BOULDER BARRIER

8"W FIRE SUPPLY LINE

2"W DOMESTIC WATER

UGE/T/C UNDERGROUND ELECTRIC / TELEPHONE / CABLE

STONE DRIP STRIP

EXISTING

IRON PIN FOUND (IPF) OR CAPPED IRON ROD FOUND (CIR)

ELECTRIC MANHOLE

CATCH BASIN

SEWER MANHOLE

DRAIN MANHOLE

DOWN SPOUT

WATER VALVE

WATER SHUTOFF

UTILITY POLE

SIGN

LIGHT POLE

ELECTRIC METER

GAS METER

EDGE OF PAVEMENT

CURB (GRANITE, UNLESS NOTED)

EDGE OF GRAVEL

VEGETATION

STUMP

EXISTING CONTOUR

SPOT GRADE

PROPERTY LINE

RIGHT OF WAY

EASEMENT

24"UD STORM DRAIN

36"SAN SEWER

W UNDERGROUND WATER

OHU OVERHEAD UTILITY WIRES

WOOD STOCKADE FENCE

CHAIN LINK FENCE

GUARD RAIL

EXISTING BUILDING

STONE WALL

WETLAND

1. "PLAN DEPICTING THE RESULTS OF A PARTIAL BOUNDARY SURVEY, EXISTING CONDITIONS & PROPOSED LOT DIVISION MADE FOR PH WARREN AVE, LLC NORTHERLY SIDELINE OF WARREN AVENUE, SAVILLE STREET & NEWCOMB STREET PORTLAND, MAINE" DATED 01.07.2014 BY NADEAU LAND SURVEYS

VERTICAL DATUM IS NGVD29. BENCHMARK ESTABLISHED WITH GPS STATIC OBSERVATIONS TAKEN ON OCTOBER 28, 2013 BY NADEAU LAND SURVEYS

TP-ST-3

 APPROXIMATE TESTPIT LOCATION

P5

REMAINING LAND OF PH WARREN AVENUE LLC
(SEE NADEAU LAND SURVEY PLAN FOR DETAILS)

PROPOSED LOT
9.6 ACRES
418,393 SF

N/F
SAGA COMMUNICATIONS
OF NEW ENGLAND, INC.
CCRD BOOK 12543, PAGE 308

#429 WARREN AVENUE
N/F
424 WARREN AVENUE, LLC
CCRD BOOK 17326, PAGE 340
MAP 304, BLOCK B, LOT 32

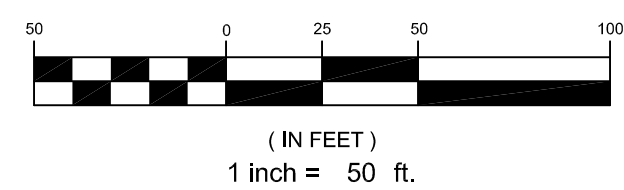
N/F
VANCE
CCRD BOOK 3080, PAGE 873

#401 WARREN AVENUE
N/F
PETER F. HOLMES
CCRD BOOK 6918, PAGE 5
MAP 303, BLOCK A, LOT 1

SAVILLE STREET

NEWCOMB STREET

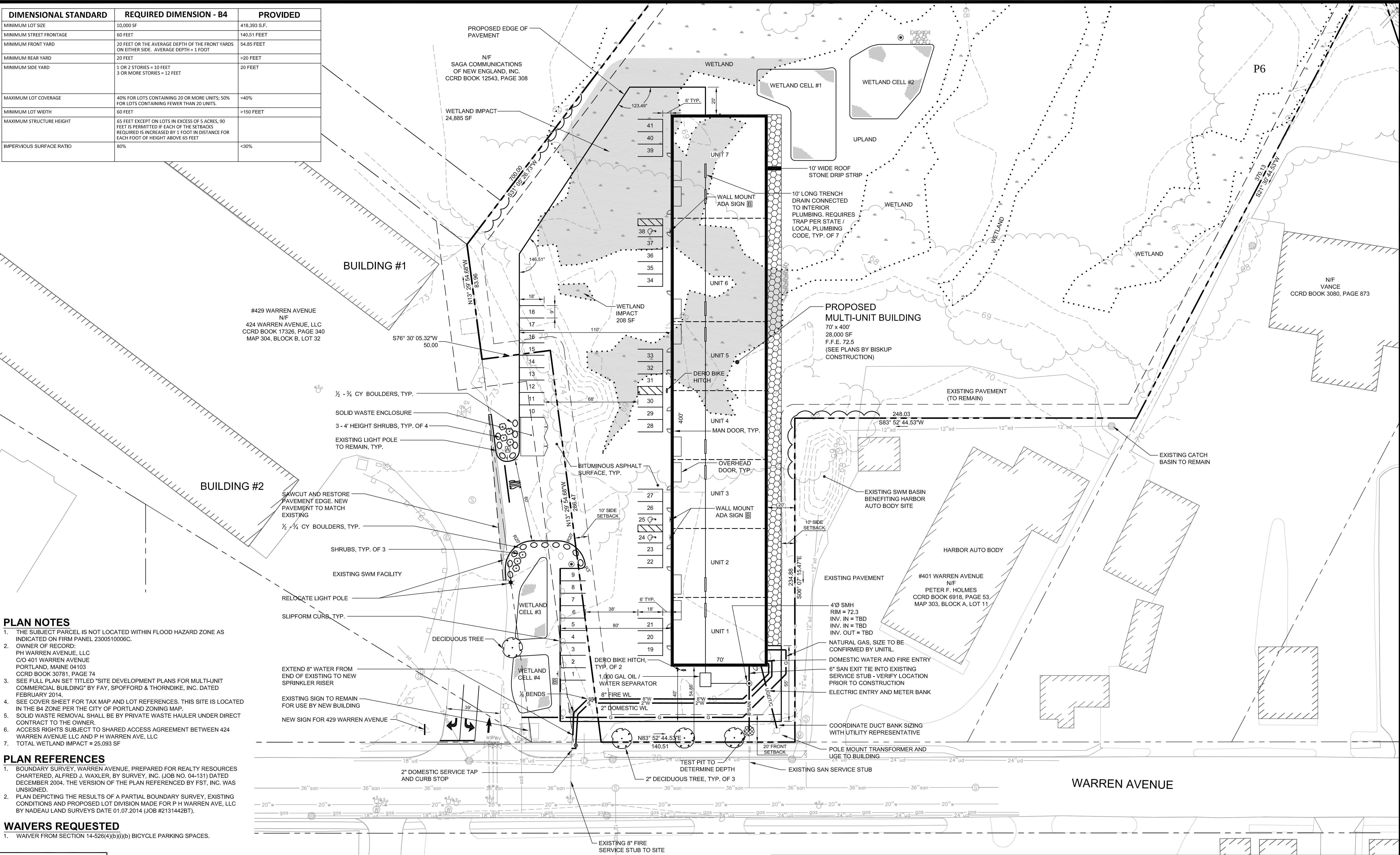
WARREN AVENUE



PRELIMINARY - NOT FOR CONSTRUCTION

				PROJECT PH WARREN AVENUE, LLC COMMERCIAL SITE 421 WARREN AVENUE	ENGINEERS  FAY, SPOFFORD & THORNDIKE, INC. ENGINEERS · PLANNERS · SCIENTISTS 778 MAIN ST, SUITE 8, SOUTH PORTLAND, ME 04106 Since 1914
1	02.10.14	SUBMITTED TO CITY OF PORTLAND		SHEET TITLE EXISTING CONDITIONS PLAN	
REV	DATE	DESCRIPTION	P.E. STEPHEN BUSHEY	CLIENT	PH WARREN AVENUE, LLC C/O PETER HOLMES 12 WILDWOOD LANE SCARBOROUGH, ME 04074
		REVISIONS	LIC. # 7429		DRAWN: CMW DESIGNED: SRB CHECKED: SRB FILE NAME: SP-M104-EXISTING SHEET C-2.1
					DATE: NOVEMBER 2013 SCALE: 1" = 50' JOB NO. SP-M104

DIMENSIONAL STANDARD	REQUIRED DIMENSION - B4	PROVIDED
MINIMUM LOT SIZE	10,000 SF	418,393 S.F.
MINIMUM STREET FRONTAGE	60 FEET	140.51 FEET
MINIMUM FRONT YARD	20 FEET OR THE AVERAGE DEPTH OF THE FRONT YARDS ON EITHER SIDE. AVERAGE DEPTH = 1 FOOT	54.85 FEET
MINIMUM REAR YARD	20 FEET	>20 FEET
MINIMUM SIDE YARD	1 OR 2 STORIES = 10 FEET 3 OR MORE STORIES = 12 FEET	20 FEET
MAXIMUM LOT COVERAGE	40% FOR LOTS CONTAINING 20 OR MORE UNITS; 50% FOR LOTS CONTAINING FEWER THAN 20 UNITS.	<40%
MINIMUM LOT WIDTH	60 FEET	>150 FEET
MAXIMUM STRUCTURE HEIGHT	65 FEET EXCEPT ON LOTS IN EXCESS OF 5 ACRES, 90 FEET IS PERMITTED IF EACH OF THE SETBACKS REQUIRED IS INCREASED BY 1 FOOT IN DISTANCE FOR EACH FOOT OF HEIGHT ABOVE 65 FEET	
IMPERVIOUS SURFACE RATIO	80%	<30%



PLAN NOTES

- THE SUBJECT PARCEL IS NOT LOCATED WITHIN FLOOD HAZARD ZONE AS INDICATED ON FIRM PANEL 2300510006C.
- OWNER OF RECORD:
PH WARREN AVENUE, LLC
C/O 401 WARREN AVENUE
PORTLAND, MAINE 04103
CCRD BOOK 30781, PAGE 74
- SEE FULL PLAN SET TITLED "SITE DEVELOPMENT PLANS FOR MULTI-UNIT COMMERCIAL BUILDING" BY FAY, SPOFFORD & THORNDIKE, INC. DATED FEBRUARY 2014.
- SEE COVER SHEET FOR TAX MAP AND LOT REFERENCES. THIS SITE IS LOCATED IN THE B4 ZONE PER THE CITY OF PORTLAND ZONING MAP.
- SOLID WASTE REMOVAL SHALL BE BY PRIVATE WASTE HAULER UNDER DIRECT CONTRACT TO THE OWNER.
- ACCESS RIGHTS SUBJECT TO SHARED ACCESS AGREEMENT BETWEEN 424 WARREN AVENUE LLC AND P H WARREN AVE, LLC
- TOTAL WETLAND IMPACT = 25,093 SF

PLAN REFERENCES

- BOUNDARY SURVEY, WARREN AVENUE, PREPARED FOR REALTY RESOURCES CHARTERED, ALFRED J. WAXLER, BY SURVEY, INC. (JOB NO. 04-131) DATED DECEMBER 2004. THE VERSION OF THE PLAN REFERENCED BY FST, INC. WAS UNSIGNED.
- PLAN DEPICTING THE RESULTS OF A PARTIAL BOUNDARY SURVEY, EXISTING CONDITIONS AND PROPOSED LOT DIVISION MADE FOR P H WARREN AVE, LLC BY NADAU LAND SURVEYS DATE 01.07.2014 (JOB #2131442BT).

WAIVERS REQUESTED

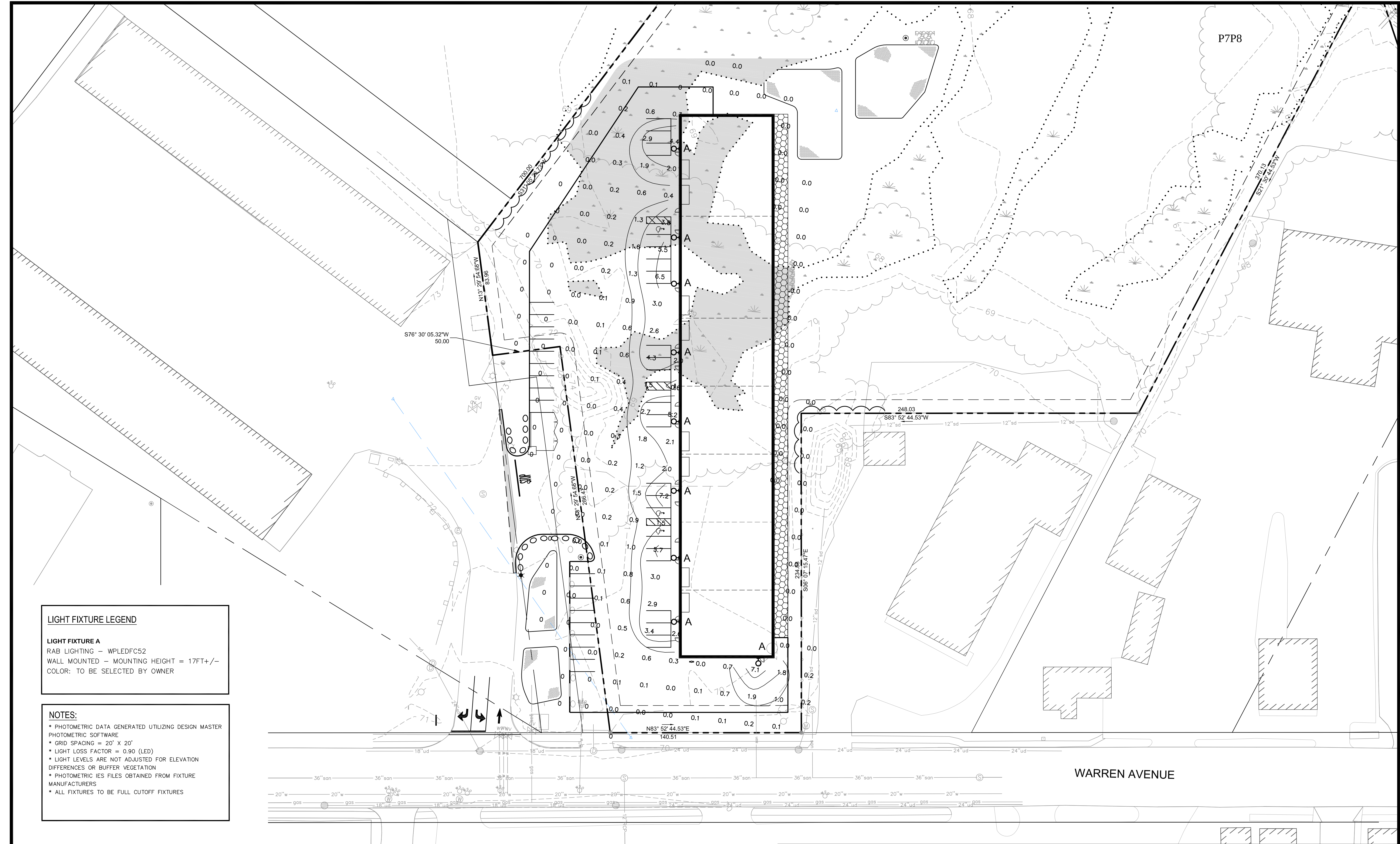
- WAIVER FROM SECTION 14-526(4)(b)(i)(b) BICYCLE PARKING SPACES.

SIGN LEGEND

R1-1
24"x24"
A

R7-8
12"x18"
B

PRELIMINARY - NOT FOR CONSTRUCTION



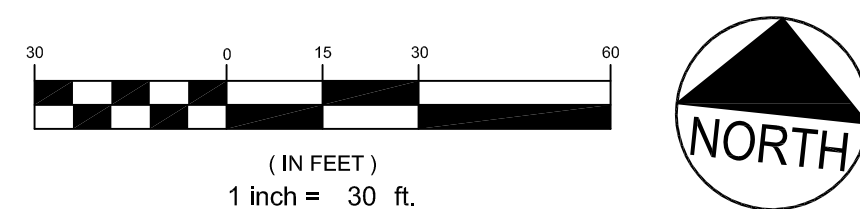
LIGHT FIXTURE LEGEND

LIGHT FIXTURE A
RAB LIGHTING — WPLEDFC52
WALL MOUNTED — MOUNTING HEIGHT = 17FT+/-
COLOR: TO BE SELECTED BY OWNER

NOTES:

- * PHOTOMETRIC DATA GENERATED UTILIZING DESIGN MASTER PHOTOMETRIC SOFTWARE
- * GRID SPACING = 20' X 20'
- * LIGHT LOSS FACTOR = 0.90 (LED)
- * LIGHT LEVELS ARE NOT ADJUSTED FOR ELEVATION DIFFERENCES OR BUFFER VEGETATION
- * PHOTOMETRIC IES FILES OBTAINED FROM FIXTURE MANUFACTURERS
- * ALL FIXTURES TO BE FULL CUTOFF FIXTURES

PRELIMINARY - NOT FOR CONSTRUCTION

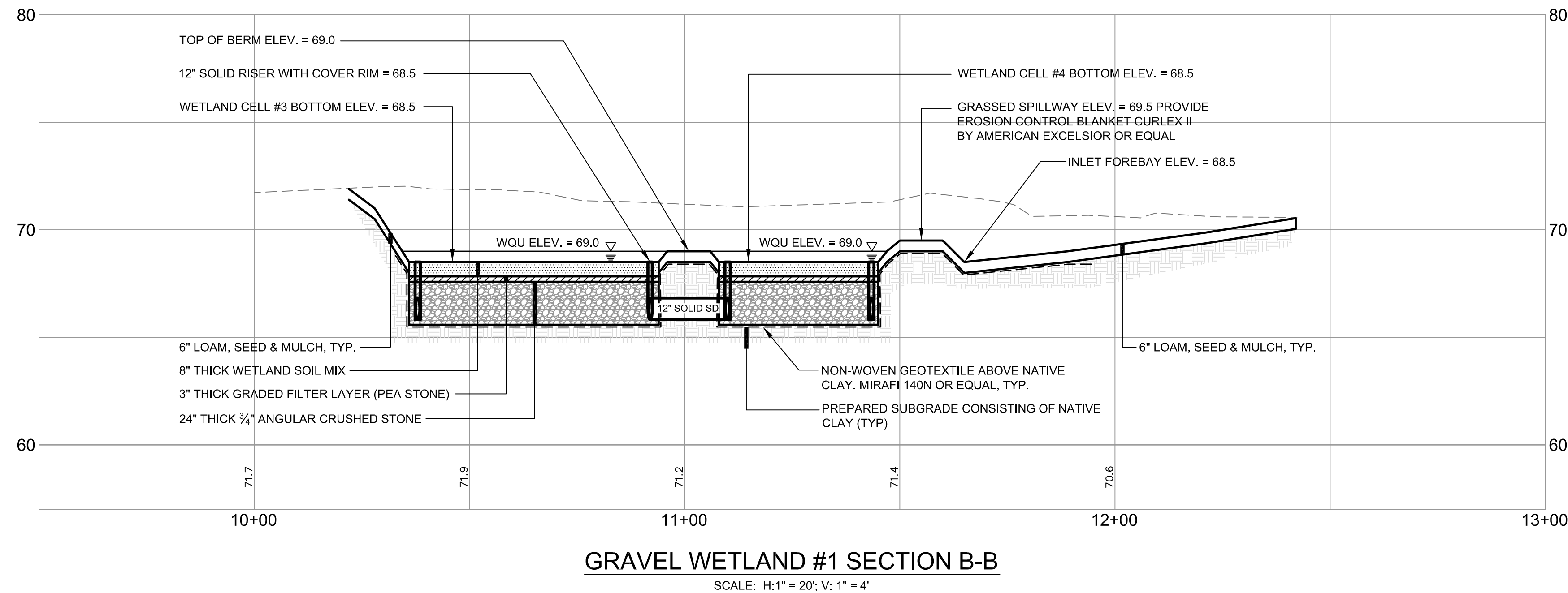


			 P.E. STEPHEN BUSHEY LIC. # 7429	PROJECT PH WARREN AVENUE, LLC COMMERCIAL SITE 421 WARREN AVENUE		ENGINEERS FST Since 1954 FAY, SPOFFORD & THORNDIKE, INC. ENGINEERS · PLANNERS · SCIENTISTS 778 MAIN ST, SUITE 8, SOUTH PORTLAND, ME 04106	
				SHEET TITLE LIGHTING AND PHOTOMETRICS PLAN		DRAWN: RJW DATE: NOVEMBER 2013	
1	02.10.14	SUBMITTED TO CITY OF PORTLAND		CLIENT PH WARREN AVENUE, LLC C/O PETER HOLMES 12 WILDWOOD LANE SCARBOROUGH, ME 04074		DESIGNED: SRB SCALE: 1"=30'	CHECKED: SRB JOB NO. SP-M104
REV	DATE	DESCRIPTION		P.E. STEPHEN BUSHEY LIC. # 7429		FILE NAME: SP-M104-PHOTOMETRICS	SHEET C-3.1



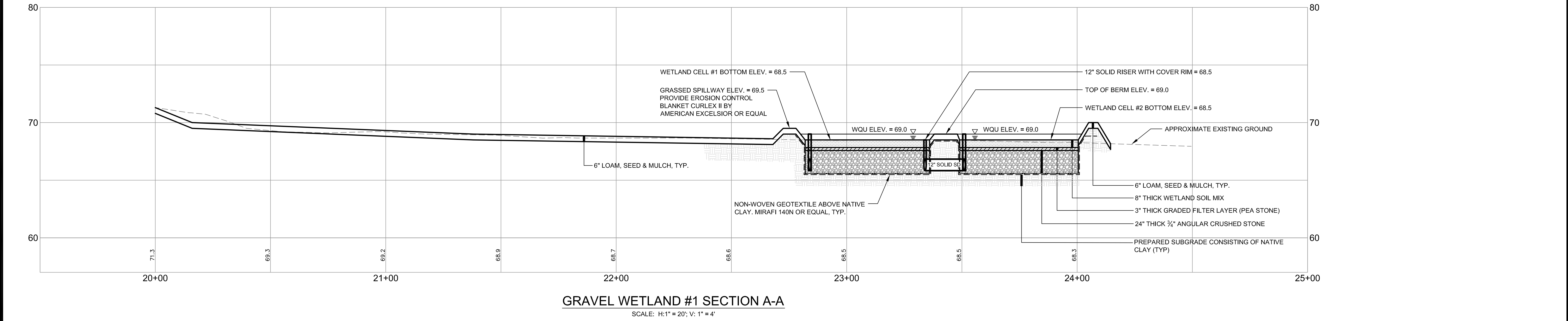
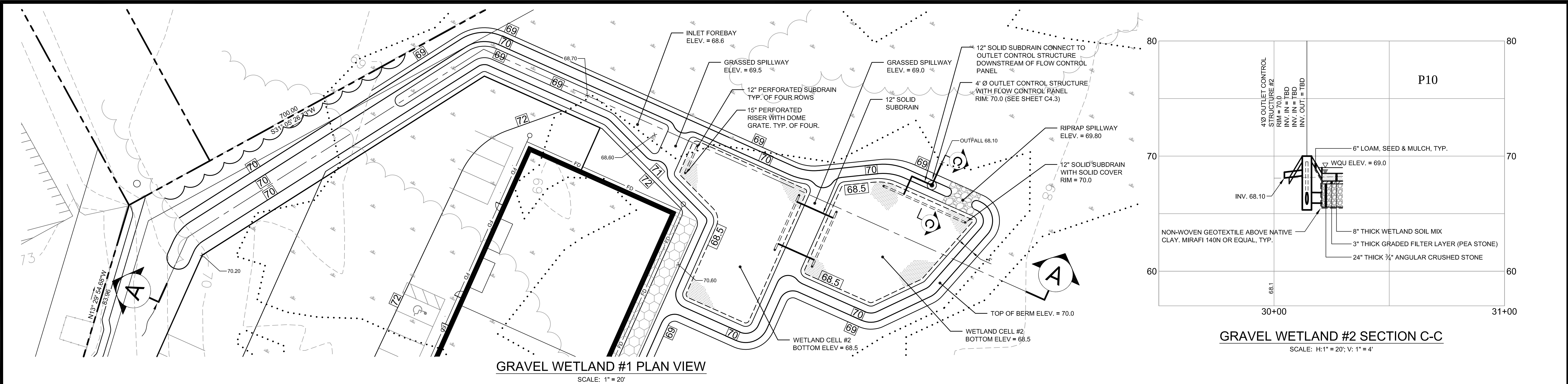
PRELIMINARY - NOT FOR CONSTRUCTION

				PROJECT PH WARREN AVENUE, LLC COMMERCIAL SITE 421 WARREN AVENUE	ENGINEERS  FAY, SPOFFORD & THORNDIKE, INC. ENGINEERS • PLANNERS • SCIENTISTS 778 MAIN ST, SUITE 8, SOUTH PORTLAND, ME 04106
1	02.10.14	SUBMITTED TO CITY OF PORTLAND		SHEET TITLE GRADING AND DRAINAGE PLAN	
REV	DATE	DESCRIPTION	P.E. STEPHEN BUSHEY	CLIENT	PH WARREN AVENUE, LLC C/O PETER HOLMES 12 WILLOWOOD LANE SCARBOROUGH, ME 04074
		REVISIONS	LIC. # 7429		DRAWN: CMW DESIGNED: SRB CHECKED: SRB FILE NAME: SP-M104-GRADE SHEET C-4.0
					DATE: NOVEMBER 2013 SCALE: 1" = 30' JOB NO. SP-M104



1. SUBSURFACE GRAVEL WETLANDS WERE DESIGNED PER THE UNIVERSITY OF NEW HAMPSHIRE STORMWATER CENTER'S (UNHSC) DESIGN SPECIFICATIONS, DATED JUNE 2009.
2. WETLAND SOIL: THE WETLAND SOIL SHOULD BE SIMILAR TO A NATIVE WETLAND SOIL WITH LOW HYDRAULIC CONDUCTIVITY. THIS SOIL CAN BE MANUFACTURED USING COMPOST, SAND, AND SOME FINE SOILS. SURFACE INFILTRATION RATES SHOULD BE BETWEEN 3.5 X 10-5 CM/SEC AND 3.5 X 10-4 CM/SEC. A 10:1 SLOPE SHOULD BE 15%, AND CLAY CONTENT SHOULD BE <15% TO PREVENT THE MIGRATION OF FINES INTO THE SUBSURFACE GRAVEL LAYER. THE EXISTING HYDRIC SOILS REMOVED FROM IMPACTED WETLAND AREAS MAY ALSO BE USED.
3. THE 3" THICK GRADED FILTER OR CHOKER COURSE IS INTENDED TO PREVENT THE WETLAND SOIL FROM MIGRATING DOWN INTO THE CRUSHED STONE SUB-LAYER. MATERIAL COMPATIBILITY MUST MEET THE FOLLOWING FHWA CRITERIA:
 - D15 (COARSE SUB-LAYER) $\leq$ X D85 (GRADED FILTER)
 - D90 (COARSE SUB-LAYER) $\leq$ 25 X D50 (GRADED FILTER)
4. THE COARSE SUB-LAYER MATERIAL SHALL BE AN ANGULAR CRUSHED STONE MEETING THE REQUIREMENTS OF MDOT 703.22 TYPE C.
5. GEOTEXTILES SHOULD NOT BE USED BETWEEN HORIZONTAL LAYERS OF THIS SYSTEM, AS THEY MAY CLOG DUE TO FINES AND MAY RESTRICT ROOT GROWTH
6. THE SEASONAL HIGH GROUNDWATER ELEVATION IN THE AREA OF GRAVEL WETLAND #1 IS APPROXIMATELY 67.0 BASED ON TEST PIT TP-37-1.
7. CONSTRUCTION OVERSIGHT: THE OWNER WILL RETAIN THE SERVICES OF A PROFESSIONAL ENGINEER TO INSPECT THE CONSTRUCTION AND STABILIZATION OF ALL STORMWATER MANAGEMENT STRUCTURES. IF NECESSARY, THE INSPECTING ENGINEER WILL INTERPRET THE POND CONSTRUCTION FOR THE CONTRACTOR. ONCE ALL STORMWATER MANAGEMENT STRUCTURES ARE CONSTRUCTED AND STABILIZED, THE INSPECTING ENGINEER WILL NOTIFY THE DEPARTMENT IN WRITING WITHIN 30 DAYS TO STATE THAT THE POND HAS BEEN COMPLETED. ACCORDINGLY, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE INSPECTING ENGINEER'S INSPECTIONS GIVING THE DATE AND TIME OF EACH INSPECTION AND THE ITEMS INSPECTED ON EACH VISIT AND INCLUDING ANY TESTING DATA OR SIEVE ANALYSIS DATA OF EVERY MINERAL SOIL AND SOIL MEDIA SPECIFIED IN THE PLANS AND USED ON SITE.
8. CONSTRUCTION SEQUENCE: THE SUBSURFACE GRAVEL WETLAND MUST NOT BE INSTALLED UNTIL THE AREA THAT DRAINS TO THE WETLAND HAS BEEN PERMANENTLY STABILIZED WITH PAVEMENT OR OTHER STRUCTURE. 90% VEGETATION COVER, OR OTHER PERMANENT STABILIZATION UNLESS THE RUNOFF FROM THE CONTRIBUTING DRAINAGE AREA IS DIVERTED AROUND THE STRUCTURE UNTIL STABILIZATION IS COMPLETE.
9. COMPACTION: WETLAND SOIL AND SUBSURFACE MATERIAL MUST BE COMPACTED TO BETWEEN 90% AND 95% STANDARD PROCTOR.
10. CONSTRUCTION OVERSIGHT: INSPECTION BY A PROFESSIONAL ENGINEER WILL OCCUR AT A MINIMUM.
 - AFTER THE PRELIMINARY CONSTRUCTION OF THE STRUCTURE'S GRADES AND ONCE THE SUBSURFACE DRAIN PIPES ARE INSTALLED BUT NOT BACKFILLED,
 - AFTER THE CRUSHED STONE LAYER IS CONSTRUCTED AND PRIOR TO THE INSTALLATION OF THE WETLAND SOIL,
 - AFTER THE WETLAND SOIL HAS BEEN INSTALLED AND SEEDED.AFTER ONE YEAR TO INSPECT HEALTH OF THE VEGETATION AND MAKE CORRECTIONS.
11. ALL THE MATERIAL USED FOR THE CONSTRUCTION OF THE FILTER BASIN MUST BE CONFIRMED AS SUITABLE BY THE DESIGN ENGINEER. TESTING MUST BE DONE BY A CERTIFIED LABORATORY TO SHOW THAT THEY ARE PASSING DESIGN SPECIFICATIONS.
12. TESTING AND SUBMITTALS: THE CONTRACTOR SHALL IDENTIFY THE LOCATION OF THE SOURCE OF EACH COMPONENT OF THE SUBSURFACE GRAVEL WETLAND SYSTEM. ALL RESULTS OF FIELD AND LABORATORY TESTING SHALL BE SUBMITTED TO THE DESIGN ENGINEER FOR CONFIRMATION. THE CONTRACTOR SHALL:
 - PERFORM A SIEVE ANALYSIS CONFORMING TO ASTM C136 (STANDARD TEST METHOD FOR SIEVE ANALYSIS OF FINE AND COARSE AGGREGATES 1998a) ON EACH MATERIAL USED IN THE SUBSURFACE GRAVEL WETLAND SYSTEM,
 - PERFORM A HYDROMETER GRAIN SIZE ANALYSIS ON THE WETLAND SOIL,
 - DETERMINE ORGANIC CONTENT OF THE WETLAND SOIL PER ASTM D2974,
 - PERFORM A PERMEABILITY TEST ON THE WETLAND SOIL CONFORMING TO ASTM D2434 WITH THE MIXTURE COMPACTED TO 90% TO 95% OF MAXIMUM DRY DENSITY BASED ON ASTM D698.
13. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL MATERIALS AND CONSTRUCTION PROCEDURES UTILIZED IN THE CONSTRUCTION OF THE SUBSURFACE GRAVEL WETLAND SYSTEM FOR MAINTENANCE AND PROTECTION OF THE CONSTRUCTED SYSTEM UNTIL APPROVAL AND ACCEPTANCE BY THE DESIGN ENGINEER.
14. UPON COMPLETION OF INSTALLATION OF THE WETLAND SOIL LAYER AND ESTABLISHMENT OF 90% OF VEGETATION WITHIN THE STRUCTURE, THE CONTRACTOR SHALL FLOOD THE BASIN TO THE WATER QUALITY ELEVATION WITH CLEAN WATER AND ADJUST THE BALL VALVE INSTALLED ON THE UNDERDRAIN OUTLET TO ACHIEVE A 24-48 HOUR DRAIN TIME.

				PROJECT	PH WARREN AVENUE, LLC COMMERCIAL SITE 421 WARREN AVENUE	 FAY, SPOFFORD & THORNDIKE, INC. ENGINEERS · PLANNERS · SCIENTISTS 778 MAIN ST, SUITE 8, SOUTH PORTLAND, ME 04106	
				SHEET TITLE	GRAVEL WETLAND #1 PLAN VIEW AND SECTIONS		
1	02.10.14	SUBMITTED TO CITY OF PORTLAND		CLIENT	PH WARREN AVENUE, LLC C/O PETER HOLMES 12 WILDWOOD LANE SCARBOROUGH, ME 04074		
REV	DATE	DESCRIPTION	P.E. STEPHEN BUSHEY LIC. # 7429			DRAWN: CMW DESIGNED: SRB CHECKED: SRB FILE NAME: SP-M104-GRAVEL WETLAND SECTIONS SHEET	DATE: NOVEMBER 2013 SCALE: AS NOTED JOB NO. SP-M104 C-4.1
REVISIONS							



NOTES

- SUBSURFACE GRAVEL WETLANDS WERE DESIGNED PER THE UNIVERSITY OF NEW HAMPSHIRE STORMWATER CENTER'S (UNHSC) DESIGN SPECIFICATIONS, DATED JUNE 2009.
- WETLAND SOIL: THE WETLAND SOIL SHOULD BE SIMILAR TO A NATIVE WETLAND SOIL WITH LOW HYDRAULIC CONDUCTIVITY. THIS SOIL CAN BE MANUFACTURED USING COMPOST, SAND, AND SOME FINE SOILS. SURFACE INFILTRATION RATES SHOULD BE BETWEEN 3.5 X 10-5 CM/SEC AND 3.5 X 10-6 CM/SEC. ORGANIC CONTENT SHOULD BE >15%, AND CLAY CONTENT SHOULD BE <15% TO PREVENT THE MIGRATION OF FINES INTO THE SUBSURFACE GRAVEL LAYER. THE EXISTING HYDRIC SOILS REMOVED FROM IMPACTED WETLAND AREAS MAY ALSO BE USED.
- THE 3" THICK GRADED FILTER OR CHOKER COURSE IS INTENDED TO PREVENT THE WETLAND SOIL FROM MIGRATING DOWN INTO THE CRUSHED STONE SUB-LAYER. MATERIAL COMPATIBILITY MUST MEET THE FOLLOWING FHWA CRITERIA:
D15 (COARSE SUB-LAYER) ≤ 5 X D85 (GRADED FILTER)
D50 (COARSE SUB-LAYER) ≤ 25 X D50 (GRADED FILTER)
- THE COARSE SUB-LAYER MATERIAL SHALL BE AN ANGULAR CRUSHED STONE MEETING THE REQUIREMENTS OF MDOT 703.22 TYPE C.
- GEOTEXTILES SHOULD NOT BE USED BETWEEN HORIZONTAL LAYERS OF THIS SYSTEM, AS THEY MAY CLOG DUE TO FINES AND MAY RESTRICT ROOT GROWTH.
- THE SEASONAL HIGH GROUNDWATER ELEVATION IN THE AREA OF GRAVEL WETLAND #2 IS APPROXIMATELY 64.5' BASED ON TEST PIT TP-ST-3.
- CONSTRUCTION OVERSIGHT: THE OWNER WILL RETAIN THE SERVICES OF A PROFESSIONAL ENGINEER TO INSPECT THE CONSTRUCTION AND STABILIZATION OF ALL STORMWATER MANAGEMENT STRUCTURES. IF NECESSARY, THE INSPECTING ENGINEER WILL INTERPRET THE POND'S CONSTRUCTION PLAN FOR THE CONTRACTOR. ONCE ALL STORMWATER MANAGEMENT STRUCTURES ARE CONSTRUCTED AND STABILIZED, THE INSPECTING ENGINEER WILL NOTIFY THE DEPARTMENT IN WRITING WITHIN 30 DAYS TO STATE THAT THE POND HAS BEEN COMPLETED. ACCOMPANYING THE ENGINEER'S NOTIFICATION MUST BE A LOG OF THE ENGINEER'S INSPECTIONS GIVING THE DATE AND TIME OF EACH INSPECTION AND THE ITEMS INSPECTED ON EACH VISIT AND INCLUDING ANY TESTING DATA OR SIEVE ANALYSIS DATA OF EVERY MINERAL SOIL AND SOIL MEDIA SPECIFIED IN THE PLANS AND USED ON SITE.
- CONSTRUCTION SEQUENCE: THE SUBSURFACE GRAVEL WETLAND MUST NOT BE INSTALLED UNTIL THE AREA THAT DRAINS TO THE WETLAND HAS BEEN PERMANENTLY STABILIZED WITH PAVEMENT OR OTHER STRUCTURE, 90% VEGETATION COVER, OR OTHER PERMANENT STABILIZATION UNLESS THE RUNOFF FROM THE CONTRIBUTING DRAINAGE AREA IS DIVERTED AROUND THE STRUCTURE UNTIL STABILIZATION IS COMPLETE.
- COMPACTION: WETLAND SOIL AND SUBSURFACE MATERIAL MUST BE COMPACTED TO BETWEEN 90% AND 95% STANDARD PROCTOR.
- TEST PIT TP-ST-3 REVEALED MARINE CLAY AT DEPTHS BELOW 1.8'. A PERMEABILITY TEST CONFORMING TO ASTM D2434 MAY BE COMPLETED ON THIS MATERIAL TO DETERMINE IF IT MEETS THE REQUIREMENTS FOR LOW PERMEABILITY CLAY LINER MATERIAL. IF THE NATIVE CLAY IS FOUND TO HAVE A PERMEABILITY OF LESS THAN 1 X 10-6 CM/SEC, NO ADDITIONAL CLAY LINER IS NECESSARY.
- CONSTRUCTION OVERSIGHT: INSPECTION BY A PROFESSIONAL ENGINEER WILL OCCUR AT A MINIMUM:
AFTER THE PRELIMINARY CONSTRUCTION OF THE STRUCTURE'S GRADES AND ONCE THE SUBSURFACE DRAIN PIPES ARE INSTALLED BUT NOT BACKFILLED.
AFTER THE CRUSHED STONE LAYER IS CONSTRUCTED AND PRIOR TO THE INSTALLATION OF THE WETLAND SOIL.
AFTER THE WETLAND SOIL HAS BEEN INSTALLED AND SEEDING.
AFTER ONE YEAR TO INSPECT HEALTH OF THE VEGETATION AND MAKE CORRECTIONS.
ALL THE MATERIAL USED FOR THE CONSTRUCTION OF THE FILTER BASIN MUST BE CONFIRMED AS SUITABLE BY THE DESIGN ENGINEER. TESTING MUST BE DONE BY A CERTIFIED LABORATORY TO SHOW THAT THEY ARE PASSING DESIGN SPECIFICATIONS.
- TESTING AND SUBMITTALS: THE CONTRACTOR SHALL IDENTIFY THE LOCATION OF THE SOURCE OF EACH COMPONENT OF THE SUBSURFACE GRAVEL WETLAND SYSTEM. ALL RESULTS OF FIELD AND LABORATORY TESTING SHALL BE SUBMITTED TO THE DESIGN ENGINEER FOR CONFIRMATION. THE CONTRACTOR SHALL:
PERFORM A SIEVE ANALYSIS CONFORMING TO ASTM C136 (STANDARD TEST METHOD FOR SIEVE ANALYSIS OF FINE AND COARSE AGGREGATES 1996A) ON EACH MATERIAL USED IN THE SUBSURFACE GRAVEL WETLAND SYSTEM.
PERFORM A HYDROMETER GRAIN SIZE ANALYSIS ON THE WETLAND SOIL.
DETERMINE ORGANIC CONTENT OF THE WETLAND SOIL PER ASTM D2974.
PERFORM A PERMEABILITY TEST ON THE WETLAND SOIL CONFORMING TO ASTM D2434 WITH THE MIXTURE COMPACTED TO 90% TO 95% OF MAXIMUM DRY DENSITY BASED ON ASTM D698.
- THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL MATERIALS AND CONSTRUCTION PROCEDURES UTILIZED IN THE CONSTRUCTION OF THE SUBSURFACE GRAVEL WETLAND SYSTEM AND FOR MAINTENANCE AND PROTECTION OF THE CONSTRUCTED SYSTEM UNTIL APPROVAL AND ACCEPTANCE BY THE DESIGN ENGINEER.
- UPON COMPLETION OF INSTALLATION OF THE WETLAND SOIL LAYER AND ESTABLISHMENT OF 90% OF VEGETATION WITHIN THE STRUCTURE, THE CONTRACTOR SHALL FLOOD THE BASIN TO THE WATER QUALITY ELEVATION WITH CLEAN WATER AND ADJUST THE BALL VALVE INSTALLED ON THE UNDERDRAIN OUTLET TO ACHIEVE A 24-HOUR DRAIN TIME.

CAST IN PLACE FLOW CONTROL PANEL

NOTES:
THIS FLOW CONTROL PANEL IS TO BE INSTALLED WITHIN AN OUTLET CONTROL STRUCTURE. SEE SHEET C-4.3 FOR OUTLET CONTROL STRUCTURE DETAIL.

