NOTES:

1. Geopier element drawings are based on structural drawing S1.1, Level 1 Foundation Plan, prepared by Veitas and Veitas Engineers, Inc., dated November 27, 2018. Loads received via emails on November 16 and 28, 2018. In the event the structural loads vary, the Designer shall be notified immediately.

2. The Geopier element ground improvement design is based on the geotechnical information contained in the Final Geotechnical Report prepared by Summit Geoengineering Services, Inc., dated February 6, 2018. The Designer has relied on this information and has no reason to suspect any of the information in the report is in error and is not responsible for errors or omissions in the report that may affect the parameter values in our design. If the subsurface or site conditions differ from those utilized in the design, The Designer shall be notified immediately.

3. Refer to the Design Submittal booklet for subsurface exploration logs, locations, and Geopier element shaft lengths.

4. Foundation information provided on this plan is for reference only and shall not be used in-lieu of structural foundation plans. The Geopier element Layout Plan and Details are for pier numbering, location, and layout purposes only. Refer to the plans prepared by the structural engineer for foundation layout, dimensions, elevations, and details. The Geopier Foundation Company, Inc. (the Designer) accepts no responsibility for location of footings shown on these plans. The Designer shall be notified immediately if information on these plans conflicts with structural or architectural drawings.

5. All existing and proposed utilities within and adjacent to the proposed Geopier element supported footprint shall be verified by the General Contractor. The Geopier Designer shall be notified of any conflicts with Geopier element locations shown on the plans prior to the Geopier installer mobilizing to the site.

6. Geopier element layout is the responsibility of the General Contractor. Piers shall be installed in the field within 6 inches of locations shown on these plans. A copy of the AutoCAD file for this drawing is available upon request to determine coordinate locations of individual Geopier elements only. Geopier element coordinates obtained from the AutoCAD file of this drawing may be used with electronic survey equipment to stake out pier locations in the field. Dimension callouts shown on this plan are for reference only and shall be reviewed by the surveyor. The dimension callouts shall not be used in-lieu of the coordinates obtained from the AutoCAD file of this drawing. Discrepancies shall be discussed and clarified with the Architect. However, discrepancies of 2 inches or less may be ignored and staked out at the coordinate location shown.

7. Geopier elements are located at the intersection of reference grid lines or at the centerline of strip footings, unless dimensioned otherwise. The Structural Engineer must review the foundation geometry shown on the Geopier Location Plan(s) for consistency with the structural foundation plan(s). Written confirmation that this review has been completed shall be provided to the Designer prior to the start of Geopier Construction.

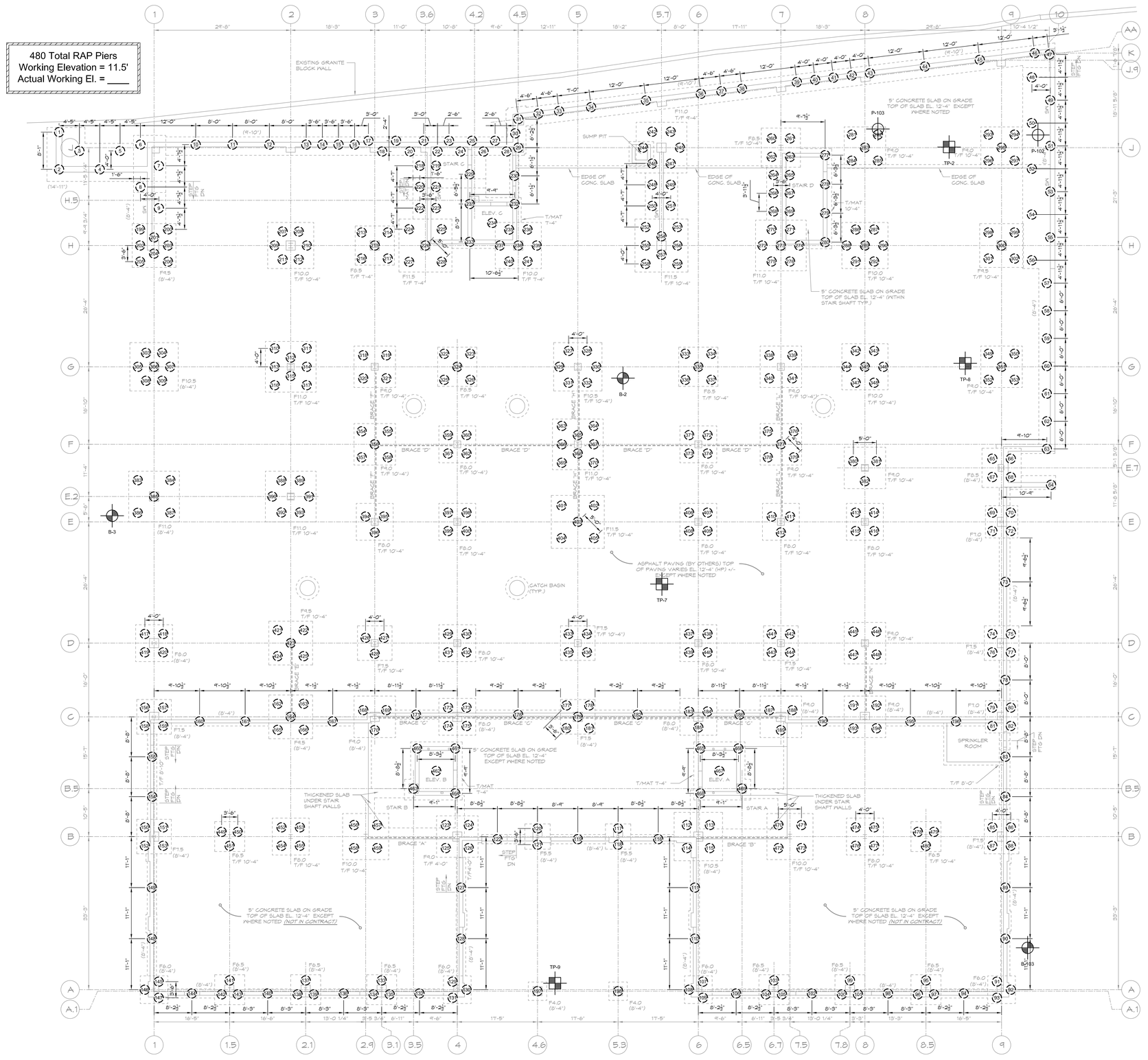
8. See sheet GEO-2.0 for construction notes, specifications, and details.

9. Portions of the proposed structures include slabs not supported by Geopier elements. Differential settlement between Geopier and non-Geopier supported areas is the responsibility of others.

(R) Indicates Rammed Aggregate Pier foundation element location and designation.

Reviewed for Code Compliance
Permitting and Inspections Department
Approved with Conditions
01/22/2019

480 Total RAP Piers
Working Elevation = 11.5'
Actual Working El. = ____



GEOPIER LOCATION PLAN
SCALE: 1/8" = 1'-0"

4'–0" 12'–0"
0 8'–0" 16'–0"

GEOPIER®

SCALE	DATE	SHEET	PLAN #
1/8"=1'-0"	12/3/18	1 of 2	
DRAWN BY	CHKD BY	APPD BY	DISK REF #
MJP	SMD	BDG	

INSTALLER: HELICAL
Geotechnical Design/Build
HELICAL PILING, INC.
634 GRANITE STREET
BRAINTREE, MA 02184
TEL. (781) 848-2110

GEOPIER LOCATION PLAN
Hobson's Landing Condominium
383 Commercial Street
Portland, ME

SHEET NO.
GNE-01838
GEO-1.0
ME-80318

SPECIFICATIONS

Geopier Element Ground Improvement

1. Geopier element foundation support has been designed by the Geopier Foundation Company, Inc. (the Designer) and is responsible for delivering a foundation system capable of supporting the proposed loads while limiting long term settlement of Geopier element supported foundations to the criteria summarized in the Design Submittal.

2. Geopier element design shall be confirmed by a full-scale modulus load test performed at the site.

3. A qualified, full-time Quality Control (QC) representative provided by the Geopier element installer (the Installer) shall be responsible for installation of the piers in accordance with the design, and shall report all Geopier element ground improvement construction activities to the Designer. If authorized by the Owner, the QC representative shall coordinate QC activities with the Testing Agency hired by the Owner. Under no circumstance shall the Testing Agency direct Geopier element installation procedures.

4. Geopier Rammed Aggregate Piers shall be accepted based on the following criteria unless otherwise approved in writing by the Designer:
   a. Geopier elements shall be installed, at a minimum, to the elevations shown in the Design Submittal but no more than 6 inches shallower than these elevations, unless approved in writing by the Designer.
   b. Average compacted lift thickness of the shaft shall be approximately 12 inches. During the mandrel removal phase of pier construction, the rate of withdrawal shall be less than the rate determined from flow testing to ensure sufficient aggregate flow to fill the resulting mandrel cavity and shall be no greater than 6 seconds per foot.
   c. Bottom Stabilization Tests (BST) shall be completed in accordance with the procedures outlined below.
      i. A BST should be performed by shutting the hammer energy off at the top of the compacted base of the pier.
      ii. Once the hammer energy is off and the mandrel is resting on top of the last compacted lift, static crowd pressure should be applied to the pier for a period of 15 seconds. The corresponding deflection of the mandrel is then noted and recorded on the Quality Control forms.
      iii. The frequency of BSTs may vary depending on the soil conditions; however, BSTs shall be performed on no less than 10% of the production piers.
   d. Aggregate used by the Installer for Geopier element construction shall be pre-approved by the Designer and shall demonstrate suitable performance during modulus testing. Typical aggregate consists of Type 1 Grade B in accordance with ASTM D-1241-68, No. 57 stone recycled concrete, or other graded aggregate approved by the Designer.

5. If obstructions are encountered that cannot be removed with conventional Geopier element installation equipment, the General Contractor shall be responsible for removing the obstructions. If the General Contractor does not do so in a timely manner that does not interrupt Geopier element production, the Installer may remove the obstruction(s) and shall be reimbursed for costs incurred, including labor, equipment and materials.

6. Geopier elements not meeting the requirements defined in the design and modulus test shall be reinstalled to meet project requirements unless otherwise approved in writing by the Designer.

7. Prior to installing Geopier elements, the General Contractor is responsible for providing footing and ground surface elevations at Geopier element locations to the Installer's QC representative.

8. All Geopier elements shall be constructed to the depths and termination criteria provided in the Design Submittal unless noted otherwise on these plans or agreed upon by the Designer and the Owner's representative. Estimated shaft lengths for each pier, based on the evaluation of the available subsurface information, are included in the Geopier Schedule in the Design Submittal.

CONSTRUCTION NOTES

Site Preparation

1. In portions of the footprint where fill must be placed to achieve the temporary working pad grade or backfill excavations due to obstruction removal, the fill to be placed shall consist of on-site granular soils or imported common granular fill with a particle size not exceeding 6 inches that is placed in lifts not exceeding 1 ft. in thickness measured before compaction. Each lift of fill shall be placed within approximately ±2% of optimum moisture content and compacted with heavy construction equipment, loaded trucks, a static steel wheel roller, or other alternative means to achieve a maximum of 92% Modified Proctor compaction. Soft areas, as may be evidenced by weaving under construction traffic shall be removed, refilled, and compacted to provide no more than 92% Modified Proctor compaction and a safe trafficable sub-grade from which Geopier construction may be completed. Placement of non-granular (cohesive silt and/or clay) fill shall not be permitted without prior review and written approval of the proposed fill material and placement procedures by the Geopier Designer. All fill placement and compaction work shall be observed and documented by the Owner's Geotechnical Representative and copies of reports summarizing the completion of this work in general accordance with the requirements included herein shall be submitted to Geopier Foundation Company at the completion of the work.

2. Prior to placing footing concrete, sub-grade protection materials, or structural fill on the Geopier element reinforced sub-grade, the exposed sub-grade and tops of Geopier elements shall be exposed and thoroughly compacted with a standard, hand-operated impact compactor or twin drum vibratory roller. Compaction shall be performed by the General Contractor on the same day that footing concrete, sub-grade protection materials, or structural fill is to be placed and shall extend over the entire sub-grade to compact any loose surface soil and loose surface pier aggregate.

3. Excavation adjacent to a completed Geopier element or Geopier supported footing shall be performed in accordance with Details 3 and 4 on GEO-2.0. In the event that excavation is carried beyond these limits, the Contractor is responsible for the remedial measures shown in the applicable detail(s) that may include reconstruction of the impacted portion of the pier, placement of structural fill, and/or underpinning of the existing footing.

Fill Placement Following Geopier element Construction

1. Compacted Structural Fill to be placed above Geopier elements as noted herein shall consist of granular material placed and compacted in controlled lifts with a maximum particle size no larger than 4 to 6 inches and no greater than 50% of the loose lift thickness, compacted to 95% maximum dry density in accordance with the requirements of ASTM-D1557, and approved for support of spread footings at an allowable bearing pressure of at least the allowable foundation bearing pressure upon which the Geopier Design Submittal has been based.

Footing Sub-grade Preparation:

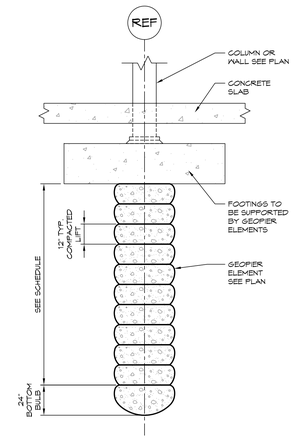
1. It is standard practice for the Owner's Geotechnical Consultant to observe installation of Geopier elements. In addition, the Geotechnical Consultant shall observe and document all sub-grade preparation including immediately prior to placement of concrete, sub-grade protection materials, or structural fill on the Geopier element reinforced sub-grade. The Geotechnical Consultant shall evaluate whether or not the Geopier element reinforced sub-grade, including matrix soils and the top of Geopier elements, have been prepared in accordance with the project specifications and notes on this drawing.

2. Excavations for footings supported by Geopier elements shall not be performed prior to the completion of the modulus load test and review of the load test results. Footing excavations and form work performed prior to acceptance of modulus test results are not recommended and are at the General Contractor's risk.

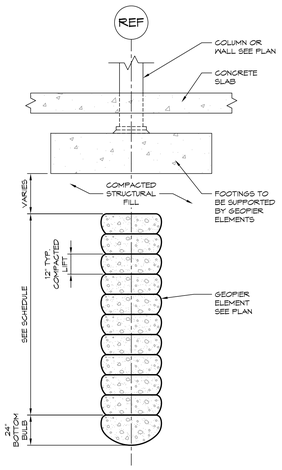
3. All excavations shall be performed by the General Contractor using a smooth edge excavator bucket. Excavations shall extend to the bottom of footing elevations and a minimum of 9 inches beyond the perimeter of the footing. Over-excavation below the bottom of footing shall be limited to 3 inches unless approved by the Designer.

4. Whenever possible, the footing concrete shall be placed the same day as footing excavations are completed. If immediate placement is not possible, the excavated soil may be placed back in the excavation or additional protection of the prepared sub-grade soils shall be provided to prevent disturbance of the sub-grade. Water shall not be allowed to accumulate in the footing excavations prior to concrete placement. Sub-grade protection measures may consist of a lean mix concrete "mud mat", a layer of thoroughly compacted 3/4 inch clean crushed stone placed on a heavy polyethylene plastic or geotextile material, or other appropriate protective measures as determined by the General Contractor. Proposed sub-grade protection alternatives, if required, shall be submitted to the Designer for approval.

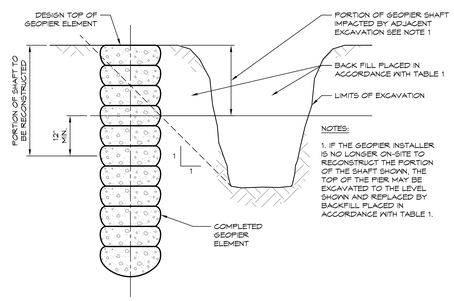
5. In the event that footing bottom preparation, as described above, is not performed or documented in accordance with this section, any written or implied warranty, with respect to Geopier ground improvement performance, shall be considered void.



DETAIL 1 - TYPICAL GEOPIER ELEMENT UNDER FOOTING



DETAIL 2 - TYPICAL GEOPIER ELEMENT INDIRECT SUPPORT UNDER FOOTING

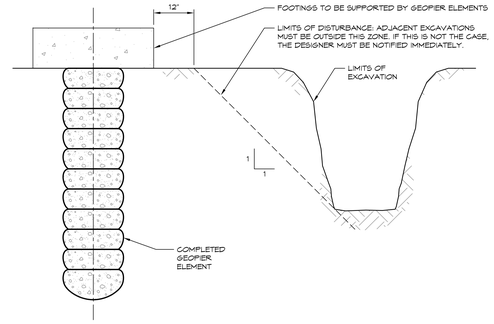


DETAIL 3 - LIMITS OF GEOPIER ELEMENT IMPACTED BY ADJACENT EXCAVATION BEFORE FOOTING PLACEMENT

TABLE 1

Impacted Pier Type	Excavation Location	Backfill Location	Backfill Type
Foundation	Inside Footprint	Inside Footprint	1
		Outside Footprint	2
Foundation	Outside Footprint	Outside Footprint	2

1 = Compacted Structural Fill or fill provided and placed with written authorization from the Geopier Designer.
2 = Backfill material as required by project specifications or in accordance with recommendations provided by the Owner's Geotechnical Representative.



DETAIL 4 - LIMITS OF GEOPIER ELEMENT IMPACTED BY ADJACENT EXCAVATION AFTER FOOTING PLACEMENT

DETAIL 4 NOTES:
1. FOR EXCAVATIONS DEEPER THAN 12 FEET BELOW BOTTOM-OF-FOOTING ELEVATION, CONTACT THE GEOPIER DESIGNER TO REVIEW PRIOR TO EXCAVATION.

2. THIS DETAIL IS FOR GENERAL GUIDANCE TO HELP PROTECT SHALLOW FOOTINGS SUPPORTED ON IMPROVED GROUND. OTHER (MORE STRINGENT) EXCAVATION REQUIREMENTS MAY EXIST AS RECOMMENDED BY THE PROJECT GEOTECHNICAL CONSULTANT AND/OR OSHA STANDARDS. SUCH (MORE STRINGENT) REQUIREMENTS SHALL TAKE PRECEDENCE.

Reviewed for Code Compliance
Permitting and Inspections Department
Approved with Conditions
01/22/2019

STATE OF MAINE
BENJAMIN M COTE
No. 14329
LICENSED PROFESSIONAL ENGINEER

GEOPIER®

SCALE	DATE	SHEET	PLAN #
N.T.S.	12/3/18	2 of 2	
DRAWN BY	CHKD BY	APPD BY	DISK REF #
MJF	SMD	BDC	

INSTALLER:
HELICAL Geotechnical Design/Build
HELICAL DRILLING, INC.
634 GRANITE STREET
BRAINTREE, MA 02184
TEL. (781) 848-2110

GEOPIER DETAILS
Hobson's Landing Condominium
383 Commercial Street
Portland, ME

SHEET NO.
GNE-01838
GEO-2.0
ME-31880

HELICAL

GEOPIER®

Reviewed for Code Compliance
Permitting and Inspections Department
Approved with Conditions
01/22/2019

Design Submittal for:

GEOPIER® Ground Improvement

For

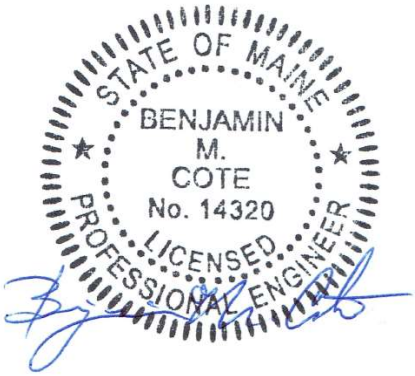
Hobson's Landing Condominium
383 Commercial Street
Portland, Maine

Project Number:

GNE-01838

Consigli Construction Co., Inc., Milford, MA

December 3, 2018



Benjamin M. Cote, PE
Maine Registration No. 14320

HELICAL

GEOPIER®

Design Submittal for GEOPIER® Ground Improvement
Hobson's Landing Condominium
Portland, Maine

1.0 Introduction

The design of Geopier ground improvement has been completed to support foundation loads for the Hobson's Landing Condominium to be constructed at 383 Commercial Street, Portland, Maine. The purpose of the Geopier ground improvement for this project is to eliminate the need for over excavation and replacement of existing fill and to provide a higher allowable bearing pressure for foundations and settlement control. The design has been developed to limit total post-construction settlement of foundations to 1 inch and differential settlement of adjacent foundations to less than ½ inch. Portions of the proposed structures include slabs not supported by Geopier elements. Differential settlement between Geopier and non-Geopier supported areas is the responsibility of others.

2.0 Design Information

The design is based on drawing S1.1 "Level 1 Foundation Plan" dated November 27, 2018 prepared by Veitas and Veitas Engineers, foundation loads provided by Veitas and Veitas Engineers via emails dated November 16, 2018 and November 28, 2018, and the Final Geotechnical Report prepared by Summit Geoengineering Services dated February 6, 2018.

The referenced geotechnical report indicates the subsurface conditions consist of up to 18.5 feet of Fill (very loose to dense silty sand to sandy gravel to silty clay with coal, bricks, ash, timber, and concrete), underlain by up to 11 feet of Glacial Marine (loose sand with little silt or silty clay with trace sand and gravel), underlain by Glacial Till (medium dense to dense sand with varying amounts of silt, gravel, and clay). Groundwater was observed at a depth of approximately 2.9 to 9.5 feet below ground surface based on data obtained during drilling and from installed groundwater observation wells.

Relevant geotechnical information summarized in the referenced Geotechnical Report, including a subsurface exploration location plan, subsurface profiles, and logs of completed explorations, are included herein at the end of Attachment D for reference.

2.1 Design Approach

For this project, Geopier ground improvement includes Rammed Aggregate Piers (RAPs) to support the foundations. The Geopier ground improvement design consists of estimating the capacity, modulus, and allowable bearing pressure of Geopier elements and developing a corresponding composite Geopier/matrix soil bearing pressure. Geopier elements are designed to support each foundation based on provided loads, anticipated subsurface conditions, foundation geometry, anticipated settlement, and constructability.

Geopier design parameter values have been selected in response to the anticipated engineering characteristics of the overburden soils. Based on our evaluations, the following parameters were utilized for design of the ground improvement for the proposed structure:

- Geopier Stiffness Modulus: 245 pounds per cubic inch (pci)
- Geopier Nominal Diameter: 20 inches
- Geopier Length: Approximately 12.5 to 26.5 ft. drill depth
- Geopier Capacity: 80 kips
- Foundation Bearing Pressure: 5,000 pounds per square foot (psf)
- Soil Stiffness Modulus: 21 pci
- Geopier Elastic Modulus 3,600 ksf above El. 2
  2,200 ksf below El. 2
- Matrix Soil Elastic Modulus 300 ksf above El. 2
  175 ksf below El. 2
- Lower Zone Elastic Modulus: 100 ksf in Glacial Marine
  400 ksf in Glacial TIll

Geopier design calculations were performed in general accordance with the Geopier Foundation Design Manual and are summarized in Attachment A. Geopier ground improvement design shall be confirmed by conducting modulus testing on one RAP installed at the site. Geopier Modulus Test forms and proposed modulus test set up are included in Attachment B.

3.0 Ground Improvement Layout and Specifications

Geopier elements will be installed in accordance with the referenced layout plans and specification requirements as shown in the Geopier Layout Plan, Construction Notes and Typical Details included as Attachment C.

4.0 Quality Control

During Geopier ground improvement installation, a full-time Quality Control (QC) Representative will be present on site to verify and report all QC installation procedures and prepare Daily Progress Reports. A Geopier Schedule, summarizing the key installation aspects of individual Geopier elements, QC Procedures, and QC Reporting forms to be used during construction are included as Attachment D.

5.0 Site Pad Preparation and Foundation Construction

Before mobilizing to start ground improvement installation, a temporary working pad shall be constructed at approximately El. 11.5 across the building footprint. Geopier locations may be pre-augered adjacent to the existing stone wall prior to pier installation as required; however, obstructions and remnants of any existing construction shall be excavated, "chased out," and removed by others prior to the start of ground improvement installation.

In portions of the footprint where fill must be placed to achieve the temporary working pad grade or backfill excavations due to obstruction removal, the fill to be placed shall consist of on-site *granular* soils or imported common *granular* fill with a particle size not exceeding 6 inches that is placed in lifts not exceeding 1 ft. in thickness measured before compaction. Each lift of fill shall be placed within approximately ±2% of optimum moisture content and compacted with heavy construction equipment, loaded trucks, a static steel wheel roller, or other alternative means to achieve a maximum of 92% Modified Proctor compaction. Soft areas, as may be evidenced by weaving under construction traffic shall be removed, refilled, and compacted to provide no more than 92% Modified Proctor compaction and a safe trafficable subgrade from which Geopier construction may be completed. Placement of non-granular (cohesive silt and/or clay) fill shall not be permitted without prior review and written approval of the proposed fill material and placement procedures by the Geopier Designer. All fill placement and compaction work shall be observed and documented by the Owner's Geotechnical Representative and copies of reports summarizing the completion of this work in general accordance with the requirements included herein shall be submitted to Geopier Foundation Company at the completion of the work.

If the Geopier reinforced subgrade is below the bottom of footing or slab elevation, placement of structural fill may be required to raise the subgrade. Prior to placing structural fill, the tops of Geopier elements and subgrade soils shall be exposed and thoroughly compacted with a standard, hand-operated impact compactor or twin drum vibratory roller. Compaction shall be performed on the same day that structural fill is to be placed and shall extend over the entire subgrade to compact any loose surface soil and loose surface pier aggregate. Compacted Structural Fill to be placed above Geopier elements as noted herein shall consist of granular material placed and compacted in controlled lifts with a maximum particle size no larger than 4 to 6 inches and no greater than 50% of the loose lift thickness, compacted to 95% maximum dry density in accordance with the requirements of ASTM-D1557, and approved for support of spread footings at an allowable bearing pressure of at least the allowable foundation bearing pressure upon which the Geopier Design Submittal has been based.

Whenever possible, footing concrete shall be placed the same day as footing excavations are completed. If immediate placement is not possible, the excavated soil may be placed back in the excavation or additional protection of the prepared subgrade soils shall be provided to prevent disturbance of the subgrade. Water shall not be allowed to accumulate in the footing excavations prior to concrete placement. Subgrade protection measures may consist of a 3-in. thick lean mix concrete "mud mat", a 6-in. thick layer of thoroughly compacted 3/4 in. clean crushed stone placed

on a heavy polyethylene plastic or geotextile material, or other appropriate protective measures as determined by the General Contractor. Proposed subgrade protection alternatives, if required, shall be submitted to Geopier Foundation Company for approval.

** Note that the foundation bearing elevations shown in the Geopier Schedule have been provided based on review of the referenced foundation plans. However, the contractor shall review and confirm these bottom of footing elevations prior to footing excavation.*

All aspects of foundation excavation, subgrade preparation, and subsequent backfill placement shall be completed in accordance with the project specifications and the requirements included on drawing GEO-2.0 - Geopier Details. All work shall be completed by others under direction by the General Contractor and observed and documented by the Owner's Geotechnical Representative or an Independent Testing Agency. At the completion of this work, a report from the Geotechnical Representative or Testing Agency shall be provided to the Geopier Designer confirming that this work was completed in accordance with project specifications and requirements included in the Geopier Design submittal.

Design Submittal for GEOPIER® Ground Improvement
Hobson's Landing Condominium
Portland, Maine

Attachment A:
Geopier Element Design Calculations

GEOPIER DESIGN METHODOLOGY FOR SUPPORT OF SPREAD FOOTINGS

Geopier ground improvement is designed to control foundation settlements to the project design criteria. Foundation settlements are estimated by summing the estimated settlement in the *Geopier*-reinforced zone (the "upper zone") and the estimated settlement in the zone of soil below the bottoms of the *Geopier* elements (the "lower zone") in accordance with the methodology described by Lawton et al. (1994).

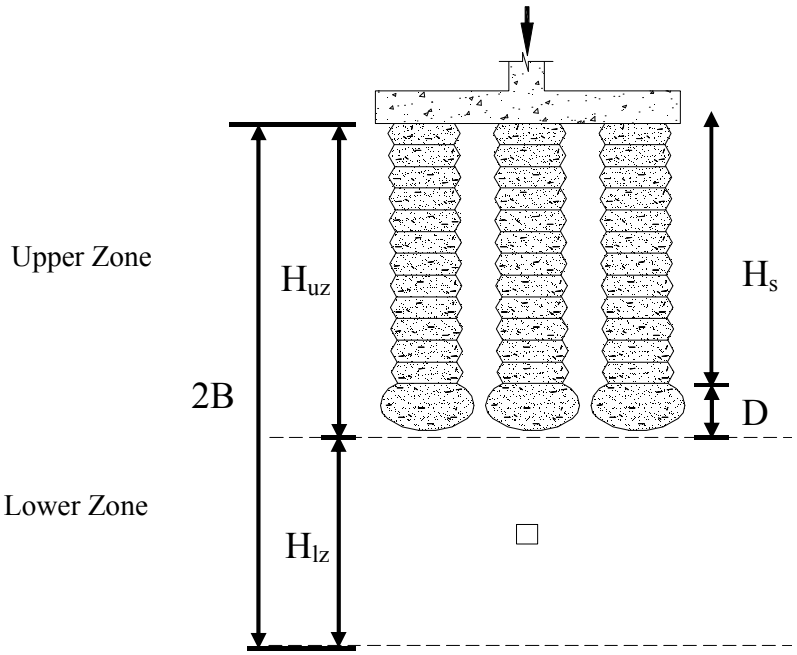


Figure 1: *Geopier* two-layer settlement approach

Upper Zone Settlement

Settlements are evaluated using a composite modulus approach where settlement within the upper zone of soil (zone of soil reinforced with the Geopier system) is estimated using conventional settlement calculations as shown in the following equation (Terzaghi et al. 1996):

$$s = \frac{qI_\sigma H}{E_{comp}} \qquad \text{(Eq. 1)}$$

where q is the average bearing pressure, I_σ is the influence factor at depths within the compressible layer, H is the thickness of the compressible layer, and E_{comp} is the composite elastic modulus value within the aggregate pier-reinforced zone. The composite elastic modulus value is computed based on a weighted average of the elastic modulus values of the rammed aggregate pier elements and matrix soil using the following relationship:

$$E_{comp} = E_g R_a + E_m (1 - R_a) \qquad \text{(Eq. 2)}$$

where R_a is the area replacement ratio, E_g is the elastic modulus value of the aggregate pier, and E_m is the elastic modulus value of the matrix soil. The elastic modulus value of the aggregate pier is estimated in proportion to the stiffness modulus value of the pier as verified by the modulus test. The elastic modulus value of the matrix soil is often estimated using correlations with undrained shear strength, Standard Penetration Test (SPT) blow counts, Cone Penetration Test (CPT) tip resistances or determined from consolidation test results.

For verification purposes, the equivalent top-of-pier stress and stiffness requirement, k_g of the pier may then be back-calculated using Equation 1 and the computed composite elastic settlements within the reinforced zone of the soil profile. The minimum stiffness at the maximum top of pier stress is then utilized for design verification purposes by modulus load testing.

Lower Zone Settlement Calculations - Overview

Settlements within the "lower zone" (zone of soils beneath the upper zone which receives lower intensity footing stresses) are computed using conventional geotechnical settlement methods that involve: estimating the depth of stress influence below the footing bottom (typically twice the footing width for square footings and five times the footing width for continuous footings), estimating the footing-induced stress in the lower zone (established using conventional influence factor charts), and estimating the compressibility of the lower zone soils. Lower zone settlements (s_{lz}) in granular soils are estimated with the equation:

$$s_{lz} = qI\frac{H_{lz}}{E_s} \qquad \text{(Eq. 3)}$$

where q is the average footing-bottom stress, I is the stress influence factor in the lower zone, H_{lz} is the thickness of the lower zone, and E_s is the secant modulus of the soil in the lower zone.

Total Settlement Calculations

The estimated settlement of *Geopier*-supported footings (s_{total}) is determined by summing the upper zone settlement and lower zone settlement values:

$$s_{total} = s_{uz} + s_{lz} \qquad \text{(Eq. 4)}$$

Settlement estimates are checked by performing a modulus test on an installed RAP element that allows designers to verify the assumed modulus value of the element/soil interaction and the ability of the element to transfer loads to the lower zone. Details summarizing the modulus load test program are included in Attachment B. Footing specific calculations are included in subsequent sections.

Evaluation of Estimated Settlement

Using the previously described settlement evaluation procedure, settlement calculations were completed to estimate settlement for footings to be constructed for the project. These estimates are summarized on the following spreadsheets. As indicated in these calculations, estimated total settlements for footings range from 0.1 to 1.0 in. and differential settlement less than 0.5 in between adjacent footings.

GEOPIER Foundation Company

Project: Hobson's Landing Condominium - Portland, ME
No.: GNE-01838
Engnr: SMD/ENG/BMC/JEF
Date: 12/3/2018

GEOPIER®
SQUARE FOOTINGS
Version 3.1 June 2017

Reviewed for Code Compliance
Permitting and Inspections Department
Approved with Conditions
01/22/2019

INPUT PARAMETER VALUES:

Parameter	Sym.	Val.
RAP diameter (in)	d	20
Depth to groundwater (ft)	dgw	3
Total unit weight of soil (pcf)	g	120
Soil frict. angle (degr)	f	28
Max. hor. pressure (psf)	pmax	2500
RAP cell cap. (kips)	Qcell	80
Footing bearing press. (ksf)	qall	5
RAP stiffn. modulus (pci)	kg	245
Soil stiffness modulus (pci)	km	21
Concrete Comp. Str. (psi)	f'c	0

TOP OF PIER STRESS - SQUARE FOOTINGS

Parameter	Symb	Equation	F4 A/5.3	F5.5 B/4.6	F6 A/6	F6.5 A/6.7	F7 E/9	F7.5 D/3	F7.5 D
Column load (kips)	P		80.0	150.9	182.5	221.7	256.2	256.1	291.8
Estimated footing width (ft)	Br	sqrt(P/qall)	4.0	5.5	6.0	6.7	7.2	7.2	7.6
Selected footing width (ft)	B		4.0	5.5	6.0	6.5	7.0	7.5	7.5
Footing contact pressure	q	P/(B*B)	5.0	5.0	5.1	5.2	5.2	4.6	5.2
Estimated No. RAP elements	Nr	P/Qcell	1	2	3	3	4	4	4
Selected No. RAP elements	N		1	2	3	3	4	3	4
Area replacement ratio	Ra	N*Ag/(B*B)	0.14	0.14	0.18	0.15	0.18	0.12	0.16
Stiffness ratio	Rs	kg/km	11.7	11.7	11.7	11.7	11.7	11.7	11.7
Stress at top of GP (ksf)	qg	q*Rs/(Rs*Ra-Ra+1)	23.8	22.9	20.1	23.1	21.0	23.7	22.8
Load at top of GP (kips)	Qg	qg*Ag	51.9	50.0	43.9	50.4	45.9	51.7	49.7

SHAFT LENGTH REQUIREMENTS - SQUARE FOOTINGS

Depth of Embedment	Df		4.0	4.0	4.0	4.0	4.0	4.0	4.0
Trial shaft length (ft)	Hs		15.3	14.3	15.3	15.3	11.3	12.3	13.3
Drill depth (ft)	Hdrill	Df+Hs	19.3	18.3	19.3	19.3	15.3	16.3	17.3
Frictional resistance force (kips)	Qs	fs*pi*d*Hs	90.7	83.8	90.7	90.7	62.9	69.9	76.8
Allowable tensile resistance (kips)	Qsall	Qs/2	45.4	41.9	45.4	45.4	31.5	34.9	38.4
Allowable end-bearing rest. (kips)	Qeb	Qeb	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Is shaft long enough?		Qs+Qeb>Pcdem?	**ok**	**ok**	**ok**	**ok**	**ok**	**ok**	**ok**

INPUT PARAMETER VALUES:

Upper Zone Elastic Parameters		
Parameter	Sym.	Val.
Pier Modulus Layer 1 (ksf)	Eg1	3600
Pier Modulus Layer 2 (ksf)	Eg2	3600
Pier Modulus Layer 3 (ksf)	Eg3	3600
Pier Modulus Layer 4 (ksf)	Eg4	2200
Pier Modulus Layer 5 (ksf)	Eg5	2200
Soil Modulus Layer 1 (ksf)	Em1	300
Soil Modulus Layer 2 (ksf)	Em2	300
Soil Modulus Layer 3 (ksf)	Em3	300
Soil Modulus Layer 4 (ksf)	Em4	175
Soil Modulus Layer 5 (ksf)	Em5	175

UPPER ZONE SETTLEMENT - SQUARE FOOTINGS

Parameter	**Symb**	Equation	F4 A/5.3	F5.5 B/4.6	F6 A/6	F6.5 A/6.7	F7 E/9	F7.5 D/3	F7.5 D/9
UZ Settlement Approach		1-Stiffness, 2-Modulus	2	2	2	2	2	2	2
Thickness of UZ sublayer 1(ft)	H_{uz1}		2.1	2.1	2.1	2.1	2.1	2.1	2.1
Thickness of UZ sublayer 2 (ft)	H_{uz2}		2.1	2.1	2.1	2.1	2.1	2.1	2.1
Thickness of UZ sublayer 3 (ft)	H_{uz3}		2.1	2.1	2.1	2.1	2.1	2.1	2.1
Thickness of UZ sublayer 4 (ft)	H_{uz4}		5.2	4.7	5.2	5.2	3.2	3.7	4.2
Thickness of UZ sublayer 5 (ft)	H_{uz5}		5.2	4.7	5.2	5.2	3.2	3.7	4.2
Total UZ Thickness OK?		Huz = Hs + d	**ok**	**ok**	**ok**	**ok**	**ok**	**ok**	**ok**
Composite Modulus Layer 1 (ksf)	E_{comp1}	Eg1Ra + Em1(1-Ra)	750	776	900	811	888	684	812
Composite Modulus Layer 2 (ksf)	E_{comp2}	Eg2Ra + Em2(1-Ra)	750	776	900	811	888	684	812
Composite Modulus Layer 3 (ksf)	E_{comp3}	Eg3Ra + Em3(1-Ra)	750	776	900	811	888	684	812
Composite Modulus Layer 4 (ksf)	E_{comp4}	Eg4Ra + Em4(1-Ra)	451	467	543	489	536	411	489
Composite Modulus Layer 5 (ksf)	E_{comp5}	Eg5Ra + Em5(1-Ra)	451	467	543	489	536	411	489
Sett. of UZ sublayer 1 (in)	s_{uz1}	qg/kg or q*Iσ-vag*H/Ecomp	0.15	0.15	0.14	0.16	0.14	0.16	0.16
Sett. of UZ sublayer 2 (in)	s_{uz2}	q*Iσ-2*H_{uz2}/E_{comp2}	0.08	0.10	0.10	0.12	0.11	0.13	0.13
Sett. of UZ sublayer 3 (in)	s_{uz3}	q*Iσ-3*H_{uz3}/E_{comp3}	0.04	0.06	0.06	0.07	0.07	0.09	0.08
Sett. of UZ sublayer 4 (in)	s_{uz4}	q*Iσ-4*H_{uz4}/E_{comp4}	0.06	0.10	0.11	0.14	0.11	0.15	0.15
Sett. of UZ sublayer 5 (in)	s_{uz5}	q*Iσ-5*H_{uz5}/E_{comp5}	0.03	0.05	0.05	0.06	0.06	0.08	0.08
Total Upper Zone Settlement (in)	s_{uz}	suz1+suz2+suz3+suz4+suz5	0.35	0.46	0.44	0.55	0.50	0.61	0.60

INPUT PARAMETER VALUES:

Parameter	Sym.	Val.
Allowable end-bearing (kips)	Qeb	5
E or c_ϵ for LZ sublyr 1	E_1 / $c_{\epsilon1}$	100
E or c_ϵ for LZ sublyr 2	E_2 / $c_{\epsilon2}$	100
E or c_ϵ for LZ sublyr 3	E_3 / $c_{\epsilon3}$	100
E or c_ϵ for LZ sublyr 4	E_4 / $c_{\epsilon4}$	400
E or c_ϵ for LZ sublyr 5	E_5 / $c_{\epsilon5}$	400
Calc. settlement to X*B	X	2

LOWER ZONE SETTLEMENTS - SQUARE FOOTINGS

Parameter	Symb	Equation	F4 A/5.3	F5.5 B/4.6	F6 A/6	F6.5 A/6.7	F7 E/9	F7.5 D/3	F7.5 D/9
Dpth to bottm of LZ from ftg (ft)	X*B	X*B	8.0	11.0	12.0	13.0	14.0	15.0	15.0
Upper zone thickness (ft)	H_{uz}	Hs+d	17.0	16.0	17.0	17.0	13.0	14.0	15.0
Lower zone thickness (ft)	H_{lz}	H2b-Hlz	-9.0	-5.0	-5.0	-4.0	1.1	1.1	0.1
Thickness of LZ sublayer 1(ft)	H_{lz1}		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thickness of LZ sublayer 2 (ft)	H_{lz2}		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thickness of LZ sublayer 3 (ft)	H_{lz3}		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thickness of LZ sublayer 4 (ft)	H_{lz4}		0.0	0.0	0.0	0.0	0.6	0.6	0.1
Thickness of LZ sublayer 5 (ft)	H_{lz5}		0.0	0.0	0.0	0.0	0.6	0.6	0.1
Total LZ thickness ok?			**No LZ**	**No LZ**	**No LZ**	**No LZ**	**ok**	**ok**	**ok**
E or c_ϵ for LZ sublyr 1	E_1 / $c_{\epsilon1}$	E (ksf) or c_ϵ	100	100	100	100	100	100	100
E or c_ϵ for LZ sublyr 2	E_2 / $c_{\epsilon2}$	E (ksf) or c_ϵ	100	100	100	100	100	100	100
E or c_ϵ for LZ sublyr 3	E_3 / $c_{\epsilon3}$	E (ksf) or c_ϵ	100	100	100	100	100	100	100
E or c_ϵ for LZ sublyr 4	E_4 / $c_{\epsilon4}$	E (ksf) or c_ϵ	400	400	400	400	400	400	400
E or c_ϵ for LZ sublyr 5	E_5 / $c_{\epsilon5}$	E (ksf) or c_ϵ	400	400	400	400	400	400	400
Initial stress for sublyr 1 (ksf)	P'_{o1}		1.4	1.3	1.4	1.4	1.2	1.2	1.3
Initial stress for sublyr 2 (ksf)	P'_{o2}		1.4	1.3	1.4	1.4	1.2	1.2	1.3
Initial stress for sublyr 3 (ksf)	P'_{o3}		1.4	1.3	1.4	1.4	1.2	1.2	1.3
Initial stress for sublyr 4 (ksf)	P'_{o4}		1.4	1.3	1.4	1.4	1.2	1.2	1.3
Initial stress for sublyr 5 (ksf)	P'_{o5}		1.4	1.3	1.4	1.4	1.2	1.3	1.3
Ftg stress on sublyr 1 (ksf)	ΔP1	q*I	0.1	0.3	0.3	0.3	0.7	0.6	0.6
Ftg stress on sublyr 2 (ksf)	ΔP2	q*I	0.1	0.3	0.3	0.3	0.7	0.6	0.6
Ftg stress on sublyr 3 (ksf)	ΔP3	q*I	0.1	0.3	0.3	0.3	0.7	0.6	0.6
Ftg stress on sublyr 4 (ksf)	ΔP4	q*I	0.1	0.3	0.3	0.3	0.6	0.5	0.6
Ftg stress on sublyr 5 (ksf)	ΔP5	q*I	0.1	0.3	0.3	0.3	0.6	0.5	0.6
Sett. of LZ sublayer 1 (in)	s_{lz1}	DP1*Hlz1/E1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sett. of LZ sublayer 2 (in)	s_{lz2}	DP2*Hlz2/E2	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sett. of LZ sublayer 3 (in)	s_{lz3}	DP3*Hlz3/E3	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sett. of LZ sublayer 4 (in)	s_{lz4}	DP4*Hlz4/E4	0.00	0.00	0.00	0.00	0.01	0.01	0.00
Sett. of LZ sublayer 5 (in)	s_{lz5}	DP5*Hlz5/E5	0.00	0.00	0.00	0.00	0.01	0.01	0.00
Total lower zone sett. (in)	s_{lz}	s_{lz1}+s_{lz2}+s_{lz3}+s_{lz4}+s_{lz5}	0.00	0.00	0.00	0.00	0.02	0.02	0.00
Total UZ + LZ settlement (in)	s		0.35	0.46	0.44	0.55	0.52	0.63	0.60

GEOPIER Foundation Company

Project: Hobson's Landing Condominium - Portland, ME
No.: GNE-01838
Engnr: SMD/ENG/BMC/JEF
Date: 12/3/2018

GEOPIER®
SQUARE FOOTINGS
Version 3.1 June 2017

INPUT PARAMETER VALUES:

Parameter	Sym.	Val.
RAP diameter (in)	d	20
Depth to groundwater (ft)	dgw	3
Total unit weight of soil (pcf)	g	120
Soil frict. angle (degr)	f	28
Max. hor. pressure (psf)	pmax	2500
RAP cell cap. (kips)	Qcell	80
Footing bearing press. (ksf)	qall	5
RAP stiffn. modulus (pci)	kg	245
Soil stiffness modulus (pci)	km	21
Concrete Comp. Str. (psi)	f'c	0

TOP OF PIER STRESS - SQUARE FOOTINGS

Parameter	Symb	Equation	F8 E/4	F8.5 G/6	F9 E.7/8	F9.5 H/9	F9.5 H/1	F10 H/2	F10 H/4.5
Column load (kips)	P		311.9	360.6	307.6	406.0	538.7	486.6	503.0
Estimated footing width (ft)	Br	sqrt(P/qall)	7.9	8.5	7.8	9.0	10.4	9.9	10.0
Selected footing width (ft)	B		8.0	8.5	9.0	9.5	9.5	10.0	10.0
Footing contact pressure	q	P/(B*B)	4.9	5.0	3.8	4.5	6.0	4.9	5.0
Estimated No. RAP elements	Nr	P/Qcell	4	5	4	6	7	7	7
Selected No. RAP elements	N		4	5	3	5	8	6	7
Area replacement ratio	Ra	N*Ag/(B*B)	0.14	0.15	0.08	0.12	0.19	0.13	0.19
Stiffness ratio	Rs	kg/km	11.7	11.7	11.7	11.7	11.7	11.7	11.7
Stress at top of GP (ksf)	qg	q*Rs/(Rs*Ra-Ra+1)	23.2	22.3	23.8	22.9	22.7	23.7	22.3
Load at top of GP (kips)	Qg	qg*Ag	50.5	48.7	51.9	50.0	49.6	51.7	48.7

SHAFT LENGTH REQUIREMENTS - SQUARE FOOTINGS

Depth of Embedment	Df		4.0	4.2	4.3	4.3	4.0	4.5	7.5
Trial shaft length (ft)	Hs		10.3	9.2	10.0	9.0	9.3	9.8	9.8
Drill depth (ft)	Hdrill	Df+Hs	14.3	13.3	14.3	13.3	13.3	14.3	17.3
Frictional resistance force (kips)	Qs	fs*pi*d*Hs	55.9	48.7	55.0	48.0	49.0	54.3	62.8
Allowable tensile resistance (kips)	Qsall	Qs/2	28.0	24.4	27.5	24.0	24.5	27.1	31.4
Allowable end-bearing rest. (kips)	Qeb	Qeb	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Is shaft long enough?		Qs+Qeb>Pcdem?	**ok**	**ok**	**ok**	**ok**	**ok**	**ok**	**ok**

INPUT PARAMETER VALUES:

Upper Zone Elastic Parameters		
Parameter	Sym.	Val.
Pier Modulus Layer 1 (ksf)	Eg1	3600
Pier Modulus Layer 2 (ksf)	Eg2	3600
Pier Modulus Layer 3 (ksf)	Eg3	3600
Pier Modulus Layer 4 (ksf)	Eg4	2200
Pier Modulus Layer 5 (ksf)	Eg5	2200
Soil Modulus Layer 1 (ksf)	Em1	300
Soil Modulus Layer 2 (ksf)	Em2	300
Soil Modulus Layer 3 (ksf)	Em3	300
Soil Modulus Layer 4 (ksf)	Em4	175
Soil Modulus Layer 5 (ksf)	Em5	175

UPPER ZONE SETTLEMENT - SQUARE FOOTINGS

Parameter	**Symb**	Equation	F8 E/4	F8.5 G/6	F9 E.7/8	F9.5 H/9	F9.5 H/1	F10 H/2	F10 H/4.5
UZ Settlement Approach		1-Stiffness, 2-Modulus	2	2	2	2	2	2	2
Thickness of UZ sublayer 1(ft)	H_{uz1}		2.1	2.1	2.0	2.0	2.1	1.9	0.9
Thickness of UZ sublayer 2 (ft)	H_{uz2}		2.1	2.1	2.0	2.0	2.1	1.9	0.9
Thickness of UZ sublayer 3 (ft)	H_{uz3}		2.1	2.1	2.0	2.0	2.1	1.9	0.9
Thickness of UZ sublayer 4 (ft)	H_{uz4}		2.7	2.3	2.7	2.2	2.2	2.7	4.2
Thickness of UZ sublayer 5 (ft)	H_{uz5}		2.7	2.3	2.7	2.2	2.2	2.7	4.2
Total UZ Thickness OK?		Huz = Hs + d	**ok**	**ok**	**ok**	**ok**	**ok**	**ok**	**ok**
Composite Modulus Layer 1 (ksf)	E_{comp1}	Eg1Ra + Em1(1-Ra)	750	798	567	699	938	732	804
Composite Modulus Layer 2 (ksf)	E_{comp2}	Eg2Ra + Em2(1-Ra)	750	798	567	699	938	732	804
Composite Modulus Layer 3 (ksf)	E_{comp3}	Eg3Ra + Em3(1-Ra)	750	798	567	699	938	732	804
Composite Modulus Layer 4 (ksf)	E_{comp4}	Eg4Ra + Em4(1-Ra)	451	481	339	420	567	440	484
Composite Modulus Layer 5 (ksf)	E_{comp5}	Eg5Ra + Em5(1-Ra)	451	481	339	420	567	440	484
Sett. of UZ sublayer 1 (in)	s_{uz1}	qg/kg or q*Iσ-vag*H/Ecomp	0.16	0.15	0.16	0.15	0.16	0.15	0.07
Sett. of UZ sublayer 2 (in)	s_{uz2}	q*Iσ-2*H_{uz2}/E_{comp2}	0.13	0.13	0.14	0.14	0.14	0.14	0.07
Sett. of UZ sublayer 3 (in)	s_{uz3}	q*Iσ-3*H_{uz3}/E_{comp3}	0.09	0.09	0.10	0.11	0.10	0.11	0.07
Sett. of UZ sublayer 4 (in)	s_{uz4}	q*Iσ-4*H_{uz4}/E_{comp4}	0.13	0.12	0.16	0.14	0.13	0.19	0.38
Sett. of UZ sublayer 5 (in)	s_{uz5}	q*Iσ-5*H_{uz5}/E_{comp5}	0.08	0.08	0.10	0.10	0.09	0.12	0.20
Total Upper Zone Settlement (in)	s_{uz}	suz1+suz2+suz3+suz4+suz5	0.59	0.57	0.67	0.63	0.63	0.71	0.78

INPUT PARAMETER VALUES:

Parameter	Sym.	Val.
Allowable end-bearing (kips)	Qeb	5
E or c_ϵ for LZ sublyr 1	E_1 / $c_{\epsilon1}$	100
E or c_ϵ for LZ sublyr 2	E_2 / $c_{\epsilon2}$	100
E or c_ϵ for LZ sublyr 3	E_3 / $c_{\epsilon3}$	100
E or c_ϵ for LZ sublyr 4	E_4 / $c_{\epsilon4}$	400
E or c_ϵ for LZ sublyr 5	E_5 / $c_{\epsilon5}$	400
Calc. settlement to X*B	X	2

LOWER ZONE SETTLEMENTS - SQUARE FOOTINGS

Parameter	Symb	Equation	F8 E/4	F8.5 G/6	F9 E.7/8	F9.5 H/9	F9.5 H/1	F10 H/2	F10 H/4.5
Dpth to bottm of LZ from ftg (ft)	X*B	X*B	16.0	17.0	18.0	19.0	19.0	20.0	20.0
Upper zone thickness (ft)	H_{uz}	Hs+d	12.0	10.8	11.7	10.7	11.0	11.5	11.5
Lower zone thickness (ft)	H_{lz}	H2b-Hlz	4.1	6.2	6.4	8.4	8.1	8.6	8.6
Thickness of LZ sublayer 1(ft)	H_{lz1}		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thickness of LZ sublayer 2 (ft)	H_{lz2}		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thickness of LZ sublayer 3 (ft)	H_{lz3}		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thickness of LZ sublayer 4 (ft)	H_{lz4}		2.1	3.1	3.2	4.2	4.1	4.3	4.3
Thickness of LZ sublayer 5 (ft)	H_{lz5}		2.1	3.1	3.2	4.2	4.1	4.3	4.3
Total LZ thickness ok?			**ok**	**ok**	**ok**	**ok**	**ok**	**ok**	**ok**
E or c_ϵ for LZ sublyr 1	E_1 / $c_{\epsilon1}$	E (ksf) or c_ϵ	100	100	100	100	100	100	100
E or c_ϵ for LZ sublyr 2	E_2 / $c_{\epsilon2}$	E (ksf) or c_ϵ	100	100	100	100	100	100	100
E or c_ϵ for LZ sublyr 3	E_3 / $c_{\epsilon3}$	E (ksf) or c_ϵ	100	100	100	100	100	100	100
E or c_ϵ for LZ sublyr 4	E_4 / $c_{\epsilon4}$	E (ksf) or c_ϵ	400	400	400	400	400	400	400
E or c_ϵ for LZ sublyr 5	E_5 / $c_{\epsilon5}$	E (ksf) or c_ϵ	400	400	400	400	400	400	400
Initial stress for sublyr 1 (ksf)	P'_{o1}		1.1	1.1	1.1	1.0	1.0	1.1	1.3
Initial stress for sublyr 2 (ksf)	P'_{o2}		1.1	1.1	1.1	1.0	1.0	1.1	1.3
Initial stress for sublyr 3 (ksf)	P'_{o3}		1.1	1.1	1.1	1.0	1.0	1.1	1.3
Initial stress for sublyr 4 (ksf)	P'_{o4}		1.2	1.1	1.2	1.2	1.2	1.2	1.4
Initial stress for sublyr 5 (ksf)	P'_{o5}		1.3	1.3	1.4	1.4	1.4	1.5	1.7
Ftg stress on sublyr 1 (ksf)	ΔP1	q*I	0.9	1.2	0.9	1.3	1.6	1.3	1.4
Ftg stress on sublyr 2 (ksf)	ΔP2	q*I	0.9	1.2	0.9	1.3	1.6	1.3	1.4
Ftg stress on sublyr 3 (ksf)	ΔP3	q*I	0.9	1.2	0.9	1.3	1.6	1.3	1.4
Ftg stress on sublyr 4 (ksf)	ΔP4	q*I	0.8	0.9	0.7	1.0	1.2	1.0	1.1
Ftg stress on sublyr 5 (ksf)	ΔP5	q*I	0.6	0.6	0.5	0.6	0.8	0.6	0.7
Sett. of LZ sublayer 1 (in)	s_{lz1}	DP1*Hlz1/E1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sett. of LZ sublayer 2 (in)	s_{lz2}	DP2*Hlz2/E2	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sett. of LZ sublayer 3 (in)	s_{lz3}	DP3*Hlz3/E3	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sett. of LZ sublayer 4 (in)	s_{lz4}	DP4*Hlz4/E4	0.05	0.09	0.07	0.12	0.15	0.13	0.14
Sett. of LZ sublayer 5 (in)	s_{lz5}	DP5*Hlz5/E5	0.04	0.06	0.05	0.08	0.10	0.08	0.09
Total lower zone sett. (in)	s_{lz}	s_{lz1}+s_{lz2}+s_{lz3}+s_{lz4}+s_{lz5}	0.08	0.15	0.11	0.20	0.25	0.21	0.22
Total UZ + LZ settlement (in)	s		0.67	0.72	0.78	0.83	0.87	0.93	1.00

GEOPIER Foundation Company

Project: Hobson's Landing Condominium - Portland, ME
No.: GNE-01838
Engnr: SMD/ENG/BMC/JEF
Date: 12/3/2018

GEOPIER®
SQUARE FOOTINGS
Version 3.1 June 2017

Reviewed for Code Compliance
Permitting and Inspections Department
Approved with Conditions
01/22/2019

INPUT PARAMETER VALUES:

Parameter	Sym.	Val.
RAP diameter (in)	d	20
Depth to groundwater (ft)	dgw	3
Total unit weight of soil (pcf)	g	120
Soil frict. angle (degr)	f	28
Max. hor. pressure (psf)	pmax	2500
RAP cell cap. (kips)	Qcell	80
Footing bearing press. (ksf)	qall	5
RAP stiffn. modulus (pci)	kg	245
Soil stiffness modulus (pci)	km	21
Concrete Comp. Str. (psi)	f'c	0

TOP OF PIER STRESS - SQUARE FOOTINGS

Parameter	Symb	Equation	F10.5 G/5	F11 E.2/1	F11 F/5	F11 H/5.7
Column load (kips)	P		465.3	478.4	579.0	579.7
Estimated footing width (ft)	Br	sqrt(P/qall)	9.6	9.8	10.8	10.8
Selected footing width (ft)	B		10.5	11.0	11.0	11.5
Footing contact pressure	q	P/(B*B)	4.2	4.0	4.8	4.4
Estimated No. RAP elements	Nr	P/Qcell	6	6	8	8
Selected No. RAP elements	N		6	5	8	8
Area replacement ratio	Ra	N*Ag/(B*B)	0.12	0.09	0.14	0.13
Stiffness ratio	Rs	kg/km	11.7	11.7	11.7	11.7
Stress at top of GP (ksf)	qg	q*Rs/(Rs*Ra-Ra+1)	21.7	23.5	22.0	21.2
Load at top of GP (kips)	Qg	qg*Ag	47.4	51.3	48.0	46.3

SHAFT LENGTH REQUIREMENTS - SQUARE FOOTINGS

Depth of Embedment	Df		4.5	4.0	4.7	5.0
Trial shaft length (ft)	Hs		9.8	10.3	11.7	10.3
Drill depth (ft)	Hdrill	Df+Hs	14.3	14.3	16.4	15.3
Frictional resistance force (kips)	Qs	fs*pi*d*Hs	54.3	55.9	68.2	59.5
Allowable tensile resistance (kips)	Qsall	Qs/2	27.1	28.0	34.1	29.7
Allowable end-bearing rest. (kips)	Qeb	Qeb	5.0	5.0	5.0	5.0
Is shaft long enough?		Qs+Qeb>Pcdem?	**ok**	**ok**	**ok**	**ok**