REV	DATE	DESCRIPTION
1	02.10.14	SUBMITTED TO CITY OF PORTLAND

REVISIONS

STATE OF MAINE
STEPHEN BUSHEY
No. 7429
LICENSED PROFESSIONAL ENGINEER
EXPIRATION 12/31/2018

PROJECT PH WARREN AVENUE, LLC
COMMERCIAL SITE
421 WARREN AVENUE

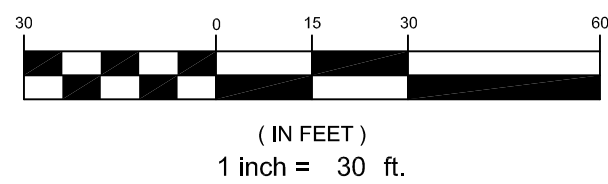
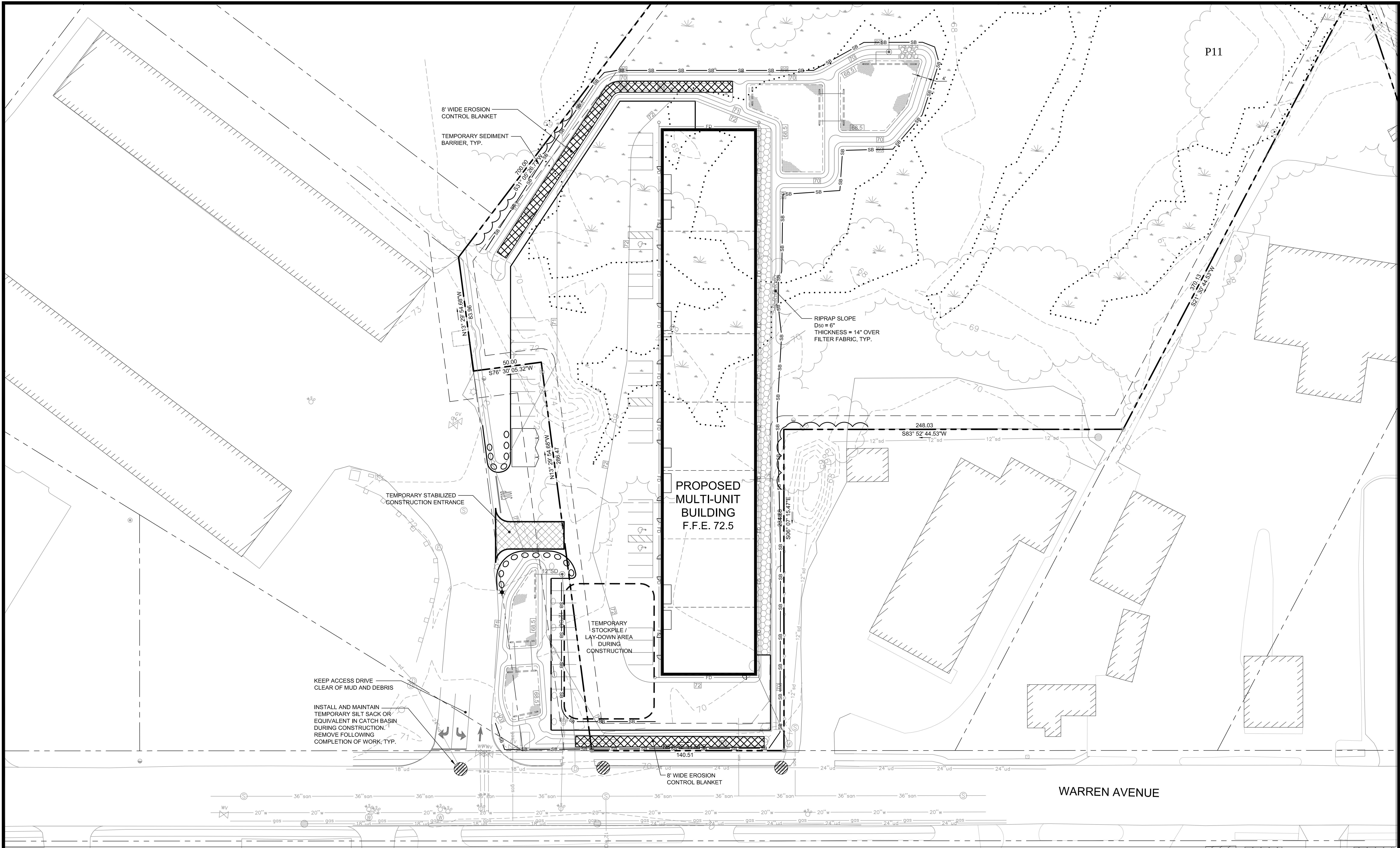
SHEET TITLE
**GRAVEL WETLAND #2
PLAN VIEW AND SECTIONS**

CLIENT PH WARREN AVENUE, LLC
C/O PETER HOLMES
12 WILDWOOD LANE
SCARBOROUGH, ME 04074

ENGINEERS
FST
Since 1914

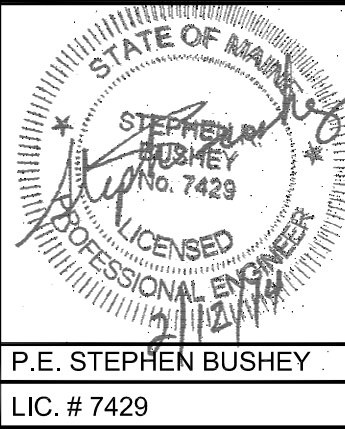
FAY, SPOFFORD & THORNDIKE, INC.
ENGINEERS · PLANNERS · SCIENTISTS
778 MAIN ST, SUITE 8, SOUTH PORTLAND, ME 04106

DRAWN: CMW	DATE: NOVEMBER 2013
DESIGNED: SRB	SCALE: AS NOTED
CHECKED: SRB	JOB NO. SP-M104
FILE NAME: SP-M104-GRAVEL WETLAND SECTIONS	
SHEET	C-4.2



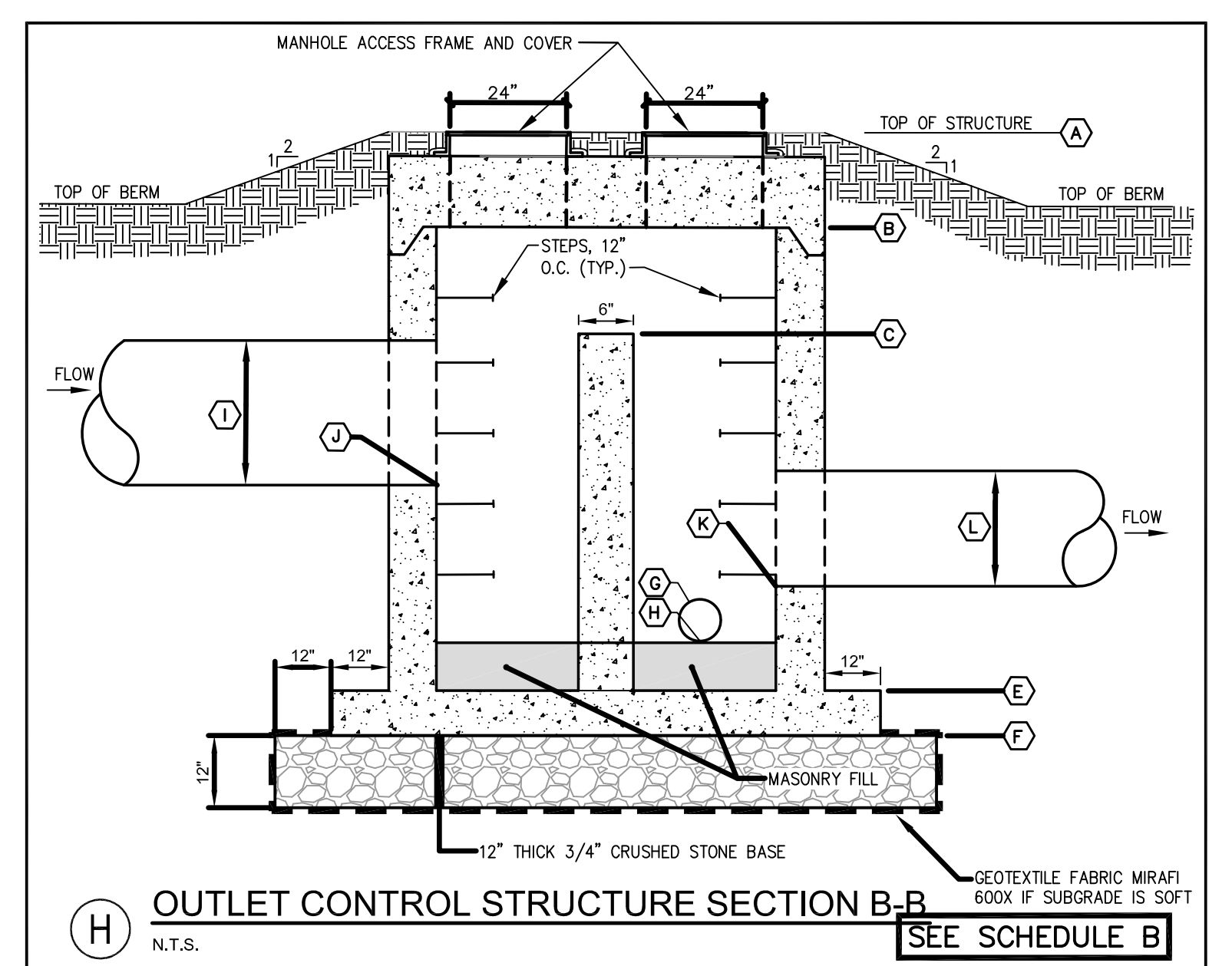
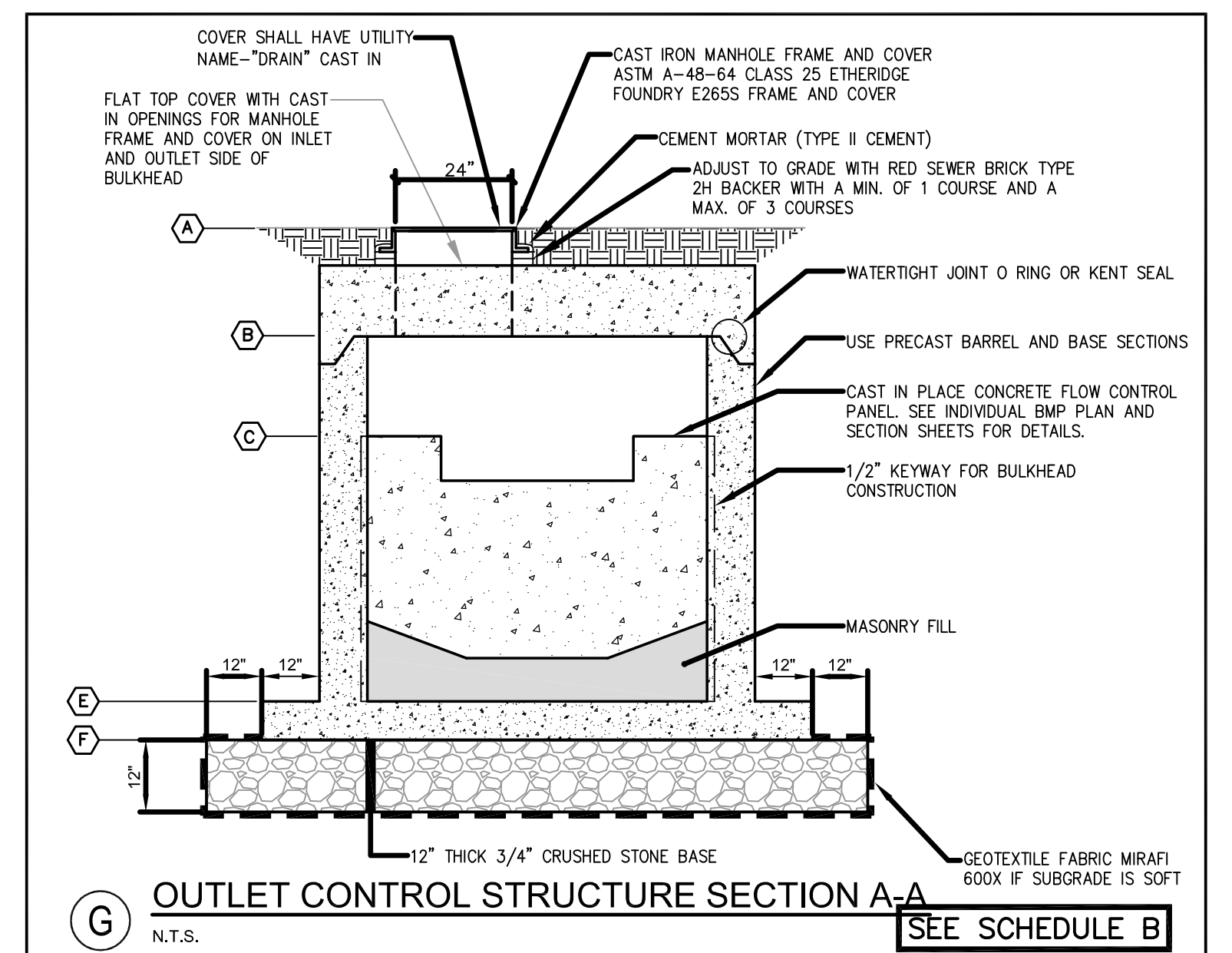
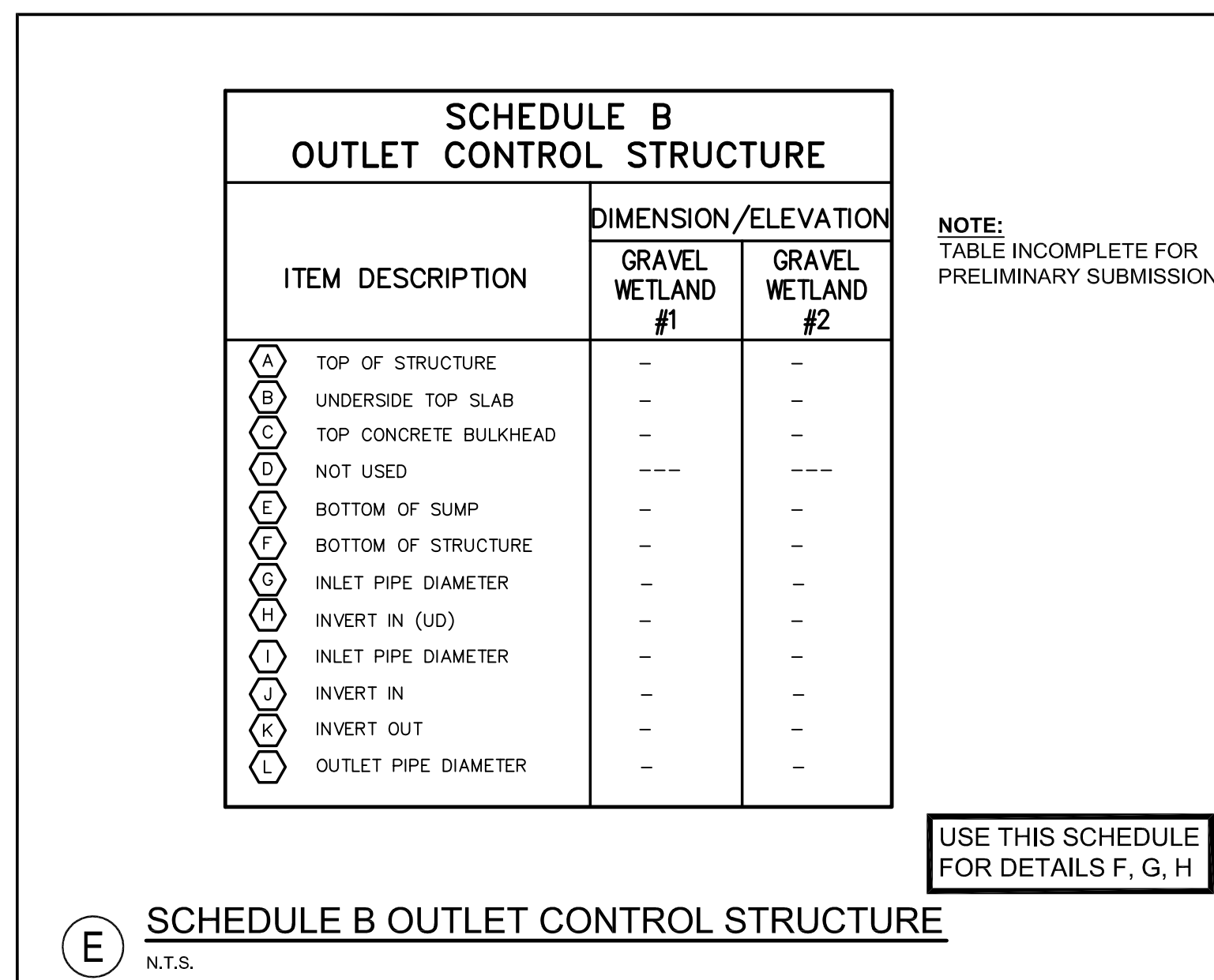
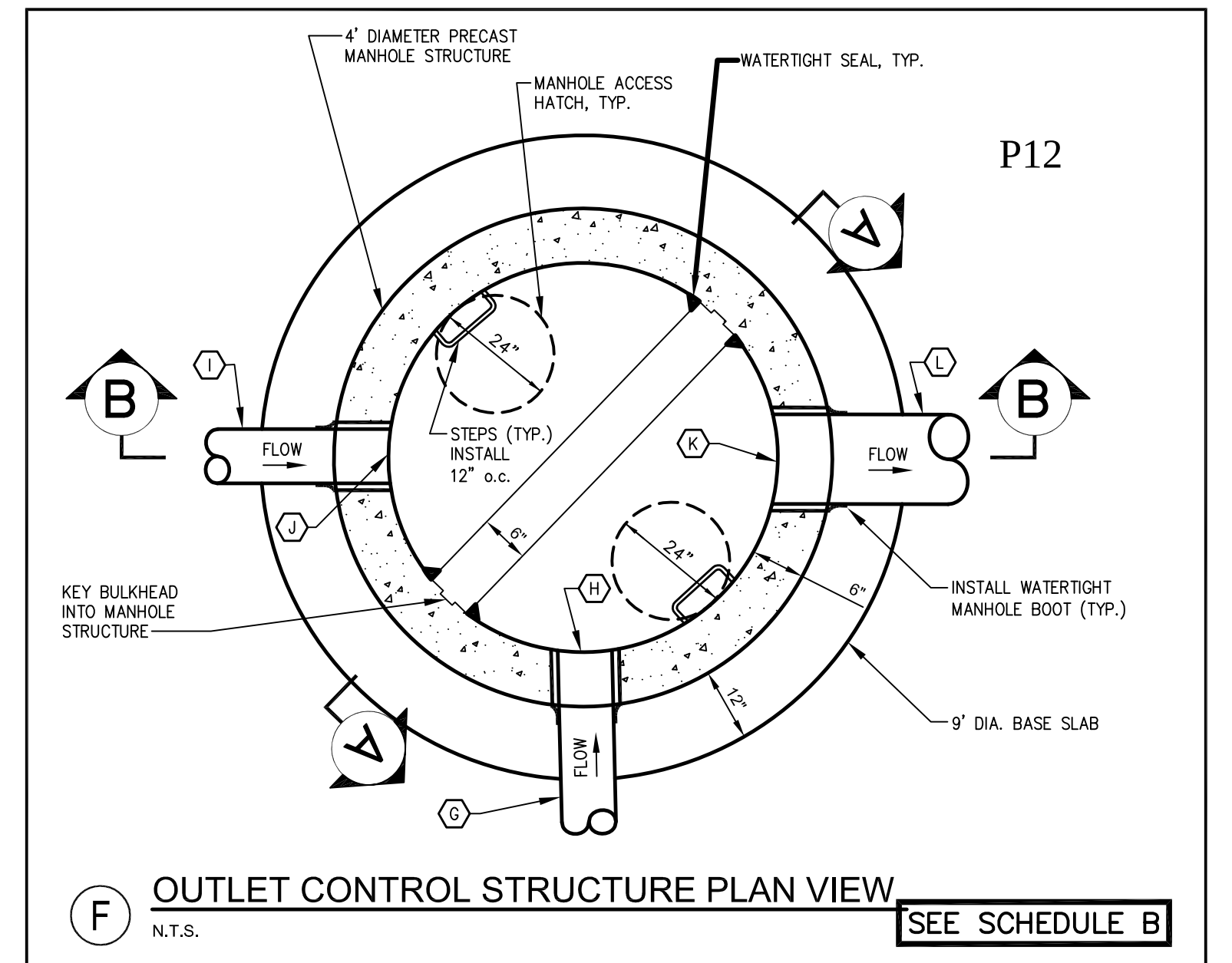
PRELIMINARY - NOT FOR CONSTRUCTION

1	02.10.14	SUBMITTED TO CITY OF PORTLAND
REV	DATE	DESCRIPTION
REVISIONS		

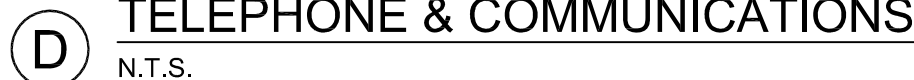


PROJECT	PH WARREN AVENUE, LLC COMMERCIAL SITE 421 WARREN AVENUE
SHEET TITLE	EROSION AND SEDIMENT CONTROL PLAN
CLIENT	PH WARREN AVENUE, LLC C/O PETER HOLMES 12 WILDWOOD LANE SCARBOROUGH, ME 04074

DRAWN: CMW		DATE: NOVEMBER 2013	
DESIGNED: SRB		SCALE: 1" = 30'	
CHECKED: SRB		JOB NO.: SP-M104	
FILE NAME: SP-M104-EROS		SHEET	
		C-5.0	

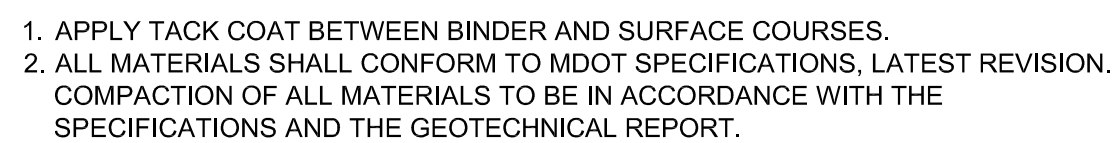


				PROJECT PH WARREN AVENUE, LLC COMMERCIAL SITE 421 WARREN AVENUE	RYAN'S FST Since 1974 FAY, SPOFFORD & THORNDIKE, INC. ENGINEERS · PLANNERS · SCIENTISTS 778 MAIN ST, SUITE 8, SOUTH PORTLAND, ME 04106
1	02.10.14	SUBMITTED TO CITY OF PORTLAND		SHEET TITLE DETAILS	
REV	DATE	DESCRIPTION	P.E. STEPHEN BUSHEY	CLIENT	FILE NAME: SP-M104-DET
		REVISIONS	LIC. # 7429		SHEET C-4.3

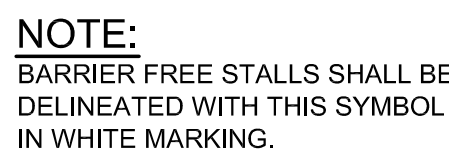


NOTE:
BRACING AND SHEETING OR OTHER TRENCH PROTECTION TO BE PROVIDED TO MEET APPLICABLE STATE AND O.S.H.A. SAFETY STANDARDS. ALL SUCH TRENCH PROTECTION TO BE THE RESPONSIBILITY OF THE CONTRACTOR.

G TYPICAL TRENCH DETAIL
N.T.S.



(C) BITUMINOUS CONCRETE PAVEMENT SECTION
N.T.S.



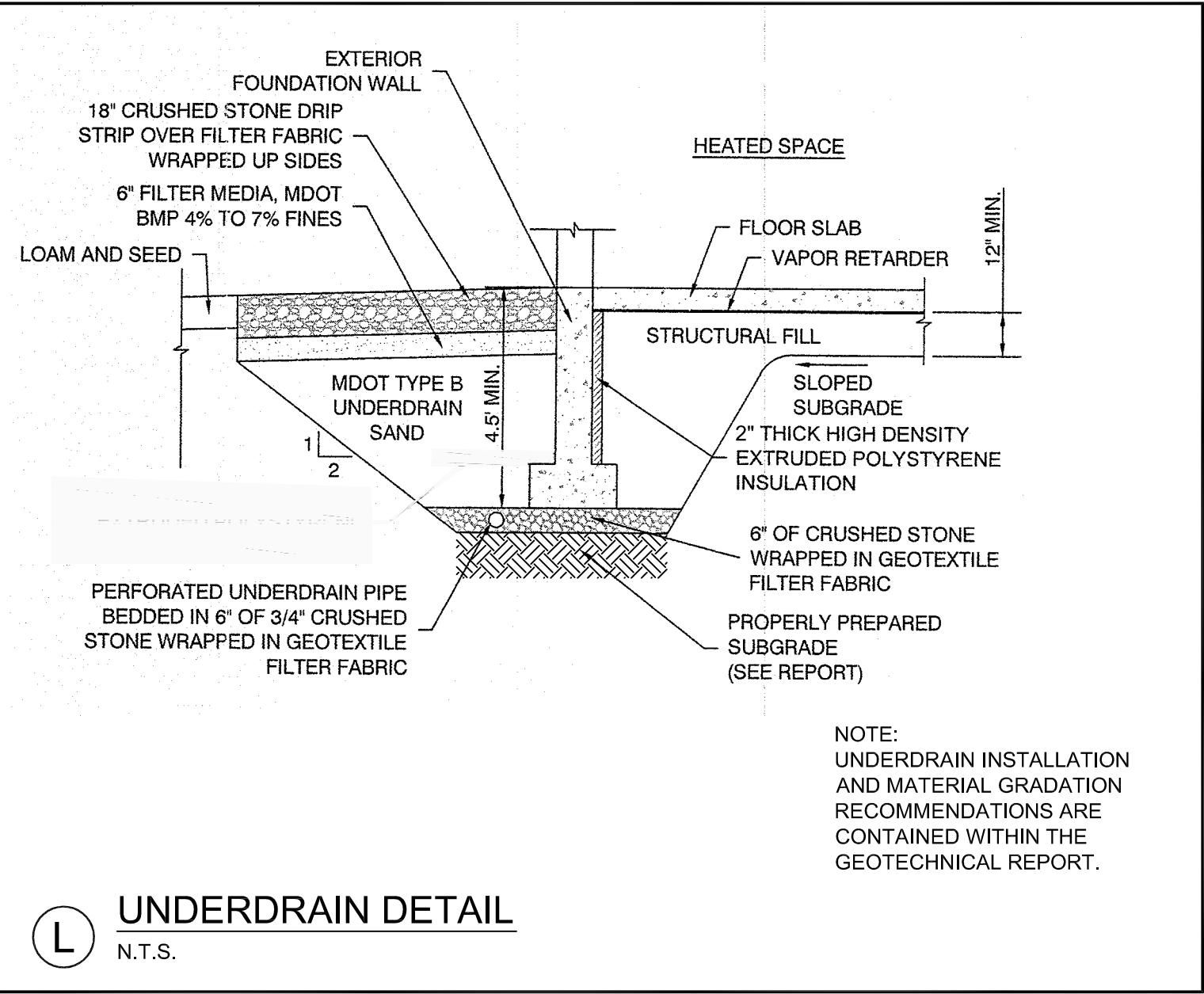
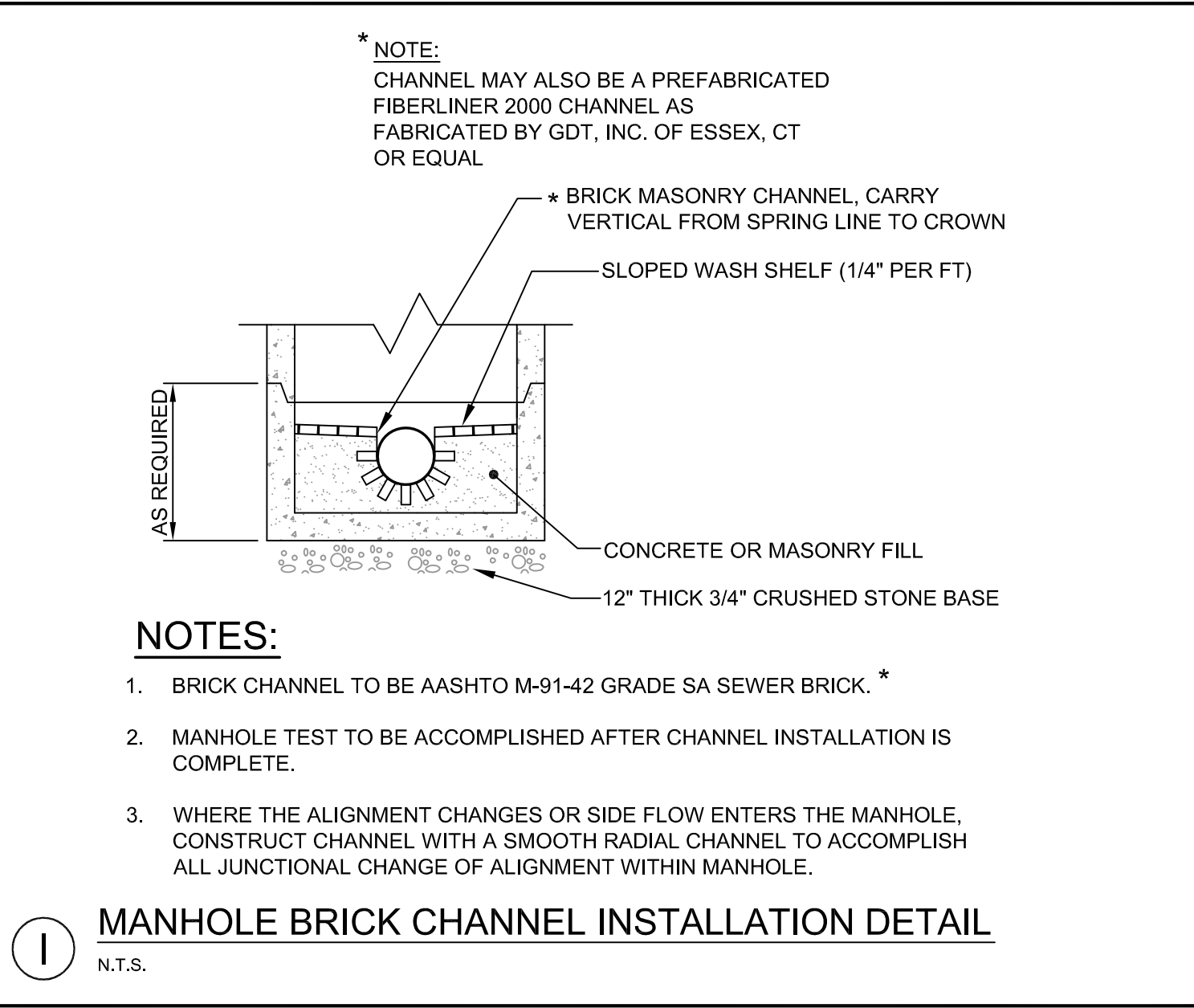
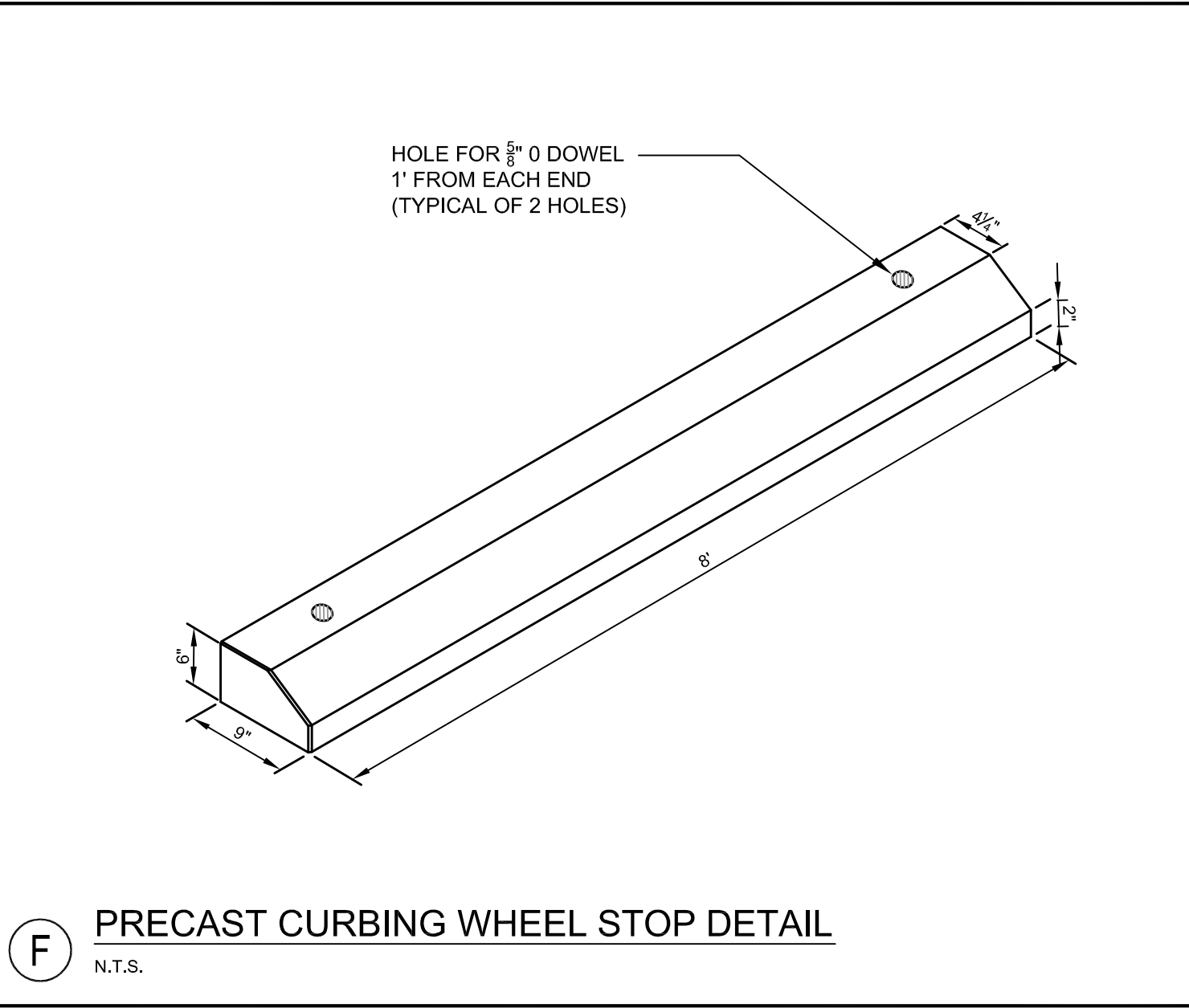
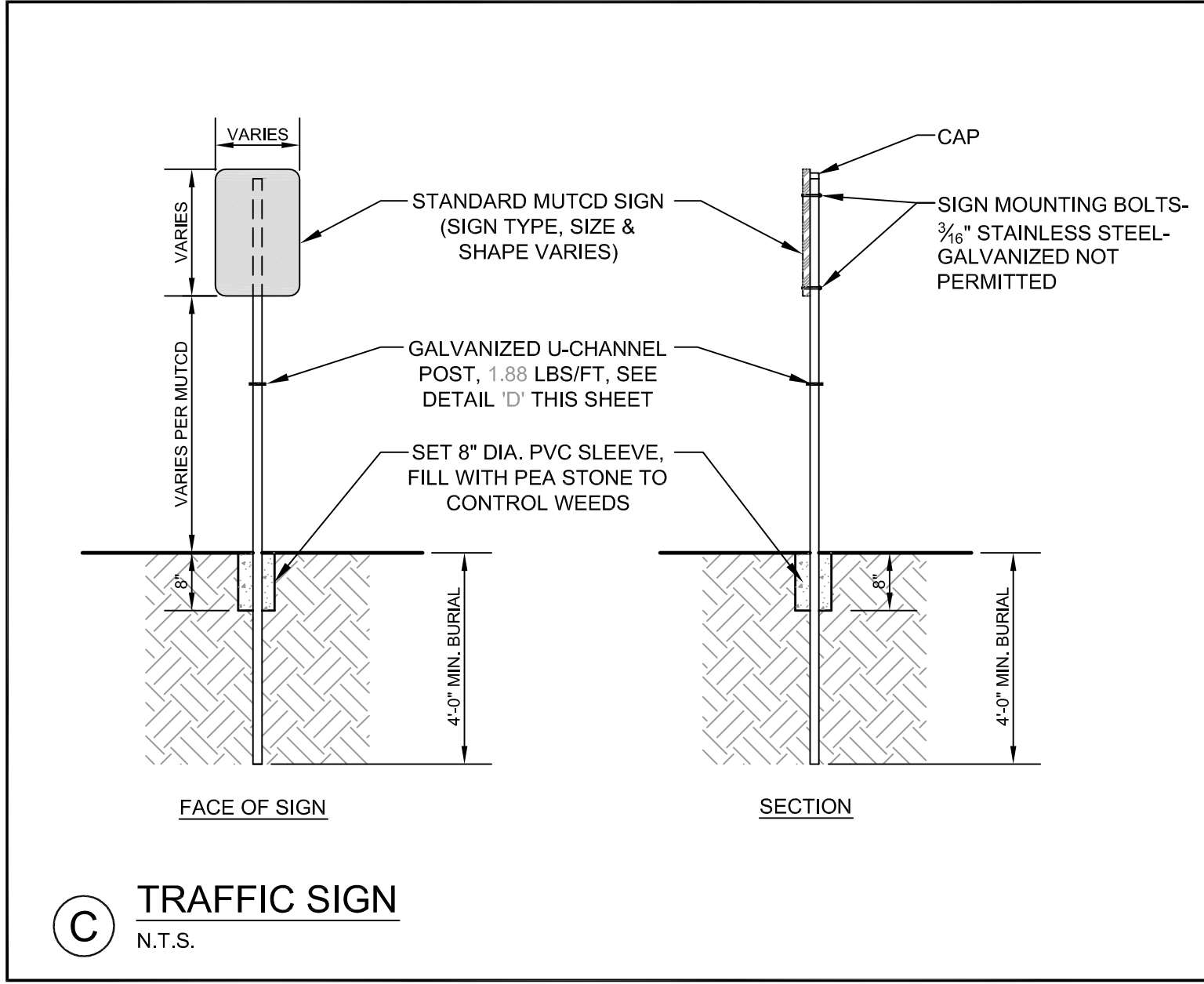
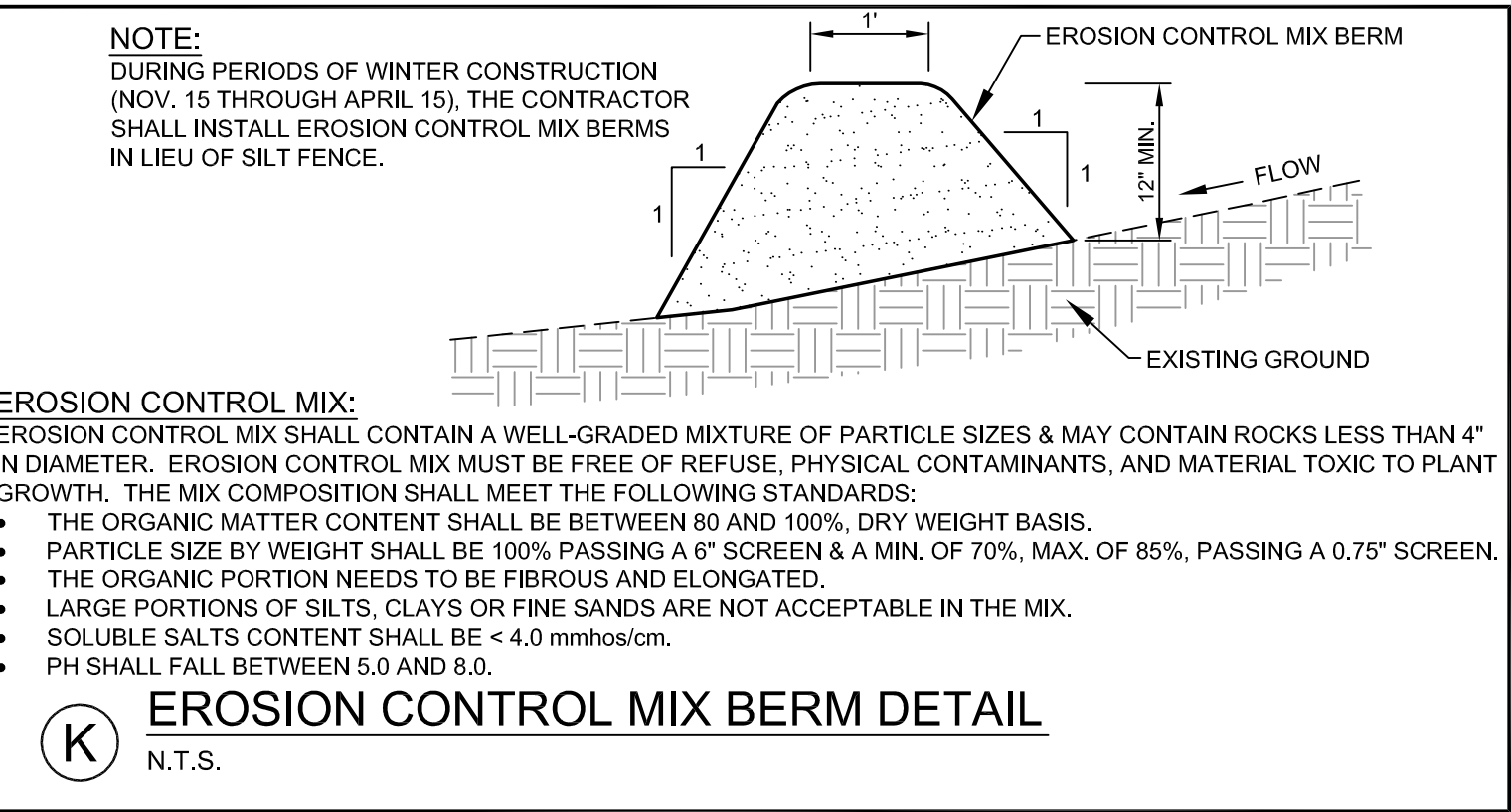
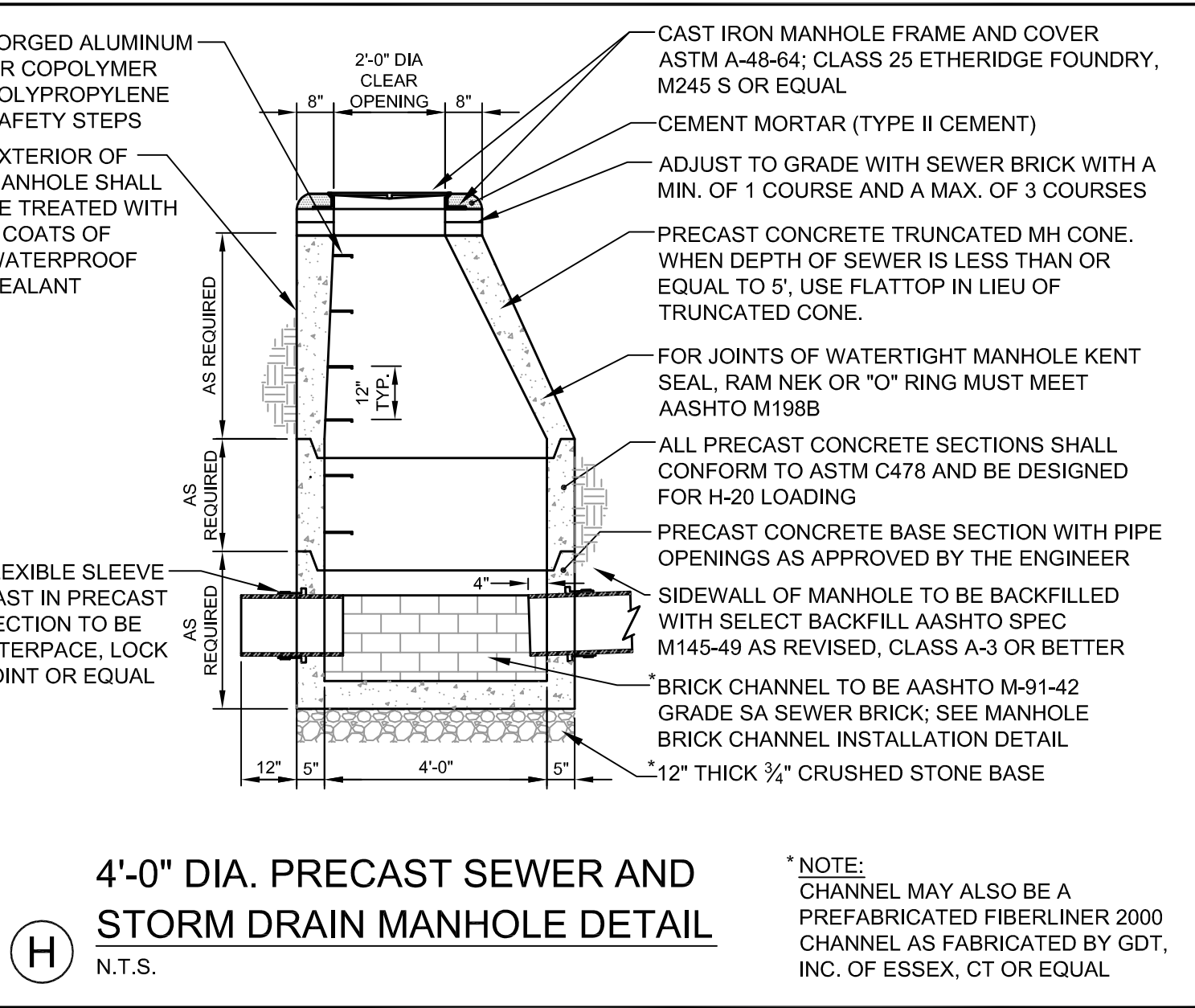
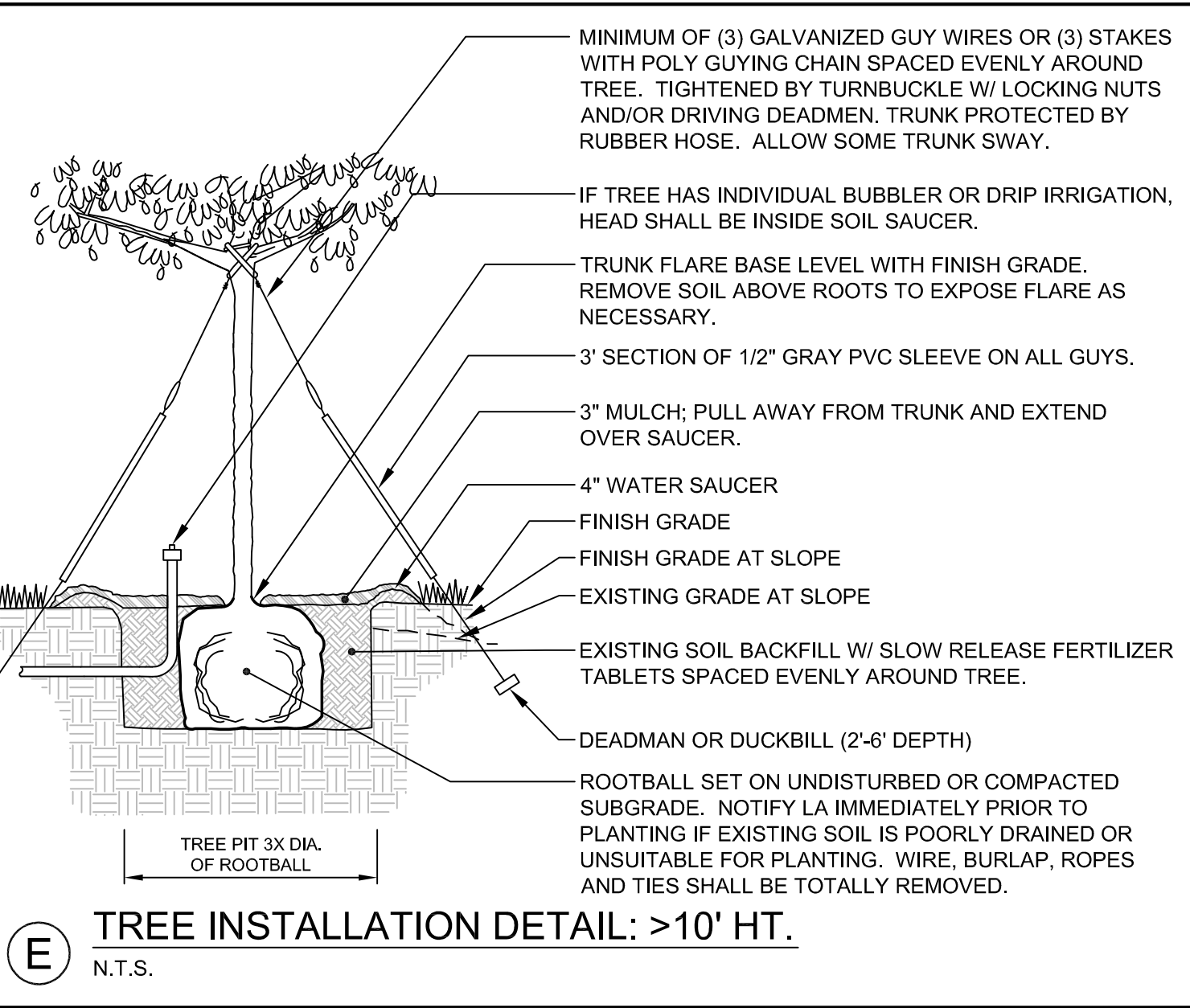
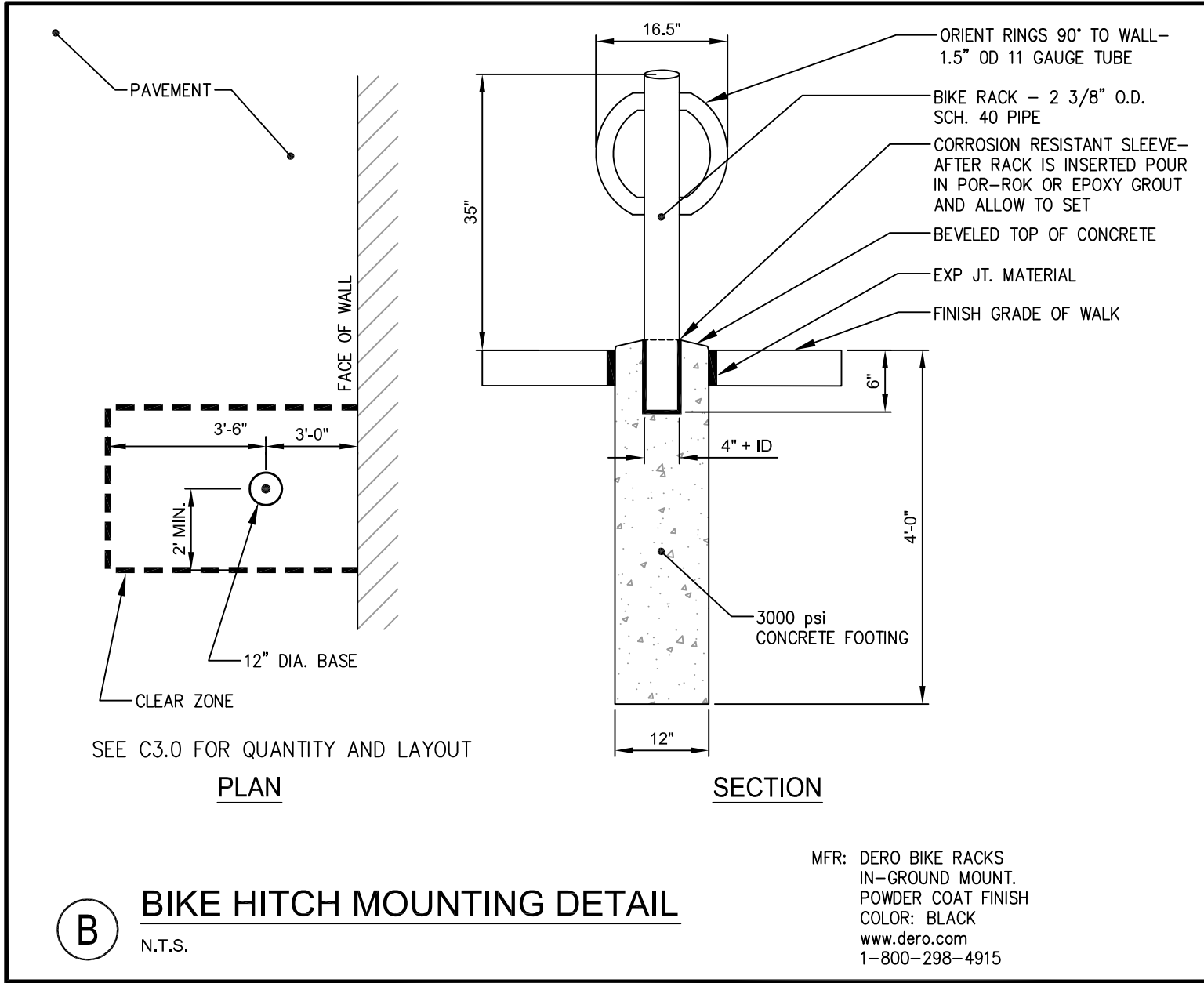
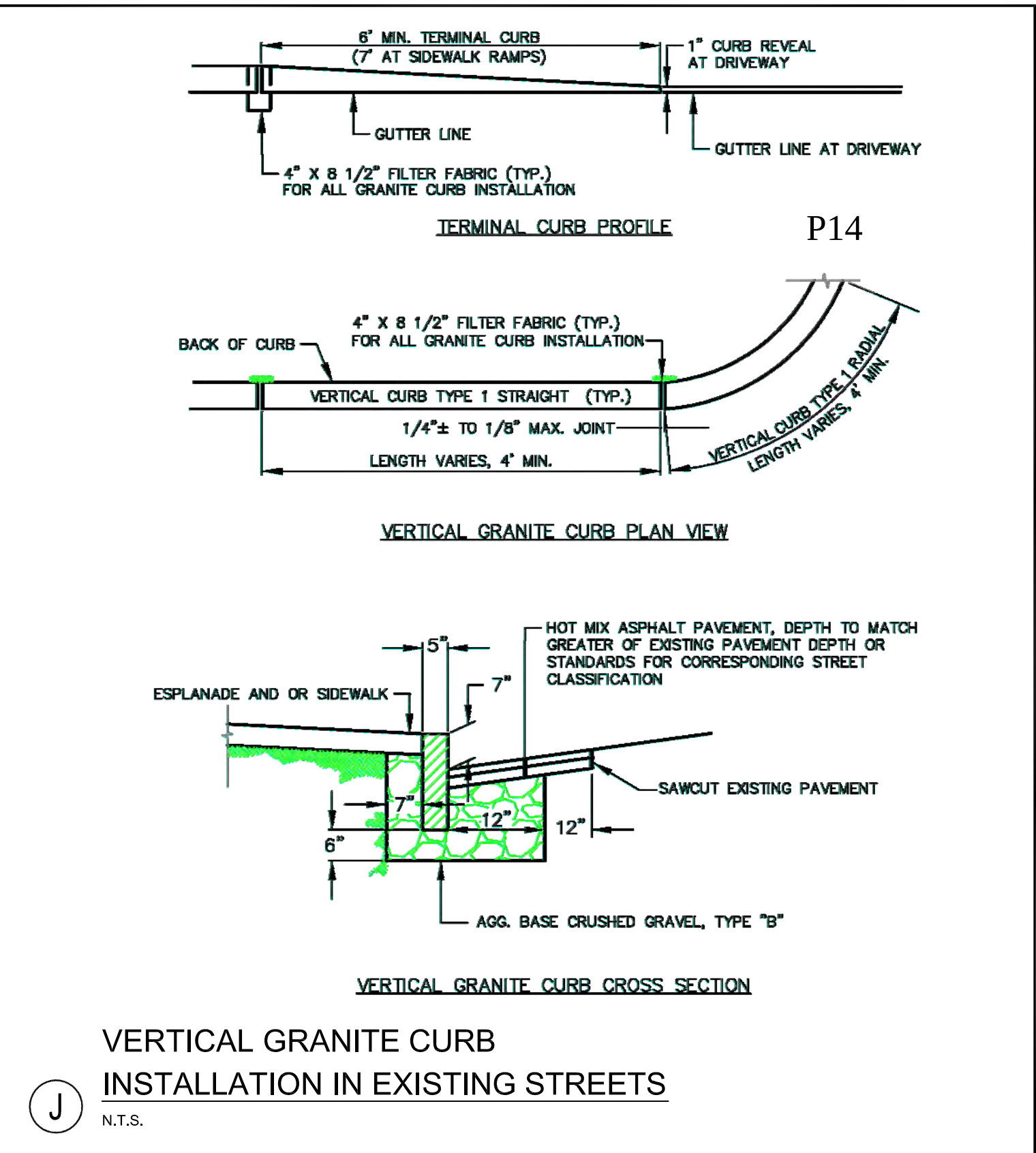
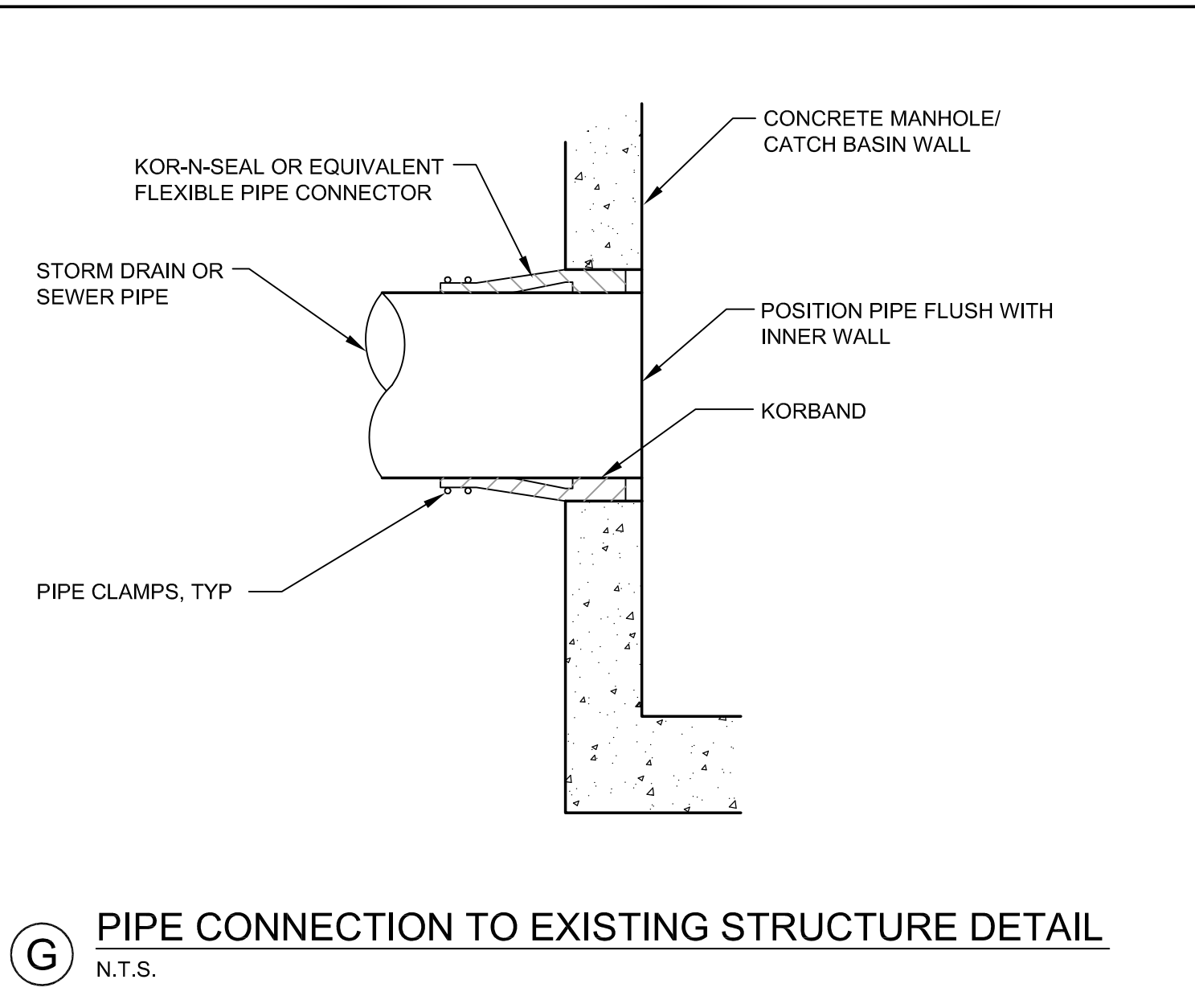
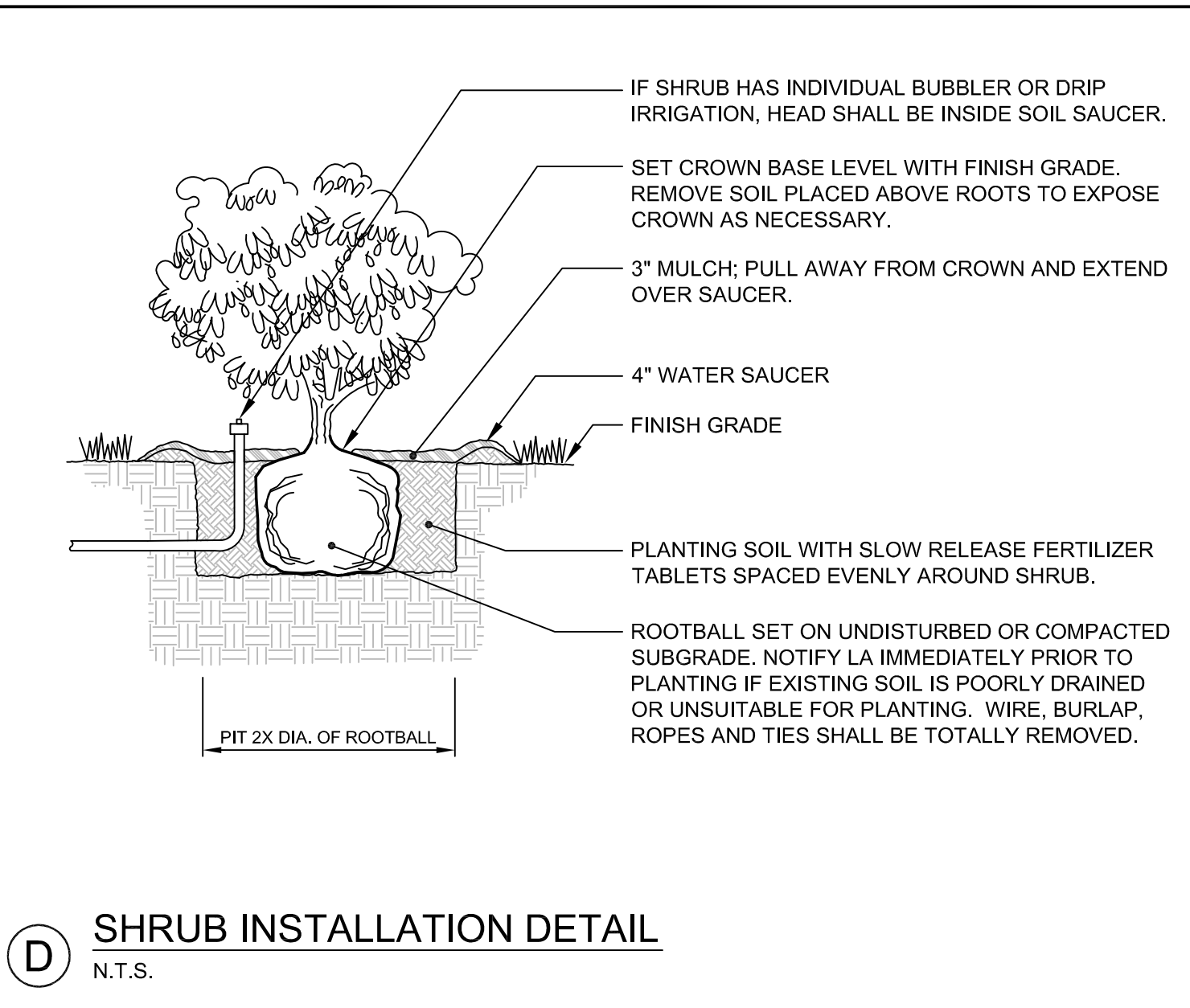
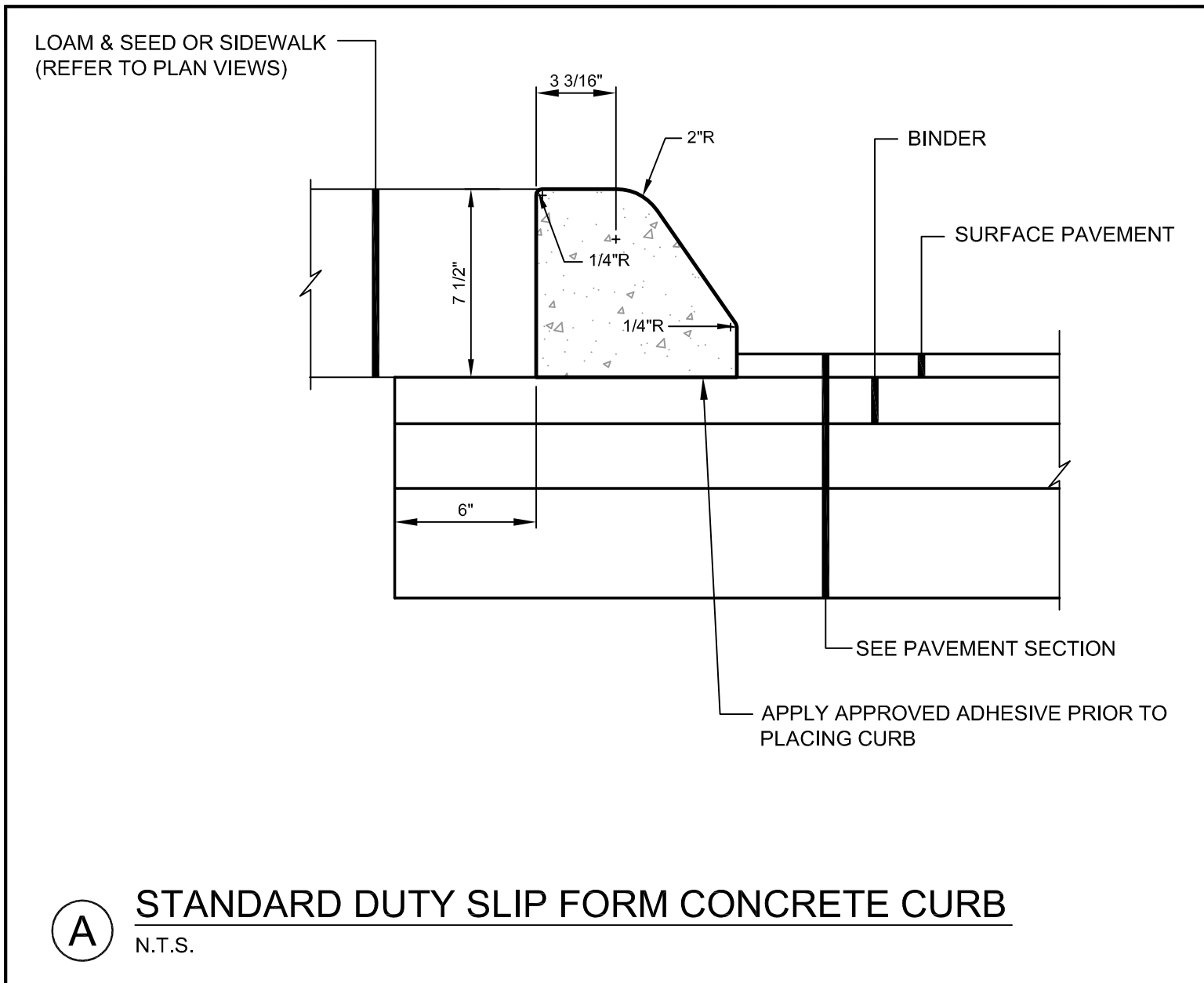
(F) INTERNATIONAL BARRIER FREE SYMBOL
N.T.S.