INPUT PARAMETER VALUES:

Upper Zone Elastic Parameters		
Parameter	Sym.	Val.
Pier Modulus Layer 1 (ksf)	Eg1	3600
Pier Modulus Layer 2 (ksf)	Eg2	3600
Pier Modulus Layer 3 (ksf)	Eg3	3600
Pier Modulus Layer 4 (ksf)	Eg4	2200
Pier Modulus Layer 5 (ksf)	Eg5	2200
Soil Modulus Layer 1 (ksf)	Em1	300
Soil Modulus Layer 2 (ksf)	Em2	300
Soil Modulus Layer 3 (ksf)	Em3	300
Soil Modulus Layer 4 (ksf)	Em4	175
Soil Modulus Layer 5 (ksf)	Em5	175

UPPER ZONE SETTLEMENT - SQUARE FOOTINGS

Parameter	**Symb**	Equation	F10.5 G/5	F11 E.2/1	F11 F/5	F11 H/5.7
UZ Settlement Approach		1-Stiffness, 2-Modulus	2	2	2	2
Thickness of UZ sublayer 1(ft)	H_{uz1}		1.9	2.1	1.9	1.8
Thickness of UZ sublayer 2 (ft)	H_{uz2}		1.9	2.1	1.9	1.8
Thickness of UZ sublayer 3 (ft)	H_{uz3}		1.9	2.1	1.9	1.8
Thickness of UZ sublayer 4 (ft)	H_{uz4}		2.7	2.7	3.8	3.2
Thickness of UZ sublayer 5 (ft)	H_{uz5}		2.7	2.7	3.8	3.2
Total UZ Thickness OK?		Huz = Hs + d	**ok**	**ok**	**ok**	**ok**
Composite Modulus Layer 1 (ksf)	E_{comp1}	Eg1Ra + Em1(1-Ra)	692	597	776	736
Composite Modulus Layer 2 (ksf)	E_{comp2}	Eg2Ra + Em2(1-Ra)	692	597	776	736
Composite Modulus Layer 3 (ksf)	E_{comp3}	Eg3Ra + Em3(1-Ra)	692	597	776	736
Composite Modulus Layer 4 (ksf)	E_{comp4}	Eg4Ra + Em4(1-Ra)	415	358	467	442
Composite Modulus Layer 5 (ksf)	E_{comp5}	Eg5Ra + Em5(1-Ra)	415	358	467	442
Sett. of UZ sublayer 1 (in)	s_{uz1}	qg/kg or q*Iσ-vag*H/Ecomp	0.14	0.17	0.14	0.13
Sett. of UZ sublayer 2 (in)	s_{uz2}	q*Iσ-2*H_{uz2}/E_{comp2}	0.13	0.15	0.13	0.12
Sett. of UZ sublayer 3 (in)	s_{uz3}	q*Iσ-3*H_{uz3}/E_{comp3}	0.11	0.12	0.11	0.10
Sett. of UZ sublayer 4 (in)	s_{uz4}	q*Iσ-4*H_{uz4}/E_{comp4}	0.18	0.19	0.25	0.23
Sett. of UZ sublayer 5 (in)	s_{uz5}	q*Iσ-5*H_{uz5}/E_{comp5}	0.12	0.13	0.15	0.15
Total Upper Zone Settlement (in)	s_{uz}	suz1+suz2+suz3+suz4+suz5	0.68	0.76	0.78	0.74

INPUT PARAMETER VALUES:

Parameter	Sym.	Val.
Allowable end-bearing (kips)	Qeb	5
E or c_ε for LZ sublyr 1	E_1 / $c_{\varepsilon1}$	100
E or c_ε for LZ sublyr 2	E_2 / $c_{\varepsilon2}$	100
E or c_ε for LZ sublyr 3	E_3 / $c_{\varepsilon3}$	100
E or c_ε for LZ sublyr 4	E_4 / $c_{\varepsilon4}$	400
E or c_ε for LZ sublyr 5	E_5 / $c_{\varepsilon5}$	400
Calc. settlement to X*B	X	2

LOWER ZONE SETTLEMENTS - SQUARE FOOTINGS

Parameter	Symb	Equation	F10.5 G/5	F11 E.2/1	F11 F/5	F11 H/5.7
Dpth to bottm of LZ from ftg (ft)	X*B	X*B	21.0	22.0	22.0	23.0
Upper zone thickness (ft)	H_{uz}	Hs+d	11.5	12.0	13.4	12.0
Lower zone thickness (ft)	H_{lz}	H2b-Hlz	9.6	10.1	8.7	11.1
Thickness of LZ sublayer 1(ft)	H_{lz1}		0.0	0.0	0.0	0.0
Thickness of LZ sublayer 2 (ft)	H_{lz2}		0.0	0.0	0.0	0.0
Thickness of LZ sublayer 3 (ft)	H_{lz3}		0.0	0.0	0.0	0.0
Thickness of LZ sublayer 4 (ft)	H_{lz4}		4.8	5.1	4.4	5.6
Thickness of LZ sublayer 5 (ft)	H_{lz5}		4.8	5.1	4.4	5.6
Total LZ thickness ok?			**ok**	**ok**	**ok**	**ok**
E or c_ε for LZ sublyr 1	E_1 / $c_{\varepsilon1}$	E (ksf) or c_ε	100	100	100	100
E or c_ε for LZ sublyr 2	E_2 / $c_{\varepsilon2}$	E (ksf) or c_ε	100	100	100	100
E or c_ε for LZ sublyr 3	E_3 / $c_{\varepsilon3}$	E (ksf) or c_ε	100	100	100	100
E or c_ε for LZ sublyr 4	E_4 / $c_{\varepsilon4}$	E (ksf) or c_ε	400	400	400	400
E or c_ε for LZ sublyr 5	E_5 / $c_{\varepsilon5}$	E (ksf) or c_ε	400	400	400	400
Initial stress for sublyr 1 (ksf)	P'_{o1}		1.1	1.1	1.2	1.2
Initial stress for sublyr 2 (ksf)	P'_{o2}		1.1	1.1	1.2	1.2
Initial stress for sublyr 3 (ksf)	P'_{o3}		1.1	1.1	1.2	1.2
Initial stress for sublyr 4 (ksf)	P'_{o4}		1.2	1.3	1.4	1.3
Initial stress for sublyr 5 (ksf)	P'_{o5}		1.5	1.5	1.6	1.6
Ftg stress on sublyr 1 (ksf)	ΔP1	q*I	1.3	1.2	1.2	1.4
Ftg stress on sublyr 2 (ksf)	ΔP2	q*I	1.3	1.2	1.2	1.4
Ftg stress on sublyr 3 (ksf)	ΔP3	q*I	1.3	1.2	1.2	1.4
Ftg stress on sublyr 4 (ksf)	ΔP4	q*I	0.9	0.9	0.9	1.0
Ftg stress on sublyr 5 (ksf)	ΔP5	q*I	0.6	0.5	0.6	0.6
Sett. of LZ sublayer 1 (in)	s_{lz1}	DP1*Hlz1/E1	0.00	0.00	0.00	0.00
Sett. of LZ sublayer 2 (in)	s_{lz2}	DP2*Hlz2/E2	0.00	0.00	0.00	0.00
Sett. of LZ sublayer 3 (in)	s_{lz3}	DP3*Hlz3/E3	0.00	0.00	0.00	0.00
Sett. of LZ sublayer 4 (in)	s_{lz4}	DP4*Hlz4/E4	0.13	0.13	0.12	0.17
Sett. of LZ sublayer 5 (in)	s_{lz5}	DP5*Hlz5/E5	0.08	0.08	0.08	0.10
Total lower zone sett. (in)	s_{lz}	s_{lz1}+s_{lz2}+s_{lz3}+s_{lz4}+s_{lz5}	0.22	0.21	0.21	0.27
Total UZ + LZ settlement (in)	s		0.89	0.98	0.98	1.00

GEOPIER Foundation Company

Project: Hobson's Landing Condominium - Portland, ME
No.: GNE-01838
Engnr: SMD/ENG/BMC/JEF
Date: 12/3/2018

GEOPIER®
RECTANGULAR FOOTINGS
Version 3.1 June 2017

INPUT PARAMETER VALUES:

Parameter	Sym.	Val.
RAP diameter (in)	d	20
Depth to groundwater (ft)	dgw	3
Total unit weight of soil (pcf)	g	120
Soil frict. angle (degr)	f	28
Max. hor. pressure (psf)	pmax	2500
RAP cell cap. (kips)	Qcell	80
Footing bearing press. (ksf)	qall	5
RAP stiffn. modulus (pci)	kg	245
Soil stiffness modulus (pci)	km	21
Concrete Comp. Str. (psi)	f'c	0

TOP OF PIER STRESS - RECTANGULAR FOOTINGS

Parameter	Symb	Equation	Elevator
Column load (kips)	P		300.0
Selected footing width (ft)	B		11.7
Estimated footing length (ft)	Lr		5.1
Selected footing length (ft)	L		12.6
Footing contact pressure	q	P/(B*L)	2.0
Estimated No. RAP elements	Nr	P/Qcell	4
Selected No. RAP elements	N		5
Area replacement ratio	Ra	N*Ag/(B*L)	0.07
Stiffness ratio	Rs	kg/km	11.7
Stress at top of GP (ksf)	qg	q*Rs/(Rs*Ra-Ra+1)	13.3
Load at top of GP (kips)	Qg	qg*Ag	29.0

SHAFT LENGTH REQUIREMENTS - RECTANGULAR FOOTINGS

Depth of Embedment	Df		7.2
Trial shaft length (ft)	Hs		18.2
Drill depth (ft)	Hdrill	Df+Hs	25.4
Frictional resistance force (kips)	Qs	fs*pi*d*Hs	120.6
Allowable tensile resistance (kips)	Qsall	Qs/2	60.3
Allowable end-bearing rest. (kips)	Qeb	Qeb	5.0
Is shaft long enough?		Qs+Qeb>Pcdem?	**ok**

INPUT PARAMETER VALUES:

Upper Zone Elastic Parameters		
Parameter	Sym.	Val
Pier Modulus Layer 1 (ksf)	Eg1	3600
Pier Modulus Layer 2 (ksf)	Eg2	3600
Pier Modulus Layer 3 (ksf)	Eg3	3600
Pier Modulus Layer 4 (ksf)	Eg4	2200
Pier Modulus Layer 5 (ksf)	Eg5	2200
Soil Modulus Layer 1 (ksf)	Em1	300
Soil Modulus Layer 2 (ksf)	Em2	300
Soil Modulus Layer 3 (ksf)	Em3	300
Soil Modulus Layer 4 (ksf)	Em4	175
Soil Modulus Layer 5 (ksf)	Em5	175

UPPER ZONE SETTLEMENT - RECTANGULAR FOOTINGS

Parameter	**Symb**	Equation	Elevator
UZ Settlement Approach		1-Stiffness, 2-Modulus	2
Thickness of UZ sublayer 1(ft)	H_{uz1}		1.0
Thickness of UZ sublayer 2 (ft)	H_{uz2}		1.0
Thickness of UZ sublayer 3 (ft)	H_{uz3}		1.0
Thickness of UZ sublayer 4 (ft)	H_{uz4}		8.3
Thickness of UZ sublayer 5 (ft)	H_{uz5}		8.3
Total UZ Thickness OK?		Huz = Hs +d	**ok**
Composite Modulus Layer 1 (ksf)	E_{comp1}	Eg1Ra + Em1(1-Ra)	545
Composite Modulus Layer 2 (ksf)	E_{comp2}	Eg2Ra + Em2(1-Ra)	545
Composite Modulus Layer 3 (ksf)	E_{comp3}	Eg3Ra + Em3(1-Ra)	545
Composite Modulus Layer 4 (ksf)	E_{comp4}	Eg4Ra + Em4(1-Ra)	325
Composite Modulus Layer 5 (ksf)	E_{comp5}	Eg5Ra + Em5(1-Ra)	325
Sett. of UZ sublayer 1 (in)	s_{uz1}	qg/kg or q*Iσ-vag*H/Ecomp	0.05
Sett. of UZ sublayer 2 (in)	s_{uz2}	q*Iσ-2*H_{uz2}/E_{comp2}	0.05
Sett. of UZ sublayer 3 (in)	s_{uz3}	q*Iσ-3*H_{uz3}/E_{comp3}	0.04
Sett. of UZ sublayer 4 (in)	s_{uz4}	q*Iσ-4*H_{uz4}/E_{comp4}	0.38
Sett. of UZ sublayer 5 (in)	s_{uz5}	q*Iσ-5*H_{uz5}/E_{comp5}	0.14
Total Upper Zone Settlement (in)	s_{uz}	uz1+suz2+suz3+suz4+suz	0.66

INPUT PARAMETER VALUES:

Parameter	Sym.	Val.
Allowable end-bearing (kips)	Qeb	5
E or c_ε for LZ sublyr 1	E_1 / $c_{\varepsilon1}$	100
E or c_ε for LZ sublyr 2	E_2 / $c_{\varepsilon2}$	100
E or c_ε for LZ sublyr 3	E_3 / $c_{\varepsilon3}$	100
E or c_ε for LZ sublyr 4	E_4 / $c_{\varepsilon4}$	400
E or c_ε for LZ sublyr 5	E_5 / $c_{\varepsilon5}$	400
Calc. settlement to X*B	X	2

LOWER ZONE SETTLEMENTS - RECTANGULAR FOOTINGS

Parameter	Symb	Equation	Elevator
Dpth to bottm of LZ from ftg (ft)	X*B	X*Beq	24.2
Upper zone thickness (ft)	H_{uz}	Hs+d	19.9
Lower zone thickness (ft)	H_{lz}	H2b-Hlz	4.4
Thickness of LZ sublayer 1(ft)	H_{lz1}		0.0
Thickness of LZ sublayer 2 (ft)	H_{lz2}		0.0
Thickness of LZ sublayer 3 (ft)	H_{lz3}		0.0
Thickness of LZ sublayer 4 (ft)	H_{lz4}		2.2
Thickness of LZ sublayer 5 (ft)	H_{lz5}		2.2
Total thickness ok?			**ok**
E or c_ε for LZ sublyr 1	E_1 / $c_{\varepsilon1}$	E (ksf) or c_ε	100
E or c_ε for LZ sublyr 2	E_2 / $c_{\varepsilon2}$	E (ksf) or c_ε	100
E or c_ε for LZ sublyr 3	E_3 / $c_{\varepsilon3}$	E (ksf) or c_ε	100
E or c_ε for LZ sublyr 4	E_4 / $c_{\varepsilon4}$	E (ksf) or c_ε	400
E or c_ε for LZ sublyr 5	E_5 / $c_{\varepsilon5}$	E (ksf) or c_ε	400
Initial stress for sublyr 1 (ksf)	P'_{o1}		1.7
Initial stress for sublyr 2 (ksf)	P'_{o2}		1.7
Initial stress for sublyr 3 (ksf)	P'_{o3}		1.7
Initial stress for sublyr 4 (ksf)	P'_{o4}		1.8
Initial stress for sublyr 5 (ksf)	P'_{o5}		1.9
Ftg stress on sublyr 1 (ksf)	ΔP1	q*I	0.3
Ftg stress on sublyr 2 (ksf)	ΔP2	q*I	0.3
Ftg stress on sublyr 3 (ksf)	ΔP3	q*I	0.3
Ftg stress on sublyr 4 (ksf)	ΔP4	q*I	0.3
Ftg stress on sublyr 5 (ksf)	ΔP5	q*I	0.2
Sett. of LZ sublayer 1 (in)	s_{lz1}	DP1*Hlz1/E1	0.00
Sett. of LZ sublayer 2 (in)	s_{lz2}	DP2*Hlz2/E2	0.00
Sett. of LZ sublayer 3 (in)	s_{lz3}	DP3*Hlz3/E3	0.00
Sett. of LZ sublayer 4 (in)	s_{lz4}	DP4*Hlz4/E4	0.02
Sett. of LZ sublayer 5 (in)	s_{lz5}	DP5*Hlz5/E5	0.02
Total lower zone sett. (in)	s_{lz}	s_{lz1}+s_{lz2}+s_{lz3}+s_{lz4}+s_{lz5}	0.03
Total UZ + LZ settlement (in)	s		0.70

GEOPIER Foundation Company

Project: Hobson's Landing Condominium - Portland, ME
No.: GNE-01838
Engnr: SMD/ENG/BMC/JEF
Date: 12/3/2018

GEOPIER®
CONTINUOUS FOOTINGS
Version 3.1 June 2017

INPUT PARAMETER VALUES:

Parameter	Sym.	Val.
RAP diameter (in)	d	20
Depth to groundwater (ft)	dgw	3
Total unit weight of soil (pcf)	g	120
Soil frict. angle (degr)	f	28
Max. hor. pressure (psf)	pmax	2500
RAP cell cap. (kips)	Qcell	80
Footing bearing press. (ksf)	qall	5
RAP stiffn. modulus (pci)	kg	245
Soil stiffness modulus (pci)	km	21
Concrete Comp. Str. (psi)	f'c	0

TOP OF PIER STRESS - CONTINUOUS FOOTINGS

Parameter	Symb	Equation	Pier 10	Pier 11	Pier 14	Pier 19	Pier 25	Pier 31	Pier 41
Wall Load (kips/ft)	p		12.1	14.0	20.9	22.2	26.0	17.7	19.3
Estimated Geopier spacing (ft)	sreq	Qcell/p	6.6	5.7	3.8	3.6	3.1	4.5	4.1
Selected Geopier spacing (ft)	s		12.0	8.0	3.5	3.0	2.5	4.5	4.0
Estimated footing width (ft)	Breq	p/qall	2.4	2.8	4.2	4.4	5.2	3.5	3.9
Selected footing width (ft)	B		4.0	4.0	4.0	4.0	4.0	4.0	4.0
Contact pressure (ksf)	q	p/B	3.0	3.5	5.2	5.6	6.5	4.4	4.8
Area replacement ratio	Ra	Ag/(B*s)	0.05	0.07	0.16	0.18	0.22	0.12	0.14
Stiffness ratio	Rs	kg/km	11.7	11.7	11.7	11.7	11.7	11.7	11.7
Stress at top of GP (ksf)	qg	q*Rs/(Rs*Ra-Ra+1)	23.8	23.6	22.9	22.0	22.8	22.5	22.9
Load at top of GP (kips)	Qg	qg*Ag	51.9	51.6	50.0	48.1	49.7	49.1	50.0

SHAFT LENGTH REQUIREMENTS - CONTINUOUS FOOTINGS

Depth of Embedment	Df		2.5	2.5	2.5	2.5	2.5	2.5	2.5
Trial shaft length (ft)	Hs		10.8	10.8	10.8	10.8	10.8	10.8	10.8
Drill depth (ft)	Hdrill	Df+Hs	13.3	13.3	13.3	13.3	13.3	13.3	13.3
Frictional resistance force (kips)	Qs	fs*pi*d*Hs	53.3	53.3	53.3	53.3	53.3	53.3	53.3
Allowable tensile resistance (kips)	Qsall	Qs/2	26.6	26.6	26.6	26.6	26.6	26.6	26.6
Allowable end-bearing rest. (kips)	Qeb	Qeb	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Is shaft long enough?		Qs+Qeb>Pcdem?	**ok**	**ok**	**ok**	**ok**	**ok**	**ok**	**ok**

INPUT PARAMETER VALUES:

Upper Zone Elastic Parameters		
Parameter	Sym.	Val
Pier Modulus Layer 1 (ksf)	Eg1	3600
Pier Modulus Layer 2 (ksf)	Eg2	3600
Pier Modulus Layer 3 (ksf)	Eg3	3600
Pier Modulus Layer 4 (ksf)	Eg4	2200
Pier Modulus Layer 5 (ksf)	Eg5	2200
Soil Modulus Layer 1 (ksf)	Em1	300
Soil Modulus Layer 2 (ksf)	Em2	300
Soil Modulus Layer 3 (ksf)	Em3	300
Soil Modulus Layer 4 (ksf)	Em4	175
Soil Modulus Layer 5 (ksf)	Em5	175

UPPER ZONE SETTLEMENT - CONTINUOUS FOOTINGS

Parameter	**Symb**	Equation	Pier 10	Pier 11	Pier 14	Pier 19	Pier 25	Pier 31	Pier 41
UZ Settlement Approach		1-Stiffness, 2-Modulus	2	2	2	2	2	2	2
Thickness of UZ sublayer 1(ft)	H_{uz1}		2.6	2.6	2.6	2.6	2.6	2.6	2.6
Thickness of UZ sublayer 2 (ft)	H_{uz2}		2.6	2.6	2.6	2.6	2.6	2.6	2.6
Thickness of UZ sublayer 3 (ft)	H_{uz3}		2.6	2.6	2.6	2.6	2.6	2.6	2.6
Thickness of UZ sublayer 4 (ft)	H_{uz4}		2.2	2.2	2.2	2.2	2.2	2.2	2.2
Thickness of UZ sublayer 5 (ft)	H_{uz5}		2.2	2.2	2.2	2.2	2.2	2.2	2.2
Total UZ Thickness OK?		Huz = Hs +d	**ok**	**ok**	**ok**	**ok**	**ok**	**ok**	**ok**
Composite Modulus Layer 1 (ksf)	E_{comp1}	Eg1Ra + Em1(1-Ra)	450	525	814	900	1020	700	750
Composite Modulus Layer 2 (ksf)	E_{comp2}	Eg2Ra + Em2(1-Ra)	450	525	814	900	1020	700	750
Composite Modulus Layer 3 (ksf)	E_{comp3}	Eg3Ra + Em3(1-Ra)	450	525	814	900	1020	700	750
Composite Modulus Layer 4 (ksf)	E_{comp4}	Eg4Ra + Em4(1-Ra)	267	313	491	543	617	420	451
Composite Modulus Layer 5 (ksf)	E_{comp5}	Eg5Ra + Em5(1-Ra)	267	313	491	543	617	420	451
Sett. of UZ sublayer 1 (in)	s_{uz1}	qg/kg or q*Iσ-vag*H/Ecomp	0.19	0.19	0.18	0.17	0.18	0.18	0.18
Sett. of UZ sublayer 2 (in)	s_{uz2}	q*Iσ-2*H_{uz2}/E_{comp2}	0.12	0.12	0.11	0.11	0.11	0.11	0.11
Sett. of UZ sublayer 3 (in)	s_{uz3}	q*Iσ-3*H_{uz3}/E_{comp3}	0.08	0.08	0.07	0.07	0.07	0.07	0.07
Sett. of UZ sublayer 4 (in)	s_{uz4}	q*Iσ-4*H_{uz4}/E_{comp4}	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Sett. of UZ sublayer 5 (in)	s_{uz5}	q*Iσ-5*H_{uz5}/E_{comp5}	0.07	0.07	0.06	0.06	0.06	0.06	0.06
Total Upper Zone Settlement (in)	s_{uz}	suz1+suz2+suz3+suz4+suz5	0.54	0.53	0.51	0.49	0.51	0.50	0.51

INPUT PARAMETER VALUES:

Parameter	Symb	Val.
Allowable end-bearing (kips)	Qeb	5
E or c_ε for LZ sublyr 1	E_1 / $c_{\varepsilon1}$	100
E or c_ε for LZ sublyr 2	E_2 / $c_{\varepsilon2}$	100
E or c_ε for LZ sublyr 3	E_3 / $c_{\varepsilon3}$	100
E or c_ε for LZ sublyr 4	E_4 / $c_{\varepsilon4}$	400
E or c_ε for LZ sublyr 5	E_5 / $c_{\varepsilon5}$	400
Calc. settlement to X*B	X	5

LOWER ZONE SETTLEMENTS - CONTINUOUS FOOTINGS

Parameter	Symb	Equation	Pier 10	Pier 11	Pier 14	Pier 19	Pier 25	Pier 31	Pier 41
Dpth to bottm of LZ from ftg (ft)	X*B	X*B	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Upper zone thickness (ft)	H_{uz}	Hs+d	12.5	12.5	12.5	12.5	12.5	12.5	12.5
Lower zone thickness (ft)	H_{lz}	H2b-Hlz	7.6	7.6	7.6	7.6	7.6	7.6	7.6
Thickness of LZ sublayer 1(ft)	H_{lz1}		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thickness of LZ sublayer 2 (ft)	H_{lz2}		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thickness of LZ sublayer 3 (ft)	H_{lz3}		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Thickness of LZ sublayer 4 (ft)	H_{lz4}		3.8	3.8	3.8	3.8	3.8	3.8	3.8
Thickness of LZ sublayer 5 (ft)	H_{lz5}		3.8	3.8	3.8	3.8	3.8	3.8	3.8
Total thickness ok?			**ok**	**ok**	**ok**	**ok**	**ok**	**ok**	**ok**
E or c_ε for LZ sublyr 1	E_1 / $c_{\varepsilon1}$	E (ksf) or c_ε	100	100	100	100	100	100	100
E or c_ε for LZ sublyr 2	E_2 / $c_{\varepsilon2}$	E (ksf) or c_ε	100	100	100	100	100	100	100
E or c_ε for LZ sublyr 3	E_3 / $c_{\varepsilon3}$	E (ksf) or c_ε	100	100	100	100	100	100	100
E or c_ε for LZ sublyr 4	E_4 / $c_{\varepsilon4}$	E (ksf) or c_ε	400	400	400	400	400	400	400
E or c_ε for LZ sublyr 5	E_5 / $c_{\varepsilon5}$	E (ksf) or c_ε	400	400	400	400	400	400	400
Initial stress for sublyr 1 (ksf)	P'_{o1}		1.0	1.0	1.0	1.0	1.0	1.0	1.0
Initial stress for sublyr 2 (ksf)	P'_{o2}		1.0	1.0	1.0	1.0	1.0	1.0	1.0
Initial stress for sublyr 3 (ksf)	P'_{o3}		1.0	1.0	1.0	1.0	1.0	1.0	1.0
Initial stress for sublyr 4 (ksf)	P'_{o4}		1.2	1.2	1.2	1.2	1.2	1.2	1.2
Initial stress for sublyr 5 (ksf)	P'_{o5}		1.4	1.4	1.4	1.4	1.4	1.4	1.4
Ftg stress on sublyr 1 (ksf)	ΔP1	q*I	0.6	0.7	1.0	1.1	1.3	0.9	1.0
Ftg stress on sublyr 2 (ksf)	ΔP2	q*I	0.6	0.7	1.0	1.1	1.3	0.9	1.0
Ftg stress on sublyr 3 (ksf)	ΔP3	q*I	0.6	0.7	1.0	1.1	1.3	0.9	1.0
Ftg stress on sublyr 4 (ksf)	ΔP4	q*I	0.5	0.6	0.9	1.0	1.1	0.8	0.8
Ftg stress on sublyr 5 (ksf)	ΔP5	q*I	0.4	0.5	0.7	0.8	0.9	0.6	0.7
Sett. of LZ sublayer 1 (in)	s_{lz1}	DP1*Hlz1/E1	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sett. of LZ sublayer 2 (in)	s_{lz2}	DP2*Hlz2/E2	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sett. of LZ sublayer 3 (in)	s_{lz3}	DP3*Hlz3/E3	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sett. of LZ sublayer 4 (in)	s_{lz4}	DP4*Hlz4/E4	0.06	0.07	0.10	0.11	0.13	0.09	0.10
Sett. of LZ sublayer 5 (in)	s_{lz5}	DP5*Hlz5/E5	0.05	0.05	0.08	0.09	0.10	0.07	0.08
Total lower zone sett. (in)	s_{lz}	s_{lz1}+s_{lz2}+s_{lz3}+s_{lz4}+s_{lz5}	0.11	0.12	0.19	0.20	0.23	0.16	0.17
Total UZ + LZ settlement (in)	s		0.64	0.66	0.70	0.69	0.74	0.66	0.68

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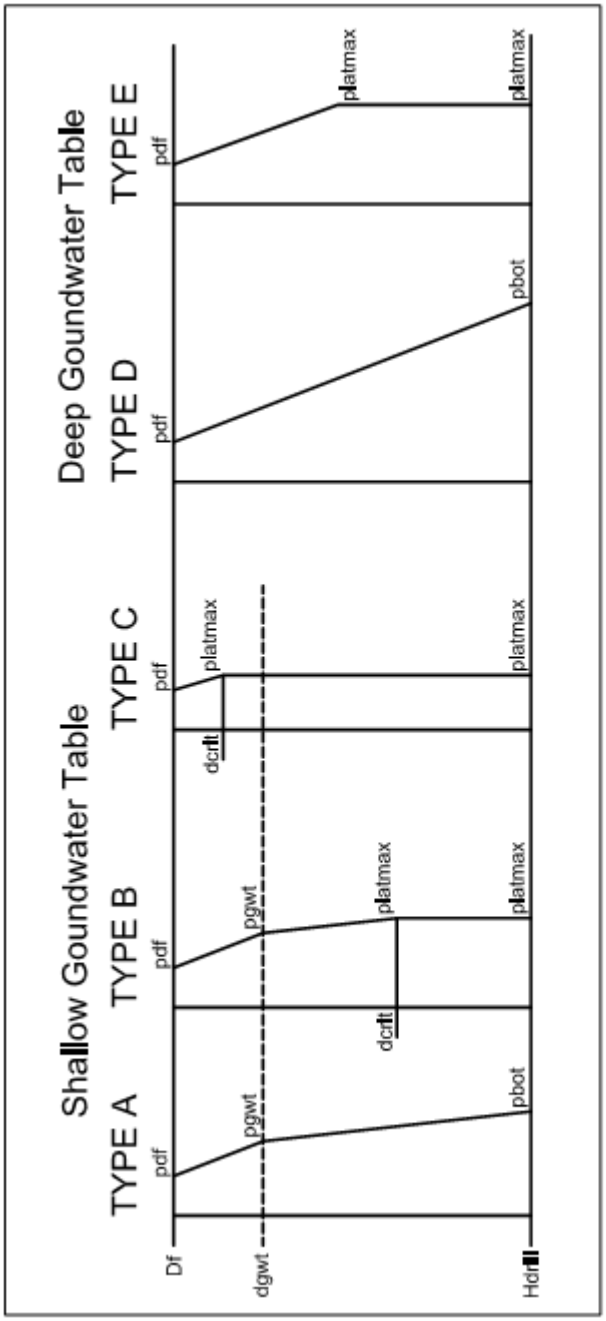

Lateral Earth Pressure Cases to Determine Average Earth Pressure

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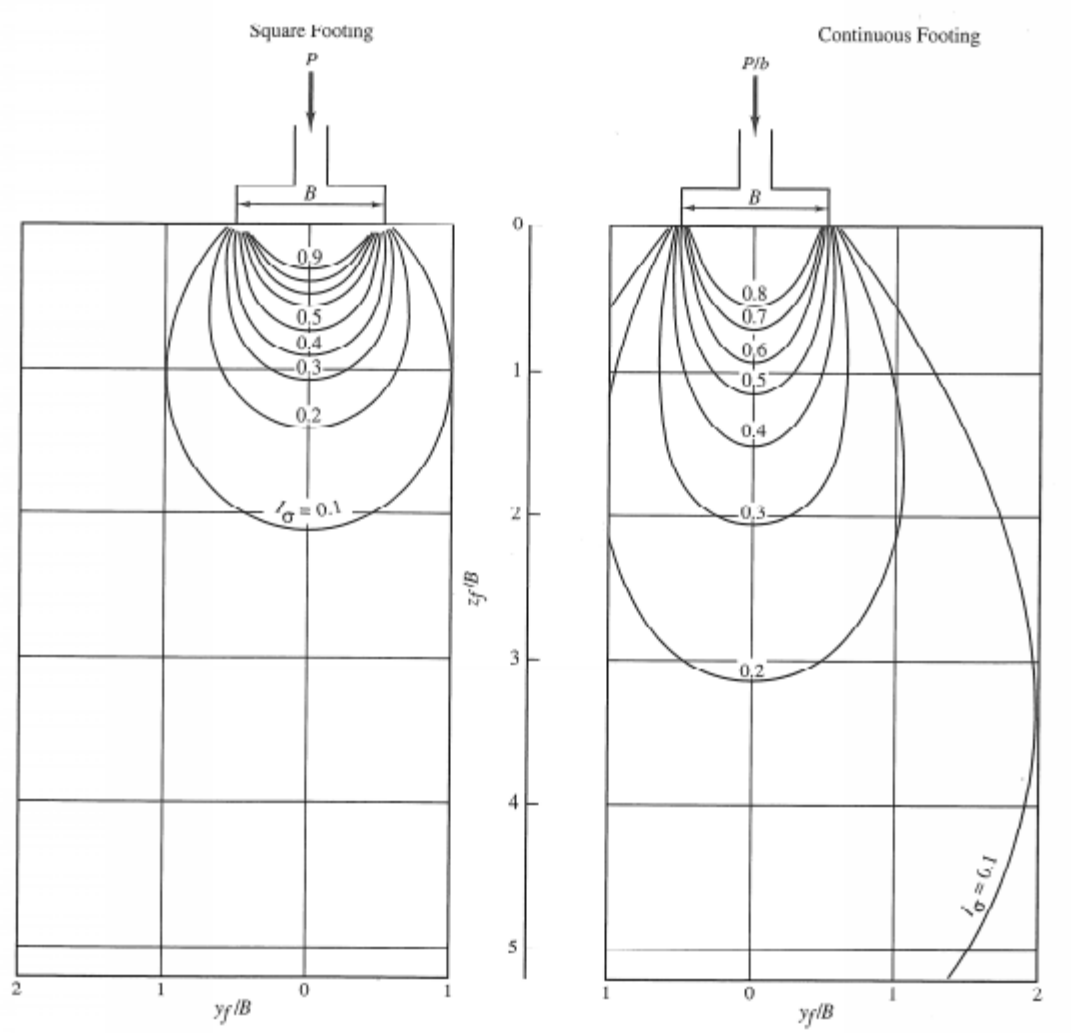

Boussinesq Influence Chart (after Newmark)

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Reviewed for Code Compliance
Permitting and Inspections Department
Approved with Conditions
01/22/2019

Design Submittal for GEOPIER® Ground Improvement
Hobson's Landing Condominium
Portland, Maine

Attachment B:
Geopier Element Modulus Test Forms

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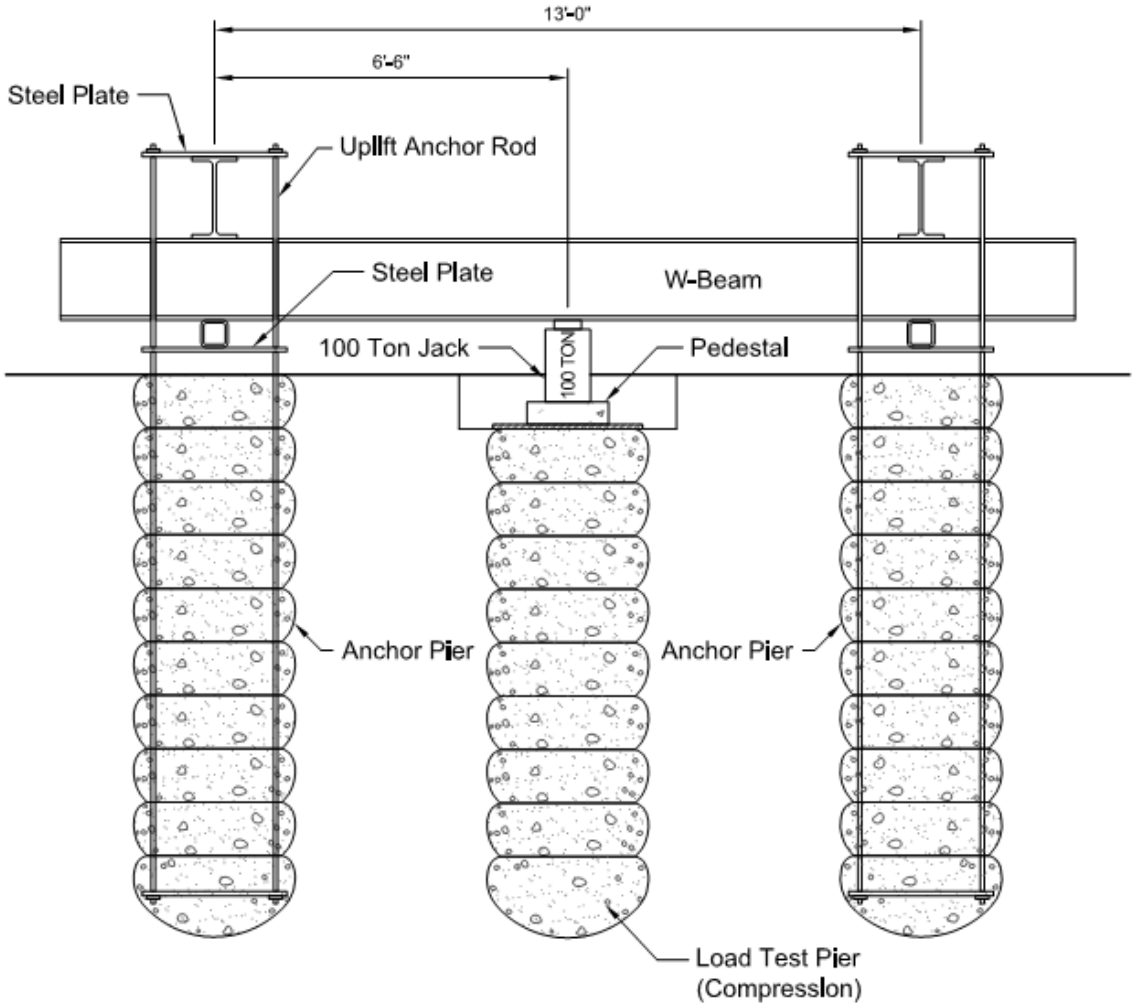

Typical Modulus Load Test Setup

At the discretion of the Geopier Installer, Helical Anchors or dead weight may be substituted for Anchor Piers

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GEOPIER MODULUS LOAD TEST SCHEDULE

Reviewed for Code Compliance
Permitting and Inspections Department
Approved with Conditions
01/22/2019

Project Number: GNE-01838
Project Name: Hobson's Landing Condominium
Project Location: Portland, ME
Date: 12/3/2018

Maximum GEOPIER Design Stress: 23,800 psf Maximum top-of-pier stress calculated at F9 footing along E.7/8 line
Geopier Diameter: 20 in.
Pier Area: 2.18 sf

Load No.	Ram Load, (tons)	Geopier Stress, (psf)	Percent of Design Stress	Minimum Duration	Maximum Duration	Remarks
	1.30	1,190	5.0%	N/A	N/A	Seating load
1	4.33	3,967	16.7%	15 min	60 min	
2	8.65	7,933	33.3%	15 min	60 min	
3	12.98	11,900	50.0%	15 min	60 min	
4	17.31	15,867	66.7%	15 min	60 min	
5	21.63	19,833	83.3%	15 min	60 min	
6	25.96	23,800	100.0%	15 min	60 min	
7	30.28	27,760	116.6%	60 min	240 min	Creep ≤ 0.01 in/hr
8	34.61	31,733	133.3%	15 min	60 min	
9	38.94	35,700	150.0%	15 min	60 min	
10	25.96	23,800	100.0%	N/A	N/A	Rebound, unload
11	17.13	15,708	66.0%	N/A	N/A	Rebound, unload
12	8.57	7,854	33.0%	N/A	N/A	Rebound, unload
13	1.30	1,190	5.0%	N/A	N/A	Rebound, unload

Notes:

1 - The Geopier element to be used in the modulus load testing should be a Rammed Aggregate Pier installed in a manner similar to production. The modulus load test should be performed in an accessible location within or close to the building footprint and as close to boring B-103 that is agreeable to the general contractor and the engineer.

2 - The modulus load test shall be performed to a stress not less than 150% of the design maximum top-of-Geopier stress indicated in the Geopier Design Calculations.

3 - The modulus load test Geopier element shall be installed from the proposed working grade at El. 11.5 to a depth consistent with the nearby Geopier elements that have been summarized on the Geopier Schedule with a base constructed in the Glacial Marine or Glacial Till that underlies the Fill.

4 - One telltale shall be installed at the base of pier. Telltale deflections shall be monitored concurrent with top of Geopier deflections during the modulus load test.

5 - The modulus load test setup shall be as shown on the attached sketch "Typical Modulus Load Test Setup". At the discretion of the Geopier Installer, helical anchors or dead weight may be used in lieu of uplift Geopiers to provide adequate reaction during modulus load testing.

6 - A representative of the owner's geotechnical consultant should be present to witness the load test.

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Approved with Conditions
01/22/2019

Design Submittal for GEOPIER® Ground Improvement
Hobson's Landing Condominium
Portland, Maine

Attachment C:
Geopier Location Plan, Construction Notes & Specifications

(See enclosed GEO-Series Drawings)

Design Submittal for GEOPIER® Ground Improvement
Hobson's Landing Condominium
Portland, Maine

Attachment D:
Geopier Schedule and Quality Control Forms

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GEOPIER SCHEDULE

Project Number: GNE-01838
Project Name: Hobson's Landing Condominium
Project Location: Portland, ME
Date: 12/3/2018

FF Elev, Structural
FF Elev. Civil 12.33
Notes:

Reviewed for Code Compliance
Permitting and Inspections Department
Approved with Conditions
01/22/2019

Pier		Design	Footing Design Data, ft			Design Installation Data, ft			Proposed Geopier Geometry		
No.	Type	Capacity (kips)	Type	Depth Below FFE	Bottom [1] Elev.	Surface Elev.	Est. Drill Depth	Top Depth	Bottom El, ft.	Top El, ft.	Shaft Length ft.
1	RAP	80	Ret. Wall	0.0	14.9	11.5	12.5	0.0	-1.0	11.5	12.5
2	RAP	80	Ret. Wall	0.0	14.9	11.5	12.5	0.0	-1.0	11.5	12.5
3	RAP	80	Ret. Wall	0.0	14.9	11.5	12.5	0.0	-1.0	11.5	12.5
4	RAP	80	Ret. Wall	0.0	14.9	11.5	12.5	0.0	-1.0	11.5	12.5
5	RAP	80	Ret. Wall	0.0	14.9	11.5	12.5	0.0	-1.0	11.5	12.5
6	RAP	80	Ret. Wall	2.5	9.8	11.5	12.5	0.7	-1.0	9.8	10.8
7	RAP	80	Ret. Wall	2.5	9.8	11.5	12.5	0.7	-1.0	9.8	10.8
8	RAP	80	Ret. Wall	2.5	9.8	11.5	12.5	0.7	-1.0	9.8	10.8
9	RAP	80	Ret. Wall	2.5	9.8	11.5	12.5	0.7	-1.0	9.8	10.8
10	RAP	80	Ret. Wall	2.5	9.8	11.5	12.5	0.7	-1.0	9.8	10.8
11	RAP	80	Ret. Wall	2.5	9.8	11.5	12.5	0.7	-1.0	9.8	10.8
12	RAP	80	Ret. Wall	2.5	9.8	11.5	12.5	0.7	-1.0	9.8	10.8
13	RAP	80	Ret. Wall	2.5	9.8	11.5	12.5	0.7	-1.0	9.8	10.8
14	RAP	80	Ret. Wall	2.5	9.8	11.5	12.5	0.7	-1.0	9.8	10.8
15	RAP	80	Ret. Wall	2.5	9.8	11.5	12.5	0.7	-1.0	9.8	10.8
16	RAP	80	Ret. Wall	2.5	9.8	11.5	12.5	0.7	-1.0	9.8	10.8
17	RAP	80	Ret. Wall	2.5	9.8	11.5	12.5	0.7	-1.0	9.8	10.8
18	RAP	80	Ret. Wall	2.5	9.8	11.5	12.5	0.7	-1.0	9.8	10.8
19	RAP	80	Ret. Wall	2.5	9.8	11.5	12.5	0.7	-1.0	9.8	10.8
20	RAP	80	Ret. Wall	2.5	9.8	11.5	12.5	0.7	-1.0	9.8	10.8
21	RAP	80	Ret. Wall	2.5	9.8	11.5	12.5	0.7	-1.0	9.8	10.8
22	RAP	80	Ret. Wall	2.5	9.8	11.5	12.5	0.7	-1.0	9.8	10.8
23	RAP	80	Ret. Wall	2.5	9.8	11.5	12.5	0.7	-1.0	9.8	10.8
24	RAP	80	Ret. Wall	2.5	9.8	11.5	12.5	0.7	-1.0	9.8	10.8
25	RAP	80	Ret. Wall	2.5	9.8	11.5	12.5	0.7	-1.0	9.8	10.8
26	RAP	80	Ret. Wall	2.5	9.8	11.5	12.5	0.7	-1.0	9.8	10.8
27	RAP	80	Ret. Wall	2.5	9.8	11.5	12.5	0.7	-1.0	9.8	10.8
28	RAP	80	Ret. Wall	2.5	9.8	11.5	12.5	0.7	-1.0	9.8	10.8
29	RAP	80	Ret. Wall	2.5	9.8	11.5	12.5	0.7	-1.0	9.8	10.8
30	RAP	80	Ret. Wall	2.5	9.8	11.5	12.5	0.7	-1.0	9.8	10.8
31	RAP	80	Ret. Wall	2.5	9.8	11.5	12.5	0.7	-1.0	9.8	10.8
32	RAP	80	Ret. Wall	2.5	9.8	11.5	12.5	0.7	-1.0	9.8	10.8
33	RAP	80	Ret. Wall	2.5	9.8	11.5	12.5	0.7	-1.0	9.8	10.8
34	RAP	80	Ret. Wall	2.5	9.8	11.5	12.5	0.7	-1.0	9.8	10.8
35	RAP	80	Ret. Wall	2.5	9.8	11.5	12.5	0.7	-1.0	9.8	10.8
36	RAP	80	Ret. Wall	2.5	9.8	11.5	12.5	0.7	-1.0	9.8	10.8
37	RAP	80	Ret. Wall	2.5	9.8	11.5	12.5	0.7	-1.0	9.8	10.8
38	RAP	80	Ret. Wall	2.5	9.8	11.5	12.5	0.7	-1.0	9.8	10.8
39	RAP	80	Ret. Wall	2.5	9.8	11.5	12.5	0.7	-1.0	9.8	10.8
40	RAP	80	Ret. Wall	2.5	9.8	11.5	12.5	0.7	-1.0	9.8	10.8
41	RAP	80	Ret. Wall	2.5	9.8	11.5	12.5	0.7	-1.0	9.8	10.8
42	RAP	80	Ret. Wall	2.5	9.8	11.5	12.5	0.7	-1.0	9.8	10.8
43	RAP	80	Ret. Wall	2.5	9.8	11.5	12.5	0.7	-1.0	9.8	10.8
44	RAP	80	Ret. Wall	2.5	9.8	11.5	12.5	0.7	-1.0	9.8	10.8
45	RAP	80	Ret. Wall	2.5	9.8	11.5	12.5	0.7	-1.0	9.8	10.8
46	RAP	80	Ret. Wall	2.5	9.8	11.5	12.5	0.7	-1.0	9.8	10.8
47	RAP	80	Ret. Wall	2.5	9.8	11.5	12.5	0.7	-1.0	9.8	10.8
48	RAP	80	Ret. Wall	4.0	8.3	11.5	12.5	2.2	-1.0	8.3	9.3
49	RAP	80	Ret. Wall	4.0	8.3	11.5	12.5	2.2	-1.0	8.3	9.3
50	RAP	80	Ret. Wall	4.0	8.3	11.5	12.5	2.2	-1.0	8.3	9.3

[1] Elevations provided for reference only. Not to be used in lieu of structural drawings.
The General Contractor is responsible for verifying these elevations to ensure that excavations are carried to the proper elevation.

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GEOPIER SCHEDULE

Project Number: GNE-01838
Project Name: Hobson's Landing Condominium
Project Location: Portland, ME
Date: 12/3/2018

FF Elev, Structural
FF Elev. Civil 12.33
Notes:

Reviewed for Code Compliance
Permitting and Inspections Department
Approved with Conditions
01/22/2019

Pier		Design Capacity (kips)	Footing Design Data, ft			Design Installation Data, ft			Proposed Geopier Geometry		
No.	Type		Type	Depth Below FFE	Bottom [1] Elev.	Surface Elev.	Est. Drill Depth	Top Depth	Bottom El, ft.	Top El, ft.	Shaft Length ft.
51	RAP	80	Ret. Wall	4.0	8.3	11.5	12.5	2.2	-1.0	8.3	9.3
52	RAP	80	Ret. Wall	4.0	8.3	11.5	12.5	2.2	-1.0	8.3	9.3
53	RAP	80	Ret. Wall	4.0	8.3	11.5	12.5	2.2	-1.0	8.3	9.3
54	RAP	80	Ret. Wall	4.0	8.3	11.5	12.5	2.2	-1.0	8.3	9.3
55	RAP	80	Ret. Wall	4.0	8.3	11.5	12.5	2.2	-1.0	8.3	9.3
56	RAP	80	Ret. Wall	4.0	8.3	11.5	12.5	2.2	-1.0	8.3	9.3
57	RAP	80	Ret. Wall	4.0	8.3	11.5	12.5	2.2	-1.0	8.3	9.3
58	RAP	80	Ret. Wall	4.0	8.3	11.5	12.5	2.2	-1.0	8.3	9.3
59	RAP	80	Ret. Wall	4.0	8.3	11.5	12.5	2.2	-1.0	8.3	9.3
60	RAP	80	Ret. Wall	4.0	8.3	11.5	12.5	2.2	-1.0	8.3	9.3
61	RAP	80	Ret. Wall	4.0	8.3	11.5	13.5	2.2	-2.0	8.3	10.3
62	RAP	80	Ret. Wall	4.0	8.3	11.5	13.5	2.2	-2.0	8.3	10.3
63	RAP	80	Ret. Wall	4.0	8.3	11.5	13.5	2.2	-2.0	8.3	10.3
64	RAP	80	Strip	4.0	8.3	11.5	13.5	2.2	-2.0	8.3	10.3
65	RAP	80	F8.5	4.0	8.3	11.5	13.5	2.2	-2.0	8.3	10.3
66	RAP	80	F8.5	4.0	8.3	11.5	13.5	2.2	-2.0	8.3	10.3
67	RAP	80	F8.5	4.0	8.3	11.5	13.5	2.2	-2.0	8.3	10.3
68	RAP	80	F8.5	4.0	8.3	11.5	13.5	2.2	-2.0	8.3	10.3
69	RAP	80	F7	4.0	8.3	11.5	14.5	2.2	-3.0	8.3	11.3
70	RAP	80	F7	4.0	8.3	11.5	14.5	2.2	-3.0	8.3	11.3
71	RAP	80	F7	4.0	8.3	11.5	14.5	2.2	-3.0	8.3	11.3
72	RAP	80	F7	4.0	8.3	11.5	14.5	2.2	-3.0	8.3	11.3
73	RAP	80	Strip	4.0	8.3	11.5	15.5	2.2	-4.0	8.3	12.3
74	RAP	80	F7.5	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3
75	RAP	80	F7.5	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3
76	RAP	80	F7.5	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3
77	RAP	80	F7.5	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3
78	RAP	80	Strip	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3
79	RAP	80	F7	4.0	8.3	11.5	17.5	2.2	-6.0	8.3	14.3
80	RAP	80	F7	4.0	8.3	11.5	17.5	2.2	-6.0	8.3	14.3
81	RAP	80	F7	4.0	8.3	11.5	17.5	2.2	-6.0	8.3	14.3
82	RAP	80	F7	4.0	8.3	11.5	17.5	2.2	-6.0	8.3	14.3
83	RAP	80	Strip	5.3	7.0	11.5	17.5	3.5	-6.0	7.0	13.0
84	RAP	80	Strip	5.3	7.0	11.5	17.5	3.5	-6.0	7.0	13.0
85	RAP	80	F7.5	4.0	8.3	11.5	18.5	2.2	-7.0	8.3	15.3
86	RAP	80	F7.5	4.0	8.3	11.5	18.5	2.2	-7.0	8.3	15.3
87	RAP	80	F7.5	4.0	8.3	11.5	18.5	2.2	-7.0	8.3	15.3
88	RAP	80	F7.5	4.0	8.3	11.5	18.5	2.2	-7.0	8.3	15.3
89	RAP	80	Strip	4.0	8.3	11.5	19.5	2.2	-8.0	8.3	16.3
90	RAP	80	Strip	4.0	8.3	11.5	19.5	2.2	-8.0	8.3	16.3
91	RAP	80	F6	4.0	8.3	11.5	19.5	2.2	-8.0	8.3	16.3
92	RAP	80	F6	4.0	8.3	11.5	19.5	2.2	-8.0	8.3	16.3
93	RAP	80	F6	4.0	8.3	11.5	19.5	2.2	-8.0	8.3	16.3
94	RAP	80	Strip	4.0	8.3	11.5	19.5	2.2	-8.0	8.3	16.3
95	RAP	80	F6.5	4.0	8.3	11.5	19.5	2.2	-8.0	8.3	16.3
96	RAP	80	F6.5	4.0	8.3	11.5	19.5	2.2	-8.0	8.3	16.3
97	RAP	80	F6.5	4.0	8.3	11.5	19.5	2.2	-8.0	8.3	16.3
98	RAP	80	Strip	4.0	8.3	11.5	19.5	2.2	-8.0	8.3	16.3
99	RAP	80	F6.5	4.0	8.3	11.5	19.5	2.2	-8.0	8.3	16.3
100	RAP	80	F6.5	4.0	8.3	11.5	19.5	2.2	-8.0	8.3	16.3

[1] Elevations provided for reference only. Not to be used in lieu of structural drawings.
The General Contractor is responsible for verifying these elevations to ensure that excavations are carried to the proper elevation.