(H)	STANDARD PARKING STALL STRIPING
	N.T.S.



PRELIMINARY - NOT FOR CONSTRUCTION



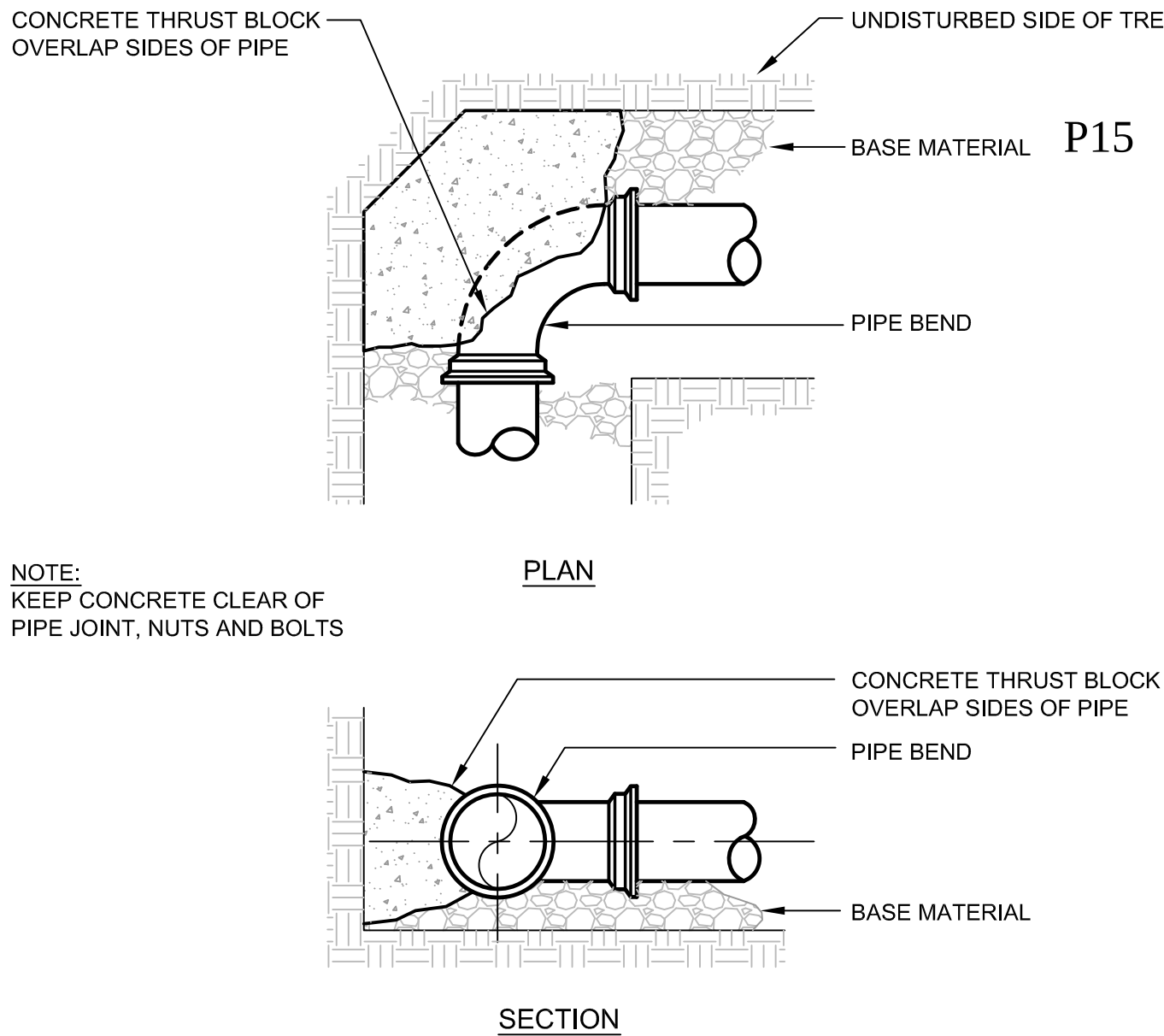
PRELIMINARY - NOT FOR CONSTRUCTION

					PROJECT PH WARREN AVENUE, LLC COMMERCIAL SITE 421 WARREN AVENUE		ENGINEERS FST FAY, SPOFFORD & THORNDIKE, INC. ENGINEERS · PLANNERS · SCIENTISTS 778 MAIN ST, SUITE 8, SOUTH PORTLAND, ME 04106	
					SHEET TITLE DETAILS		DRAWN: CMW DESIGNED: SRB CHECKED: SRB FILE NAME: SP-M104-DET SHEET C-6.1	
					CLIENT PH WARREN AVENUE, LLC C/O PETER HOLMES 12 WILLOW LANE SCARBOROUGH, ME 04074		DATE: NOVEMBER 2013 SCALE: AS NOTED JOB NO. SP-M104	

A VACANT
N.T.S.

D PLAN VIEW OF MINOR EXCAVATION PAVEMENT REPAIR
N.T.S.

G PLAN VIEW OF MAJOR EXCAVATION PAVEMENT REPAIR
N.T.S.



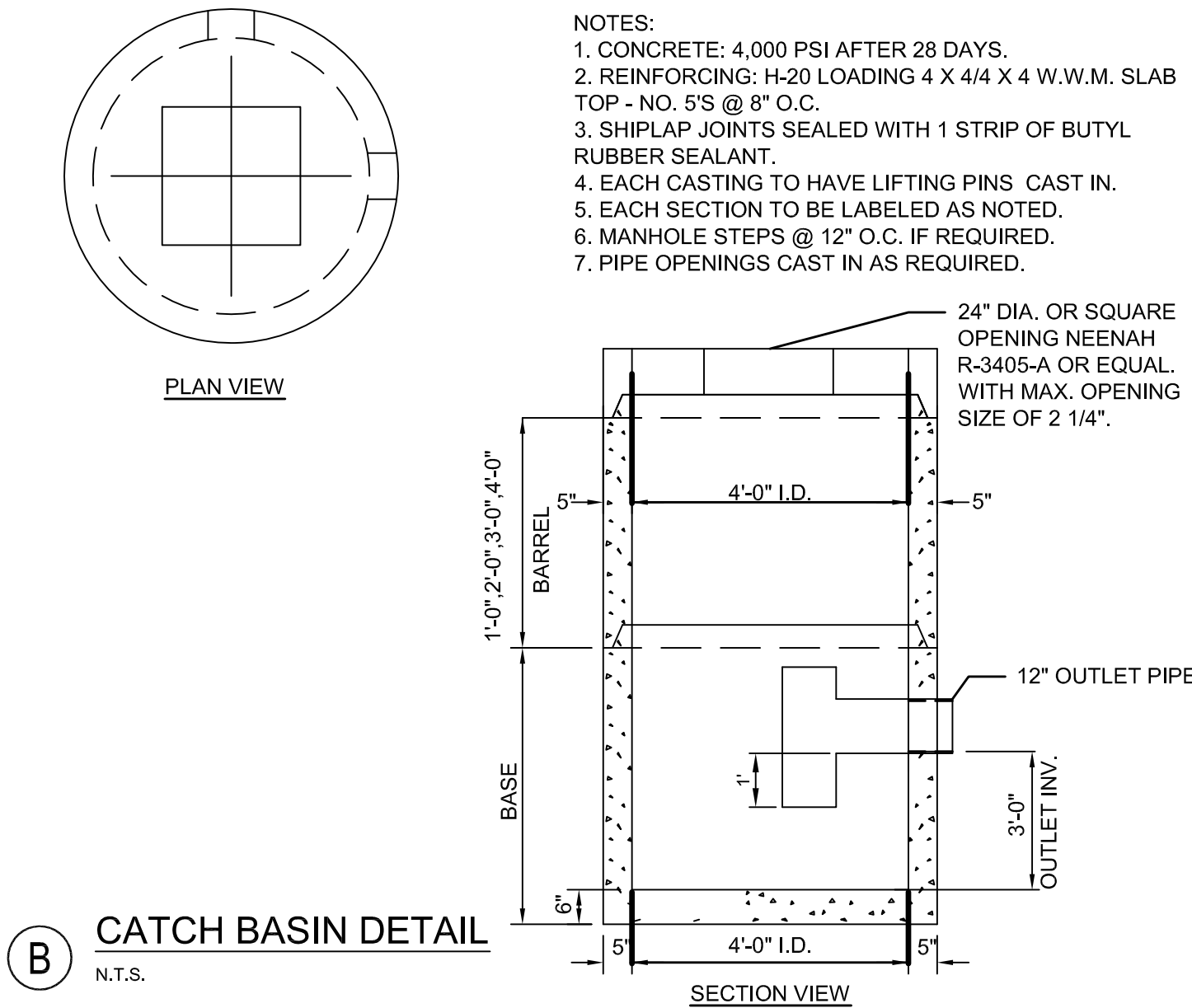
THRUST/RETAINER GLAND SCHEDULE		
¼ BEND	(90°)	USE POURED-IN-PLACE THRUST BLOCK WITH GRIPRING™ MECHANICAL JOINT RESTRAINT
⅛ BEND	(45°)	THRUST BLOCK W/ GRIPRING™
⅙ BEND	(22 ½°)	THRUST BLOCK W/ GRIPRING™
⅓ BEND	(11 ½°)	THRUST BLOCK W/ GRIPRING™

THE ABOVE SCHEDULE IS SUBJECT TO THE APPROVAL OF THE ON-SITE INSPECTOR DUE TO SOILS AND WORKING PRESSURES IN THE AREA.

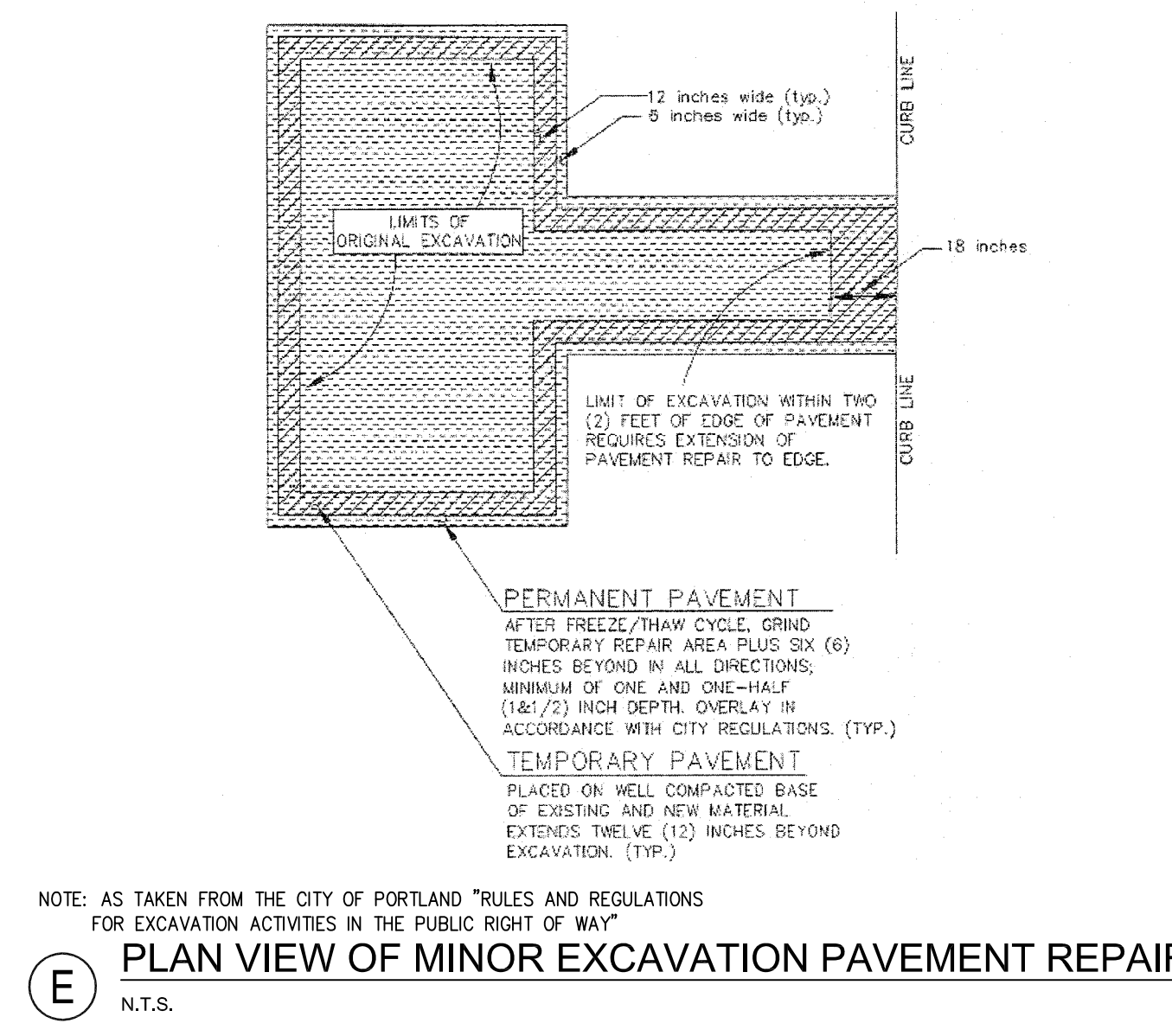
NOTES:

1. THE PORTLAND WATER DISTRICT MAY HAVE INSPECTION FEES AND REQUIRE OBSERVATION OF ALL PIPING INSTALLATION BEFORE BURIAL. REFER TO SPECIFICATIONS.
2. FOR WATER MAIN LAYOUT SEE DRAWING C-3.00
3. REFER TO SPECIFICATIONS FOR TESTING AND CHLORINATION REQUIREMENTS.
4. ALL HYDRANTS AND VALVES TO BE EPOXY COATED, NUTS & BOLTS TO BE STAINLESS STEEL.
5. SERVICE RODS FOR DOMESTIC SERVICE OR AIR VALVES TO BE STAINLESS STEEL.

J TYPICAL THRUST BLOCK PLACEMENT ON BENDS DETAIL
N.T.S.



B CATCH BASIN DETAIL
N.T.S.



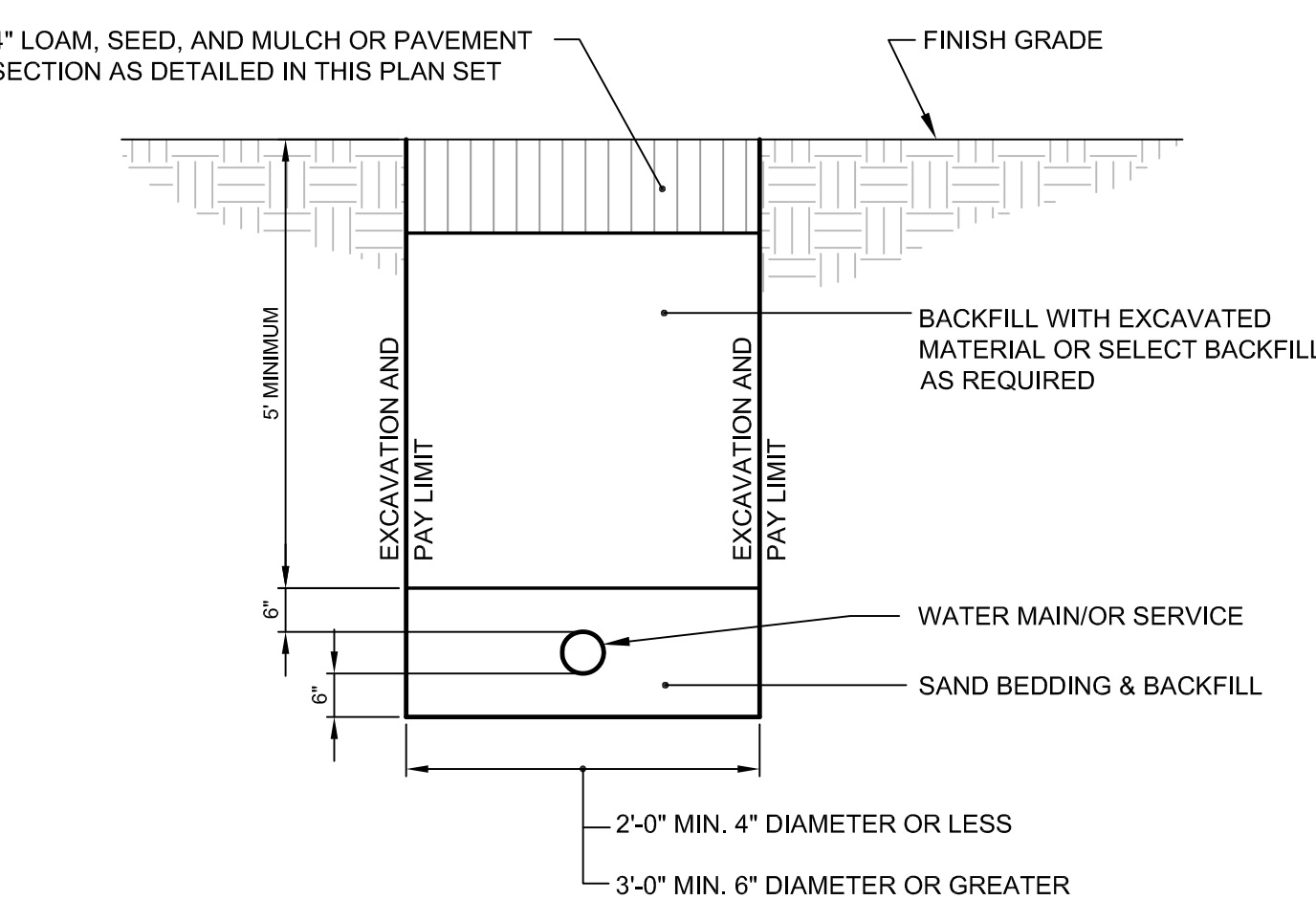
E PLAN VIEW OF MINOR EXCAVATION PAVEMENT REPAIR
N.T.S.

1. INSTALL POLY BARRIER BETWEEN PIPE AND ALL THRUST BLOCKS.
2. ANY MODIFICATION TO THRUST BLOCK SIZING OR PIPE RESTRAINT REVISIONS SHALL BE APPROVED IN WRITING BY THE ENGINEER PRIOR TO IMPLEMENTATION IN THE FIELD.
3. ANY WORK RELATING TO WATER PIPING OR DETAILS SHALL BE IN ACCORDANCE WITH THE PORTLAND WATER DISTRICT SPECIFICATIONS.
4. ALL RESTRAINED JOINTS MUST HAVE GRIPRING™.

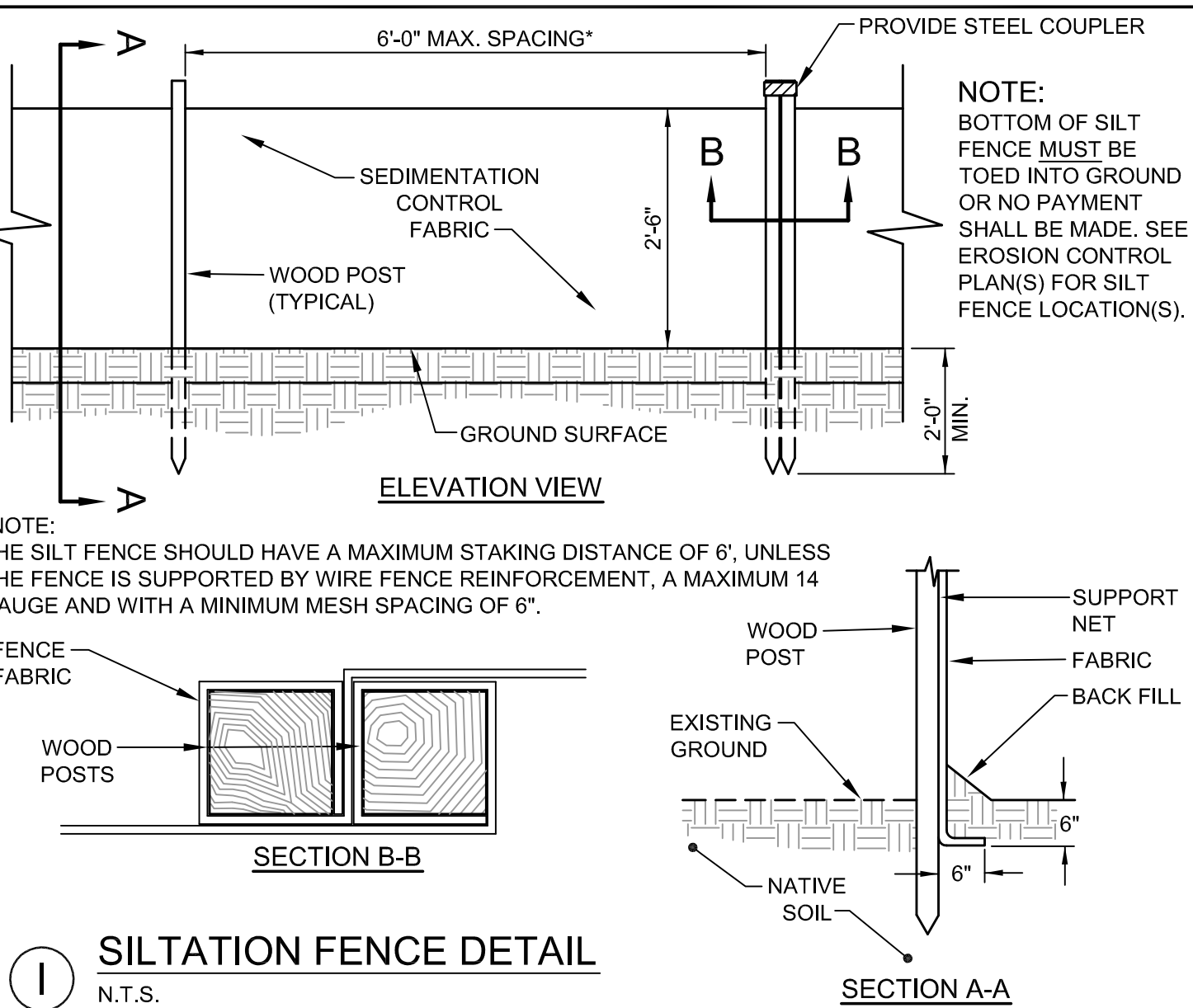
BEARING SURFACE REQUIRED IN SQUARE FEET

PIPE SIZE	¼ BEND	⅛ BEND	⅙ BEND	⅓ BEND	TEES/CAPS
6" / 8"	5.0	5.0	5.0	6.5	5.0
12"	11.5	11.5	11.5	20.0	22.0

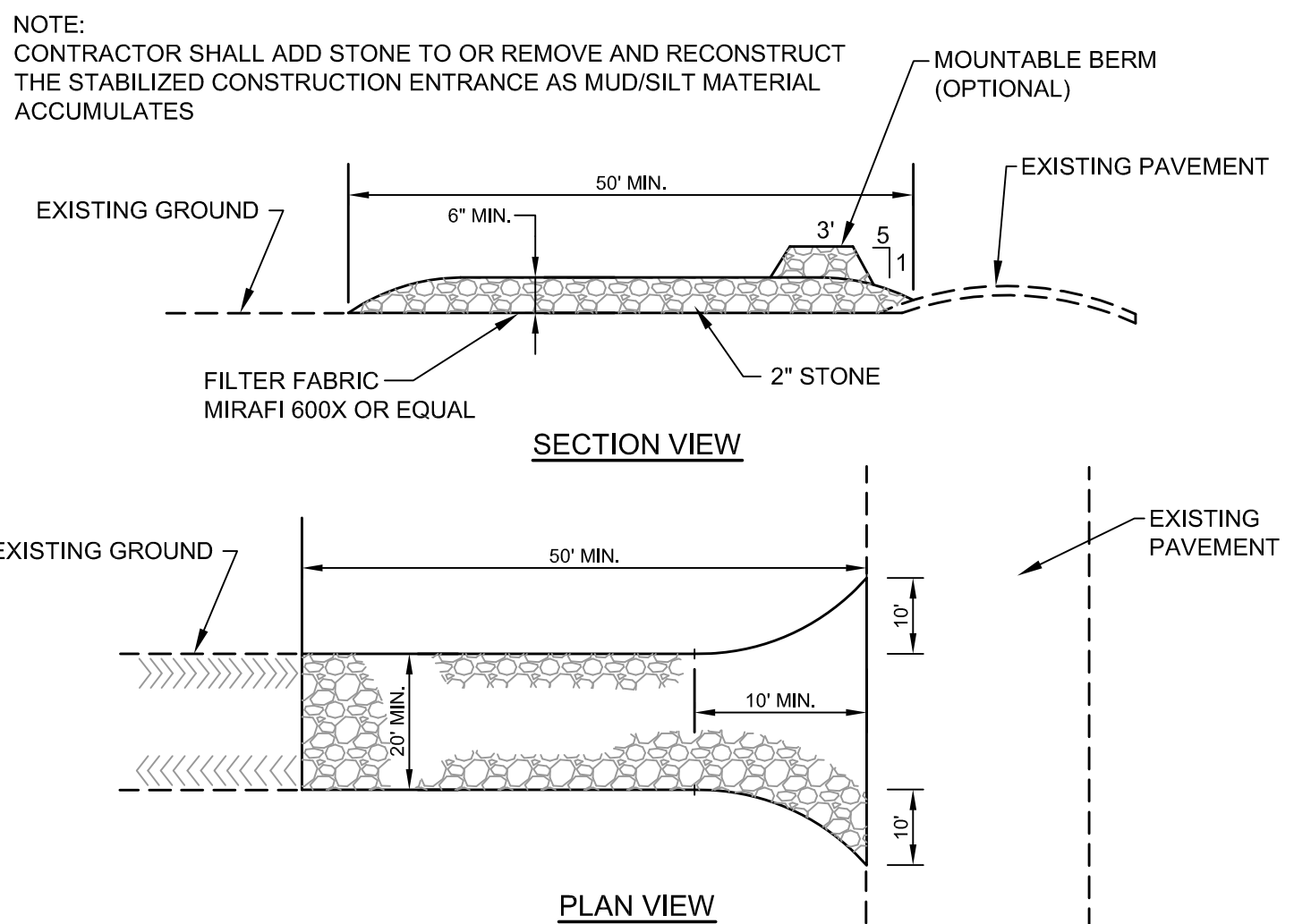
H THRUST BLOCK NOTES
N.T.S.



SEE NOTE 3 IN THRUST BLOCK NOTES DETAIL **H**
F WATER SERVICE TRENCH SECTION
N.T.S.



I SILTATION FENCE DETAIL
N.T.S.



K STABILIZED CONSTRUCTION ENTRANCE DETAIL
N.T.S.

PRELIMINARY - NOT FOR CONSTRUCTION

PRE-DEVELOPMENT SUMMARY			
SUBCATCHMENT ID	AREA (ACRES)	TC (MIN)	RCN
1	5.720	56.70	81
2	0.473	6	80
3A	0.500	6	93
3B	0.099	6	98
3C	0.370	6	98
4	0.795	6	87

NOTE
ONLY AREA IMPACTS POI 1 & POI 2 WERE
USED FOR WATERSHED ANALYSIS.