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GEOPIER SCHEDULE

Project Number: GNE-01838
Project Name: Hobson's Landing Condominium
Project Location: Portland, ME
Date: 12/3/2018

FF Elev, Structural
FF Elev. Civil 12.33
Notes:

Reviewed for Code Compliance
Permitting and Inspections Department
Approved with Conditions
01/22/2019

Pier		Design Capacity (kips)	Footing Design Data, ft			Design Installation Data, ft			Proposed Geopier Geometry		
No.	Type		Type	Depth Below FFE	Bottom [1] Elev.	Surface Elev.	Est. Drill Depth	Top Depth	Bottom El, ft.	Top El, ft.	Shaft Length ft.
101	RAP	80	F6.5	4.0	8.3	11.5	19.5	2.2	-8.0	8.3	16.3
102	RAP	80	Strip	4.0	8.3	11.5	18.5	2.2	-7.0	8.3	15.3
103	RAP	80	F6.5	4.0	8.3	11.5	18.5	2.2	-7.0	8.3	15.3
104	RAP	80	F6.5	4.0	8.3	11.5	18.5	2.2	-7.0	8.3	15.3
105	RAP	80	F6.5	4.0	8.3	11.5	18.5	2.2	-7.0	8.3	15.3
106	RAP	80	Strip	4.0	8.3	11.5	18.5	2.2	-7.0	8.3	15.3
107	RAP	80	F6	4.0	8.3	11.5	18.5	2.2	-7.0	8.3	15.3
108	RAP	80	F6	4.0	8.3	11.5	18.5	2.2	-7.0	8.3	15.3
109	RAP	80	F6	4.0	8.3	11.5	18.5	2.2	-7.0	8.3	15.3
110	RAP	80	Strip	4.0	8.3	11.5	18.5	2.2	-7.0	8.3	15.3
111	RAP	80	Strip	4.0	8.3	11.5	18.5	2.2	-7.0	8.3	15.3
112	RAP	80	F10.5	4.0	8.3	11.5	17.5	2.2	-6.0	8.3	14.3
113	RAP	80	F10.5	4.0	8.3	11.5	17.5	2.2	-6.0	8.3	14.3
114	RAP	80	F10.5	4.0	8.3	11.5	17.5	2.2	-6.0	8.3	14.3
115	RAP	80	F10.5	4.0	8.3	11.5	17.5	2.2	-6.0	8.3	14.3
116	RAP	80	Strip	4.0	8.3	11.5	17.5	2.2	-6.0	8.3	14.3
117	RAP	80	F5.5	4.0	8.3	11.5	17.5	2.2	-6.0	8.3	14.3
118	RAP	80	F5.5	4.0	8.3	11.5	17.5	2.2	-6.0	8.3	14.3
119	RAP	80	Strip	4.0	8.3	11.5	17.5	2.2	-6.0	8.3	14.3
120	RAP	80	F5.5	4.0	8.3	11.5	17.5	2.2	-6.0	8.3	14.3
121	RAP	80	F5.5	4.0	8.3	11.5	17.5	2.2	-6.0	8.3	14.3
122	RAP	80	Strip	9.3	3.0	11.5	17.5	7.5	-6.0	3.0	9.0
123	RAP	80	F9	10.7	1.7	11.5	26.5	8.8	-15.0	1.7	16.7
124	RAP	80	F9	10.7	1.7	11.5	26.5	8.8	-15.0	1.7	16.7
125	RAP	80	F9	10.7	1.7	11.5	26.5	8.8	-15.0	1.7	16.7
126	RAP	80	F9	10.7	1.7	11.5	26.5	8.8	-15.0	1.7	16.7
127	RAP	80	Strip	9.3	3.0	11.5	17.5	7.5	-6.0	3.0	9.0
128	RAP	80	Strip	4.0	8.3	11.5	17.5	2.2	-6.0	8.3	14.3
129	RAP	80	F6	4.0	8.3	11.5	17.5	2.2	-6.0	8.3	14.3
130	RAP	80	F6	4.0	8.3	11.5	17.5	2.2	-6.0	8.3	14.3
131	RAP	80	F6	4.0	8.3	11.5	17.5	2.2	-6.0	8.3	14.3
132	RAP	80	Strip	4.0	8.3	11.5	17.5	2.2	-6.0	8.3	14.3
133	RAP	80	F6.5	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3
134	RAP	80	F6.5	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3
135	RAP	80	F6.5	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3
136	RAP	80	Strip	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3
137	RAP	80	F6.5	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3
138	RAP	80	F6.5	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3
139	RAP	80	F6.5	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3
140	RAP	80	Strip	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3
141	RAP	80	F6.5	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3
142	RAP	80	F6.5	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3
143	RAP	80	F6.5	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3
144	RAP	80	Strip	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3
145	RAP	80	F6	4.0	8.3	11.5	15.5	2.2	-4.0	8.3	12.3
146	RAP	80	F6	4.0	8.3	11.5	15.5	2.2	-4.0	8.3	12.3
147	RAP	80	F6	4.0	8.3	11.5	15.5	2.2	-4.0	8.3	12.3
148	RAP	80	Strip	4.0	8.3	11.5	15.5	2.2	-4.0	8.3	12.3
149	RAP	80	Strip	4.0	8.3	11.5	15.5	2.2	-4.0	8.3	12.3
150	RAP	80	F7.5	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3

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Pier		Design Capacity (kips)	Footing Design Data, ft			Design Installation Data, ft			Proposed Geopier Geometry		
No.	Type		Type	Depth Below FFE	Bottom [1] Elev.	Surface Elev.	Est. Drill Depth	Top Depth	Bottom El, ft.	Top El, ft.	Shaft Length ft.
151	RAP	80	F7.5	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3
152	RAP	80	F7.5	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3
153	RAP	80	F7.5	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3
154	RAP	80	Strip	4.5	7.8	11.5	15.5	2.7	-4.0	7.8	11.8
155	RAP	80	Strip	4.5	7.8	11.5	14.5	2.7	-3.0	7.8	10.8
156	RAP	80	F7.5	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3
157	RAP	80	F7.5	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3
158	RAP	80	F7.5	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3
159	RAP	80	F7.5	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3
160	RAP	80	Strip	4.0	8.3	11.5	14.5	2.2	-3.0	8.3	11.3
161	RAP	80	Strip	4.0	8.3	11.5	15.5	2.2	-4.0	8.3	12.3
162	RAP	80	F9.5	4.0	8.3	11.5	20.5	2.2	-9.0	8.3	17.3
163	RAP	80	F9.5	4.0	8.3	11.5	20.5	2.2	-9.0	8.3	17.3
164	RAP	80	F9.5	4.0	8.3	11.5	20.5	2.2	-9.0	8.3	17.3
165	RAP	80	F9.5	4.0	8.3	11.5	20.5	2.2	-9.0	8.3	17.3
166	RAP	80	F9.5	4.0	8.3	11.5	20.5	2.2	-9.0	8.3	17.3
167	RAP	80	Strip	4.0	8.3	11.5	15.5	2.2	-4.0	8.3	12.3
168	RAP	80	F9	4.0	8.3	11.5	19.5	2.2	-8.0	8.3	16.3
169	RAP	80	F9	4.0	8.3	11.5	19.5	2.2	-8.0	8.3	16.3
170	RAP	80	F9	4.0	8.3	11.5	19.5	2.2	-8.0	8.3	16.3
171	RAP	80	Strip	4.0	8.3	11.5	15.5	2.2	-4.0	8.3	12.3
172	RAP	80	F8	4.0	8.3	11.5	17.5	2.2	-6.0	8.3	14.3
173	RAP	80	F8	4.0	8.3	11.5	17.5	2.2	-6.0	8.3	14.3
174	RAP	80	F8	4.0	8.3	11.5	17.5	2.2	-6.0	8.3	14.3
175	RAP	80	F8	4.0	8.3	11.5	17.5	2.2	-6.0	8.3	14.3
176	RAP	80	Strip	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3
177	RAP	80	F7.5	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3
178	RAP	80	F7.5	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3
179	RAP	80	F7.5	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3
180	RAP	80	F7.5	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3
181	RAP	80	F7.5	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3
182	RAP	80	Strip	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3
183	RAP	80	F8	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3
184	RAP	80	F8	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3
185	RAP	80	F8	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3
186	RAP	80	Strip	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3
187	RAP	80	F9	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3
188	RAP	80	F9	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3
189	RAP	80	F9	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3
190	RAP	80	Strip	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3
191	RAP	80	F9	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3
192	RAP	80	F9	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3
193	RAP	80	F9	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3
194	RAP	80	F9	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3
195	RAP	80	Strip	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3
196	RAP	80	Strip	4.0	8.3	11.5	16.5	2.2	-5.0	8.3	13.3
197	RAP	80	F4	4.0	8.3	11.5	17.5	2.2	-6.0	8.3	14.3
198	RAP	80	F4	4.0	8.3	11.5	18.5	2.2	-7.0	8.3	15.3
199	RAP	80	F9.5	4.0	8.3	11.5	12.5	2.2	-1.0	8.3	9.3
200	RAP	80	F9.5	4.0	8.3	11.5	12.5	2.2	-1.0	8.3	9.3

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FF Elev, Structural
FF Elev. Civil 12.33
Notes:

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Permitting and Inspections Department
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01/22/2019

Pier		Design	Footing Design Data, ft			Design Installation Data, ft			Proposed Geopier Geometry		
No.	Type	Capacity (kips)	Type	Depth Below FFE	Bottom [1] Elev.	Surface Elev.	Est. Drill Depth	Top Depth	Bottom El, ft.	Top El, ft.	Shaft Length ft.
201	RAP	80	F9.5	4.0	8.3	11.5	12.5	2.2	-1.0	8.3	9.3
202	RAP	80	F9.5	4.0	8.3	11.5	12.5	2.2	-1.0	8.3	9.3
203	RAP	80	F9.5	4.0	8.3	11.5	12.5	2.2	-1.0	8.3	9.3
204	RAP	80	F9.5	4.0	8.3	11.5	12.5	2.2	-1.0	8.3	9.3
205	RAP	80	F9.5	4.0	8.3	11.5	12.5	2.2	-1.0	8.3	9.3
206	RAP	80	F9.5	4.0	8.3	11.5	12.5	2.2	-1.0	8.3	9.3
207	RAP	80	F10	4.5	7.8	11.5	13.5	2.7	-2.0	7.8	9.8
208	RAP	80	F10	4.5	7.8	11.5	13.5	2.7	-2.0	7.8	9.8
209	RAP	80	F10	4.5	7.8	11.5	13.5	2.7	-2.0	7.8	9.8
210	RAP	80	F10	4.5	7.8	11.5	13.5	2.7	-2.0	7.8	9.8
211	RAP	80	F10	4.5	7.8	11.5	13.5	2.7	-2.0	7.8	9.8
212	RAP	80	F10	4.5	7.8	11.5	13.5	2.7	-2.0	7.8	9.8
213	RAP	80	F8.5	7.2	5.2	11.5	15.5	5.3	-4.0	5.2	9.2
214	RAP	80	F8.5	7.2	5.2	11.5	15.5	5.3	-4.0	5.2	9.2
215	RAP	80	F8.5	7.2	5.2	11.5	15.5	5.3	-4.0	5.2	9.2
216	RAP	80	F8.5	7.2	5.2	11.5	15.5	5.3	-4.0	5.2	9.2
217	RAP	80	F8.5	7.2	5.2	11.5	15.5	5.3	-4.0	5.2	9.2
218	RAP	80	Mat	7.2	5.2	11.5	15.5	5.3	-4.0	5.2	9.2
219	RAP	80	Mat	7.2	5.2	11.5	15.5	5.3	-4.0	5.2	9.2
220	RAP	80	Mat	7.2	5.2	11.5	15.5	5.3	-4.0	5.2	9.2
221	RAP	80	Mat	7.2	5.2	11.5	15.5	5.3	-4.0	5.2	9.2
222	RAP	80	Mat	7.2	5.2	11.5	15.5	5.3	-4.0	5.2	9.2
223	RAP	80	Mat	7.2	5.2	11.5	15.5	5.3	-4.0	5.2	9.2
224	RAP	80	F11.5	8.0	4.3	11.5	17.5	6.2	-6.0	4.3	10.3
225	RAP	80	F11.5	8.0	4.3	11.5	17.5	6.2	-6.0	4.3	10.3
226	RAP	80	F11.5	8.0	4.3	11.5	17.5	6.2	-6.0	4.3	10.3
227	RAP	80	F11.5	8.0	4.3	11.5	17.5	6.2	-6.0	4.3	10.3
228	RAP	80	F11.5	8.0	4.3	11.5	17.5	6.2	-6.0	4.3	10.3
229	RAP	80	Mat	7.2	5.2	11.5	15.5	5.3	-4.0	5.2	9.2
230	RAP	80	Strip	6.0	6.3	11.5	14.5	4.2	-3.0	6.3	9.3
231	RAP	80	Mat	7.2	5.2	11.5	15.5	5.3	-4.0	5.2	9.2
232	RAP	80	Mat	7.2	5.2	11.5	15.5	5.3	-4.0	5.2	9.2
233	RAP	80	Mat	7.2	5.2	11.5	15.5	5.3	-4.0	5.2	9.2
234	RAP	80	Mat	7.2	5.2	11.5	15.5	5.3	-4.0	5.2	9.2
235	RAP	80	F10	7.5	4.8	11.5	16.5	5.7	-5.0	4.8	9.8
236	RAP	80	F10	7.5	4.8	11.5	16.5	5.7	-5.0	4.8	9.8
237	RAP	80	F10	7.5	4.8	11.5	16.5	5.7	-5.0	4.8	9.8
238	RAP	80	F10	7.5	4.8	11.5	16.5	5.7	-5.0	4.8	9.8
239	RAP	80	F10	7.5	4.8	11.5	16.5	5.7	-5.0	4.8	9.8
240	RAP	80	F10	7.5	4.8	11.5	16.5	5.7	-5.0	4.8	9.8
241	RAP	80	F10	7.5	4.8	11.5	16.5	5.7	-5.0	4.8	9.8
242	RAP	80	F11	5.7	6.7	11.5	14.5	3.8	-3.0	6.7	9.7
243	RAP	80	F11	5.7	6.7	11.5	14.5	3.8	-3.0	6.7	9.7
244	RAP	80	F11	5.7	6.7	11.5	14.5	3.8	-3.0	6.7	9.7
245	RAP	80	F11	5.7	6.7	11.5	14.5	3.8	-3.0	6.7	9.7
246	RAP	80	F11	5.7	6.7	11.5	14.5	3.8	-3.0	6.7	9.7
247	RAP	80	F11	5.7	6.7	11.5	14.5	3.8	-3.0	6.7	9.7
248	RAP	80	Strip	5.3	7.0	11.5	13.5	3.5	-2.0	7.0	9.0
249	RAP	80	Strip	5.3	7.0	11.5	13.5	3.5	-2.0	7.0	9.0
250	RAP	80	Strip	5.3	7.0	11.5	13.5	3.5	-2.0	7.0	9.0

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No.	Type		Type	Depth Below FFE	Bottom [1] Elev.	Surface Elev.	Est. Drill Depth	Top Depth	Bottom El, ft.	Top El, ft.	Shaft Length ft.
251	RAP	80	Strip	5.3	7.0	11.5	13.5	3.5	-2.0	7.0	9.0
252	RAP	80	F11.5	5.0	7.3	11.5	14.5	3.2	-3.0	7.3	10.3
253	RAP	80	F11.5	5.0	7.3	11.5	14.5	3.2	-3.0	7.3	10.3
254	RAP	80	F11.5	5.0	7.3	11.5	14.5	3.2	-3.0	7.3	10.3
255	RAP	80	F11.5	5.0	7.3	11.5	14.5	3.2	-3.0	7.3	10.3
256	RAP	80	F11.5	5.0	7.3	11.5	14.5	3.2	-3.0	7.3	10.3
257	RAP	80	F11.5	5.0	7.3	11.5	14.5	3.2	-3.0	7.3	10.3
258	RAP	80	F11.5	5.0	7.3	11.5	14.5	3.2	-3.0	7.3	10.3
259	RAP	80	F11.5	5.0	7.3	11.5	14.5	3.2	-3.0	7.3	10.3
260	RAP	80	F8.5	4.2	8.2	11.5	12.5	2.3	-1.0	8.2	9.2
261	RAP	80	F8.5	4.2	8.2	11.5	12.5	2.3	-1.0	8.2	9.2
262	RAP	80	F8.5	4.2	8.2	11.5	12.5	2.3	-1.0	8.2	9.2
263	RAP	80	F8.5	4.2	8.2	11.5	12.5	2.3	-1.0	8.2	9.2
264	RAP	80	Mat	3.8	8.5	11.5	12.5	2.0	-1.0	8.5	9.5
265	RAP	80	Mat	3.8	8.5	11.5	12.5	2.0	-1.0	8.5	9.5
266	RAP	80	Mat	3.8	8.5	11.5	12.5	2.0	-1.0	8.5	9.5
267	RAP	80	Mat	3.8	8.5	11.5	12.5	2.0	-1.0	8.5	9.5
268	RAP	80	Mat	3.8	8.5	11.5	12.5	2.0	-1.0	8.5	9.5
269	RAP	80	Mat	3.8	8.5	11.5	12.5	2.0	-1.0	8.5	9.5
270	RAP	80	F11	4.7	7.7	11.5	13.5	2.8	-2.0	7.7	9.7
271	RAP	80	F11	4.7	7.7	11.5	13.5	2.8	-2.0	7.7	9.7
272	RAP	80	F11	4.7	7.7	11.5	13.5	2.8	-2.0	7.7	9.7
273	RAP	80	F11	4.7	7.7	11.5	13.5	2.8	-2.0	7.7	9.7
274	RAP	80	F11	4.7	7.7	11.5	13.5	2.8	-2.0	7.7	9.7
275	RAP	80	F11	4.7	7.7	11.5	13.5	2.8	-2.0	7.7	9.7
276	RAP	80	F11	4.7	7.7	11.5	13.5	2.8	-2.0	7.7	9.7
277	RAP	80	Mat	3.8	8.5	11.5	12.5	2.0	-1.0	8.5	9.5
278	RAP	80	Mat	3.8	8.5	11.5	12.5	2.0	-1.0	8.5	9.5
279	RAP	80	Mat	3.8	8.5	11.5	12.5	2.0	-1.0	8.5	9.5
280	RAP	80	Mat	3.8	8.5	11.5	12.5	2.0	-1.0	8.5	9.5
281	RAP	80	F9	4.3	8.0	11.5	12.5	2.5	-1.0	8.0	9.0
282	RAP	80	F9	4.3	8.0	11.5	12.5	2.5	-1.0	8.0	9.0
283	RAP	80	F9	4.3	8.0	11.5	12.5	2.5	-1.0	8.0	9.0
284	RAP	80	F9	4.3	8.0	11.5	12.5	2.5	-1.0	8.0	9.0
285	RAP	80	F9	4.3	8.0	11.5	12.5	2.5	-1.0	8.0	9.0
286	RAP	80	F10	4.5	7.8	11.5	13.5	2.7	-2.0	7.8	9.8
287	RAP	80	F10	4.5	7.8	11.5	13.5	2.7	-2.0	7.8	9.8
288	RAP	80	F10	4.5	7.8	11.5	13.5	2.7	-2.0	7.8	9.8
289	RAP	80	F10	4.5	7.8	11.5	13.5	2.7	-2.0	7.8	9.8
290	RAP	80	F10	4.5	7.8	11.5	13.5	2.7	-2.0	7.8	9.8
291	RAP	80	F10	4.5	7.8	11.5	13.5	2.7	-2.0	7.8	9.8
292	RAP	80	F10	4.5	7.8	11.5	13.5	2.7	-2.0	7.8	9.8
293	RAP	80	F9	4.3	8.0	11.5	12.5	2.5	-1.0	8.0	9.0
294	RAP	80	F9	4.3	8.0	11.5	12.5	2.5	-1.0	8.0	9.0
295	RAP	80	F9	4.3	8.0	11.5	12.5	2.5	-1.0	8.0	9.0
296	RAP	80	F9	4.3	8.0	11.5	12.5	2.5	-1.0	8.0	9.0
297	RAP	80	F9	4.3	8.0	11.5	12.5	2.5	-1.0	8.0	9.0
298	RAP	80	F9.5	4.3	8.0	11.5	12.5	2.5	-1.0	8.0	9.0
299	RAP	80	F9.5	4.3	8.0	11.5	12.5	2.5	-1.0	8.0	9.0
300	RAP	80	F9.5	4.3	8.0	11.5	12.5	2.5	-1.0	8.0	9.0

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HELICAL

GEOPIER®

GEOPIER SCHEDULE

Project Number: GNE-01838
Project Name: Hobson's Landing Condominium
Project Location: Portland, ME
Date: 12/3/2018

FF Elev, Structural
FF Elev. Civil 12.33
Notes:

Reviewed for Code Compliance
Permitting and Inspections Department
Approved with Conditions
01/22/2019

Pier		Design Capacity (kips)	Footing Design Data, ft			Design Installation Data, ft			Proposed Geopier Geometry		
No.	Type		Type	Depth Below FFE	Bottom [1] Elev.	Surface Elev.	Est. Drill Depth	Top Depth	Bottom El, ft.	Top El, ft.	Shaft Length ft.
301	RAP	80	F9.5	4.3	8.0	11.5	12.5	2.5	-1.0	8.0	9.0
302	RAP	80	F9.5	4.3	8.0	11.5	12.5	2.5	-1.0	8.0	9.0
303	RAP	80	F10.5	6.0	6.3	11.5	14.5	4.2	-3.0	6.3	9.3
304	RAP	80	F10.5	6.0	6.3	11.5	14.5	4.2	-3.0	6.3	9.3
305	RAP	80	F10.5	6.0	6.3	11.5	14.5	4.2	-3.0	6.3	9.3
306	RAP	80	F10.5	6.0	6.3	11.5	14.5	4.2	-3.0	6.3	9.3
307	RAP	80	F10.5	6.0	6.3	11.5	14.5	4.2	-3.0	6.3	9.3
308	RAP	80	F10.5	6.0	6.3	11.5	14.5	4.2	-3.0	6.3	9.3
309	RAP	80	F10.5	6.0	6.3	11.5	14.5	4.2	-3.0	6.3	9.3
310	RAP	80	F11	4.7	7.7	11.5	13.5	2.8	-2.0	7.7	9.7
311	RAP	80	F11	4.7	7.7	11.5	13.5	2.8	-2.0	7.7	9.7
312	RAP	80	F11	4.7	7.7	11.5	13.5	2.8	-2.0	7.7	9.7
313	RAP	80	F11	4.7	7.7	11.5	13.5	2.8	-2.0	7.7	9.7
314	RAP	80	F11	4.7	7.7	11.5	13.5	2.8	-2.0	7.7	9.7
315	RAP	80	F11	4.7	7.7	11.5	13.5	2.8	-2.0	7.7	9.7
316	RAP	80	F11	4.7	7.7	11.5	13.5	2.8	-2.0	7.7	9.7
317	RAP	80	F11	4.7	7.7	11.5	13.5	2.8	-2.0	7.7	9.7
318	RAP	80	F9	4.3	8.0	11.5	12.5	2.5	-1.0	8.0	9.0
319	RAP	80	F9	4.3	8.0	11.5	12.5	2.5	-1.0	8.0	9.0
320	RAP	80	F9	4.3	8.0	11.5	12.5	2.5	-1.0	8.0	9.0
321	RAP	80	F9	4.3	8.0	11.5	12.5	2.5	-1.0	8.0	9.0
322	RAP	80	F8.5	4.2	8.2	11.5	12.5	2.3	-1.0	8.2	9.2
323	RAP	80	F8.5	4.2	8.2	11.5	12.5	2.3	-1.0	8.2	9.2
324	RAP	80	F8.5	4.2	8.2	11.5	12.5	2.3	-1.0	8.2	9.2
325	RAP	80	F8.5	4.2	8.2	11.5	12.5	2.3	-1.0	8.2	9.2
326	RAP	80	F8.5	4.2	8.2	11.5	12.5	2.3	-1.0	8.2	9.2
327	RAP	80	F10.5	4.5	7.8	11.5	13.5	2.7	-2.0	7.8	9.8
328	RAP	80	F10.5	4.5	7.8	11.5	13.5	2.7	-2.0	7.8	9.8
329	RAP	80	F10.5	4.5	7.8	11.5	13.5	2.7	-2.0	7.8	9.8
330	RAP	80	F10.5	4.5	7.8	11.5	13.5	2.7	-2.0	7.8	9.8
331	RAP	80	F10.5	4.5	7.8	11.5	13.5	2.7	-2.0	7.8	9.8
332	RAP	80	F10.5	4.5	7.8	11.5	13.5	2.7	-2.0	7.8	9.8
333	RAP	80	F8.5	4.2	8.2	11.5	12.5	2.3	-1.0	8.2	9.2
334	RAP	80	F8.5	4.2	8.2	11.5	12.5	2.3	-1.0	8.2	9.2
335	RAP	80	F8.5	4.2	8.2	11.5	12.5	2.3	-1.0	8.2	9.2
336	RAP	80	F8.5	4.2	8.2	11.5	12.5	2.3	-1.0	8.2	9.2
337	RAP	80	F8.5	4.2	8.2	11.5	12.5	2.3	-1.0	8.2	9.2
338	RAP	80	F9	4.3	8.0	11.5	12.5	2.5	-1.0	8.0	9.0
339	RAP	80	F9	4.3	8.0	11.5	12.5	2.5	-1.0	8.0	9.0
340	RAP	80	F9	4.3	8.0	11.5	12.5	2.5	-1.0	8.0	9.0
341	RAP	80	F9	4.3	8.0	11.5	12.5	2.5	-1.0	8.0	9.0
342	RAP	80	F10	4.5	7.8	11.5	13.5	2.7	-2.0	7.8	9.8
343	RAP	80	F10	4.5	7.8	11.5	13.5	2.7	-2.0	7.8	9.8
344	RAP	80	F10	4.5	7.8	11.5	13.5	2.7	-2.0	7.8	9.8
345	RAP	80	F10	4.5	7.8	11.5	13.5	2.7	-2.0	7.8	9.8
346	RAP	80	F10	4.5	7.8	11.5	13.5	2.7	-2.0	7.8	9.8
347	RAP	80	F10	4.5	7.8	11.5	13.5	2.7	-2.0	7.8	9.8
348	RAP	80	F10	4.5	7.8	11.5	13.5	2.7	-2.0	7.8	9.8
349	RAP	80	F9	4.3	8.0	11.5	13.5	2.5	-2.0	8.0	10.0
350	RAP	80	F9	4.3	8.0	11.5	13.5	2.5	-2.0	8.0	10.0

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HELICAL

GEOPIER®

GEOPIER SCHEDULE

Project Number: GNE-01838
Project Name: Hobson's Landing Condominium
Project Location: Portland, ME
Date: 12/3/2018

FF Elev, Structural
FF Elev. Civil 12.33
Notes:

Reviewed for Code Compliance
Permitting and Inspections Department
Approved with Conditions
01/22/2019

Pier		Design Capacity (kips)	Footing Design Data, ft			Design Installation Data, ft			Proposed Geopier Geometry		
No.	Type		Type	Depth Below FFE	Bottom [1] Elev.	Surface Elev.	Est. Drill Depth	Top Depth	Bottom El, ft.	Top El, ft.	Shaft Length ft.
351	RAP	80	F9	4.3	8.0	11.5	13.5	2.5	-2.0	8.0	10.0
352	RAP	80	F9	4.3	8.0	11.5	13.5	2.5	-2.0	8.0	10.0
353	RAP	80	F9	4.3	8.0	11.5	13.5	2.5	-2.0	8.0	10.0
354	RAP	80	F9	4.3	8.0	11.5	13.5	2.5	-2.0	8.0	10.0
355	RAP	80	F9	4.3	8.0	11.5	13.5	2.5	-2.0	8.0	10.0
356	RAP	80	F9	4.3	8.0	11.5	13.5	2.5	-2.0	8.0	10.0
357	RAP	80	F9	4.3	8.0	11.5	13.5	2.5	-2.0	8.0	10.0
358	RAP	80	F9	4.3	8.0	11.5	13.5	2.5	-2.0	8.0	10.0
359	RAP	80	F8	4.0	8.3	11.5	13.5	2.2	-2.0	8.3	10.3
360	RAP	80	F8	4.0	8.3	11.5	13.5	2.2	-2.0	8.3	10.3
361	RAP	80	F8	4.0	8.3	11.5	13.5	2.2	-2.0	8.3	10.3
362	RAP	80	F8	4.0	8.3	11.5	13.5	2.2	-2.0	8.3	10.3
363	RAP	80	F11	4.7	7.7	11.5	15.5	2.8	-4.0	7.7	11.7
364	RAP	80	F11	4.7	7.7	11.5	15.5	2.8	-4.0	7.7	11.7
365	RAP	80	F11	4.7	7.7	11.5	15.5	2.8	-4.0	7.7	11.7
366	RAP	80	F11	4.7	7.7	11.5	15.5	2.8	-4.0	7.7	11.7
367	RAP	80	F11	4.7	7.7	11.5	15.5	2.8	-4.0	7.7	11.7
368	RAP	80	F11	4.7	7.7	11.5	15.5	2.8	-4.0	7.7	11.7
369	RAP	80	F11	4.7	7.7	11.5	15.5	2.8	-4.0	7.7	11.7
370	RAP	80	F11	4.7	7.7	11.5	15.5	2.8	-4.0	7.7	11.7
371	RAP	80	F8	4.0	8.3	11.5	13.5	2.2	-2.0	8.3	10.3
372	RAP	80	F8	4.0	8.3	11.5	13.5	2.2	-2.0	8.3	10.3
373	RAP	80	F8	4.0	8.3	11.5	13.5	2.2	-2.0	8.3	10.3
374	RAP	80	F8	4.0	8.3	11.5	13.5	2.2	-2.0	8.3	10.3
375	RAP	80	F9	4.3	8.0	11.5	13.5	2.5	-2.0	8.0	10.0
376	RAP	80	F9	4.3	8.0	11.5	13.5	2.5	-2.0	8.0	10.0
377	RAP	80	F9	4.3	8.0	11.5	13.5	2.5	-2.0	8.0	10.0
378	RAP	80	F9	4.3	8.0	11.5	13.5	2.5	-2.0	8.0	10.0
379	RAP	80	F9	4.3	8.0	11.5	13.5	2.5	-2.0	8.0	10.0
380	RAP	80	F9	4.3	8.0	11.5	13.5	2.5	-2.0	8.0	10.0
381	RAP	80	F9	4.3	8.0	11.5	13.5	2.5	-2.0	8.0	10.0
382	RAP	80	F9	4.3	8.0	11.5	13.5	2.5	-2.0	8.0	10.0
383	RAP	80	F11	4.0	8.3	11.5	13.5	2.2	-2.0	8.3	10.3
384	RAP	80	F11	4.0	8.3	11.5	13.5	2.2	-2.0	8.3	10.3
385	RAP	80	F11	4.0	8.3	11.5	13.5	2.2	-2.0	8.3	10.3
386	RAP	80	F11	4.0	8.3	11.5	13.5	2.2	-2.0	8.3	10.3
387	RAP	80	F11	4.0	8.3	11.5	13.5	2.2	-2.0	8.3	10.3
388	RAP	80	F11	4.7	7.7	11.5	13.5	2.8	-2.0	7.7	9.7
389	RAP	80	F11	4.7	7.7	11.5	13.5	2.8	-2.0	7.7	9.7
390	RAP	80	F11	4.7	7.7	11.5	13.5	2.8	-2.0	7.7	9.7
391	RAP	80	F11	4.7	7.7	11.5	13.5	2.8	-2.0	7.7	9.7
392	RAP	80	F11	4.7	7.7	11.5	13.5	2.8	-2.0	7.7	9.7
393	RAP	80	F11	4.7	7.7	11.5	13.5	2.8	-2.0	7.7	9.7
394	RAP	80	F8	4.0	8.3	11.5	13.5	2.2	-2.0	8.3	10.3
395	RAP	80	F8	4.0	8.3	11.5	13.5	2.2	-2.0	8.3	10.3
396	RAP	80	F8	4.0	8.3	11.5	13.5	2.2	-2.0	8.3	10.3
397	RAP	80	F8	4.0	8.3	11.5	13.5	2.2	-2.0	8.3	10.3
398	RAP	80	F8	4.0	8.3	11.5	13.5	2.2	-2.0	8.3	10.3
399	RAP	80	F8	4.0	8.3	11.5	13.5	2.2	-2.0	8.3	10.3
400	RAP	80	F8	4.0	8.3	11.5	13.5	2.2	-2.0	8.3	10.3

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GEOPIER SCHEDULE

Project Number: GNE-01838
Project Name: Hobson's Landing Condominium
Project Location: Portland, ME
Date: 12/3/2018

FF Elev, Structural
FF Elev. Civil 12.33
Notes:

Reviewed for Code Compliance
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Approved with Conditions
01/22/2019

Pier		Design	Footing Design Data, ft			Design Installation Data, ft			Proposed Geopier Geometry		
No.	Type	Capacity (kips)	Type	Depth Below FFE	Bottom [1] Elev.	Surface Elev.	Est. Drill Depth	Top Depth	Bottom El, ft.	Top El, ft.	Shaft Length ft.
401	RAP	80	F11.5	5.0	7.3	11.5	14.5	3.2	-3.0	7.3	10.3
402	RAP	80	F11.5	5.0	7.3	11.5	14.5	3.2	-3.0	7.3	10.3
403	RAP	80	F11.5	5.0	7.3	11.5	14.5	3.2	-3.0	7.3	10.3
404	RAP	80	F11.5	5.0	7.3	11.5	14.5	3.2	-3.0	7.3	10.3
405	RAP	80	F11.5	5.0	7.3	11.5	14.5	3.2	-3.0	7.3	10.3
406	RAP	80	F8	4.0	8.3	11.5	14.5	2.2	-3.0	8.3	11.3
407	RAP	80	F8	4.0	8.3	11.5	14.5	2.2	-3.0	8.3	11.3
408	RAP	80	F8	4.0	8.3	11.5	14.5	2.2	-3.0	8.3	11.3
409	RAP	80	F8	4.0	8.3	11.5	14.5	2.2	-3.0	8.3	11.3
410	RAP	80	F8	4.0	8.3	11.5	14.5	2.2	-3.0	8.3	11.3
411	RAP	80	F8	4.0	8.3	11.5	14.5	2.2	-3.0	8.3	11.3
412	RAP	80	F8	4.0	8.3	11.5	14.5	2.2	-3.0	8.3	11.3
413	RAP	80	F8	4.0	8.3	11.5	14.5	2.2	-3.0	8.3	11.3
414	RAP	80	F8	4.0	8.3	11.5	14.5	2.2	-3.0	8.3	11.3
415	RAP	80	F8	4.0	8.3	11.5	14.5	2.2	-3.0	8.3	11.3
416	RAP	80	F8	4.0	8.3	11.5	14.5	2.2	-3.0	8.3	11.3
417	RAP	80	F8	4.0	8.3	11.5	14.5	2.2	-3.0	8.3	11.3
418	RAP	80	F8	4.0	8.3	11.5	14.5	2.2	-3.0	8.3	11.3
419	RAP	80	F8	4.0	8.3	11.5	14.5	2.2	-3.0	8.3	11.3
420	RAP	80	F8	4.0	8.3	11.5	14.5	2.2	-3.0	8.3	11.3
421	RAP	80	F9.5	4.3	8.0	11.5	14.5	2.5	-3.0	8.0	11.0
422	RAP	80	F9.5	4.3	8.0	11.5	14.5	2.5	-3.0	8.0	11.0
423	RAP	80	F9.5	4.3	8.0	11.5	14.5	2.5	-3.0	8.0	11.0
424	RAP	80	F9.5	4.3	8.0	11.5	14.5	2.5	-3.0	8.0	11.0
425	RAP	80	F9.5	4.3	8.0	11.5	14.5	2.5	-3.0	8.0	11.0
426	RAP	80	F7.5	4.0	8.3	11.5	15.5	2.2	-4.0	8.3	12.3
427	RAP	80	F7.5	4.0	8.3	11.5	15.5	2.2	-4.0	8.3	12.3
428	RAP	80	F7.5	4.0	8.3	11.5	15.5	2.2	-4.0	8.3	12.3
429	RAP	80	F8	4.0	8.3	11.5	15.5	2.2	-4.0	8.3	12.3
430	RAP	80	F8	4.0	8.3	11.5	15.5	2.2	-4.0	8.3	12.3
431	RAP	80	F8	4.0	8.3	11.5	15.5	2.2	-4.0	8.3	12.3
432	RAP	80	F8	4.0	8.3	11.5	15.5	2.2	-4.0	8.3	12.3
433	RAP	80	F7.5	4.0	8.3	11.5	15.5	2.2	-4.0	8.3	12.3
434	RAP	80	F7.5	4.0	8.3	11.5	15.5	2.2	-4.0	8.3	12.3
435	RAP	80	F7.5	4.0	8.3	11.5	15.5	2.2	-4.0	8.3	12.3
436	RAP	80	F7.5	4.0	8.3	11.5	15.5	2.2	-4.0	8.3	12.3
437	RAP	80	F8	4.0	8.3	11.5	15.5	2.2	-4.0	8.3	12.3
438	RAP	80	F8	4.0	8.3	11.5	15.5	2.2	-4.0	8.3	12.3
439	RAP	80	F8	4.0	8.3	11.5	15.5	2.2	-4.0	8.3	12.3
440	RAP	80	F8	4.0	8.3	11.5	15.5	2.2	-4.0	8.3	12.3
441	RAP	80	F7.5	4.0	8.3	11.5	15.5	2.2	-4.0	8.3	12.3
442	RAP	80	F7.5	4.0	8.3	11.5	15.5	2.2	-4.0	8.3	12.3
443	RAP	80	F7.5	4.0	8.3	11.5	15.5	2.2	-4.0	8.3	12.3
444	RAP	80	F7.5	4.0	8.3	11.5	15.5	2.2	-4.0	8.3	12.3
445	RAP	80	F9	4.3	8.0	11.5	15.5	2.5	-4.0	8.0	12.0
446	RAP	80	F9	4.3	8.0	11.5	15.5	2.5	-4.0	8.0	12.0
447	RAP	80	F9	4.3	8.0	11.5	15.5	2.5	-4.0	8.0	12.0
448	RAP	80	F9	4.3	8.0	11.5	15.5	2.5	-4.0	8.0	12.0
449	RAP	80	F6.5	3.7	8.7	11.5	15.5	1.8	-4.0	8.7	12.7
450	RAP	80	F6.5	3.7	8.7	11.5	15.5	1.8	-4.0	8.7	12.7

[1] Elevations provided for reference only. Not to be used in lieu of structural drawings.
The General Contractor is responsible for verifying these elevations to ensure that excavations are carried to the proper elevation.

HELICAL

GEOPIER®

GEOPIER SCHEDULE

Project Number: GNE-01838
Project Name: Hobson's Landing Condominium
Project Location: Portland, ME
Date: 12/3/2018

FF Elev, Structural
FF Elev. Civil 12.33
Notes:

Reviewed for Code Compliance
Permitting and Inspections Department
Approved with Conditions
01/22/2019

Pier		Design Capacity (kips)	Footing Design Data, ft			Design Installation Data, ft			Proposed Geopier Geometry		
No.	Type		Type	Depth Below FFE	Bottom [1] Elev.	Surface Elev.	Est. Drill Depth	Top Depth	Bottom El, ft.	Top El, ft.	Shaft Length ft.
451	RAP	80	F6.5	3.7	8.7	11.5	15.5	1.8	-4.0	8.7	12.7
452	RAP	80	F8	4.0	8.3	11.5	17.5	2.2	-6.0	8.3	14.3
453	RAP	80	F8	4.0	8.3	11.5	17.5	2.2	-6.0	8.3	14.3
454	RAP	80	F8	4.0	8.3	11.5	17.5	2.2	-6.0	8.3	14.3
455	RAP	80	F8	4.0	8.3	11.5	17.5	2.2	-6.0	8.3	14.3
456	RAP	80	F10	4.5	7.8	11.5	22.5	2.7	-11.0	7.8	18.8
457	RAP	80	F10	4.5	7.8	11.5	22.5	2.7	-11.0	7.8	18.8
458	RAP	80	F10	4.5	7.8	11.5	22.5	2.7	-11.0	7.8	18.8
459	RAP	80	F10	4.5	7.8	11.5	22.5	2.7	-11.0	7.8	18.8
460	RAP	80	Mat	7.2	5.2	11.5	24.5	5.3	-13.0	5.2	18.2
461	RAP	80	Mat	7.2	5.2	11.5	24.5	5.3	-13.0	5.2	18.2
462	RAP	80	Mat	7.2	5.2	11.5	24.5	5.3	-13.0	5.2	18.2
463	RAP	80	Mat	7.2	5.2	11.5	24.5	5.3	-13.0	5.2	18.2
464	RAP	80	Mat	7.2	5.2	11.5	24.5	5.3	-13.0	5.2	18.2
465	RAP	80	Mat	7.2	5.2	11.5	17.5	5.3	-6.0	5.2	11.2
466	RAP	80	Mat	7.2	5.2	11.5	17.5	5.3	-6.0	5.2	11.2
467	RAP	80	Mat	7.2	5.2	11.5	17.5	5.3	-6.0	5.2	11.2
468	RAP	80	Mat	7.2	5.2	11.5	17.5	5.3	-6.0	5.2	11.2
469	RAP	80	Mat	7.2	5.2	11.5	17.5	5.3	-6.0	5.2	11.2
470	RAP	80	F10	4.5	7.8	11.5	18.5	2.7	-7.0	7.8	14.8
471	RAP	80	F10	4.5	7.8	11.5	18.5	2.7	-7.0	7.8	14.8
472	RAP	80	F10	4.5	7.8	11.5	18.5	2.7	-7.0	7.8	14.8
473	RAP	80	F10	4.5	7.8	11.5	18.5	2.7	-7.0	7.8	14.8
474	RAP	80	F8	4.0	8.3	11.5	18.5	2.2	-7.0	8.3	15.3
475	RAP	80	F8	4.0	8.3	11.5	18.5	2.2	-7.0	8.3	15.3
476	RAP	80	F8	4.0	8.3	11.5	18.5	2.2	-7.0	8.3	15.3
477	RAP	80	F8	4.0	8.3	11.5	18.5	2.2	-7.0	8.3	15.3
478	RAP	80	F6.5	3.7	8.7	11.5	18.5	1.8	-7.0	8.7	15.7
479	RAP	80	F6.5	3.7	8.7	11.5	18.5	1.8	-7.0	8.7	15.7
480	RAP	80	F6.5	3.7	8.7	11.5	18.5	1.8	-7.0	8.7	15.7

[1] Elevations provided for reference only. Not to be used in lieu of structural drawings.
The General Contractor is responsible for verifying these elevations to ensure that excavations are carried to the proper elevation.

HELICAL

GEOPIER®

QUALITY CONTROL PACKAGE FOR GEOPIER FOUNDATIONS

Date:	December 3, 2018
Project Number:	GNE-01838
Project:	Hobson's Landing Condominium Portland, Maine
Geopier Designer:	Benjamin M. Cote, PE, Geopier Foundation Company
Phone:	860-531-9137
Mobile:	860-373-3542
Geotechnical Engineer:	Summit Geoengineering Services
Contact:	Bill Peterlein
Phone:	207-576-3313
Structural Engineer:	Veitas and Veitas Engineers
Referenced Drawings:	S1.1 "Level 1 Foundation Plan"
Date of Drawings:	November 27, 2018

Anticipated Geotechnical Conditions:
The subsurface conditions consist of up to 18.5 feet of Fill (very loose to dense silty sand to sandy gravel to silty clay with coal, bricks, ash, timber, and concrete), underlain by up to 11 feet of Glacial Marine (loose sand with little silt or silty clay with trace sand and gravel), underlain by Glacial Till (medium dense to dense sand with varying amounts of silt, gravel, and clay). Groundwater was observed at a depth of approximately 2.9 to 9.5 feet below ground surface based on data obtained during drilling and from installed groundwater observation wells.

Potential Anomalies:
The depth to natural soil may vary significantly across the site. Shallow refusals in Glacial Till or Bedrock may be encountered.

Pier Construction and Termination Requirements:
Working from a temporary grade at approximately El. 11.5, the mandrel with chained tip shall be driven into the ground to completely penetrate the Fill to drill depths between approximately 12.5 to 26.5 feet. Piers shall extend into the Glacial Marine to the depths shown on the Geopier Schedule, whichever is deeper. In the event that refusal, defined as a mandrel penetration rate of less than 6 inches in 60 seconds under full hammer energy and crowd, is encountered above the scheduled drill depth, the Geopier Designer shall be contacted. The mandrel shall be raised and re-driven while aggregate is fed to construct 12- to 24-inch-thick compacted lifts. The compaction stroke shall be the same as used in the construction of the modulus test pier.

Refer to the Geopier Schedule for estimated drill depths and other pier construction geometry. If unanticipated ground conditions are encountered, call the Geopier Designer.

ATTACHMENT 1 – DAILY QUALITY CONTROL FORM
ATTACHMENT 2 – GEOTECHNICAL INFORMATION

HELICAL

GEOPIER IMPACT® RAMMED AGGREGATE PIER QUALITY CONTROL SUMMARY

GEOPIER®

Reviewed for Code Compliance
Permitting and Inspections Department
Approved with Conditions
01/22/2019

Project Name: _____
Location: _____
Date: _____ Revision # _____ Date _____

Hammer: _____
Rig Type: _____

GFC # _____

Stone Gradation _____
Grout Mix: _____

Hopper Volume _____cf
Mandrel Diameter _____in

Volume of Measurement_____cf
Est. Grout Req'd._____cf/ft

Top Grout El.: Varies, see summary column below

Pier No.	Pier Type	Des. Cap. kips	Bottom Footing El, ft	Ground Surface Elevation, ft Planned	Ground Surface Elevation, ft Actual	Mandrel Penetration Data Bottom Depth,ft Planned	Mandrel Penetration Data Bottom Depth,ft Actual	Mandrel Penetration Data Top Depth, ft Planned	Mandrel Penetration Data Top Depth, ft Actual	Impact Bottom El, ft	Impact Top El, ft.	Impact Shaft Length,ft	Top of Grout El, ft	Design Shaft Length	Estimated Grout Volume cf	Estimated Grout Volume gal	Actual Grout Vol. cf.	Install Date	Mandrel Stroke, ft Up Stroke	Mandrel Stroke, ft Down Stroke	Volume of Aggregate (cf)	Install Time (min)	Rock Spoil Cone Bottom Dia., in.	Rock Spoil Cone Height in.	Top Cone Dia.	Spoil Volume, cf Below Grade	Spoil Volume, cf Above Grade	Pier Volume, cf	Nominal Pier Dia., in	Remarks	Planned Grouted Shaft Length

GNE Quality Control Representative
_____**(HDI)**

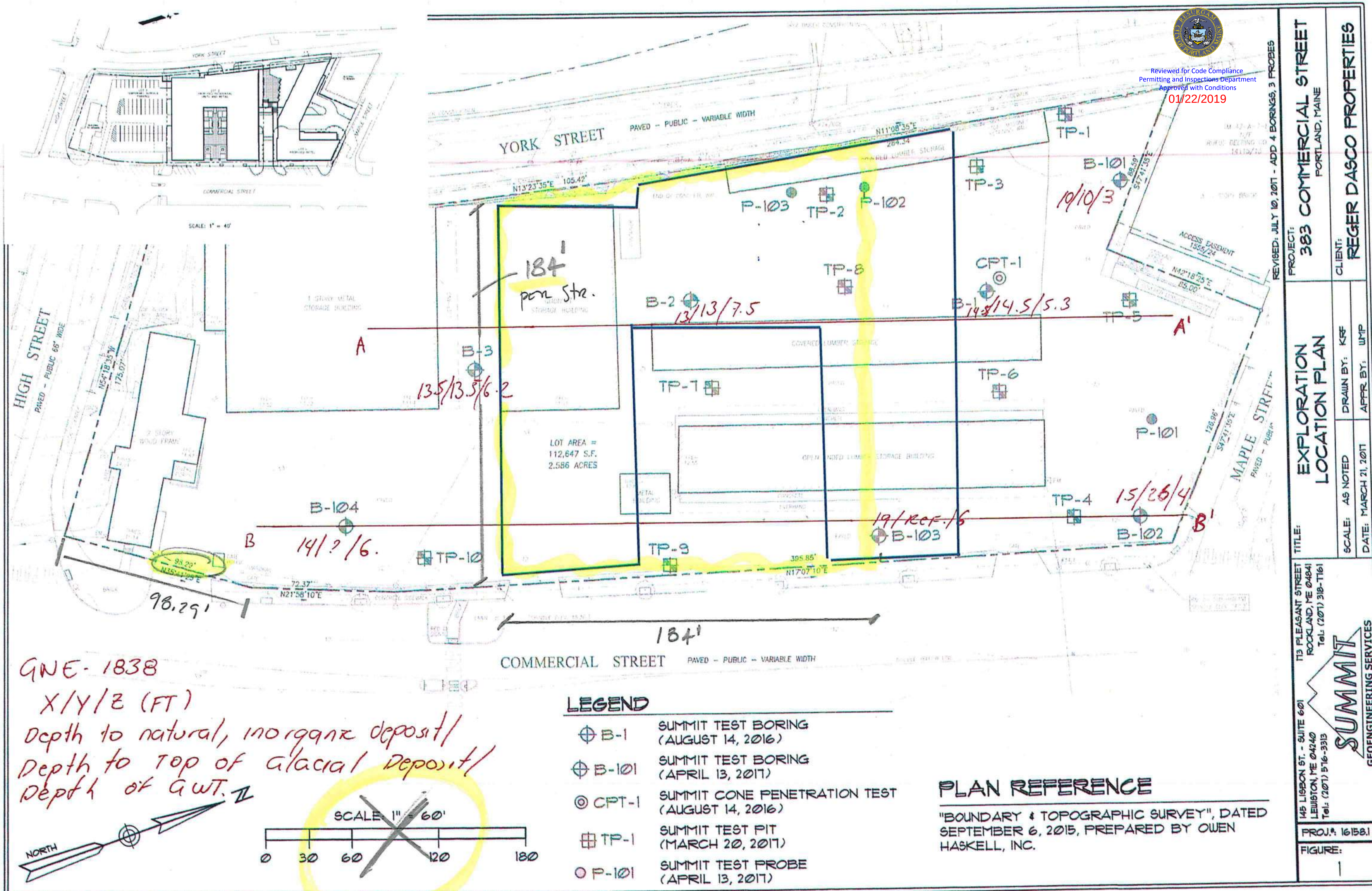
Owner's Quality Assurance Representative
_____

HELICAL

GEOPIER®

Design Submittal for GEOPIER® Ground Improvement
Hobson's Landing Condominium
Portland, Maine

GEOTECHNICAL INFORMATION



Reviewed for Code Compliance
Permitting and Inspections Department
Approved with Conditions
01/22/2019
YORK STREET
PAVED - PUBLIC - VARIABLE WIDTH
HIGH STREET
PAVED - PUBLIC 66' WIDE
MAPLE STREET
COMMERCIAL STREET
PAVED - PUBLIC - VARIABLE WIDTH
LOT AREA = 112,647 S.F. 2.586 ACRES
1 STORY METAL STORAGE BUILDING
OPEN SIDED LUMBER STORAGE BUILDING
COVERED LUMBER STORAGE
ACCESS EASEMENT
N13°23'35"E 105.42'
N11°08'35"E 284.34'
395.85' N17°07'10"E
72.37' N21°58'10"E
98.29' N35°41'25"E
N42°18'25"E 65.00'
S47°41'35"E
TP-1
TP-2
TP-3
TP-4
TP-5
TP-6
TP-7
TP-8
TP-9
TP-10
B-1
B-2
B-3
B-101
B-102
B-103
B-104
CPT-1
P-101
P-102
P-103
A
A'
B
B'
184'
pen. Str.
184'
98.29'
10/10/3
13/13/7.5
14.8/14.5/5.3
13.5/13.5/6.2
15/26/4
19/Ref./6
14/?/6.
GNE-1838
X/Y/Z (FT)
Depth to natural, inorganic deposit/
Depth to top of Glacial Deposit/
Depth of GWT.
NORTH
SCALE 1" = 60'
0
30
60
120
180
LEGEND
B-1 SUMMIT TEST BORING (AUGUST 14, 2016)
B-101 SUMMIT TEST BORING (APRIL 13, 2017)
CPT-1 SUMMIT CONE PENETRATION TEST (AUGUST 14, 2016)
TP-1 SUMMIT TEST PIT (MARCH 20, 2017)
P-101 SUMMIT TEST PROBE (APRIL 13, 2017)
PLAN REFERENCE
"BOUNDARY & TOPOGRAPHIC SURVEY", DATED SEPTEMBER 6, 2015, PREPARED BY OWEN HASKELL, INC.
REVISED: JULY 10, 2017 - ADD 4 BORINGS, 3 PROBES
PROJECT: 383 COMMERCIAL STREET PORTLAND, MAINE
CLIENT: REGER DASCO PROPERTIES
TITLE: EXPLORATION LOCATION PLAN
SCALE: AS NOTED
DATE: MARCH 21, 2017
DRAWN BY: KRF
APPR. BY: WMP
145 LISBON ST. - SUITE 601 LEWISTON, ME 04240 Tel.: (207) 576-3313
113 PLEASANT STREET ROCKLAND, ME 04841 Tel.: (207) 318-7161
SUMMIT GEOENGINEERING SERVICES
PROJ.#: 16158.1
FIGURE: 1

BY JEF DATE 4/9/18

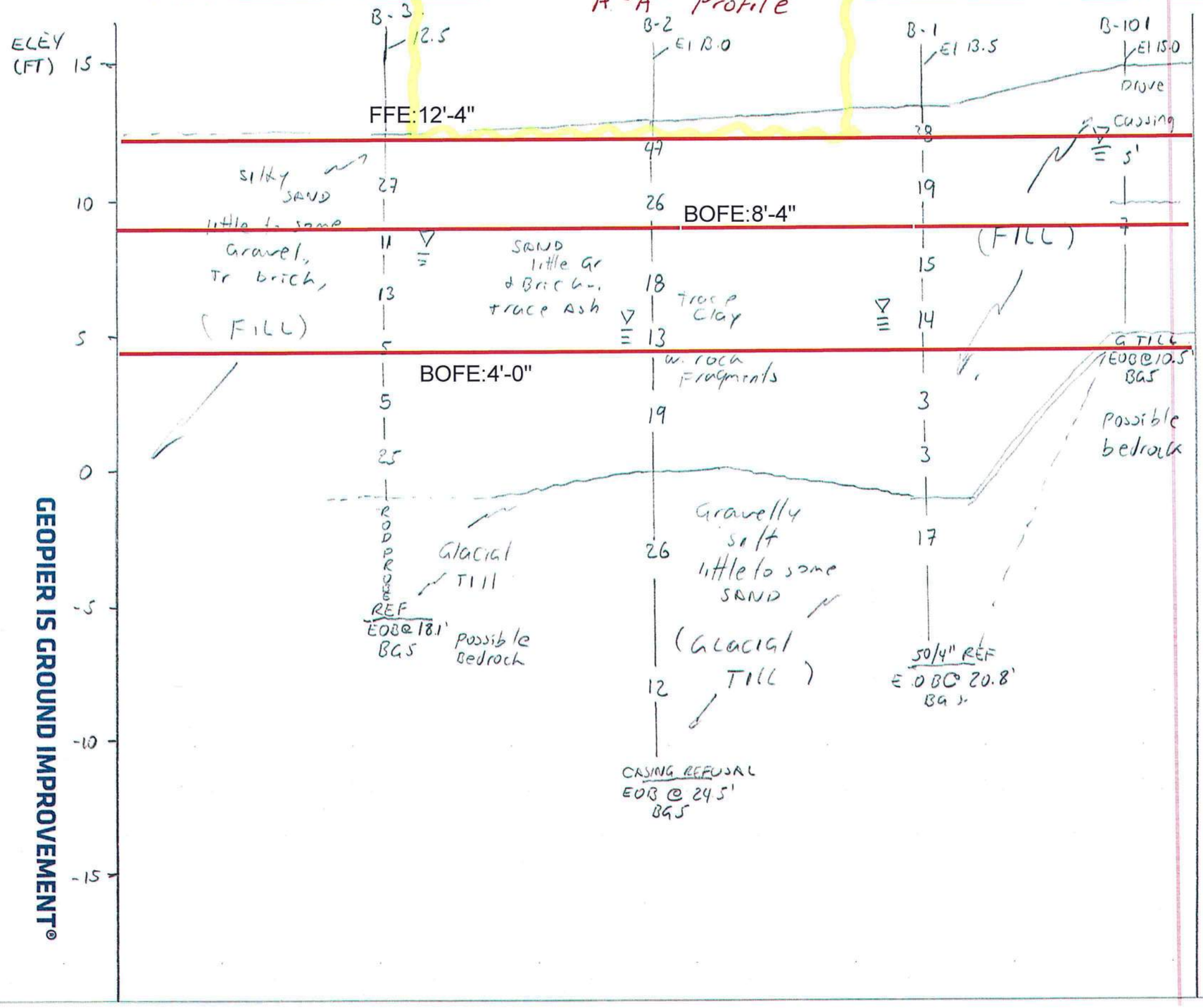
CHECK BY _____ DATE _____

REVISIONS

BY _____ DATE _____ CHK ___

BY _____ DATE _____ CHK ___

A-A' Profile



PROJECT 383 Commercial St, Portland, ME

PROJECT NO. GWE-1838 PAGE 1 OF 2

GEOPIER®

Tensar

GEOPIER IS GROUND IMPROVEMENT®

BY JEF DATE 4/9/18

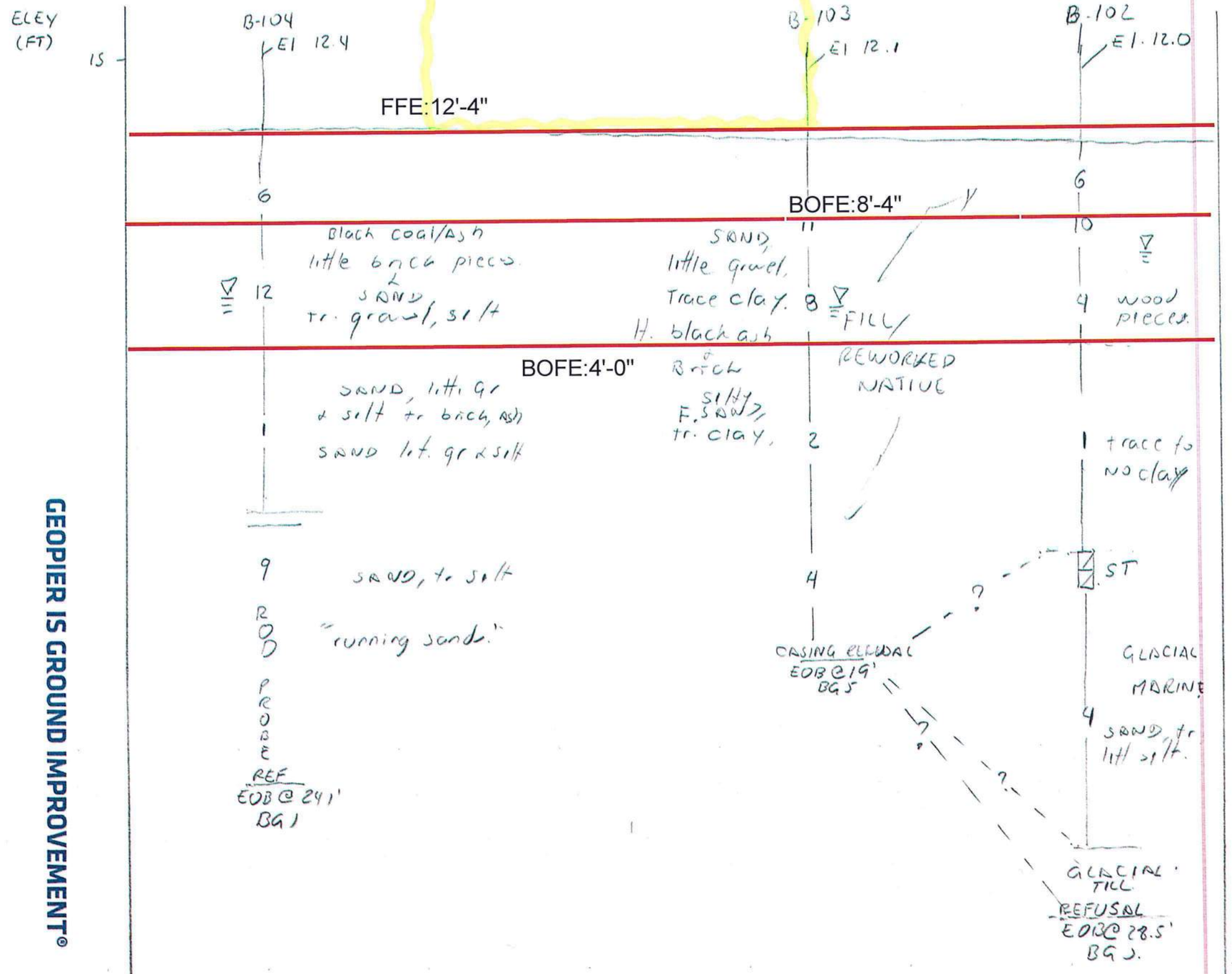
CHECK BY _____ DATE _____

REVISIONS

BY _____ DATE _____ CHK ___

BY _____ DATE _____ CHK ___

B-B' Profile



GEOPIER®

Tensar

PROJECT 383. Commercial St, Portland, ME

PROJECT NO. GME-1838 PAGE 2 OF 2

GEOPIER IS GROUND IMPROVEMENT®

SOIL BORING LOG

SUMMIT GEOENGINEERING SERVICES

Project:	Proposed Development	Boring #:	B-1
Location:	383 Commercial Street	Project #:	18158
City, State:	Portland, Maine	Sheet:	1 of 1
		Chkd by:	

Drilling Co:	Summit Geoengineering Services	Boring Elevation:	13.5 ft. +/-
Driller:	C. Coolidge, P.E.	Reference:	"Boundary and Topographic Survey" September 6, 2015, Owen Haskell, Inc.
Summit Staff:	M. Hardison, E.I.	Date started: 8/14/2016	Date Completed: 8/14/2016

DRILLING METHOD		SAMPLER	
Vehicle:	Tracked	Length:	24" SS
Model:	AMS Power Probe	Diameter:	2"OD/1.5"ID
Method:	3" Casing	Hammer:	140 lb
Hammer Style:	Automatic	Method:	ASTM D1586

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
8/14/2016	5.3 ft	8.2 ft +/-	Measured in casing

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
	S-1	24/22	0 to 2	15		Gray to black Gravelly SAND, little to some Silt,		
1				20		trace brick and ash, dry, dense, SW		
				18				FILL
2				13				
	S-2	24/3	2 to 4	11		Brown Gravelly SAND, similar to above (based on		
3				11		minimal sample recovery)		
				8				
4				9				
5								
	S-3	24/20	5 to 7	9		Dark gray fine to coarse SAND, little Silt and	▽ Groundwater	
6				9		Gravel, few small wood pieces, moist, compact, SW		
				6				
7				4				
	S-4	24/16	7 to 9	10		Same as above, white and black Ash in bottom 6",	PP = 4,000 psf	
8				6				
				8				
9				6		Gray Silty CLAY intermixed with white and black ash		
						and Sand, moist, soft, ML or CL		
10								
	S-5	24/16	10 to 12	1		Gray Silty CLAY, intermixed ash and Sand, Brick		
11				1		fragments at bottom, wet, soft, CL		
				2				
12				3				
	S-6	24/14	12 to 14	1		Similar to above with more Sand content	PP = 1,500 psf	
13				2				
				1				
14				3				
					-1.0			
15								
	S-7	24/22	15 to 17	4		Gray fine to coarse SAND, little Silt, trace fine		
16				7		Gravel, wet, compact, SM		GLACIAL TILL
				10				
17				7				
18								
19								
20								
	S-8	24/20	20 to 22	21		Same as above, Rock fragments in bottom, SM		
21				50 / 4"	-7.3			
						Refusal at 20.8', End of Boring. Likely bedrock		
22								

Granular Soils		Cohesive Soils		% Composition
Blows/ft.	Density	Blows/ft.	Consistency	ASTM D2487
0-4	V. Loose	<2	V. soft	
5-10	Loose	2-4	Soft	< 5% Trace
11-30	Compact	5-8	Firm	5-15% Little
31-50	Dense	9-15	Stiff	15-30% Some
>50	V. Dense	16-30	V. Stiff	> 30% With
		>30	Hard	

NOTES: PP = Pocket Penetrometer, MC = Moisture Content
LL = Liquid Limit, PI = Plastic Index, FV = Field Vane Test
Su = Undrained Shear Strength, Su(r) = Remolded Shear Strength

Bedrock Joints
Shallow = 0 to 35 degrees
Dipping = 35 to 55 degrees
Steep = 55 to 90 degrees

Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches
Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200

Soil Moisture Condition
Dry: S = 0%
Humid: S = 1 to 25%
Damp: S = 26 to 50%
Moist: S = 51 to 75%
Wet: S = 76 to 99%
Saturated: S = 100%

SOIL BORING LOG

SUMMIT GEOENGINEERING SERVICES

Project:	Proposed Development	Boring #:	B-2
Location:	383 Commercial Street	Project #:	15159
City, State:	Portland, Maine	Sheet:	1 of 1
		Chkd by:	

Drilling Co:	Summit Geoengineering Services	Boring Elevation:	13.0 ft. +/-
Driller:	C. Coolidge, P.E.	Reference:	"Boundary and Topographic Survey" September 6, 2015, Owen Haskell, Inc.
Summit Staff:	M. Hardison, E.I.	Date started: 8/14/2016	Date Completed: 8/14/2016

DRILLING METHOD		SAMPLER	
Vehicle:	Tracked	Length:	24" SS
Model:	AMS Power Probe	Diameter:	2"OD/1.5"ID
Method:	3" Casing	Hammer:	140 lb
Hammer Style:	Automatic	Method:	ASTM D1586

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
8/14/2016	7.5 ft	5.5 ft +/-	Measured after completion

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
	S-1	24/20	0 to 2	12		Dark gray Silty medium to coarse SAND, little		
1				24		Gravel and Brick pieces, trace ash, dry, dense, SM		
				23				FILL
2				15				
	S-2	24/18	2 to 4	14		Same, as above, brown, compact, dry, SM		
3				13		(no ash or brick in sample)		
				13				
4				12				
5								
	S-3	24/16	5 to 7	3		Light gray SILT intermixed Sand and Gravel, trace		
6				9		Clay, humid, compact, ML (no brick or ash in sample)		
				9				
7				10				
	S-4	24/18	7 to 9	5		Gray to black SAND, little to some Silt, trace Gravel,	▽ Groundwater	
8				8		trace Brick, and Rock fragments, humid to damp,		
				5		compact, SM		
9				2				
10								
	S-5	24/12	10 to 12	7		Brown to dark gray SAND, little to some Silt, trace		
11				8		to little fine Gravel, wet, compact, SP		
				11				
12				9				
13					0			
14								
								GLACIAL TILL
15								
	S-6	24/8	15 to 17	10		Gray Gravelly SILT, little to some Sand, moist,		
16				13		very stiff, ML		
				13				
17				10				
18								
19								
20								
	S-7	24/12	20 to 22	4		Similar to above, little Clay, Silt seam from 20' to	PP = 2,000 psf	
21				6		21.3', ML	to 3,000 psf	
				6				
22				7				
					-11.5			
						Casing refusal at 24.5', End of Boring		

Granular Soils		Cohesive Soils		% Composition
Blows/ft.	Density	Blows/ft.	Consistency	ASTM D2487
0-4	V. Loose	<2	V. soft	
5-10	Loose	2-4	Soft	< 5% Trace
11-30	Compact	5-8	Firm	5-15% Little
31-50	Dense	9-15	Stiff	15-30% Some
>50	V. Dense	16-30	V. Stiff	> 30% With
		>30	Hard	

NOTES: PP = Pocket Penetrometer, MC = Moisture Content
LL = Liquid Limit, PI = Plastic Index, FV = Field Vane Test
Su = Undrained Shear Strength, Su(r) = Remolded Shear Strength

Bedrock Joints
Shallow = 0 to 35 degrees
Dipping = 35 to 55 degrees
Steep = 55 to 90 degrees

Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches
Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200

Soil Moisture Condition
Dry: S = 0%
Humid: S = 1 to 25%
Damp: S = 26 to 50%
Moist: S = 51 to 75%
Wet: S = 76 to 99%
Saturated: S = 100%

SOIL BORING LOG

SUMMIT GEOENGINEERING SERVICES

Project:	Proposed Development	Boring #:	B-3
Location:	383 Commercial Street	Project #:	18158
City, State:	Portland, Maine	Sheet:	1 of 1
		Chkd by:	

Drilling Co:	Summit Geoengineering Services	Boring Elevation:	12.5 ft. +/-
Driller:	C. Coolidge, P.E.	Reference:	"Boundary and Topographic Survey" September 6, 2015, Owen Haskell, Inc.
Summit Staff:	M. Hardison, E.I.	Date started: 8/14/2016	Date Completed: 8/14/2016

DRILLING METHOD		SAMPLER	
Vehicle:	Tracked	Length:	24" SS
Model:	AMS Power Probe	Diameter:	2"OD/1.5"ID
Method:	3" Casing	Hammer:	140 lb
Hammer Style:	Automatic	Method:	ASTM D1586

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
8/14/2016	6.2 ft	6.3 ft +/-	Measured after completion

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
	PS-1		0 to 1			4" pavement		PAVEMENT
1								
	S-1	24/20	1 to 3	15		Brown to black Silty SAND, little to some Gravel,		
2				14		trace brick, humid, compact to dense, SM		FILL
				13				
3				13				
	S-2	24/18	3 to 4.5	7		Brown to black Silty SAND, little Gravel, humid		
4				6		compact to dense, SM		
				5				
5								
	S-3	24/10	5 to 7	5		Brown Silty medium to coarse SAND, trace fine		
6				7		Gravel, humid to moist, SM		
				6			▽ Groundwater	
7				3				
	S-4	24/0	7 to 9	2		No recovery, presumed loose SAND		
8				2				
				3				
9				3				
	S-5	24/6	9 to 11	3		Light brown fine to coarse SAND, little Silt, trace		
10				3		fine Gravel, moist, loose, SW		
				2				
11				3				
	S-6	24/10	11 to 13	4		Same as above		
12				13				
			ROD	12 / 5"		Black SAND, little to some Silt, Brick fragments,		
13			PROBE			black staining, moist, SP		
					-1.0			
14				13		Spear tip probe in blows / foot		GLACIAL TILL
15				10				
16				10				
17				11				
18				28 / 10"	-5.6			
						Refusal at 18.1', End of Boring. Likely bedrock		
19								
20								
21								
22								

Granular Soils		Cohesive Soils		% Composition
Blows/ft.	Density	Blows/ft.	Consistency	ASTM D2487
0-4	V. Loose	<2	V. soft	
5-10	Loose	2-4	Soft	< 5% Trace
11-30	Compact	5-8	Firm	5-15% Little
31-50	Dense	9-15	Stiff	15-30% Some
>50	V. Dense	16-30	V. Stiff	> 30% With
		>30	Hard	

NOTES: PP = Pocket Penetrometer, MC = Moisture Content
LL = Liquid Limit, PI = Plastic Index, FV = Field Vane Test
Su = Undrained Shear Strength, Su(r) = Remolded Shear Strength

Bedrock Joints
Shallow = 0 to 35 degrees
Dipping = 35 to 55 degrees
Steep = 55 to 90 degrees

Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches
Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200

Soil Moisture Condition
Dry: S = 0%
Humid: S = 1 to 25%
Damp: S = 26 to 50%
Moist: S = 51 to 75%
Wet: S = 76 to 99%
Saturated: S = 100%

SOIL BORING LOG

SUMMIT GEOENGINEERING SERVICES

Project:	Proposed Development	Boring #:	B-101
Location:	383 Commercial Street	Project #:	16158.1
City, State:	Portland, Maine	Sheet:	1 of 1
		Chkd by:	

Drilling Co:	Summit Geoengineering Services	Boring Elevation:	15.0 ft. +/-
Driller:	C. Coolidge, P.E.	Reference:	"Boundary and Topographic Survey" September 6, 2015, Owen Haskell, Inc.
Summit Staff:	M. Hardison, E.I.	Date started: 4/13/2017	Date Completed: 4/13/2017

DRILLING METHOD		SAMPLER	
Vehicle:	Tracked	Length:	24" SS
Model:	AMS Power Probe	Diameter:	2"OD/1.5"ID
Method:	3" Casing	Hammer:	140 lb
Hammer Style:	Automatic	Method:	ASTM D1586

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
4/13/2017	2.9 ft.	12.1 ft.	13:30, In Well
7/28/2017	3.9 ft.	11.1 ft.	11:00, In Well

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
						5.5" pavement, poor condition		PAVEMENT
1						Drove Casing to 5', no sample collected		
2								FILL
3							Groundwater	
4								
5								
	S-1	24/16	5 to 7	2		Black fine Gravelly medium to coarse SAND, slight odor,		
6				1		very loose, wet, SP		
				6		Black to olive brown Silty CLAY, little Gravel and Sand		PP = 2,000 psf to
7				4		intermixed, stiff, moist, CL		4,000 psf
8								
9								
10					5.0'			
	S-2	24/8	10 to 10.5	7/5"		Gray fine to coarse SAND, little to some Silt, little Clay	PP = 5,000 psf	GLACIAL TILL
11				50/1"	4.5'	and Gravel, dense, wet, SP-SM		
						Spoon refusal at 10.5' on likely bedrock		BEDROCK
12								
13						Installed Monitoring Well in Hole		
14						1" Dia. PVC Screen from 10' depth up to 5'		
15						1" Dia. PVC Riser from 5' depth to ground surface		
16								
17								
18								
19								
20								
21								
22								

Granular Soils		Cohesive Soils		% Composition
Blows/ft.	Density	Blows/ft.	Consistency	ASTM D2487
0-4	V. Loose	<2	V. soft	
5-10	Loose	2-4	Soft	< 5% Trace
11-30	Compact	5-8	Firm	5-15% Little
31-50	Dense	9-15	Stiff	15-30% Some
>50	V. Dense	16-30	V. Stiff	> 30% With
		>30	Hard	

NOTES: PP = Pocket Penetrometer, MC = Moisture Content
LL = Liquid Limit, PI = Plastic Index, FV = Field Vane Test
Su = Undrained Shear Strength, Su(r) = Remolded Shear Strength

Bedrock Joints
Shallow = 0 to 35 degrees
Dipping = 35 to 55 degrees
Steep = 55 to 90 degrees

Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches
Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200

Soil Moisture Condition
Dry: S = 0%
Humid: S = 1 to 25%
Damp: S = 26 to 50%
Moist: S = 51 to 75%
Wet: S = 76 to 99%
Saturated: S = 100%

SUMMIT GEOENGINEERING SERVICES

SOIL BORING LOG

Boring #: B-102

Project: Proposed Development
Location: 383 Commercial Street
City, State: Portland, Maine

Project #: 16158.1
Sheet: 1 of 2
Chkd by:

Drilling Co: Summit Geoengineering Services
Driller: C. Coolidge, P.E.
Summit Staff: M. Hardison, E.I.

Boring Elevation: 12.0 ft. +/-
Reference: "Boundary and Topographic Survey" September 6, 2015, Owen Haskell, Inc.
Date started: 4/13/2017 Date Completed: 4/13/2017

DRILLING METHOD		SAMPLER	
Vehicle:	Tracked	Length:	24" SS
Model:	AMS Power Probe	Diameter:	2"OD/1.5"ID
Method:	3" Casing	Hammer:	140 lb
Hammer Style:	Automatic	Method:	ASTM D1586

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
4/13/2017	8.1 ft	3.9 ft	Measured after casing pulled 10:30
4/13/2017	4.1 ft	7.9 ft	13:30

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
						9" Pavement Gravelly and poor condition		PAVEMENT
1								
	S-1	12-Dec	1 to 2	12				
2				6				FILL
	S-1A	24/24	2 to 4	6		Brown to black coarse Sandy GRAVEL, Cobble pieces,		
3				5		little Silt, loose to compact, humid, GP-GM		
				5				
4				4		6" Wood (timber) pieces, moist	▽	
					7.5'		Groundwater	
5								
	S-2	24/6	5 to 7	2		Gray Silty fine SAND, little Clay, trace fine Gravel,		FILL/ REWORKED
6				2		very loose to loose, moist to wet, SM		NATIVE
				2				
7				2				
8								
9								
10								
	S-3	24/20	10 to 12	1		Similar to above, trace to no Clay, very loose, wet		
11				1				
				WH				
12				1				
13						Minimal resistance to casing advance from 10' to 15'		
						depth		
14								
15					-3.0'			
	UT-1	30/30	15 to 17.5	Push		Collected Shelby Tube sample		GLACIAL MARINE
16								
17								
				▼				
18						Increased resistance to casing advance at 18'		
19								
20								
	S-4	24/12	20 to 22	1		Gray medium SAND, trace to little Silt, very loose, wet		
21				2				
				2				
22				3				

Granular Soils		Cohesive Soils		% Composition
Blows/ft.	Density	Blows/ft.	Consistency	ASTM D2487
0-4	V. Loose	<2	V. soft	
5-10	Loose	2-4	Soft	< 5% Trace
11-30	Compact	5-8	Firm	5-15% Little
31-50	Dense	9-15	Stiff	15-30% Some
>50	V. Dense	16-30	V. Stiff	> 30% With
		>30	Hard	

NOTES: PP = Pocket Penetrometer, MC = Moisture Content
LL = Liquid Limit, PI = Plastic Index, FV = Field Vane Test
Bedrock Joints Su = Undrained Shear Strength, Su(r) = Remolded Shear Strength
Shallow = 0 to 35 degrees
Dipping = 35 to 55 degrees
Steep = 55 to 90 degrees

Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches
Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200

Soil Moisture Condition
Dry: S = 0%
Humid: S = 1 to 25%
Damp: S = 26 to 50%
Moist: S = 51 to 75%
Wet: S = 76 to 99%
Saturated: S = 100%

SUMMIT GEOENGINEERING SERVICES

SOIL BORING LOG

Boring #: B-102
Project: Proposed Development
Project #: 16158.1
Location: 383 Commercial Street
Sheet: 2 of 2
City, State: Portland, Maine
Chkd by:

Drilling Co: Summit Geoengineering Services
Driller: C. Coolidge, P.E.
Summit Staff: M. Hardison, E.I.

Boring Elevation: 12.0 ft. +/-
Reference: "Boundary and Topographic Survey" September 6, 2015, Owen Haskell, Inc.
Date started: 4/13/2017 Date Completed: 4/13/2017

DRILLING METHOD		SAMPLER	
Vehicle:	Tracked	Length:	24" SS
Model:	AMS Power Probe	Diameter:	2"OD/1.5"ID
Method:	3" Casing	Hammer:	140 lb
Hammer Style:	Automatic	Method:	ASTM D1586

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
4/13/2017	8.1 ft	3.9 ft	Measured after casing pulled 10:30
4/13/2017	4.1 ft	7.9 ft	13:30

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/12"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
23				4				GLACIAL MARINE
24				12				
25				17				
26				14	-14.0'			
27				44		Dense at 26'		GLACIAL TILL
28				36				
				65/6"	-16.5'			
29						Refusal at 28.5'		PROBABLE BEDROCK
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								
41								
42								
43								
44								

Granular Soils		Cohesive Soils		% Composition
Blows/ft.	Density	Blows/ft.	Consistency	ASTM D2487
0-4	V. Loose	<2	V. soft	
5-10	Loose	2-4	Soft	< 5% Trace
11-30	Compact	5-8	Firm	5-15% Little
31-50	Dense	9-15	Stiff	15-30% Some
>50	V. Dense	16-30	V. Stiff	> 30% With
		>30	Hard	

NOTES: PP = Pocket Penetrometer, MC = Moisture Content
LL = Liquid Limit, PI = Plastic Index, FV = Field Vane Test
Bedrock Joints Su = Undrained Shear Strength, Su(r) = Remolded Shear Strength
Shallow = 0 to 35 degrees
Dipping = 35 to 55 degrees
Steep = 55 to 90 degrees

Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches
Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200

Soil Moisture Condition
Dry: S = 0%
Humid: S = 1 to 25%
Damp: S = 26 to 50%
Moist: S = 51 to 75%
Wet: S = 76 to 99%
Saturated: S = 100%

SUMMIT GEOENGINEERING SERVICES

SOIL BORING LOG

Boring #: B-103
Project: Proposed Development
Project #: 16158.1
Location: 383 Commercial Street
Sheet: 1 of 1
City, State: Portland, Maine
Chkd by:

Drilling Co: Summit Geoengineering Services
Driller: C. Coolidge, P.E.
Summit Staff: M. Hardison, E.I.

Boring Elevation: 12.1 ft. +/-
Reference: "Boundary and Topographic Survey" September 6, 2015, Owen Haskell, Inc.
Date started: 4/13/2017 Date Completed: 4/13/2017

DRILLING METHOD		SAMPLER	
Vehicle:	Tracked	Length:	24" SS
Model:	AMS Power Probe	Diameter:	2"OD/1.5"ID
Method:	3" Casing	Hammer:	140 lb
Hammer Style:	Automatic	Method:	ASTM D1586

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
4/13/2017	6.5 ft	5.6 ft	Measured after casing pulled 12:00
4/13/2017	6.0 ft	6.1 ft	1.5 hours after completion 13:30

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
						Pavement 6"		PAVEMENT
1								
2								FILL
	S-1	24/16	2 to 4	7		Brown-red Silty fine to coarse SAND, little Gravel,		
3				5		trace Clay, little black Ash and brick pieces, compact,		
				6		humid, SM		
4				6				
5								
	S-2	24/22	5 to 7	7		Brown Silty fine SAND, trace Clay, loose, damp, SM		
6				5			▽ Groundwater	
				3				
7				7		Increased Clay at bottom 6"	PP = 5,000 psf	
8								
9								
10								
	S-3	24/10	10 to 12	1		Gray Clayey SAND, little to some Silt, intermixed coal		FILL/ REWORKED
11				2		Ash, very soft, wet, SC		NATIVE
				WH				
12				1				
13								
14								
15								
	S-4	24/12	15 to 17	1		Similar to above, trace fine Gravel, trace brick and		
16				3		white Ash		
				1				
17				2				
18								
19					-6.9'			
						Casing refusal at 19.0', end of boring		PROBABLE BEDROCK
20								
21								
22								

Granular Soils		Cohesive Soils		% Composition
Blows/ft.	Density	Blows/ft.	Consistency	ASTM D2487
0-4	V. Loose	<2	V. soft	
5-10	Loose	2-4	Soft	< 5% Trace
11-30	Compact	5-8	Firm	5-15% Little
31-50	Dense	9-15	Stiff	15-30% Some
>50	V. Dense	16-30	V. Stiff	> 30% With
		>30	Hard	

NOTES: PP = Pocket Penetrometer, MC = Moisture Content
LL = Liquid Limit, PI = Plastic Index, FV = Field Vane Test
Bedrock Joints Su = Undrained Shear Strength, Su(r) = Remolded Shear Strength
Shallow = 0 to 35 degrees
Dipping = 35 to 55 degrees
Steep = 55 to 90 degrees

Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches
Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200

Soil Moisture Condition
Dry: S = 0%
Humid: S = 1 to 25%
Damp: S = 26 to 50%
Moist: S = 51 to 75%
Wet: S = 76 to 99%
Saturated: S = 100%

SUMMIT GEOENGINEERING SERVICES

SOIL BORING LOG

Boring #: B-104
Project: Proposed Development
Project #: 16158.1
Location: 383 Commercial Street
Sheet: 1 of 2
City, State: Portland, Maine
Chkd by:

Drilling Co: Summit Geoengineering Services
Driller: C. Coolidge, P.E.
Summit Staff: M. Hardison, E.I.

Boring Elevation: 12.4 ft. +/-
Reference: "Boundary and Topographic Survey" September 6, 2015, Owen Haskell, Inc.
Date started: 4/13/2017 Date Completed: 4/13/2017

DRILLING METHOD		SAMPLER	
Vehicle:	Tracked	Length:	24" SS
Model:	AMS Power Probe	Diameter:	2"OD/1.5"ID
Method:	3" Casing	Hammer:	140 lb
Hammer Style:	Automatic	Method:	ASTM D1586

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
4/13/2017	5.9 ft	6.5 ft	After Casing Pulled, 1:00 PM

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/6"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
						6" Pavement		
1								
						Black Coal/Ash, Little Brick pieces and Sand, trace Gravel		
2	S-1	24/20	1.5 to 3.5	2		and Silt, loose, humid		FILL
				3				
3				3				
				4				
4								
5								
	S-2	24/14	5 to 7	3		Brown-tan medium to coarse SAND, little Gravel and Silt,		
6				5		trace brick and ash, humid, moist, SP-SM	▽	
				7			Groundwater	
7				7				
8								
9								
						Easy casing advance to 10'		
10								
	S-3	24/6	10 to 12	2		Brown fine to medium SAND, little Gravel and Silt,		
11				1		very loose, wet, SP-SM		
				WH				
12				1				
13								
14					-1.6'			
	S-4	24/24	15 to 17	2		Dense drilling and 14'		
15				3				
				6		Brown-gray fine to coarse SAND, trace Silt, loose to		GLACIAL MARINE
16				7		compact, wet		
						Running Sands, finished with speartip probe		
17								
				9**				
18						**=Blows/12"		
				5**				
19								
				4**				
20								
				5**				
21								
				4**				
22								

Granular Soils		Cohesive Soils		% Composition
Blows/ft.	Density	Blows/ft.	Consistency	ASTM D2487
0-4	V. Loose	<2	V. soft	
5-10	Loose	2-4	Soft	< 5% Trace
11-30	Compact	5-8	Firm	5-15% Little
31-50	Dense	9-15	Stiff	15-30% Some
>50	V. Dense	16-30	V. Stiff	> 30% With
		>30	Hard	

NOTES: PP = Pocket Penetrometer, MC = Moisture Content
LL = Liquid Limit, PI = Plastic Index, FV = Field Vane Test
Bedrock Joints Su = Undrained Shear Strength, Su(r) = Remolded Shear Strength
Shallow = 0 to 35 degrees
Dipping = 35 to 55 degrees
Steep = 55 to 90 degrees

Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches
Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200

Soil Moisture Condition
Dry: S = 0%
Humid: S = 1 to 25%
Damp: S = 26 to 50%
Moist: S = 51 to 75%
Wet: S = 76 to 99%
Saturated: S = 100%

SUMMIT
GEOENGINEERING SERVICES

SOIL BORING LOG

Boring #: B-104
Project: Proposed Development
Project #: 16158.1
Location: 383 Commercial Street
Sheet: 2 of 2
City, State: Portland, Maine
Chkd by:

Drilling Co: Summit Geoengineering Services
Driller: C. Coolidge, P.E.
Summit Staff: M. Hardison, E.I.

Boring Elevation: 12.4 ft. +/-
Reference: "Boundary and Topographic Survey" September 6, 2015, Owen Haskell, Inc.
Date started: 4/13/2017 Date Completed: 4/13/2017

DRILLING METHOD		SAMPLER	
Vehicle:	Tracked	Length:	24" SS
Model:	AMS Power Probe	Diameter:	2"OD/1.5"ID
Method:	3" Casing	Hammer:	140 lb
Hammer Style:	Automatic	Method:	ASTM D1586

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference
4/13/2017	5.9 ft	6.5 ft	After Casing Pulled, 13:00

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/12"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
23				2				GLACIAL MARINE
24				3	-11.7			
25				5/0.5"		Refusal at 24.1'		PROBABLE BEDROCK

Granular Soils		Cohesive Soils		% Composition
Blows/ft.	Density	Blows/ft.	Consistency	ASTM D2487
0-4	V. Loose	<2	V. soft	
5-10	Loose	2-4	Soft	< 5% Trace
11-30	Compact	5-8	Firm	5-15% Little
31-50	Dense	9-15	Stiff	15-30% Some
>50	V. Dense	16-30	V. Stiff	> 30% With
		>30	Hard	

NOTES: PP = Pocket Penetrometer, MC = Moisture Content
LL = Liquid Limit, PI = Plastic Index, FV = Field Vane Test
Bedrock Joints Su = Undrained Shear Strength, Su(r) = Remolded Shear Strength
Shallow = 0 to 35 degrees
Dipping = 35 to 55 degrees
Steep = 55 to 90 degrees

Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches
Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200

Soil Moisture Condition
Dry: S = 0%
Humid: S = 1 to 25%
Damp: S = 26 to 50%
Moist: S = 51 to 75%
Wet: S = 76 to 99%
Saturated: S = 100%

SUMMIT GEOENGINEERING SERVICES

SOIL PROBE LOG

Probe #: P-101

Project: Proposed Development
Location: 383 Commercial Street
City, State: Portland, Maine

Project #: 16158.1
Sheet: 1 of 2
Chkd by:

Drilling Co: Summit Geoengineering Services
Driller: C. Coolidge, P.E.
Summit Staff: M. Hardison, E.I.

Boring Elevation: 12.8 ft. +/-
Reference: "Boundary and Topographic Survey" September 6, 2015, Owen Haskell, Inc.
Date started: 4/13/2017 Date Completed: 4/13/2017

DRILLING METHOD		SAMPLER	
Vehicle:	Tracked	Length:	
Model:	AMS Power Probe	Diameter:	
Method:	Speartip	Hammer:	
Hammer Style:	Automatic	Method:	

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/12"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
1								
2				12				
3				10				
4				4		Very loose 4'-5'		FILL
5				5				
6				14				
7				6				
8				4		Very loose 8'-11'		
9				4				
10				4				
11				5				
12				11				
13				15				GLACIAL MARINE
14				10				
15				9				
16				7				
17				8				
18				14				
19				22				
20				16				
21				13				
22				13				

Granular Soils		Cohesive Soils		% Composition
Blows/ft.	Density	Blows/ft.	Consistency	ASTM D2487
0-4	V. Loose	<2	V. soft	
5-10	Loose	2-4	Soft	< 5% Trace
11-30	Compact	5-8	Firm	5-15% Little
31-50	Dense	9-15	Stiff	15-30% Some
>50	V. Dense	16-30	V. Stiff	> 30% With
		>30	Hard	

NOTES: PP = Pocket Penetrometer, MC = Moisture Content
LL = Liquid Limit, PI = Plastic Index, FV = Field Vane Test
Bedrock Joints Su = Undrained Shear Strength, Su(r) = Remolded Shear Strength
Shallow = 0 to 35 degrees
Dipping = 35 to 55 degrees
Steep = 55 to 90 degrees

Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches
Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200

Soil Moisture Condition
Dry: S = 0%
Humid: S = 1 to 25%
Damp: S = 26 to 50%
Moist: S = 51 to 75%
Wet: S = 76 to 99%
Saturated: S = 100%

SUMMIT
GEOENGINEERING SERVICES

SOIL PROBE LOG

Probe #: P-101

Project:	Proposed Development	Project #:	16158.1
Location:	383 Commercial Street	Sheet:	2 of 2
City, State:	Portland, Maine	Chkd by:	

Drilling Co:	Summit Geoengineering Services	Boring Elevation:	12.8 ft. +/-
Driller:	C. Coolidge, P.E.	Reference:	"Boundary and Topographic Survey" September 6, 2015, Owen Haskell, Inc.
Summit Staff:	M. Hardison, E.I.	Date started: 4/13/2017	Date Completed: 4/13/2017

DRILLING METHOD		SAMPLER	
Vehicle:	Tracked	Length:	
Model:	AMS Power Probe	Diameter:	
Method:	Speartip	Hammer:	
Hammer Style:	Automatic	Method:	

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/12"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
23				18		**=Blows/12" Dense at 22.8'		GLACIAL MARINE
24				18		Very dense at 24.0'		
25				42				GLACIAL TILL
26				28/6"	-12.7	Refusal at 25.5'		PROBABLE BEDROCK
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								
41								
42								
43								
44								

Granular Soils		Cohesive Soils		% Composition
Blows/ft.	Density	Blows/ft.	Consistency	ASTM D2487
0-4	V. Loose	<2	V. soft	
5-10	Loose	2-4	Soft	< 5% Trace
11-30	Compact	5-8	Firm	5-15% Little
31-50	Dense	9-15	Stiff	15-30% Some
>50	V. Dense	16-30	V. Stiff	> 30% With
		>30	Hard	

NOTES: PP = Pocket Penetrometer, MC = Moisture Content
LL = Liquid Limit, PI = Plastic Index, FV = Field Vane Test
Bedrock Joints Su = Undrained Shear Strength, Su(r) = Remolded Shear Strength
Shallow = 0 to 35 degrees
Dipping = 35 to 55 degrees
Steep = 55 to 90 degrees

Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches
Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200

Soil Moisture Condition
Dry: S = 0%
Humid: S = 1 to 25%
Damp: S = 26 to 50%
Moist: S = 51 to 75%
Wet: S = 76 to 99%
Saturated: S = 100%

SUMMIT
GEOENGINEERING SERVICES

SOIL PROBE LOG

Probe #: P-102

Project:	Proposed Development	Project #:	16158.1
Location:	383 Commercial Street	Sheet:	1 of 1
City, State:	Portland, Maine	Chkd by:	

Drilling Co:	Summit Geoengineering Services	Boring Elevation:	14.0 ft. +/-
Driller:	C. Coolidge, P.E.	Reference:	"Boundary and Topographic Survey" September 6, 2015, Owen Haskell, Inc.
Summit Staff:	M. Hardison, E.I.	Date started: 4/13/2017	Date Completed: 4/13/2017

DRILLING METHOD		SAMPLER	
Vehicle:	Tracked	Length:	
Model:	AMS Power Probe	Diameter:	
Method:	2.5" SSA	Hammer:	
Hammer Style:	Automatic	Method:	

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/12"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
				PROBE		Solid Stem Auger Probe		
1								
2								
3								
4								FILL
5								
6								
7								
8								
9								
10						End of Probe at 10 feet, no refusal		
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								

Granular Soils		Cohesive Soils		% Composition
Blows/ft.	Density	Blows/ft.	Consistency	ASTM D2487
0-4	V. Loose	<2	V. soft	
5-10	Loose	2-4	Soft	< 5% Trace
11-30	Compact	5-8	Firm	5-15% Little
31-50	Dense	9-15	Stiff	15-30% Some
>50	V. Dense	16-30	V. Stiff	> 30% With
		>30	Hard	

NOTES: PP = Pocket Penetrometer, MC = Moisture Content
LL = Liquid Limit, PI = Plastic Index, FV = Field Vane Test
Bedrock Joints Su = Undrained Shear Strength, Su(r) = Remolded Shear Strength
Shallow = 0 to 35 degrees
Dipping = 35 to 55 degrees
Steep = 55 to 90 degrees

Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches
Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200

Soil Moisture Condition
Dry: S = 0%
Humid: S = 1 to 25%
Damp: S = 26 to 50%
Moist: S = 51 to 75%
Wet: S = 76 to 99%
Saturated: S = 100%

SUMMIT GEOENGINEERING SERVICES

SOIL PROBE LOG

Probe #: **P-103**

Project:	Proposed Development	Project #:	16158.1
Location:	383 Commercial Street	Sheet:	1 of 1
City, State:	Portland, Maine	Chkd by:	

Drilling Co:	Summit Geoengineering Services	Boring Elevation:	14.0 ft. +/-
Driller:	C. Coolidge, P.E.	Reference:	"Boundary and Topographic Survey" September 6, 2015, Owen Haskell, Inc.
Summit Staff:	M. Hardison, E.I.	Date started: 4/13/2017	Date Completed: 4/13/2017

DRILLING METHOD		SAMPLER	
Vehicle:	Tracked	Length:	
Model:	AMS Power Probe	Diameter:	
Method:	2.5" SSA	Hammer:	
Hammer Style:	Automatic	Method:	

ESTIMATED GROUND WATER DEPTH

Date	Depth	Elevation	Reference

Depth (ft.)	No.	Pen/Rec (in)	Depth (ft)	blows/12"	Elev. (ft.)	SAMPLE DESCRIPTION	Geological/ Test Data	Geological Stratum
				PROBE		Solid Stem Auger Probe		
1								
2								
3								FILL
4								
5								
6								
7								
8								
9								
10						End of Probe at 10 feet, no refusal		
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								

Granular Soils		Cohesive Soils		% Composition
Blows/ft.	Density	Blows/ft.	Consistency	ASTM D2487
0-4	V. Loose	<2	V. soft	
5-10	Loose	2-4	Soft	< 5% Trace
11-30	Compact	5-8	Firm	5-15% Little
31-50	Dense	9-15	Stiff	15-30% Some
>50	V. Dense	16-30	V. Stiff	> 30% With
		>30	Hard	

NOTES: PP = Pocket Penetrometer, MC = Moisture Content
LL = Liquid Limit, PI = Plastic Index, FV = Field Vane Test
Bedrock Joints Su = Undrained Shear Strength, Su(r) = Remolded Shear Strength
Shallow = 0 to 35 degrees
Dipping = 35 to 55 degrees
Steep = 55 to 90 degrees

Boulders = diameter > 12 inches, Cobbles = diameter < 12 inches and > 3 inches
Gravel = < 3 inch and > No 4, Sand = < No 4 and >No 200, Silt/Clay = < No 200

Soil Moisture Condition
Dry: S = 0%
Humid: S = 1 to 25%
Damp: S = 26 to 50%
Moist: S = 51 to 75%
Wet: S = 76 to 99%
Saturated: S = 100%

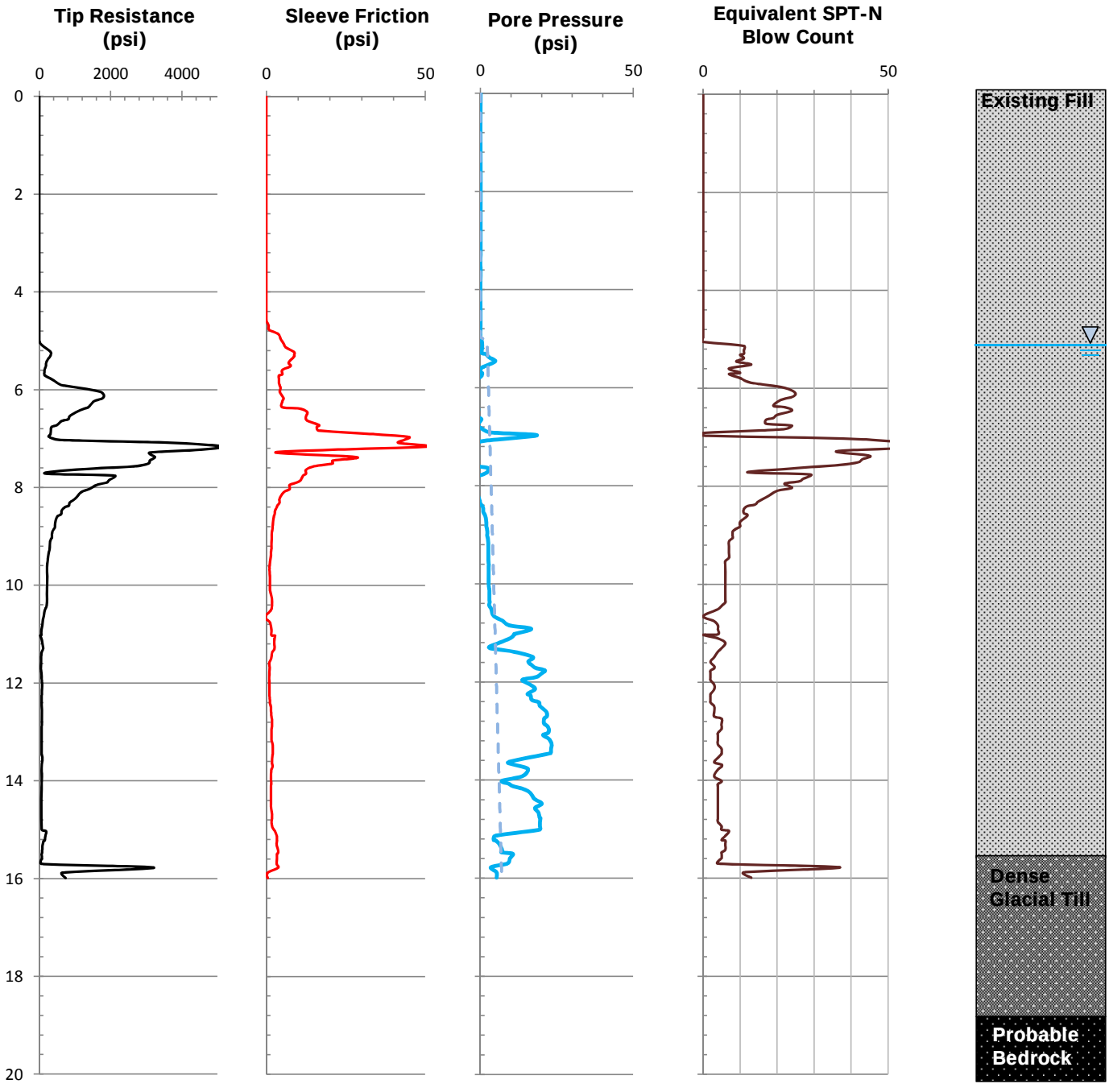
SUMMIT GEOENGINEERING SERVICES

PIEZOCONE PENETRATION LOG

Project:	New Building	Test Number:	CPT-1
Location:	383 Commercial Street	Sheet:	1 of 1
City, State	Portland, Maine	Project Number:	16158
		Method:	ASTM D5778
		Weather:	80° Sunny

Cone ID:	Vertek #4644.101xx	Test Elevation:	13.5 ft. +/-
Cone Type:	VTK 5 Ton Digital Cone	Reference:	Interpolated from City of Portland GIS
Piezocone:	Silicone Single Filter	Date started:	8/14/2016 Date Completed: 8/14/2016
Push Rig:	AMS Power Probe 9500 VTR	ESTIMATED GROUND WATER DEPTH	
Anchor Style:	Single Point Hollow Stem Anchor		
Performed By:	Craig Coolidge, P.E.		

Date	Depth	Elevation	Reference
8/14/2016	5.0 ft.	8.5 ft. +/-	Interpreted from pore pressure



NOTES:

Soil Profile based on interpretation of CPT measurements and nearby borings

Abrupt push refusal encountered at depth of 16.0 feet

SUMMIT
GEOENGINEERING SERVICES

TEST PIT LOG

Test Pit # TP-1

Project: 383 Commercial Street, Portland, Maine

Project #: 16158.1

Groundwater: Heavy Seepage at 3.5 ft

Contractor: Eastern Excavation, Inc.

Ground Surface Elevation: 16 ft +/-

Equipment: Linkbelt 160x Tracked

Reference: Existing Condition Plan, Undated, Sebago Technics

Summit Staff: B. Peterlein, P.E.

Date: 3/20/2017

Weather: Sunny

Depth (ft)	DESCRIPTION	
	ENGINEERING	GEOLOGIC/GENERAL
1	Black Silty SAND mixed with ash, brick, loose, slightly,	
2	cohesive, wet, loose, SM	FILL
3		Petroleum sheen, strong odor
4	Seepage rapid at 40 inches (see photo below)	
5	End of Test Pit at 4.5 ft	
6		
7	Note: Retaining wall base > 4.5 feet below grade	
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		

RETAINING WALL

SUMMIT
GEOENGINEERING SERVICES

TEST PIT LOG

Test Pit # TP-2

Project: 383 Commercial Street
Portland, Maine

Project #: 16158.1

Groundwater:

Contractor: Eastern Excavation, Inc.

Ground Surface Elevation: 14 ft +/-

Equipment: Linkbelt 160x Tracked

Reference: Existing Condition Plan, Undated, Sebago Technics

Summit Staff: B. Peterlein, P.E.

Date: 3/20/2017

Weather: Sunny

Depth (ft)	DESCRIPTION	
	ENGINEERING	GEOLOGIC/GENERAL
1	Black Silty SAND, little Gravel, Cobbles, loose, SM	FILL
2		
3	End of Test Pit at 2 ft on Refusal	POSSIBLE BOULDER
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		

SUMMIT
GEOENGINEERING SERVICES

TEST PIT LOG

Test Pit # TP-3
Project: 383 Commercial Street, Portland, Maine
Project #: 16158.1
Groundwater:

Contractor: Eastern Excavation, Inc.
Ground Surface Elevation: 14 ft +/-
Equipment: Linkbelt 160x Tracked
Reference: Existing Condition Plan, Undated, Sebago Technics
Summit Staff: B. Peterlein, P.E.
Date: 3/20/2017
Weather: Sunny

Depth (ft)	DESCRIPTION	
	ENGINEERING	**GEOLOGIC/GENERAL**
1	Brown Gravelly SAND, trace Silt, compact, moist, many rounded cobbles, SM	FILL
2		
3	Seepage at 3 ft	
4		
5		
6	Olive-brown Silty CLAY, trace Sand, blocky, firm, moist, blocky, ML or CL	GLACIAL MARINE
7		
8	End of Test Pit at 7 ft	
9		
10		
11		
12		
13		
14		
15		
16		
17		

SUMMIT
GEOENGINEERING SERVICES

TEST PIT LOG

Test Pit # TP-4

Project: 383 Commercial Street, Portland, Maine

Project #: 16158.1

Groundwater: None Observed

Contractor: Eastern Excavation, Inc.

Ground Surface Elevation: 12 ft +/-

Equipment: Linkbelt 160x Tracked

Reference: Existing Condition Plan, Undated, Sebago Technics

Summit Staff: B. Peterlein, P.E.

Date: 3/20/2017

Weather: Sunny

Depth (ft)	DESCRIPTION	
	ENGINEERING	**GEOLOGIC/GENERAL**
1	2" Pavement Olive-brown Silty SAND, little Gravel, bricks, cobbles, dry, loose, SM	FILL
2		Concrete pier, 8" diameter x 4 feet long, isolated
3		
4		
5	Olive-gray Sandy SILT, trace Gravel, mixed with clods of gray silty clay, firm, moist, ML	Sidewalls collapsing at 4 ft
6		
7		
8		
9		
10		
11	Becomes very soft and wet at 10 ft	
12		
13	End of Test Pit a 12 ft	
14		
15		
16		
17		

SUMMIT
GEOENGINEERING SERVICES

TEST PIT LOG

Test Pit # TP-5

Project: 383 Commercial Street, Portland, Maine

Project #: 16158.1

Groundwater: None Observed

Contractor: Eastern Excavation, Inc.

Ground Surface Elevation: 14 ft +/-

Equipment: Linkbelt 160x Tracked

Reference: Existing Condition Plan, Undated, Sebago Technics

Summit Staff: B. Peterlein, P.E.

Date: 3/20/2017

Weather: Sunny

Depth (ft)	DESCRIPTION	
	ENGINEERING	**GEOLOGIC/GENERAL**
1	2" Pavement Black Silty SAND, trace ash and brick, mixed with clods of reworked silty clay, moist, loose, SM	FILL
2		
3	Pocket Penetremeter Resistance > 4.5 tsf at 2 ft Olive-brown Sandy SILT with bicks	
4	Gray Sandy SILT, some Gravel, little black ash, some bricks, moist, firm, ML	
5		
6		
7	Olive-brown Silty CLAY, little Sand, firm, damp, CL	REWORKED FILL
8		
9	Olive-brown to gray SAND, little Silt, wet, compact, SM	GLACIAL TILL
10	End of Test Pit at 9 ft	
11		
12		
13		
14		
15		
16		
17		

SUMMIT GEOENGINEERING SERVICES	TEST PIT LOG	Test Pit # TP-6
	Project: 383 Commercial Street, Portland, Maine	Project #: 16158.1
		Groundwater: None Observed
Contractor: Eastern Excavation, Inc.	Ground Surface Elevation: 13 ft +/-	
Equipment: Linkbelt 160x Tracked	Reference: Existing Condition Plan, Undated, Sebago Technics	
Summit Staff: B. Peterlein, P.E.	Date: 3/20/2017	Weather: Sunny

Depth (ft)	DESCRIPTION	
	ENGINEERING	**GEOLOGIC/GENERAL**
1	2" Pavement Olive-brown Silty CLAY mixed with reworked silty sand, trace ash, moist, compact, ML	REWORKED FILL
2		
3		
4		
5		Sidewalls collapsing at 5 feet
6	Olive-gray SILT, little Sand, trace Clay, wet, firm, ML	GLACIAL TILL
7		
8		
9	End of Test Pit at 8 ft	
10		
11		
12		
13		
14		
15		
16		
17		

SUMMIT
GEOENGINEERING SERVICES

TEST PIT LOG

Test Pit # TP-7

Project: 383 Commercial Street
Portland, Maine

Project #: 16158.1

Groundwater:
None Observed

Contractor: Eastern Excavation, Inc.	Ground Surface Elevation: 13 ft +/-
Equipment: Linkbelt 160x Tracked	Reference: Existing Condition Plan, Undated, Sebago Technics
Summit Staff: B. Peterlein, P.E.	Date: 3/20/2017 Weather: Sunny

Depth (ft)	DESCRIPTION	
	ENGINEERING	**GEOLOGIC/GENERAL**
1	2" Pavement Dark brown Silty SAND, little Gravel, trace ash, moist, compact, SM	FILL
2		
3	Brown Silty SAND, trace Gravel, moist, compact, SM	
4	6" brick layer mixed with Silty SAND, moist, loose	
5	Brown Gravelly SAND, little Silt, few Cobbles, compact, moist, SM	Sidewalls are vertical for entire depth of test pit
6		
7		
8		
9		
10		
11	End of Test Pit at 10 ft	
12		
13		
14		
15		
16		
17		

SUMMIT GEOENGINEERING SERVICES	TEST PIT LOG	Test Pit # TP-8
	Project: 383 Commercial Street, Portland, Maine	Project #: 16158.1
		Groundwater: Seepage at 6 ft
Contractor: Eastern Excavation, Inc.	Ground Surface Elevation: 13 ft +/-	
Equipment: Linkbelt 160x Tracked	Reference: Existing Condition Plan, Undated, Sebago Technics	
Summit Staff: B. Peterlein, P.E.	Date: 3/20/2017	Weather: Sunny

Depth (ft)	DESCRIPTION	
	ENGINEERING	**GEOLOGIC/GENERAL**
1	Black Silty SAND, little Gravel, occasional Cobbles, frozen, SM	FILL
2	Black SILT, trace Sand mixed with ash, ML	
3	Brown Silty SAND, trace to little Gravel, compact, moist, mixed with coarse gravel and cobbles, SM	
4		
5		
6	Water seepage moderate	
7		
8		
9	End of Test Pit at 8 ft	
10		
11		
12		
13		
14		
15		
16		
17		

SUMMIT
GEOENGINEERING SERVICES

TEST PIT LOG

Test Pit # TP-9

Project: 383 Commercial Street
Portland, Maine

Project #: 16158.1

Groundwater:
Seepage at 9.5 ft

Contractor: Eastern Excavation, Inc.

Ground Surface Elevation: 12 ft +/-

Equipment: Linkbelt 160x Tracked

Reference: Existing Condition Plan, Undated, Sebago Technics

Summit Staff: B. Peterlein, P.E.

Date: 3/20/2017

Weather: Sunny

Depth (ft)	DESCRIPTION	
	ENGINEERING	**GEOLOGIC/GENERAL**
1	3" Pavement Brown Gravelly SAND, little Silt, dry, compact, SM	FILL
2	Black Silty SAND mixed with ashes, bricks, cobbles, small wood pieces, firm to compact, moist, SM	
3		
4		
5		
6	Brown Silty SAND, little Gravel, trace of Silty Clay in pockets, wet, loose, SM	
7		
8		
9	Seepage moderate at 9.5 ft	
10	Gray SAND, little Silt and Gravel, wet, loose, SM	GLACIAL TILL
	End of Test Pit at 10 ft	
11		
12		
13		
14		
15		
16		
17		

SUMMIT
GEOENGINEERING SERVICES

TEST PIT LOG

Test Pit # TP-10

Project: 383 Commercial Street
Portland, Maine

Project #: 16158.1

Groundwater:
Seepage at 7 ft

Contractor: Eastern Excavation, Inc.

Ground Surface Elevation: 12 ft +/-

Equipment: Linkbelt 160x Tracked

Reference: Existing Condition Plan, Undated, Sebago Technics

Summit Staff: B. Peterlein, P.E.

Date: 3/20/2017

Weather: Sunny

Depth (ft)	DESCRIPTION	
	ENGINEERING	**GEOLOGIC/GENERAL**
1	4" Pavement Dark brown Gravelly SAND, little Silt, few Cobbles, compact, moist, SM	FILL
2		
3		
4		
5	Olive-brown Silty SAND, little Gravel, damp, loose, SM	
6		
7	Seepage heavy at 7 ft Wood pieces, decayed organics, rags, bricks (wood pieces are small but numerous)	
8		
9		
10	End of Test Pit at 9 ft	
11		
12		
13		
14		
15		
16		
17		

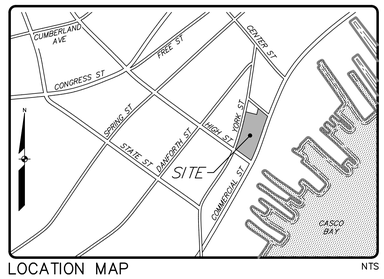
383 COMMERCIAL STREET-PHASE 1 AND 2

383 COMMERCIAL STREET
PORTLAND, MAINE

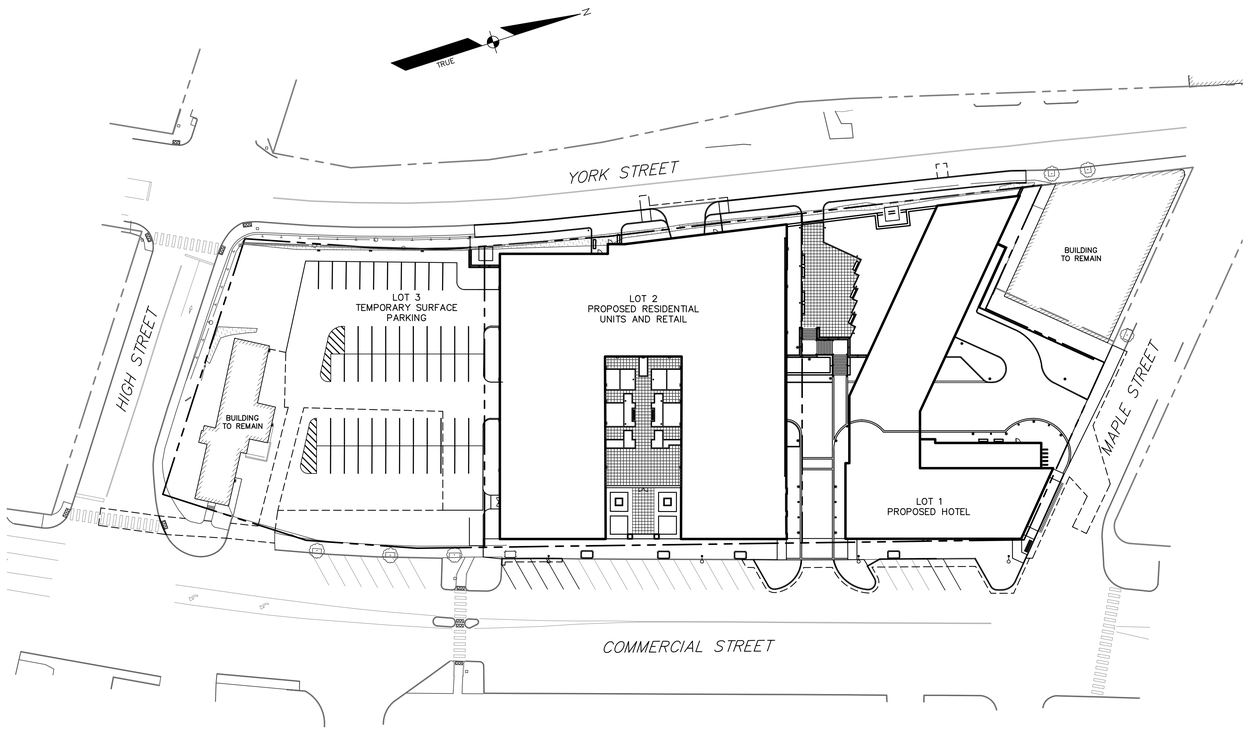
APPLICANT:
DEERING PROPERTY DEVELOPMENT, LLC
2730 TRANSIT ROAD
WEST SENECA, NEW YORK

ENGINEER/SURVEYOR:
SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd. Suite 1A South Portland, ME 04106 Tel. 207-200-2100
250 Goddard Rd. Suite B Lewiston, ME 04240 Tel. 207-783-5656

PROJECT ARCHITECT:
ARCHETYPE ARCHITECTS
48 UNION WHARF
PORTLAND, MAINE 04101



LOCATION MAP NTS



SCALE: 1" = 40'

INDEX OF PLANS

LEGEND (TYPICAL ALL SHEETS)

EXISTING	DESCRIPTION	PROPOSED
	PROPERTY LINE/R.O.W.	
	ABUTTER LINE/R.O.W.	
	DEED LINE/R.O.W.	
	TIE LINE	
	SETBACK	
	EASEMENT	
	BUFFER	
	CENTERLINE	
	BUILDING	
	EDGE PAVEMENT	
	PAVEMENT SAWCUT	
	EDGE CONCRETE	
	PAVEMENT PAINT	
	EDGE GRAVEL	
	CURB LINE	
	EDGE OF WATER	
	TREELINE	
120 118	CONTOURS	120
X120.00	SPOT GRADE	+120.00
O	CHAIN LINK FENCE	O
	STOCKADE FENCE	
	RETAINING WALL	
	DECIDUOUS TREE	X
	CONIFEROUS TREE	X
	MULCH LINE	
	BOLLARD	
	SIGN	
	RAILROAD	
G	GAS	G
	GAS GATE VALVE	
GM	GAS METER	
G	GAS MANHOLE	
W	WATER	W
	WATER GATE VALVE	
	WATER SHUT OFF	
	HYDRANT	
W	WATER MANHOLE	
W	WELL	W
S	SANITARY SEWER	S
FM	FORCE MAIN	FM
S	SANITARY MANHOLE	
SD	STORM DRAIN	SD
UD	UNDER DRAIN	UD
D	DRAINAGE MANHOLE	
	CATCH BASIN	
OHU	OVERHEAD UTILITY	OHU
UGU	UNDERGROUND UTILITY	UGU
T	TRANSFORMER PAD	T
E	ELECTRICAL MANHOLE	
EM	ELECTRIC METER	
H	HVAC UNIT	
T	TELEPHONE MANHOLE	
	LIGHT POLE	
	UTILITY POLE	
	GUY WIRE	
	FILTER BARRIER	FB
	INLET PROTECTION	

REVISED THROUGH 09-28-18

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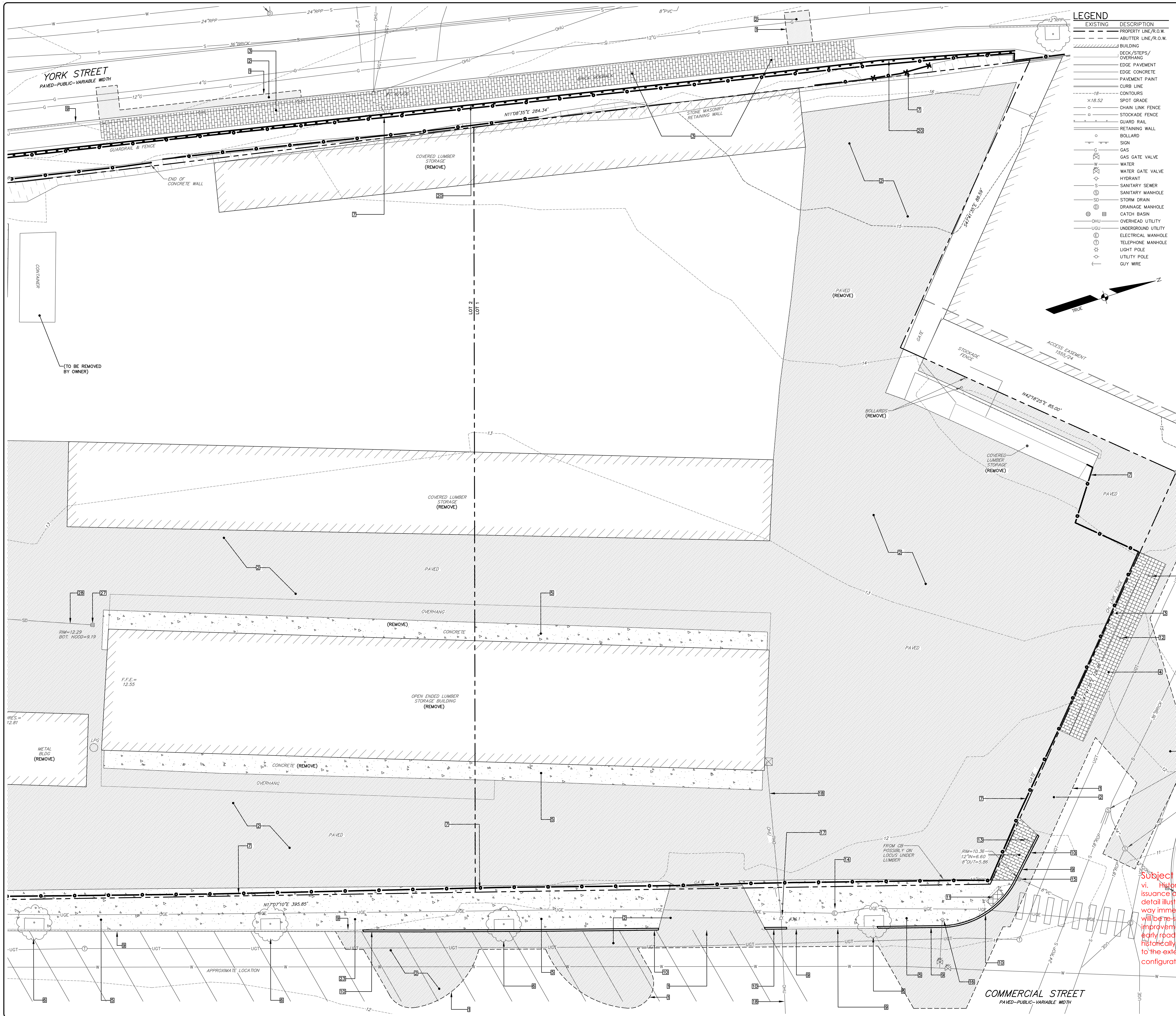


LEGEND

EXISTING	DESCRIPTION
	PROPERTY LINE/R.O.W.
	ABUTTER LINE/R.O.W.
	BUILDING
	DECK/STEPS/ OVERHANG
	EDGE PAVEMENT
	EDGE CONCRETE
	PAVEMENT PAINT
	CURB LINE
18	CONTOURS
×18.52	SPOT GRADE
	CHAIN LINK FENCE
	STOCKADE FENCE
	GUARD RAIL
	RETAINING WALL
	BOLLARD
	SIGN
G	GAS
GV	GAS GATE VALVE
W	WATER
WV	WATER GATE VALVE
	HYDRANT
S	SANITARY SEWER
(S)	SANITARY MANHOLE
SD	STORM DRAIN
(D)	DRAINAGE MANHOLE
	CATCH BASIN
OHU	OVERHEAD UTILITY
UGU	UNDERGROUND UTILITY
(E)	ELECTRICAL MANHOLE
(T)	TELEPHONE MANHOLE
	LIGHT POLE
	UTILITY POLE
	GUY WIRE

DEMOLITION KEY

1. SAW CUT PAVEMENT
2. REMOVE ASPHALT PAVEMENT
3. REMOVE BRICK PAVERS / SALVAGE FOR RE-USE
4. REMOVE GRANITE COBBLES / SALVAGE FOR RE-USE (PHOTOGRAPH PATTERN PRIOR TO REMOVAL)
5. REMOVE CONCRETE PAVEMENT
6. REMOVE STREET TREE
7. REMOVE CHAIN LINK FENCE AND GATES
8. CHAIN LINK GATE TO REMAIN
9. GRANITE CURBING TO REMAIN
10. REMOVE GRANITE CURB / SALVAGE FOR RE-USE
11. REMOVE NO PARKING SIGN / SALVAGE FOR RE-USE
12. REMOVE NO PARKING SIGN
13. REMOVE STREET / STOP SIGN / SALVAGE FOR RE-USE
14. ELECTRICAL MANHOLE TO REMAIN
15. CATCH BASIN TO REMAIN
16. FIRE HYDRANT TO REMAIN
17. REMOVE UTILITY POLE
18. REMOVE OVERHEAD UTILITY
19. STONE RETAINING WALL TO REMAIN
20. REMOVE VEHICLE GUARDRAIL
21. VEHICLE GUARDRAIL AND FENCING TO REMAIN
22. REMOVE FLAGPOLE
23. CONCRETE PAVEMENT TO REMAIN
24. STREET TREE TO REMAIN
25. REMOVE TACTILE WARNING PANEL
26. SEAL COAT OVER EXISTING PAINT STRIPING
27. REMOVE CATCH BASIN
28. REMOVE STORM DRAIN
29. BRICK PAVERS TO REMAIN
30. CONCRETE PAVING TO REMAIN
31. STOCKADE FENCE TO REMAIN
32. ASPHALT PAVING TO REMAIN

DEMOLITION NOTES

1. CONTRACTOR SHALL NOTIFY DIGSAFE FOR UTILITY LOCATIONS PRIOR TO EXCAVATION.
2. EXISTING MATERIALS TO BE SALVAGED AND RE-USED SHALL BE STORED AND PROTECTED DURING CONSTRUCTION.
3. ALL DEMOLITION WORK SHALL BE PERFORMED IN ACCORDANCE TO ALL APPLICABLE CODES AND REGULATIONS.
4. REMOVE ALL BUILDING FOOTINGS, ELECTRICAL AND MISCELLANEOUS MATERIALS.