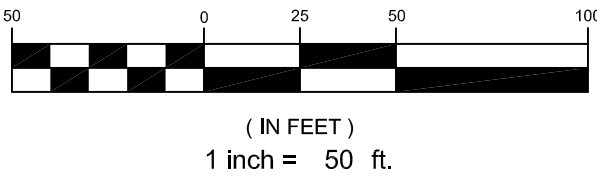
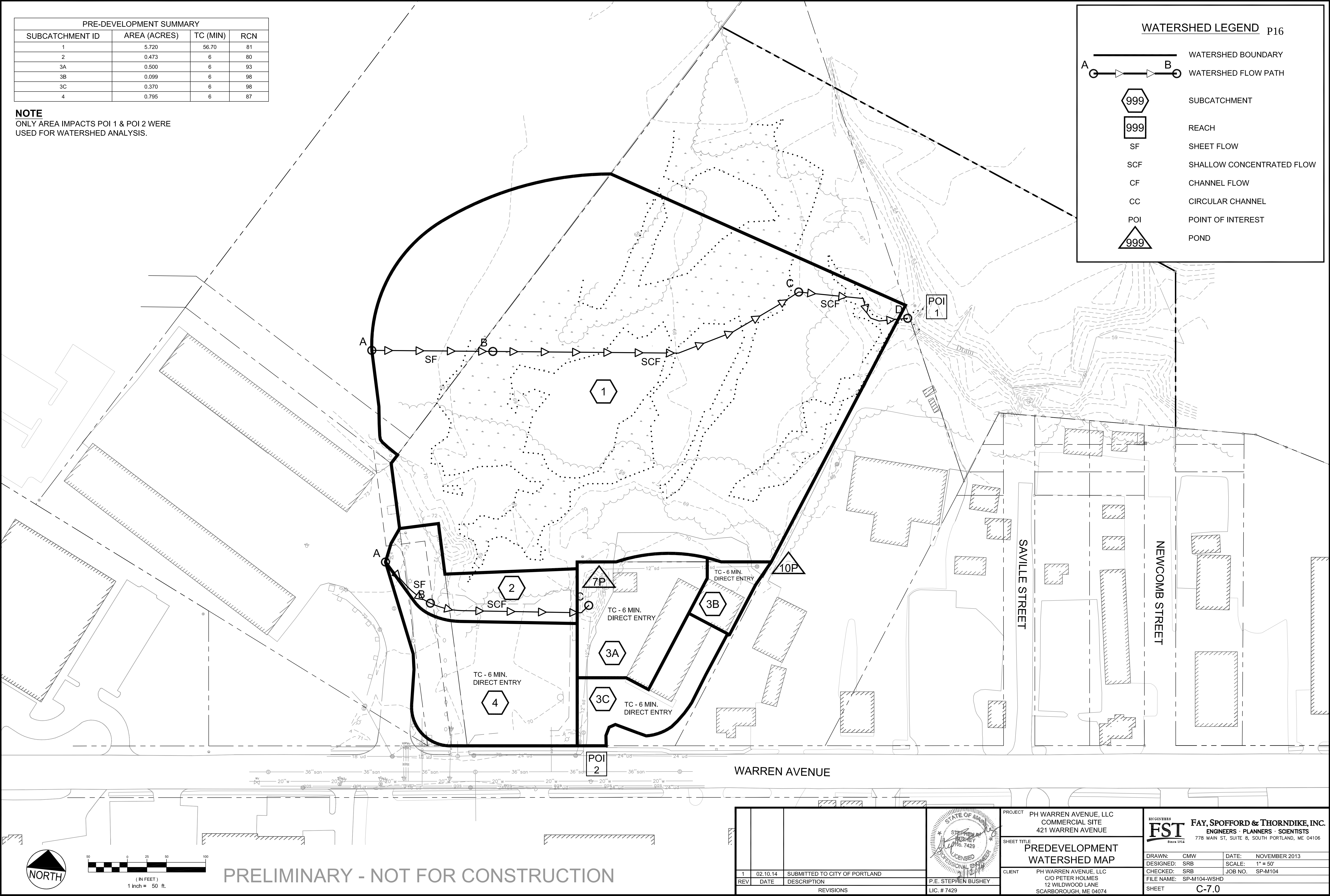
WATERSHED LEGEND P16

- A

B
- WATERSHED BOUNDARY
- WATERSHED FLOW PATH
- 999

999
- SUBCATCHMENT
- REACH
- SF
- SCF
- CF
- CC
- POI
- 999

999
- SHEET FLOW
- SHALLOW CONCENTRATED FLOW
- CHANNEL FLOW
- CIRCULAR CHANNEL
- POINT OF INTEREST
- POND



PRELIMINARY - NOT FOR CONSTRUCTION

WARREN AVENUE

SAVILLE STREET

NEWCOMB STREET

				<table><tr><td>PROJECT</td><td>PH WARREN AVENUE, LLC COMMERCIAL SITE 421 WARREN AVENUE</td></tr><tr><td>SHEET TITLE</td><td>PREDEVELOPMENT WATERSHED MAP</td></tr><tr><td>CLIENT</td><td>PH WARREN AVENUE, LLC C/O PETER HOLMES 12 WILDWOOD LANE SCARBOROUGH, ME 04074</td></tr></table>	PROJECT	PH WARREN AVENUE, LLC COMMERCIAL SITE 421 WARREN AVENUE	SHEET TITLE	PREDEVELOPMENT WATERSHED MAP	CLIENT	PH WARREN AVENUE, LLC C/O PETER HOLMES 12 WILDWOOD LANE SCARBOROUGH, ME 04074	<table><tr><td colspan="2"> ENGINEERS FST Since 1914 </td><td>FAY, SPOFFORD & THORNDIKE, INC. ENGINEERS · PLANNERS · SCIENTISTS 778 MAIN ST, SUITE 8, SOUTH PORTLAND, ME 04106</td></tr><tr><td>DRAWN: CMW</td><td>DATE: NOVEMBER 2013</td></tr><tr><td>DESIGNED: SRB</td><td>SCALE: 1" = 50'</td></tr><tr><td>CHECKED: SRB</td><td>JOB NO. SP-M104</td></tr><tr><td>FILE NAME: SP-M104-WSHD</td><td></td></tr><tr><td>SHEET</td><td>C-7.0</td></tr></table>	ENGINEERS FST Since 1914		FAY, SPOFFORD & THORNDIKE, INC. ENGINEERS · PLANNERS · SCIENTISTS 778 MAIN ST, SUITE 8, SOUTH PORTLAND, ME 04106	DRAWN: CMW	DATE: NOVEMBER 2013	DESIGNED: SRB	SCALE: 1" = 50'	CHECKED: SRB	JOB NO. SP-M104	FILE NAME: SP-M104-WSHD		SHEET	C-7.0
PROJECT	PH WARREN AVENUE, LLC COMMERCIAL SITE 421 WARREN AVENUE																							
SHEET TITLE	PREDEVELOPMENT WATERSHED MAP																							
CLIENT	PH WARREN AVENUE, LLC C/O PETER HOLMES 12 WILDWOOD LANE SCARBOROUGH, ME 04074																							
ENGINEERS FST Since 1914		FAY, SPOFFORD & THORNDIKE, INC. ENGINEERS · PLANNERS · SCIENTISTS 778 MAIN ST, SUITE 8, SOUTH PORTLAND, ME 04106																						
DRAWN: CMW	DATE: NOVEMBER 2013																							
DESIGNED: SRB	SCALE: 1" = 50'																							
CHECKED: SRB	JOB NO. SP-M104																							
FILE NAME: SP-M104-WSHD																								
SHEET	C-7.0																							
1	02.10.14	SUBMITTED TO CITY OF PORTLAND	P.E. STEPHEN BUSHEY LIC. # 7429																					
REV	DATE	DESCRIPTION																						
REVISIONS																								

WARREN AVENUE
PORTLAND, ME

ALFRED J. WAXLER
P.O. BOX 6681
PORTLAND, MAINE 0410
(OWNER OF RECORD)

MAG. 2002

N/F
SAGA COMMUNICATIONS OF
NEW ENGLAND, INC.
12543/308

N/F
SAGA COMMUNICATIONS OF
NEW ENGLAND, INC.
12543/308

424 WARREN AVENUE, LLC
17326/340
TAX MAP 304, BLOCK B, LOT 32
PLAN REF. 3(B)

N/F
PETER F. HOLMES
6918/53
TAX MAP 303, BLOCK A, LOT 11
PLAN REF. 3(D)

N/F
VANCE
3080/873, 3205/559, 2833/190
2595/255, 2755/1
TAX MAP 303, BLOCK A, LOTS 1-7, 9
TAX MAP 303, BLOCK B, LOTS 1, 6-8
PLAN REF. 3(C)

WILEY
N/F
JOHN BENNETT
15814287
TAX MAP 303, BLOCK C, LOTS 1,3,14
COMB

N/F
GIROUX
3070628 & 3798115
AT MAP 308, BLOCK D, LOTS 1-6, 10
GIROUX OIL COMPANY, INC.
436281
PLAN REF. 308

N/F
PORTLAND RINK REALTY
7031/126
TAX MAP 296, BLOCK A, LOT 7
TAX MAP, BLOCK D, LOT 15
PLAN REF. 3(A)

N/F
LEAD MT, LLC,
17401/180
TAX MAP 296, BLOCK A, L
PLAN REF. 3(N)

MT. SINAI CEMETERY
ASSOCIATION
1558/209
AX MAP 301, BLOCK J, LOT 13

**MT. SINAI
CEMETERY
ASSOCIATION
1219/386 (LOT I)
TAX MAP 301**

MT. SINAI CEMETERY ASSOCIATION 610/424 TAX MAR 201	MT. SINAI CEMETERY ASSOCIATION 1219/386 (LOT II)
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**MT. SINAI
CEMETERY
ASSOCIATION**
1425/371
TAX MAP 297,
BLOCK 1 LOT 28

I CERTIFY THAT THIS SURVEY CONFORMS TO THE STANDARDS OF THE MAINE BOARD OF LICENSURE FOR PROFESSIONAL LAND SURVEYORS AND IS CORRECT TO THE BEST OF MY KNOWLEDGE, BELIEF AND PROFESSIONAL OPINION.

ROBERT N. FARTHING P.L.S. 58

LOCATION MAP (NOT TO SCALE)

NOTES:

1. DEED REFERENCES:

(A) DEED BOOK 8261, PAGE 269

(B) DEED BOOK 8261, PAGE 273

(C) DEED BOOK 23556, PAGE 131

CUMBERLAND COUNTY REGISTRY OF DEEDS (C.C.R.D.)

2. TAX MAP REFERENCES:

- (A) FAX MAP 296 - BLOCK A, LOT 6
- (B) FAX MAP 301 - BLOCK F, LOTS 4 - 6, & BLOCK J, LOT 1
- (C) FAX MAP 302 - BLOCK A, LOT 1
- (D) FAX MAP 303 - BLOCK A, LOTS 8 - 10
- (E) FAX MAP 304 - BLOCK B, LOT 28
- (F) FAX MAP 305 - BLOCK D, LOT 1
- (G) FAX MAP 307 - BLOCK B, LOT 19, & BLOCK J, LOT 1
- (H) FAX MAP 308 - BLOCK B, LOT 2, & BLOCK C, LOT 1
- (I) TAX MAP 310 - BLOCK E, LOT 35, & BLOCK F, LOT 1

3. PLAN REFERENCES:

(A) PLAN OF PROPERTY
FOR: WILLIAM H. FAULKINGHAM
BY: H.L. & E.C. JORDAN
DATED: FEB. 26, 1973

(B) STANDARD BOUNDARY AND SITE PLAN
FOR: GIROUX OIL
BY: SEBAGO TECHNICS, INC.
DATED: 7/16/87

FOR: JOHN VANCE
BY: SEBAGO TECHNICS, INC.
DATED: 8/17/94

(D) SITE PLAN
FOR: HARBOR AUTO BODY

BY: SEBAGO TECHNICS, INC.
DATED: 1/31/90

(E) STANDARD BOUNDARY & TOPOGRAPHIC SURVEY
FOR: DANA R. MORTON, INC.
BY: LEWIS & WASINA, INC.
DATED: 8/15/00

(F) STANDARD BOUNDARY SURVEY
FOR: EUCLID AMBLER ASSOCIATES
BY: D.A. MAXFIELD, JR.
DATED: FEB. 1988

(G) STANDARD BOUNDARY SURVEY
FOR: EUCLID AMBLER ASSOC.
BY: D.A. MAXFIELD, JR.
DATED: JAN. 1986
RECORDED: PLAN BOOK 154, PAGE 37 (C.C.R.D.)

(H) PLAN OF LOTS
FOR: MRS. E.H. CUSHMAN
BY: E.C. JORDAN & CO.
DATED: SEPT. 1916
RECORDED: PLAN BOOK 13, PAGE 67 (C.C.R.D.)

(I) EXISTING CONDITIONS SURVEY
FOR: #92 FARNHAM STREET
BY: PUBLIC WORKS DEPT., CITY OF PORTLAND
DATED: OCT. 1997

(J) FINAL SUBDIVISION PLAN

FOR: YOUR HOME INC.
BY: BH2M
DATED: JULY 1979

(K) PARKS DEPT. SURVEY PLAN
FOR: RIVERTON SCHOOL SITE

(L) SUBDIVISION PLAN
FOR: VERRILL & WIRT STREETS
BY: LAND USE CONSULTANTS
DATED: JULY 10, 1989
RECORDED: PLAN BOOK 184, PAGE 15 (C.C.R.D.)

(M) PORTLAND VILLA SITES
FOR: J.W. WILBER CO. INC.
BY: ERNEST W. BRANCH CIVIL ENGINEER
DATED: JULY 9, 1918
RECORDED: PLAN BOOK 14, PAGE 7 (C.C.R.D.)

(N) BOUNDARY & EXISTING CONDITIONS PLAN.
BY: NORTHEAST CIVIL SOLUTIONS
DATED: JULY 1, 2002

(O) FARNHAM STREET PUMPING STATION, FORCE MAIN
GRAVITY SEWER & FUTURE STORM DRAIN RIGHT-OF-WAY

(P) PLAN OF HOMESTEAD ACRES EXTENSION
FOR: CHARLES H. HANSON
DATED: REVISED, MAY 1955
RECORDED: PLAN BOOK 44, PAGE 14 (C.C.R.D.)

(O) PLAN OF LAND
FOR: MRS. C.S. FARNHAM
BY: E.C. JORDAN & CO.
DATED: JUNE 1910
RECORDED: PLAN BOOK 12, PAGE 16 (C.C.R.D.)

4. PARCEL DELINEATED ON CITY OF PORTLAND TAX AS
MAP 301, BLOCK X. 20' WIDE RIGHT-OF-WAY DESCRIBED
DEED 595/366. RIGHT-OF-WAY SHOWN AS PER ASSESSOR.

5. PROPERTY IS SUBJECT TO EASEMENTS AND/OR
RIGHT-OF-WAYS OF RECORD

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466
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SUCKER INC.

SURVEY, III
P.O. Box 210 Phone: (207)
Windham, Maine 04062 Fax: (207)
Survey, Inc. V

	
DRAWN BY: KLD	JOB NAME: E

DATE: DECEMBER 2004

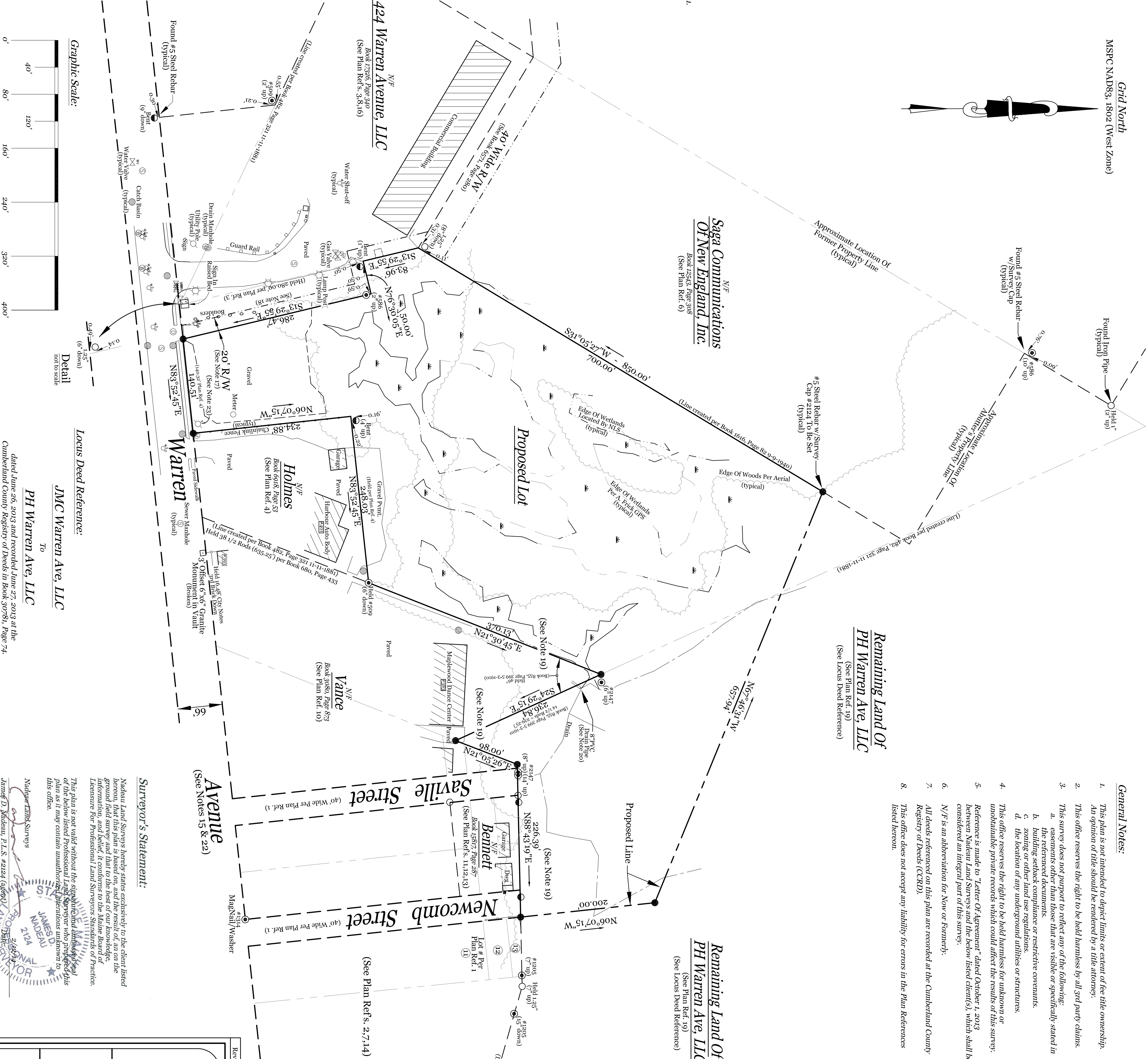
Plan References:

- 1. "Warren Ave. Fence, Portland, Maine Owned By J.W. Wilbur", dated April 1911 by Ernest W. French, Civil Engineer, Boston, Mass., recorded August 3, 1911 in CCRD Plan Book 12, Page 2.
- 2. "Plan Of Property In Portland, Maine Made For William H. Pauldingham", dated February 26, 1973 by H.L. & E.C. Jordan - Surveyors, Portland, Maine.
- 3. "Plan Of Property In Portland, Maine Made For Goodwill Of Maine Inc.", dated September 27, 1979, revised July 26, 1983 by H.L. & E.C. Jordan - Surveyors.
- 4. "Plan Of Property In Portland, Maine Made For Standard Boundary Survey, Jordan Rise Home Improvement Co.", dated September 12, 1985 by H.L. & E.C. Jordan - Surveyors, Portland, Maine.
- 5. "Warren Avenue Trade Center Condominiums, 329 Warren Avenue, Portland, Me.", dated March 1988, last revised October 19, 1988 by HTA ODEST Associates Inc., South Portland, Maine, recorded October 28, 1988 in CCRD Plan Book 175, Page 14.
- 6. "117A, ACSN Land Title Survey For Saga Communications Limited Partnership, A Massachusetts Limited Partnership Lying Within The City Of Portland, County Of Cumberland, State Of Maine By Stevens, Morton, Rose & Thompson Inc., Linnetek, Maine", dated May 15, 1987, last revised April 3, 1991, recorded April 16, 1991 in CCRD Plan Book 196, Page 36.
- 7. "Standard Boundary And Site Plan For Groux Oil, Warren Avenue, Portland, Maine", dated July 16, 1987, last revised August 10, 1993 by Sebago Technics, Inc., Westbrook, Maine, City of Portland Plan 982/36.
- 8. "Plan Of Property In Portland, Maine Made For Brown Construction, Inc. Land Title Survey", dated May 27, 1988 by H.L. & E.C. Jordan - Surveyors, Portland, Maine.
- 9. "B's Wholesale Club, Portland, Maine Land Title Survey And Site Conditions Plan", dated July 1989, last revised August 13, 1990 by E.C. Jordan Co. Consulting Engineers, recorded September 4, 1990 in CCRD Plan Book 187, Page 7.
- 10. "Standard Boundary Survey Of: A Portion Of The John Vance Property, 383 Warren Avenue, Portland, ME", dated August 17, 1994 by Sebago Technics, Westbrook, Maine.
- 11. "Sketch Plan Of Newcomb Street, Portland, Maine For Russ Glidden", dated October 19, 1994 by Bruce K. Bowring, Inc. Professional Land Surveyor, Cumberland, Maine.
- 12. "Worksheet - Standard Boundary Survey For: Russell Glidden, Saville Street, Portland, Maine", dated August 1998 by BH&M Engineers/Surveyors/Planners, Gorham, Maine.
- 13. "Site Plan/Proposed Garage Made For John Bennett, 3 Newcomb Street, Portland, Maine", dated June 5, 2001 by Stephen C. Martin, F.S.S. Gorham, Maine.
- 14. "City Of Portland, Maine Public Works Department Engineering Section Survey Plan Prepared For Damage Easement Located At #34, Warren Avenue On Property Now Of Formerly Of Groux Oil Company", dated November 27, 2001, City Plans 921/4 & 948/41.
- 15. "Boundary And Existing Conditions Survey Of 329 Warren Avenue In City Of Portland, Cumberland County, Maine", dated July 1, 2002 by Northeast Civil Solutions Incorporated, Scarborough, Maine, City of Portland Plan 1007/3.
- 16. "Existing Conditions, Warren Avenue Commercial, 424 Warren Avenue, Portland ME 04103", dated December 2002, last revised October 14, 2003 by STDDesign Consultants, Civil Engineers & Land Surveyors, Cumberland Center, Maine.
- 17. "Topographic Survey, Warren Avenue, Portland, Cumberland County, State Of Maine For Record Owner: Delta Realty Co., Inc.", dated October 24, 2003, last revised November 5, 2003 by Lewis & Watson, Inc. - Surveyors - Engineers, Westbrook, Maine, recorded December 31, 2003 in CCRD Plan Book 203, Page 701.
- 18. "Plan Of Boundaries Survey, O'Connor GMC, Inc., 279 Warren Avenue, Portland, Maine", dated September 30, 2004 by Thayer Engineering Company, Farmingdale, Maine, City of Portland Plan 1009/7.
- 19. "Boundary Survey, Warren Avenue, Portland, ME For: Realty Resources, Chartered", dated December 2004 by Storey, Inc., Wintham, Maine.
- 20. "State Of Maine Department Of Transportation Right Of Way Map, Warren Avenue, Portland, Cumberland County, Federal Aid Project No. STP-05(4400)X, D.O.T. File No. 3-522", dated March 2006, recorded February 20, 2013 in CCRD Plan Book 213, Pages 32 - 39.
- 21. "Plan Of Road From The Terminals Of Warren Street City Of Westbrook To Bridgton Street Town Of Deering As laid Out By Direction Of Commissioners Of The County Of Cumberland", surveyed November 1891 by H.W. Foster, City of Portland Plan 460/10, recorded in Cumberland County Commissioners Plan Book 3, Page 35.

Approved By The City Of Portland
Planning Board:

Name:	Date:

Grid North
MSPC NAD83, 1802 (West Zone)



General Notes:

- 1. This plan is not intended to depict limits or extent of fee title ownership. An opinion of title should be rendered by a title attorney.
- 2. This office reserves the right to be held harmless by all 3rd party claims.
- 3. This survey does not purport to reflect any of the following:
 - a. easements other than those that are visible or specifically stated in the referenced documents.
 - b. building setback requirements or restrictive covenants.
 - c. building easements or encroachments.
 - d. the location of any underground utilities or structures.
- 4. This office reserves the right to be held harmless for unknown or unobtainable private records which could affect the results of this survey. Reference is made to "Letter Of Agreement", dated October 1, 2013 between Nadeau Land Surveys and the below listed client(s), which shall be considered an integral part of this survey.
- 5. N/F is an abbreviation for "Now or Formerly".
- 6. All deeds referenced on this plan are recorded at the Cumberland County Registry of Deeds (CCRD).
- 7. This office does not accept any liability for errors in the Plan References listed hereon.

Locus Parcel is shown as City of Portland Assessor's Map 296, Block A, Lot 6, 301'-10, 302'-1, 303'-1-8-10, 304'-B-38, and 305'-D-1, and is listed as 411-423 Warren Avenue.

- 9. Area of Locus Parcel is 418,393 square feet (9.60 acres).
- 10. The apparent right of way lines depicted on this plan are based on the Plan References listed hereon and monumentation found in the field, and City of Portland Engineering Street Notes.
- 11. The Locus Parcel does not scale in a Special Flood Hazard Area per FEMA Flood Insurance Rate Map Community-Panel Number 230091 0000C, Index dated December 8, 1998. The parcel scales in Zone X.
- 12. All building corner offsets to boundary lines are from cornerboards and not building foundation, unless noted.
- 13. Call 1-888-DIGSAFE at least three business days before performing ANY excavation.
- 14. Per City of Portland Records Vol. 2, Page 20 and Cumberland County Commissioners Records Vol. 16, Page 561, Warren Avenue was laid out January 5, 1892 as 4 rods (66 feet) wide. Per City of Portland Records Vol. 2, Page 203 and City of Deering Records Vol. 1, Page 324, the County Road running from Morrill's Corner to Westbrook was named "Warren Avenue" by Order of the City Council, passed November 27, 1893.
- 15. Vertical Datum is NGVD99. Benchmark established with GPS Static observations taken on October 28, 2013.
- 16. See CCRD Book 616, Page 98, dated April 28, 1983, from Goodwill Of Maine, Inc. to City Gannett Broadcasting Services, for the right to enter a certain strip of land being twenty (20) feet in width for the purpose of the passage of vehicles of the Gannett's antenna". (Also See Plan Reference 6)
- 17. See CCRD Book 4505, Page 219, dated October 2, 1979, from Your Home, Inc. to Goodwill Of Maine, Inc., which reserved to the Grantor the right to use, improve and maintain the Hwy (50') foot wide parcel for use as a public street.
- 18. This office has utilized plans by H.L. & E.C. Jordan that appear to have tied into record lines on both sides of Locus Parcel. Sebago Technics plan for John Vance (Plan Reference 10) did not hold the Jordan plans or their previous plan (Plan Reference 7) which appears to have held the above mentioned Jordan plans. Plan Reference 7 which is an unrecorded plan appears to mark the location of lot and hold Plan Reference 10. This office recommends a boundary line agreement or consulting an attorney for boundary lines along the easterly line of Holmes and the proposed lot, along land of Vance and Bennett, to the northeast corner of Bennett.
- 19. No record assessment found for this drain pipe.
- 20. See CCRD Book 675, Page 460, dated June 28, 1899, from Thomas J. Ward to Cyrene Wiley for a right of way to Warren Avenue.
- 21. See CCRD Book 35397, Page 137, dated May 16, 2007, for State of Maine Dept. of Transportation Notice of Layout and Filing. (See Plan Reference 20)
- 22. See CCRD Book 7350, Page 27, dated May 27, 1986, for Easement Deed from Your Home Inc. to Central Maine Power Company and New England Telephone and Telegraph Company, for a line from CMP pole #39 to pole #39-1.

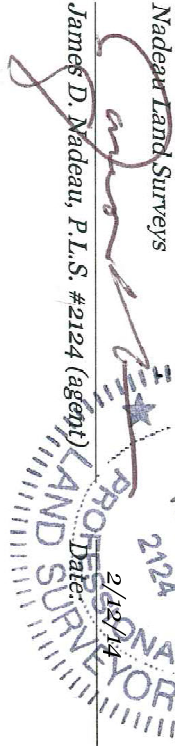
Plan Depicting The Results Of A Partial Boundary Survey,
Existing Conditions & Proposed Lot Division Made For
PH Warren Ave, LLC
Northerly Sideline Of Warren Avenue, Saville Street & Newcomb Street
Portland, Maine

PREPARED BY:			
918 BRIGHTON AVENUE PORTLAND, ME 04102			
Nadeau Land Surveys Professional Land Surveyors Certified Floodplain Managers			
DRAWN BY: TPB		PLAN DATE: 1/7/2014	
CHECKED BY: JDN/MJC		SURVEY DATE: Oct.-Dec. 2013	
INSIDE: Topcon GPT-3000W & Topcon Hyper II GPS		SCALE: 1" = 80'	
FIELD BOOK: PH 400 & Topcon Ranger		SHEET NO: 1 of 1	

Surveyor's Statement:

Nadeau Land Surveys hereby certifies exclusively to the client listed in this plan that the survey was conducted by a duly licensed and qualified Professional Land Surveyor who personally supervised the field survey and that the survey was conducted in accordance with the Maine Board of Licensure for Professional Land Surveyors Standards of Practice. Information, and belief, it conforms to the Maine Board of Licensure for Professional Land Surveyors Standards of Practice.

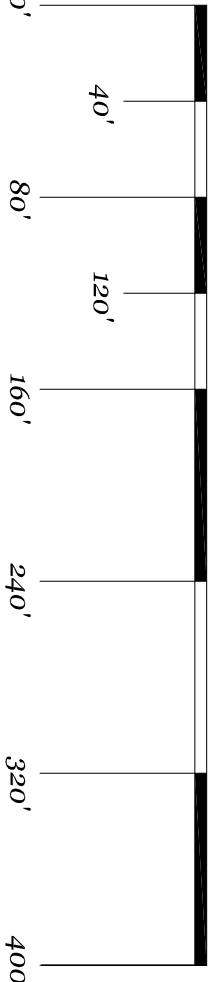
This plan is not valid without the original signature of the Professional Land Surveyor who prepared this plan as it may contain unauthorized alterations unknown to this office.



dated June 26, 2013 and recorded June 27, 2013 at the
Cumberland County Registry of Deeds in Book 30786, Page 74.

JMC Warren Ave, LLC

PH Warren Ave, LLC



Locus Deed Reference:

JMC Warren Ave, LLC

PH Warren Ave, LLC

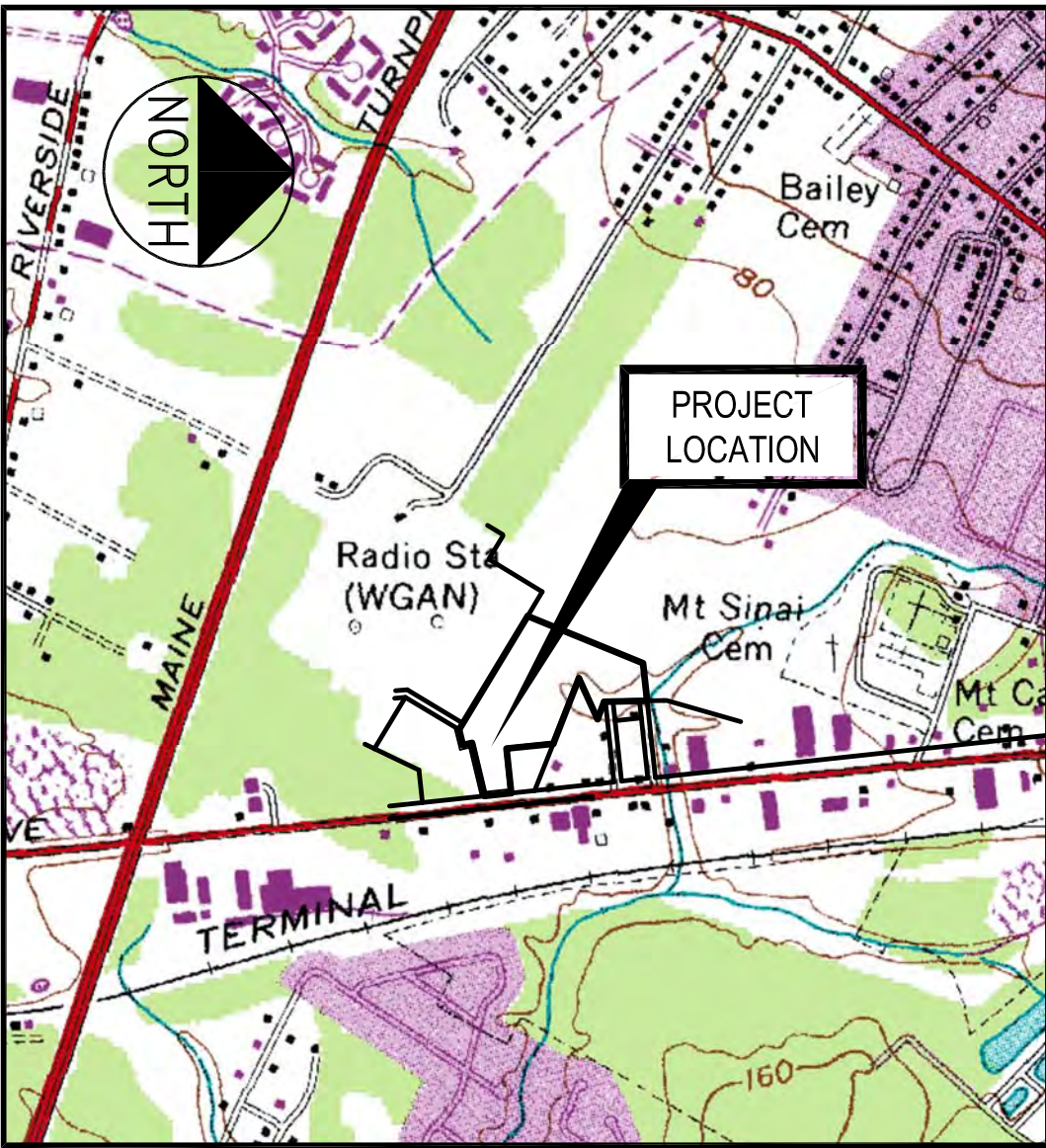
PROJECT PARCEL SITE CITY OF PORTLAND TAX MAP-BLOCK-LOT (ADDRESS)	
MAP-BLOCK-LOT	ADDRESS
296-A-6	421 WARREN AVE
303-A-8	421 WARREN AVE
302-A-1	421 WARREN AVE
303-A-10	421 WARREN AVE
301-J-10	421 WARREN AVE
304-B-28	421 WARREN AVE
305-D-1	421 WARREN AVE
299A-A-1	1592 FOREST AVE
310-E-35	0 FARNHAM ST
307-B-19	0 FARNHAM ST
308-B-2	0 FARNHAM ST
310-F-1	0 FARNHAM ST
307-J-1	0 FARNHAM ST
308-C-1	0 FARNHAM ST

OWNER
PH WARREN AVENUE, LLC C/O PETER F HOLMES 12 WILDWOOD LANE SCARBOROUGH, MAINE 04074 ATTN: PETER HOLMES
APPLICANT
PH WARREN AVENUE, LLC C/O PETER F HOLMES 12 WILDWOOD LANE SCARBOROUGH, MAINE 04074 ATTN: PETER HOLMES

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SITE DEVELOPMENT PLANS
FOR
MULTI-UNIT COMMERCIAL BUILDING
421 WARREN AVUNE
PORTLAND, MAINE
PERMITTING DOCUMENTS
FEBRUARY, 2014



LOCATION MAP
N.T.S.

PREPARED BY P3

CIVIL ENGINEER
FAY, SPOFFORD & THORNDIKE, INC.
778 MAIN STREET, SUITE 8
SOUTH PORTLAND, MAINE 04106
207.775.1121
ATTN: STEPHEN BUSHEY, P.E.
EMAIL: sbushey@fstinc.com

SURVEYOR
NADEAU LAND SURVEYS
918 BRIGHTON AVENUE
PORTLAND, MAINE 04102
207.878.7870
ATTN: JIM NADEAU
EMAIL: jim@nadeaulandsurveys.com

NATURAL RESOURCES
ALBERT FRICK ASSOCIATES
95A COUNTY ROAD
GORHAM, MAINE 04038
207.839.5563
ATTN: JIM LOGAN
EMAIL: afajames@maine.rr.com

DESIGN - BUILDER
BISKUP CONSTRUCTION
16 DANIELLE DRIVE
WINDHAM, MAINE 04062
207.892.9800
ATTN: JIM BISKUP
EMAIL: jim@biskupconstruction.com

GEOTECHNICAL ENGINEER
S.W. COLE ENGINEERING, INC.
286 PORTLAND ROAD
GRAY, MAINE 04039
207.657.2866
ATTN: TIM BOYCE, P.E.
EMAIL: tboyce@swcole.com

UTILITIES

SEWER
CITY OF PORTLAND
PUBLIC SERVICES ENGINEERING DEPARTMENT
55 PORTLAND STREET
PORTLAND, MAINE 04102
207.874.8840
ATTN: DAVID MARGOLIS-PINEO, P.E.

WATER
PORTLAND WATER DISTRICT
225 DOUGLAS STREET
P.O. BOX 3533
PORTLAND, MAINE 04104
207.761.8310
ATTN: RICO SPUGNARDI

POWER
CENTRAL MAINE POWER
162 CANCO ROAD
PORTLAND, MAINE 04103
207.791.1023
ATTN: JAMIE COUGH

TELEPHONE
FAIRPOINT COMMUNICATIONS
FIVE DAVIS FARM ROAD
PORTLAND, MAINE 04103
207.797.1842
ATTN: SUE SERRETTE

CABLE
TIME WARNER CABLE
118 JOHNSON ROAD
PORTLAND, MAINE 04102
877.546.0962
ATTN:

NATURAL GAS
UNITIL
1075 FOREST AVENUE
PORTLAND, MAINE 04103
207.797.8002 EXT 6620
ATTN: ALEX SMITH

CALL BEFORE YOU DIG
1.888.DIGSAFE
1.888.344.7233
DIG SAFE MAINE

PERMITS / APPROVALS

LOCAL

SITE PLAN SUBMISSION
APPROVAL
STORMWATER PERMIT

BUILDING PERMIT

UTILITY / STREET OPENING
PERMITS

STATE

NATURAL RESOURCES
PROTECTION ACT (NRPA) TIER II
WETLAND IMPACT PERMIT

GOVERNING BODY

CITY OF PORTLAND PLANNING AUTHORITY
CITY HALL
CONGRESS STREET
PORTLAND, MAINE 04103
207.874.8722
ATTN: BARBARA BARHYDT

CITY OF PORTLAND PLANNING AUTHORITY
CITY HALL
CONGRESS STREET
PORTLAND, MAINE 04103
207.874.8722
ATTN: BARBARA BARHYDT

CITY OF PORTLAND PUBLIC SERVICES DIVISION
55 PORTLAND STREET
PORTLAND, MAINE 04102
207.874.8801
ATTN: CAROL MERRIT

GOVERNING BODY

MAINE DEP
312 CANCO ROAD
PORTLAND, MAINE 04103

STATUS

PRELIMINARY SUBMISSION 02.10.14

STATUS

I HEREBY ACKNOWLEDGE THAT THESE PLANS AND SPECIFICATIONS WERE PREPARED UNDER MY DIRECT SUPERVISION, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MAINE AND THAT I AM COMPETENT TO PREPARE THIS DOCUMENT.

PRELIMINARY - NOT FOR CONSTRUCTION

				<table><tr><td>PROJECT</td><td>PH WARREN AVENUE, LLC COMMERCIAL SITE 421 WARREN AVENUE</td></tr><tr><td>SHEET TITLE</td><td>COVER SHEET</td></tr><tr><td>CLIENT</td><td>PH WARREN AVENUE, LLC C/O PETER HOLMES 12 WILDWOOD LANE SCARBOROUGH, ME 04074</td></tr></table>	PROJECT	PH WARREN AVENUE, LLC COMMERCIAL SITE 421 WARREN AVENUE	SHEET TITLE	COVER SHEET	CLIENT	PH WARREN AVENUE, LLC C/O PETER HOLMES 12 WILDWOOD LANE SCARBOROUGH, ME 04074	<table><tr><td colspan="2">FAY, SPOFFORD & THORNDIKE, INC. ENGINEERS · PLANNERS · SCIENTISTS 778 MAIN ST, SUITE 8, SOUTH PORTLAND, ME 04106</td></tr><tr><td>DRAWN: CMW</td><td>DATE: NOVEMBER 2013</td></tr><tr><td>DESIGNED: SRB</td><td>SCALE: AS NOTED</td></tr><tr><td>CHECKED: SRB</td><td>JOB NO. SP-M104</td></tr><tr><td colspan="2">FILE NAME: SP-M104-COV</td></tr><tr><td>SHEET</td><td>C-1.0</td></tr></table>	FAY, SPOFFORD & THORNDIKE, INC. ENGINEERS · PLANNERS · SCIENTISTS 778 MAIN ST, SUITE 8, SOUTH PORTLAND, ME 04106		DRAWN: CMW	DATE: NOVEMBER 2013	DESIGNED: SRB	SCALE: AS NOTED	CHECKED: SRB	JOB NO. SP-M104	FILE NAME: SP-M104-COV		SHEET	C-1.0
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1	02.10.14	SUBMITTED TO CITY OF PORTLAND																					
REV	DATE	DESCRIPTION	P.E. STEPHEN BUSHEY																				
REVISIONS			LIC. # 7429																				

GENERAL NOTES

1.

THIS PROJECT IS SUBJECT TO THE TERMS AND CONDITIONS OF ALL REGULATIONS ADMINISTERED BY THE LOCAL UTILITY COMPANIES AND THE CITY OF PORTLAND.
2.

THE CONTRACTOR SHALL REFER TO THE ARCHITECTURAL PLANS FOR EXACT LOCATIONS AND DIMENSIONS OF THE ENTRANCES, EXITS, PRECISE BUILDING DIMENSIONS, AND EXACT BUILDING UTILITY ENTRANCE POINTS.
3.

ALL REQUIRED AND NECESSARY INSPECTIONS AND/OR CERTIFICATIONS REQUIRED BY CODES AND/OR UTILITY SERVICE COMPANIES SHALL BE PERFORMED PRIOR TO ANNOUNCED BUILDING POSSESSION AND THE FINAL SERVICE CONNECTIONS.
4.

THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR THE ELEVATION OF THE EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES AND, WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THIS INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANY AND DIG SAFE (1-888-DIGSAFE), IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS, AT NO EXTRA EXPENSE TO THE OWNER.
5.

MAINTENANCE OF EROSION CONTROL MEASURES IS OF PARAMOUNT IMPORTANCE TO THE OWNER AND THE CONTRACTOR IS RESPONSIBLE FOR COMPLYING WITH ALL EROSION CONTROL MEASURES SHOWN ON THE PLANS. ADDITIONAL EROSION CONTROL MEASURES SHALL BE INSTALLED IF DEEMED NECESSARY BY ONSITE INSPECTIONS OF THE OWNER OR THEIR REPRESENTATIVES AT NO ADDITIONAL COST TO THE OWNER.
6.

ALL MATERIAL SCHEDULES SHOWN ON THE PLANS ARE FOR GENERAL INFORMATION ONLY. THE CONTRACTOR SHALL PREPARE HIS OWN MATERIAL SCHEDULES BASED UPON HIS PLAN REVIEW. ALL SCHEDULES SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO ORDERING MATERIALS OR PERFORMING WORK.
7.

ALL MATERIALS AND CONSTRUCTION METHODS SHALL CONFORM TO PROJECT CONTRACT SPECIFICATIONS, AND THE CITY OF PORTLAND TECHNICAL STANDARDS, WHICHEVER IS MORE STRINGENT.
8.

TOPOGRAPHIC AND BOUNDARY SURVEY INFORMATION WAS PROVIDED BY NADEAU LAND SURVEY, DECEMBER 2013.
9.

FEMA MAP COMMUNITY PANEL NUMBER 2300510006C. THE SITE IS LOCATED IN A C ZONE.
10.

THE PROPERTY SHOWN ON THIS PLAN MAY BE DEVELOPED AND USED ONLY AS DEPICTED IN THIS APPROVED PLAN. ALL ELEMENTS AND FEATURES OF THE PLAN AND ALL THE PROPERTY WHICH APPEARS IN THE RECORD OF THE PLANNING BOARD PROCEEDINGS ARE CONDITIONS OF THE APPROVAL. NO CHANGE FROM THE CONDITIONS OF APPROVALS IS PERMITTED UNLESS AN AMENDED PLAN IS FIRST SUBMITTED TO AND APPROVED BY THE PLANNING AUTHORITY.
11.

ALL SIGNAGE SHALL CONFORM TO THE STANDARDS FOR SIZE, HEIGHT, LOCATION AND REFLECTIVITY SET FORTH IN THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
12.

ALL CURB SHALL CONFORM TO THE FOLLOWING SPECIFICATIONS AS NOTED ON THE PLANS:
GRANITE SLIPFORM CONCRETE AND BITUMINOUS CONCRETE CURB SHALL MEET THE REQUIREMENTS OF MAINE DEPARTMENT OF TRANSPORTATION SPECIFICATIONS 609.03 AND 609.04 AND CITY OF PORTLAND TECHNICAL STANDARDS.
13.

ALL DIMENSIONING UNLESS OTHERWISE NOTED IS TO THE FACE OF CURB OR FACE OF BUILDING.
14.

THE FACILITY WILL BE SERVICED BY PUBLIC WATER, SEWER, NATURAL GAS AND UNDERGROUND POWER.
15.

THE CONTRACTOR IS REQUIRED TO NOTIFY THE CITY OF PORTLAND PUBLIC WORKS INSPECTION SERVICES DIVISION (874-6300 EXT. 8838), CODE ENFORCEMENT OFFICE AND DEVELOPMENT REVIEW COORDINATOR IN WRITING THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION. A PRECONSTRUCTION MEETING MAY BE REQUIRED TO INCLUDE THE PUBLIC WORKS AUTHORITY OR DEVELOPMENT REVIEW COORDINATOR.
16.

AN APPROVED SET OF PLANS AND ALL APPLICABLE PERMITS MUST BE AVAILABLE AT THE CONSTRUCTION SITE.
17.

WARNING SIGNS, MARKERS, BARRICADES OR FLAGMEN MUST BE EMPLOYED ON ADJACENT STREETS AS NECESSARY.
18.