CITY OF PORTLAND
APPROVED SITE PLAN
Subject to Conditions of Approval and Standard Conditions
DATE of APPROVAL 6-26-2018
PLANNER Jean Fraser
PROJECT NO. #2017-053

Subject to conditions which include:

vi. Historic Preservation Requirements: That prior to the issuance of a building permit the applicant shall provide detail illustrating how the existing cobbles within the right of way immediately abutting the eastern edge of the property will be re-set as part of applicant's public infrastructure improvements. The cobbles remain as a rare example of early roadway treatment and have been determined to be historically significant. The reuse of the cobbles shall match to the extent possible their current placement and configuration.

GRAPHIC SCALE
0 5 10 20
(IN FEET)
1 INCH = 10 FT.

Reviewed for Code Compliance
Permitting and Inspections Department
Approved with Conditions
01/22/2019

RICHARD L. MEEK, PE 10668 — 9-28-18
WILLIAM T. CONWAY, RLA 108 — 9-28-18

DESIGNED	CHECKED
WTC	RLM

REV:	BY:	DATE:	STATUS:
F	WTC	09-28-18	FINAL PLAN SET FOR BUILDING PERMIT
E	WTC	09-04-18	ISSUED FOR BUILDING PERMIT
D	WTC	08-29-18	BUILDING PERMIT SET
C	WTC	07-20-18	RESUBMIT FOR CITY REVIEW

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

DEMOLIOTION PLAN-1
OF:
383 COMMERCIAL STREET
383 COMMERCIAL STREET
PORTLAND, MAINE
FOR:
DEERING PROPERTY DEVELOPMENT, LLC
2730 TRANSIT ROAD
WEST SENECA, NEW YORK 14224

PROJECT NO.	SCALE
16324	1"=10'

16324DEMO.dwg, TAB: DEMO-1

DEMOLITION KEY

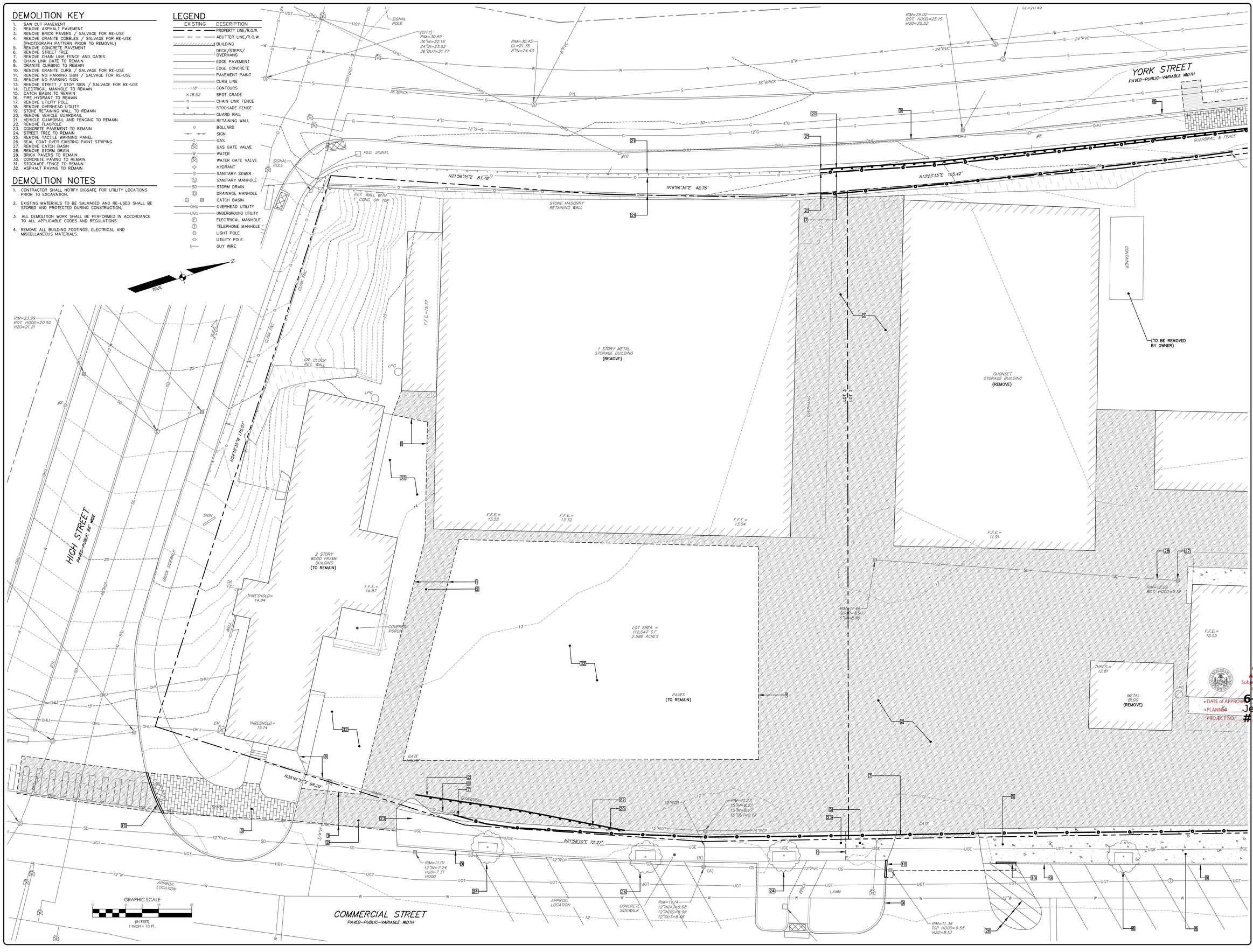
1. SAW CUT PAVEMENT
2. REMOVE ASPHALT PAVEMENT
3. REMOVE BRICK PAVERS / SALVAGE FOR RE-USE
4. REMOVE GRANITE COBBLES / SALVAGE FOR RE-USE (PHOTOGRAPH PATTERN PRIOR TO REMOVAL)
5. REMOVE CONCRETE PAVEMENT
6. REMOVE STREET TREE
7. REMOVE CHAIN LINK FENCE AND GATES
8. CHAIN LINK GATE TO REMAIN
9. GRANITE CURBING TO REMAIN
10. REMOVE GRANITE CURB / SALVAGE FOR RE-USE
11. REMOVE NO PARKING SIGN / SALVAGE FOR RE-USE
12. REMOVE NO PARKING SIGN
13. REMOVE STREET / STOP SIGN / SALVAGE FOR RE-USE
14. ELECTRICAL MANHOLE TO REMAIN
15. CATCH BASIN TO REMAIN
16. FIRE HYDRANT TO REMAIN
17. REMOVE UTILITY POLE
18. REMOVE OVERHEAD UTILITY
19. STONE RETAINING WALL TO REMAIN
20. REMOVE VEHICLE GUARDRAIL
21. VEHICLE GUARDRAIL AND FENCING TO REMAIN
22. REMOVE FLAGPOLE
23. CONCRETE PAVEMENT TO REMAIN
24. STREET TREE TO REMAIN
25. REMOVE TACTILE WARNING PANEL
26. SEAL COAT OVER EXISTING PAINT STRIPING
27. REMOVE CATCH BASIN
28. REMOVE STORM DRAIN
29. BRICK PAVERS TO REMAIN
30. CONCRETE PAVING TO REMAIN
31. STOCKADE FENCE TO REMAIN
32. ASPHALT PAVING TO REMAIN

DEMOLITION NOTES

1. CONTRACTOR SHALL NOTIFY DIGSAFE FOR UTILITY LOCATIONS PRIOR TO EXCAVATION.
2. EXISTING MATERIALS TO BE SALVAGED AND RE-USED SHALL BE STORED AND PROTECTED DURING CONSTRUCTION.
3. ALL DEMOLITION WORK SHALL BE PERFORMED IN ACCORDANCE TO ALL APPLICABLE CODES AND REGULATIONS.
4. REMOVE ALL BUILDING FOOTINGS, ELECTRICAL AND MISCELLANEOUS MATERIALS.

LEGEND

EXISTING	DESCRIPTION
	PROPERTY LINE/R.O.W.
	ABUTTER LINE/R.O.W.
	BUILDING
	DECK/STEPS/ OVERHANG
	EDGE PAVEMENT
	EDGE CONCRETE
	PAVEMENT PAINT
18	CURB LINE
	CONTOURS
×18.52	SPOT GRADE
	CHAIN LINK FENCE
	STOCKADE FENCE
	GUARD RAIL
	RETAINING WALL
	BOLLARD
	SIGN
G	GAS
	GAS GATE VALVE
W	WATER
	WATER GATE VALVE
	HYDRANT
S	SANITARY SEWER
S	SANITARY MANHOLE
SD	STORM DRAIN
D	DRAINAGE MANHOLE
	CATCH BASIN
OHU	OVERHEAD UTILITY
UGU	UNDERGROUND UTILITY
E	ELECTRICAL MANHOLE
T	TELEPHONE MANHOLE
	LIGHT POLE
	UTILITY POLE
	GUY WIRE



Reviewed for Code Compliance
Permitting and Inspections Department
Approved with Conditions
01/22/2019

RICHARD L. MEEK, PE 10668
STATE OF MAINE
RICHARD L. MEEK
10668
REGISTERED PROFESSIONAL ENGINEER
9-28-18

WILLIAM T. CONWAY, RLA 108
STATE OF MAINE
WILLIAM T. CONWAY
CONWAY
REGISTERED LANDSCAPE ARCHITECT
9-28-18

DESIGNED	CHECKED
WTC	RLM

REVI.	BY:	DATE:	STATUS:
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E.	WTC	09-04-18	ISSUED FOR BUILDING PERMIT
D.	WTC	08-29-18	BUILDING PERMIT SET
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CITY OF PORTLAND
APPROVED SITE PLAN
Subject to Conditions of Approval
and Standard Conditions
DATE of APPROVAL: 6-26-2018
PLANNER: Jean Fraser
PROJECT NO.: #2017-053

DEMOLIOTION PLAN-2

OF
383 COMMERCIAL STREET
383 COMMERCIAL STREET
PORTLAND, MAINE
FOR:
DEERING PROPERTY DEVELOPMENT, LLC
2730 TRANSIT ROAD
WEST SENECA, NEW YORK 14224

PROJECT NO.	SCALE
16324	1"=10'

SHEET 3 OF 24

16324DEMO.dwg, TAB:DEMO-2

SITE PLAN NOTES:

1. THE SITE PLAN DEPICTS (3) PROPOSED CURB BUMPOUTS INTO COMMERCIAL STREET. THERE IS CURRENTLY A MORATORIUM IN COMMERCIAL STREET WHICH EXPIRES ON MAY 25, 2021. THE TIMING OF CONSTRUCTION OF THESE BUMPOUTS, THE FINAL DESIGN, AND EXTENT OF PAVEMENT REPAIR IN THE STREET SHALL BE COORDINATED WITH THE CITY DEPARTMENT OF PUBLIC WORKS.
2. THE SITE PLAN DEPICTS A FUTURE TRANSIT STOP NEAR THE CORNER OF COMMERCIAL STREET AND MAPLE STREET. THE TIMING OF ITS INSTALLATION AND SIZE, LOCATION , AND POSSIBLE WIDENING OF THE SIDEWALK SHALL BE DETERMINED AT A FUTURE DATE BY THE CITY DEPARTMENT OF PUBLIC WORKS.
3. SEE LIGHT FIXTURE LEGEND - FINAL FIXTURE SELECTION MUST BE APPROVED BY THE CITY PLANNING AUTHORITY PRIOR TO ORDERING FIXTURES.
4. FINAL DESIGN OF TREE WELLS MUST BE APPROVED BY THE CITY PLANNING AUTHORITY PRIOR TO CONSTRUCTION.
5. FINAL DESIGN OF THE CURB RADII AT THE BUMPOUT AREAS MUST BE APPROVED BY THE PLANNING AUTHORITY PRIOR TO CONSTRUCTION.
6. FINAL LOCATION AND DESIGN OF PEDESTRIAN CROSSWALKS MUST BE APPROVED BY THE PLANNING AUTHORITY PRIOR TO CONSTRUCTION.

LIGHT FIXURE LEGEND:

- ⚠ FINAL SPECS FOR COMMERCIAL STREET LIGHT FIXTURES TO BE AGREED IN WRITING WITH THE CITY PLANNING AUTHORITY PRIOR TO ORDERING MATERIALS
- FIXTURE B1, B2, B4 - SPAULDING CIMMARON - POLE TOP LUMINAIRE
- FIXTURE B3 - BEGA - POLE TOP LUMINAIRE - #84 120
- FIXTURE C - BK LIGHTING - LOUVERED BRICK STAR STEP LIGHT
- FIXTURE D1, D2 - SPAULDING FRESNO BOLLARD, COLOR BLACK
- FIXTURE E1 - BEGA - WALL MOUNTED LUMINAIRE - #33 514
- FIXTURE F1 - BEGA - WALL MOUNTED LUMINAIRE - #24 816
- FIXTURE G1 - BEGA - CANOPY LUMINAIRE - #55 943

GENERAL NOTES:

1 NEW VERTICAL GRANITE CURB
2 GRANITE CURB TIP DOWN
3 FLUSH GRANITE CURB
4 EXISTING GRANITE CURB TO REMAIN
5 BRICK PAVER SIDEWALK
6 BRICK DRIVEWAY APRON
7 HISTORIC COBBLES - RESET TO ORIGINAL PATTERN ON 2" ASPHALT BASE/ 1" SAND BED
8 PAVEMENT SAW CUT
9 RESET SALVAGED GRANITE CURB
10 WOONERF BOLLARD, TYPICAL
11 WOONERF LIGHT BASE / LIGHT FIXTURE B3, TYPICAL
12 12" X 18" "DO NOT ENTER" SIGN MOUNTED ON BOLLARD, PAINT BACK OF SIGN BLACK
13 VEHICULAR ASPHALT PAVING
14 4" CONCRETE PAVING
15 6" RAISED GRANITE CURB / TREE WELL - 5 FT. x 8 FT. OUTSIDE DIMENSIONS
16 6" RAISED GRANITE CURB/ TREE WELL - 5 FT. X 5 FT. OUTSIDE DIMENSIONS
17 BIKE RACK - DERO DOWNTOWN RACKS, COLOR BLACK
18 TACTILE WARNING PANEL
19 NOT USED
20 NOT USED
21 EXISTING 4" WHITE PAINT STRIPING
22 NEW 4" WHITE PAINT STRIPING
23 BLUE ADA PAINTED SYMBOL
24 ADA PARKING SIGN - WALL MOUNTED 5 FT. ABOVE GRADE
25 CONCRETE RETAINING WALL WITH PEDESTRIAN GUARDRAIL AT TOP
26 PRECAST CONCRETE STAIR WITH HANDRAILS - SEE ELEC. PLANS FOR STEP LIGHTS (FIXTURE C1)
27 CONTINUE PEDESTRIAN GUARDRAIL TO EXISTING WOOD FENCE
28 EXISTING BRICK SIDEWALK TO REMAIN
29 EXISTING STONE RETAINING WALL TO REMAIN
30 24" SOLID WHITE PAINT BARS, 24" APART
31 NOT USED
32 NOT USED
33 EXISTING CONCRETE SIDEWALK TO REMAIN
34 EXISTING TREE TO REMAIN
35 EXISTING SLIDING CHAIN LINK FENCE TO REMAIN
36 EXISTING ASPHALT PAVING TO REMAIN
37 STOP SIGN MOUNTED ON BOLLARD, PAINT BACK OF SIGN BLACK
38 24" X 24" PEDESTAL PAVERS, TYPICAL
39 6" X 12" X 48" PRECAST CONCRETE CURB, TYPICAL
40 24" X 24" CONCRETE PAVERS, TYPICAL
41 48" ORNAMENTAL METAL PICKET FENCE, COLOR BLACK
42 BENCH, LANDSCAPE FORMS FGP 70" BACKLESS, IPE WOOD SEATS, TYPICAL
43 BRICK HEADER COURSE, TYPICAL
44 NEW 12" WHITE PAINT STRIPING
45 (2) 6" STEP RISERS
46 CONCRETE RETAINING WALL DOWN TO GARAGE LEVEL BELOW
47 TOP OF CONCRETE WALL BELOW TRANSFORMER VAULT
48 CONCRETE BLOCK RETAINING WALL
49 THREE PHASE TRANSFORMER
50 12" x 18" "SERVICE VEHICLES ONLY-NO PARKING" SIGN, WALL MOUNTED 5 FT. ABOVE GRADE
⚠ 51 FINAL DETAILS OF THE TREE PLANTER GRANITE SURROUNDS TO BE AGREED IN WRITING WITH THE CITY PLANNING AUTHORITY PRIOR TO ORDERING MATERIALS
⚠ 52 FINAL DETAIL AT CURB ANGLES TO BE AGREED IN WRITING WITH THE CITY PLANNING AUTHORITY PRIOR TO ORDERING MATERIALS
53 MILL AND GRIND 1.5" OF EXISTING ASPHALT, REPLACE WITH 1.5" COURSE OF 9.5MM PAVEMENT

Note 35 is not approved- it should match fence listed in Note 41 as shown to the PBHearing

YORK STREET
PAVED-PUBLIC-VARIABLE WIDTH

CONDO BACK OF HOUSE

HOTEL BACK OF HOUSE

CONDO LOBBY

FIRST FLOOR RETAIL

HOTEL LOBBY

PLANTING AREA (P.A.)

LINE OF HOTEL ABOVE

CURB BUMPOUTS (SEE NOTE 1)

CURB BUMPOUT (SEE NOTE 1)

FUTURE TRANSIT STOP (SEE NOTE 2)

MAPLE STREET
PAVED-PUBLIC-45.5' WIDE

COMMERCIAL STREET
PAVED-PUBLIC-VARIABLE WIDTH

SEE SHEET 5 FOR CONTINUATION

⚠ NOTE: FINAL LOCATIONS AND SPECS OF ALL FOR THE STREET LIGHTS AND TREE WELL LOCATIONS ON ALL OF COMMERCIAL STREET TO BE AGREED IN WRITING WITH THE CITY PLANNING AUTHORITY PRIOR TO ORDERING MATERIALS

NOTE: CONTRACTOR SHALL PHOTOGRAPH EXISTING COBBLE PATTERN PRIOR TO REMOVAL. SALVAGE CAREFULLY AND RESET IN THE EXACT SAME PATTERN.

The note below must be in accordance with the condition of approval: vi. Historic Preservation Requirements: That prior to the issuance of a building permit the applicant shall provide detail illustrating how the existing cobbles within the right of way immediately abutting the eastern edge of the property will be re-set as part of applicant's public infrastructure improvements. The cobbles remain as a rare example of early roadway treatment and have been determined to be historically significant. The reuse of the cobbles shall match to the extent possible the current placement and configuration.

GRAPHIC SCALE
0 5 10 20 30
(IN FEET)
1 INCH = 10 FT.

Reviewed for Code Compliance
Permitting & Inspections Department
Approved with Conditions
01/22/2019

CITY OF PORTLAND
APPROVED SITE PLAN
Subject to Conditions of Approval and Standard Conditions
DATE OF APPROVAL 6-26-2018
PLANNER Jean Fraser
PROJECT NO. #2017-053
Note that all work inthe ROW shall meet the city's Technical Standards unless otherwise agreed.

STATE OF MAINE — RICHARD L. MEEK — No. 10668 — REGISTERED PROFESSIONAL ENGINEER — 9-28-18
RICHARD L MEEK, PE 10668

STATE OF MAINE — WILLIAM T. CONWAY — No. 108 — REGISTERED LANDSCAPE ARCHITECT — 9-28-18
WILLIAM T. CONWAY, RLA 108

DESIGNED	CHECKED
WTC	RLM

J	WTC	09-28-18	FINAL PLAN SET FOR BUILDING PERMIT
I	WTC	09-26-18	ADDED CURB AT MAPLE STREET, ADDED TO SITE PLAN NOTES
H	WTC	09-04-18	ISSUED FOR BUILDING PERMIT
G	WTC	08-29-18	RESUBMIT FOR CITY REVIEW
F	WTC	07-12-18	SHIFT COLUMN AT WOONERF
E	WTC	06-21-18	MODIFY 2 BUMPOUTS @ COMMERCIAL STREET
D	WTC	06-21-18	MODIFY 2 BUMPOUTS @ COMMERCIAL STREET
REV.	BY:	DATE:	STATUS:

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SITE PLAN-1 LOWER LEVEL
OF:
383 COMMERCIAL STREET
383 COMMERCIAL STREET
PORTLAND, MAINE
FOR:
DEERING PROPERTY DEVELOPMENT, LLC
2730 TRANSIT ROAD
WEST SENECA, NEW YORK 14224

PROJECT NO.	SCALE
16324	1"=10'

SHEET 4 OF 24

16324S-LL.dwg, TAB: SITE-1

GENERAL NOTES:

1 NEW VERTICAL GRANITE CURB
2 GRANITE CURB TIP DOWN
3 FLUSH GRANITE CURB
4 EXISTING GRANITE CURB TO REMAIN
5 BRICK PAVER SIDEWALK
6 BRICK DRIVEWAY APRON
7 HISTORIC COBBLES - RESET TO ORIGINAL PATTERN ON 2" ASPHALT BASE/ 1" SAND BED
8 PAVEMENT SAW CUT
9 RESET SALVAGED GRANITE CURB
10 WOONERF BOLLARD, TYPICAL
11 WOONERF LIGHT BASE / LIGHT FIXTURE B3, TYPICAL
12 12" X 18" 'DO NOT ENTER' SIGN MOUNTED ON BOLLARD, PAINT BACK OF SIGN BLACK
13 VEHICULAR ASPHALT PAVING
14 4" CONCRETE PAVING
15 6" RAISED GRANITE CURB / TREE WELL - 5 FT. x 8 FT. OUTSIDE DIMENSIONS
16 6" RAISED GRANITE CURB/ TREE WELL - 5 FT. X 5 FT. OUTSIDE DIMENSIONS
17 BIKE RACK - DERO BIKE HITCH, COLOR BLACK
18 TACTILE WARNING PANEL
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22 NEW 4" WHITE PAINT STRIPING
23 BLUE ADA PAINTED SYMBOL
24 ADA PARKING SIGN - WALL MOUNTED 5 FT. ABOVE GRADE
25 CONCRETE RETAINING WALL WITH PEDESTRIAN GUARDRAIL AT TOP
26 PRECAST CONCRETE STAIR WITH HANDRAILS - SEE ELEC. PLANS FOR STEP LIGHTS (FIXTURE C1)
27 CONTINUE PEDESTRIAN GUARDRAIL TO EXISTING WOOD FENCE
28 EXISTING BRICK SIDEWALK TO REMAIN
29 EXISTING STONE RETAINING WALL TO REMAIN
30 24" SOLID WHITE PAINT BARS, 24" APART
31 NOT USED
32 NOT USED
33 EXISTING CONCRETE SIDEWALK TO REMAIN
34 EXISTING TREE TO REMAIN
35 EXISTING SLIDING CHAIN LINK FENCE GATE TO REMAIN
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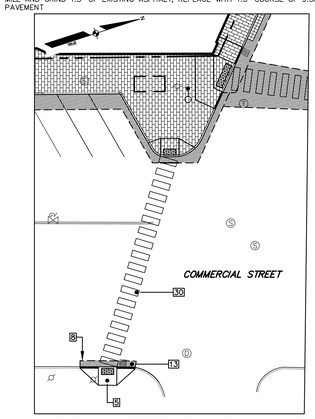
39 6" X 12" X 48" PRECAST CONCRETE CURB, TYPICAL
40 24" X 24" CONCRETE PAVERS, TYPICAL
41 48" ORNAMENTAL METAL PICKET FENCE, COLOR BLACK
42 BENCH, LANDSCAPE FORMS FGP 70" BACKLESS, IPE WOOD SEATS, TYPICAL
43 BRICK HEADER COURSE, TYPICAL
44 NEW 12" WHITE PAINT STRIPING
45 (2) 6" STEP RISERS
46 CONCRETE RETAINING WALL DOWN TO GARAGE LEVEL BELOW
47 TOP OF CONCRETE WALL BELOW TRANSFORMER VAULT
48 CONCRETE BLOCK RETAINING WALL
49 THREE PHASE TRANSFORMER
⚠ 50 12" x 18" 'SERVICE VEHICLES ONLY/NO PARKING' SIGN, WALL MOUNTED 5 FT. ABOVE GRADE
51 FINAL DETAILS OF THE CIRC PLANTER GRANITE SURROUNDS TO BE AGREED IN WRITING WITH THE CITY PLANNING AUTHORITY PRIOR TO ORDERING MATERIALS
52 FINAL DETAIL AT CURB ANGELS TO BE AGREED IN WRITING WITH THE CITY PLANNING AUTHORITY PRIOR TO ORDERING MATERIALS
53 MILL AND GRIND 1.5" OF EXISTING ASPHALT, REPLACE WITH 1.5" COURSE OF 9.5MM PAVEMENT

LIGHT FIXURE LEGEND:

FINAL SPECS FOR COMMERCIAL STREET LIGHT FIXTURES TO BE AGREED IN WRITING WITH THE CITY PLANNING AUTHORITY PRIOR TO ORDERING MATERIALS

- FIXTURE B1, B2, B4 - SPAULDING CIMMARON - POLE TOP LUMINAIRE
- FIXTURE B3 - BEGA - POLE TOP LUMINAIRE - #84 120
- FIXTURE C - BK LIGHTING - LOUVERED BRICK STAR STEP LIGHT
- FIXTURE D1, D2 - SPAULDING FRESNO BOLLARD, COLOR BLACK
- FIXTURE E1 - BEGA - WALL MOUNTED LUMINAIRE - #33 514
- FIXTURE F1 - BEGA - WALL MOUNTED LUMINAIRE - #24 816
- FIXTURE G1 - BEGA - CANOPY LUMINAIRE - #55 943

Note 35 is not approved; the gate should match the fence listed in Note 41& as shown to PB hearing.



COMMERCIAL STREET CROSSWALK DETAIL
SCALE: 1" = 20'

(CONTINUATION FROM SHEET 4)

GRAPHIC SCALE
10 0 5 10 20
(IN FEET)
1 INCH = 10 FT.

⚠ NOTE: FINAL LOCATIONS AND SPECS OF ALL FOR THE STREET LIGHTS AND TREE WELL LOCATIONS ON ALL OF COMMERCIAL STREET TO BE AGREED IN WRITING WITH THE CITY PLANNING AUTHORITY PRIOR TO ORDERING MATERIALS

Reviewed for Code Compliance
Permitting and Inspections Department
Approved with Conditions
01/22/2019

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RICHARD L MEEK, PE 10668

STATE OF MAINE — WILLIAM T. CONWAY — 108 — REGISTERED LANDSCAPE ARCHITECT — 9-28-18
WILLIAM T. CONWAY, RLA 108

	DESIGNED	CHECKED
	WTC	RLM

I	WTC	09-28-18	FINAL PLAN SET FOR BUILDING PERMIT
H	WTC	09-26-18	REVISED LIGHT FIXTURE A
G	WTC	09-04-18	ISSUED FOR BUILDING PERMIT
F	WTC	08-29-18	RESUBMIT FOR CITY REVIEW
E	WTC	08-19-18	SHIFT FENCE AWAY FROM COMMERCIAL ST. SIDEWALK
D	WTC	08-12-18	ADD RADII @ TREE WELLS, ADD 3RD BUMPOUT
C	WTC	06-12-18	
REV:	BY:	DATE:	STATUS:

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South Portland, ME 04106
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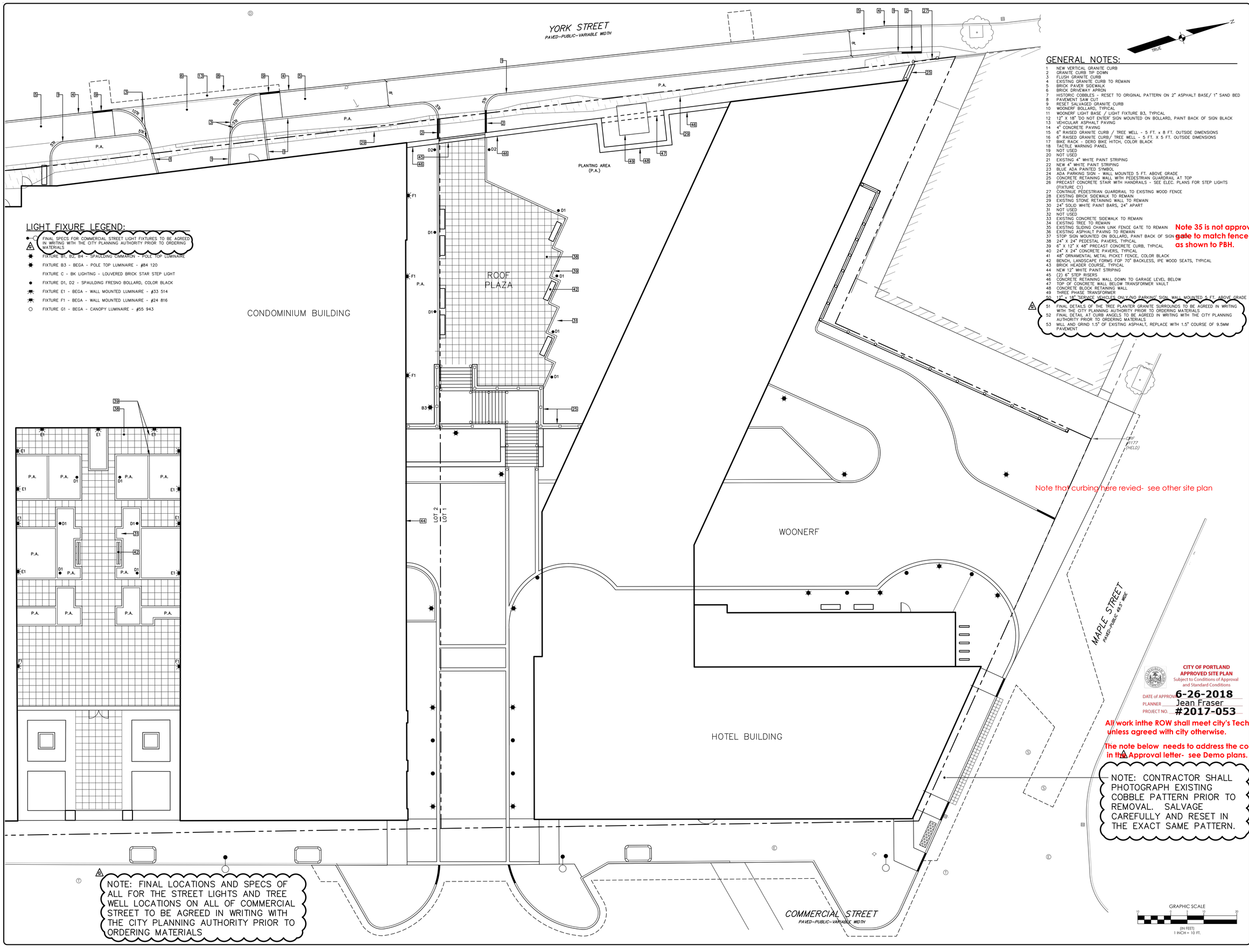
CITY OF PORTLAND
APPROVED SITE PLAN
Subject to Conditions of Approval and Standard Conditions
6-26-2018
Jean Fraser
#2017-053
SITE REVIEW APPROVAL
PLANNER
PLAN NO.

SITE PLAN-2 LOWER LEVEL
OF:
383 COMMERCIAL STREET
383 COMMERCIAL STREET
PORTLAND, MAINE
FOR:
DEERING PROPERTY DEVELOPMENT, LLC
2730 TRANSIT ROAD
WEST SENECA, NEW YORK 14224

PROJECT NO.	SCALE
16324	1"=10'

SHEET 5 OF 24

16324S-LL.dwg, TAB:SITE-2



LIGHT FIXURE LEGEND:

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GENERAL NOTES:

1 NEW VERTICAL GRANITE CURB
2 GRANITE CURB TIP DOWN
3 FLUSH GRANITE CURB
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8 PAVEMENT SAW CUT
9 RESET SALVAGED GRANITE CURB
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11 WOONERF LIGHT BASE / LIGHT FIXTURE B3, TYPICAL
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17 BIKE RACK - DERO BIKE HITCH, COLOR BLACK
18 TACTILE WARNING PANEL
19 NOT USED
20 NOT USED
21 EXISTING 4" WHITE PAINT STRIPING
22 NEW 4" WHITE PAINT STRIPING
23 BLUE ADA PAINTED SYMBOL
24 ADA PARKING SIGN - WALL MOUNTED 5 FT. ABOVE GRADE
25 CONCRETE RETAINING WALL WITH PEDESTRIAN GUARDRAIL AT TOP
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48 CONCRETE BLOCK RETAINING WALL
49 THREE PHASE TRANSFORMER
50 12" x 18" 'SERVICE VEHICLES ONLY/NO PARKING' SIGN, WALL MOUNTED 5 FT. ABOVE GRADE

6
51 FINAL DETAILS OF THE TREE PLANTER GRANITE SURROUNDS TO BE AGREED IN WRITING WITH THE CITY PLANNING AUTHORITY PRIOR TO ORDERING MATERIALS
52 FINAL DETAIL AT CURB ANGELS TO BE AGREED IN WRITING WITH THE CITY PLANNING AUTHORITY PRIOR TO ORDERING MATERIALS
53 MILL AND GRIND 1.5" OF EXISTING ASPHALT, REPLACE WITH 1.5" COURSE OF 9.5MM PAVEMENT

Reviewed for Code Compliance
Permitting and Inspections Department
Approved with Conditions
01/22/2019

CITY OF PORTLAND
APPROVED SITE PLAN
Subject to Conditions of Approval and Standard Conditions
DATE of APPROVAL 6-26-2018
PLANNER Jean Fraser
PROJECT NO. #2017-053

RICHARD L. MEEK, PE 10668 — STATE OF MAINE — RICHARD L. MEEK — NO. 10668 — PROFESSIONAL ENGINEER — 9-28-18

WILLIAM T. CONWAY, RLA 108 — REGISTERED LANDSCAPE ARCHITECT — WILLIAM T. CONWAY — NO. 108 — STATE OF MAINE — 9-28-18

DESIGNED	CHECKED
WTC	RLM

REV.	BY:	DATE:	STATUS:
G	WTC	09-28-18	FINAL PLAN SET FOR BUILDING PERMIT
F	WTC	09-25-18	REVISED PLAN SET FOR BUILDING PERMIT
E	WTC	09-04-18	ISSUED FOR BUILDING PERMIT
D	WTC	08-29-18	BUILDING PERMIT SET
C	WTC	07-20-18	RESUBMIT FOR CITY REVIEW

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SEBAGO TECHNICS
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100
WWW.SEBAGOTECHNICS.COM

SITE PLAN-1 UPPER LEVEL
OF:
383 COMMERCIAL STREET
383 COMMERCIAL STREET
PORTLAND, MAINE
FOR:
DEERING PROPERTY DEVELOPMENT LLC
2730 TRANSIT ROAD
WEST SENECA, NEW YORK 14224

PROJECT NO.	SCALE
16324	1"=10'

SHEET 6 OF 24

16324S-UL.dwg, TAB:SITE-1

GENERAL NOTES:

1 NEW VERTICAL GRANITE CURB
2 GRANITE CURB TIP DOWN
3 FLUSH GRANITE CURB
4 EXISTING GRANITE CURB TO REMAIN
5 BRICK PAVER SIDEWALK
6 BRICK DRIVEWAY APRON
7 HISTORIC COBBLES - RESET TO ORIGINAL PATTERN ON 2" ASPHALT BASE/ 1" SAND BED
8 PAVEMENT SAW CUT
9 RESET SALVAGED GRANITE CURB
10 WOONERF BOLLARD, TYPICAL
11 WOONERF LIGHT BASE / LIGHT FIXTURE B3, TYPICAL
12 12" X 18" 'DO NOT ENTER' SIGN MOUNTED ON BOLLARD, PAINT BACK OF SIGN BLACK
13 VEHICULAR ASPHALT PAVING
14 4" CONCRETE PAVING
15 6" RAISED GRANITE CURB / TREE WELL - 5 FT. x 8 FT. OUTSIDE DIMENSIONS
16 6" RAISED GRANITE CURB/ TREE WELL - 5 FT. X 5 FT. OUTSIDE DIMENSIONS
17 BIKE RACK - DERO BIKE HITCH, COLOR BLACK
18 TACTILE WARNING PANEL
19 NOT USED
20 NOT USED
21 EXISTING 4" WHITE PAINT STRIPING
22 NEW 4" WHITE PAINT STRIPING
23 BLUE ADA PAINTED SYMBOL
24 ADA PARKING SIGN - WALL MOUNTED 5 FT. ABOVE GRADE
25 CONCRETE RETAINING WALL WITH PEDESTRIAN GUARDRAIL AT TOP
26 PRECAST CONCRETE STAIR WITH HANDRAILS - SEE ELEC. PLANS FOR STEP LIGHTS (FIXTURE C1)
27 CONTINUE PEDESTRIAN GUARDRAIL TO EXISTING WOOD FENCE
28 EXISTING BRICK SIDEWALK TO REMAIN
29 EXISTING STONE RETAINING WALL TO REMAIN
30 24" SOLID WHITE PAINT BARS, 24" APART
31 NOT USED
32 NOT USED
33 EXISTING CONCRETE SIDEWALK TO REMAIN
34 EXISTING TREE TO REMAIN
35 EXISTING SLIDING CHAIN LINK FENCE GATE TO REMAIN
36 EXISTING ASPHALT PAVING TO REMAIN
37 STOP SIGN MOUNTED ON BOLLARD, PAINT BACK OF SIGN BLACK
38 24" X 24" PEDESTAL PAVERS, TYPICAL
39 6" X 12" X 48" PRECAST CONCRETE CURB, TYPICAL
40 24" X 24" CONCRETE PAVERS, TYPICAL
41 48" ORNAMENTAL METAL PICKET FENCE, COLOR BLACK
42 BENCH, LANDSCAPE FORMS FGP 70" BACKLESS, IPE WOOD SEATS, TYPICAL
43 BRICK HEADER COURSE, TYPICAL
44 NEW 12" WHITE PAINT STRIPING
45 (2) 6" STEP RISERS
46 CONCRETE RETAINING WALL DOWN TO GARAGE LEVEL BELOW
47 TOP OF CONCRETE WALL BELOW TRANSFORMER VAULT
48 CONCRETE BLOCK RETAINING WALL
49 THREE PHASE TRANSFORMER
50 12" x 18" 'SERVICE VEHICLES ONLY/NO PARKING' SIGN, WALL MOUNTED 5 FT. ABOVE GRADE
51 FINAL DETAILS OF THE TREE PLANTER GRANITE SURROUNDS TO BE AGREED IN WRITING WITH THE CITY PLANNING AUTHORITY PRIOR TO ORDERING MATERIALS
52 FINAL DETAIL AT CURB ANGELS TO BE AGREED IN WRITING WITH THE CITY PLANNING AUTHORITY PRIOR TO ORDERING MATERIALS
53 MILL AND GRIND 1.5" OF EXISTING ASPHALT, REPLACE WITH 1.5" COURSE OF 9.5MM PAVEMENT

Note 35 not approved- see detailed notes on other site plans

LIGHT FIXURE LEGEND:

FINAL SPECS FOR COMMERCIAL STREET LIGHT FIXTURES TO BE AGREED IN WRITING WITH THE CITY PLANNING AUTHORITY PRIOR TO ORDERING MATERIALS

FIXTURE B1, B2, B4 - SPAULDING CIMMARON - POLE TOP LUMINAIRE
FIXTURE B3 - BEGA - POLE TOP LUMINAIRE - #84 120
FIXTURE C - BK LIGHTING - LOUVERED BRICK STAR STEP LIGHT
FIXTURE D1, D2 - SPAULDING FRESNO BOLLARD, COLOR BLACK
FIXTURE E1 - BEGA - WALL MOUNTED LUMINAIRE - #33 514
FIXTURE F1 - BEGA - WALL MOUNTED LUMINAIRE - #24 816
FIXTURE G1 - BEGA - CANOPY LUMINAIRE - #55 943

TRUE

HIGH STREET
PAVED–PUBLIC–66' WIDE

YORK STREET
PAVED–PUBLIC–VARIABLE WIDTH

COMMERCIAL STREET
PAVED–PUBLIC–VARIABLE WIDTH

CONDOMINIUM BUILDING

LOT 3
LOT 2

P.A.

NOTE: FINAL LOCATIONS AND SPECS OF ALL FOR THE STREET LIGHTS AND TREE WELL LOCATIONS ON ALL OF COMMERCIAL STREET TO BE AGREED IN WRITING WITH THE CITY PLANNING AUTHORITY PRIOR TO ORDERING MATERIALS

GRAPHIC SCALE
10 0 5 10 20
(IN FEET)
1 INCH = 10 FT.

CITY OF PORTLAND
APPROVED SITE PLAN
Subject to Conditions of Approval and Standard Conditions
DATE OF APPROVAL 6-26-2018
PLANNER Jean Fraser
PROJECT NO. #2017-053

All work in the ROW to meet city's Technical Standards unless otherwise agreed with city.

Reviewed for Code Compliance
Permitting and Inspections Department
Approved with Conditions
01/22/2019

STATE OF MAINE ★ RICHARD L. MEEK ★ 10668 ★ REGISTERED PROFESSIONAL ENGINEER
RICHARD L MEEK, PE 10668 9-28-18

STATE OF MAINE ★ WILLIAM T. CONWAY ★ 108 ★ REGISTERED LANDSCAPE ARCHITECT
WILLIAM T. CONWAY, RLA 108 9-28-18

DESIGNED	WTC	CHECKED	RLM

G	WTC	09-28-18	FINAL PLAN SET FOR BUILDING PERMIT
F	WTC	09-26-18	REVISED PLAN SET
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C	WTC	07-20-18	RESUBMIT FOR CITY REVIEW
REVI	BY:	DATE:	STATUS:

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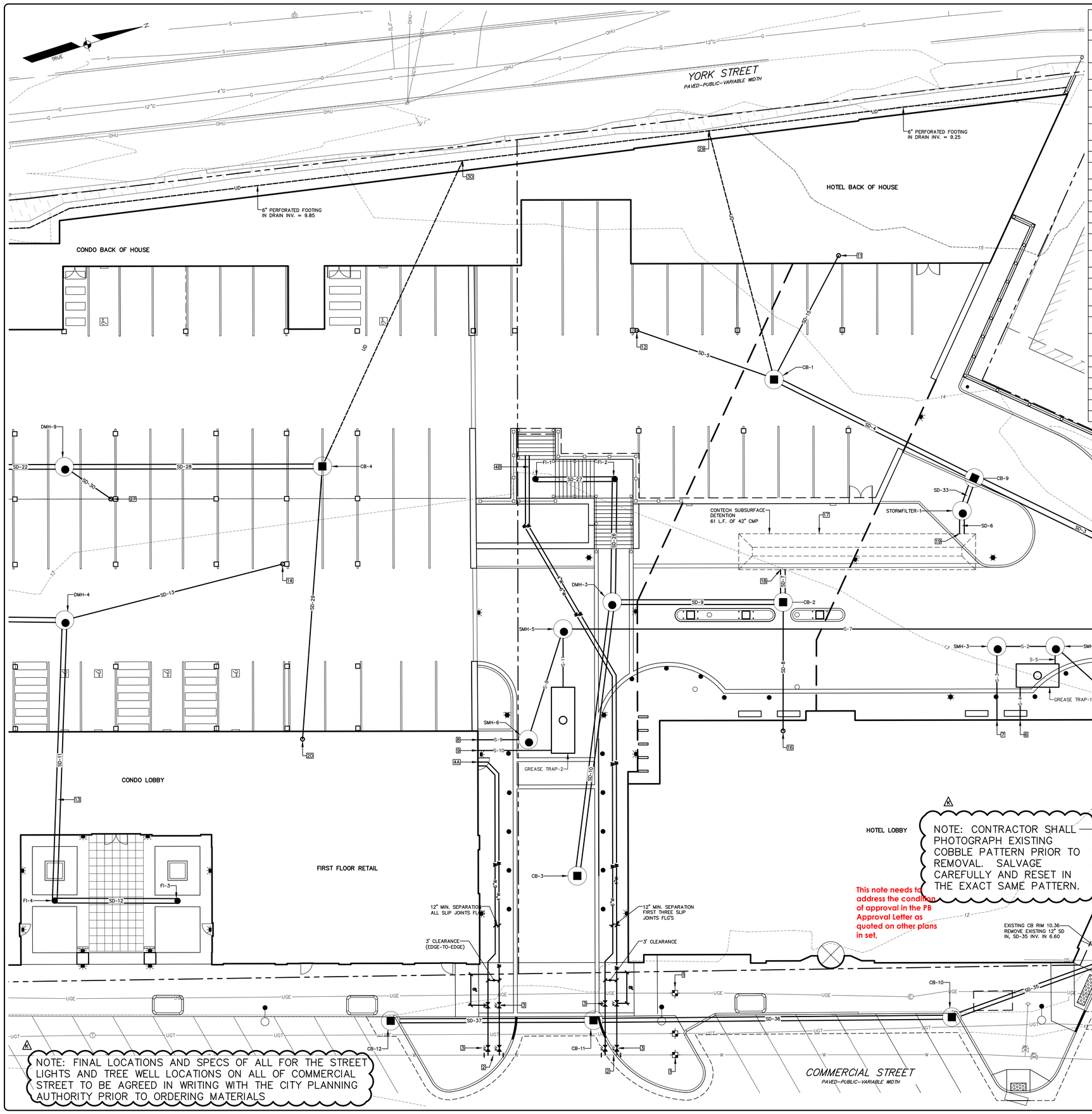
SITE PLAN-2 UPPER LEVEL
OF:
383 COMMERCIAL STREET
383 COMMERCIAL STREET
PORTLAND, MAINE
FOR:
DEERING PROPERTY DEVELOPMENT, LLC
2730 TRANSIT ROAD
WEST SENECA, NEW YORK 14224

PROJECT NO.	SCALE
16324	1"=10'

SHEET 7 OF 24

16324S-UL.dwg, TAB:SITE-2



NOTE: FINAL LOCATIONS AND SPECS OF ALL FOR THE STREET LIGHTS AND TREE WELL LOCATIONS ON ALL OF COMMERCIAL STREET TO BE AGREED IN WRITING WITH THE CITY PLANNING AUTHORITY PRIOR TO ORDERING MATERIALS

NOTE: CONTRACTOR SHALL PHOTOGRAPH EXISTING COBBLE PATTERN PRIOR TO REMOVAL. SALVAGE CAREFULLY AND RESET IN THE EXACT SAME PATTERN.

This note needs to address the condition of approval in the PB Approval Letter as quoted on other plans in set,

CONNECTION LOCATION TO BE APPROVED IN WRITING BY THE CITY PLANNING AUTHORITY PRIOR TO ORDERING MATERIALS

CITY OF PORTLAND
APPROVED SITE PLAN
Subject to Conditions of Approval and Standard Conditions
DATE OF APPROVAL 6-26-2018
PLANNER Jean Fraser
PROJECT NO. #2017-053

All work in the ROW shall meet the city's Technical Standards unless agreed otherwise with city.

GRAPHIC SCALE
0 5 10 20
(IN FEET)
1 INCH = 10 FT.

STORM DRAIN STRUCTURE DATA

STRUCTURE	RIM	INV. IN	INV. OUT:	DIAM.
CB-1	10.65	6.68 (SD-15) 6.68 (SD-5) 6.85 (UD-1)	6.35 (SD-4)	48"
CB-2	11.00	6.35 (SD-9) 6.68 (SD-8)	6.25 (SD-7)	48"
CB-3	11.20		6.99 (SD-10)	48"
CB-4	11.30	6.53 (SD-29) 6.36 (UD-2)	5.86 (SD-28)	48"
CB-5	11.30	5.32 (SD-22) 6.30 (SD-32)	5.22 (SD-21)	48"
CB-6	11.50	4.84 (SD-21) 5.24 (UD-3)	4.74 (SD-20)	48"
CB-7	11.90	6.08 (SD-24)	5.98 (SD-23)	48"
CB-8	11.80		6.27 (SD-24)	48"
CB-9	11.00	6.07 (SD-4) 6.04 (SD-33)	5.83 (SD-3)	48"
CB-10	10.86	6.92 (SD-36)	6.82 (SD-35)	48"
CB-11	12.62	7.46 (SD-37)	7.36 (SD-36)	48"
CB-12	12.88		7.70 (SD-37)	48"
DMH-1	12.20	5.11 (SD-2)	5.01 (SD-1)	48"
DMH-2	13.35	5.54 (SD-3)	5.44 (SD-2)	48"
DMH-3	11.70	6.65 (SD-10) 6.65 (SD-26)	6.55 (SD-9)	48"
DMH-4	12.05	4.65 (SD-11) 5.22 (SD-13)	4.55 (SD-14)	48"
DMH-5	12.90	2.60 (SD-16)		72"
DMH-6	11.64	3.21 (SD-17)	3.11 (SD-16)	48"
DMH-7	13.85	3.75 (SD-18) 3.90 (SD-19)	3.65 (SD-17)	48"
DMH-8	13.90	4.19 (SD-20)	4.09 (SD-19)	48"
DMH-9	11.63	5.53 (SD-28) 6.10 (SD-30)	5.43 (SD-22)	48"
DMH-10	6.24	4.30 (SD-14) 4.41 (SD-31) 4.41 (SD-25)	4.20 (SD-14 (1))	48"
FI-1	23.15		16.72 (SD-27)	12"
FI-2	18.15	15.25 (SD-27)	9.10 (SD-26)	12"
FI-3	12.15		5.28 (SD-12)	12"
FI-4	12.15	5.12 (SD-12)	5.02 (SD-11)	12"
STORMFILTER-1	13.00	6.18 (SD-6)	6.08 (SD-33)	48"
STORMFILTER-2	12.83	3.97 (SD-34)	3.87 (SD-18)	72"

SANITARY SEWER STRUCTURE DATA

STRUCTURE	RIM	INVERT IN	INVERT OUT	DIAMETER
SMH-1	12.00	7.00	7.00	4 FT.
SMH-2	11.80	7.65	7.65	4 FT.
SMH-3	11.50	7.80	7.80	4 FT.
SMH-4	12.20	7.28	7.28	4 FT.
SMH-5	11.80	8.03	8.03	4 FT.
SMH-6	12.15	8.18	8.18	4 FT.
GREASE TRAP-1	11.60	7.73	7.73	1,500 GAL.
GREASE TRAP-2	11.90	8.11	8.11	2,500 GAL.

STORM DRAIN PIPE DATA

NAME	SIZE	LENGTH	SLOPE
SD-1	15"	28'	0.530%
SD-2	15"	62'	0.538%
SD-3	15"	55'	0.528%
SD-4	12"	53'	0.523%
SD-5	8"	36'	0.507%
SD-6	12"	4'	0.765%
SD-7	12"	6'	0.580%
SD-8	8"	31'	0.513%
SD-9	12"	40'	0.500%
SD-10	12"	67'	0.507%
SD-11	12"	70'	0.526%
SD-12	12"	32'	0.506%
SD-13	8"	56'	0.518%
SD-14	12"	45'	0.549%
SD-14 (1)	12"	32'	0.531%
SD-15	8"	34'	0.529%
SD-16	15"	97'	0.526%
SD-17	15"	87'	0.504%
SD-18	15"	13'	0.944%
SD-19	12"	35'	0.547%
SD-20	12"	106'	0.521%
SD-21	12"	72'	0.531%
SD-22	12"	17'	0.635%
SD-23	12"	32'	6.133%
SD-24	12"	37'	0.514%
SD-25	8"	12'	0.590%
SD-26	12"	29'	8.371%
SD-27	12"	19'	7.565%
SD-28	12"	62'	0.528%
SD-29	8"	68'	0.511%
SD-30	8"	13'	0.631%
SD-31	8"	12'	0.592%
SD-32	8"	68'	1.538%
SD-33	12"	5'	0.801%
SD-34	12"	8'	0.756%
SD-35	12"	42'	0.524%
SD-36	12"	88'	0.498%
SD-37	12"	48'	0.498%

SANITARY SEWER PIPE DATA

PIPE	SIZE	LENGTH	SLOPE
S-1	8"	65 FT.	1%
S-2	8"	15 FT.	1%
S-3	8"	19 FT.	1%
S-4	6"	8 FT.	2%
S-5	10"	4 FT.	2%
S-6	10"	55 FT.	0.5%
S-7	10"	149 FT.	0.5%
S-8	10"	30 FT.	0.5%
S-9	10"	12 FT.	0.5%
S-10	6"	19 FT.	0.5%
S-11	6"	16 FT.	0.5%
S-12	6"	5 FT.	0.5%
S-13	6"	5 FT.	0.5%

UTILITY PLAN NOTES:

1 PRIOR TO ORDERING ANY WATER INSTALLATIOIN MATERIALS, EXCAVATE TEST PITS TO DETERMINE INVERT OF 12" WATER MAIN, WIDTH, TOP AND BOTTOM ELEVATIONS OF ELECTRIC AND TELEPHONE DUCT BANKS. REPORT FINDINGS IMMEDIATELY TO DESIGNER
2 TAPPING SLEEVES AND GATE VALVES AT EXISTING 12" WATER MAIN PER PORTLAND WATER DISTRICT STANDARDS
3 4" AND 6" GATE VALVES IN C.I. VALVE BOXES, PER PORTLAND WATER DISTRICT STANDARDS
4A WATER MAINS ENTER CONDO SPRINKLER ROOM. PROVIDE DOUBLE CHECK VALVE ASSEMBLIES ON FIRE AND DOMESTIC LINES
4B WATER MAINS ENTER HOTEL SPRINKLER ROOM UNDER STAIR. PROVIDE DOUBLE CHECK VALVE ASSEMBLIES ON FIRE AND DOMESTIC LINES
5 SET SMH - 1 ON EXISTING 36" BRICK SEWER MAIN, COORDINATE WITH PORTLAND PUBLIC SERVICES
6 SANITARY SEWER INVERT = 7.89
7 SANITARY SEWER INVERT = 7.99
8 SANITARY SEWER INVERT = 8.24
9 SANITARY SEWER INVERT = 8.21
10 CORE INTO EXISTING STRUCTURE FOR NEW STORM DRAIN SD - 1, INVERT = 4.86 - PRIOR TO MAKING THIS CONNECTION, CONTRACTOR MUST CONFIRM THE LOCATION WITH THE CITY PUBLIC WORKS DEPARTMENT
11 8" ROOF DRAIN DOWN FROM HOTEL ROOF B, INVERT = 6.86
12 8" ROOF DRAIN DOWN FROM HOTEL ROOF GARDEN, INVERT = 6.86
13 STORM DRAIN SD - 11 SHALL BE REINFORCED CONCRETE PIPE
14 8" ROOF DRAIN DOWN FOM CONDO ROOF B - 2, INVERT = 5.17
15 8" ROOF DRAIN DOWN FROM CONDO ROOF A, INVERT = 4.48
16 8" ROOF DRAIN DOWN FROM HOTEL ROOF A, INVERT = 6.44
17 SUBSURFACE CHAMBER SYSTEM 1
18 STORM DRAIN SD-7 INVERT IN = 6.21
19 STORM DRAIN SD - 6 INVERT OUT = 6.21
20 8" ROOF DRAIN DOWN FROM CONDO ROOF C - 2, INVERT = 6.50
21 8" ROOF DRAIN DOWN FROM CONDO ROOF B - 1, INVERT = 4.48
22 8" ROOF DRAIN DOWN FROM CONDO ROOF C - 1, INVERT = 6.50
23 SUBSURFACE CHAMBER SYSTEM 2
24 STORM DRAIN SD - 14 INVERT IN = 4.03
25 STORM DRAIN SD - 25 INVERT IN = 4.03
26 STORM DRAIN SD - 23 INVERT IN = 4.03
27 8" ROOF DRAIN DOWN FROM CONDO ROOF GARDEN , INVERT = 5.85
28 SET DMH - 6 ON EXISTING 48" ROP STORM DRAIN, INVERT = 2.60 COORDINATE WITH PORTLAND PUBLIC SERVICES
29 6" PVC OUTLET FROM WALL DRAIN, INVERT= 9.25
30 6" PVC OUTLET FROM WALL DRAIN, INVERT= 9.85
31 6" PVC OUTLET FROM WALL DRAIN, INVERT= 9.85
32 SANITARY SEWER INVERT = 9.17
33 SANITARY SEWER INVERT = 9.17
34 TERMINATE SANITARY SEWER S-12 AND S-13 AT INVERT 9.20. EXTEND TO GRADE WITH 6" THREADED CAP. WRAP BOTH PIPES IN 2" RIGID INSULATION IN ALL DIRECTIONS.
35 HOTEL SERVICE DROP FROM POLE # 7 (CMP, FAIRPOINT, SPECTRUM)
36 (2) 5" PVC CONDUIT AND (2) 4" PVC CONDUIT
37 (2) 5" PVC CONDUIT
38 (2) 5" PVC CONDUIT
39 SECONDARY ELECTRIC TO MECHANICAL ROOM
40 CONDO SERVICE DROP FROM POLE # 7 (CMP, FAIRPOINT, SPECTRUM)
41 NATURAL GAS TAP, SERVICE LINE AND GAS METER BY UNITIL

Reviewed for Code Compliance
Permitting and Inspections Department
Approved with Conditions
01/22/2019

RICHARD L MEEK, PE 10668
STATE OF MAINE · RICHARD L MEEK · No. 10668 · REGISTERED PROFESSIONAL ENGINEER · 9-28-18

WILLIAM T. CONWAY, RLA 108
STATE OF MAINE · WILLIAM T. CONWAY · 108 · REGISTERED LANDSCAPE ARCHITECT · 9-28-18

DESIGNED	CHECKED
WTC	RLM

REV.	BY:	DATE:	STATUS:
K	WTC	09-28-18	FINAL PLAN SET FOR BUILDING PERMIT
J	WTC	09-26-18	ADDED CURB AT MAPLE STREET, REVISED UTILITY NOTE 10
I	WTC	09-26-18	COORDINATED STORM DRAINAGE WITH STRUCTURAL ENGINEER
H	WTC	09-24-18	ISSUED FOR BUILDING PERMIT
G	WTC	08-20-18	REVISED PER CITY REVIEW
F	WTC	07-20-18	RESUBMIT FOR CITY REVIEW
E	WTC	07-12-18	SHIFT COLUMN AT WOONERF

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UTILITY PLAN-1 LOWER LEVEL

OF:
383 COMMERCIAL STREET
383 COMMERCIAL STREET
PORTLAND, MAINE

FOR:
DEERING PROPERTY DEVELOPMENT, LLC
2730 TRANSIT ROAD
WEST SENECA, NEW YORK 14224

PROJECT NO.	SCALE
16324	1"=10'

SHEET 12 OF 24

16324D-LL.dwg, TAB:U-1

STORM DRAIN STRUCTURE DATA

STRUCTURE	RIM	INV. IN	INV. OUT:	DIAM.
CB-1	10.65	6.68 (SD-15) 6.68 (SD-5) 6.85 (UD-1)	6.35 (SD-4)	48"
CB-2	11.00	6.35 (SD-9) 6.68 (SD-8)	6.25 (SD-7)	48"
CB-3	11.20		6.99 (SD-10)	48"
CB-4	11.30	6.53 (SD-29) 6.36 (UD-2)	5.86 (SD-28)	48"
CB-5	11.30	5.32 (SD-22) 6.30 (SD-32)	5.22 (SD-21)	48"
CB-6	11.50	4.84 (SD-21) 5.24 (UD-3)	4.74 (SD-20)	48"
CB-7	11.90	6.08 (SD-24)	5.98 (SD-23)	48"
CB-8	11.80		6.27 (SD-24)	48"
CB-9	11.00	6.07 (SD-4) 6.04 (SD-33)	5.83 (SD-3)	48"
CB-10	10.86	6.92 (SD-36)	6.82 (SD-35)	48"
CB-11	12.62	7.46 (SD-37)	7.36 (SD-36)	48"
CB-12	12.88		7.70 (SD-37)	48"
DMH-1	12.20	5.11 (SD-2)	5.01 (SD-1)	48"
DMH-2	13.35	5.54 (SD-3)	5.44 (SD-2)	48"
DMH-3	11.70	6.65 (SD-10) 6.65 (SD-26)	6.55 (SD-9)	48"
DMH-4	12.05	4.65 (SD-11) 5.22 (SD-13)	4.55 (SD-14)	48"
DMH-5	12.90	2.60 (SD-16)		72"
DMH-6	11.64	3.21 (SD-17)	3.11 (SD-16)	48"
DMH-7	13.85	3.75 (SD-18) 3.90 (SD-19)	3.65 (SD-17)	48"
DMH-8	13.90	4.19 (SD-20)	4.09 (SD-19)	48"
DMH-9	11.63	5.53 (SD-28) 6.10 (SD-30)	5.43 (SD-22)	48"
DMH-10	6.24	4.30 (SD-14) 4.41 (SD-31) 4.41 (SD-25)	4.20 (SD-14 (1))	48"
FI-1	23.15		16.72 (SD-27)	12"
FI-2	18.15	15.25 (SD-27)	9.10 (SD-26)	12"
FI-3	12.15		5.28 (SD-12)	12"
FI-4	12.15	5.12 (SD-12)	5.02 (SD-11)	12"
STORMFILTER-1	13.00	6.18 (SD-6)	6.08 (SD-33)	48"
STORMFILTER-2	12.83	3.97 (SD-34)	3.87 (SD-18)	72"

STORM DRAIN PIPE DATA

NAME	SIZE	LENGTH	SLOPE
SD-1	15"	28'	0.530%
SD-2	15"	62'	0.538%
SD-3	15"	55'	0.528%
SD-4	12"	53'	0.523%
SD-5	8"	36'	0.507%
SD-6	12"	4'	0.765%
SD-7	12"	6'	0.580%
SD-8	8"	31'	0.513%
SD-9	12"	40'	0.500%
SD-10	12"	67'	0.507%
SD-11	12"	70'	0.526%
SD-12	12"	32'	0.506%
SD-13	8"	56'	0.518%
SD-14	12"	45'	0.549%
SD-14 (1)	12"	32'	0.531%
SD-15	8"	34'	0.529%
SD-16	15"	97'	0.526%
SD-17	15"	87'	0.504%
SD-18	15"	13'	0.944%
SD-19	12"	35'	0.547%
SD-20	12"	106'	0.521%
SD-21	12"	72'	0.531%
SD-22	12"	17'	0.635%
SD-23	12"	32'	6.133%
SD-24	12"	37'	0.514%
SD-25	8"	12'	0.590%
SD-26	12"	29'	8.371%
SD-27	12"	19'	7.565%
SD-28	12"	62'	0.528%
SD-29	8"	68'	0.511%
SD-30	8"	13'	0.631%
SD-31	8"	12'	0.592%
SD-32	8"	68'	1.538%
SD-33	12"	5'	0.801%
SD-34	12"	8'	0.756%
SD-35	12"	42'	0.524%
SD-36	12"	88'	0.498%
SD-37	12"	48'	0.498%

SANITARY SEWER STRUCTURE DATA

STRUCTURE	RIM	INVERT IN	INVERT OUT	DIAMETER
SMH-1	12.00	7.00	7.00	4 FT.
SMH-2	11.80	7.65	7.65	4 FT.
SMH-3	11.50	7.80	7.80	4 FT.
SMH-4	12.20	7.28	7.28	4 FT.
SMH-5	11.80	8.03	8.03	4 FT.
SMH-6	12.15	8.18	8.18	4 FT.
GREASE TRAP-1	11.60	7.73	7.73	1,500 GAL.
GREASE TRAP-2	11.90	8.11	8.11	2,500 GAL.

SANITARY SEWER PIPE DATA

PIPE	SIZE	LENGTH	SLOPE
S-1	8"	65 FT.	1%
S-2	8"	15 FT.	1%
S-3	8"	19 FT.	1%
S-4	6"	8 FT.	2%
S-5	10"	4 FT.	2%
S-6	10"	55 FT.	0.5%
S-7	10"	149 FT.	0.5%
S-8	10"	30 FT.	0.5%
S-9	10"	12 FT.	0.5%
S-10	6"	19 FT.	0.5%
S-11	6"	16 FT.	0.5%
S-12	6"	5 FT.	0.5%
S-13	6"	5 FT.	0.5%

UTILITY PLAN NOTES:

1 PRIOR TO ORDERING ANY WATER INSTALLATION MATERIALS, EXCAVATE TEST PITS TO DETERMINE INVERT OF 12" WATER MAIN, WIDTH, TOP AND BOTTOM ELEVATIONS OF ELECTRIC AND TELEPHONE DUCT BANKS. REPORT FINDINGS IMMEDIATELY TO DESIGNER
2 TAPPING SLEEVES AND GATE VALVES AT EXISTING 12" WATER MAIN PER PORTLAND WATER DISTRICT STANDARDS
3 4" AND 6" GATE VALVES IN C.I. VALVE BOXES, PER PORTLAND WATER DISTRICT STANDARDS
4A WATER MAINS ENTER CONDO SPRINKLER ROOM. PROVIDE DOUBLE CHECK VALVE ASSEMBLIES ON FIRE AND DOMESTIC LINES
4B WATER MAINS ENTER HOTEL SPRINKLER ROOM UNDER STAIR. PROVIDE DOUBLE CHECK VALVE ASSEMBLIES ON FIRE AND DOMESTIC LINES
5 SET SMH - 1 ON EXISTING 36" BRICK SEWER MAIN, COORDINATE WITH PORTLAND PUBLIC SERVICES
6 SANITARY SEWER INVERT = 7.89
7 SANITARY SEWER INVERT = 7.99
8 SANITARY SEWER INVERT = 8.24
9 SANITARY SEWER INVERT = 8.21
10 CORE INTO EXISTING STRUCTURE FOR NEW STORM DRAIN SD - 1, INVERT = 4.86
11 8" ROOF DRAIN DOWN FROM HOTEL ROOF B, INVERT = 6.86
12 8" ROOF DRAIN DOWN FROM HOTEL ROOF GARDEN, INVERT = 6.86
13 STORM DRAIN SD - 11 SHALL BE REINFORCED CONCRETE PIPE
14 8" ROOF DRAIN DOWN FOM CONDO ROOF B - 2, INVERT = 5.17
15 8" ROOF DRAIN DOWN FROM CONDO ROOF A, INVERT = 4.48
16 8" ROOF DRAIN DOWN FROM HOTEL ROOF A, INVERT = 6.44
17 SUBSURFACE CHAMBER SYSTEM 1
18 STORM DRAIN SD-7 INVERT IN = 6.21
19 STORM DRAIN SD - 6 INVERT OUT = 6.21
20 8" ROOF DRAIN DOWN FROM CONDO ROOF C - 2, INVERT = 6.50
21 8" ROOF DRAIN DOWN FROM CONDO ROOF B - 1, INVERT = 4.48
22 8" ROOF DRAIN DOWN FROM CONDO ROOF C - 1, INVERT = 6.50
23 SUBSURFACE CHAMBER SYSTEM 2
24 STORM DRAIN SD - 14 INVERT IN = 4.03
25 STORM DRAIN SD - 25 INVERT IN = 4.03
26 STORM DRAIN SD - 23 INVERT IN = 4.03
27 8" ROOF DRAIN DOWN FROM CONDO ROOF GARDEN , INVERT = 5.85
28 SET DMH - 6 ON EXISTING 48" RCP STORM DRAIN, INVERT = 2.60 COORDINATE WITH PORTLAND PUBLIC SERVICES
29 6" PVC OUTLET FROM WALL DRAIN, INVERT= 9.25
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35 HOTEL SERVICE DROP FROM POLE # 7 (CMP, FAIRPOINT, SPECTRUM)
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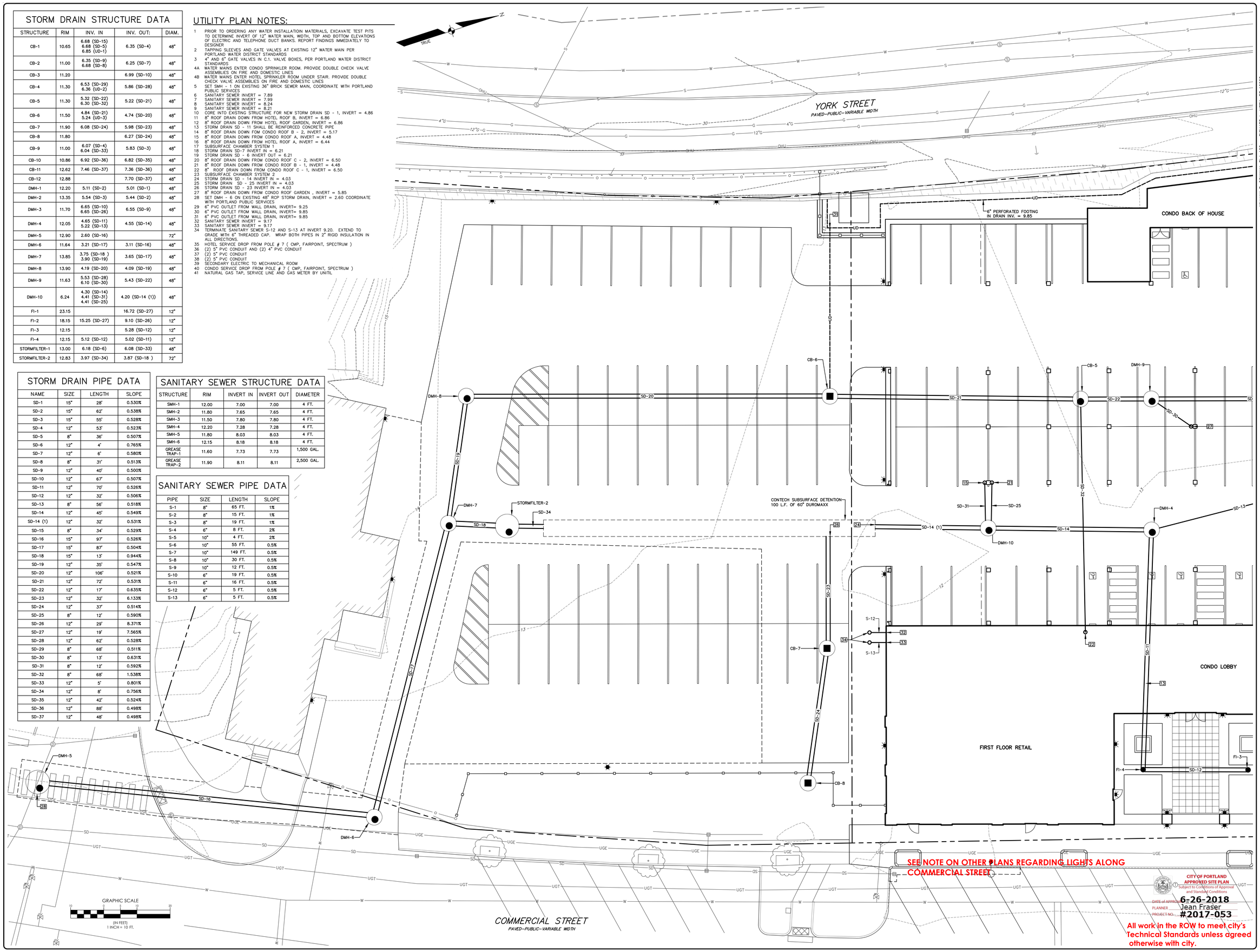

CITY OF PORTLAND
APPROVED SITE PLAN
Subject to Conditions of Approval and Standard Conditions
DATE of APPROVAL 6-26-2018
PLANNER Jean Fraser
PROJECT NO. #2017-053

All work in the ROW to meet city's Technical Standards unless agreed otherwise with city.

Reviewed for Code Compliance
Permitting and Inspections Department
Approved with Conditions
01/22/2019

RICHARD L. MEEK, PE 10668 — STATE OF MAINE — RICHARD L. MEEK No. 10668 — REGISTERED PROFESSIONAL ENGINEER — 9-28-18

WILLIAM T. CONWAY, RLA 108 — REGISTERED LANDSCAPE ARCHITECT — WILLIAM T. CONWAY No. 108 — STATE OF MAINE — 9-28-18

DESIGNED	CHECKED
WTC	RLM

REV.	BY:	DATE:	STATUS:
J	WTC	09-28-18	FINAL PLAN SET FOR BUILDING PERMIT
I	WTC	09-26-18	COORDINATED STORM DRAINAGE WITH STRUCTURAL ENGINEER
H	WTC	09-04-18	ISSUED FOR BUILDING PERMIT
G	WTC	08-29-18	RESUBMIT FOR FINAL SC REVIEW
F	WTC	06-21-18	MODIFY STORM STRUCTURES
E	WTC	06-19-18	SHIFT FENCE AWAY FROM COMMERCIAL ST. SIDEWALK
D	WTC	06-19-18	

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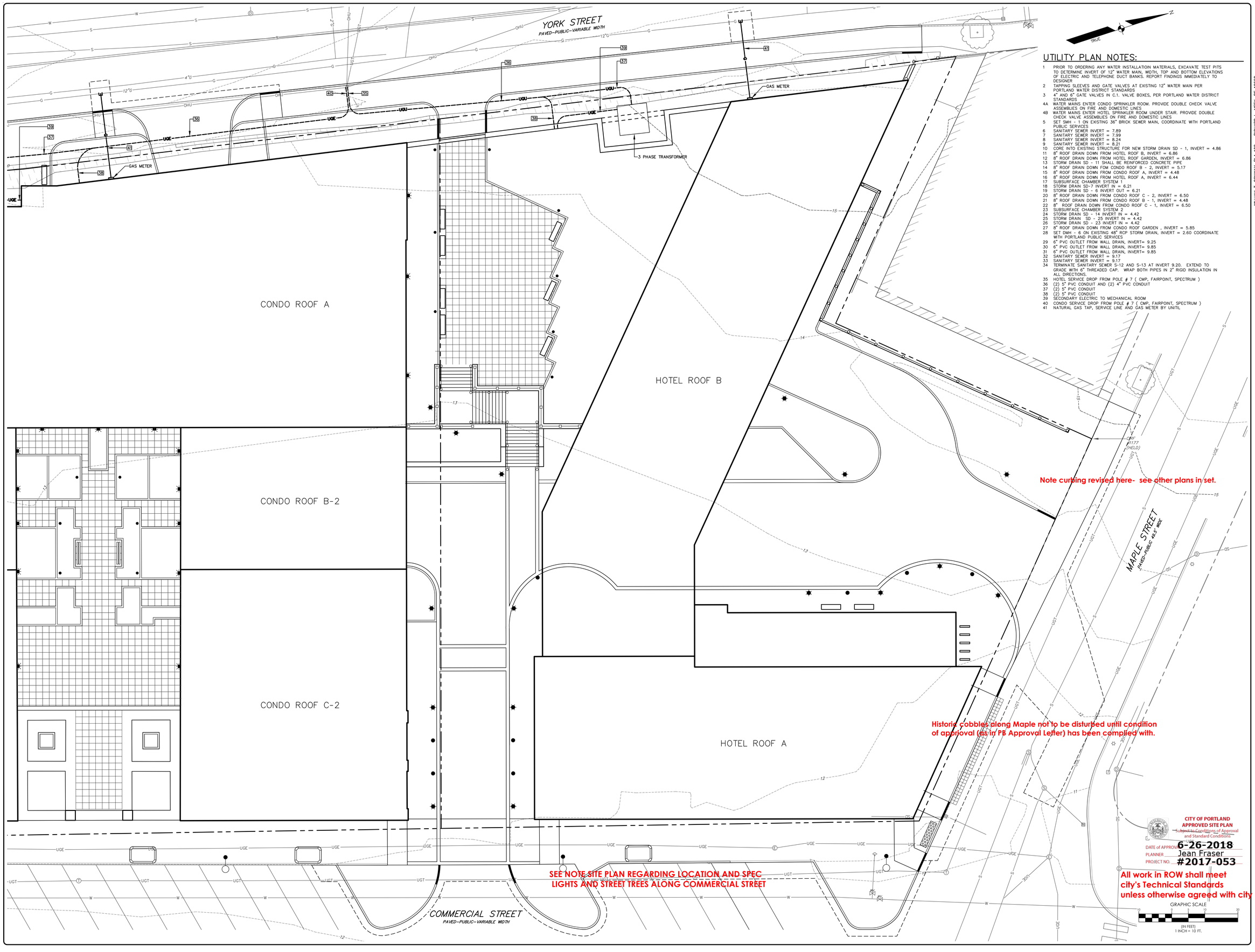
SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel: 207-200-2100

UTILITY PLAN-2 LOWER LEVEL
OF:
383 COMMERCIAL STREET
383 COMMERCIAL STREET
PORTLAND, MAINE
FOR:
DEERING PROPERTY DEVELOPMENT, LLC
2730 TRANSIT ROAD
WEST SENECA, NEW YORK 14224

PROJECT NO.	SCALE
16324	1"=10'

SHEET 13 OF 24

163240-LL.dwg, TAB:U-2



UTILITY PLAN NOTES:

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Reviewed for Code Compliance
Permitting and Inspections Department
Approved with Conditions
01/22/2019

RICHARD L. MEEK, PE 10668 — STATE OF MAINE — RICHARD L. MEEK — NO. 10668 — REGISTERED PROFESSIONAL ENGINEER — 9-28-18

WILLIAM T. CONWAY, RLA 108 — REGISTERED LANDSCAPE ARCHITECT — WILLIAM T. CONWAY — STATE OF MAINE — 9-28-18

DESIGNED	CHECKED
WTC	RLM

REV:	BY:	DATE:	STATUS:
F.	WTC	09-28-18	FINAL PLAN SET FOR BUILDING PERMIT
E.	WTC	09-04-18	ISSUED FOR BUILDING PERMIT
D.	WTC	08-29-18	BUILDING PERMIT SET
C.	WTC	07-20-18	RESUBMIT FOR CITY REVIEW

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WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 1A, Rear
South Portland, ME 04106
Tel. 207-200-2100

UTILITY PLAN-1 UPPER LEVEL
OF:
383 COMMERCIAL STREET
383 COMMERCIAL STREET
PORTLAND, MAINE
FOR:
DEERING PROPERTY DEVELOPMENT, LLC
2730 TRANSIT ROAD
WEST SENECA, NEW YORK 14224

PROJECT NO.	SCALE
16324	1"=10'

SHEET 14 OF 24

16324U-GL.dwg, TAB:U-1

UTILITY PLAN NOTES:

1 PRIOR TO ORDERING ANY WATER INSTALLATIOIN MATERIALS, EXCAVATE TEST PITS TO DETERMINE INVERT OF 12" WATER MAIN, WIDTH, TOP AND BOTTOM ELEVATIONS OF ELECTRIC AND TELEPHONE DUCT BANKS. REPORT FINDINGS IMMEDIATELY TO DESIGNER
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TRUE

YORK STREET
PAVED–PUBLIC–VARIABLE WIDTH

HIGH STREET
PAVED–PUBLIC 66' WIDE

COMMERCIAL STREET
PAVED–PUBLIC–VARIABLE WIDTH

3 PHASE TRANSFORMER

GAS METER

CONDO ROOF A

CONDO ROOF B-1

CONDO ROOF C-1

SEE NOTE ON SITE PLANS RE LOCATIONS AND SPECS OF LIGHTS AND STREET TREES ALONG COMMERCIAL STREET

GRAPHIC SCALE
(IN FEET)
1 INCH = 10 FT.

CITY OF PORTLAND
APPROVED SITE PLAN
Subject to Conditions of Approval and Standard Conditions
DATE of APPROVAL 6-26-2018
PLANNER Jean Fraser
PROJECT NO. #2017-053

All work in ROW shall meet city;s Technical Standards unless agreed otherwise with city.

Reviewed for Code Compliance
Permitting and Inspections Department
Approved with Conditions
01/22/2019

RICHARD L. MEEK, PE 10668
STATE OF MAINE
RICHARD L. MEEK
NO. 10668
REGISTERED PROFESSIONAL ENGINEER
9-28-18

WILLIAM T. CONWAY, RLA 108
REGISTERED LANDSCAPE ARCHITECT
WILLIAM T. CONWAY
STATE OF MAINE
9-28-18

DESIGNED	CHECKED
WTC	RLM

F	WTC	09-28-18 FINAL PLAN SET FOR BUILDING PERMIT
E	WTC	09-24-18 ISSUED FOR BUILDING PERMIT
D	WTC	08-29-18 BUILDING PERMIT SET
C	WTC	07-20-18 RESUBMIT FOR CITY REVIEW

REVI BY: DATE: STATUS:

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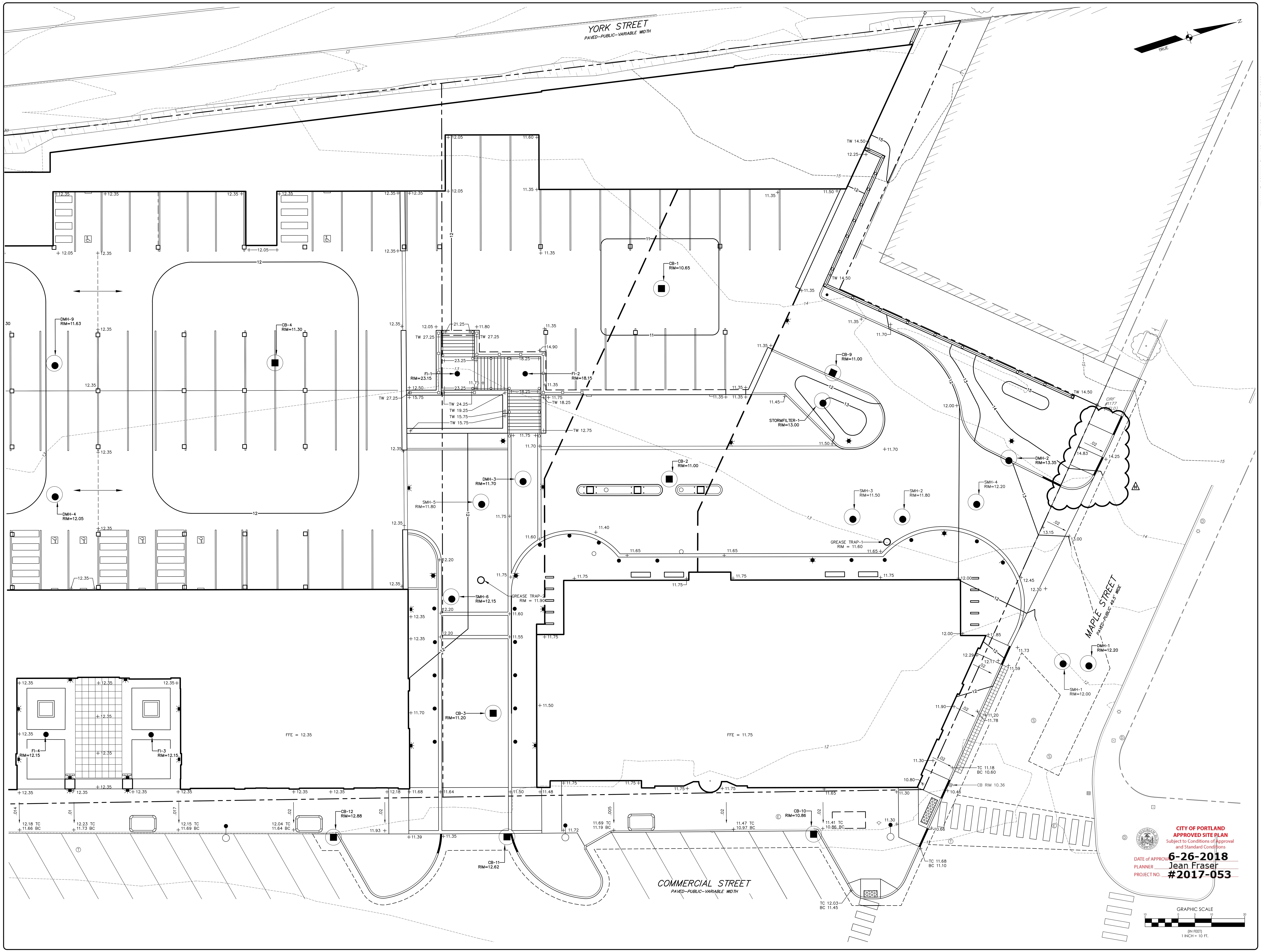
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

UTILITY PLAN-2 UPPER LEVEL
OF:
383 COMMERCIAL STREET
383 COMMERCIAL STREET
PORTLAND, MAINE
FOR:
DEERING PROPERTY DEVELOPMENT, LLC
2730 TRANSIT ROAD
WEST SENECA, NEW YORK 14224

PROJECT NO.	SCALE
16324	1"=10'

16324U-DL.dwg, TAB:U-2

SHEET 15 OF 24



CITY OF PORTLAND
APPROVED SITE PLAN
Subject to Conditions of Approval and Standard Conditions
DATE of APPROVAL 6-26-2018
PLANNER Jean Fraser
PROJECT NO. #2017-053

Reviewed for Code Compliance
Permitting and Inspections Department
Approved with Conditions
01/22/2019

RICHARD L. MEEK, PE 10668
STATE OF MAINE — RICHARD L. MEEK No. 10668 — LICENSED PROFESSIONAL ENGINEER
9-28-18

WILLIAM T. CONWAY, RLA 108
REGISTERED LANDSCAPE ARCHITECT — WILLIAM T. CONWAY No. 108 — STATE OF MAINE
9-28-18

DESIGNED	CHECKED
WTC	RLM

REV:	BY:	DATE:	STATUS:
I	WTC	09-28-18	FINAL PLAN SET FOR BUILDING PERMIT
H	WTC	09-26-18	ADD CURB AT MAPLE STREET
G	WTC	09-04-18	ISSUED FOR BUILDING PERMIT
F	WTC	07-20-18	RESUBMIT FOR CITY REVIEW
E	WTC	07-12-18	SHIFT COLUMN AT WOONERF
D	WTC	06-21-18	MODIFY BUMPOUTS AT COMMERCIAL STEET, ADD CB 11 & 12
C	WTC	06-12-18	ADD RADII @ TREE WELLS, ADD 3RD BUMPOUT

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GRADING PLAN-1 LOWER LEVEL

OF:
383 COMMERCIAL STREET
383 COMMERCIAL STREET
PORTLAND, MAINE

FOR:
DEERING PROPERTY DEVELOPMENT, LLC
2730 TRANSIT ROAD
WEST SENECA, NEW YORK 14224

PROJECT NO.	SCALE
16324	1"=10'

SHEET 8 OF 24

16324G-LL.dwg, TAB: G-1

Reviewed for Code Compliance
Permitting and Inspections Department
Approved with Conditions
01/22/2019

RICHARD L. MEEK, PE 10668 — 9-28-18

WILLIAM T. CONWAY, RLA 108 — 9-28-18

DESIGNED	CHECKED
WTC	RLM

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D	WTC	07-19-18	SHIFT FENCE AWAY FROM COMMERCIAL ST. SIDEWALK
C	WTC	06-12-18	ADD RADII @ TREE WELLS, ADD 3RD BUMPOUT

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GRADING PLAN-2 LOWER LEVEL

OF: 383 COMMERCIAL STREET
383 COMMERCIAL STREET
PORTLAND, MAINE

FOR: DEERING PROPERTY DEVELOPMENT, LLC
2730 TRANSIT ROAD
WEST SENECA, NEW YORK 14224

PROJECT NO.	SCALE
16324	1"=10'

SHEET 9 OF 24

YORK STREET
PAVED–PUBLIC–VARIABLE WIDTH

CONDO ROOF A

CONDO ROOF B-2

CONDO ROOF C-2

HOTEL ROOF B

HOTEL ROOF A

MAPLE STREET
PAVED–PUBLIC 49.5' WIDE

COMMERCIAL STREET
PAVED–PUBLIC–VARIABLE WIDTH

TRUE

CITY OF PORTLAND
APPROVED SITE PLAN
Subject to Conditions of Approval
and Standard Conditions
DATE of APPROVAL 6-26-2018
PLANNER Jean Fraser
PROJECT NO. #2017-053

GRAPHIC SCALE
10 0 5 10 20
(IN FEET)
1 INCH = 10 FT.

Reviewed for Code Compliance
Permit Application Requirement
Approved with Conditions
01/22/2019

RICHARD L MEEK, PE 10668
STATE OF MAINE · RICHARD L MEEK · No. 10668 · REGISTERED PROFESSIONAL ENGINEER · 9-28-18

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GRADING PLAN-1 UPPER LEVEL
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PORTLAND, MAINE
FOR:
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2730 TRANSIT ROAD
WEST SENECA, NEW YORK 14224

PROJECT NO.	SCALE
16324	1"=10'

SHEET 10 OF 24

16324C-GL.dwg, TAB:C-1

TRUE

YORK STREET
PAVED–PUBLIC–VARIABLE WIDTH

HIGH STREET
PAVED–PUBLIC 66' WIDE

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PAVED–PUBLIC–VARIABLE WIDTH

CONDO ROOF A

CONDO ROOF B-1

CONDO ROOF C-1

TW 30.50

TW 30.50

GRAPHIC SCALE
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(IN FEET)
1 INCH = 10 FT.

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APPROVED SITE PLAN
Subject to Conditions of Approval and Standard Conditions
DATE of APPROVAL 6-26-2018
PLANNER Jean Fraser
PROJECT NO. #2017-053

Reviewed for Code Compliance
Permitting and Inspections Department
Approved with Conditions
01/22/2019

STATE OF MAINE
RICHARD L. MEEK
No. 10668
REGISTERED PROFESSIONAL ENGINEER
9-28-18

RICHARD L. MEEK, PE 10668

WILLIAM T. CONWAY
No. 108
REGISTERED LANDSCAPE ARCHITECT
STATE OF MAINE
9-28-18

WILLIAM T. CONWAY, RLA 108

DESIGNED	CHECKED
WTC	RLM

REV.	BY:	DATE:	STATUS:
F	WTC	09-28-18	FINAL PLAN SET FOR BUILDING PERMIT
E	WTC	09-04-18	ISSUED FOR BUILDING PERMIT
D	WTC	08-29-18	BUILDING PERMIT SET
C	WTC	07-20-18	RESUBMIT FOR CITY REVIEW

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

GRADING PLAN-2 UPPER LEVEL
OF:
383 COMMERCIAL STREET
383 COMMERCIAL STREET
PORTLAND, MAINE
FOR:
DEERING PROPERTY DEVELOPMENT, LLC
2730 TRANSIT ROAD
WEST SENECA, NEW YORK 14224

PROJECT NO.	SCALE
16324	1"=10'

SHEET 11 OF 24

16324C-UL.dwg, TAB: C-2

EROSION CONTROL MEASURES

PRE-CONSTRUCTION PHASE

PRIOR TO THE BEGINNING OF ANY CONSTRUCTION, SEDIMENT BARRIERS (SILT FENCE) WILL BE STAKED/INSTALLED ACROSS THE SLOPE(S), ON THE CONTOUR AT OR JUST BELOW THE LIMITS OF CLEARING OR GRUBBING, AND/OR JUST ABOVE ANY ADJACENT PROPERTY LINE OR WATERCOURSE TO PROTECT AGAINST CONSTRUCTION RELATED EROSION. THE PLACEMENT OF SEDIMENT BARRIERS SHALL BE COMPLETED IN ACCORDANCE WITH GUIDELINES ESTABLISHED IN BEST MANAGEMENT PRACTICES AND IN ACCORDANCE WITH THIS EROSION CONTROL PLAN AND DETAILS IN THIS PLAN SET. THIS NETWORK IS TO BE MAINTAINED BY THE CONTRACTOR UNTIL ALL EXPOSED SLOPES HAVE AT LEAST 85%-90% VIGOROUS PERENNIAL VEGETATIVE COVER TO PREVENT EROSION. TEMPORARY EROSION CONTROL MEASURES SHALL BE REMOVED WITHIN 30 DAYS AFTER PERMANENT STABILIZATION IS ATTAINED.

PRIOR TO ANY CLEARING OR GRUBBING, A CONSTRUCTION ENTRANCE/EXIT SHALL BE CONSTRUCTED AT THE INTERSECTION OF THE PROPOSED ENTRANCES AND EXISTING ROADWAY TO AVOID TRACKING OF MUD, DUST AND DEBRIS FROM THE SITE.

PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL PREPARE A DETAILED SCHEDULE AND MARKED UP PLAN INDICATING AREAS AND COMPONENTS OF THE WORK AND KEY DATES SHOWING DATE OF DISTURBANCE AND COMPLETION OF THE WORK. THE CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE MUNICIPAL STAFF. THREE COPIES OF THE SCHEDULE AND MARKED UP PLAN SHALL BE PROVIDED TO THE MUNICIPALITY THREE DAYS PRIOR TO THE SCHEDULED PRE-CONSTRUCTION MEETING. SPECIAL ATTENTION SHALL BE GIVEN TO THE 14 DAY LIMIT OF DISTURBANCE IN THE SCHEDULE ADDRESSING TEMPORARY AND PERMANENT VEGETATION MEASURES.

CONSTRUCTION AND POST-CONSTRUCTION PHASE

AREAS UNDERGOING ACTUAL CONSTRUCTION SHALL ONLY EXPOSE THAT AMOUNT OF MINERAL SOIL NECESSARY FOR PROGRESSIVE AND EFFICIENT CONSTRUCTION . AN AREA CONSIDERED OPEN IS ANY AREA NOT STABILIZED WITH PAVEMENT, VEGETATION, MULCHING, EROSION CONTROL MATS, RIPRAP OR GRAVEL BASE ON A ROAD . OPEN AREAS SHALL BE ANCHORED WITH TEMPORARY EROSION CONTROL AS SHOWN ON THE DESIGN PLANS AND AS DESCRIBED WITHIN THIS EROSION CONTROL PLAN WITHIN 14-DAYS OF DISTURBANCE. AREAS LOCATED WITHIN 100' OF STREAMS SHALL BE ANCHORED WITH TEMPORARY EROSION CONTROL WITHIN SEVEN (7) DAYS. REFER TO WINTER EROSION CONTROL NOTES FOR THE TREATMENT OF OPEN AREAS AFTER OCTOBER 1ST OF THE CONSTRUCTION YEAR.

THE CONTRACTOR MUST INSTALL ANY ADDED MEASURES WHICH MAY BE NECESSARY TO CONTROL EROSION/SEDIMENTATION FROM THE SITE DEPENDENT UPON THE ACTUAL SITE AND WEATHER CONDITIONS. CONTINUATION OF EARTHWORK OPERATIONS ON ADDITIONAL AREAS SHALL NOT BEGIN UNTIL THE EXPOSED SOIL SURFACE ON THE AREA BEING WORKED HAS BEEN STABILIZED, IN ORDER TO MINIMIZE AREAS WITHOUT EROSION CONTROL PROTECTION.

EROSION CONTROL APPLICATIONS & MEASURES

THE PLACEMENT OF EROSION CONTROL MEASURES SHALL BE COMPLETED IN ACCORDANCE WITH GUIDELINES ESTABLISHED IN BEST MANAGEMENT PRACTICES AND IN ACCORDANCE WITH THE EROSION CONTROL PLAN AND DETAILS IN THE PLAN SET.

1. TEMPORARY MULCHING:

ALL DISTURBED AREAS SHALL BE MULCHED WITH MATERIALS SPECIFIED BELOW PRIOR TO ANY STORM EVENT. ALL DISTURBED AREAS NOT FINAL GRADED WITHIN 14 DAYS SHALL BE MULCHED. ALSO, AREAS, WHICH HAVE BEEN TEMPORARILY OR PERMANENTLY SEEDED, SHALL BE MULCHED IMMEDIATELY FOLLOWING SEEDING. EROSION CONTROL BLANKETS ARE RECOMMENDED TO BE USED AT THE BASE OF GRASSED WATERWAYS AND ON SLOPES GREATER THAN 15%. MULCH ANCHORING SHOULD BE USED ON SLOPES GREATER THAN 5% AFTER SEPTEMBER 15TH OF THE CONSTRUCTION YEAR (SEE WINTER EROSION CONTROL NOTES).
TYPES OF MULCH:
HAY OR STRAW: SHALL BE APPLIED AT A RATE OF 75 LBS/1,000 S.F. (1.5 TONS PER ACRE).
EROSION CONTROL MIX: SHALL BE PLACED EVENLY AND MUST PROVIDE 100% SOIL COVERAGE. EROSION CONTROL MIX SHALL BE APPLIED SUCH THAT THE THICKNESS ON SLOPES 3:1 OR LESS IS 2 INCHES PLUS 1/2 INCH PER 20 FEET OF SLOPE UP TO 100 FEET. THE THICKNESS ON SLOPES BETWEEN 3:1 AND 2:1 SHALL BE 4 INCHES PLUS 1/2 INCH PER 20 FEET OF SLOPE UP TO 100 FEET. THIS SHALL NOT BE USED ON SLOPES GREATER THAN 2:1.
EROSION CONTROL BLANKET: SHALL BE INSTALLED SUCH THAT CONTINUOUS CONTACT BETWEEN THE MAT AND THE SOIL IS OBTAINED. INSTALL BLANKETS AND STAPLE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

2. SOIL STOCKPILES:

STOCKPILES OF SOIL OR SUBSOIL SHALL BE MULCHED WITH HAY OR STRAW AT A RATE OF 75 LBS/1,000 S.F. (1.5 TONS PER ACRE) OR WITH A FOUR-INCH LAYER OF WOOD WASTE EROSION CONTROL MIX. THIS WILL BE DONE WITHIN 24 HOURS OF STOCKING AND RE-ESTABLISHED PRIOR TO ANY RAINFALL. ANY SOIL STOCKPILE WILL NOT BE PLACED (EVEN COVERED WITH HAY OR STRAW) WITHIN 100 FEET FROM ANY NATURAL RESOURCES.

3. NATURAL RESOURCES PROTECTION:

ANY AREAS WITHIN 100 FEET FROM ANY NATURAL RESOURCES, IF NOT STABILIZED WITH A MINIMUM OF 75% MATURE VEGETATION CATCH, SHALL BE MULCHED USING TEMPORARY MULCHING (AS DESCRIBED IN PART 1. OF THIS SECTION) WITHIN 7 DAYS OF EXPOSURE OR PRIOR TO ANY STORM EVENT. SEDIMENT BARRIERS (AS DESCRIBED IN PART 4. OF THIS SECTION) SHALL BE PLACED BETWEEN ANY NATURAL RESOURCE AND THE DISTURBED AREA.
PROJECTS CROSSING THE NATURAL RESOURCE SHALL BE PROTECTED A MINIMUM DISTANCE OF 100 FEET ON EITHER SIDE FROM THE RESOURCE.

4. SEDIMENT BARRIERS:

PRIOR TO THE BEGINNING OF ANY CONSTRUCTION, SEDIMENT BARRIERS SHALL BE STAKED ACROSS THE SLOPE(S), ON THE CONTOUR AT OR JUST BELOW THE LIMITS OF CLEARING OR GRUBBING, AND/OR JUST ABOVE ANY ADJACENT PROPERTY LINE OR WATERCOURSE TO PROTECT AGAINST CONSTRUCTION RELATED EROSION. SEDIMENT BARRIERS SHALL BE MAINTAINED BY THE CONTRACTOR UNTIL ALL EXPOSED SLOPES HAVE AT LEAST 85%-90% VIGOROUS PERENNIAL VEGETATIVE COVER TO PREVENT EROSION.

SILT FENCE: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THE EFFECTIVE HEIGHT OF THE FENCE SHALL NOT EXCEED 36 INCHES. IT IS RECOMMENDED THAT SILT FENCE BE REMOVED BY CUTTING THE FENCE MATERIALS AT GROUND LEVEL SO AS TO AVOID ADDITIONAL SOIL DISTURBANCE.

HAY BALES: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. BALES SHALL BE WIRE-BOUND OR STRING-TIED AND THESE BINDINGS MUST REMAIN PARALLEL WITH THE GROUND SURFACE DURING INSTALLATION TO PREVENT DETERIORATION OF THE BINDINGS. BALES SHALL BE INSTALLED WITHIN A MINIMUM 4 INCH DEEP TRENCH LINE WITH ENDS OF ADJACENT BALES TIGHTLY ABUTTING ONE ANOTHER.

EROSION CONTROL MIX: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THE MIX SHALL CONSIST PRIMARILY OF ORGANIC MATERIAL AND CONTAIN A WELL-GRADED MIXTURE OF PARTICLE SIZES AND MAY CONTAIN ROCKS LESS THAN 4 INCHES IN DIAMETER. THE MIX COMPOSITION SHALL MEET THE STANDARDS DESCRIBED WITHIN THE MDEP BEST MANAGEMENT PRACTICES. NO TRENCHING IS REQUIRED FOR INSTALLATION OF THIS BARRIER.

CONTINUOUS CONTAINED BERM: SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THIS SEDIMENT BARRIER IS EROSION CONTROL MIX PLACED WITHIN A SYNTHETIC TUBULAR NETTING AND PERFORMS AS A STURDY SEDIMENT BARRIER THAT WORKS WELL ON HARD GROUND SUCH AS FROZEN CONDITIONS, TRAVELED AREAS OR PAVEMENT. NO TRENCHING IS REQUIRED FOR INSTALLATION OF THIS BARRIER.

5. TEMPORARY CHECK DAMS:

SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. CHECK DAMS ARE TO BE PLACED WITHIN DITCHES/ SWALES AS SPECIFIED ON THE DESIGN PLANS IMMEDIATELY AFTER FINAL GRADING. CHECK DAMS SHALL BE 2 FEET HIGH. TEMPORARY CHECK DAMS MAY BE REMOVED ONLY AFTER THE ROADWAYS ARE PAVED AND THE VEGETATED SWALE ARE ESTABLISHED WITH AT LEAST 85%-90% OF VIGOROUS PERENNIAL GROWTH. THE AREA BENEATH THE CHECK DAM MUST BE SEEDED AND MULCHED IMMEDIATELY AFTER REMOVAL OF THE CHECK DAM.

STONE CHECK DAMS: SHOULD BE CONSTRUCTED OF 2 TO 3 INCH STONE AND PLACED SUCH THAT COMPLETE COVERAGE OF THE SWALE IS OBTAINED AND THAT THE CENTER OF THE DAM IS 6 INCHES LOWER THAT THE OUTER EDGES.

HAY BALE CHECK DAMS: WE DO NOT RECOMMEND THE USE OF HAY BALES AS CHECK DAMS.

MANUFACTURED CHECK DAMS: MANUFACTURED CHECK DAMS, AS SPECIFIED IN THE DETAIL ON THE PLANS, MAY BE USED IF AUTHORIZED BY THE PROPER LOCAL, STATE OR FEDERAL REGULATING AGENCIES. THESE UNITS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURE'S RECOMMENDATIONS.

6. STORMDRAIN INLET PROTECTION:

INLET PROTECTION SHALL BE PLACED AROUND A STORMDRAIN DROP INLETOR CURB INLET PRIOR TO PERMANENT STABILIZATION OF THE IMMEDIATE AND UPSTREAM DISTURBED AREAS. THEY SHALL BE CONSTRUCTED IN A MANNER THAT WILL FACILITATE CLEAN-OUT AND DISPOSAL OF TRAPPED SEDIMENTS AND MINIMIZE INTERFERENCE WITH CONSTRUCTION ACTIVITIES. ANY RESULTANT PONDING OF WATER FROM THE PROTECTION METHOD MUST NOT CAUSE EXCESSIVE INCONVENIENCE OR DAMAGE TO ADJACENT AREAS OR STRUCTURES.

HAY BALE DROP INLET PROTECTION: WE DO NOT RECOMMEND THE USE OF HAY BALES AS INLET PROTECTION.

CONCRETE BLOCK AND STONE INLET SEDIMENT FILTER (DROP OR CURB INLET): SHALL BE INSTALLED PER THE DETAIL ON THE PLANS. THE HEIGHT OF THE CONCRETE BLOCK BARRIER CAN VARY BUT MUST BE BETWEEN 12 AND 24 INCHES TALL. A MINIMUM OF 1 INCH CRUSHED STONE SHALL BE USED.

MANUFACTURED SEDIMENT BARRIERS AND FILTER (DROP OR CURB INLET): MANUFACTURED FILTERS, AS SPECIFIED IN THE DETAIL ON THE PLANS, MAY BE USED IF INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

7. STABILIZED CONSTRUCTION ENTRANCE/EXIT:

PRIOR TO CLEARING AND/OR GRUBBING THE SITE A STABILIZED CONSTRUCTION ENTRANCE/EXIT SHALL BE CONSTRUCTED WHEREVER TRAFFIC WILL EXIT THE CONSTRUCTION SITE ONTO A PAVED ROADWAY IN ORDER TO MINIMIZE THE TRACKING OF SEDIMENT AND DEBRIS FROM THE CONSTRUCTION SITE ONTO PUBLIC ROADWAYS. THE ENTRANCES AND ADJACENT ROADWAY AREAS SHALL BE PERIODICALLY SWEPT OR WASHED TO FURTHER MINIMIZE THE TRACKING OF MUD, DUST OR DEBRIS FROM THE CONSTRUCTION AREA. STABILIZED CONSTRUCTION EXITS SHALL BE CONSTRUCTED IN AREAS SPECIFIED ON THE PLANS AND AS DETAILED ON THE PLANS.

8. DUST CONTROL:

DUST CONTROL DURING CONSTRUCTION SHALL BE ACHIEVED BY THE USE OF A WATERING TRUCK TO PERIODICALLY SPRINKLE THE EXPOSED ROADWAY AREAS AS NECESSARY TO REDUCE DUST DURING THE DRY MONTHS. APPLYING OTHER DUST CONTROL PRODUCTS SUCH AS CALCIUM CHLORIDE OR OTHER MANUFACTURED PRODUCTS ARE ALLOWED IF AUTHORIZED BY THE PROPER LOCAL, STATE AND/OR FEDERAL REGULATING AGENCIES. HOWEVER, IT IS THE CONTRACTOR'S ULTIMATE RESPONSIBILITY TO MITIGATE DUST AND SOIL LOSS FROM THE SITE.

9. TEMPORARY VEGETATION:

TEMPORARY VEGETATION SHALL BE APPLIED TO DISTURBED AREAS THAT WILL NOT RECEIVE FINAL GRADING FOR PERIODS UP TO 12 MONTHS. THIS PROCEDURE SHOULD BE USED EXTENSIVELY IN AREAS ADJACENT TO NATURAL RESOURCES. SEEDBED PREPARATION AND APPLICATION OF SEED SHALL BE CONDUCTED AS INDICATED IN THE PERMANENT VEGETATION SECTION OF THIS NARRATIVE. SPECIFIC SEEDS (FAST GROWING AND SHORT LIVING) SHALL BE SELECTED FROM THE MAINE EROSION AND SEDIMENT CONTROL BMP MANUAL DATED 3/2003 OR LATER. ALTERNATIVE EROSION CONTROL MEASURES SHOULD BE USED IF SEEDING CAN NOT BE DONE BEFORE SEPTEMBER 15TH OF THE CONSTRUCTION YEAR.

10. PERMANENT VEGETATION:

REVEGETATION MEASURES SHALL COMMENCE IMMEDIATELY UPON COMPLETION OF FINAL GRADING OF AREAS TO BE LOAMED AND SEEDED. THE APPLICATION OF SEED SHALL BE CONDUCTED BETWEEN APRIL 1ST AND OCTOBER 1ST OF THE CONSTRUCTION YEAR, PLEASE REFER TO THE WINTER EROSION CONTROL NOTES FOR MORE DETAIL. REVEGETATION MEASURES SHALL CONSIST OF THE FOLLOWING:

SEEDBED PREPARATION:

A. FOUR (4) INCHES OF LOAM SHALL BE SPREAD OVER DISTURBED AREAS AND SMOOTHED TO A UNIFORM SURFACE. LOAM SHALL BE FREE OF SUBSOIL, CLAY LUMPS, STONES AND OTHER OBJECTS OVER 2 INCHES OR LARGER IN ANY DIMENSION, AND WITHOUT WEEDS, ROOTS OR OTHER OBJECTIONABLE MATERIAL.

B. SOILS TESTS SHALL BE TAKEN AT THE TIME OF SOIL STRIPPING TO DETERMINE FERTILIZATION REQUIREMENTS. SOILS TESTS SHALL BE TAKEN PROMPTLY AS TO NOT INTERFERE WITH THE 14-DAY LIMIT ON SOIL EXPOSURE. BASED UPON TEST RESULTS, SOIL AMENDMENTS SHALL BE INCORPORATED INTO THE SOIL PRIOR TO FINAL SEEDING. IN LIEU OF SOIL TESTS, SOIL AMENDMENTS MAY BE APPLIED AS FOLLOWS:

ITEM	APPLICATION RATE
10-20-20 FERTILIZER (N-P205-K20 OR EQUAL)	18.4 LBS./1,000 S.F.
GROUND LIMESTONE (50% CALCIUM & MAGNESIUM OXIDE)	138 LBS./1,000 S.F.

C. WORK LIME AND FERTILIZER INTO THE SOIL AS NEARLY AS PRACTICAL TO A DEPTH OF 4 INCHES WITH PROPER EQUIPMENT. ROLL THE AREA TO FIRM THE SEEDBED EXCEPT ON CLAY OR SILTY SOILS OR COARSE SAND.

APPLICATION OF SEED:

A. SEEDING: SHALL BE CONDUCTED BETWEEN APRIL 1ST AND OCTOBER 1ST OF THE CONSTRUCTION YEAR. GENERALLY A SEED MIXTURE MAY BE APPLIED AS FOLLOWS: (MDEP SEED MIX 2 IS DISPLAYED)

SEED TYPE	APPLICATION RATE
CREEPING RED FESCUE	0.46 LBS/1,000 S.F. (20 LBS/ACRE)
REDTOP	0.05 LBS/1,000 S.F. (2 LBS/ACRE)
TALL FESCUE	0.46 LBS/1,000 S.F. (20 LBS/ACRE)
TOTAL:	0.97 LBS/1,000 S.F. (42 LBS/ACRE)

NOTE: A SPECIFIC SEED MIXTURE SHOULD BE CHOSEN TO MATCH THE SOILS CONDITION OF THE SITE. VARIOUS AGENCIES CAN RECOMMEND SEED MIXTURES. MDEP RECOMMENDED SEED MIXTURES ARE IN THE EROSION AND SEDIMENT CONTROL BMP MANUAL DATED 3/2003 OR LATER.

B. HYDROSEEDING: SHALL BE CONDUCTED ON PREPARED AREAS WITH SLOPES LESS THAN 2:1. LIME AND FERTILIZER MAY BE APPLIED SIMULTANEOUSLY WITH THE SEED. RECOMMENDED SEEDING RATES MUST BE INCREASED BY 10% WHEN HYDROSEEDING.

C. MULCHING: SHALL COMMENCE IMMEDIATELY AFTER SEED IS APPLIED. REFER TO THE TEMPORARY MULCHING SECTION OF THIS NARRATIVE FOR DETAILS.

SODDING:

FOLLOWING SEEDBED PREPARATION, SOD CAN BE APPLIED IN LIEU OF SEEDING IN AREAS WHERE IMMEDIATE VEGETATION IS MOST BENEFICIAL SUCH AS DITCHES, AROUND STORMWATER DROP INLETS AND AREAS OF AESTHETIC VALUE. SOD SHOULD BE LAID AT RIGHT ANGLES TO THE DIRECTION OF FLOW, STARTING AT THE LOWEST ELEVATION. SOD SHOULD BE ROLLED OR TAMPED DOWN TO EVEN OUT THE JOINTS ONCE LAID DOWN. WHERE FLOW IS PREVALENT THE SOD MUST BE PROPERLY ANCHORED DOWN. IRRIGATE THE SOD IMMEDIATELY AFTER INSTALLATION. IN MOST CASES, SOD CAN BE ESTABLISHED BETWEEN APRIL 1ST AND NOVEMBER 15TH OF THE CONSTRUCTION YEAR, HOWEVER, REFER TO THE WINTER EROSION CONTROL NOTES FOR ANY ACTIVITIES AFTER OCTOBER 1ST.

TRENCH DEWATERING AND TEMPORARY STREAM DIVERSION:

WATER FROM CONSTRUCTION TRENCH DEWATERING OR TEMPORARY STREAM DIVERSION WILL PASS FIRST THROUGH A FILTER BAG OR SECONDARY CONTAINMENT STRUCTURE (E.G. HAY BALE LINED POOL) PRIOR TO DISCHARGE. THE DISCHARGE SITE SHALL BE SELECTED TO AVOID FLOODING AND SEDIMENT DISCHARGES TO A PROTECTED RESOURCE. IN NO CASE SHALL THE FILTER BAG OR CONTAINMENT STRUCTURE BE LOCATED WITHIN 100 FEET OF A PROTECTED NATURAL RESOURCE.

STANDARDS FOR TIMELY STABILIZATION:

STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SLOPES -- THE CONTRACTOR WILL CONSTRUCT AND STABILIZE STONE-COVERED SLOPES BY NOVEMBER 15. THE CONTRACTOR WILL SEED AND MULCH ALL SLOPES TO BE VEGETATED BY SEPTEMBER 15. THE MDEP WILL CONSIDER ANY AREA HAVING A GRADE GREATER THAN 15% (6.67H:1V) TO BE A SLOPE. IF THE CONTRACTOR FAILS TO STABILIZE ANY SLOPE TO BE VEGETATED BY SEPTEMBER 15, THEN THE CONTRACTOR WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SLOPE FOR LATE FALL AND WINTER.

A. STABILIZE THE SOIL WITH TEMPORARY VEGETATION AND EROSION CONTROL MATS -- BY OCTOBER 1 THE CONTRACTOR WILL 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 WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR COVER AT LEAST 75% OF THE DISTURBED SLOPE BY NOVEMBER 1, THEN THE APPLICANT WILL COVER THE SLOPE WITH A LAYER OF WOOD WASTE COMPOST AS DESCRIBED IN ITEM 2(C.) OF THIS STANDARD OR WITH STONE RIPRAP AS DESCRIBED IN ITEM 2(D.) OF THIS STANDARD.
B. STABILIZE THE SLOPE WITH SOD -- THE CONTRACTOR WILL STABILIZE THE DISTURBED SLOPE WITH PROPERLY INSTALLED SOD BY NOVEMBER 15. PROPER INSTALLATION INCLUDES THE APPLICANT 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 APPLICANT WILL NOT USE LATE-SEASON SOD INSTALLATION TO STABILIZE SLOPES HAVING A GRADE GREATER THAN 33% (3H:1V).
C. STABILIZE THE SLOPE WITH WOOD WASTE COMPOST -- THE CONTRACTOR WILL PLACE A SIX-INCH LAYER OF WOOD WASTE COMPOST ON THE SLOPE BY NOVEMBER 15. PRIOR TO PLACING THE WOOD WASTE COMPOST, THE APPLICANT WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED SLOPE. THE APPLICANT WILL NOT USE WOOD WASTE COMPOST TO STABILIZE SLOPES HAVING GRADES GREATER THAN 50% (2H:1V) OR HAVING GROUNDWATER SEEPS ON THE SLOPE FACE.
D. STABILIZE THE SLOPE WITH STONE RIPRAP -- THE CONTRACTOR WILL PLACE A LAYER OF STONE RIPRAP ON THE SLOPE BY NOVEMBER 15. THE APPLICANT WILL HIRE A REGISTERED PROFESSIONAL ENGINEER TO DETERMINE THE STONE SIZE NEEDED FOR STABILITY AND TO DESIGN A FILTER LAYER FOR UNDERNEATH THE RIPRAP.