CONSTRUCTION DEBRIS SHALL BE CONTAINERIZED AND DISPOSED OF IN ACCORDANCE WITH THE CITY OF PORTLAND'S SOLID WASTE ORDINANCE CHAPTER 12. ALL DEMOLITION MATERIAL FROM THE PROJECT SITES SHALL BE TAKEN TO THE RIVERSIDE RECYCLING FACILITY OR AS OTHERWISE DIRECTED PENDING THE RESULTS OF A HAZARDOUS BUILDING MATERIALS SURVEY AS AUTHORIZED AND COORDINATED BY THE OWNER. ALL SALVAGED MATERIAL WITHIN THE PUBLIC R.O.W.(SIDEWALKS, BRICKS, GRANITE CURB) NOT REUSED SHALL BE DISPOSED OF AS DIRECTED BY THE PORTLAND PUBLIC SERVICES DEPARTMENT AT NO EXTRA COST TO THE OWNER.
19.

ANY DAMAGE TO PUBLIC OR PRIVATE PROPERTY RESULTING FROM CONSTRUCTION ACTIVITIES SHALL BE REPAIRED BY THE CONTRACTOR AT THEIR EXPENSE.
20.

PROPERTY MARKERS AND STREET LINE MONUMENTS SHALL BE PROPERLY PROTECTED AT ALL TIMES DURING CONSTRUCTION TO INSURE INTEGRITY. IF DISTURBED THEY SHALL BE REPLACED BY A SURVEYOR REGISTERED IN THE STATE OF MAINE AT THE CONTRACTOR'S EXPENSE.
21.

THE OWNER SHALL BE RESPONSIBLE TO COORDINATE THE PERFORMANCE OF A HAZARDOUS MATERIALS INSPECTION OF THE EXISTING PROPERTY.
22.

A STREET OPENING PERMIT MUST BE OBTAINED FROM THE CITY OF PORTLAND PUBLIC WORKS DEPARTMENT PRIOR TO BEGINNING ANY WORK WITHIN THE CITY RIGHT-OF-WAY. ALL WORK WITHIN THE PUBLIC RIGHT OF WAY SHALL BE COMPLETED IN CONFORMANCE TO THE CITY'S RULES AND REGULATIONS FOR EXCAVATION ACTIVITIES IN PUBLIC RIGHT OF WAYS.
23.

CONTRACTOR MUST MAINTAIN THROUGH TRAFFIC ON WARREN AVENUE AT ALL TIMES.
24.

ALL METHODS AND MATERIALS USED IN THE CONSTRUCTION OF THE IMPROVEMENTS IDENTIFIED HEREIN SHALL CONFORM TO THE CITY OF PORTLAND CONSTRUCTION AND TECHNICAL STANDARDS AND SPECIFICATIONS AND/OR CURRENT MDOT STANDARDS AND SPECIFICATIONS, WHICHEVER IS MORE STRINGENT.
25.

SITE WORK FOR BUILDING SHALL INCLUDE GRADING THE BUILDING PAD AREA (DEFINED AS THE BUILDING FOOTPRINT PLUS 5'-0" BEYOND THE EXTERIOR WALL) TO A GRADE 18" BELOW THE GROUND FLOOR FINISH ELEVATION. ALL WORK SHALL INCLUDE EXCAVATION (INCLUDING ROCK REMOVAL AND EXISTING FOUNDATION DEMOLITION) AND BACKFILL OF ALL FOOTINGS AND FOUNDATIONS, INSTALLATION OF PERIMETER FOUNDATION DRAINS, EXCAVATION AND BACKFILL OF ALL UNDERSLAB UTILITIES AND PLACEMENT OF ALL AGGREGATES BELOW THE FLOOR SLAB AND ADJACENT THE FOUNDATION WALLS IN ACCORDANCE WITH THE CONTRACT PLANS AND SPECIFICATIONS.
26.

RECORD DRAWINGS REQUIRE ALL BURIED UTILITIES INCLUDING, BUT NOT LIMITED TO, BENDS, APPURTENANCES, AND OTHER FEATURES TO BE LOCATED BY COORDINATE INFORMATION TO BE RECORDED BY THE CONTRACTOR AND SUPPLIED TO THE OWNER AT THE END OF THE PROJECT.

EROSION CONTROL NOTES

1.

LAND DISTURBING ACTIVITIES SHALL BE ACCOMPLISHED IN A MANNER AND SEQUENCE THAT CAUSES THE LEAST PRACTICAL DISTURBANCE OF THE SITE.
2.

PRIOR TO BEGINNING ANY CLEARING/LAND DISTURBING ACTIVITIES, THE CONTRACTOR SHALL INSTALL THE PERIMETER SILT FENCES AND THE STABILIZED CONSTRUCTION ENTRANCES.
3.

SILT BARRIERS SHALL BE INSPECTED, REPAIRED AND CLEANED AS NOTED IN THE EROSION CONTROL NOTES SHOWN ON THE EROSION CONTROL DETAIL SHEET.
4.

THE CONTRACTOR SHALL REPAIR AND ADD STONE TO THE CONSTRUCTION ENTRANCES AS THEY BECOME SATURATED WITH MUD TO ENSURE THAT THEY WORK AS PLANNED DURING CONSTRUCTION AND SHALL KEEP ADJACENT STREETS CLEAR OF DIRT AND MUD.
5.

SILT REMOVED FROM AROUND INLETS AND BEHIND THE SILT FENCES SHALL BE PLACED ON A TOPSOIL STOCKPILE AND MIXED INTO IT FOR LATER USE IN LANDSCAPING OPERATIONS.
6.

CONTRACTORS SHALL NOTIFY OPERATORS WHO MAINTAIN UNDERGROUND UTILITIES IN THE AREA OF PROPOSED EXCAVATION OR BLASTING AT LEAST THREE (3) BUT NOT MORE THAN (30) DAYS PRIOR TO COMMENCEMENT OF EXCAVATION OR DEMOLITION. CONTRACTORS SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE REQUIREMENTS OF 23 MRSA 3360-A.
7.

IMMEDIATELY UPON COMPLETION OF CUTS/FILLS, THE CONTRACTOR SHALL STABILIZE DISTURBED AREAS IN ACCORDANCE WITH EROSION CONTROL NOTES AS SPECIFIED ON PLANS.
8.

ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED IN ACCORDANCE WITH "MAINE EROSION AND SEDIMENTATION CONTROL HANDBOOK FOR CONSTRUCTION: BEST MANAGEMENT PRACTICES" PUBLISHED BY THE CUMBERLAND COUNTY SOIL AND WATER CONSERVATION DISTRICT AND MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION, MARCH 1991 OR LATEST EDITION. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO POSSESS A COPY OF THE EROSION CONTROL PLAN AT ALL TIMES.
9.

CONTRACTOR SHALL PERFORM WORK IN ACCORDANCE WITH THE EROSION AND SEDIMENT CONTROL REQUIREMENTS, INSPECTION AND MAINTENANCE REQUIREMENTS AND GOOD HOUSEKEEPING PRACTICES IN ACCORDANCE WITH APPENDIX A, B& C OF MAINE DEP CHAPTER 500.

GRADING AND DRAINAGE NOTES

1.

ALL STORM DRAIN PIPE SHALL BE SMOOTH BORE INTERIOR PROVIDING A MANNINGS ROUGHNESS COEFFICIENT OF n = 0.013 OR LESS. UNLESS A SPECIFIC PIPE MATERIAL IS CALLED FOR ON THE CONTRACT DRAWINGS, PVC PIPING SHALL NOT BE USED IN AREAS OF EXPOSED SUNLIGHT.
2.

SLOPE PROTECTION IS TO BE PROVIDED PER THE DESIGN PLANS AND MAY INCLUDE RIPRAP, SOD OR MULCH.
3.

THE CONTRACTOR SHALL EXERCISE EXTREME CAUTION DURING EARTHWORK OPERATIONS TO INSURE THAT DISTURBANCE TO ANY STEEP SLOPE AREAS ARE MINIMIZED TO THE EXTENT PRACTICABLE.
4.

THE CONTRACTOR IS HEREBY CAUTIONED THAT ALL SITE FEATURES SHOWN ARE BASED ON FIELD OBSERVATIONS BY THE SURVEYOR AND BY INFORMATION PROVIDED BY OTHERS. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR SHALL CONTACT DIG SAFE (1-888-DIGSAFE) AT LEAST THREE (3) BUT NOT MORE THAN THIRTY (30) DAYS PRIOR TO COMMENCEMENT OF EXCAVATION OR DEMOLITION TO VERIFY HORIZONTAL AND VERTICAL LOCATION OF ALL UTILITIES.
5.

ALL PAVING WITHIN THE PUBLIC R.O.W. SHALL BE PERFORMED IN ACCORDANCE WITH THE CITY OF PORTLAND RULES AND REGULATIONS FOR EXCAVATION ACTIVITIES IN THE PUBLIC R.O.W.
6.

NO HOLES, TRENCHES OR STRUCTURES SHALL BE LEFT OPEN OVERNIGHT IN ANY EXCAVATION ACCESSIBLE TO THE PUBLIC OR IN PUBLIC RIGHTS-OF-WAY.
7.

THE CONTRACTOR SHALL TAKE FULL RESPONSIBILITY FOR ANY CHANGES AND DEVIATION OF APPROVED PLANS NOT AUTHORIZED BY THE ARCHITECT/ENGINEER AND/OR CLIENT/OWNER.
8.

CONTRACTOR SHALL INCORPORATE PROVISIONS AS NECESSARY IN CONSTRUCTION TO PROTECT EXISTING STRUCTURES AND PHYSICAL FEATURES THAT ARE OUTSIDE THE SCOPE OF WORK. THE CONTRACTOR SHALL MAINTAIN SITE STABILITY DURING CONSTRUCTION TO AVOID EROSION AND SEDIMENT TRANSPORT. CONTRACTOR SHALL RESTORE ALL AREAS TO A FINAL STABILIZED CONDITION AS DIRECTED BY DESIGN DRAWINGS.
9.

CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS IN THE FIELD PRIOR TO FABRICATION AND ERECTION OF ANY MATERIAL. ANY UNUSUAL CONDITIONS SHALL BE REPORTED TO THE ATTENTION OF THE ENGINEER.
10.

EXTERIOR GRADES AROUND PROPOSED STRUCTURE SHALL BE COORDINATED WITH FINAL BUILDING PLANS AND PROVIDE FOR ALL ACCESS OPENINGS.
11.

SUBGRADE FILL PLACED BENEATH ALL PERMANENT PAVEMENT, SIDEWALK OR CONCRETE SURFACES EXCLUDING ANY BUILDING AREAS, SHALL BE GRANULAR BORROW. SUBGRADE FILL PLACED BENEATH ALL LANDSCAPE AREAS EXCEPT THOSE ADJACENT THE FOUNDATION SYSTEMS MAY BE A COMMON BORROW MATERIAL SUITABLE FOR EMBANKMENT CONSTRUCTION, FREE FROM FROZEN MATERIAL, PERISHABLE RUBBLE, PEAT, ORGANICS, ROCKS LARGER THAN 12" IN DIAMETER, VEGETATION AND OTHER MATERIAL UNSUITABLE FOR ROADWAY AND SUBGRADE CONSTRUCTION. EXCAVATED ON-SITE MATERIALS MAY BE USED FOR FILL PROVIDED THE MATERIAL IS FREE FROM UNSUITABLE MATERIAL DESCRIBED IN THIS NOTE AND UPON APPROVAL OF THE ENGINEER. EXCAVATED ONSITE MATERIALS MAY NOT BE USED AS COMPACTED STRUCTURAL FILL BENEATH THE BUILDING AREAS OR AS FOUNDATION BACKFILL. GRANULAR BORROW AND COMMON BORROW SHALL COMPLY WITH THE MDOT SPECIFICATIONS.
12.

ALL FILLS SHALL BE PLACED IN LAYERS NOT MORE THAN 12" LOOSE DEPTH AND COMPACTED BY HEAVY COMPACTION EQUIPMENT. MINIMUM COMPACTION SHALL BE 95% OF MAXIMUM DENSITY ASTM 1557, MODIFIED AND FIELD DENSITY ASTM D2922 (NUCLEAR METHODS).

UTILITY NOTES

1.

ALL REQUIRED UTILITIES SERVING THE PROJECT SHALL BE COORDINATED BETWEEN THE SITE WORK CONTRACTOR AND DIVISION 22/26 CONTRACTOR(S). THE SITE WORK CONTRACTOR SHALL BE RESPONSIBLE TO EXTEND ALL PROPOSED UTILITIES TO WITHIN FIVE (5) FEET OF THE BUILDING TO A LOCATION COORDINATED WITH THE MECHANICAL AND ELECTRICAL SUBCONTRACTORS. THE BUILDING CONTRACTOR SHALL BE RESPONSIBLE FOR ALL UTILITIES WITHIN FIVE (5) FEET AND INSIDE THE BUILDING OR UNDER SLAB.
2.

THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF AND/OR RELOCATION OF OVERHEAD AND UNDERGROUND TELEPHONE WITH FAIRPOINT COMMUNICATIONS. CONTRACTOR SHALL BE RESPONSIBLE FOR CONDUITS, PULL WIRES, TRENCHING AND BACKFILLING NECESSARY TO COMPLETE THE WORK.
3.

THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF ELECTRIC SERVICE WITH CENTRAL MAINE POWER; THE TELECOMMUNICATIONS SERVICE WITH FAIRPOINT COMMUNICATIONS AND CABLE SERVICE WITH TIME WARNER CABLE. ALL WORK SHALL CONFORM TO THE PROJECT SPECIFICATIONS OR UTILITY COMPANY STANDARDS, WHICHEVER IS MORE STRINGENT.
4.

ADJUST ALL MANHOLES, CATCH BASINS, CURB BOXES, ETC. WITHIN LIMITS OF WORK TO FINISH GRADE AT NO ADDITIONAL EXPENSE TO THE OWNER.
5.

ALL UNDERGROUND CONDUITS SHALL HAVE NYLON PULL ROPES TO FACILITATE PULLING CABLES.
6.

THE CONTRACTOR SHALL OBTAIN, PAY FOR, AND COMPLY WITH ALL REQUIRED PERMITS, ARRANGE FOR ALL INSPECTIONS, AND SUBMIT COPIES OF ACCEPTANCE CERTIFICATES TO THE OWNER PRIOR TO COMPLETION OF THE PROJECT.
7.

THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL BOXES, FITTINGS, CONNECTORS, COVER PLATES AND OTHER MISCELLANEOUS ITEMS NOT NECESSARILY DETAILED ON THE DRAWINGS TO RENDER INSTALLATION OF UTILITIES COMPLETE AND OPERATIONAL, AT NO EXTRA EXPENSE TO THE OWNER.
8.

A 10 FOOT MINIMUM EDGE TO EDGE HORIZONTAL SEPARATION SHALL BE PROVIDED BETWEEN ALL WATER AND SANITARY SEWER LINES. AN 18 INCH OUTSIDE TO OUTSIDE VERTICAL SEPARATION SHALL BE PROVIDED AT ALL WATER AND SANITARY SEWER CROSSINGS.
9.

THE CONTRACTOR SHALL PROVIDE TEMPORARY SERVICES AS REQUIRED TO PROVIDE CONTINUOUS SERVICE TO THE JOBSITE. TEMPORARY SERVICES SHALL COMPLY WITH ALL FEDERAL, STATE, LOCAL AND UTILITY COMPANY STANDARDS. COORDINATE ALL TEMPORARY SERVICES WITH UTILITY COMPANY, OWNER AND AFFECTED BUSINESSES.
10.

CONTRACTOR SHALL PROVIDE AND INSTALL ALL NECESSARY ELECTRICAL SERVICES IN CONDUIT TO SITE LIGHTING, COMPLYING WITH APPLICABLE CODES. COORDINATE WITH OWNER, SITE ELECTRICAL, ARCHITECTURAL AND CMP PLANS.
11.

ALL SANITARY SERVICES AND APPURTENANCES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CURRENT STANDARDS AND SPECIFICATIONS OF THE CITY OF PORTLAND PUBLIC WORKS DEPARTMENT. ALL SANITARY SERVICES AND APPURTENANCES TO BE ABANDONED SHALL BE PROPERLY RECORDED WITH PORTLAND PUBLIC WORKS ENGINEERING DEPARTMENT. A DIGITAL VIDEOTAPE SHALL BE MADE OF SANITARY SEWER SYSTEMS TO BE UTILIZED PRIOR TO CONSTRUCTION; UPSTREAM PIPES INTENDED FOR ABANDONMENT SHALL BE INSPECTED TO VERIFY THAT THEY NO LONGER SERVE OTHER FACILITIES.

DIMENSIONAL STANDARD	REQUIRED DIMENSION - B4	PROVIDED
MINIMUM LOT SIZE	10,000 SF	418,393 S.F.
MINIMUM STREET FRONTAGE	60 FEET	140.51 FEET
MINIMUM FRONT YARD	20 FEET OR THE AVERAGE DEPTH OF THE FRONT YARDS ON EITHER SIDE. AVERAGE DEPTH = 1 FOOT	54.85 FEET
MINIMUM REAR YARD	20 FEET	>20 FEET
MINIMUM SIDE YARD	1 OR 2 STORIES = 10 FEET 3 OR MORE STORIES = 12 FEET	20 FEET
MAXIMUM LOT COVERAGE	40% FOR LOTS CONTAINING 20 OR MORE UNITS; 50% FOR LOTS CONTAINING FEWER THAN 20 UNITS.	<40%
MINIMUM LOT WIDTH	60 FEET	>150 FEET
MAXIMUM STRUCTURE HEIGHT	65 FEET EXCEPT ON LOTS IN EXCESS OF 5 ACRES, 90 FEET IS PERMITTED IF EACH OF THE SETBACKS REQUIRED IS INCREASED BY 1 FOOT IN DISTANCE FOR EACH FOOT OF HEIGHT ABOVE 65 FEET	
IMPERVIOUS SURFACE RATIO	80%	<30%

LEGEND

PROPOSED

BUILDING

LANDSCAPING

WHEEL STOP

PARKING STRIPING

BARRIER FREE SYMBOL

TRAFFIC ARROW

EDGE OF PAVEMENT

SLIPFORM CONCRETE CURB

WETLAND IMPACT

BOULDER BARRIER

8"W FIRE SUPPLY LINE

2"W DOMESTIC WATER

UGE/T/C UNDERGROUND ELECTRIC / TELEPHONE / CABLE

STONE DRIP STRIP

EXISTING

IRON PIN FOUND (IPF) OR CAPPED IRON ROD FOUND (CIR)

ELECTRIC MANHOLE

CATCH BASIN

SEWER MANHOLE

DRAIN MANHOLE

DOWN SPOUT

WATER VALVE

WATER SHUTOFF

UTILITY POLE

SIGN

LIGHT POLE

ELECTRIC METER

GAS METER

EDGE OF PAVEMENT

CURB (GRANITE, UNLESS NOTED)

EDGE OF GRAVEL

VEGETATION

STUMP

EXISTING CONTOUR

SPOT GRADE

PROPERTY LINE

RIGHT OF WAY

EASEMENT

24"UD STORM DRAIN

36" SAN SEWER

W UNDERGROUND WATER

OHU OVERHEAD UTILITY WIRES

WOOD STOCKADE FENCE

CHAIN LINK FENCE

GUARD RAIL

EXISTING BUILDING

STONE WALL

WETLAND

PLAN REFERENCES

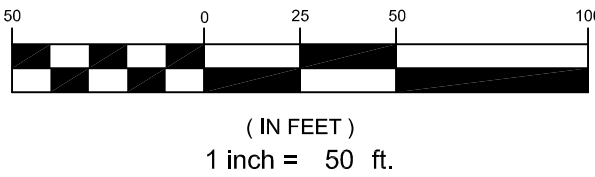
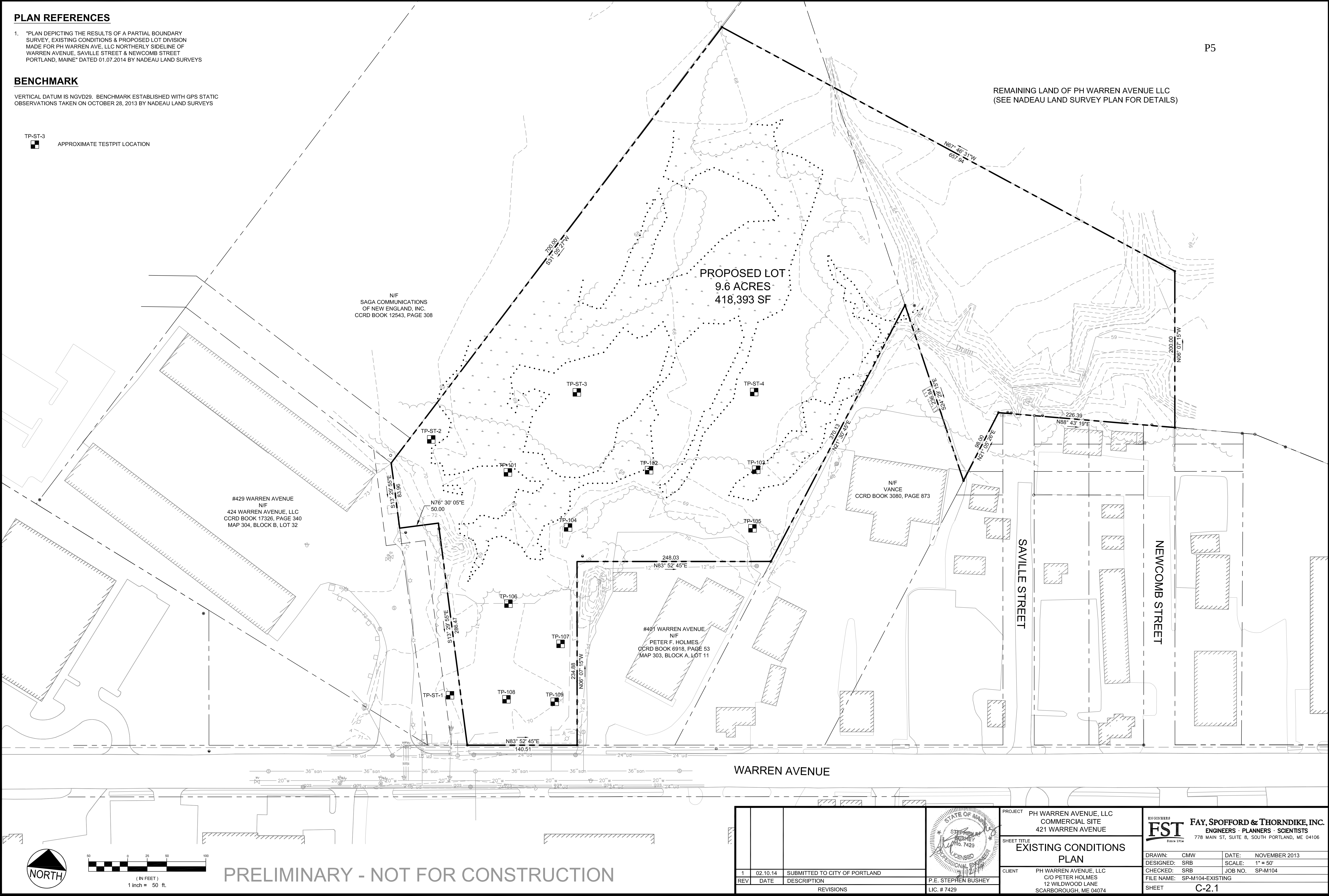
1. "PLAN DEPICTING THE RESULTS OF A PARTIAL BOUNDARY SURVEY, EXISTING CONDITIONS & PROPOSED LOT DIVISION MADE FOR PH WARREN AVE. LLC NORTHERLY SIDELINE OF WARREN AVENUE, SAVILLE STREET & NEWCOMB STREET PORTLAND, MAINE" DATED 01.07.2014 BY NADEAU LAND SURVEYS

BENCHMARK

VERTICAL DATUM IS NGVD29. BENCHMARK ESTABLISHED WITH GPS STATIC OBSERVATIONS TAKEN ON OCTOBER 28, 2013 BY NADEAU LAND SURVEYS

TP-ST-3
APPROXIMATE TESTPIT LOCATION

REMAINING LAND OF PH WARREN AVENUE LLC
(SEE NADEAU LAND SURVEY PLAN FOR DETAILS)



PRELIMINARY - NOT FOR CONSTRUCTION

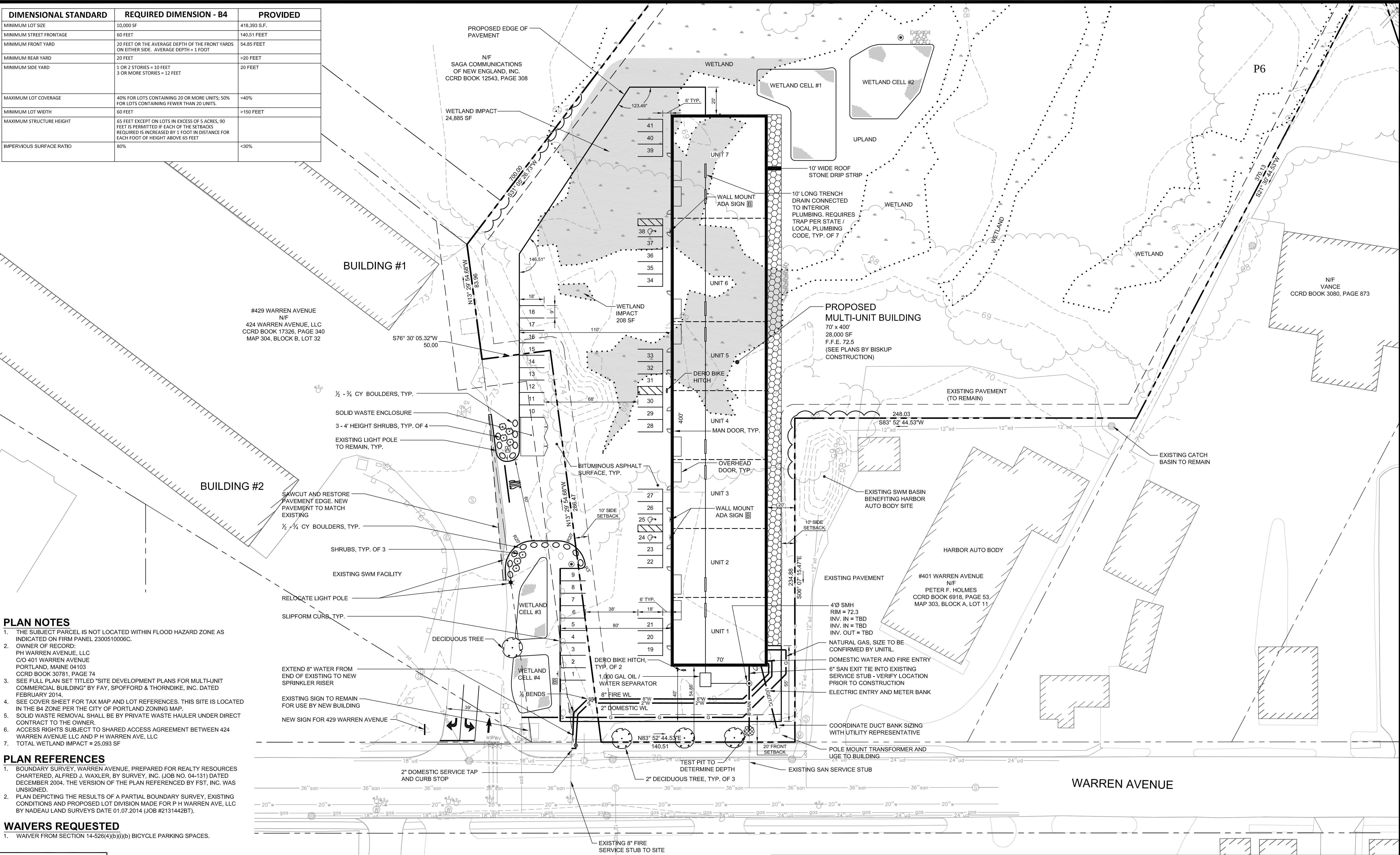
WARREN AVENUE

SAVILLE STREET

NEWCOMB STREET

				<table><tr><td>PROJECT</td><td>PH WARREN AVENUE, LLC COMMERCIAL SITE 421 WARREN AVENUE</td></tr><tr><td>SHEET TITLE</td><td>EXISTING CONDITIONS PLAN</td></tr><tr><td>CLIENT</td><td>PH WARREN AVENUE, LLC C/O PETER HOLMES 12 WILDWOOD LANE SCARBOROUGH, ME 04074</td></tr></table>	PROJECT	PH WARREN AVENUE, LLC COMMERCIAL SITE 421 WARREN AVENUE	SHEET TITLE	EXISTING CONDITIONS PLAN	CLIENT	PH WARREN AVENUE, LLC C/O PETER HOLMES 12 WILDWOOD LANE SCARBOROUGH, ME 04074	<table><tr><td colspan="2"> FAY, SPOFFORD & THORNDIKE, INC. ENGINEERS · PLANNERS · SCIENTISTS 778 MAIN ST, SUITE 8, SOUTH PORTLAND, ME 04106</td></tr><tr><td>DRAWN: CMW</td><td>DATE: NOVEMBER 2013</td></tr><tr><td>DESIGNED: SRB</td><td>SCALE: 1" = 50'</td></tr><tr><td>CHECKED: SRB</td><td>JOB NO. SP-M104</td></tr><tr><td colspan="2">FILE NAME: SP-M104-EXISTING</td></tr><tr><td>SHEET</td><td>C-2.1</td></tr></table>	 FAY, SPOFFORD & THORNDIKE, INC. ENGINEERS · PLANNERS · SCIENTISTS 778 MAIN ST, SUITE 8, SOUTH PORTLAND, ME 04106		DRAWN: CMW	DATE: NOVEMBER 2013	DESIGNED: SRB	SCALE: 1" = 50'	CHECKED: SRB	JOB NO. SP-M104	FILE NAME: SP-M104-EXISTING		SHEET	C-2.1
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1	02.10.14	SUBMITTED TO CITY OF PORTLAND																					
REV	DATE	DESCRIPTION	P.E. STEPHEN BUSHEY																				
REVISIONS			LIC. # 7429																				

DIMENSIONAL STANDARD	REQUIRED DIMENSION - B4	PROVIDED
MINIMUM LOT SIZE	10,000 SF	418,393 S.F.
MINIMUM STREET FRONTAGE	60 FEET	140.51 FEET
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MINIMUM LOT WIDTH	60 FEET	>150 FEET
MAXIMUM STRUCTURE HEIGHT	65 FEET EXCEPT ON LOTS IN EXCESS OF 5 ACRES, 90 FEET IS PERMITTED IF EACH OF THE SETBACKS REQUIRED IS INCREASED BY 1 FOOT IN DISTANCE FOR EACH FOOT OF HEIGHT ABOVE 65 FEET	
IMPERVIOUS SURFACE RATIO	80%	<30%



PLAN NOTES

- THE SUBJECT PARCEL IS NOT LOCATED WITHIN FLOOD HAZARD ZONE AS INDICATED ON FIRM PANEL 2300510006C.
- OWNER OF RECORD:
PH WARREN AVENUE, LLC
C/O 401 WARREN AVENUE
PORTLAND, MAINE 04103
CCRD BOOK 30781, PAGE 74
- SEE FULL PLAN SET TITLED "SITE DEVELOPMENT PLANS FOR MULTI-UNIT COMMERCIAL BUILDING" BY FAY, SPOFFORD & THORNDIKE, INC. DATED FEBRUARY 2014.
- SEE COVER SHEET FOR TAX MAP AND LOT REFERENCES. THIS SITE IS LOCATED IN THE B4 ZONE PER THE CITY OF PORTLAND ZONING MAP.
- SOLID WASTE REMOVAL SHALL BE BY PRIVATE WASTE HAULER UNDER DIRECT CONTRACT TO THE OWNER.
- ACCESS RIGHTS SUBJECT TO SHARED ACCESS AGREEMENT BETWEEN 424 WARREN AVENUE LLC AND P H WARREN AVE, LLC
- TOTAL WETLAND IMPACT = 25,093 SF

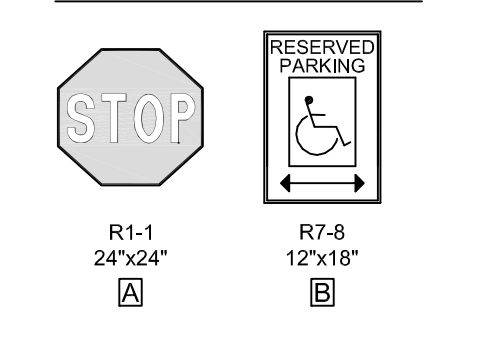
PLAN REFERENCES

- BOUNDARY SURVEY, WARREN AVENUE, PREPARED FOR REALTY RESOURCES CHARTERED, ALFRED J. WAXLER, BY SURVEY, INC. (JOB NO. 04-131) DATED DECEMBER 2004. THE VERSION OF THE PLAN REFERENCED BY FST, INC. WAS UNSIGNED.
- PLAN DEPICTING THE RESULTS OF A PARTIAL BOUNDARY SURVEY, EXISTING CONDITIONS AND PROPOSED LOT DIVISION MADE FOR P H WARREN AVE, LLC BY NADEAU LAND SURVEYS DATE 01.07.2014 (JOB #2131442BT).

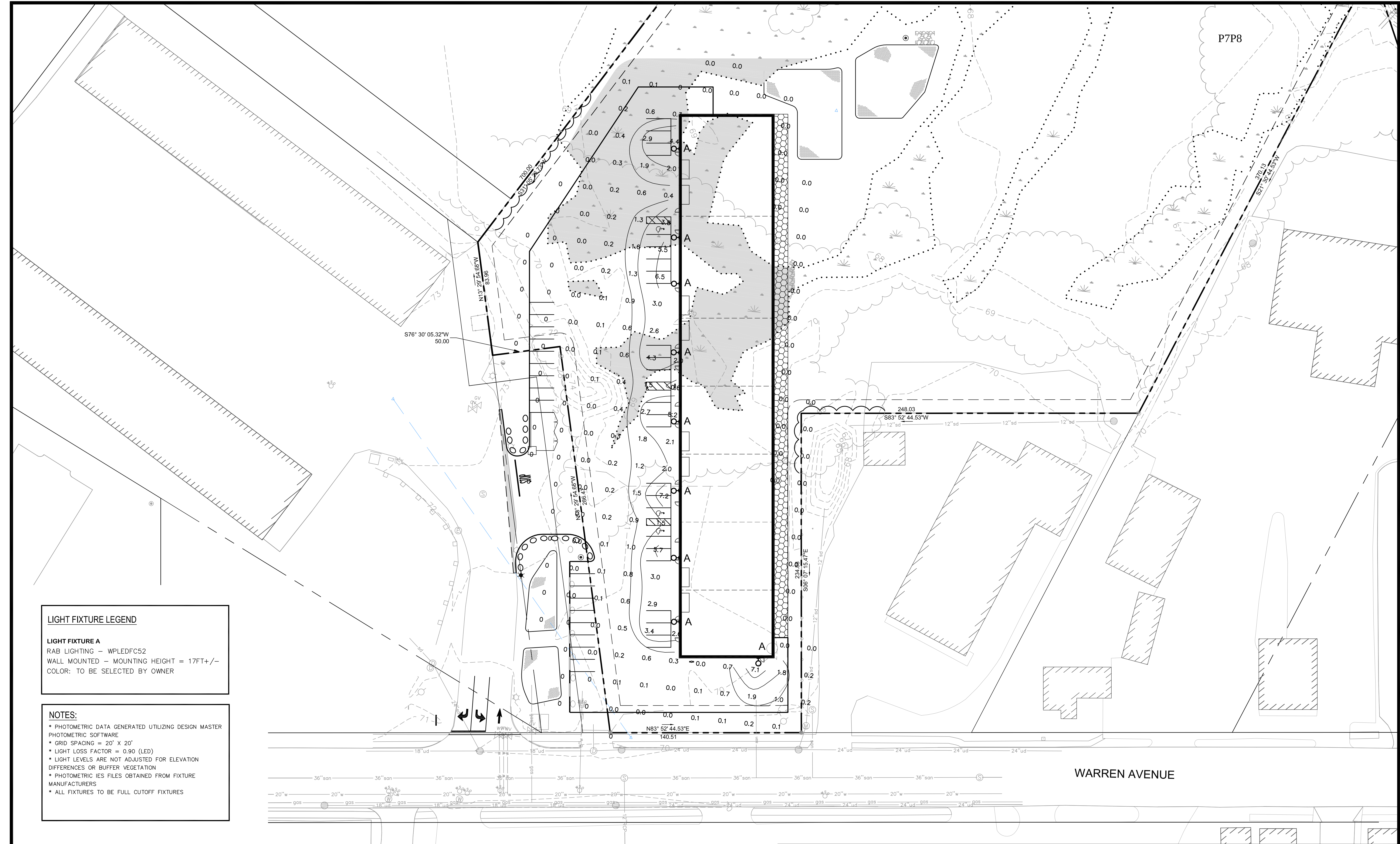
WAIVERS REQUESTED

- WAIVER FROM SECTION 14-526(4)(b)(i)(b) BICYCLE PARKING SPACES.

SIGN LEGEND



PRELIMINARY - NOT FOR CONSTRUCTION



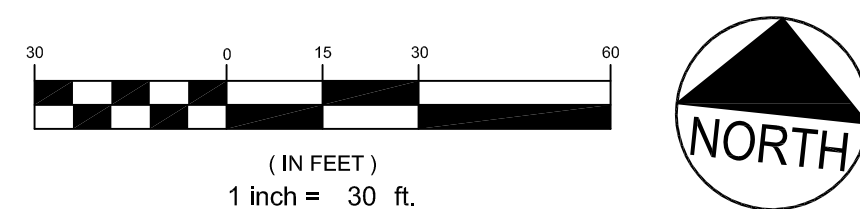
LIGHT FIXTURE LEGEND

LIGHT FIXTURE A
RAB LIGHTING — WPLEDFC52
WALL MOUNTED — MOUNTING HEIGHT = 17FT+/-
COLOR: TO BE SELECTED BY OWNER

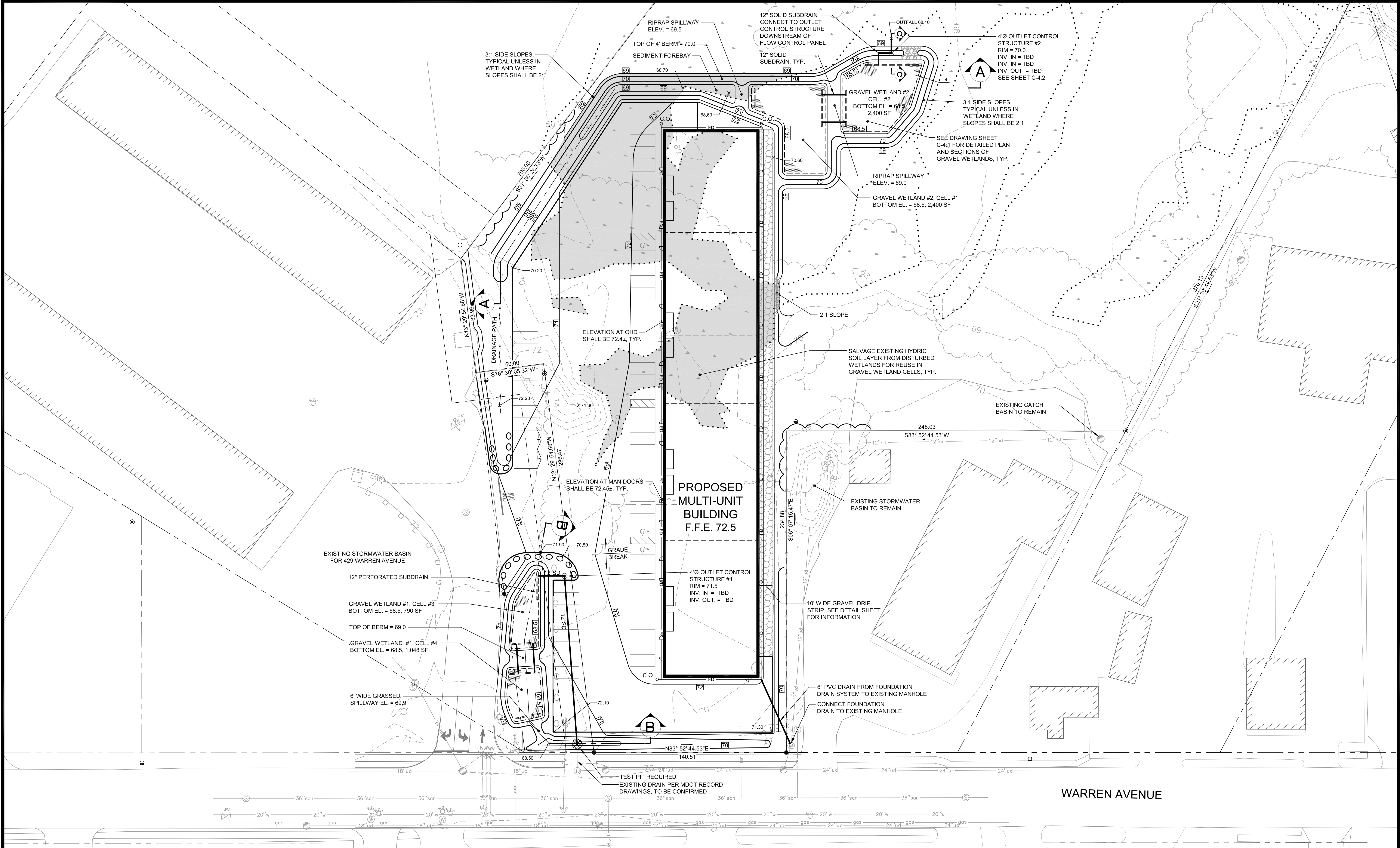
NOTES:

- * PHOTOMETRIC DATA GENERATED UTILIZING DESIGN MASTER PHOTOMETRIC SOFTWARE
- * GRID SPACING = 20' X 20'
- * LIGHT LOSS FACTOR = 0.90 (LED)
- * LIGHT LEVELS ARE NOT ADJUSTED FOR ELEVATION DIFFERENCES OR BUFFER VEGETATION
- * PHOTOMETRIC IES FILES OBTAINED FROM FIXTURE MANUFACTURERS
- * ALL FIXTURES TO BE FULL CUTOFF FIXTURES

PRELIMINARY - NOT FOR CONSTRUCTION

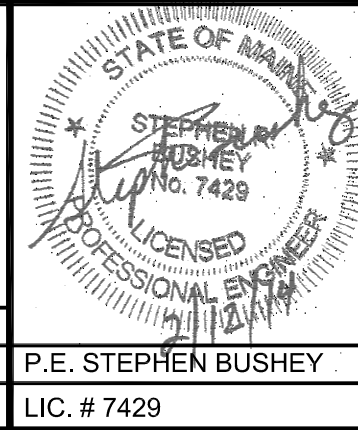


				PROJECT PH WARREN AVENUE, LLC COMMERCIAL SITE 421 WARREN AVENUE		ENGINEERS FST Since 1954 FAY, SPOFFORD & THORNDIKE, INC. ENGINEERS · PLANNERS · SCIENTISTS 778 MAIN ST, SUITE 8, SOUTH PORTLAND, ME 04106	
1	02.10.14	SUBMITTED TO CITY OF PORTLAND		SHEET TITLE LIGHTING AND PHOTOMETRICS PLAN		DRAWN: RJW DATE: NOVEMBER 2013	
REV	DATE	DESCRIPTION	P.E. STEPHEN BUSHEY LIC. # 7429	CLIENT PH WARREN AVENUE, LLC C/O PETER HOLMES 12 WILDWOOD LANE SCARBOROUGH, ME 04074	DESIGNED: SRB CHECKED: SRB FILE NAME: SP-M104-PHOTOMETRICS	SCALE: 1"=30' JOB NO. SP-M104	
REVISIONS					SHEET C-3.1		



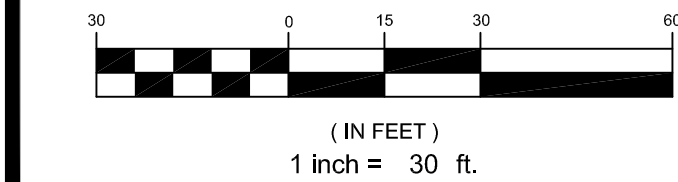
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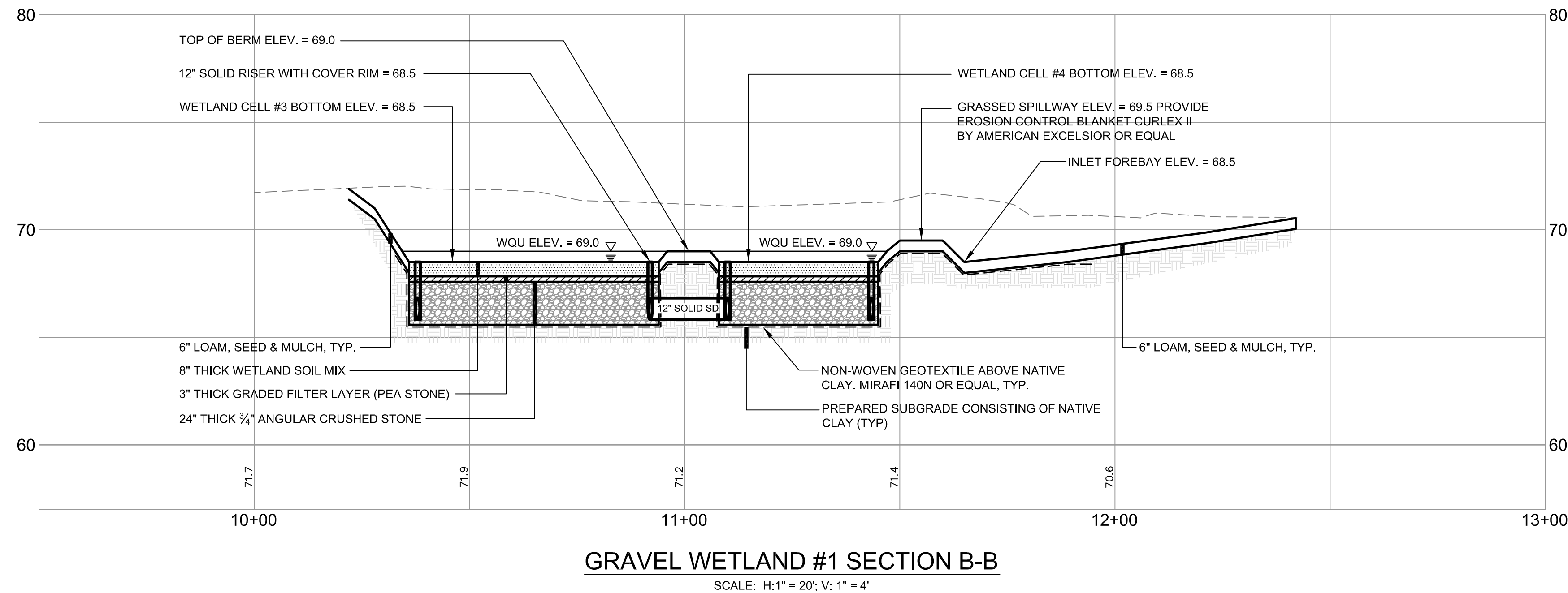
REV	DATE	DESCRIPTION
1	02.10.14	SUBMITTED TO CITY OF PORTLAND
		REVISIONS



PROJECT	PH WARREN AVENUE, LLC COMMERCIAL SITE 421 WARREN AVENUE
SHEET TITLE	GRADING AND DRAINAGE PLAN
CLIENT	PH WARREN AVENUE, LLC C/O PETER HOLMES 12 WILLOW LANE SCARBOROUGH, ME 04074

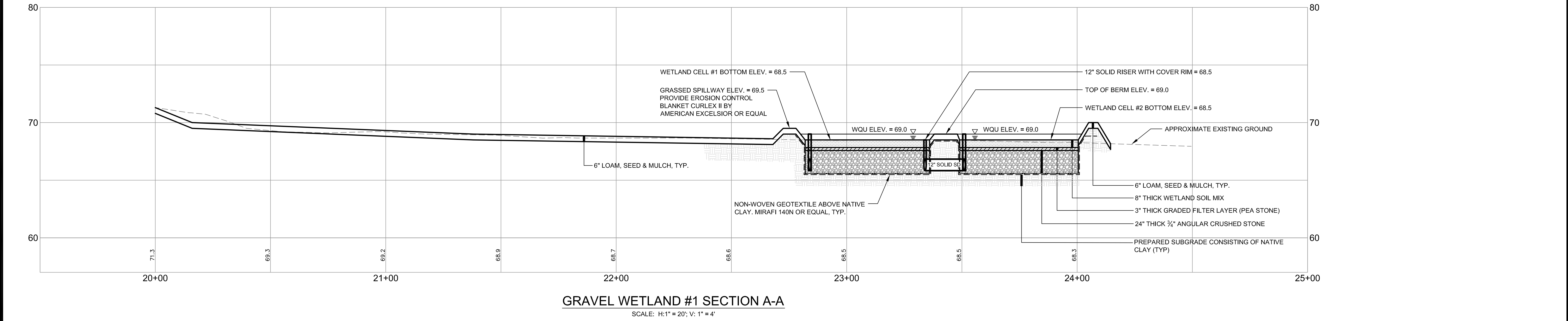
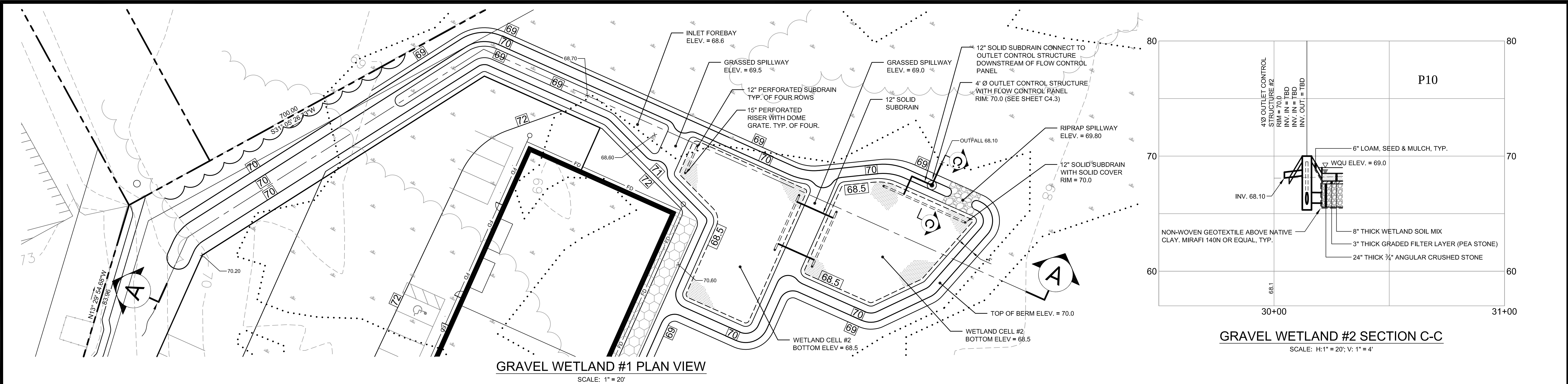
FAY, SPOFFORD & THORNDIKE, INC. ENGINEERS · PLANNERS · SCIENTISTS 778 MAIN ST, SUITE 8, SOUTH PORTLAND, ME 04106	
DRAWN: CMW	DATE: NOVEMBER 2013
DESIGNED: SRB	SCALE: 1" = 30'
CHECKED: SRB	JOB NO. SP-M104
FILE NAME: SP-M104-GRADE	
SHEET	C-4.0





1. SUBSURFACE GRAVEL WETLANDS WERE DESIGNED PER THE UNIVERSITY OF NEW HAMPSHIRE STORMWATER CENTER'S (UNHSC) DESIGN SPECIFICATIONS, DATED JUNE 2009.
2. WETLAND SOIL: THE WETLAND SOIL SHOULD BE SIMILAR TO A NATIVE WETLAND SOIL WITH LOW HYDRAULIC CONDUCTIVITY. THIS SOIL CAN BE MANUFACTURED USING COMPOST, SAND, AND SOME FINE SOILS. SURFACE INFILTRATION RATES SHOULD BE BETWEEN 3.5 X 10-5 CM/SEC AND 3.5 X 10-4 CM/SEC. A 10:1 SLOPE SHOULD BE 15%, AND CLAY CONTENT SHOULD BE <15% TO PREVENT THE MIGRATION OF FINES INTO THE SUBSURFACE GRAVEL LAYER. THE EXISTING HYDRIC SOILS REMOVED FROM IMPACTED WETLAND AREAS MAY ALSO BE USED.
3. THE 3" THICK GRADED FILTER OR CHOKER COURSE IS INTENDED TO PREVENT THE WETLAND SOIL FROM MIGRATING DOWN INTO THE CRUSHED STONE SUB-LAYER. MATERIAL COMPATIBILITY MUST MEET THE FOLLOWING FHWA CRITERIA:
 - D15 (COARSE SUB-LAYER) $\leq$ X D85 (GRADED FILTER)
 - D90 (COARSE SUB-LAYER) $\leq$ 25 X D50 (GRADED FILTER)
4. THE COARSE SUB-LAYER MATERIAL SHALL BE AN ANGULAR CRUSHED STONE MEETING THE REQUIREMENTS OF MDOT 703.22 TYPE C.
5. GEOTEXTILES SHOULD NOT BE USED BETWEEN HORIZONTAL LAYERS OF THIS SYSTEM, AS THEY MAY CLOG DUE TO FINES AND MAY RESTRICT ROOT GROWTH
6. THE SEASONAL HIGH GROUNDWATER ELEVATION IN THE AREA OF GRAVEL WETLAND #1 IS APPROXIMATELY 67.0 BASED ON TEST PIT TP-37-1.
7. CONSTRUCTION OVERSIGHT: THE OWNER WILL RETAIN THE SERVICES OF A PROFESSIONAL ENGINEER TO INSPECT THE CONSTRUCTION AND STABILIZATION OF ALL STORMWATER MANAGEMENT STRUCTURES. IF NECESSARY, THE INSPECTING ENGINEER WILL INTERPRET THE POND CONSTRUCTION FOR THE CONTRACTOR. ONCE ALL STORMWATER MANAGEMENT STRUCTURES ARE CONSTRUCTED AND STABILIZED, THE INSPECTING ENGINEER WILL NOTIFY THE DEPARTMENT IN WRITING WITHIN 30 DAYS TO STATE THAT THE POND HAS BEEN COMPLETED. ACCORDINGLY, THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING THE ENGINEER'S INSPECTIONS GIVING THE DATE AND TIME OF EACH INSPECTION AND THE ITEMS INSPECTED ON EACH VISIT AND INCLUDING ANY TESTING DATA OR SIEVE ANALYSIS DATA OF EVERY MINERAL SOIL AND SOIL MEDIA SPECIFIED IN THE PLANS AND USED ON SITE.
8. CONSTRUCTION SEQUENCE: THE SUBSURFACE GRAVEL WETLAND MUST NOT BE INSTALLED UNTIL THE AREA THAT DRAINS TO THE WETLAND HAS BEEN PERMANENTLY STABILIZED WITH PAVEMENT OR OTHER STRUCTURE. 90% VEGETATION COVER, OR OTHER PERMANENT STABILIZATION UNLESS THE RUNOFF FROM THE CONTRIBUTING DRAINAGE AREA IS DIVERTED AROUND THE STRUCTURE UNTIL STABILIZATION IS COMPLETE.
9. COMPACTION: WETLAND SOIL AND SUBSURFACE MATERIAL MUST BE COMPACTED TO BETWEEN 90% AND 95% STANDARD PROCTOR.
10. CONSTRUCTION OVERSIGHT: INSPECTION BY A PROFESSIONAL ENGINEER WILL OCCUR AT A MINIMUM.
 - AFTER THE PRELIMINARY CONSTRUCTION OF THE STRUCTURE'S GRADES AND ONCE THE SUBSURFACE DRAIN PIPES ARE INSTALLED BUT NOT BACKFILLED,
 - AFTER THE CRUSHED STONE LAYER IS CONSTRUCTED AND PRIOR TO THE INSTALLATION OF THE WETLAND SOIL,
 - AFTER THE WETLAND SOIL HAS BEEN INSTALLED AND SEEDED.AFTER ONE YEAR TO INSPECT HEALTH OF THE VEGETATION AND MAKE CORRECTIONS.
11. ALL THE MATERIAL USED FOR THE CONSTRUCTION OF THE FILTER BASIN MUST BE CONFIRMED AS SUITABLE BY THE DESIGN ENGINEER. TESTING MUST BE DONE BY A CERTIFIED LABORATORY TO SHOW THAT THEY ARE PASSING DESIGN SPECIFICATIONS.
12. TESTING AND SUBMITTALS: THE CONTRACTOR SHALL IDENTIFY THE LOCATION OF THE SOURCE OF EACH COMPONENT OF THE SUBSURFACE GRAVEL WETLAND SYSTEM. ALL RESULTS OF FIELD AND LABORATORY TESTING SHALL BE SUBMITTED TO THE DESIGN ENGINEER FOR CONFIRMATION. THE CONTRACTOR SHALL:
 - PERFORM A SIEVE ANALYSIS CONFORMING TO ASTM C136 (STANDARD TEST METHOD FOR SIEVE ANALYSIS OF FINE AND COARSE AGGREGATES 1996a) ON EACH MATERIAL USED IN THE SUBSURFACE GRAVEL WETLAND SYSTEM,
 - PERFORM A HYDROMETER GRAIN SIZE ANALYSIS ON THE WETLAND SOIL,
 - DETERMINE ORGANIC CONTENT OF THE WETLAND SOIL PER ASTM D2974,
 - PERFORM A PERMEABILITY TEST ON THE WETLAND SOIL CONFORMING TO ASTM D2434 WITH THE MIXTURE COMPACTED TO 90% TO 95% OF MAXIMUM DRY DENSITY BASED ON ASTM D698.
13. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL MATERIALS AND CONSTRUCTION PROCEDURES UTILIZED IN THE CONSTRUCTION OF THE SUBSURFACE GRAVEL WETLAND SYSTEM FOR MAINTENANCE AND PROTECTION OF THE CONSTRUCTED SYSTEM UNTIL APPROVAL AND ACCEPTANCE BY THE DESIGN ENGINEER.
14. UPON COMPLETION OF INSTALLATION OF THE WETLAND SOIL LAYER AND ESTABLISHMENT OF 90% OF VEGETATION WITHIN THE STRUCTURE, THE CONTRACTOR SHALL FLOOD THE BASIN TO THE WATER QUALITY ELEVATION WITH CLEAN WATER AND ADJUST THE BALL VALVE INSTALLED ON THE UNDERDRAIN OUTLET TO ACHIEVE A 24-48 HOUR DRAIN TIME.

				PROJECT PH WARREN AVENUE, LLC COMMERCIAL SITE 421 WARREN AVENUE	 FAY, SPOFFORD & THORNDIKE, INC. ENGINEERS · PLANNERS · SCIENTISTS 778 MAIN ST, SUITE 8, SOUTH PORTLAND, ME 04106
1	02.10.14	SUBMITTED TO CITY OF PORTLAND		SHEET TITLE GRAVEL WETLAND #1 PLAN VIEW AND SECTIONS	
REV	DATE	DESCRIPTION	P.E. STEPHEN BUSHEY LIC. # 7429	CLIENT PH WARREN AVENUE, LLC C/O PETER HOLMES 12 WILDWOOD LANE SCARBOROUGH, ME 04074	DRAWN: CMW DESIGNED: SRB CHECKED: SRB FILE NAME: SP-M104-GRAVEL WETLAND SECTIONS SHEET C-4.1
		REVISIONS			



NOTES

- SUBSURFACE GRAVEL WETLANDS WERE DESIGNED PER THE UNIVERSITY OF NEW HAMPSHIRE STORMWATER CENTER'S (UNHSC) DESIGN SPECIFICATIONS, DATED JUNE 2009.
- WETLAND SOIL: THE WETLAND SOIL SHOULD BE SIMILAR TO A NATIVE WETLAND SOIL WITH LOW HYDRAULIC CONDUCTIVITY. THIS SOIL CAN BE MANUFACTURED USING COMPOST, SAND, AND SOME FINE SOILS. SURFACE INFILTRATION RATES SHOULD BE BETWEEN 3.5 X 10-5 CM/SEC AND 3.5 X 10-6 CM/SEC. ORGANIC CONTENT SHOULD BE >15%, AND CLAY CONTENT SHOULD BE <15% TO PREVENT THE MIGRATION OF FINES INTO THE SUBSURFACE GRAVEL LAYER. THE EXISTING HYDRIC SOILS REMOVED FROM IMPACTED WETLAND AREAS MAY ALSO BE USED.
- THE 3" THICK GRADED FILTER OR CHOKER COURSE IS INTENDED TO PREVENT THE WETLAND SOIL FROM MIGRATING DOWN INTO THE CRUSHED STONE SUB-LAYER. MATERIAL COMPATIBILITY MUST MEET THE FOLLOWING FHWA CRITERIA:
D15 (COARSE SUB-LAYER) ≤ 5 X D85 (GRADED FILTER)
D50 (COARSE SUB-LAYER) ≤ 25 X D50 (GRADED FILTER)
- THE COARSE SUB-LAYER MATERIAL SHALL BE AN ANGULAR CRUSHED STONE MEETING THE REQUIREMENTS OF MDOT 703.22 TYPE C.
- GEOTEXTILES SHOULD NOT BE USED BETWEEN HORIZONTAL LAYERS OF THIS SYSTEM, AS THEY MAY CLOG DUE TO FINES AND MAY RESTRICT ROOT GROWTH.
- THE SEASONAL HIGH GROUNDWATER ELEVATION IN THE AREA OF GRAVEL WETLAND #2 IS APPROXIMATELY 64.5' BASED ON TEST PIT TP-ST-3.
- CONSTRUCTION OVERSIGHT: THE OWNER WILL RETAIN THE SERVICES OF A PROFESSIONAL ENGINEER TO INSPECT THE CONSTRUCTION AND STABILIZATION OF ALL STORMWATER MANAGEMENT STRUCTURES. IF NECESSARY, THE INSPECTING ENGINEER WILL INTERPRET THE POND'S CONSTRUCTION PLAN FOR THE CONTRACTOR. ONCE ALL STORMWATER MANAGEMENT STRUCTURES ARE CONSTRUCTED AND STABILIZED, THE INSPECTING ENGINEER WILL NOTIFY THE DEPARTMENT IN WRITING WITHIN 30 DAYS TO STATE THAT THE POND HAS BEEN COMPLETED. ACCOMPANYING THE ENGINEER'S NOTIFICATION MUST BE A LOG OF THE ENGINEER'S INSPECTIONS GIVING THE DATE AND TIME OF EACH INSPECTION AND THE ITEMS INSPECTED ON EACH VISIT AND INCLUDING ANY TESTING DATA OR SIEVE ANALYSIS DATA OF EVERY MINERAL SOIL AND SOIL MEDIA SPECIFIED IN THE PLANS AND USED ON SITE.
- CONSTRUCTION SEQUENCE: THE SUBSURFACE GRAVEL WETLAND MUST NOT BE INSTALLED UNTIL THE AREA THAT DRAINS TO THE WETLAND HAS BEEN PERMANENTLY STABILIZED WITH PAVEMENT OR OTHER STRUCTURE, 90% VEGETATION COVER, OR OTHER PERMANENT STABILIZATION UNLESS THE RUNOFF FROM THE CONTRIBUTING DRAINAGE AREA IS DIVERTED AROUND THE STRUCTURE UNTIL STABILIZATION IS COMPLETE.
- COMPACTION: WETLAND SOIL AND SUBSURFACE MATERIAL MUST BE COMPACTED TO BETWEEN 90% AND 95% STANDARD PROCTOR.
- TEST PIT TP-ST-3 REVEALED MARINE CLAY AT DEPTHS BELOW 1.8'. A PERMEABILITY TEST CONFORMING TO ASTM D2434 MAY BE COMPLETED ON THIS MATERIAL TO DETERMINE IF IT MEETS THE REQUIREMENTS FOR LOW PERMEABILITY CLAY LINER MATERIAL. IF THE NATIVE CLAY IS FOUND TO HAVE A PERMEABILITY OF LESS THAN 1 X 10-6 CM/SEC, NO ADDITIONAL CLAY LINER IS NECESSARY.
- CONSTRUCTION OVERSIGHT: INSPECTION BY A PROFESSIONAL ENGINEER WILL OCCUR AT A MINIMUM:
AFTER THE PRELIMINARY CONSTRUCTION OF THE STRUCTURE'S GRADES AND ONCE THE SUBSURFACE DRAIN PIPES ARE INSTALLED BUT NOT BACKFILLED.
AFTER THE CRUSHED STONE LAYER IS CONSTRUCTED AND PRIOR TO THE INSTALLATION OF THE WETLAND SOIL.
AFTER THE WETLAND SOIL HAS BEEN INSTALLED AND SEEDING.
AFTER ONE YEAR TO INSPECT HEALTH OF THE VEGETATION AND MAKE CORRECTIONS.
ALL THE MATERIAL USED FOR THE CONSTRUCTION OF THE FILTER BASIN MUST BE CONFIRMED AS SUITABLE BY THE DESIGN ENGINEER. TESTING MUST BE DONE BY A CERTIFIED LABORATORY TO SHOW THAT THEY ARE PASSING DESIGN SPECIFICATIONS.
- TESTING AND SUBMITTALS: THE CONTRACTOR SHALL IDENTIFY THE LOCATION OF THE SOURCE OF EACH COMPONENT OF THE SUBSURFACE GRAVEL WETLAND SYSTEM. ALL RESULTS OF FIELD AND LABORATORY TESTING SHALL BE SUBMITTED TO THE DESIGN ENGINEER FOR CONFIRMATION. THE CONTRACTOR SHALL:
PERFORM A SIEVE ANALYSIS CONFORMING TO ASTM C136 (STANDARD TEST METHOD FOR SIEVE ANALYSIS OF FINE AND COARSE AGGREGATES 1996A) ON EACH MATERIAL USED IN THE SUBSURFACE GRAVEL WETLAND SYSTEM.
PERFORM A HYDROMETER GRAIN SIZE ANALYSIS ON THE WETLAND SOIL.
DETERMINE ORGANIC CONTENT OF THE WETLAND SOIL PER ASTM D2974.
PERFORM A PERMEABILITY TEST ON THE WETLAND SOIL CONFORMING TO ASTM D2434 WITH THE MIXTURE COMPACTED TO 90% TO 95% OF MAXIMUM DRY DENSITY BASED ON ASTM D698.
- THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL MATERIALS AND CONSTRUCTION PROCEDURES UTILIZED IN THE CONSTRUCTION OF THE SUBSURFACE GRAVEL WETLAND SYSTEM AND FOR MAINTENANCE AND PROTECTION OF THE CONSTRUCTED SYSTEM UNTIL APPROVAL AND ACCEPTANCE BY THE DESIGN ENGINEER.
- UPON COMPLETION OF INSTALLATION OF THE WETLAND SOIL LAYER AND ESTABLISHMENT OF 90% OF VEGETATION WITHIN THE STRUCTURE, THE CONTRACTOR SHALL FLOOD THE BASIN TO THE WATER QUALITY ELEVATION WITH CLEAN WATER AND ADJUST THE BALL VALVE INSTALLED ON THE UNDERDRAIN OUTLET TO ACHIEVE A 24-HOUR DRAIN TIME.

CAST IN PLACE FLOW CONTROL PANEL

NOTES:
THIS FLOW CONTROL PANEL IS TO BE INSTALLED WITHIN AN OUTLET CONTROL STRUCTURE. SEE SHEET C-4.3 FOR OUTLET CONTROL STRUCTURE DETAIL.

REV	DATE	DESCRIPTION
1	02.10.14	SUBMITTED TO CITY OF PORTLAND

REVISIONS

STATE OF MAINE
STEPHEN BUSHEY
No. 7429
LICENSED PROFESSIONAL ENGINEER

PROJECT: PH WARREN AVENUE, LLC
COMMERCIAL SITE
421 WARREN AVENUE

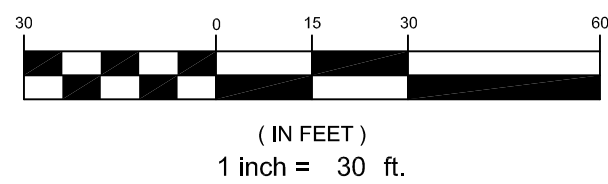
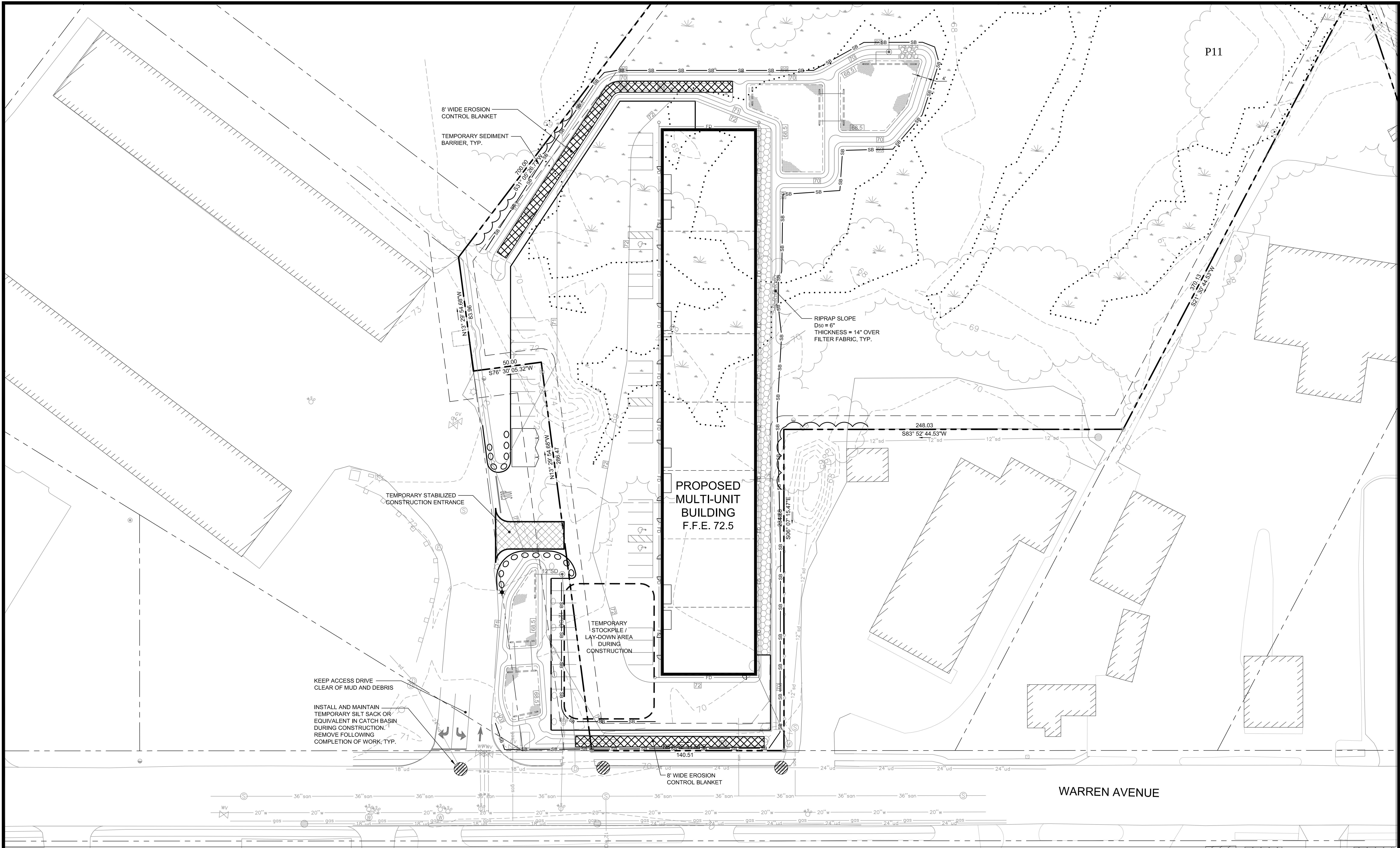
SHEET TITLE: GRAVEL WETLAND #2
PLAN VIEW AND SECTIONS

CLIENT: PH WARREN AVENUE, LLC
C/O PETER HOLMES
12 WILDWOOD LANE
SCARBOROUGH, ME 04074

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FST
Since 1914

FAY, SPOFFORD & THORNDIKE, INC.
ENGINEERS · PLANNERS · SCIENTISTS
778 MAIN ST, SUITE 8, SOUTH PORTLAND, ME 04106

DRAWN: CMW	DATE: NOVEMBER 2013
DESIGNED: SRB	SCALE: AS NOTED
CHECKED: SRB	JOB NO. SP-M104
FILE NAME: SP-M104-GRAVEL WETLAND SECTIONS	
SHEET	C-4.2

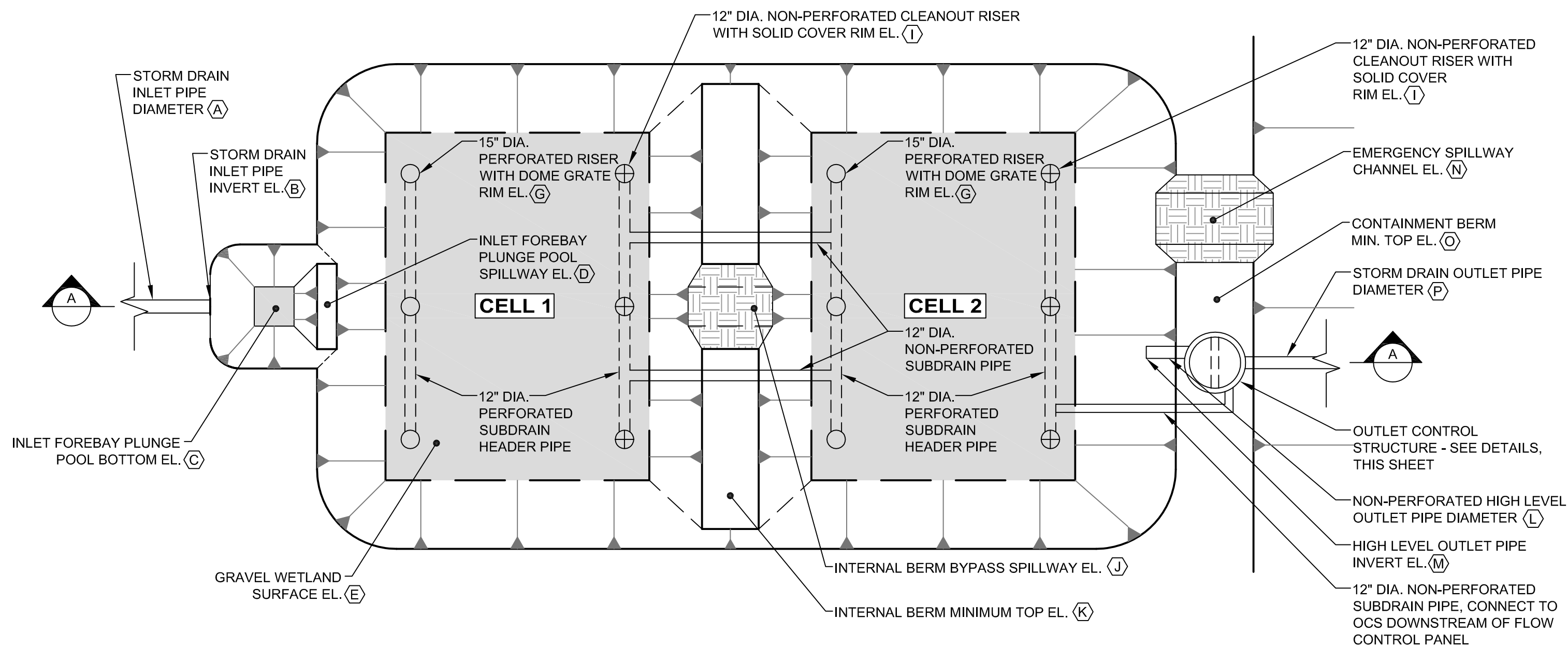


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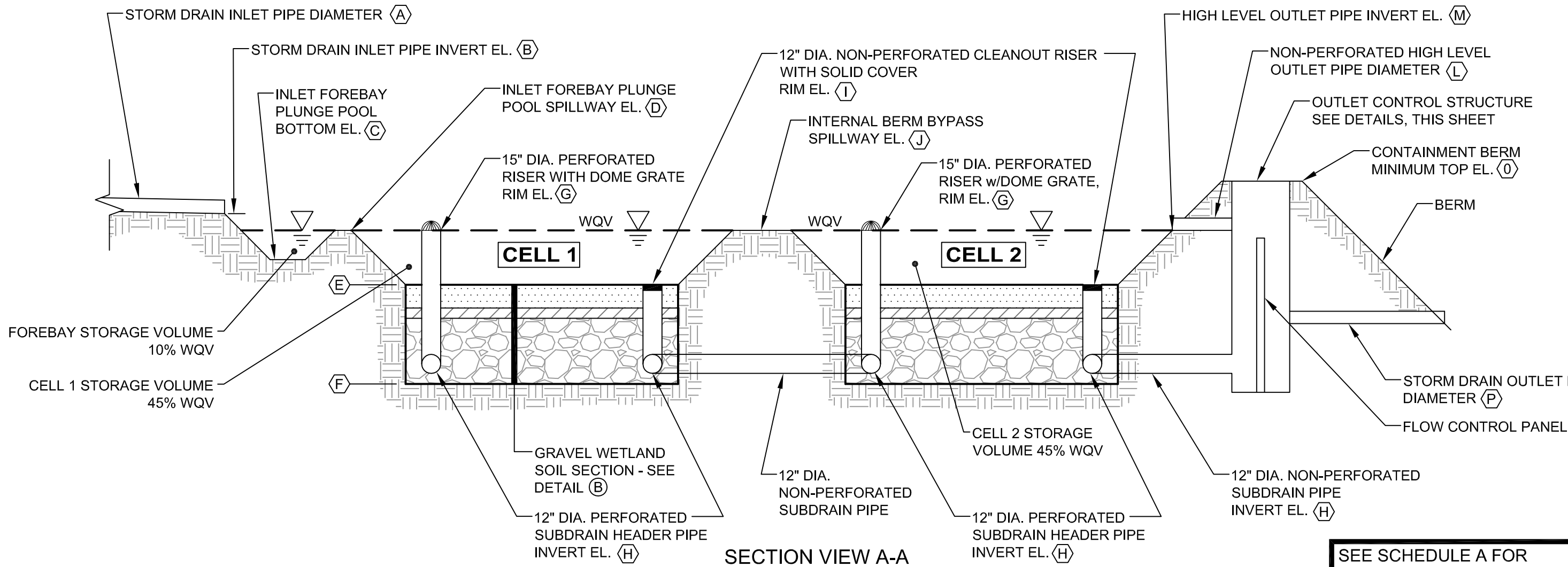
REV	DATE	DESCRIPTION	PROFESSIONAL ENGINEER
1	02.10.14	SUBMITTED TO CITY OF PORTLAND	P.E. STEPHEN BUSHEY
REVISIONS			LIC. # 7429

PROJECT	PH WARREN AVENUE, LLC COMMERCIAL SITE 421 WARREN AVENUE
SHEET TITLE	EROSION AND SEDIMENT CONTROL PLAN
CLIENT	PH WARREN AVENUE, LLC C/O PETER HOLMES 12 WILDWOOD LANE SCARBOROUGH, ME 04074

DRAWN: CMW		DATE: NOVEMBER 2013	
DESIGNED: SRB		SCALE: 1" = 30'	
CHECKED: SRB		JOB NO. SP-M104	
FILE NAME: SP-M104-EROS		SHEET C-5.0	



PLAN VIEW



SECTION VIEW A-A

SEE SCHEDULE A FOR
DIMENSIONAL INFORMATION
FOR GRAVEL WETLAND BASIN
CONSTRUCTION

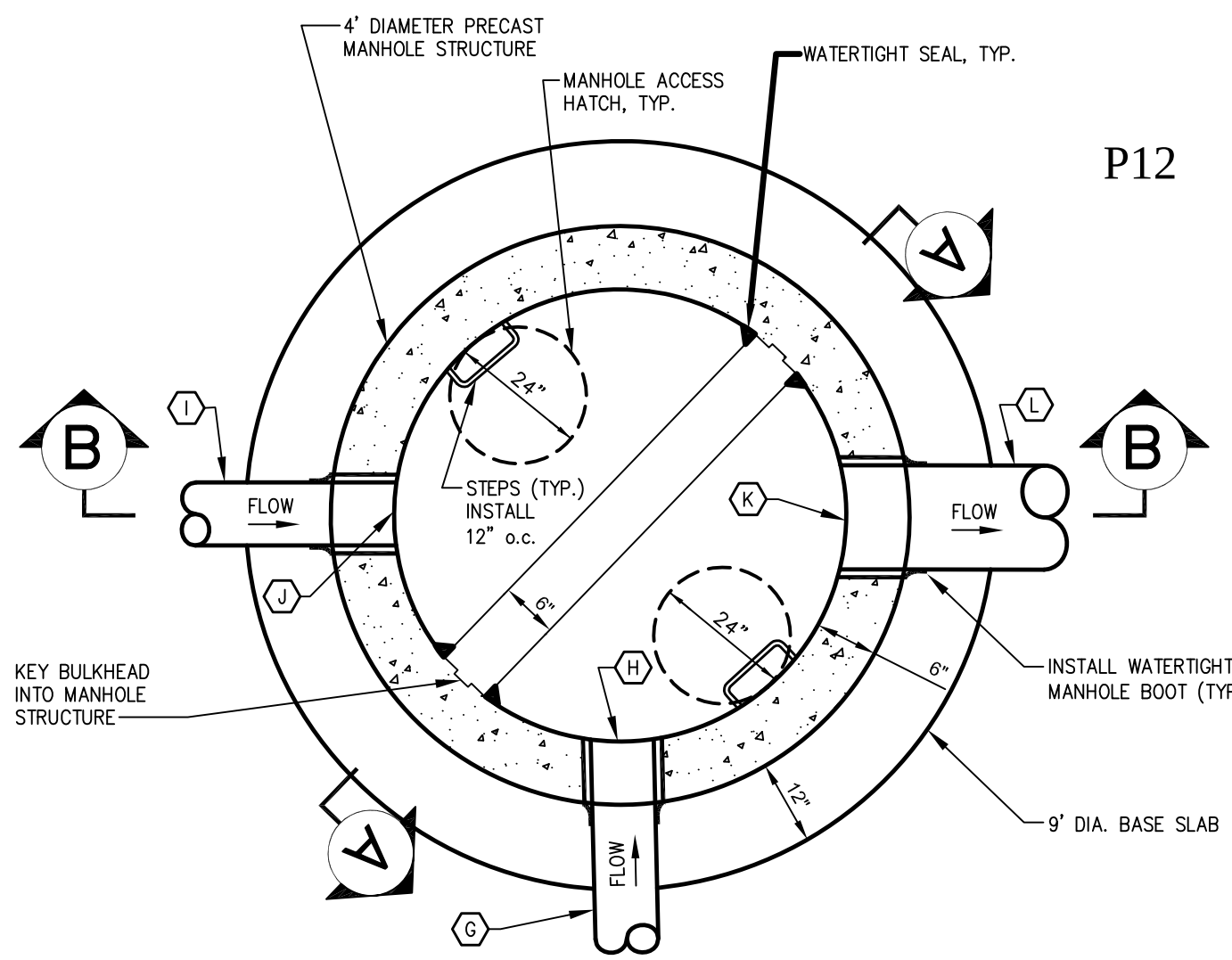
A TYPICAL GRAVEL WETLAND BASIN DETAIL
N.T.S.

SCHEDULE A - SUBSURFACE GRAVEL WETLANDS			
I.D.	DESCRIPTION	GRAVEL WETLAND BASIN #1	GRAVEL WETLAND BASIN #2
A	STORM DRAIN INLET PIPE DIA. (IN.)	N/A	N/A
B	STORM DRAIN INLET PIPE INVERT EL.	N/A	N/A
C	INLET FOREBAY PLUNGE POOL BOTTOM EL.	68.5	68.6
D	INLET FOREBAY PLUNGE POOL SPILLWAY EL.	69.5	69.5
E	GRAVEL WETLAND SURFACE EL.	68.5	68.5
F	GRAVEL WETLAND BOTTOM SUBGRADE EL.	65.58	65.58
G	15" DIAMETER RISER RIM EL.	69.5	69.5
H	12" DIAMETER SUBDRAIN HEADER PIPE INVERT EL.	65.83	65.83
I	12" DIAMETER CLEANOUT RIM EL.	68.5	68.5
J	INTERNAL BERM BYPASS SPILLWAY EL.	69.0	69.0
K	INTERNAL BERM MINIMUM TOP EL.	70.0	70.0
L	HIGH LEVEL OUTLET PIPE DIAMETER (IN.)	TBD	TBD
M	HIGH LEVEL OUTLET PIPE INVERT EL.	TBD	TBD
N	EMERGENCY SPILLWAY CHANNEL EL.	TBD	TBD
O	CONTAINMENT BERM MINIMUM TOP EL.	70.0 (MIN)	70.0 (MIN)
P	STORM DRAIN OUTLET PIPE DIAMETER	12"	12"

NOTE:
TABLE INCOMPLETE FOR
PRELIMINARY SUBMISSION

USE THIS SCHEDULE
FOR DETAIL A

D SCHEDULE A SUBSURFACE GRAVEL WETLANDS
N.T.S.



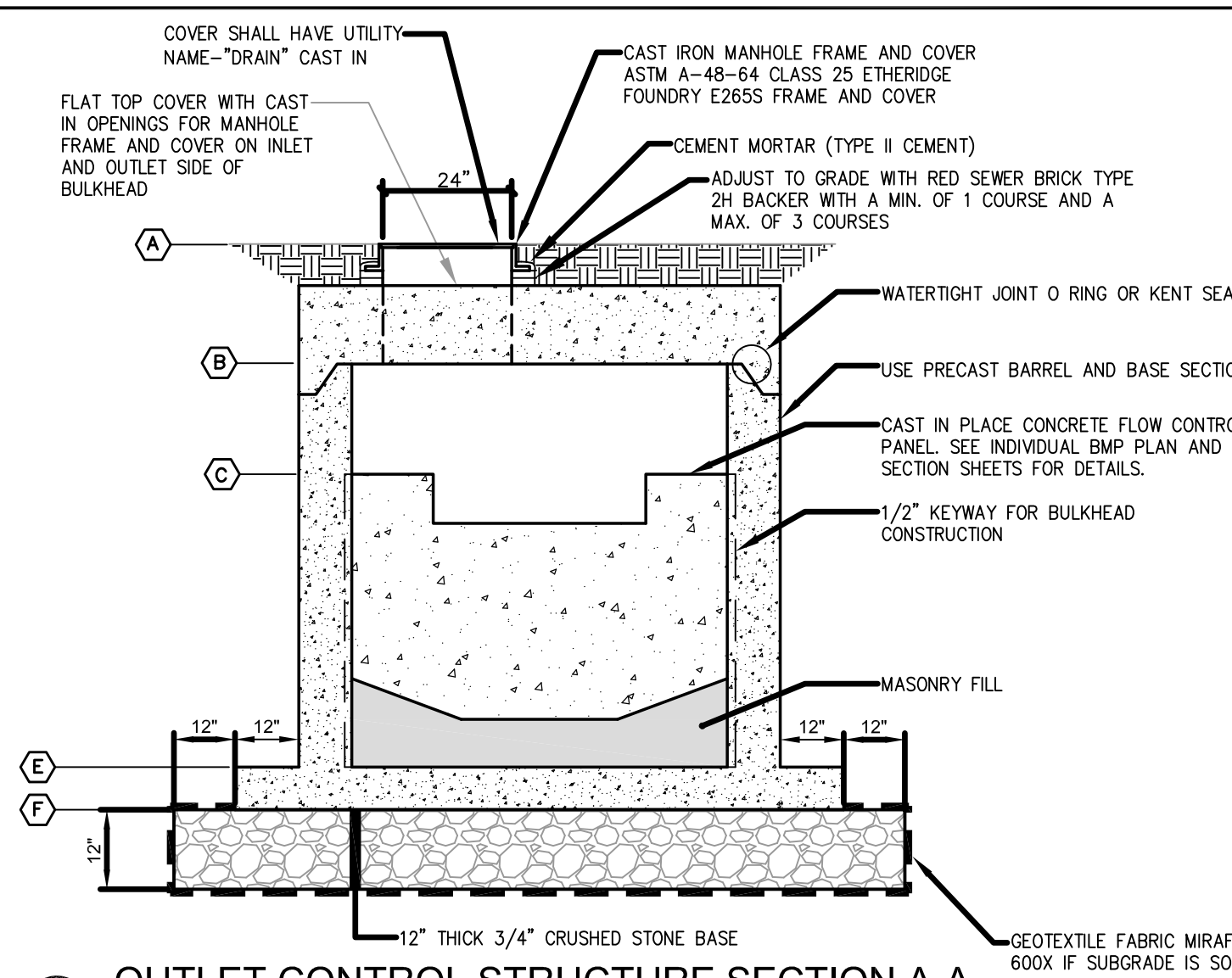
F OUTLET CONTROL STRUCTURE PLAN VIEW
N.T.S. SEE SCHEDULE B

SCHEDULE B OUTLET CONTROL STRUCTURE		
ITEM DESCRIPTION	DIMENSION/ELEVATION	
	GRAVEL WETLAND #1	GRAVEL WETLAND #2
A	TOP OF STRUCTURE	-
B	UNDERSIDE TOP SLAB	-
C	TOP CONCRETE BULKHEAD	-
D	NOT USED	---
E	BOTTOM OF SUMP	-
F	BOTTOM OF STRUCTURE	-
G	INLET PIPE DIAMETER	-
H	INVERT IN (UD)	-
I	INLET PIPE DIAMETER	-
J	INVERT IN	-
K	INVERT OUT	-
L	OUTLET PIPE DIAMETER	-

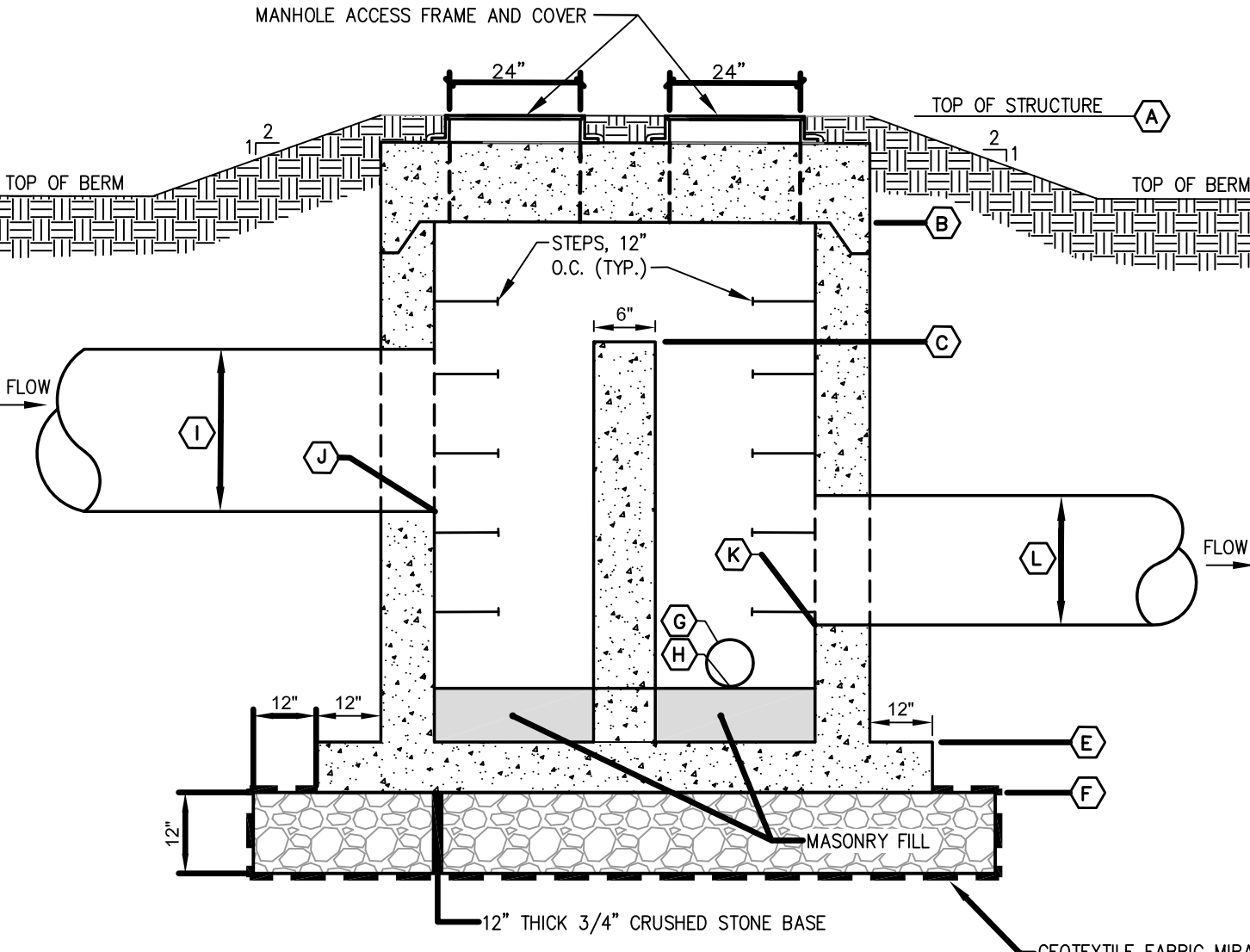
NOTE:
TABLE INCOMPLETE FOR
PRELIMINARY SUBMISSION

USE THIS SCHEDULE
FOR DETAILS F, G, H

E SCHEDULE B OUTLET CONTROL STRUCTURE
N.T.S.