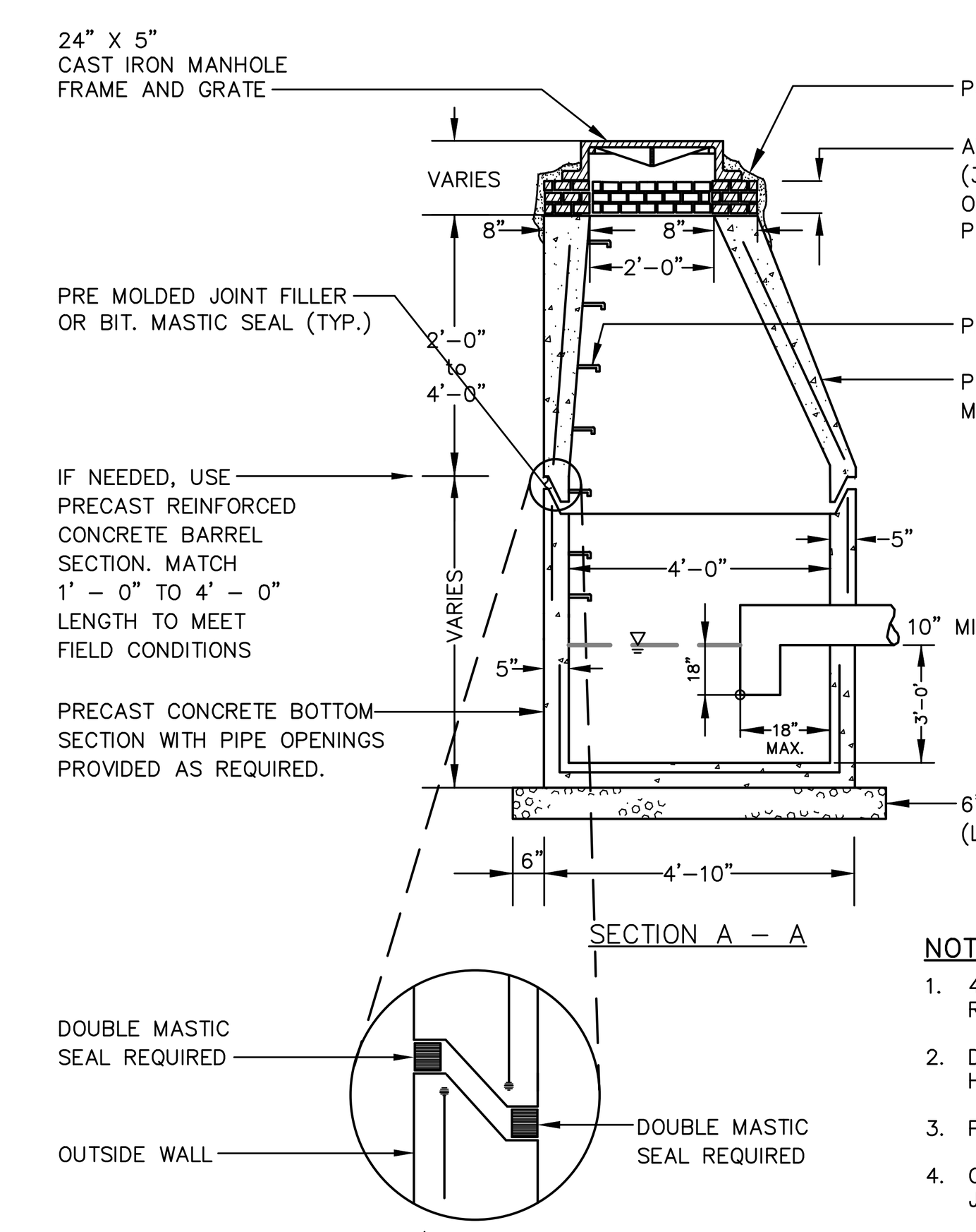
STANDARD FOR THE TIMELY STABILIZATION OF DISTURBED SOILS -- BY SEPTEMBER 15 THE CONTRACTOR WILL SEED AND MULCH ALL DISTURBED SOILS ON AREAS HAVING A SLOPE LESS THAN 15%. IF THE CONTRACTOR FAILS TO STABILIZE THESE SOILS BY THIS DATE, THEN THE CONTRACTOR WILL TAKE ONE OF THE FOLLOWING ACTIONS TO STABILIZE THE SOIL FOR LATE FALL AND WINTER.

A. STABILIZE THE SOIL WITH TEMPORARY VEGETATION -- BY OCTOBER 1 THE CONTRACTOR WILL SEED THE DISTURBED SOIL WITH WINTER RYE AT A SEEDING RATE OF 3 POUNDS PER 1000 SQUARE FEET, LIGHTLY MULCH THE SEEDED SOIL WITH HAY OR STRAW AT 75 POUNDS PER 1000 SQUARE FEET, AND ANCHOR THE MULCH WITH PLASTIC NETTING. THE APPLICANT WILL MONITOR GROWTH OF THE RYE OVER THE NEXT 30 DAYS. IF THE RYE FAILS TO GROW AT LEAST THREE INCHES OR COVER AT LEAST 75% OF THE DISTURBED SOIL BEFORE NOVEMBER 15, THEN THE APPLICANT WILL MULCH THE AREA FOR OVER-WINTER PROTECTION AS DESCRIBED IN ITEM 3(C.) OF THIS STANDARD.
B. STABILIZE THE SOIL WITH SOD -- THE APPLICANT WILL STABILIZE THE DISTURBED SOIL WITH PROPERLY INSTALLED SOD BY OCTOBER 1. 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, AND WATERING THE SOD TO PROMOTE ROOT GROWTH INTO THE DISTURBED SOIL.
C. STABILIZE THE SOIL WITH MULCH -- BY NOVEMBER 15 THE APPLICANT WILL MULCH THE DISTURBED SOIL BY SPREADING HAY OR STRAW AT A RATE OF AT LEAST 150 POUNDS PER 1000 SQUARE FEET ON THE AREA SO THAT NO SOIL IS VISIBLE THROUGH THE MULCH. PRIOR TO APPLYING THE MULCH, THE APPLICANT WILL REMOVE ANY SNOW ACCUMULATION ON THE DISTURBED AREA. IMMEDIATELY AFTER APPLYING THE MULCH, THE APPLICANT WILL ANCHOR THE MULCH WITH PLASTIC NETTING TO PREVENT WIND FROM MOVING THE MULCH OFF THE DISTURBED SOIL.

INSPECTIONS/MONITORING:

1. MAINTENANCE MEASURES SHALL BE APPLIED AS NEEDED DURING THE ENTIRE CONSTRUCTION CYCLE. AFTER EACH RAINFALL, SNOW STORM OR PERIOD OF THAWING AND RUNOFF, OR AT LEAST EVERY SEVEN (7) DAYS, THE CONTRACTOR SHALL PERFORM A VISUAL INSPECTION OF ALL INSTALLED EROSION CONTROL MEASURES. THE CONTRACTOR SHALL PERFORM REPAIRS AS NEEDED TO ALLOW CONTINUED PROPER FUNCTIONING OF THE EROSION CONTROL MEASURE. THE CONTRACTOR SHALL PROVIDE THE NECESSARY REGULATING AGENCIES WITH WRITTEN DOCUMENTATION DESCRIBING DATES OF INSPECTIONS AND NECESSARY FOLLOW-UP WORK TO MAINTAIN EROSION CONTROL MEASURES MEETING THE REQUIREMENTS OF THIS PLAN.

2. FOLLOWING THE TEMPORARY AND/OR FINAL SEEDINGS, THE CONTRACTOR SHALL INSPECT THE WORK AREA SEMIMONTHLY UNTIL THE SEEDINGS HAVE BEEN ESTABLISHED. ESTABLISHED MEANS A MINIMUM OF 85%-90% OF AREAS VEGETATED WITH VIGOROUS GROWTH. RESEEDING SHALL BE CARRIED OUT BY THE CONTRACTOR WITH FOLLOW-UP INSPECTIONS IN THE EVENT OF ANY FAILURES UNTIL VEGETATION IS ADEQUATELY ESTABLISHED.



NOTES:
1. 4'-0" I.D. TYPICAL. SOME STRUCTURES MAY REQUIRE LARGER I.D. PROVIDE SHOP DRAWINGS.
2. DRAINAGE STRUCTURES TO BE DESIGNED FOR H-20 LOADING.
3. PIPE SIZES AND INVERTS AS NOTED ON PLANS.
4. CATCH BASIN FRAME AND GRATE TO BE EAST JORDAN FOUNDRY 5250, OR APPROVED EQUAL.

CATCH BASIN/ OIL GRIT SEPARATOR

NOT TO SCALE

CONSTRUCTION NOTES

1. ALL WORK SHALL CONFORM TO THE APPLICABLE CODES AND ORDINANCES.

2. CONTRACTOR SHALL VISIT THE SITE AND FAMILIARIZE THEMSELVES WITH ALL CONDITIONS AFFECTING THE PROPOSED WORK AND SHALL MAKE PROVISIONS AS TO THE COST THEREOF. CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING THEMSELVES WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS AND CONFIRMING THAT THE WORK MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.

3. CONTRACTOR SHALL NOTIFY ENGINEER OF ALL PRODUCTS OR ITEMS NOTED AS "EXISTING" WHICH ARE NOT FOUND IN THE FIELD.

4. INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND OWNER'S REQUIREMENTS UNLESS SPECIFICALLY OTHERWISE INDICATED OR WHERE LOCAL CODES OR REGULATIONS TAKE PRECEDENCE.

5. 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.

6. CONTRACTOR SHALL CLEAN AND REMOVE DEBRIS AND SEDIMENT DEPOSITED ON PUBLIC STREETS, SIDEWALKS, ADJACENT AREAS, OR OTHER PUBLIC WAYS DUE TO CONSTRUCTION.

7. CONTRACTOR SHALL INCORPORATE PROVISIONS AS NECESSARY IN CONSTRUCTION TO PROTECT EXISTING STRUCTURES, PHYSICAL FEATURES, AND MAINTAIN SITE STABILITY DURING CONSTRUCTION. CONTRACTOR SHALL RESTORE ALL AREAS TO ORIGINAL CONDITION AND AS DIRECTED BY DESIGN DRAWINGS.

8. SITE CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS PRIOR TO CONSTRUCTION.

9. 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 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.

10. THE CONTRACTOR IS HEREBY CAUTIONED THAT ALL SITE FEATURES SHOWN HEREON ARE BASED ON FIELD OBSERVATIONS BY THE SURVEYOR AND BY INFORMATION PROVIDED BY UTILITY COMPANIES. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR SHALL CONTACT DIG SAFE (811) 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. CONTRACTORS SHALL BE RESPONSIBLE FOR COMPLIANCE WITH THE REQUIREMENTS OF 23 MRSA 3360-A. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE APPROPRIATE UTILITIES TO OBTAIN AUTHORIZATION PRIOR TO RELOCATION OF ANY EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THESE PLANS. IF A UTILITY CONFLICT ARISES, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE OWNER, THE MUNICIPALITY AND APPROPRIATE UTILITY COMPANY PRIOR TO PROCEEDING WITH ANY RELOCATION.

11. IMMEDIATELY UPON COMPLETION OF CUTS/FILLS, THE CONTRACTOR SHALL STABILIZE DISTURBED AREAS IN ACCORDANCE WITH EROSION CONTROL NOTES AND AS SPECIFIED ON PLANS.

12. INSTALL UNDERGROUND UTILITY SERVICES IN SCHEDULE 40 PVC CONDUIT AT LOCATIONS WITHIN PAVED, GRAVEL, OR TRAFFIC AREAS.

13. ALL SEWER PIPE TO BE PVC SDR 35. ALL OTHER REQUIRED DRAINAGE PIPE SHALL BE CORRUGATED METAL PIPE OR REINFORCED CONCRETE PIPE.

14. PRIOR TO ANY CONSTRUCTION AT THE SITE, REPRESENTATIVES OF THE OWNER, SITE CONTRACTOR AND THE SITE DESIGN ENGINEER SHALL ARRANGE FOR AND MEET WITH THE DIRECTOR OF PUBLIC WORKS AND CITY ENGINEER TO DISCUSS THE SCHEDULING OF THE SITE CONSTRUCTION. ON OR BEFORE THAT MEETING, THE CONTRACTOR WILL PREPARE A DETAILED SCHEDULE AND MARKED-UP SITE PLAN INDICATING AREAS AND COMPONENTS OF THE WORK AND KEY DATES SHOWING DATE OF DISTURBANCE AND COMPLETION OF THE WORK IS DISTURBED AREAS ARE NOT TO BE FINISHED (LOAMED, SEEDED AND MULCHED) WITHIN FOURTEEN (14) DAYS, THE SCHEDULE SHALL INDICATE THOSE AREAS TO BE PROTECTED WITH TEMPORARY SEEDING/MULCH.

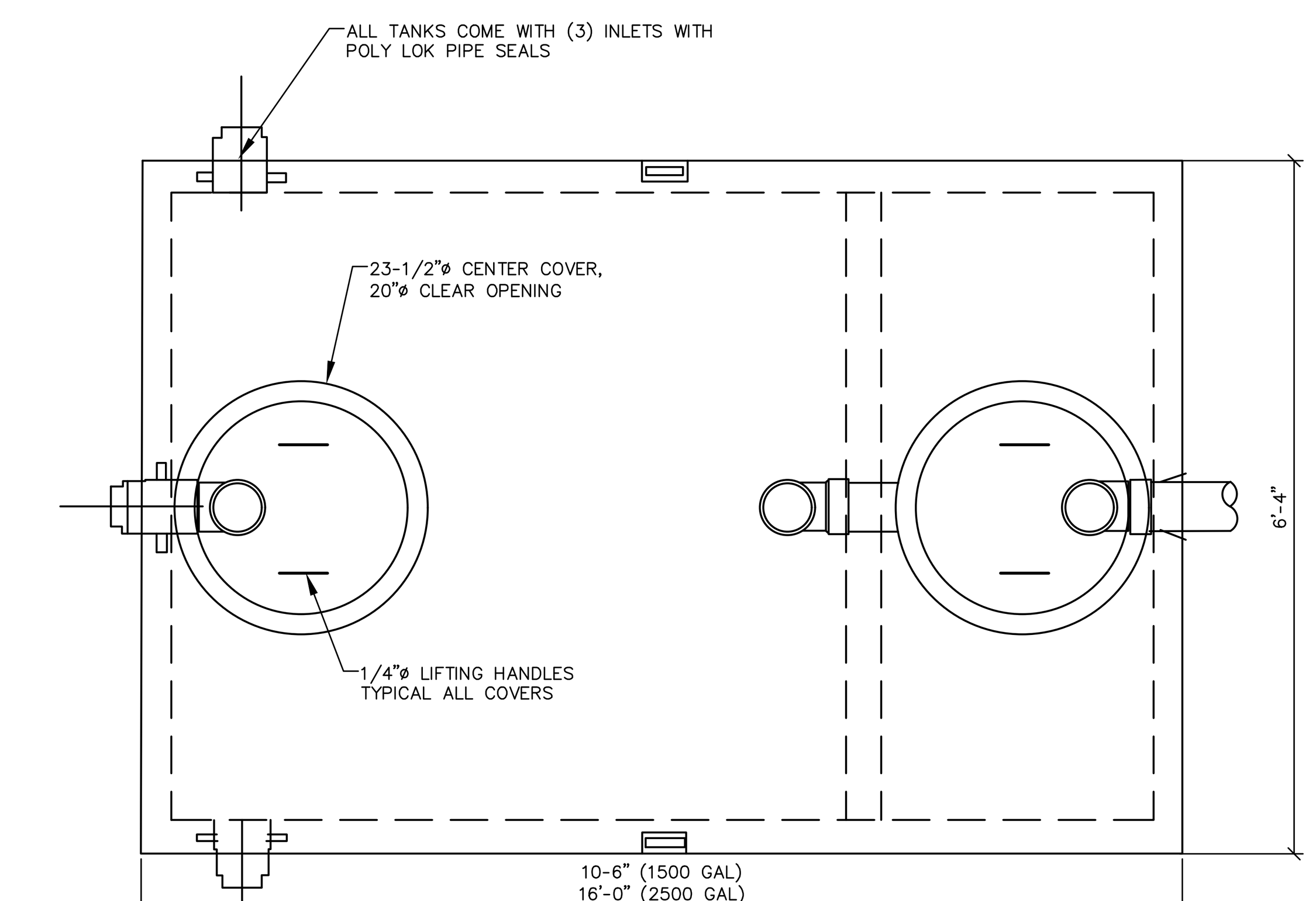
15. PRIOR TO CONSTRUCTION, THE SITE CONTRACTOR SHALL CONFIRM SETBACKS AND BUILDING DIMENSIONS WITH ARCHITECTURAL DRAWINGS. CONTRACTOR SHALL NOTIFY ENGINEER AND OWNER OF ANY DIFFERENCES AFFECTING BUILDING OR SITE CONSTRUCTION.

16. 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).

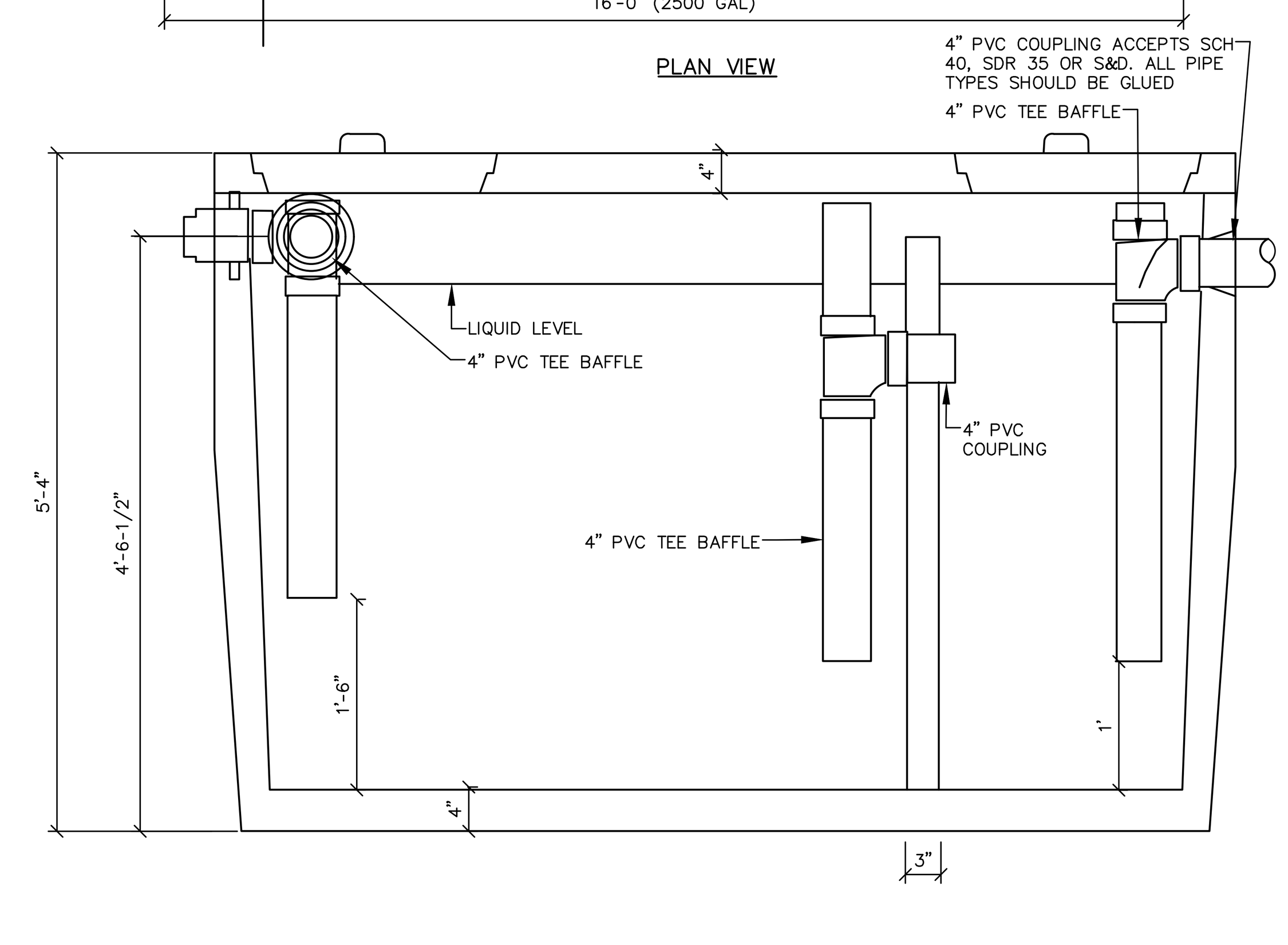
17. REMOVE TOPSOIL AND ROUGHEN SUBGRADE TO ESTABLISH SUITABLE INTERFACE FOR ALL FILLS.

18. FILL AREAS UNDER PAVEMENT SHALL BE GRANULAR BORROW. ALL OTHER FILL AREAS SHALL BE A COMMON BORROW MATERIAL SUITABLE FOR EMBANKMENT CONSTRUCTION, FREE FROM FROZEN MATERIAL PERISHABLE RUBBLE, PEAT, ORGANIC, 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 IF THE ENGINEER GRANULAR BORROW AND COMMON BORROW SHALL COMPLY WITH M.D.O.T. SPECIFICATIONS.

19. ALL SUBSURFACE UTILITY LINES SHOWN HEREON ARE BASED SOLELY ON THE FIELD LOCATION OF VISIBLE STRUCTURES, SMH'S, CB'S, HYDRANTS, ETC.. IN CONJUNCTION WITH DESIGN AND OR AS-BUILT PLANS SUPPLIED TO SEBAGO TECHNICS INC. BY OTHERS. PRIOR TO ANY CONSTRUCTION, EXCAVATION, TEST BORINGS, DRILLING, ETC.. DIG SAFE MUST BE NOTIFIED AND A SITE IDENTIFICATION NUMBER ALONG WITH A SAFE TO DIG DATE OBTAINED. THE SITE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING THE LOCATION, DEPTH AND MATERIAL OF ALL SUBSURFACE UTILITY LINES SHOWN HEREON AND ANY AND ALL OTHERS LOCATED ON SITE WITHIN THE CONSTRUCTION AREA.



PLAN VIEW



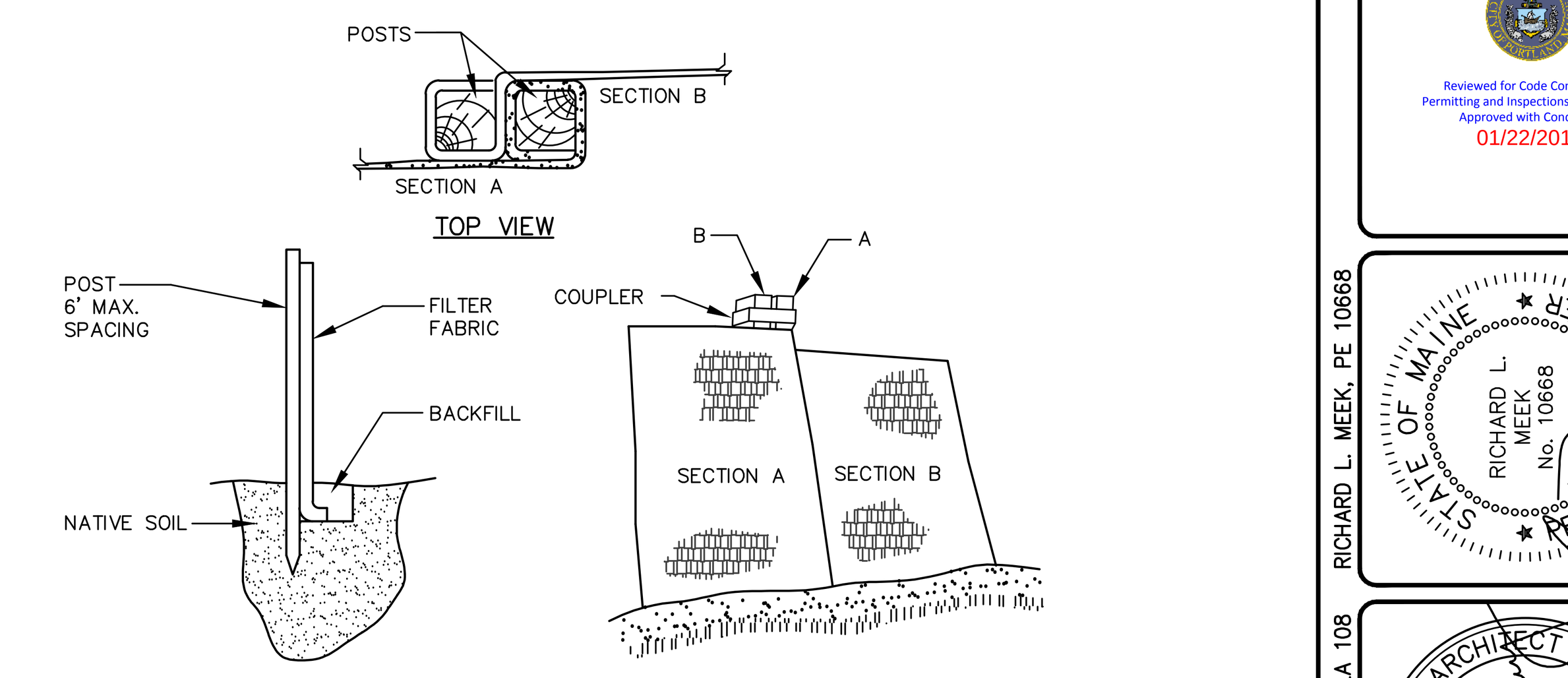
SECTION VIEW

1500 AND 2500 GALLON GREASE TRAP

NOT TO SCALE

CONCRETE SPECIFICATIONS:
1. 4000 PSI @ 28 DAYS
2. 4%-6% ENTRAINED AIR
3. TANK PENETRATIONS ARE INTEGRALLY COST
4. ALL JOINTS SEALED WITH BUTYL RUBBER JOINT SEALANT

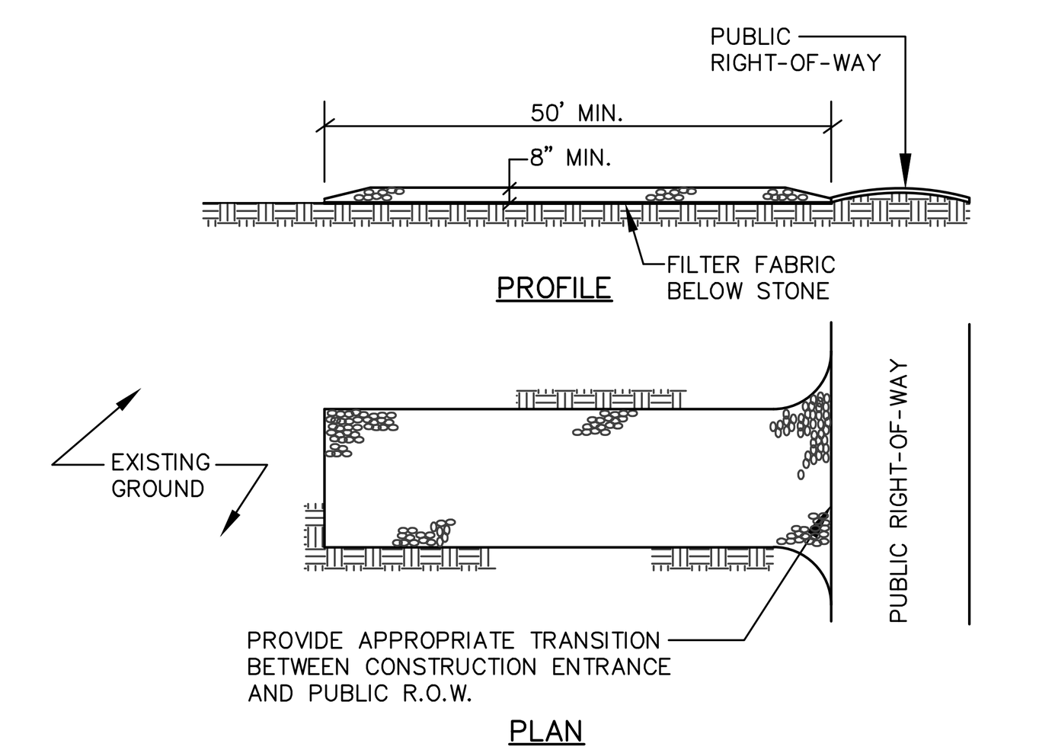
GREASE TRAP INFORMATION:
1. TANKS SHOULD BE PUMPED AS NEEDED
2. ACCESS COVERS SHOULD HAVE RISERS TO BEING COVER ACCESS TO GRADE.
3. TANKS CAN BE VACUUM TESTED AT AN ADDITIONAL COST.



INSTALLATION:
1. EXCAVATE A 6"x 6" TRENCH ALONG THE LINE OF PLACEMENT FOR THE FILTER BARRIER.
2. UNROLL A SECTION AT A TIME AND POSITION THE POSTS AGAINST THE BACK (DOWNSTREAM) WALL OF THE TRENCH.
3. DRIVE POSTS INTO THE GROUND UNTIL APPROXIMATELY 2" OF FABRIC IS LYING ON THE TRENCH BOTTOM.
4. LAY THE TOE-IN FLAP OF FABRIC ONTO THE UNDISTURBED BOTTOM OF THE TRENCH, BACKFILL THE TRENCH AND TAMP THE SOIL. TOE-IN CAN ALSO BE ACCOMPLISHED BY LAYING THE FABRIC FLAP ON UNDISTURBED GROUND AND PILING AND TAMPING FILL AT THE BASE, BUT MUST BE ACCOMPANIED BY AN INTERCEPTION DITCH.
5. JOIN SECTION AS SHOWN ABOVE.
6. BARRIER SHALL BE MIRAFI SILT FENCE OR EQUAL.

FILTER BARRIER

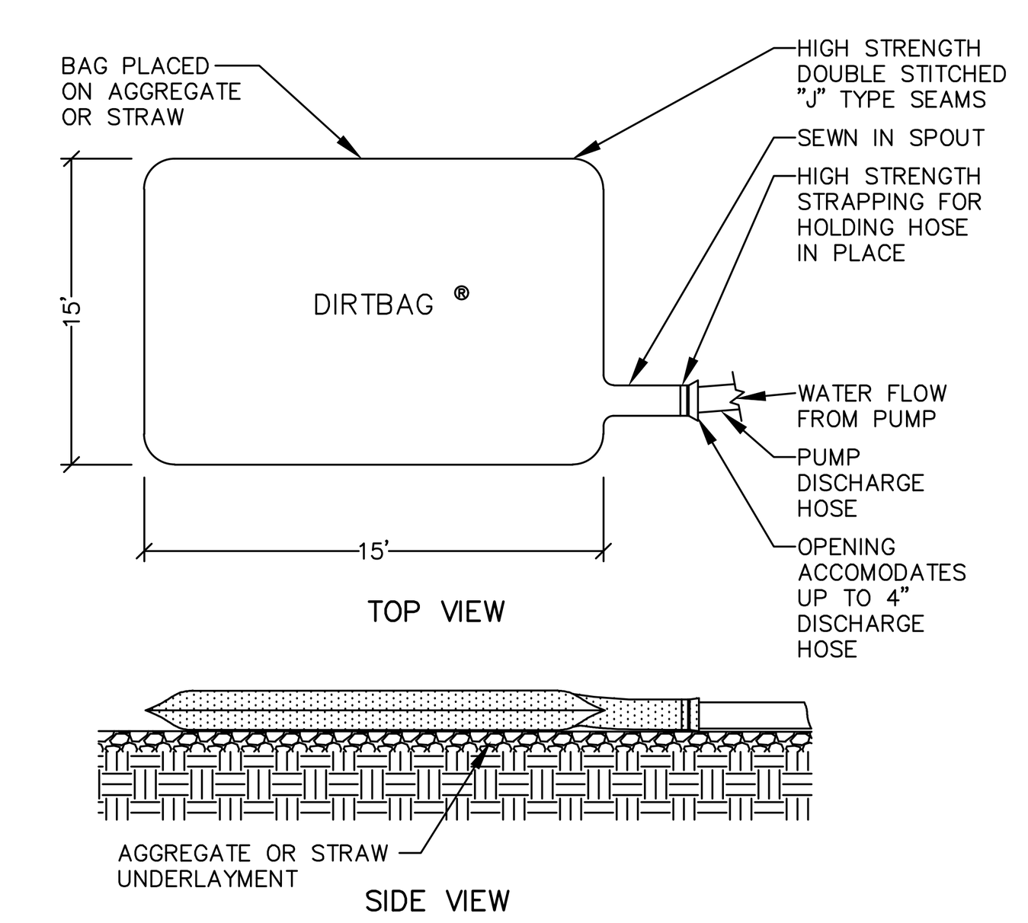
NOT TO SCALE



NOTES:
1. STONE SIZE- AASHTO DESIGNATION M43, SIZE NO. 2 (2 1/2" TO 1 1/2"). USE CRUSHED STONE.
2. LENGTH- AS SHOWN ON PLANS, MIN. 50 FEET.
3. THICKNESS- NOT LESS THAN EIGHT (8) INCHES.
4. WIDTH- NOT LESS THAN FULL WIDTH OF ALL POINT OF INGRESS OR EGRESS.
5. MAINTENANCE- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED IMMEDIATELY.

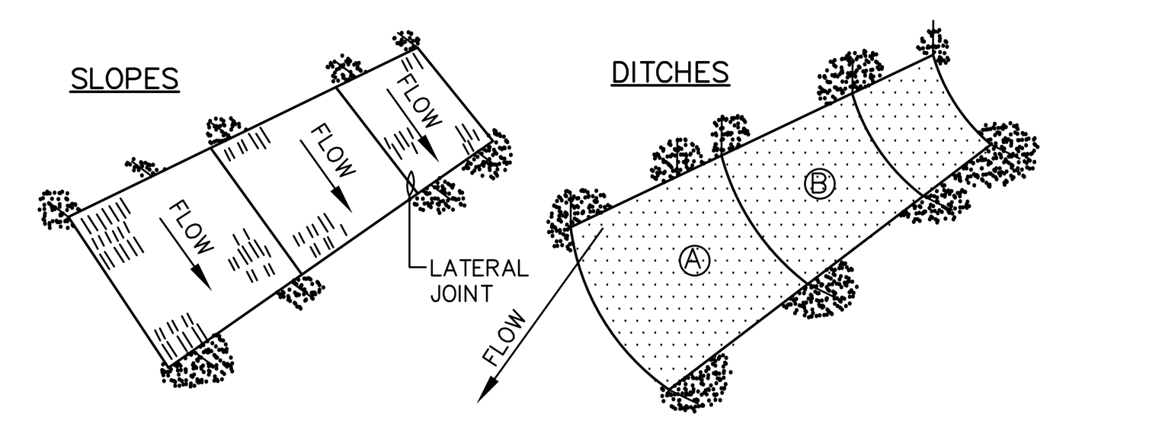
STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE



DIRTBAG PUMPED SILT CONTROL SYSTEM

NOT TO SCALE



NOTES:
1. BURY THE TOP END OF THE MESH MATERIAL IN A 6" TRENCH AND BACKFILL AND TAMP TRENCHING SECURE END WITH STAPLES AT 6" SPACING, 4" DOWN FROM EXPOSED END.
2. FLOW DIRECTION JOINTS TO HAVE UPPER END OF LOWER STRIP BURIED WITH UPPER LAYERS OVERLAPPED 4" AND STAPLED. OVERLAP B OVER A.
3. LATERAL JOINTS TO HAVE 4" OVERLAP OF STRIPS. STAPLE 18" ON CENTER.
4. STAPLE OUTSIDE LATERAL EDGE 2" ON CENTER.
5. WIRE STAPLES TO BE MIN OF #11 WIRE 6" LONG AND 1-1/2" WIDE.
6. USE NORTH AMERICAN GREEN DS 150 OR APPROVED EQUAL.

EROSION CONTROL BLANKET

NOT TO SCALE

CITY OF PORTLAND
APPROVED SITE PLAN
Subject to Conditions of Approval and Standard Conditions
DATE of APPROVAL 6-26-2018
PLANNER Jean Fraser
PROJECT NO. #2017-053

Reviewed for Code Compliance
Permitting and Inspections Department
Approved with Conditions
01/22/2019

RICHARD L. MEEK, PE 10668
STATE OF MAINE — RICHARD L. MEEK No. 10668 — LICENSED PROFESSIONAL ENGINEER
9-28-18

WILLIAM T. CONWAY, RLA 108
STATE OF MAINE — WILLIAM T. CONWAY No. 108 — REGISTERED LANDSCAPE ARCHITECT
9-28-18

DESIGNED	CHECKED
WTC	RLM

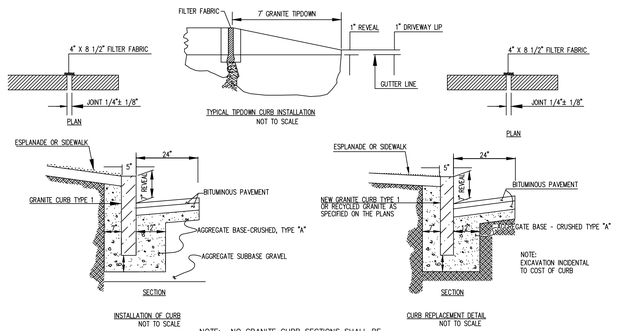
REV:	BY:	DATE:	STATUS:
F	WTC	09-28-18	FINAL PLAN SET FOR BUILDING PERMIT
E	WTC	09-04-18	ISSUED FOR BUILDING PERMIT
D	WTC	08-29-18	BUILDING PERMIT SET
C	WTC	07-20-18	RESUBMIT FOR CITY REVIEW

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

DETAILS
OF:
383 COMMERCIAL STREET
383 COMMERCIAL STREET
PORTLAND, MAINE
FOR:
DEERING PROPERTY DEVELOPMENT, LLC
2730 TRANSIT ROAD
WEST SENECA, NEW YORK 14224

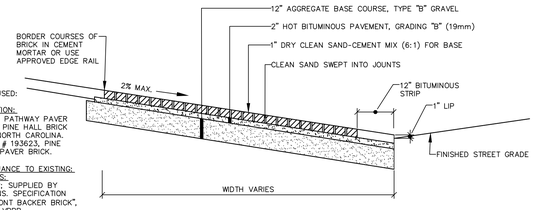
PROJECT NO.	SCALE
16324	N.T.S.

16324D.dwg, TAB:D-1

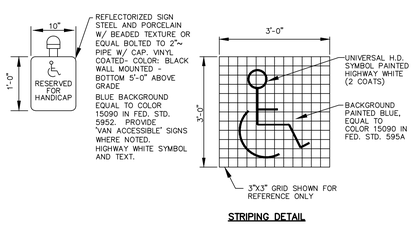


NOTE: NO GRANITE CURB SECTIONS SHALL BE INSTALLED LESS THAN 4 FT. IN LENGTH.

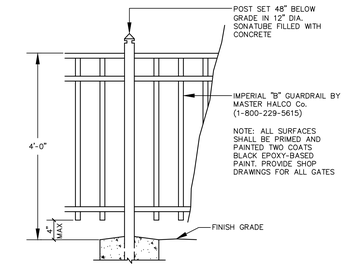
INSTALLATION OF CURB, TYPE 1
NOT TO SCALE



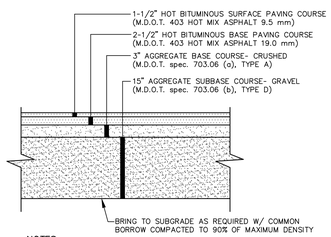
BRICK DRIVEWAY APRON WITH BITUMINOUS BASE
NOT TO SCALE



HANDICAP SIGNS AND STRIPING
NOT TO SCALE

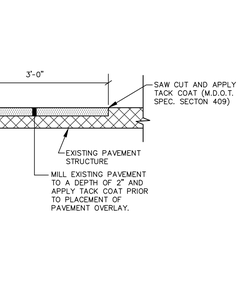


WROUGHT IRON FENCE (AT LOT 3)
NOT TO SCALE

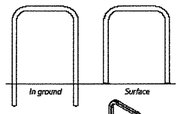


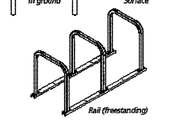
NOTES:
1. COMPACT GRAVEL SUBBASE, BASE COURSE TO 92% OF MAXIMUM DENSITY USING HEAVY ROLLER COMPACTION.
2. CONTRACTOR SHALL SET GRADE STAKES MARKING SUBBASE AND FINISH GRADE ELEVATIONS FOR CONSTRUCTION REFERENCE.
3. CONTRACTOR MAY REPLACE BITUMINOUS PAVING SECTION WITH TWO (2) 1-1/2" LIFTS OF 12.5mm SUPERPAVE MIX. SUBMIT PAVEMENT MIX DESIGN PRIOR TO CONSTRUCTION.

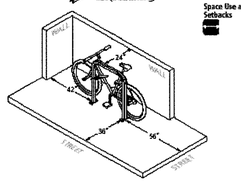
TYP. PAVED ASPHALT SECTION
NOT TO SCALE



BRICK SIDEWALK WITH BITUMINOUS BASE
NOT TO SCALE







Product Dero Downtown Rack
As manufactured by Dero Bike Racks

Capacity 2 Bikes

Materials 2" x 2" x 3/16" tube

Finishes An after fabrication hot dipped galvanized finish is standard. 250TGIC powder coat colors, a thermoplastic coating and a stainless steel option are also available.

Our powder coat finish assures a high level of adhesion and durability by following these steps:
1. Sandblast
2. Iron phosphate pretreatment
3. Epoxy primer electrostatically applied
4. Final thick TGIC polyester powder coat

Stainless Steel: 304 grade stainless steel material finished in either a high polished shine or a satin finish.

A rubbery PVC Dip is also available

Installation Methods In ground mount is embedded into concrete base. Specify in ground mount for this option.
Foot Mount has two 2.5"x6"x.25" feet with two anchors per foot. Specify foot mount for this option.
Rail Mounted Downtown Racks are bolted to two parallel rails which can be left freestanding or anchored to the ground. Rails are heavy duty 3"x1.4"x3/16" thick galvanized mounting rails. Specify rail mount for this option.

Space Use and Setbacks

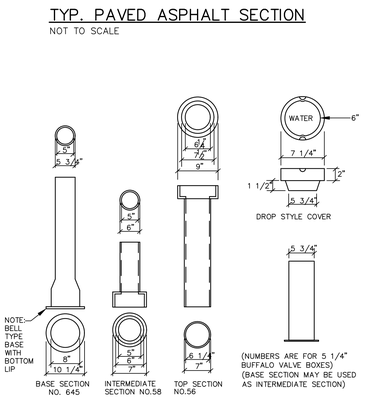
Wall Setbacks:
For racks set parallel to a wall:
Minimum: 24"
Recommended: 36"

For racks set perpendicular to a wall:
Minimum" 28"
Recommended: 42"

Distance Between Racks:
Minimum: 24"
Recommended: 36"

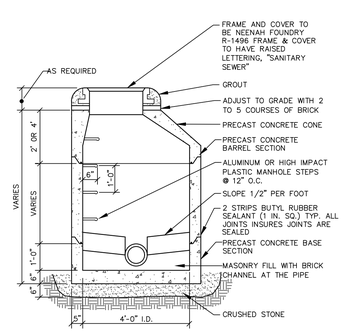
Street Setbacks:
Minimum: 24"
Recommended: 36"

BIKE RACK DETAIL
NOT TO SCALE



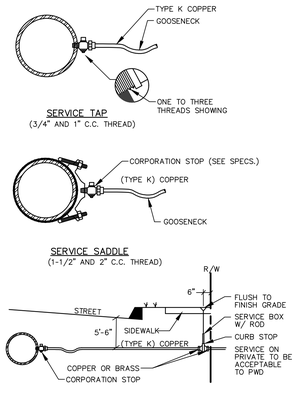
VALVE BOX & COVER
NOT TO SCALE

TYPICAL PAVEMENT JOINT
NOT TO SCALE

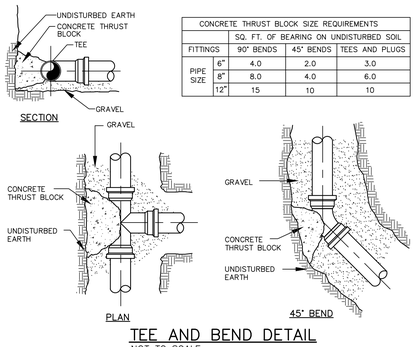


NOTE: PIPE CONNECTIONS SHALL BE WATERTIGHT FLEXIBLE BOOT CONNECTORS PROVIDES LEAKPROOF CONNECTION

PRECAST MANHOLE
NOT TO SCALE

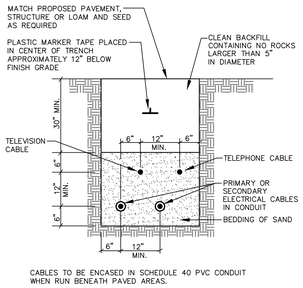


TYPICAL SERVICE CONNECTION
NOT TO SCALE



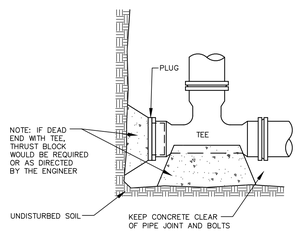
CONCRETE THRUST BLOCK SIZE REQUIREMENTS				
		SQ. FT. OF BEARING ON UNDISTURBED SOIL		
FITTINGS		90° BENDS	45° BENDS	TEES AND PLUGS
PIPE SIZE	6"	4.0	2.0	3.0
	8"	8.0	4.0	6.0
	12"	15	10	10

TEE AND BEND DETAIL
NOT TO SCALE

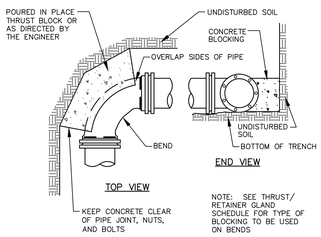


CABLES TO BE ENCASED IN SCHEDULE 40 PVC CONDUIT WHEN RUN BENEATH PAVED AREAS.

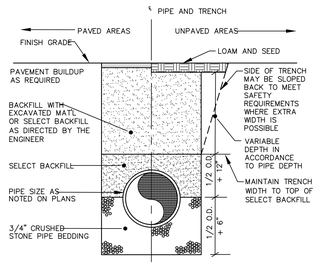
TYPICAL UNDERGROUND CABLE INSTALLATION
NOT TO SCALE



STANDARD TEE BLOCKING
NOT TO SCALE



STANDARD BEND BLOCKING
NOT TO SCALE



TYPICAL TRENCH SECTION
NOT TO SCALE

CITY OF PORTLAND
APPROVED SITE PLAN
Subject to Conditions of Approval and Standard Conditions
DATE of APPROVAL 6-26-2018
PLANNER Jean Fraser
PROJECT NO. #2017-053

Reviewed for Code Compliance
Permitting and Inspections Department
Approved with Conditions
01/22/2019

RICHARD L. MEEK, PE 10668 — STATE OF MAINE — RICHARD L. MEEK — 10668 — REGISTERED PROFESSIONAL ENGINEER — 9-28-18

WILLIAM T. CONWAY, RLA 108 — REGISTERED LANDSCAPE ARCHITECT — WILLIAM T. CONWAY — 108 — STATE OF MAINE — 9-28-18

DESIGNED	CHECKED
WTC	RLM

REV.	BY:	DATE:	STATUS:
F	WTC	09-28-18	FINAL PLAN SET FOR BUILDING PERMIT
E	WTC	09-04-18	ISSUED FOR BUILDING PERMIT
D	WTC	08-29-18	BUILDING PERMIT SET
C	WTC	07-20-18	RESUBMIT FOR CITY REVIEW

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

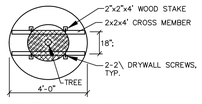
SEBAGO TECHNICS
75 John Roberts Rd. Suite 4A
South Portland, ME 04106
Tel: 207-200-2100
WWW.SEBAGOTECHNICS.COM

DETAILS
OF:
383 COMMERCIAL STREET
383 COMMERCIAL STREET
PORTLAND, MAINE
FOR:
DEERING PROPERTY DEVELOPMENT, LLC
2730 TRANSIT ROAD
WEST SENECA, NEW YORK 14224

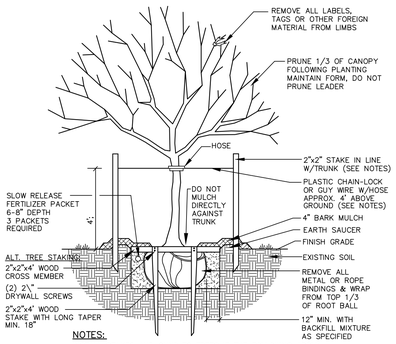
PROJECT NO.	SCALE
16324	N.T.S.

SHEET 21 OF 24

163240.dwg, TAB: D-2



ALT. TREE STAKING PLAN
NOT TO SCALE

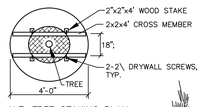


NOTES:

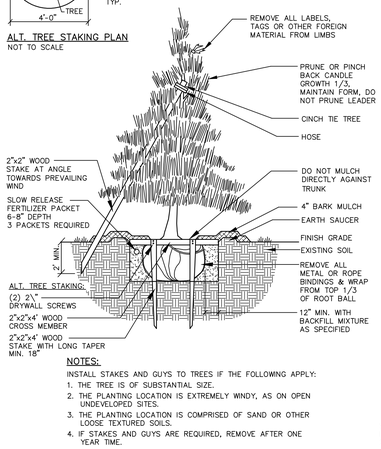
INSTALL STAKES AND GUYS TO TREES IF THE FOLLOWING APPLY:

1. THE TREE IS OF SUBSTANTIAL SIZE.
2. THE PLANTING LOCATION IS EXTREMELY WINDY, AS ON OPEN UNDEVELOPED SITES.
3. THE PLANTING LOCATION IS COMPRISED OF SAND OR OTHER LOOSE TEXTURED SOILS.
4. IF STAKES AND GUYS ARE REQUIRED, REMOVE AFTER ONE YEAR TIME.

DECIDUOUS TREES 2" TO 4" CALIPER
NOT TO SCALE



ALT. TREE STAKING PLAN
NOT TO SCALE



NOTES:

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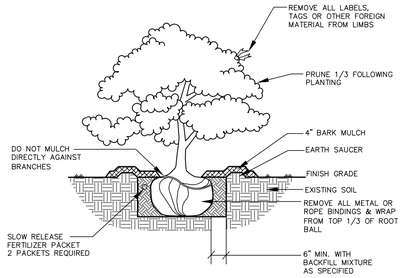
2. THE PLANTING LOCATION IS EXTREMELY WINDY, AS ON OPEN UNDEVELOPED SITES.
3. THE PLANTING LOCATION IS COMPRISED OF SAND OR OTHER LOOSE TEXTURED SOILS.
4. IF STAKES AND GUYS ARE REQUIRED, REMOVE AFTER ONE YEAR TIME.

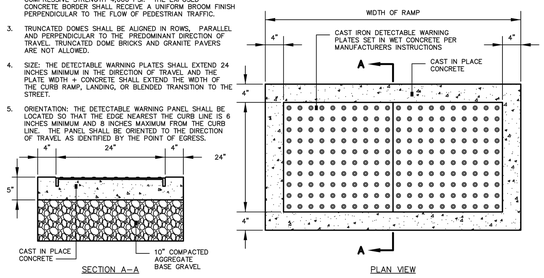
DECIDUOUS TREES UNDER 2" CALIPER OR UNDER 8' IN HEIGHT
EVERGREEN TREES 7'-0" IN HEIGHT & UNDER
NOT TO SCALE



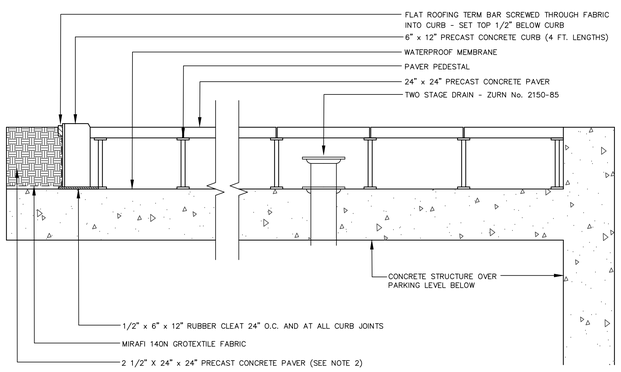
DECIDUOUS & EVERGREEN SHRUB
NOT TO SCALE

NOTES:

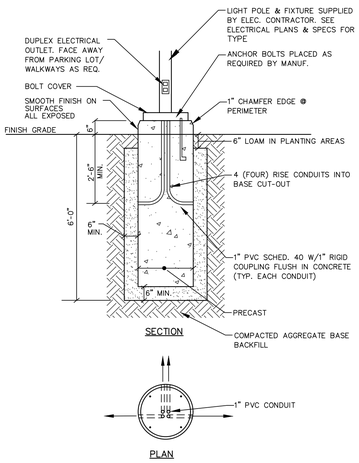
1. ALL DETECTABLE WARNING PLATES SHALL BE UNCOATED CAST IRON. FOLOW MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION.
2. CAST IN PLACE CONCRETE SHALL MEET SPECIFICATIONS FOR MDOT CLASS A STRUCTURAL CONCRETE, MINIMUM COMPRESSIVE STRENGTH 4,000 PSI. THE EXPOSED CONCRETE BORDER SHALL RECEIVE A UNIFORM BROOM FINISH PERPENDICULAR TO THE FLOW OF PEDESTRIAN TRAFFIC.
3. TRUNCATED DOMES SHALL BE ALIGNED IN ROWS, PARALLEL AND PERPENDICULAR TO THE PREDOMINANT DIRECTION OF TRAVEL. TRUNCATED DOME BRICKS AND GRANITE PAVERS ARE NOT ALLOWED.
4. SIZE: THE DETECTABLE WARNING PLATES SHALL EXTEND 24 INCHES MINIMUM IN THE DIRECTION OF TRAVEL AND THE PLATE WIDTH + CONCRETE SHALL EXTEND THE WIDTH OF THE CURB RAMP, LANDING, OR BLENDED TRANSITION TO THE STREET.
5. ORIENTATION: THE DETECTABLE WARNING PANEL SHALL BE LOCATED SO THAT THE EDGE NEAREST THE CURB LINE IS 6 INCHES MINIMUM AND 8 INCHES MAXIMUM FROM THE CURB LINE. THE PANEL SHALL BE ORIENTED TO THE DIRECTION OF TRAVEL AS IDENTIFIED BY THE POINT OF EGRESS.



SIDEWALK RAMP DETECTABLE WARNING PANEL
NOT TO SCALE



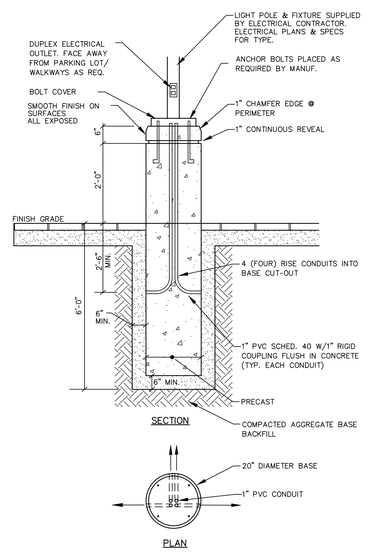
PEDESTAL PAVERS
NOT TO SCALE



NOTES:

1. CONCRETE f'c=5000 psi. @ 28 DAYS WITH STEEL REINFORCEMENT.
2. CONDUIT AND ANCHOR BOLTS PLACED AS REQUIRED PROVIDED BY ELECTRICAL CONSTRACTOR.
3. PROVIDE 2 COATS BITUMINOUS DAMPROOFING FOR ALL CONCRETE BELOW GRADE.

STANDARD LIGHT POLE BASE
NOT TO SCALE



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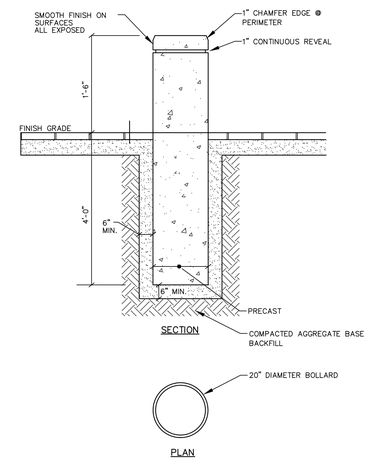
WOONERF LIGHT POLE BASE
NOT TO SCALE



NOTES:

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2. PROVIDE 2 COATS BITUMINOUS DAMPROOFING FOR ALL CONCRETE BELOW GRADE.

WOONERF BOLLARD
NOT TO SCALE

CITY OF PORTLAND
APPROVED SITE PLAN
Subject to Conditions of Approval and Standard Conditions
DATE of APPROVAL 6-26-2018
PLANNER Jean Fraser
PROJECT NO. #2017-053

Reviewed for Code Compliance
Permitting and Inspections Department
Approved with Conditions
01/22/2019

RICHARD L. MEEK, PE 10668
STATE OF MAINE
RICHARD L. MEEK
No. 10668
REGISTERED PROFESSIONAL ENGINEER
9-28-18

WILLIAM T. CONWAY, RLA 108
REGISTERED LANDSCAPE ARCHITECT
WILLIAM T. CONWAY
No. 108
STATE OF MAINE
9-28-18

DESIGNED	CHECKED
WTC	RLM

REV.	BY:	DATE:	STATUS:
F	WTC	09-28-18	FINAL PLAN SET FOR BUILDING PERMIT
E	WTC	09-24-18	ISSUED FOR BUILDING PERMIT
D	WTC	08-29-18	BUILDING PERMIT SET
C	WTC	07-20-18	RESUBMIT FOR CITY REVIEW

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 1A
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DETAILS
OF:
383 COMMERCIAL STREET
383 COMMERCIAL STREET
PORTLAND, MAINE
FOR:
DEERING PROPERTY DEVELOPMENT, LLC
2730 TRANSIT ROAD
WEST SENECA, NEW YORK 14224

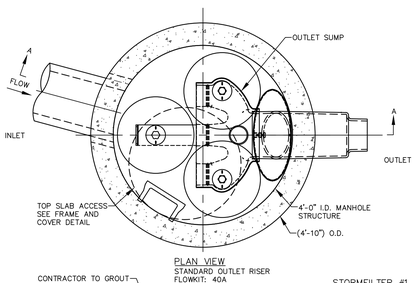
PROJECT NO.	SCALE
16324	N.T.S.