G OUTLET CONTROL STRUCTURE SECTION A-A
N.T.S. SEE SCHEDULE B



H OUTLET CONTROL STRUCTURE SECTION B-B
N.T.S. SEE SCHEDULE B

B VACANT
N.T.S.

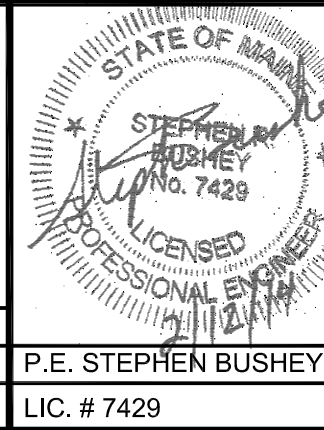
C VACANT
N.T.S.

- VACANT
N.T.S.

NOTE
GRAVEL WETLAND DETAILS TO BE COMPLETED
PRIOR TO FINAL PLAN SUBMISSION.

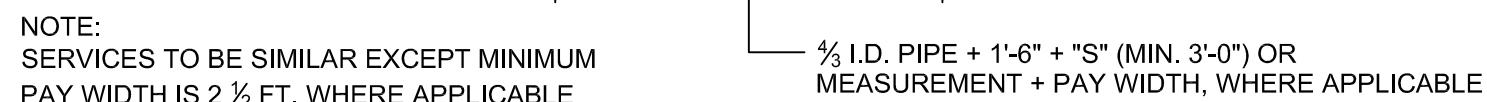
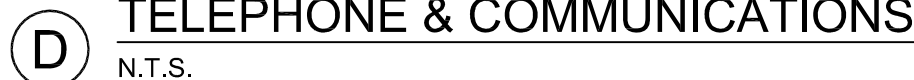
PRELIMINARY - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION
1	02.10.14	SUBMITTED TO CITY OF PORTLAND
		REVISIONS



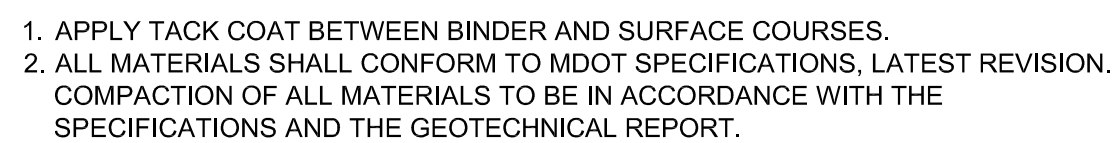
PROJECT	PH WARREN AVENUE, LLC COMMERCIAL SITE 421 WARREN AVENUE
SHEET TITLE	DETAILS
CLIENT	PH WARREN AVENUE, LLC C/O PETER HOLMES 12 WILLOW LANE SCARBOROUGH, ME 04074

ENGINEERS	FAY, SPOFFORD & THORNDIKE, INC.
ENGINEERS - PLANNERS - SCIENTISTS	778 MAIN ST, SUITE 8, SOUTH PORTLAND, ME 04106
DRAWN: CMW	DATE: NOVEMBER 2013
DESIGNED: SRB	SCALE: AS NOTED
CHECKED: SRB	JOB NO. SP-M104
FILE NAME: SP-M104-DET	
SHEET	C-4.3

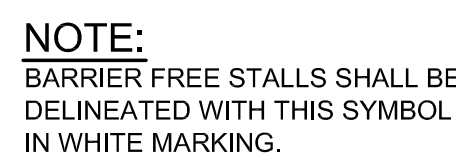


NOTE:
BRACING AND SHEETING OR OTHER TRENCH PROTECTION TO BE PROVIDED TO MEET APPLICABLE STATE AND O.S.H.A. SAFETY STANDARDS. ALL SUCH TRENCH PROTECTION TO BE THE RESPONSIBILITY OF THE CONTRACTOR.

G TYPICAL TRENCH DETAIL
N.T.S.



(C) BITUMINOUS CONCRETE PAVEMENT SECTION
N.T.S.



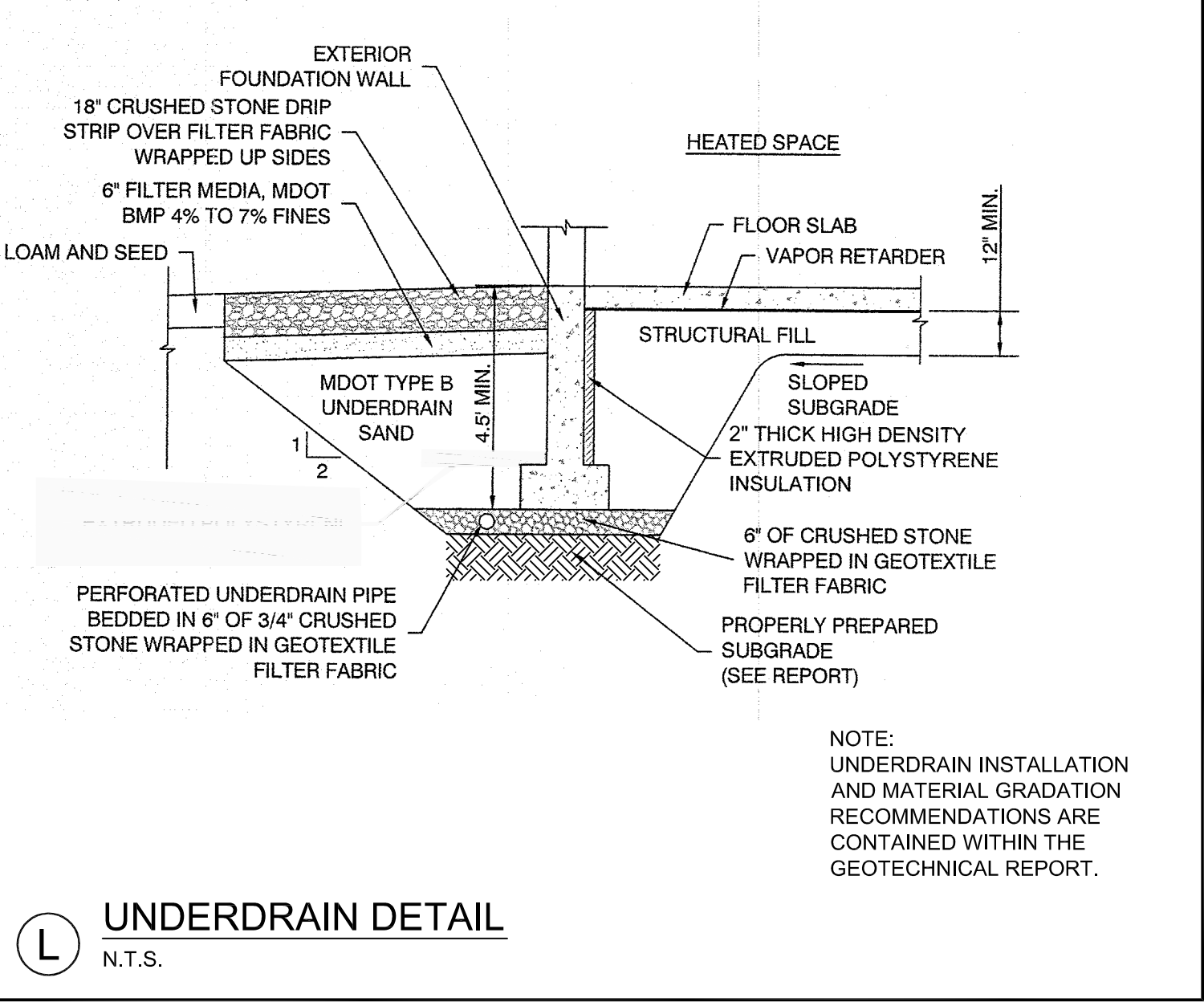
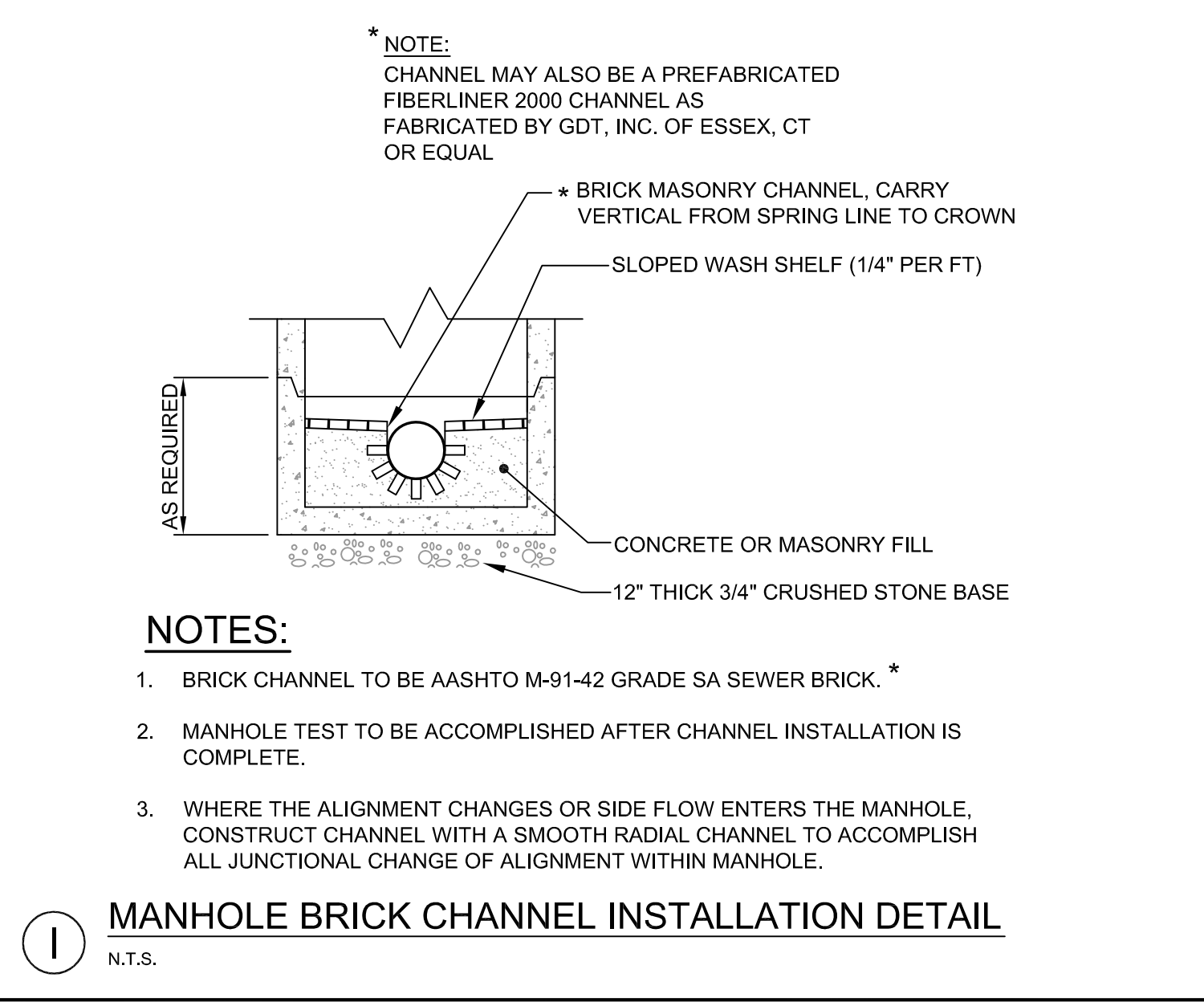
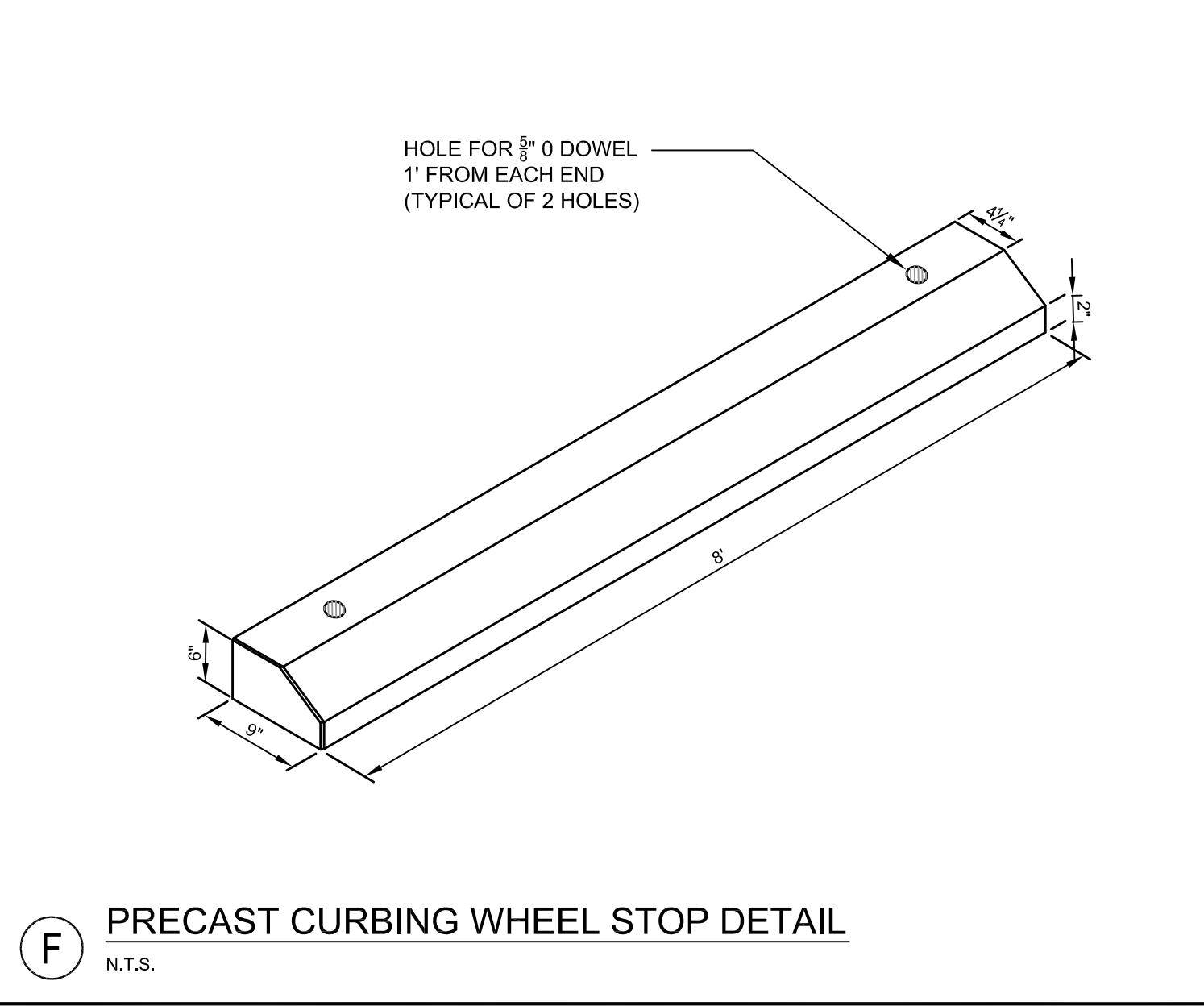
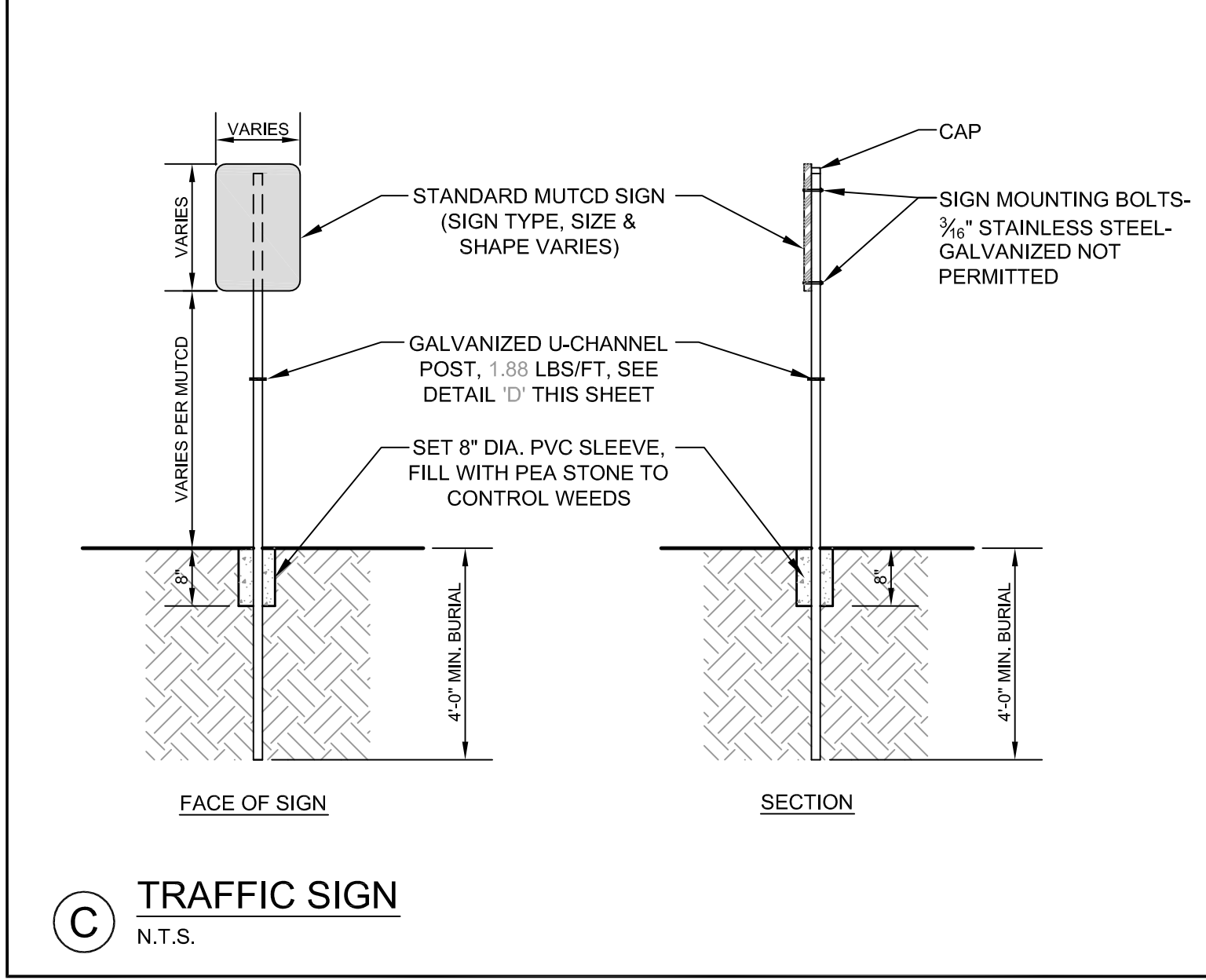
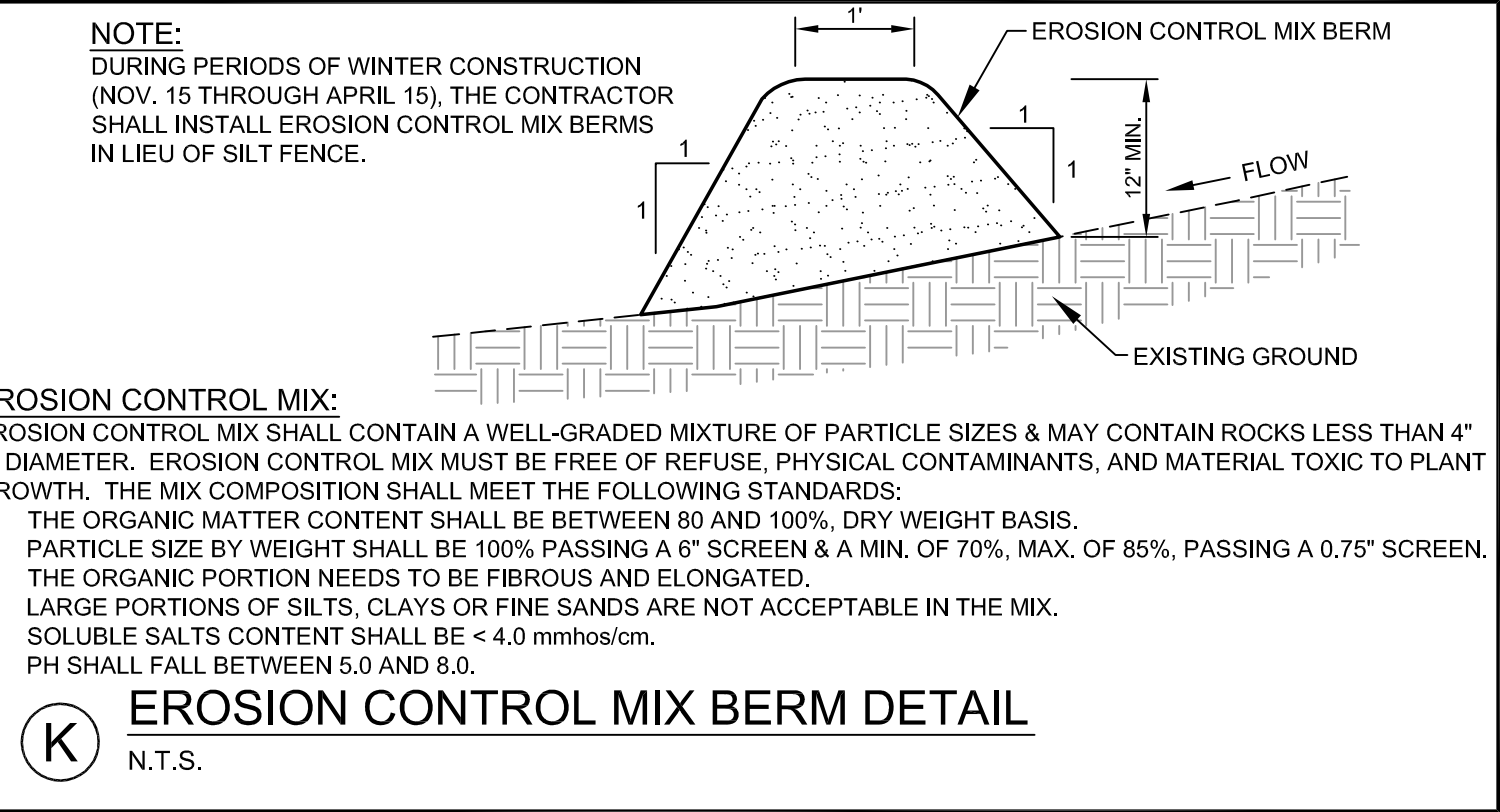
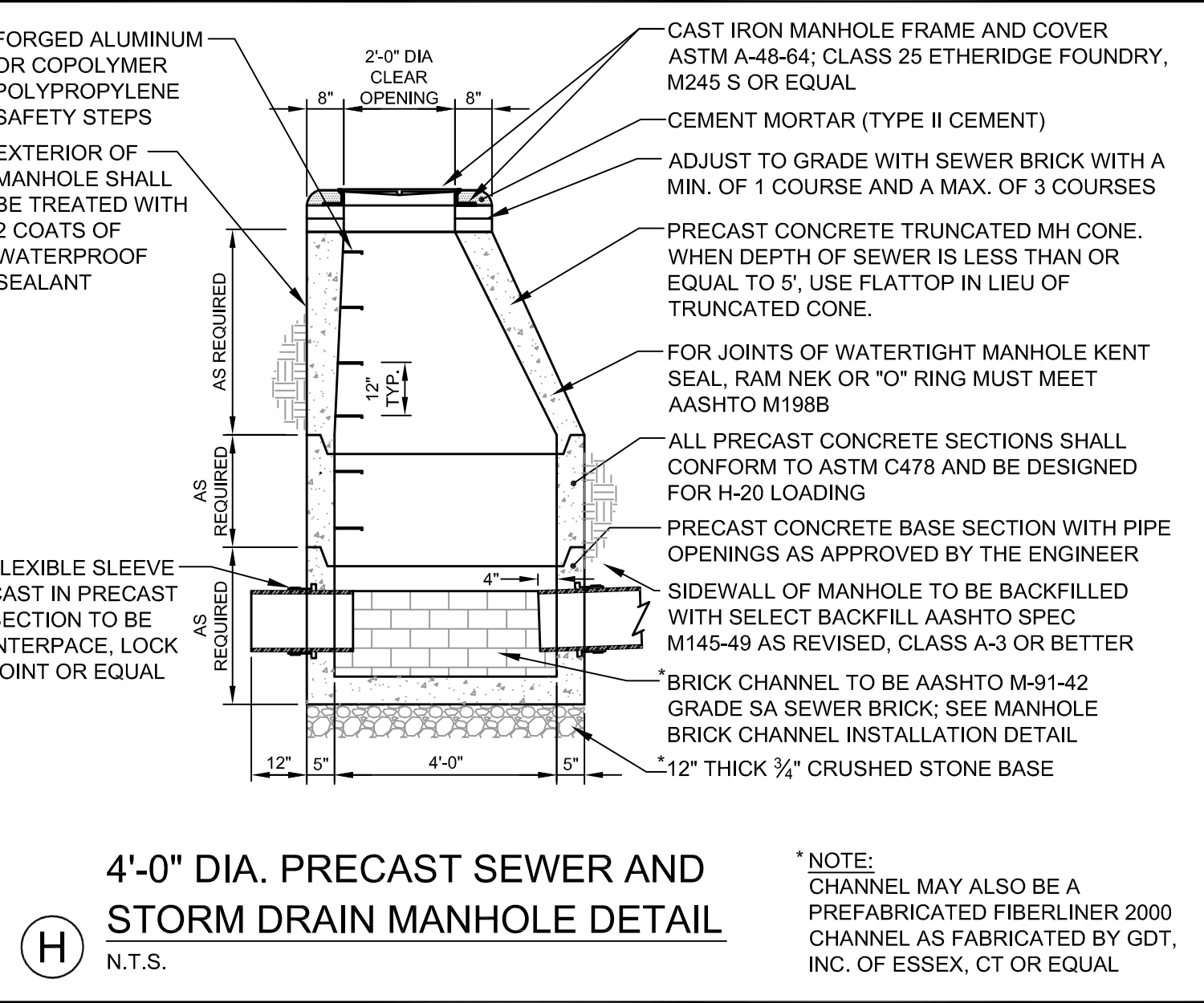
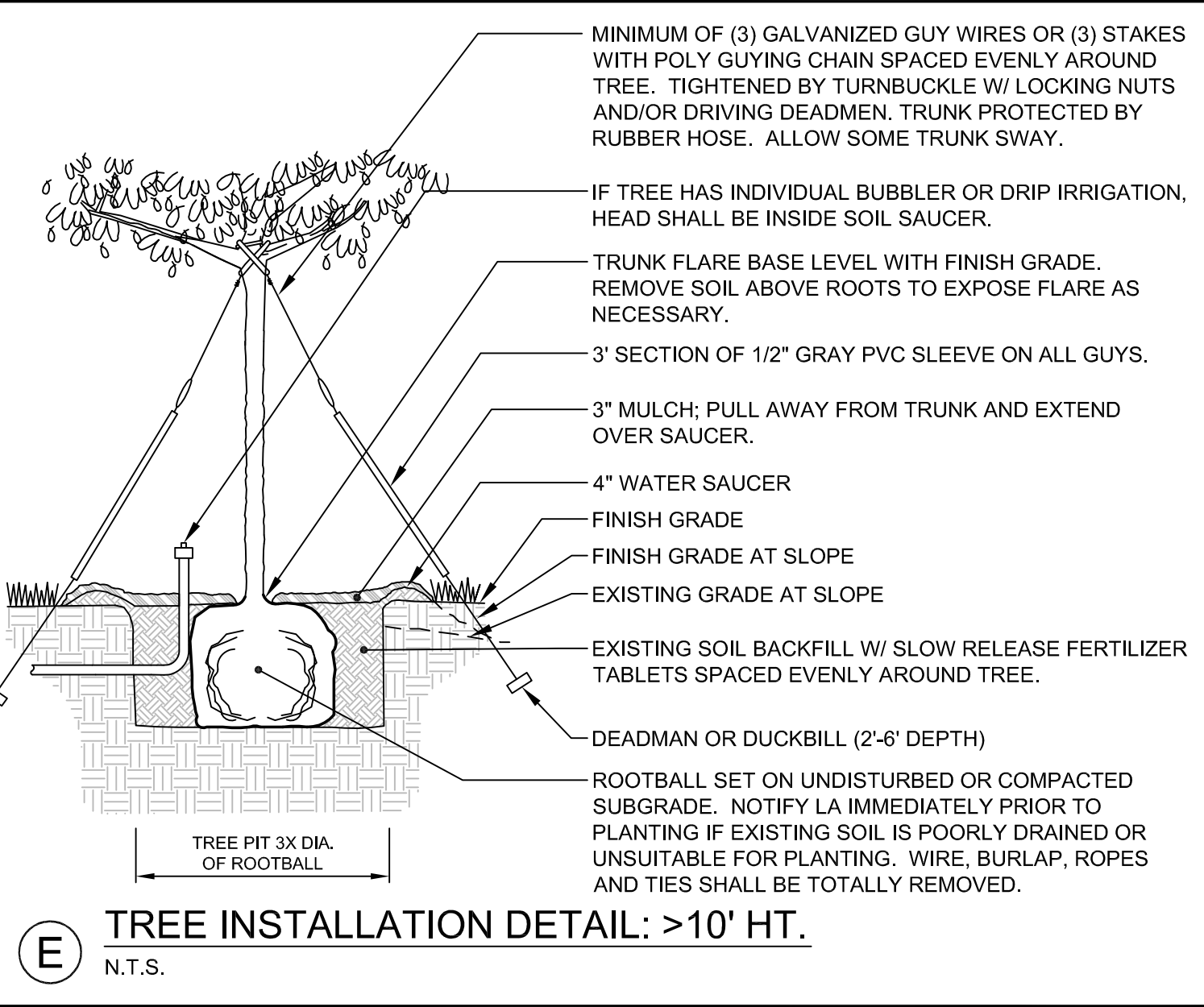
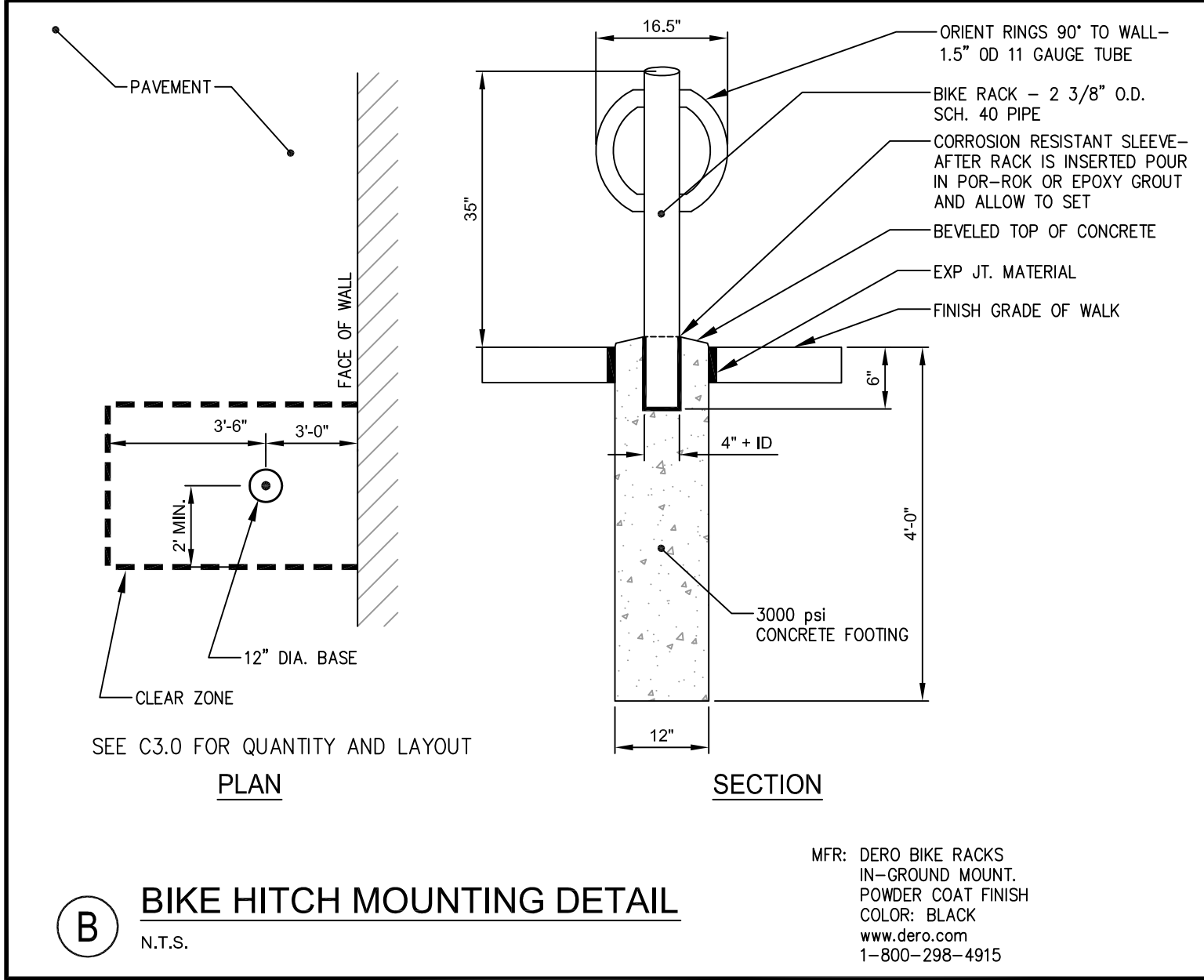
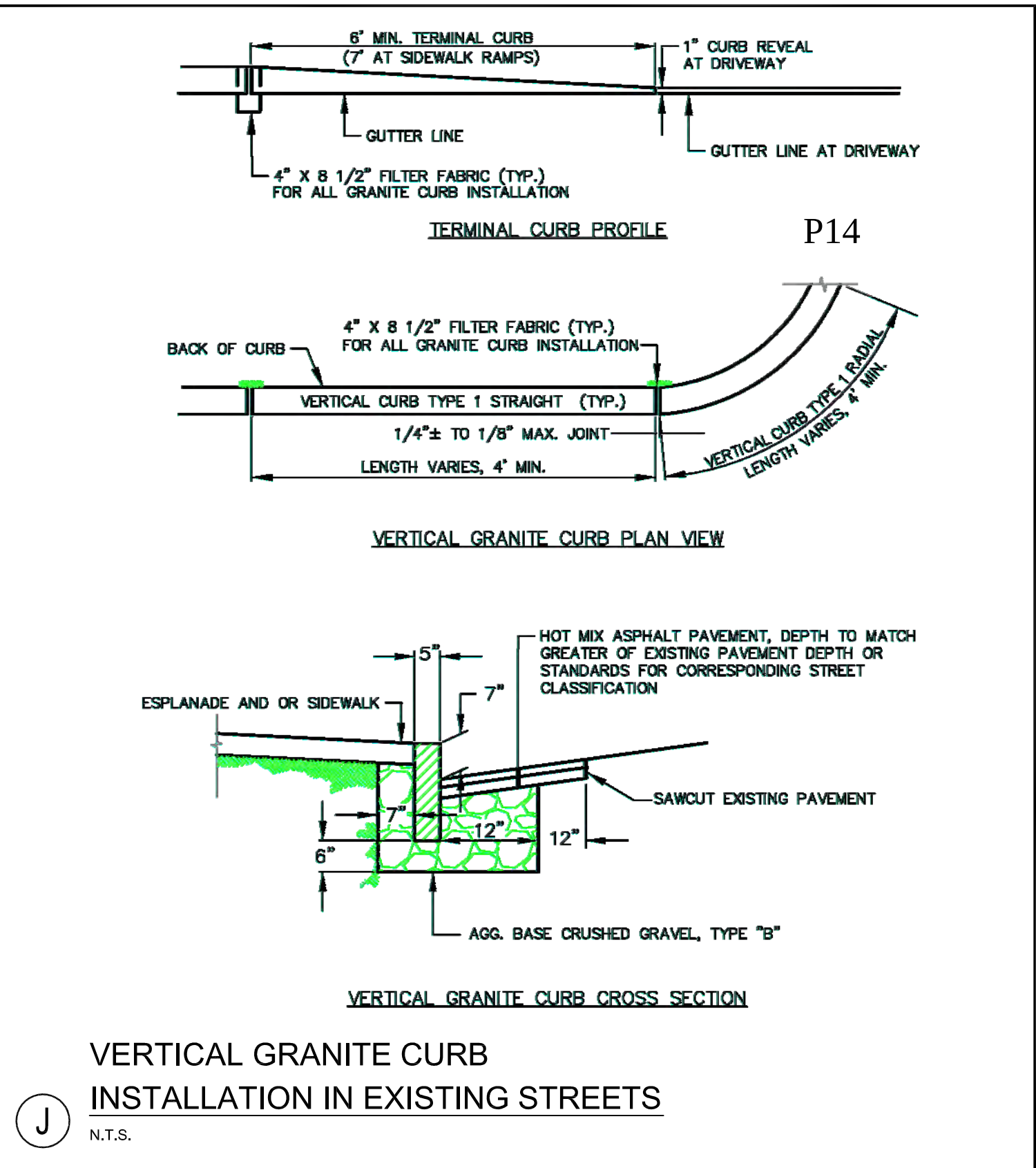
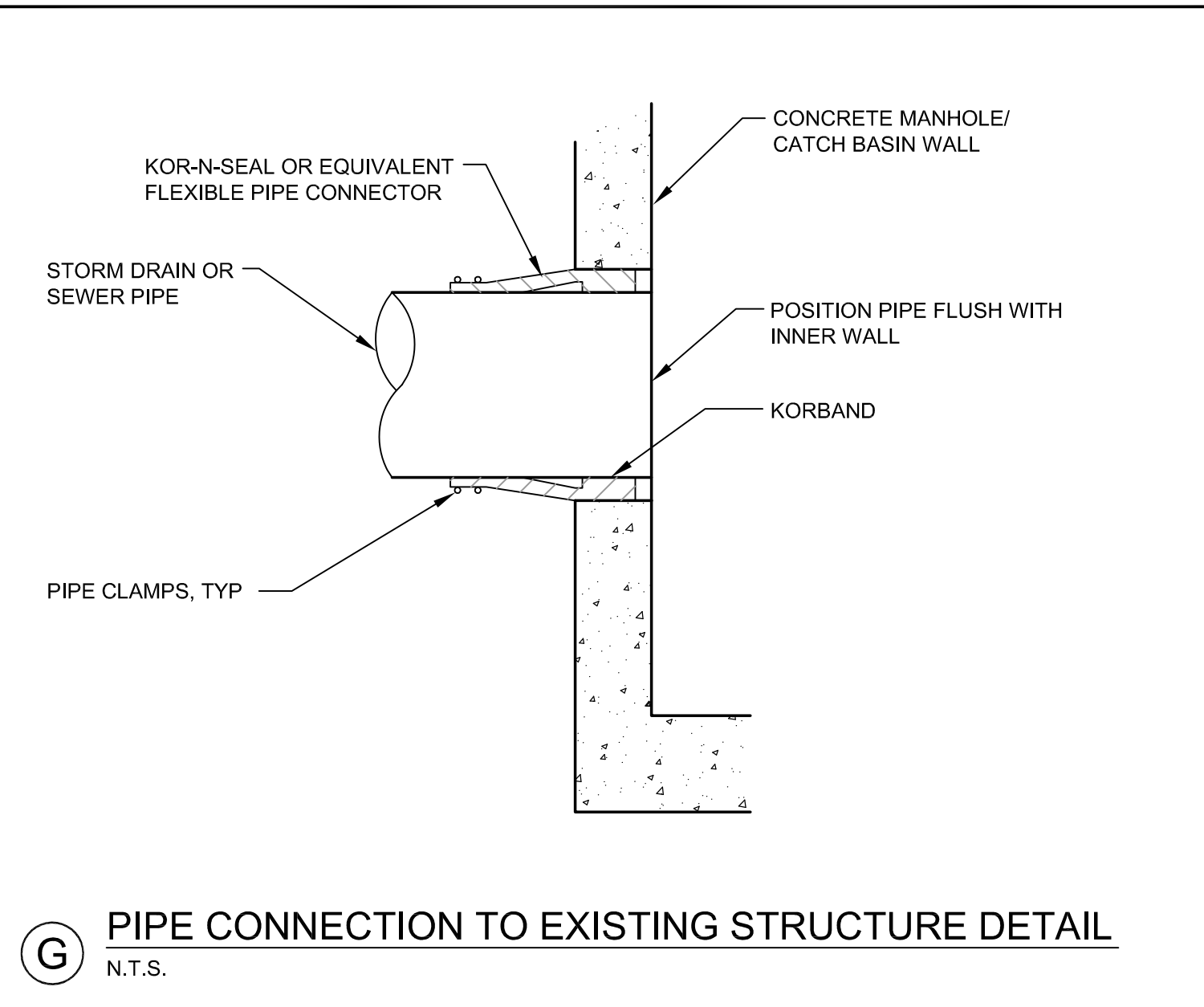
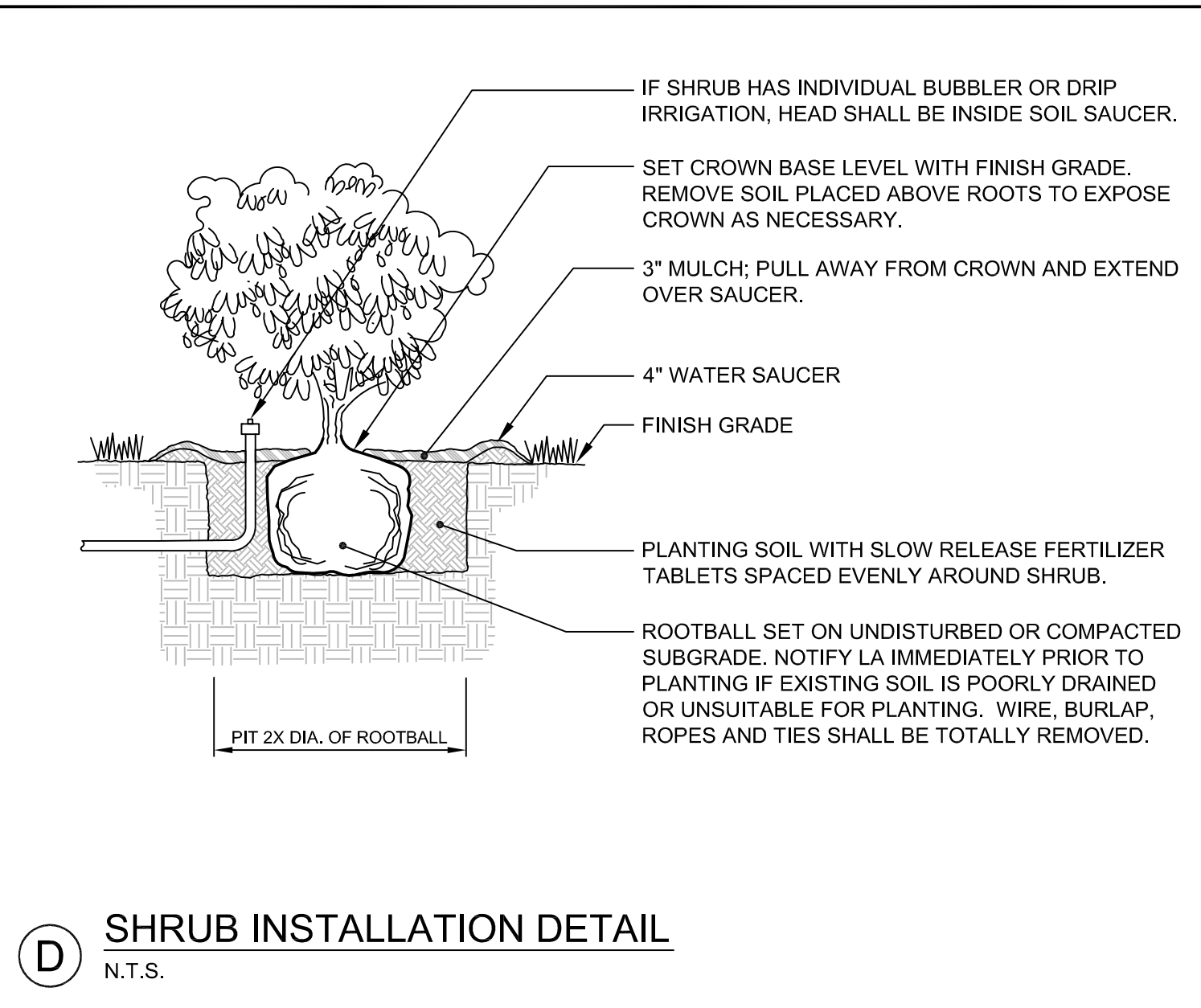
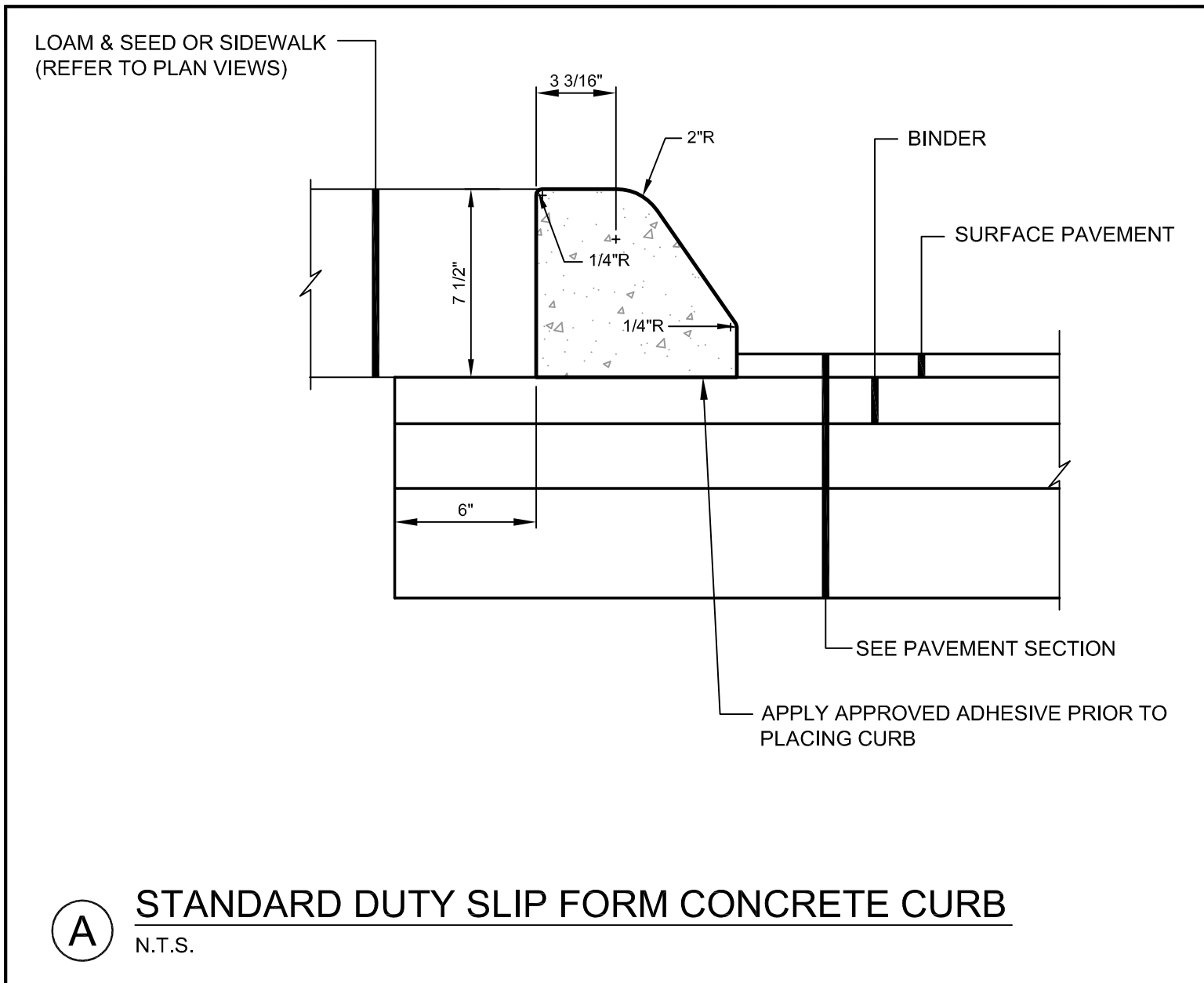
(F) INTERNATIONAL BARRIER FREE SYMBOL
N.T.S.



(H) STANDARD PARKING STALL STRIPING
N.T.S.



PRELIMINARY - NOT FOR CONSTRUCTION



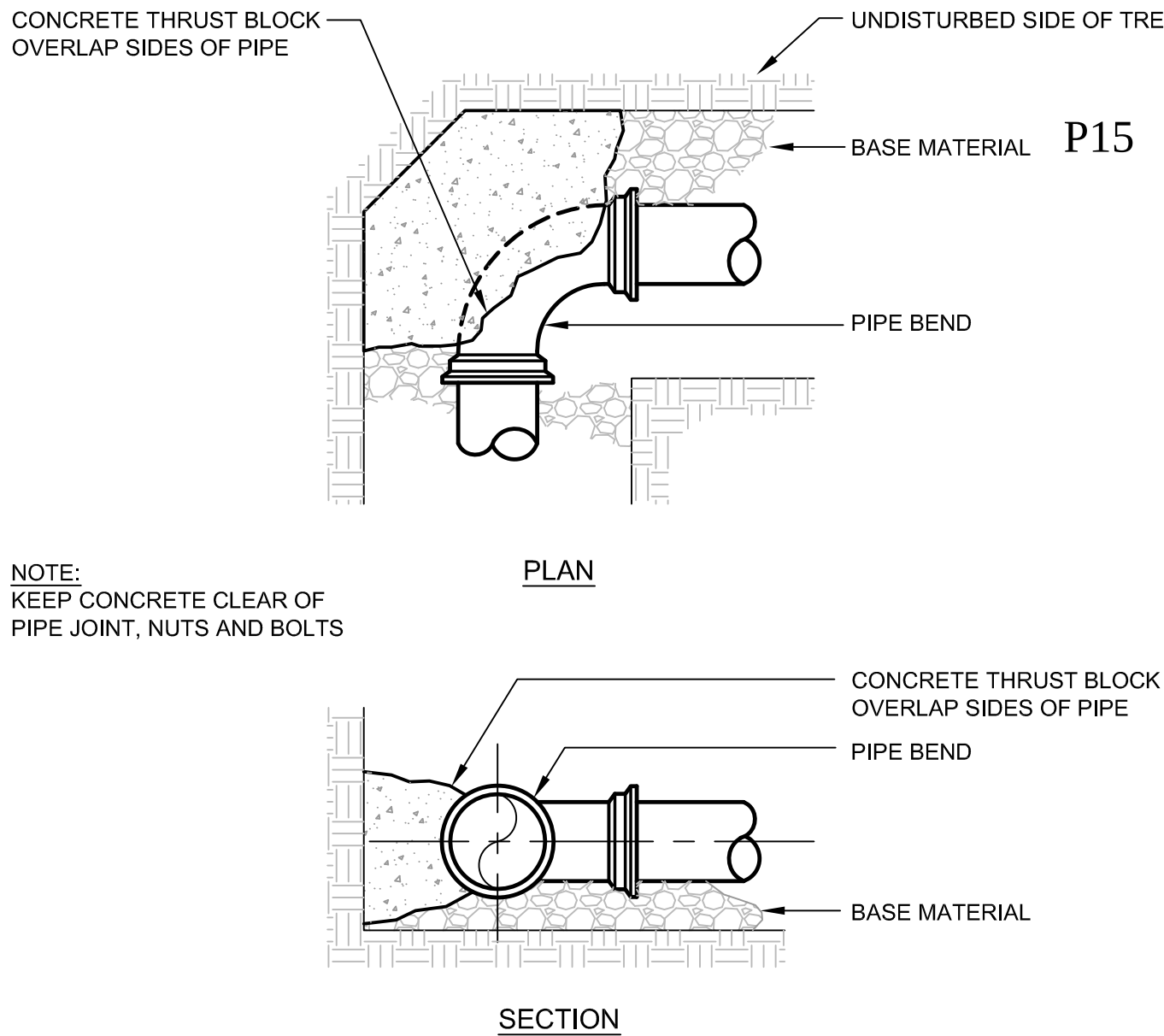
PRELIMINARY - NOT FOR CONSTRUCTION

					PROJECT PH WARREN AVENUE, LLC COMMERCIAL SITE 421 WARREN AVENUE	ENGINEERS FST FAY, SPOFFORD & THORNDIKE, INC. ENGINEERS · PLANNERS · SCIENTISTS 778 MAIN ST, SUITE 8, SOUTH PORTLAND, ME 04106
1	02.10.14	SUBMITTED TO CITY OF PORTLAND			SHEET TITLE DETAILS	
REV	DATE	DESCRIPTION	P.E. STEPHEN BUSHEY LIC. # 7429		CLIENT PH WARREN AVENUE, LLC C/O PETER HOLMES 12 WILLOW LANE SCARBOROUGH, ME 04074	DRAWN: CMW DESIGNED: SRB CHECKED: SRB FILE NAME: SP-M104-DET SHEET C-6.1
REVISIONS					DATE: NOVEMBER 2013 SCALE: AS NOTED JOB NO. SP-M104	

A VACANT
N.T.S.

D PLAN VIEW OF MINOR EXCAVATION PAVEMENT REPAIR
N.T.S.

G PLAN VIEW OF MAJOR EXCAVATION PAVEMENT REPAIR
N.T.S.



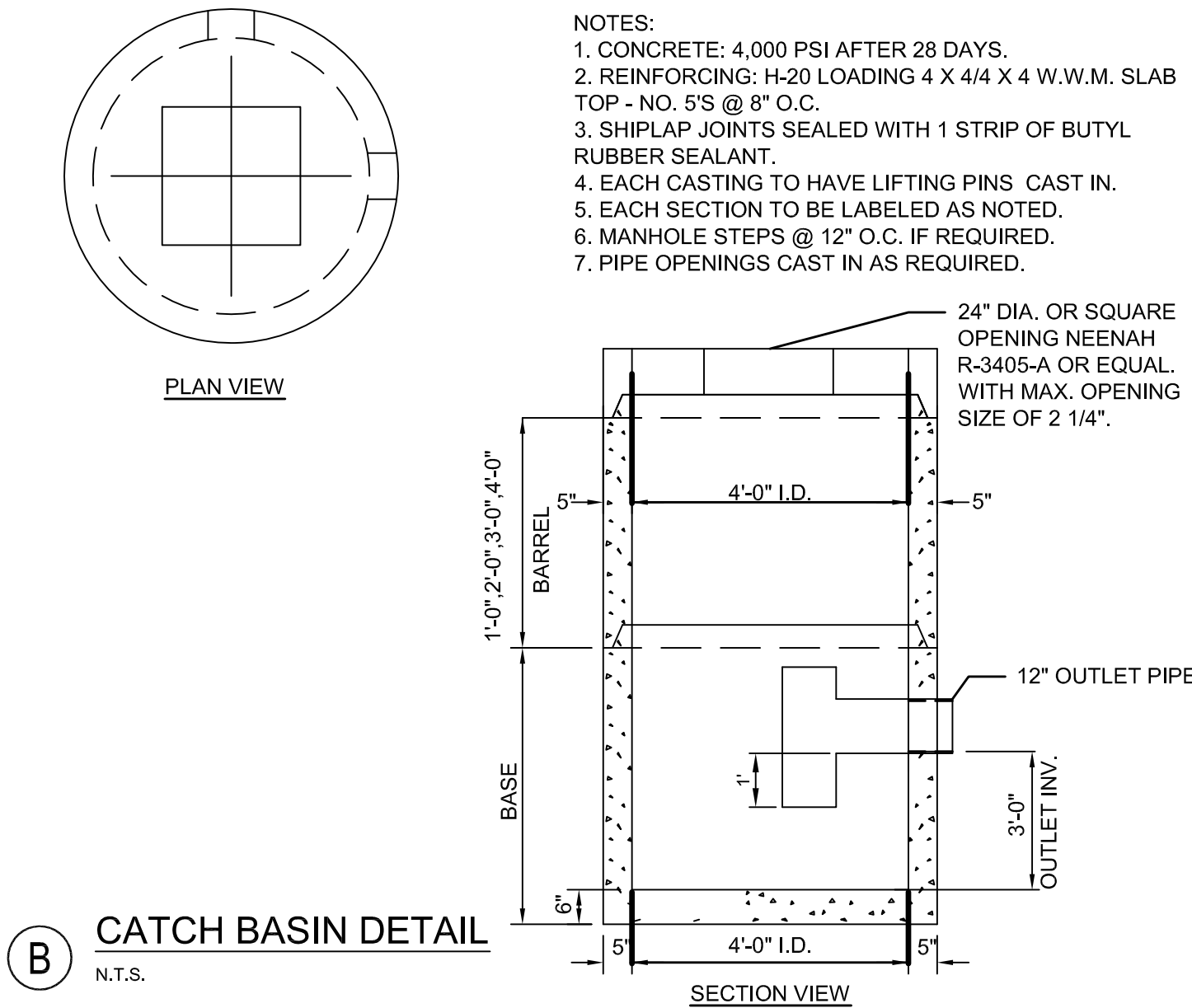
THRUST/RETAINER GLAND SCHEDULE		
¼ BEND	(90°)	USE POURED-IN-PLACE THRUST BLOCK WITH GRIPRING™ MECHANICAL JOINT RESTRAINT
⅓ BEND	(45°)	THRUST BLOCK W/ GRIPRING™
⅜ BEND	(22 ½°)	THRUST BLOCK W/ GRIPRING™
½ BEND	(11 ¼°)	THRUST BLOCK W/ GRIPRING™

THE ABOVE SCHEDULE IS SUBJECT TO THE APPROVAL OF THE ON-SITE INSPECTOR DUE TO SOILS AND WORKING PRESSURES IN THE AREA.

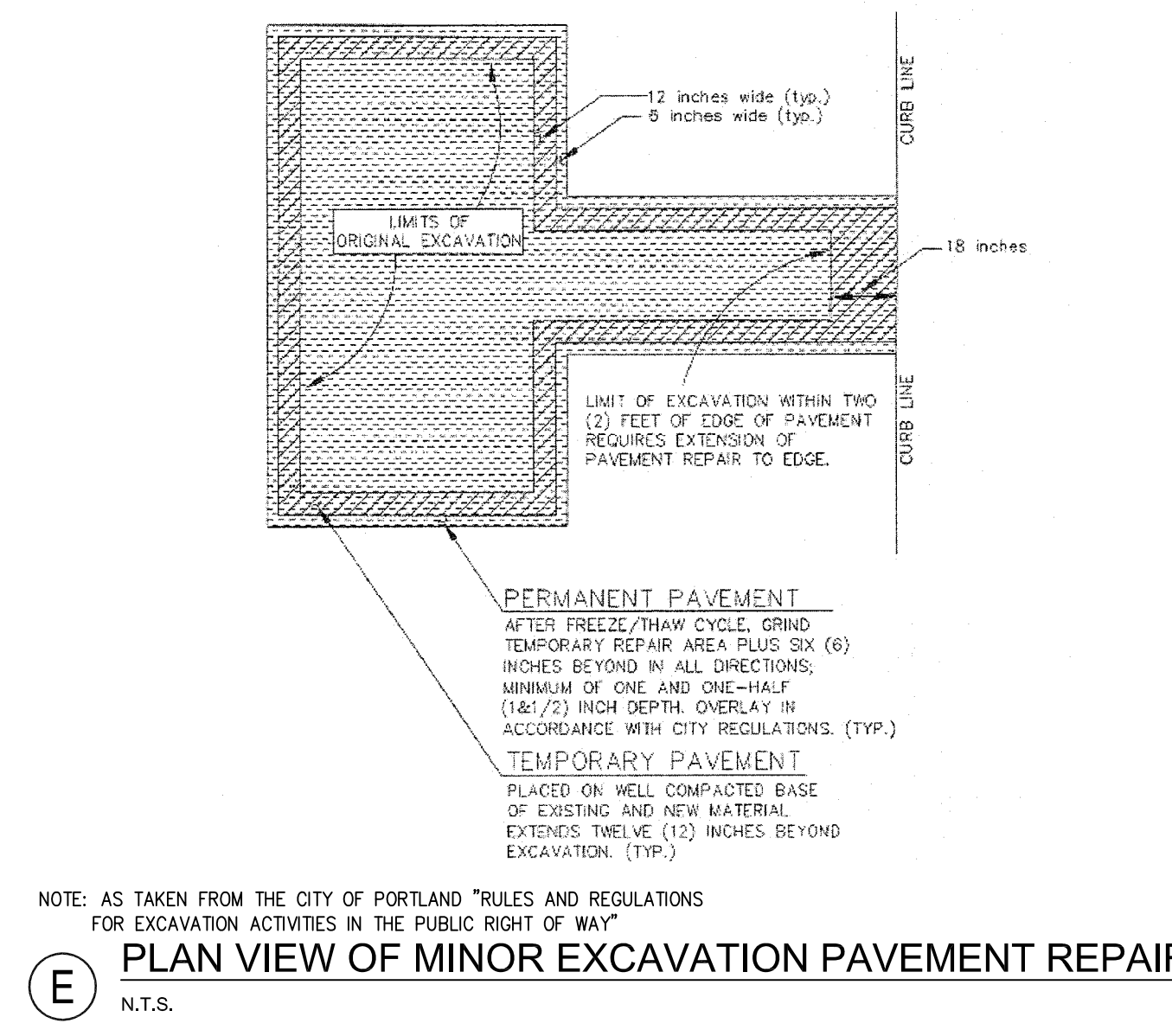
NOTES:

1. THE PORTLAND WATER DISTRICT MAY HAVE INSPECTION FEES AND REQUIRE OBSERVATION OF ALL PIPING INSTALLATION BEFORE BURIAL. REFER TO SPECIFICATIONS.
2. FOR WATER MAIN LAYOUT SEE DRAWING C-3.00
3. REFER TO SPECIFICATIONS FOR TESTING AND CHLORINATION REQUIREMENTS.
4. ALL HYDRANTS AND VALVES TO BE EPOXY COATED, NUTS & BOLTS TO BE STAINLESS STEEL.
5. SERVICE RODS FOR DOMESTIC SERVICE OR AIR VALVES TO BE STAINLESS STEEL.

J TYPICAL THRUST BLOCK PLACEMENT ON BENDS DETAIL
N.T.S.



B CATCH BASIN DETAIL
N.T.S.



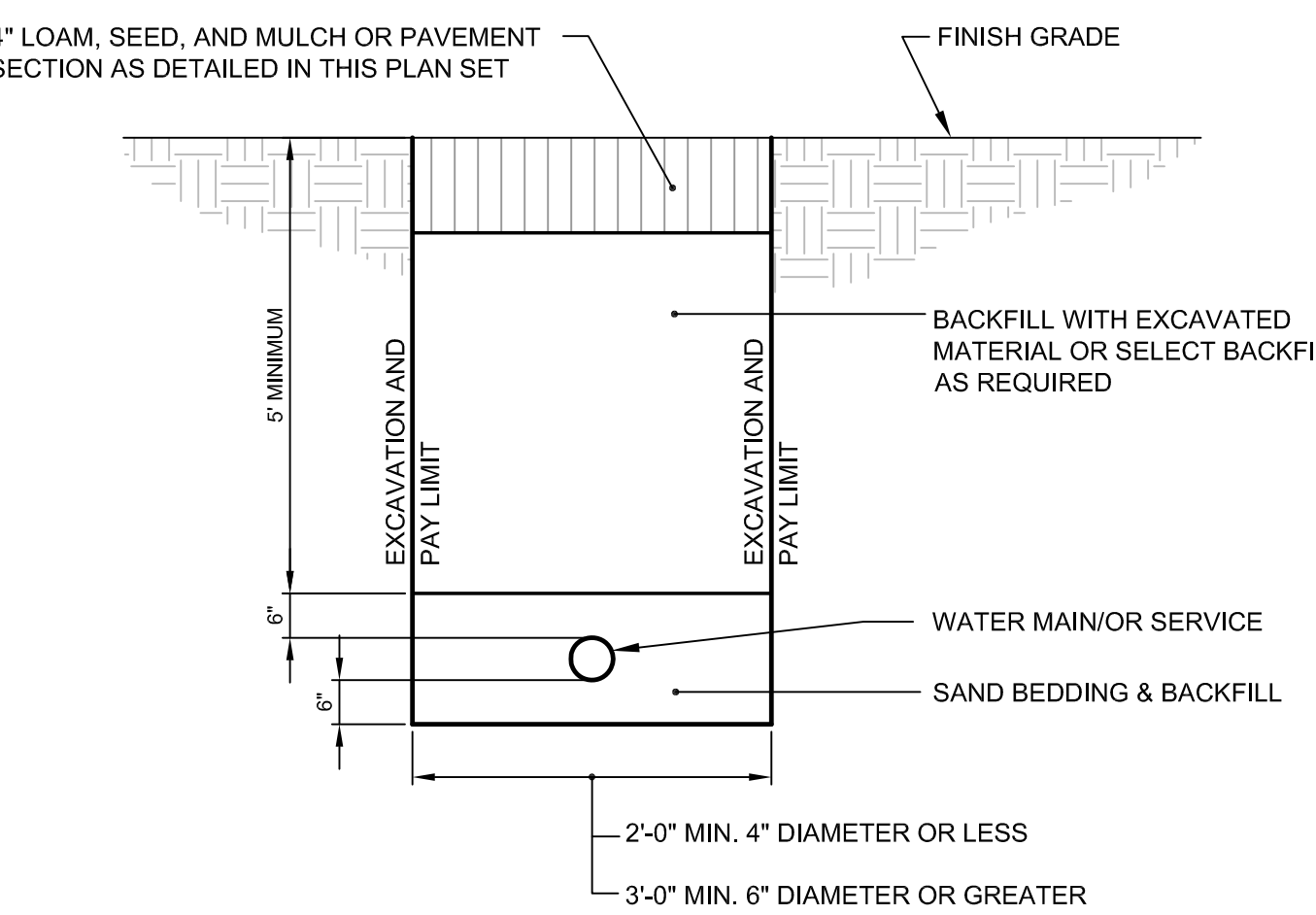
E PLAN VIEW OF MINOR EXCAVATION PAVEMENT REPAIR
N.T.S.

1. INSTALL POLY BARRIER BETWEEN PIPE AND ALL THRUST BLOCKS.
2. ANY MODIFICATION TO THRUST BLOCK SIZING OR PIPE RESTRAINT REVISIONS SHALL BE APPROVED IN WRITING BY THE ENGINEER PRIOR TO IMPLEMENTATION IN THE FIELD.
3. ANY WORK RELATING TO WATER PIPING OR DETAILS SHALL BE IN ACCORDANCE WITH THE PORTLAND WATER DISTRICT SPECIFICATIONS.
4. ALL RESTRAINED JOINTS MUST HAVE GRIPRING™.

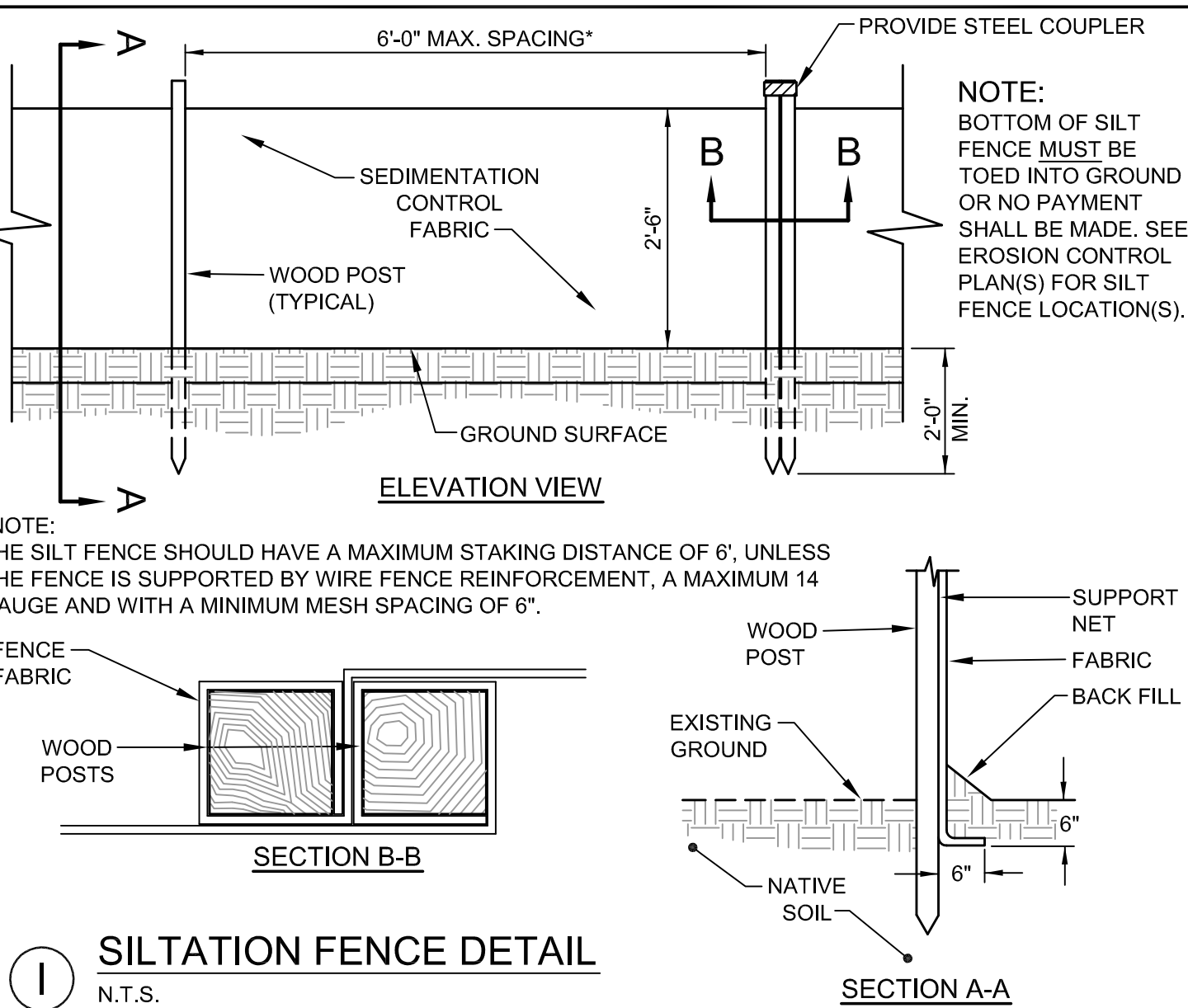
BEARING SURFACE REQUIRED IN SQUARE FEET

PIPE SIZE	¼ BEND	⅓ BEND	⅜ BEND	½ BEND	TEES/CAPS
6" / 8"	5.0	5.0	5.0	6.5	5.0
12"	11.5	11.5	11.5	20.0	22.0

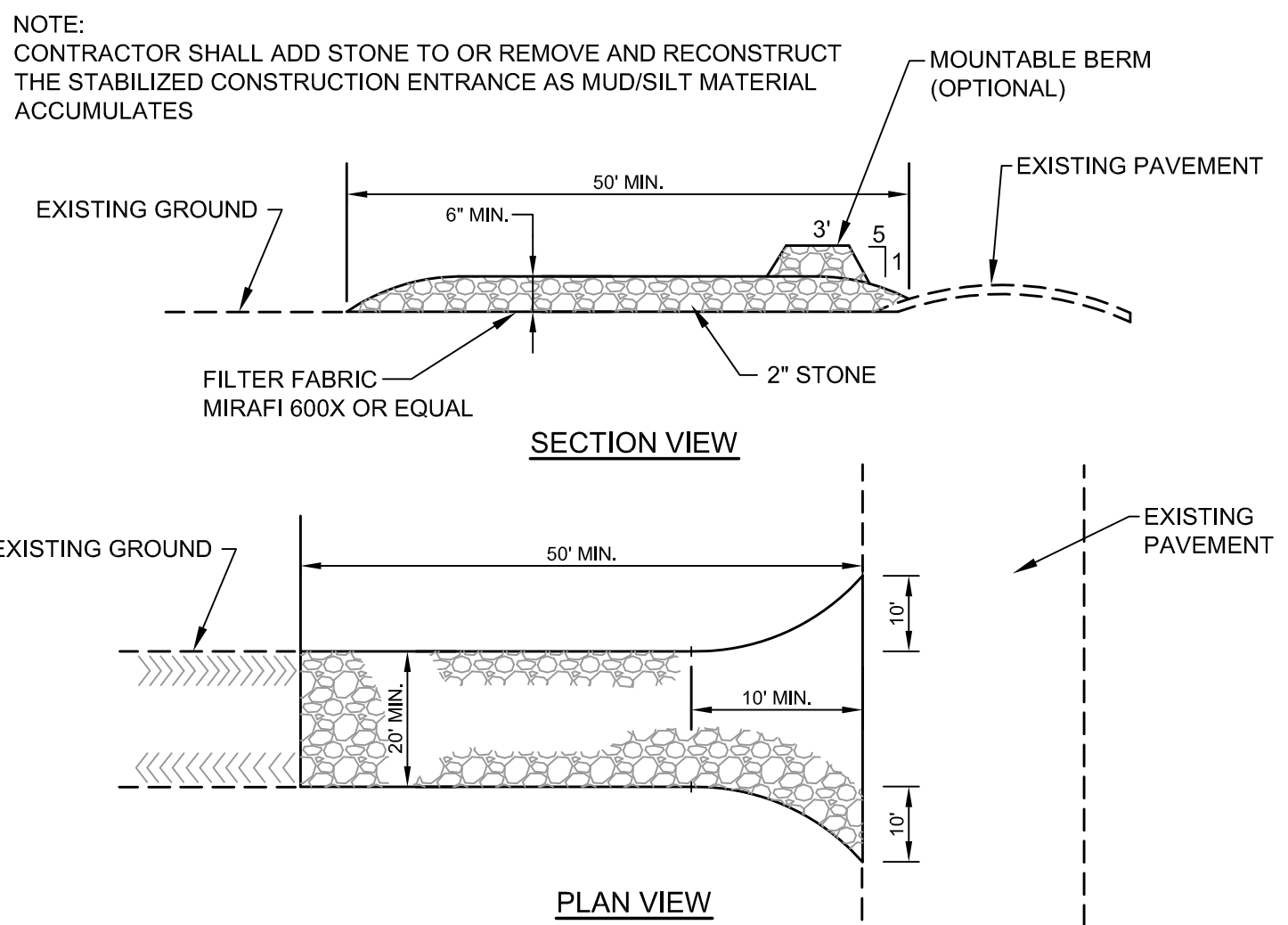
H THRUST BLOCK NOTES
N.T.S.



SEE NOTE 3 IN THRUST BLOCK NOTES DETAIL **H**
F WATER SERVICE TRENCH SECTION
N.T.S.



I SILTATION FENCE DETAIL
N.T.S.



K STABILIZED CONSTRUCTION ENTRANCE DETAIL
N.T.S.

PRELIMINARY - NOT FOR CONSTRUCTION

PRE-DEVELOPMENT SUMMARY			
SUBCATCHMENT ID	AREA (ACRES)	TC (MIN)	RCN
1	5.720	56.70	81
2	0.473	6	80
3A	0.500	6	93
3B	0.099	6	98
3C	0.370	6	98
4	0.795	6	87

NOTE
ONLY AREA IMPACTS POI 1 & POI 2 WERE
USED FOR WATERSHED ANALYSIS.

WATERSHED LEGEND P16

- A

B

WATERSHED BOUNDARY
- A

B

WATERSHED FLOW PATH
- 999

SUBCATCHMENT
- 999

REACH
- SF

SHEET FLOW
- SCF

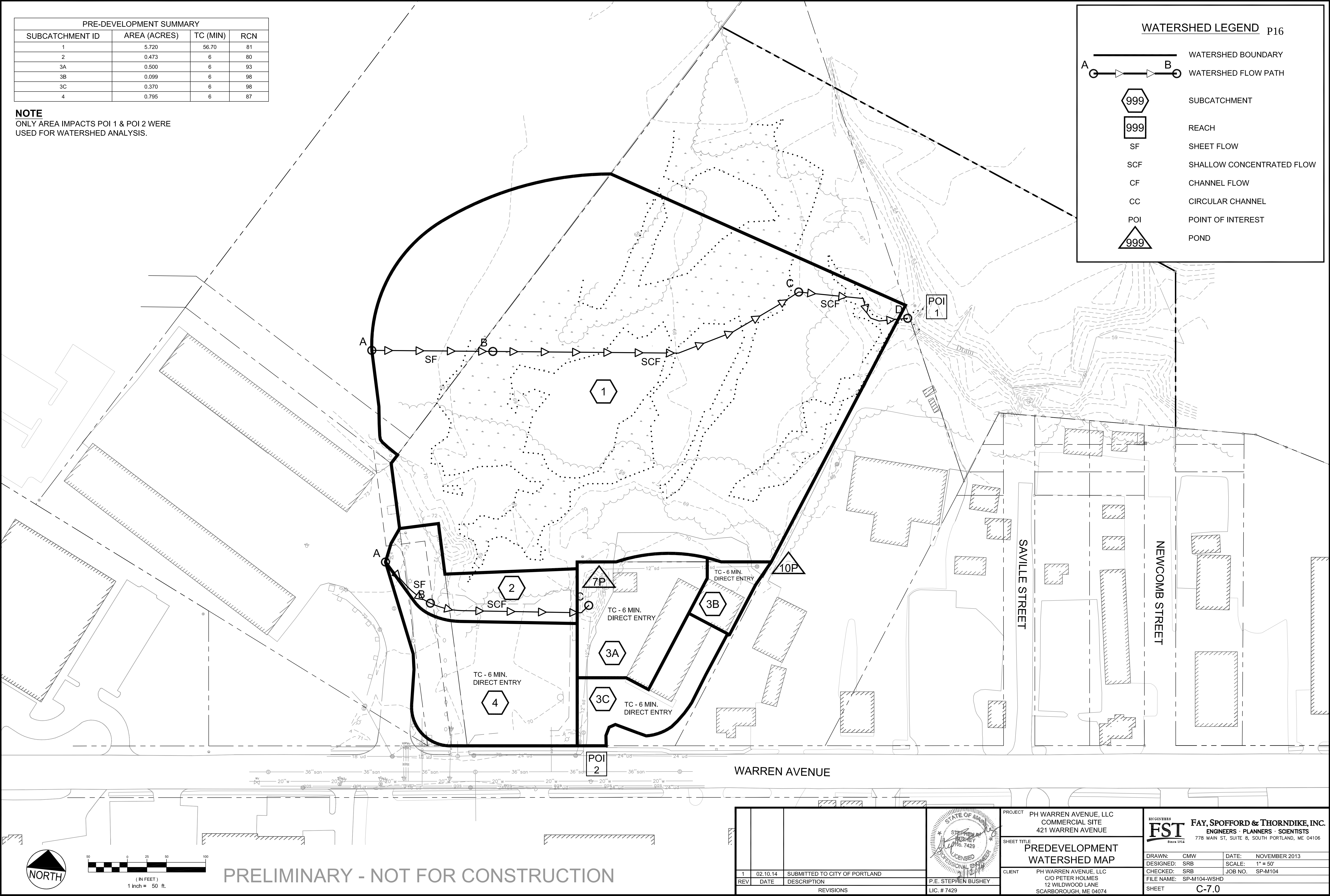
SHALLOW CONCENTRATED FLOW
- CF

CHANNEL FLOW
- CC

CIRCULAR CHANNEL
- POI

POINT OF INTEREST
- 999

POND



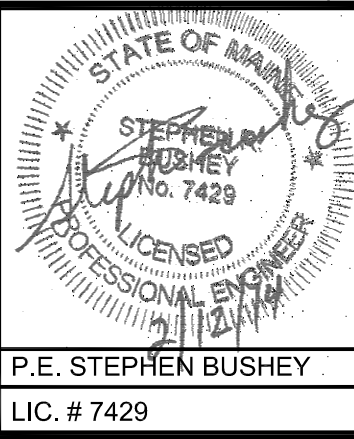
PRELIMINARY - NOT FOR CONSTRUCTION

WARREN AVENUE

SAVILLE STREET

NEWCOMB STREET

REV	DATE	DESCRIPTION	REVISIONS
1	02.10.14	SUBMITTED TO CITY OF PORTLAND	



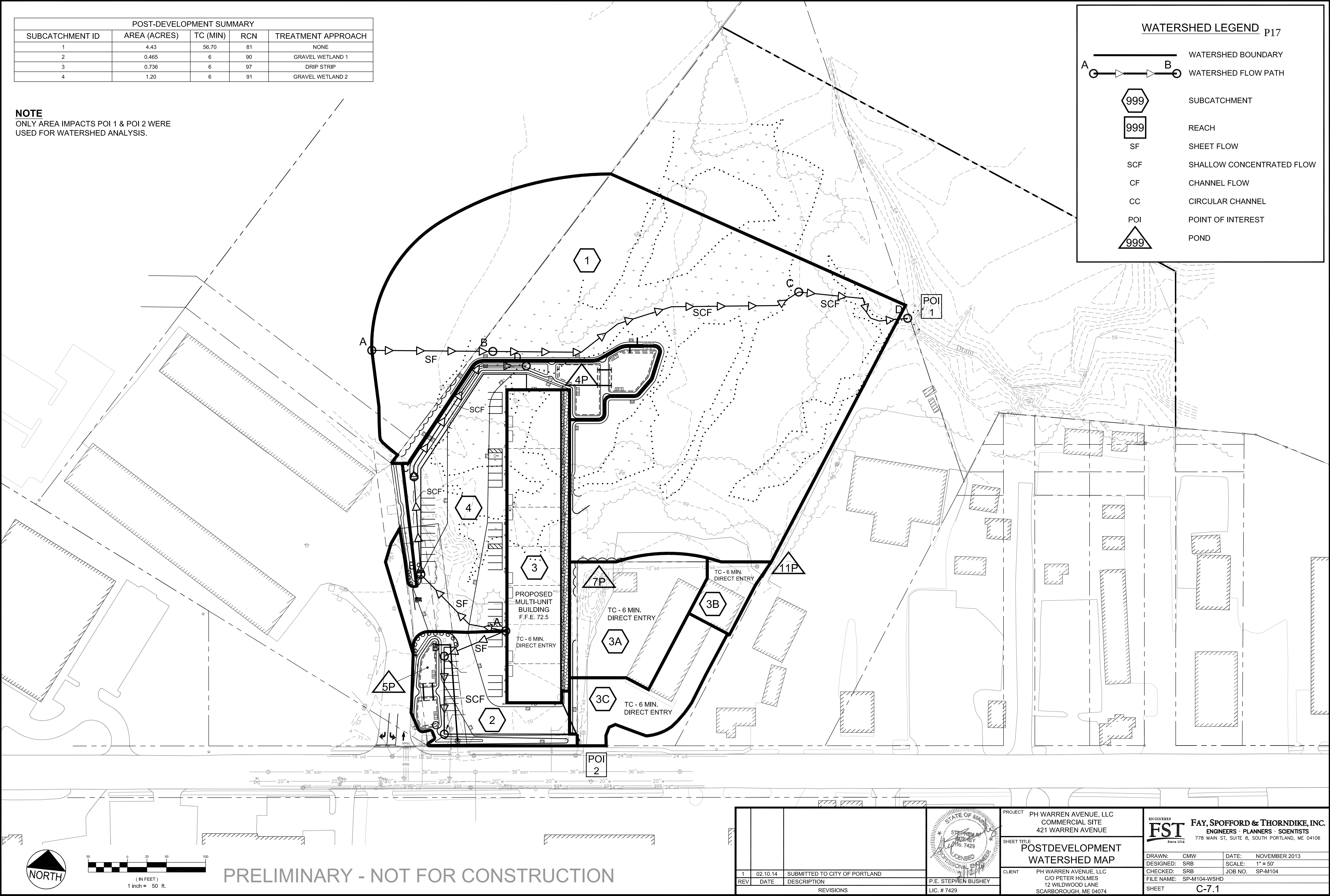
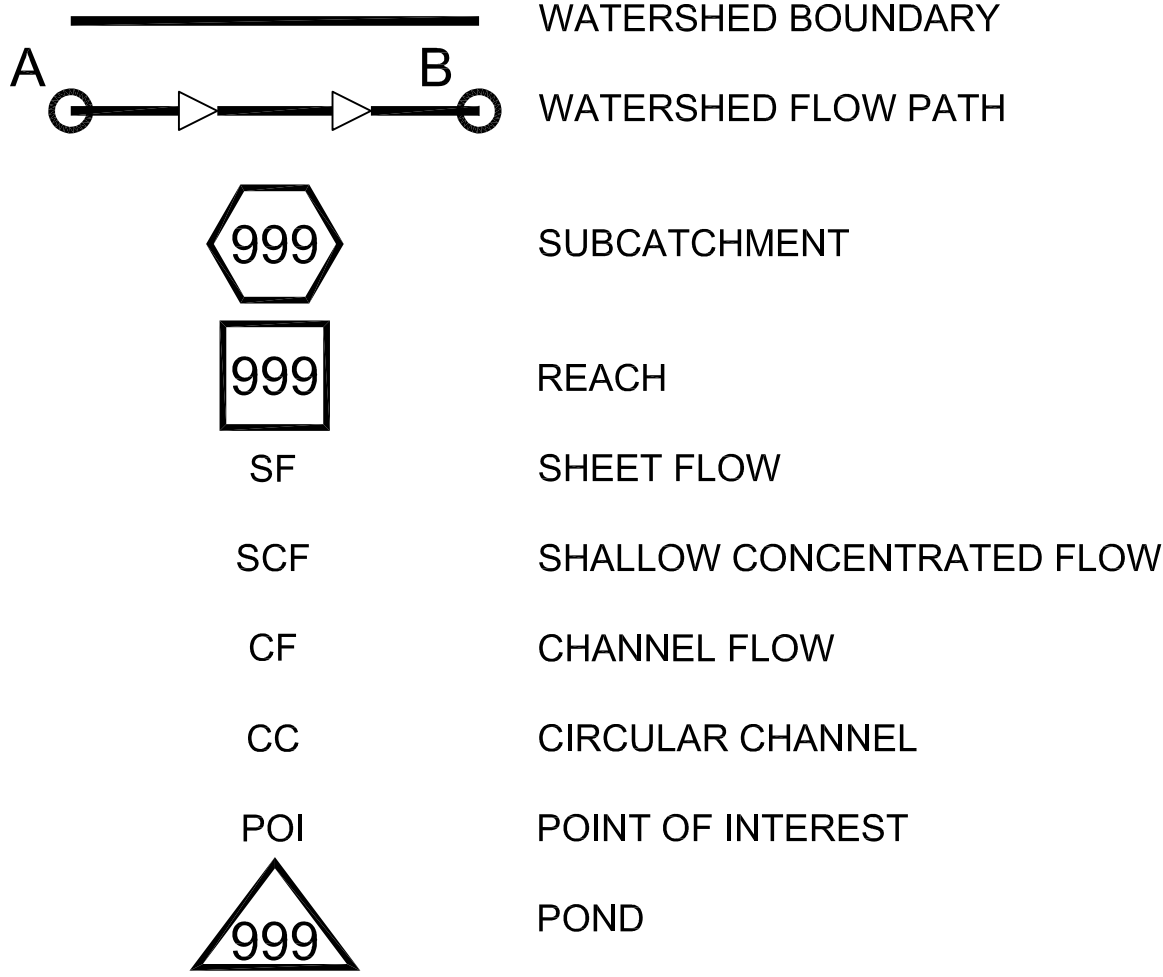
PROJECT	PH WARREN AVENUE, LLC COMMERCIAL SITE 421 WARREN AVENUE
SHEET TITLE	PREDEVELOPMENT WATERSHED MAP
CLIENT	PH WARREN AVENUE, LLC C/O PETER HOLMES 12 WILDWOOD LANE SCARBOROUGH, ME 04074

ENGINEERS FST Since 1954 FAY, SPOFFORD & THORNDIKE, INC. ENGINEERS • PLANNERS • SCIENTISTS 778 MAIN ST, SUITE 8, SOUTH PORTLAND, ME 04106	
DRAWN: CMW	DATE: NOVEMBER 2013
DESIGNED: SRB	SCALE: 1" = 50'
CHECKED: SRB	JOB NO. SP-M104
FILE NAME: SP-M104-WSHD	
SHEET	C-7.0

POST-DEVELOPMENT SUMMARY				
SUBCATCHMENT ID	AREA (ACRES)	TC (MIN)	RCN	TREATMENT APPROACH
1	4.43	56.70	81	NONE
2	0.465	6	90	GRAVEL WETLAND 1
3	0.736	6	97	DRIP STRIP
4	1.20	6	91	GRAVEL WETLAND 2

NOTE
ONLY AREA IMPACTS POI 1 & POI 2 WERE
USED FOR WATERSHED ANALYSIS.

WATERSHED LEGEND p17



PRELIMINARY - NOT FOR CONSTRUCTION

				PROJECT PH WARREN AVENUE, LLC COMMERCIAL SITE 421 WARREN AVENUE		ENGINEERS FST Since 1974 FAY, SPOFFORD & THORNDIKE, INC. ENGINEERS · PLANNERS · SCIENTISTS 778 MAIN ST, SUITE 8, SOUTH PORTLAND, ME 04106	
				SHEET TITLE POSTDEVELOPMENT WATERSHED MAP			
				CLIENT PH WARREN AVENUE, LLC C/O PETER HOLMES 12 WILDWOOD LANE SCARBOROUGH, ME 04074			
				REVISIONS P.E. STEPHEN BUSHEY LIC. # 7429			
1	02.10.14	SUBMITTED TO CITY OF PORTLAND					
REV	DATE	DESCRIPTION					