SHEET 22 OF 24

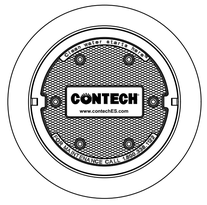
16324D.dwg, TAB:D-3

STORMFILTER DESIGN NOTES									
STORMFILTER TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE SELECTION AND THE NUMBER OF CARTRIDGES. THE STANDARD MANHOLE STYLE IS SHOWN WITH THE MAXIMUM NUMBER OF CARTRIDGES (3). VOLUME SYSTEM IS ALSO AVAILABLE WITH MAXIMUM 3 CARTRIDGES. ø48" MANHOLE STORMFILTER PEAK HYDRAULIC CAPACITY IS 1.0 CFS. IF THE SITE CONDITIONS EXCEED 1.0 CFS AN UPSTREAM BYPASS STRUCTURE IS REQUIRED. CARTRIDGE SELECTION									
CARTRIDGE HEIGHT	27"			18"			LOW DROP		
RECOMMENDED HYDRAULIC DROP (H)	3.05'			2.3'			1.8'		
SPECIFIC FLOW RATE (gpm/sf)	2	1.67•	1	2	1.67•	1	2	1.67•	1
CARTRIDGE FLOW RATE (gpm)	22.5	18.79	11.25	15	12.53	7.5	10	8.35	5

• 1.67 gpm/sf SPECIFIC FLOW RATE IS APPROVED WITH PHOSPHOSORB® (PSORB) MEDIA ONLY

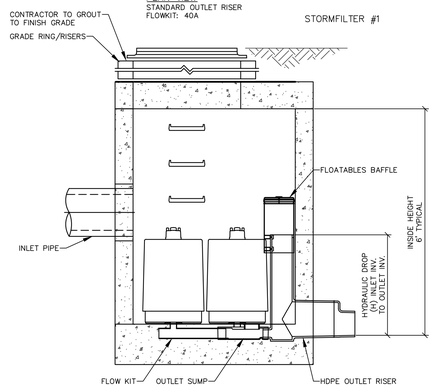


PLAN VIEW
STANDARD OUTLET RISER
FLOWKIT: 40A



FRAME AND COVER
(DIAMETER VARIES)
NOT TO SCALE

STORMFILTER #1

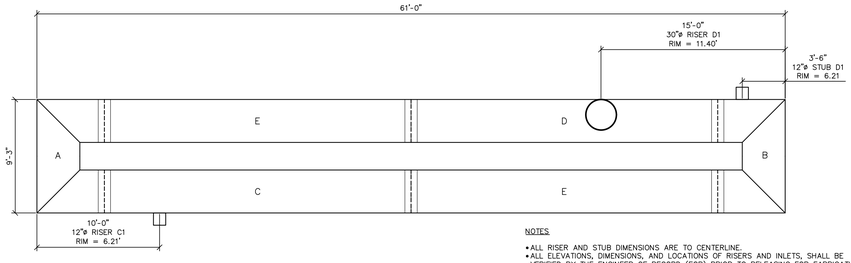


SECTION A-A

SFMH48 STORMFILTER STANDARD DETAIL
NOT TO SCALE

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR SITE SPECIFIC DRAWINGS WITH DETAILED VAULT DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE, www.ContechES.com
4. STORMFILTER WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 5' AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
6. FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF CLEANING. RADIAL MEDIA DEPTH SHALL BE 7-INCHES. FILTER MEDIA CONTACT TIME SHALL BE AT LEAST 38 SECONDS.
7. SPECIFIC FLOW RATE IS EQUAL TO THE FILTER TREATMENT CAPACITY (gpm) DIVIDED BY THE FILTER CONTACT SURFACE AREA (sq ft).
8. STORMFILTER STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.

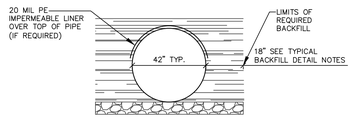
INSTALLATION NOTES
1. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
2. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STORMFILTER STRUCTURE.
3. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
4. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET PIPE(S).
5. CONTRACTOR TO PROVIDE AND INSTALL CONNECTOR TO THE OUTLET RISER STUB. STORMFILTER EQUIPPED WITH A DUAL DIAMETER HDPE OUTLET STUB AND SAND COLLAR. IF OUTLET PIPE IS LARGER THAN 8 INCHES, CONTRACTOR TO REMOVE THE 8 INCH OUTLET STUB AT MOLDED IN CUT LINE. COUPLING BY FERNCO OR EQUAL AND PROVIDED BY CONTRACTOR.
6. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.



NOTES
- ALL RISER AND STUB DIMENSIONS ARE TO CENTERLINE.
- ALL ELEVATIONS, DIMENSIONS, AND LOCATIONS OF RISERS AND INLETS, SHALL BE VERIFIED BY THE ENGINEER OF RECORD (EOR) PRIOR TO RELEASING FOR FABRICATION.
- ALL FITTINGS AND REINFORCEMENT COMPLY WITH ASTM A998.
- ALL RISERS AND STUBS ARE 2⅔" x ½" CORRUGATION AND 16 GAGE UNLESS OTHERWISE NOTED.
- RISERS TO BE FIELD TRIMMED TO GRADE AS REQUIRED, BY CONTRACTOR.
- QUANTITY OF PIPE SHOWN DOES NOT PROVIDE EXTRA PIPE FOR CONNECTING THE SYSTEM TO EXISTING PIPE OR DRAINAGE STRUCTURES. OUR SYSTEM AS DETAILED PROVIDES NOMINAL INLET AND/OR OUTLET PIPE STUB FOR CONNECTION TO EXISTING DRAINAGE FACILITIES. IF ADDITIONAL PIPE IS NEEDED IT IS THE RESPONSIBILITY OF THE CONTRACTOR.
- ALL ACCESS CASTINGS ARE THE RESPONSIBILITY OF THE CONTRACTOR AND ARE NOT SUPPLIED BY CONTECH.

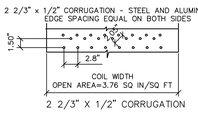
RETENTION SYSTEM #1

CONTECH 42"ø PERFORATED UNDERGROUND RETENTION SYSTEM
NOT TO SCALE



NOTE: IF SALTING AGENTS FOR SNOW AND ICE REMOVAL ARE USED ON OR NEAR THE PROJECT, A GEOMEMBRANE BARRIER IS RECOMMENDED WITH THE SYSTEM. THE GEOMEMBRANE LINER IS INTENDED TO HELP PROTECT THE SYSTEM FROM THE POTENTIAL ADVERSE EFFECTS THAT MAY RESULT FROM A CHANGE IN THE SURROUNDING ENVIRONMENT OVER A PERIOD OF TIME. PLEASE REFER TO THE CORRUGATED METAL PIPE DETENTION DESIGN GUIDE FOR ADDITIONAL INFORMATION.

TYPICAL SECTION VIEW
NOT TO SCALE



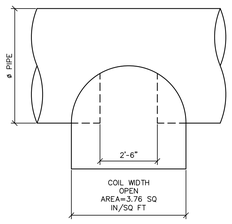
NOTES:
1. PERFORATIONS MEET AASHTO AND ASTM SPECIFICATIONS.
2. PERFORATION OPEN AREA PER SQUARE FOOT OF PIPE IS BASED ON THE NOMINAL DIAMETER AND LENGTH OF PIPE.
3. ALL DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES.
4. ALL HOLES ø⅜".

EXFILTRATION AREA
STANDARD PERFORATION PATTERNS

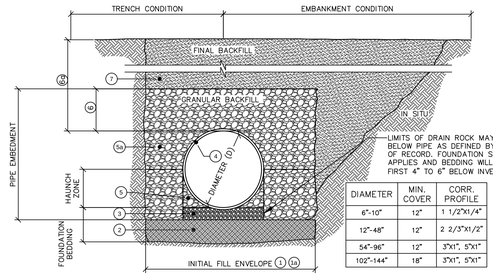
APPROXIMATE AREA PER LINEAR FOOT OF PIPE			
	CORRUGATION PATTERN		
PIPE ø (INCHES)	2-2/3"x1/2" STEEL/ALUM 3"x1" STEEL (SQ. INCHES)	3"x1" ALUMINUM (SQ. INCHES)	5"x1" STEEL (SQ. INCHES)
42	42.7	45.2	
HOLE ø	3/8"	5/16"	3/8"

NOTES:
1. PERFORATED PIPE IS AVAILABLE IN 18, 16, AND 14 GAGE MATERIAL. CONTACT THE APPROPRIATE REGIONAL PERSONNEL FOR PERFORATED 12 GAGE MATERIAL.
2. ALL DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES.

TYPICAL PERFORATION DETAIL
NOT TO SCALE



TYPICAL MANWAY DETAIL
NOT TO SCALE



DIAMETER	MIN. COVER	CORR. PROFILE
6"-10"	12"	1 1/2"X1/4"
12"-48"	12"	2 2/3"X1/2"
54"-96"	12"	3"X1", 5"X1"
102"-144"	18"	3"X1", 5"X1"

NOTES:
1 MINIMUM TRENCH WIDTH MUST ALLOW ROOM FOR PROPER COMPACTION OF HAUNCH MATERIALS UNDER THE PIPE. THE TRENCH WIDTH IS THE MINIMUM AMOUNT REQUIRED FOR PROPER INSTALLATION AND TO SUPPORT HORIZONTAL PRESSURE FROM THE PIPE. THE MANUFACTURER'S SUGGESTED MINIMUM VALUE IS: 1.5D + 12".

1a MINIMUM EMBANKMENT WIDTH (in feet) FOR INITIAL FILL ENVELOPE: 3.0D BUT NO LESS THAN D + 4'0".

2 FOUNDATION SHALL BE WELL CONSOLIDATED & STABLE, CAPABLE OF SUPPORTING FILL MATERIAL LOAD.

3 OPEN-GRADED GRANULAR BEDDING MATERIAL SHALL BE A RELATIVELY LOOSE MATERIAL THAT IS ROUGHLY SHAPED TO FIT THE BOTTOM OF THE PIPE, 4" TO 6" IN DEPTH. SUGGESTED PARTICLE SIZE OF ½ CORRUGATION DEPTH.

4 CORRUGATED STEEL PIPE (CSP) [HEL-COR].

5 HAUNCH ZONE MATERIAL SHALL BE HAND SHOVELED OR SHOVEL SLICED INTO PLACE TO ALLOW FOR PROPER COMPACTION.

5a THE BACKFILL MATERIAL SHALL BE A FREE-DRAINING, ANGULAR, WASHED-STONE PER AASHTO M 43 SIZE #3 WITH A ½" - 2" PARTICLE SIZE OR APPROVED EQUAL. MATERIAL SHALL BE PLACED IN 12" MAXIMUM LIFTS AND SHALL BE WORKED INTO THE PIPE HAUNCHES BY MEANS OF SHOVEL-SLICING, RODDING, AIR-TAMPER, VIBRATORY PLATE OR OTHER EFFECTIVE METHODS. COMPACTION IS CONSIDERED ADEQUATE WHEN A DENSITY EQUIVALENT TO 90% STANDARD PROCTOR IS ACHIEVED OR WHEN NO FURTHER YIELDING OF THE MATERIAL IS OBSERVED UNDER THE COMPACTOR OR UNDER FOOT. THE PROJECT ENGINEER OR HIS REPRESENTATIVE MUST BE SATISFIED WITH THE LEVEL OF COMPACTION. INADEQUATE COMPACTION CAN LEAD TO EXCESSIVE PIPE DEFLECTIONS AND SETTLEMENT OF THE SOILS OVER THE SYSTEM. BACKFILL SHALL BE PLACED SUCH THAT THERE IS NO MORE THAN A TWO-LIFT DIFFERENTIAL BETWEEN THE SIDES OF ANY PIPE IN THE SYSTEM AT ALL TIMES DURING THE BACKFILL PROCESS. BACKFILL SHALL BE ADVANCED ALONG THE LENGTH OF THE SYSTEM AT THE SAME RATE TO AVOID DIFFERENTIAL LOADING ON ANY PIPES IN THE SYSTEM.

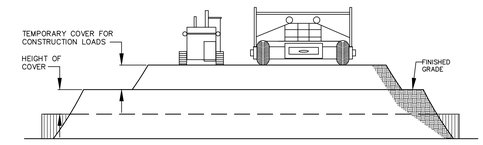
6 INITIAL OPEN GRADED GRANULAR BACKFILL ABOVE PIPE MAY INCLUDE ROAD BASE MATERIAL (AND RIGID PAVEMENT IF APPLICABLE). SEE TABLE ABOVE.

6a TOTAL HEIGHT OF COMPACTED COVER FOR CONVENTIONAL HIGHWAY LOADS IS MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TOP OF RIGID PAVEMENT.

7 FINAL BACKFILL MATERIAL SELECTION AND COMPACTION REQUIREMENTS SHALL FOLLOW THE PROJECT PLANS AND SPECIFICATIONS PER THE ENGINEER OF RECORD.

NOTES:
- GEOTEXTILE SHALL BE USED AS REQUIRED TO PREVENT SOIL MIGRATION.
- FOR MULTIPLE BARREL INSTALLATIONS THE RECOMMENDED STANDARD SPACING BETWEEN PARALLEL PIPE RUNS SHALL BE PIPE DIA./2 BUT NO LESS THAN 12", OR 36" FOR PIPE DIAMETERS 72" AND LARGER. CONTACT YOUR CONTECH REPRESENTATIVE FOR NONSTANDARD SPACING.

TYPICAL PERFORATION BACKFILL DETAIL
NOT TO SCALE



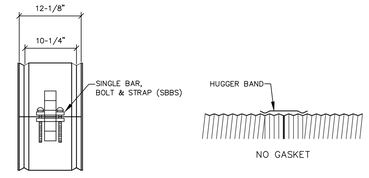
CONSTRUCTION LOADS

FOR TEMPORARY CONSTRUCTION VEHICLE LOADS, AN EXTRA AMOUNT OF COMPACTED COVER MAY BE REQUIRED OVER THE TOP OF THE PIPE. THE HEIGHT-OF-COVER SHALL MEET THE MINIMUM REQUIREMENTS SHOWN IN THE TABLE BELOW. THE USE OF HEAVY CONSTRUCTION EQUIPMENT NECESSITATES GREATER PROTECTION FOR THE PIPE THAN FINISHED GRADE COVER MINIMUMS FOR NORMAL HIGHWAY TRAFFIC.

PIPE SPAN, INCHES	AXLE LOADS (kips)			
	18-50	50-75	75-110	110-150
	MINIMUM COVER (FT)			
12-42	2.0	2.5	3.0	3.0
48-72	3.0	3.0	3.5	4.0
78-120	3.0	3.5	4.0	4.0
126-144	3.5	4.0	4.5	4.5

•MINIMUM COVER MAY VARY, DEPENDING ON LOCAL CONDITIONS. THE CONTRACTOR MUST PROVIDE THE ADDITIONAL COVER REQUIRED TO AVOID DAMAGE TO THE PIPE. MINIMUM COVER IS MEASURED FROM THE TOP OF THE PIPE TO THE TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE.

CONSTRUCTION LOADING DIAGRAM
NOT TO SCALE



2 2/3"x1/2" RE-ROLLED END HEL-COR PIPE

GENERAL NOTES:
1. BAND MATERIALS AND/OR COATING CAN VARY BY LOCATION. CONTACT YOUR CONTECH REPRESENTATIVE FOR AVAILABILITY.
2. BANDS ARE SHAPED TO MATCH THE PIPE-ARCH WHEN APPLICABLE.
3. BANDS ARE NORMALLY FURNISHED AS FOLLOWS:
   - 12" THRU 48" 1-PIECE
   - 54" THRU 96" 2-PIECES
   - 102" THRU 144" 3-PIECES
4. BAND FASTENERS ARE ATTACHED WITH SPOT WELDS, RIVETS OR HAND WELDS.
5. ALL CMP IS REROLLED TO HAVE ANNULAR END CORRUGATIONS OF 2-2/3"x1/2"
6. DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES.
7. ORDER SHALL DESIGNATE GASKET OPTION, IF REQUIRED (SEE DETAILS ABOVE).

H-12 HUGGER BAND DETAIL
NOT TO SCALE

SPECIFICATION FOR CORRUGATED STEEL PIPE-ALUMINIZED TYPE 2 STEEL

SCOPE

THIS SPECIFICATION COVERS THE MANUFACTURE AND INSTALLATION OF THE CORRUGATED STEEL PIPE (CSP) DETAILED IN THE PROJECT PLANS.

MATERIAL

THE ALUMINIZED TYPE 2 STEEL COILS SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF AASHTO M274 OR ASTM A929.

PIPE

THE CSP SHALL BE MANUFACTURED IN ACCORDANCE WITH THE APPLICABLE REQUIREMENTS OF AASHTO M36 OR ASTM A760. THE PIPE SIZES, GAGES AND CORRUGATIONS SHALL BE AS SHOWN ON THE PROJECT PLANS.

ALL FABRICATION OF THE PRODUCT SHALL OCCUR WITHIN THE UNITED STATES.

HANDLING AND ASSEMBLY

SHALL BE IN ACCORDANCE WITH RECOMMENDATIONS OF THE NATIONAL CORRUGATED STEEL PIPE ASSOCIATION (NCSPA)

INSTALLATION

SHALL BE IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SECTION 26, DIVISION II OR ASTM A798 AND IN CONFORMANCE WITH THE PROJECT PLANS AND SPECIFICATIONS. IF THERE ARE ANY INCONSISTENCIES OR CONFLICTS THE CONTRACTOR SHOULD DISCUSS AND RESOLVE WITH THE SITE ENGINEER.

IT IS ALWAYS THE RESPONSIBILITY OF THE CONTRACTOR TO FOLLOW OSHA GUIDELINES FOR SAFE PRACTICES.

MATERIAL SPECIFICATION
NOT TO SCALE

CITY OF PORTLAND
APPROVED SITE PLAN
Subject to Conditions of Approval and Standard Conditions
DATE of APPROVAL 6-26-2018
PLANNER Jean Fraser
PROJECT NO. #2017-053

Reviewed for Code Compliance
Permitting and Inspections Department
Approved with Conditions
01/22/2019

RICHARD L. MEEK, PE 10668 — STATE OF MAINE — RICHARD L. MEEK — 10668 — PROFESSIONAL ENGINEER — 9-28-18

WILLIAM T. CONWAY, RLA 108 — STATE OF MAINE — WILLIAM T. CONWAY — 108 — REGISTERED LANDSCAPE ARCHITECT — 9-28-18

DESIGNED	CHECKED
WTC	RLM

REV:	BY:	DATE:	STATUS:
F	WTC	09-28-18	FINAL PLAN SET FOR BUILDING PERMIT
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D	WTC	08-29-18	BUILDING PERMIT SET
C	WTC	07-20-18	RESUBMIT FOR CITY REVIEW

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

SEBAGO TECHNICS
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75 John Roberts Rd.
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Tel: 207-200-2100

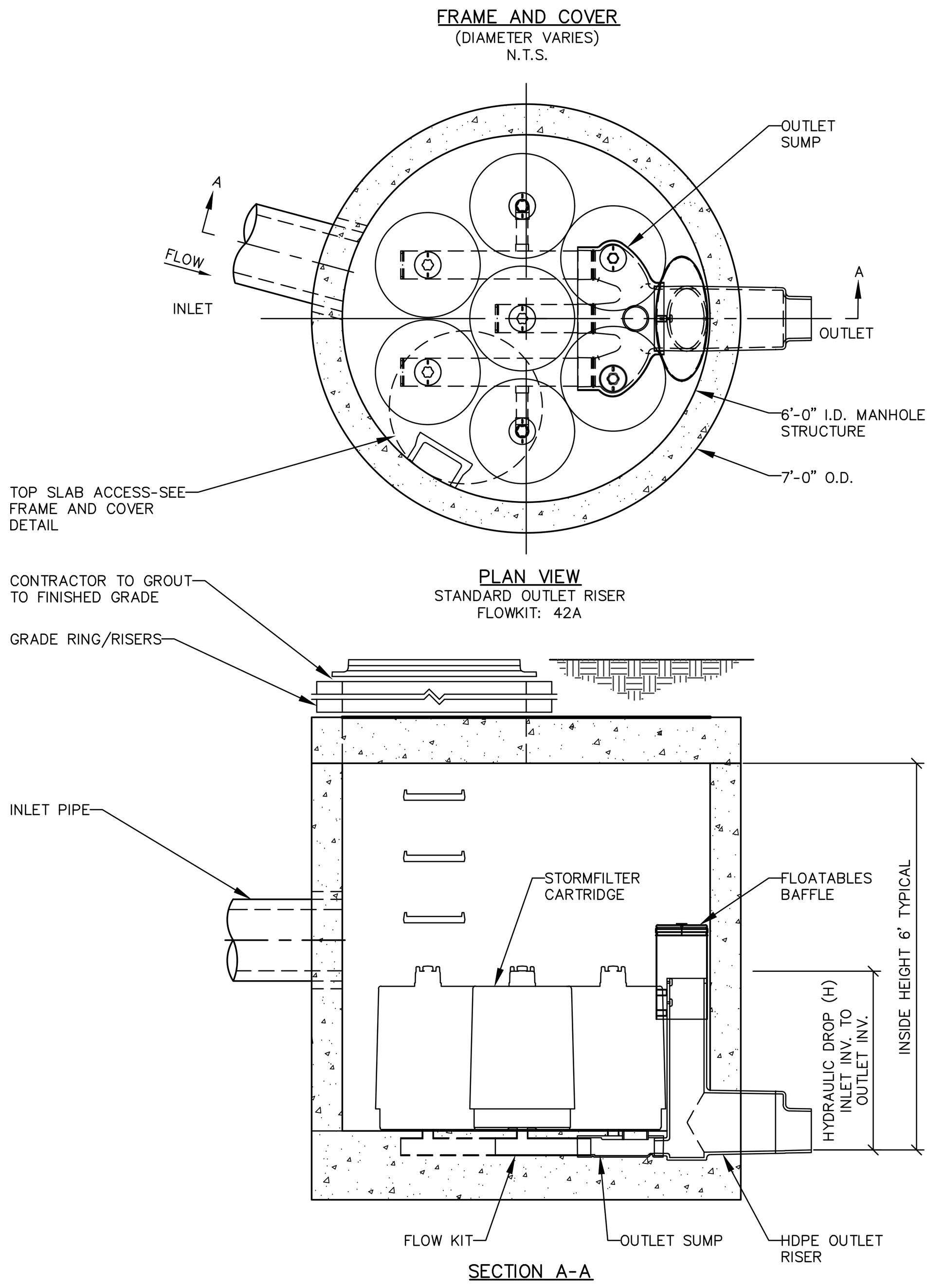
DETAILS
OF:
383 COMMERCIAL STREET
383 COMMERCIAL STREET
PORTLAND, MAINE
FOR:
DEERING PROPERTY DEVELOPMENT, LLC
2730 TRANSIT ROAD
WEST SENECA, NEW YORK 14224

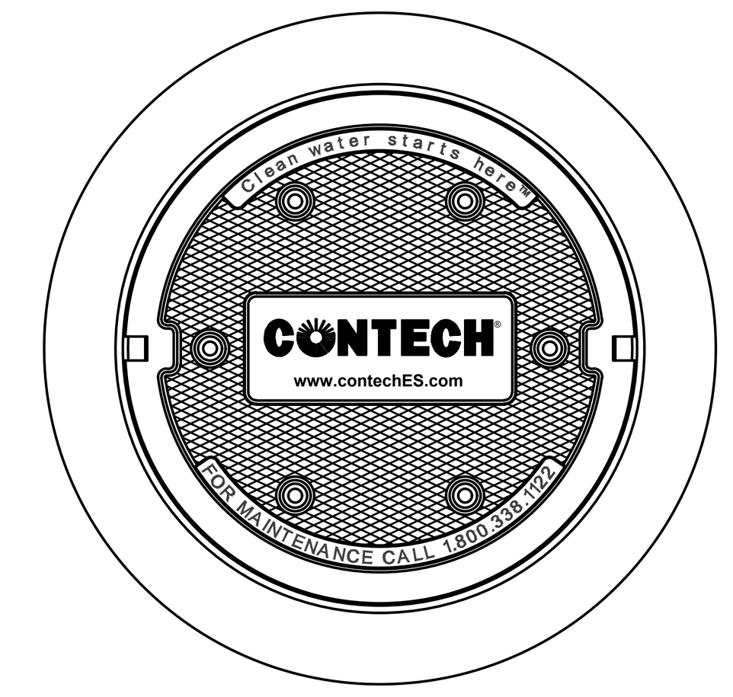
PROJECT NO.	SCALE
16324	N.T.S.

SHEET 23 OF 24

163240.dwg, TAB: D-4

FRAME AND COVER
(DIAMETER VARIES)
N.T.S.





STORMFILTER DESIGN NOTES

STORMFILTER TREATMENT CAPACITY IS A FUNCTION OF THE CARTRIDGE SELECTION AND THE NUMBER OF CARTRIDGES. THE STANDARD MANHOLE STYLE IS SHOWN WITH THE MAXIMUM NUMBER OF CARTRIDGES (7). VOLUME SYSTEM IS ALSO AVAILABLE WITH MAXIMUM 7 CARTRIDGES.
Ø72" MANHOLE STORMFILTER PEAK HYDRAULIC CAPACITY IS 1.5 CFS. IF THE SITE CONDITIONS EXCEED 1.5 CFS AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.

CARTRIDGE SELECTION

CARTRIDGE HEIGHT	27"			18"			LOW DROP		
RECOMMENDED HYDRAULIC DROP (H)	3.05'			2.3'			1.8'		
SPECIFIC FLOW RATE (gpm/sf)	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf	2 gpm/sf	1.67* gpm/sf	1 gpm/sf
CARTRIDGE FLOW RATE (gpm)	22.5	18.79	11.25	15	12.53	7.5	10	8.35	5

* 1.67 gpm/sf SPECIFIC FLOW RATE IS APPROVED WITH PHOSPHOSORB® (PSORB) MEDIA ONLY

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR SITE SPECIFIC DRAWINGS WITH DETAILED VAULT DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
4. STORMFILTER WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS-20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 5' AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
6. FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF CLEANING. RADIAL MEDIA DEPTH SHALL BE 7-INCHES. FILTER MEDIA CONTACT TIME SHALL BE AT LEAST 38 SECONDS.
7. SPECIFIC FLOW RATE IS EQUAL TO THE FILTER TREATMENT CAPACITY (gpm) DIVIDED BY THE FILTER CONTACT SURFACE AREA (sq ft).
8. STORMFILTER STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STORMFILTER STRUCTURE (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET PIPE(S).
E. CONTRACTOR TO PROVIDE AND INSTALL CONNECTOR TO THE OUTLET RISER STUB. STORMFILTER EQUIPPED WITH A DUAL DIAMETER HDPE OUTLET STUB AND SAND COLLAR. IF OUTLET PIPE IS LARGER THAN 8 INCHES, CONTRACTOR TO REMOVE THE 8 INCH OUTLET STUB AT MOLDED IN CUT LINE. COUPLING BY FERNCO OR EQUAL AND PROVIDED BY CONTRACTOR.
F. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.

SFMH72 STORMFILTER STANDARD DETAIL
NOT TO SCALE

NOTES:

1. ALL ELEVATIONS, DIMENSIONS & LOCATIONS OF RISERS AND LATERALS, SHALL BE VERIFIED BY THE ENGINEER OF RECORD (E.O.R.) OR OWNER DURING DESIGN & CONTRACT PHASE OF PROJECT. IF DESIGN INFORMATION IS NOT PROVIDED BY E.O.R. OR OWNER, THE PROJECT CANNOT BE RELEASED FOR FABRICATION.
2. THIS PROJECT IS FOR 60"ø DUROMAXX.
3. DESIGN SERVICE LIFE OF SYSTEM IS TO BE SPECIFIED BY E.O.R. OR OWNER DURING DESIGN PHASE OF PROJECT, AND WILL BE REVIEWED BY MANUFACTURER.
4. ANY TESTING OF THE SYSTEM WILL NEED TO BE SPECIFIED BY E.O.R. OR OWNER DURING DESIGN PHASE OF PROJECT.
5. ALL WATER TABLE ELEVATIONS ARE TO BE ACCURATELY PROVIDED BY E.O.R. OR OWNER PRIOR TO CONTRACT/FINAL DESIGN PHASE OF PROJECT.
6. TOTAL HEIGHT OF COVER AND DEPTHS OF THE TYPE OF PAVEMENT/FINISHED GRADE TO BE USED ARE TO BE PROVIDED BY E.O.R. OR OWNER DURING PROPOSAL & CONTRACT PHASES.
7. INTERNAL OPERATIONAL DESIGN PRESSURES (IF ANY) ARE TO BE PROVIDED BY E.O.R. OR OWNER TO THE MANUFACTURER DURING INITIAL DESIGN PHASE TO PROVIDE PROPER DESIGN OF THE SYSTEM.
8. DESIGN INFORMATION FOR SURGE PRESSURES THAT CAN BE SEEN DURING OPERATION OF THE SYSTEM AS REQUIRED BY E.O.R. OR OWNER WILL ALSO NEED TO BE PROVIDED DURING DESIGN PHASE OF THE PROJECT.
9. DESIGN INFORMATION AS TO WATER TEMPERATURE (IF ABOVE NORMAL EFFLUENT TEMPERATURES) WILL NEED TO BE PROVIDED BY E.O.R. OR OWNER DURING DESIGN PHASE OF PROJECT.
10. IF LATERAL PIPES NEED TO HAVE GREATER THAN 4PSI JOINTS FOR FIELD PIPE CONNECTIONS, THE USE OF FLANGED ADAPTERS WILL NEED TO BE SPECIFIED BY E.O.R. OR OWNER DURING DESIGN PHASE OF PROJECT.
11. ALL SYSTEM LATERALS (PIPE STUBS), RISERS & VENTS ARE CONSTRUCTED USING HDPE M294, DR32.5 & DR17 UNLESS OTHERWISE NOTED.
12. ALL PIPE DIMENSIONS ARE SUBJECT TO MANUFACTURERS TOLERANCES.
13. SYSTEM IS DESIGNED FOR H20 AND H25 LOADING.
14. CONSIDERATIONS FOR CONSTRUCTION EQUIPMENT LOADS MUST BE TAKEN INTO ACCOUNT. SEE DETAIL ON LAST PAGE.

SCOPE
THIS SPECIFICATION DESCRIBES DUROMAXX PIPE FOR USE IN MULTIPLE APPLICATIONS IN 30" (750 MM) THROUGH 120" (3000 MM) NOMINAL DIAMETERS.

DESCRIPTION
DUROMAXX IS A REINFORCED POLYETHYLENE PIPE WITH A SMOOTH WATERWAY WALL AND EXTERIOR PROFILE THAT IS REINFORCED WITH HIGH STRENGTH GALVANIZED STEEL RIBS. THE CONTINUOUS REINFORCING RIBS ARE COMPLETELY ENCASED WITHIN THE POLYETHYLENE PROFILE. DUROMAXX IS MANUFACTURED USING A HELICAL WINDING PROCESS THAT RESULTS IN A CONTINUOUSLY FUSION WELDED CIRCUMFERENTIAL LAP SEAM. THE PIPE PROFILE IS MANUFACTURED USING A HIGH QUALITY PRESSURE-RATED THERMOPLASTIC MEETING THE REQUIREMENTS OF ASTM F2562 "STANDARD SPECIFICATION FOR STEEL REINFORCED THERMOPLASTIC RIBBED PIPE AND FITTINGS FOR NON-PRESSURE DRAINAGE AND SEWERAGE". FOR THE PURPOSE OF HYDRAULIC DESIGN, THE RECOMMENDED MANNING'S "N" VALUE SHALL BE 0.012 FOR PIPE DIAMETERS INCLUDED WITHIN THIS SPECIFICATION. PIPE LENGTH & ALL DIMENSIONS SHOWN ARE SUBJECT TO MANUFACTURERS TOLERANCES OF ±1% ACCORDING TO ASTM F2562.

MATERIAL PROPERTIES
VIRGIN HIGH DENSITY POLYETHYLENE PRESSURE-RATED RESINS ARE USED TO MANUFACTURE DUROMAXX PIPE. RESINS SHALL CONFORM TO THE MINIMUM REQUIREMENTS OF CELL CLASSIFICATION 345464 C AS DEFINED AND DESCRIBED IN THE LATEST VERSION OF ASTM D3350 "STANDARD SPECIFICATION FOR POLYETHYLENE PLASTICS PIPE AND FITTINGS MATERIALS".

FITTINGS
ALL FITTINGS SHALL BE FABRICATED FROM DUROMAXX PIPE. ANY FITTINGS 30"ø AND BELOW WILL BE HDPE PIPE.

ALL FABRICATION OF THE PRODUCT SHALL OCCUR WITHIN THE UNITED STATES.

INSTALLATION SPECIFICATION

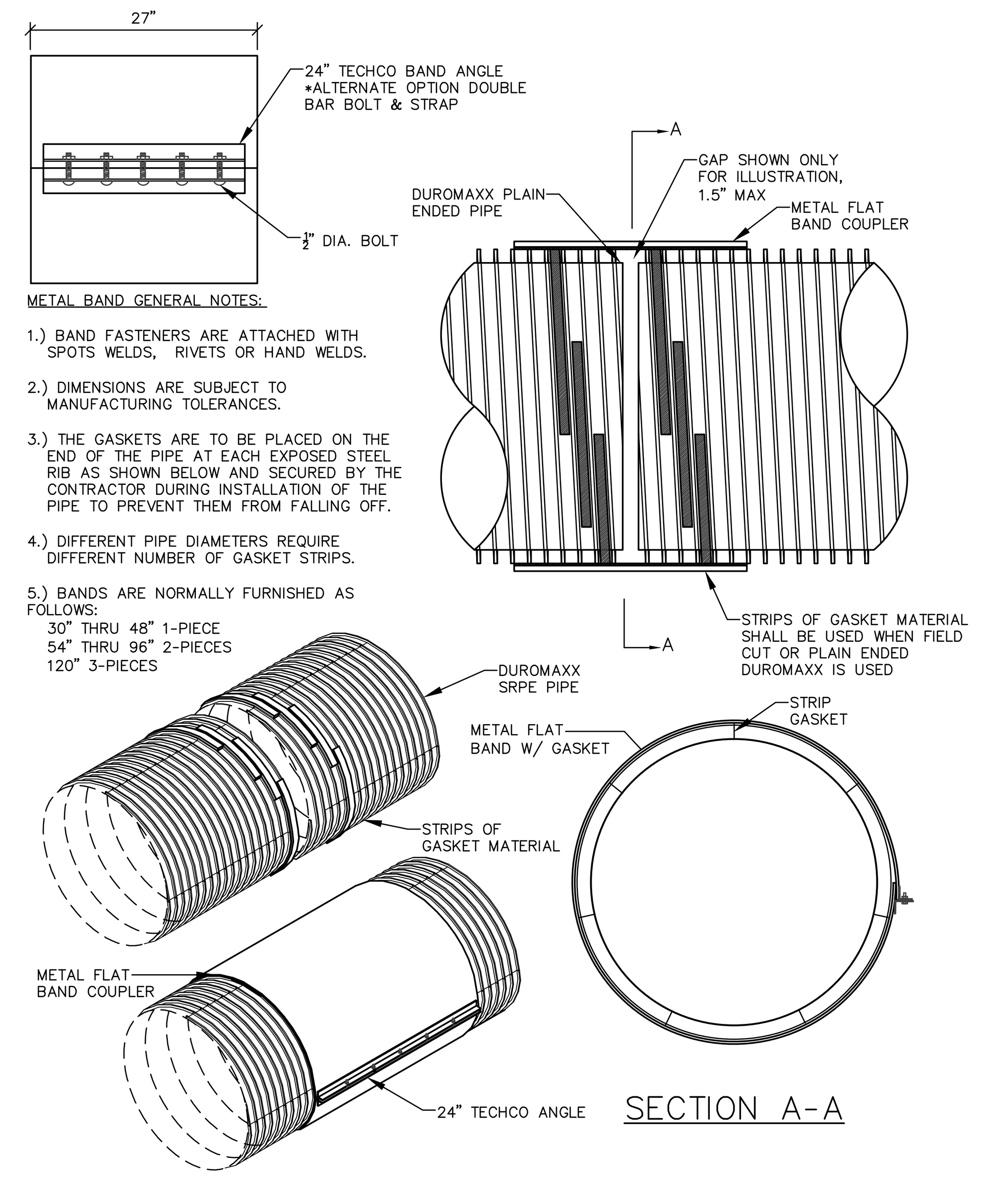
PRE-CONSTRUCTION MEETING

PRIOR TO INSTALLATION OF THE DRAINAGE SYSTEM A PRE-CONSTRUCTION MEETING SHALL BE CONDUCTED. THOSE REQUIRED TO ATTEND ARE THE SUPPLIER OF THE DRAINAGE SYSTEM, THE GENERAL CONTRACTOR, SUB CONTRACTORS AND THE ENGINEER.

INSTALLATION OF PIPE:

IT IS THE RESPONSIBILITY OF THE CONTRACTOR AND/OR PROJECT ENGINEER TO ENSURE THAT ALL QUESTIONS ABOUT INSTALLATION ARE ADDRESSED PRIOR TO APPROVAL OF SYSTEM. ALL DETAILS FOR INSTALLATION ARE LOCATED IN THIS DRAWING PACKAGE ANY QUESTIONS CONCERNING THESE STANDARD DETAILS CAN BE ADDRESSED BY YOUR CONTECH REPRESENTATIVE PRIOR TO APPROVAL.

BACKFILL SHALL BE PLACED TO THE PROPER ELEVATION OVER THE SYSTEM AS OUTLINED IN THE PLANS. MINIMUM COVER FOR CONSTRUCTION LOADING NEEDS TO BE DETERMINED BASED ON THE TYPE OF EQUIPMENT THAT IS PLANNED FOR CONSTRUCTION. PROPER COVER FOR CONSTRUCTION EQUIPMENT IS DETAILED IN THE CONSTRUCTION LOADING DIAGRAM LOCATED ON THIS PAGE.



METAL BAND GENERAL NOTES:

1.) BAND FASTENERS ARE ATTACHED WITH SPOTS WELDS, RIVETS OR HAND WELDS.

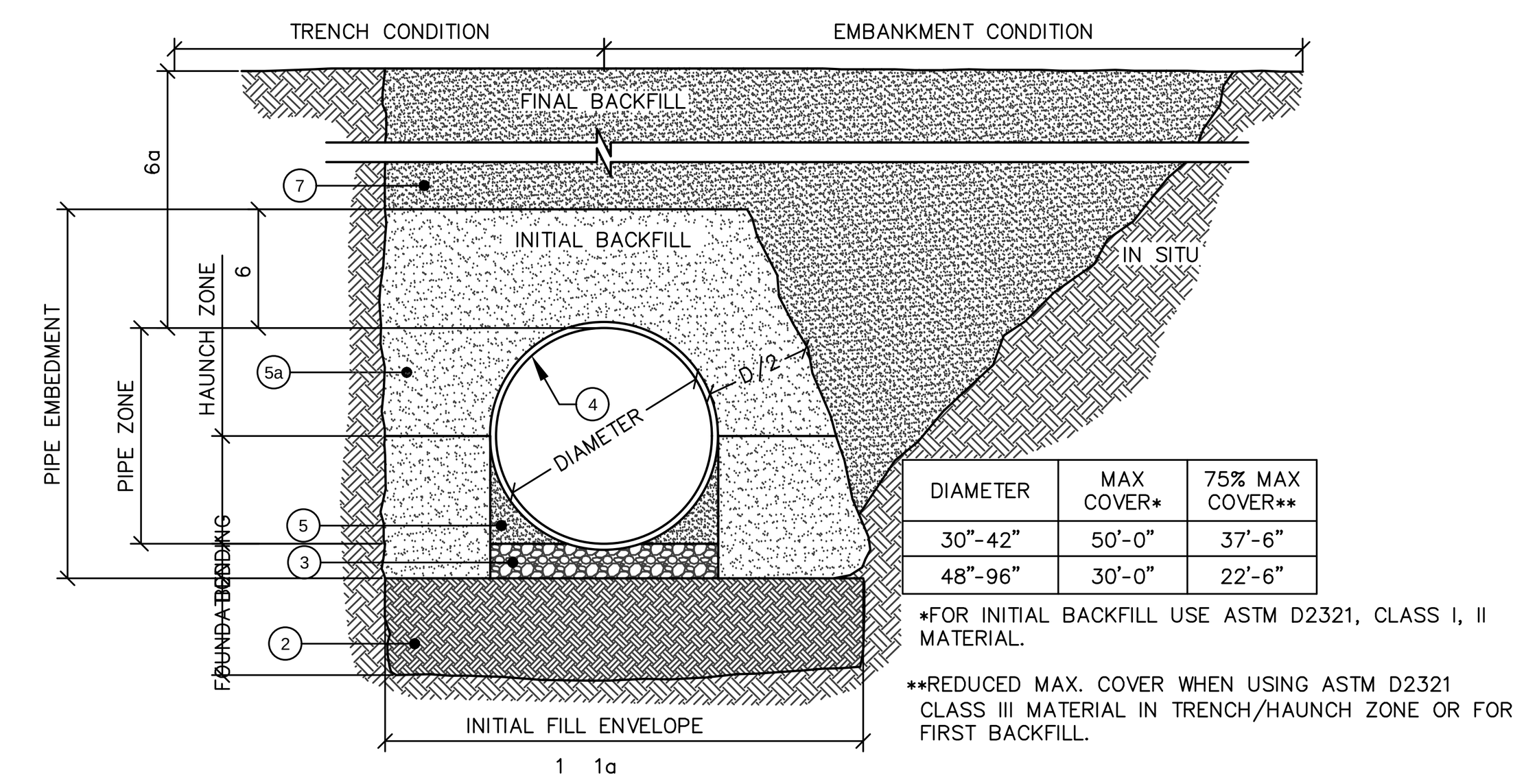
2.) DIMENSIONS ARE SUBJECT TO MANUFACTURING TOLERANCES.

3.) THE GASKETS ARE TO BE PLACED ON THE END OF THE PIPE AT EACH EXPOSED STEEL RIB AS SHOWN BELOW AND SECURED BY THE CONTRACTOR DURING INSTALLATION OF THE PIPE TO PREVENT THEM FROM FALLING OFF.

4.) DIFFERENT PIPE DIAMETERS REQUIRE DIFFERENT NUMBER OF GASKET STRIPS.

5.) BANDS ARE NORMALLY FURNISHED AS FOLLOWS:
30" THRU 48" 1-PIECE
54" THRU 96" 2-PIECES
120" 3-PIECES

FLATBAND PLAIN END TO PLAIN END CONNECTION DETAIL
NOT TO SCALE



DIAMETER	MAX COVER*	75% MAX COVER**
30"-42"	50'-0"	37'-6"
48"-96"	30'-0"	22'-6"

*FOR INITIAL BACKFILL USE ASTM D2321, CLASS I, II MATERIAL.

**REDUCED MAX. COVER WHEN USING ASTM D2321 CLASS III MATERIAL IN TRENCH/HAUNCH ZONE OR FOR FIRST BACKFILL.

1 MINIMUM TRENCH WIDTH MUST ALLOW ROOM FOR PROPER COMPACTION OF HAUNCH MATERIALS UNDER PIPE. MIN. WIDTH = (1.25 x DIAMETER) + 12" (FOLLOW ASTM D2321)

1a MINIMUM EMBANKMENT WIDTH IS 3 PIPE DIAMETERS BUT NO LESS THAN 2' OUTSIDE OF SPRINGLINE.

2 FOUNDATION SHALL BE WELL CONSOLIDATED & STABLE.

3 BEDDING MATERIAL SHALL BE A RELATIVELY LOOSE MATERIAL THAT IS ROUGHLY SHAPED TO FIT THE BOTTOM OF THE PIPE, 4" TO 6" IN DEPTH.

4 DUROMAXX STEEL REINFORCED (SRPE) PIPE.

5 HAUNCH ZONE MATERIAL SHALL BE HAND SHOVELED OR SHOVEL SLICED INTO PLACE TO ALLOW FOR PROPER COMPACTION.

5a INITIAL BACKFILL FOR PIPE EMBEDMENT MATERIAL TO MEET ASTM D2321 CLASS I, II, III OR APPROVED EQUAL, COMPACTED TO 90% STANDARD PROCTOR (NATIVE MATERIAL CAN BE UTILIZED THAT MEETS ASTM D2321 OR APPROVED EQUAL).
- ALL LIFTS PLACED IN CONTROLLED MANNER. TO PREVENT UNEVEN LOADING, IT IS RECOMMENDED THAT LIFTS NOT EXCEED 8" UNCOMPACTED LIFT HEIGHTS.

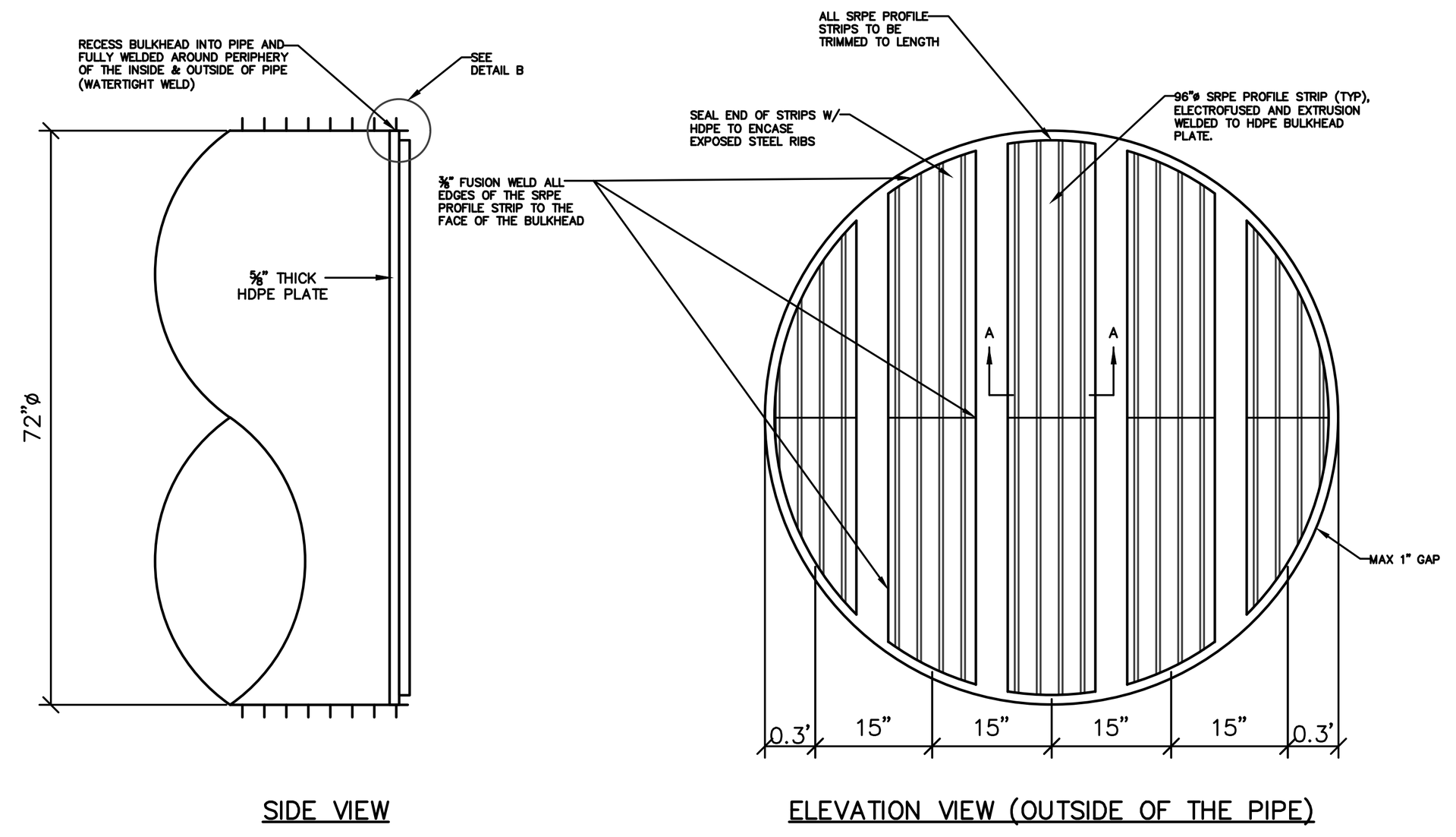
6 INITIAL BACKFILL ABOVE PIPE MAY INCLUDE ROAD BASE MATERIAL AND RIGID PAVEMENT (IF APPLICABLE), MINIMUM COVER STILL APPLIES, OTHERWISE:
6" MINIMUM FOR PIPE DIAMETERS 30" - 60"
12" MINIMUM FOR PIPE DIAMETERS 66" - 96"

6a HEIGHT OF COMPACTED COVER PER DIAMETER FOR CONVENTIONAL HIGHWAY LOADS (DISTANCE MEASURED FROM TOP OF PIPE TO BOTTOM OF FLEXIBLE PAVEMENT OR TOP OF RIGID PAVEMENT):
12" MINIMUM FOR PIPE DIAMETERS 30" - 60"
18" MINIMUM FOR PIPE DIAMETER 66" - 72"
24" MINIMUM FOR PIPE DIAMETERS 84" - 96"

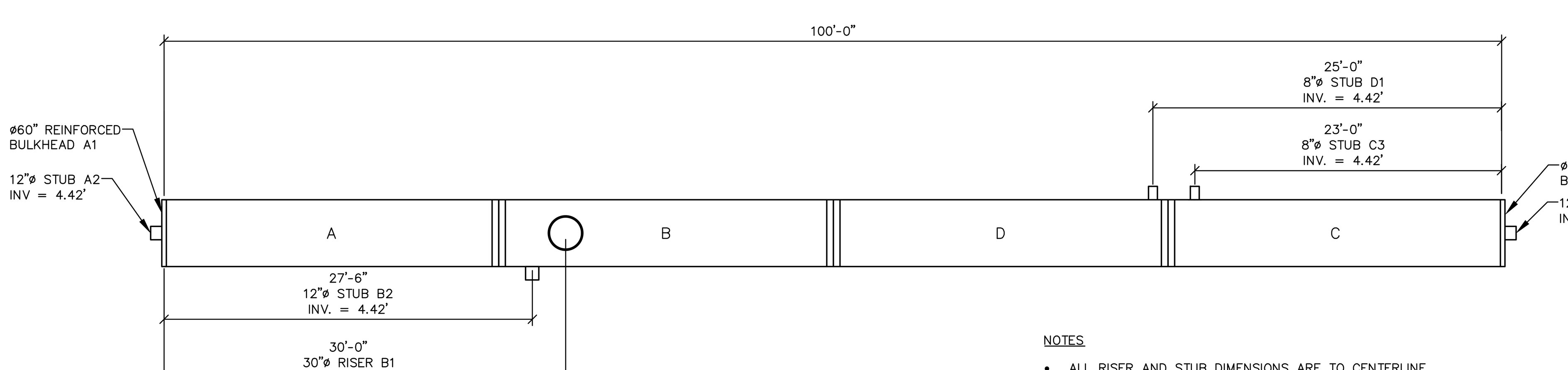
7 FINAL BACKFILL MATERIAL SELECTION AND COMPACTION REQUIREMENTS PER THE PROJECT PLANS, SPECIFICATIONS. ENGINEER OF RECORD.

NOTES:
- GEOTEXTILE SHALL BE USED AS REQUIRED TO PREVENT SOIL MIGRATION.
- FOR MULTIPLE BARREL INSTALLATION THE RECOMMENDED STANDARD SPACING BETWEEN PARALLEL PIPE RUNS SHALL BE = PIPE DIA./2 OR 3' FOR PIPE DIAMETERS 72" AND LARGER. CONTACT YOUR CONTECH REPRESENTATIVE FOR NONSTANDARD SPACING.
- BACKFILL REQUIREMENTS SHALL FOLLOW ASTM D2321. IN THE EVENT OF DISCREPANCIES, ASTM D2321 SHALL SUPERCEDE THIS DETAIL.

BACKFILL DETAIL
NOT TO SCALE



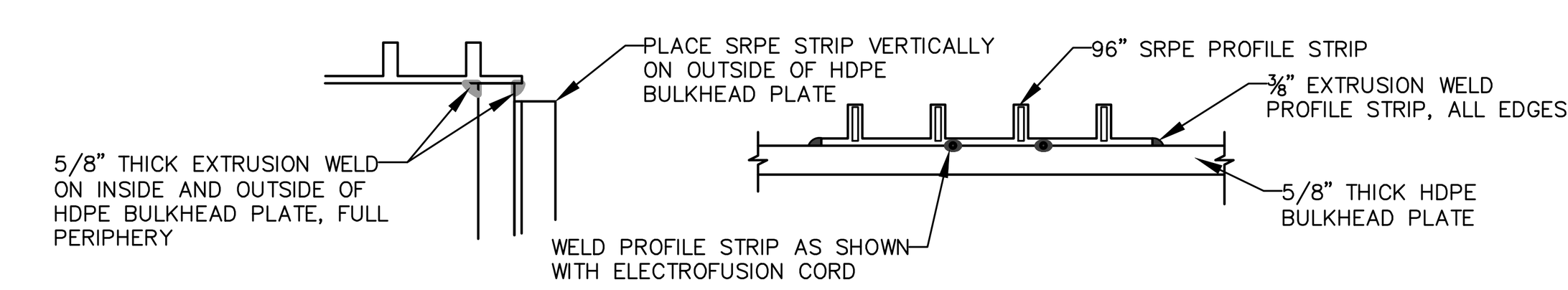
BULKHEAD DESIGN
NOT TO SCALE



NOTES
- ALL RISER AND STUB DIMENSIONS ARE TO CENTERLINE.
- ALL ELEVATIONS, DIMENSIONS, AND LOCATIONS OF RISERS AND INLETS, SHALL BE VERIFIED BY THE ENGINEER OF RECORD PRIOR TO RELEASING FOR FABRICATION.
- ALL FITTINGS AND REINFORCEMENT COMPLY WITH ASTM D3350.
- ALL RISERS AND STUBS ARE HIGH DENSITY POLYETHYLENE UNLESS OTHERWISE NOTED.
- RISERS TO BE FIELD TRIMMED TO GRADE.
- FLOTATION CONTROL IS CRITICAL AND THE RESPONSIBILITY OF THE INSTALLER. THE INFORMATION IS SUBMITTED AS A GUIDELINE ONLY.
  CONTECH IS NOT RESPONSIBLE FOR THE USE AND INTERPRETATION OF THIS INFORMATION.
- ALL FITTINGS TO BE TESTED FOR WATERTIGHT WELDS.

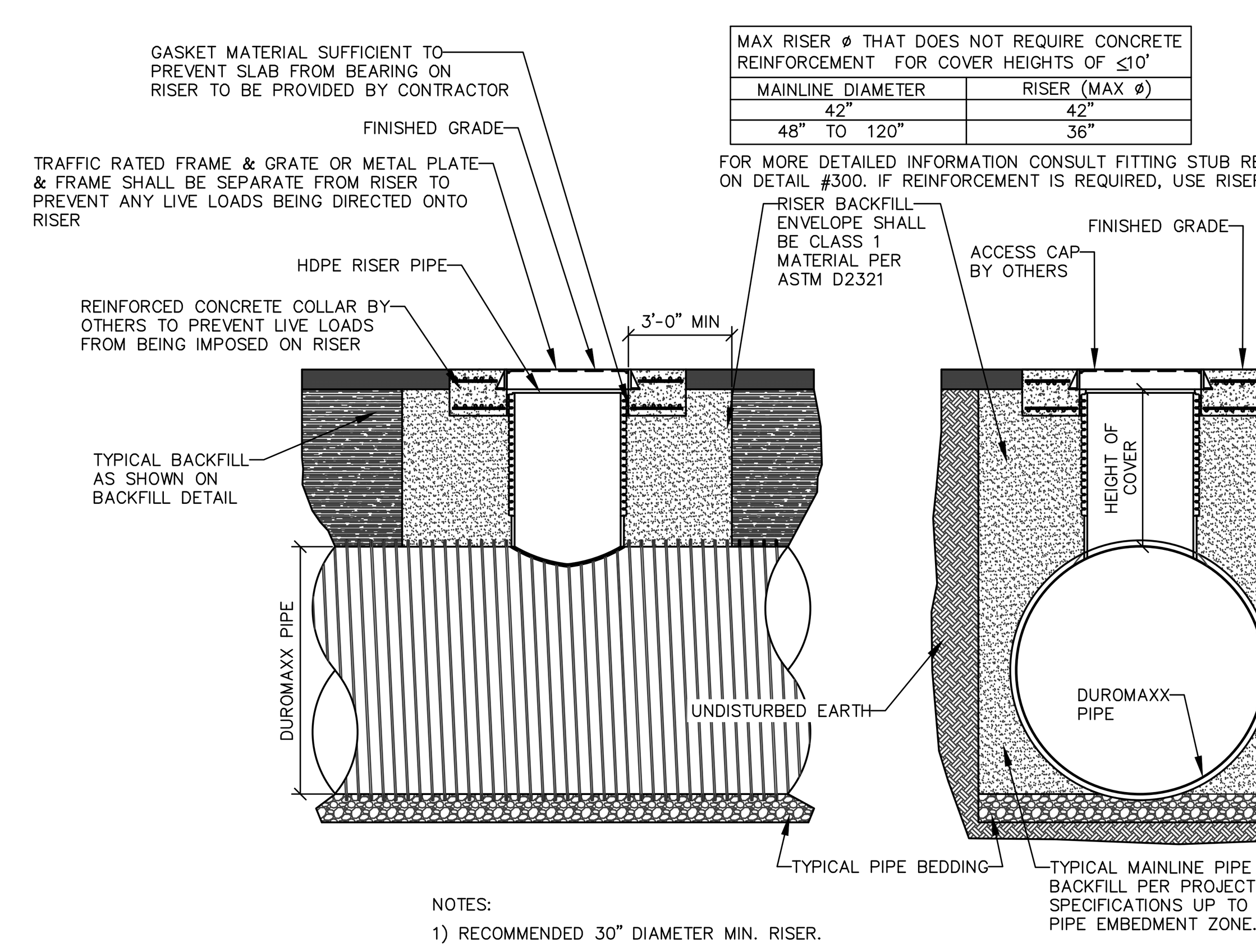
RETENTION SYSTEM #2

DUROMAXX 60"ø RETENTION SYSTEM
NOT TO SCALE



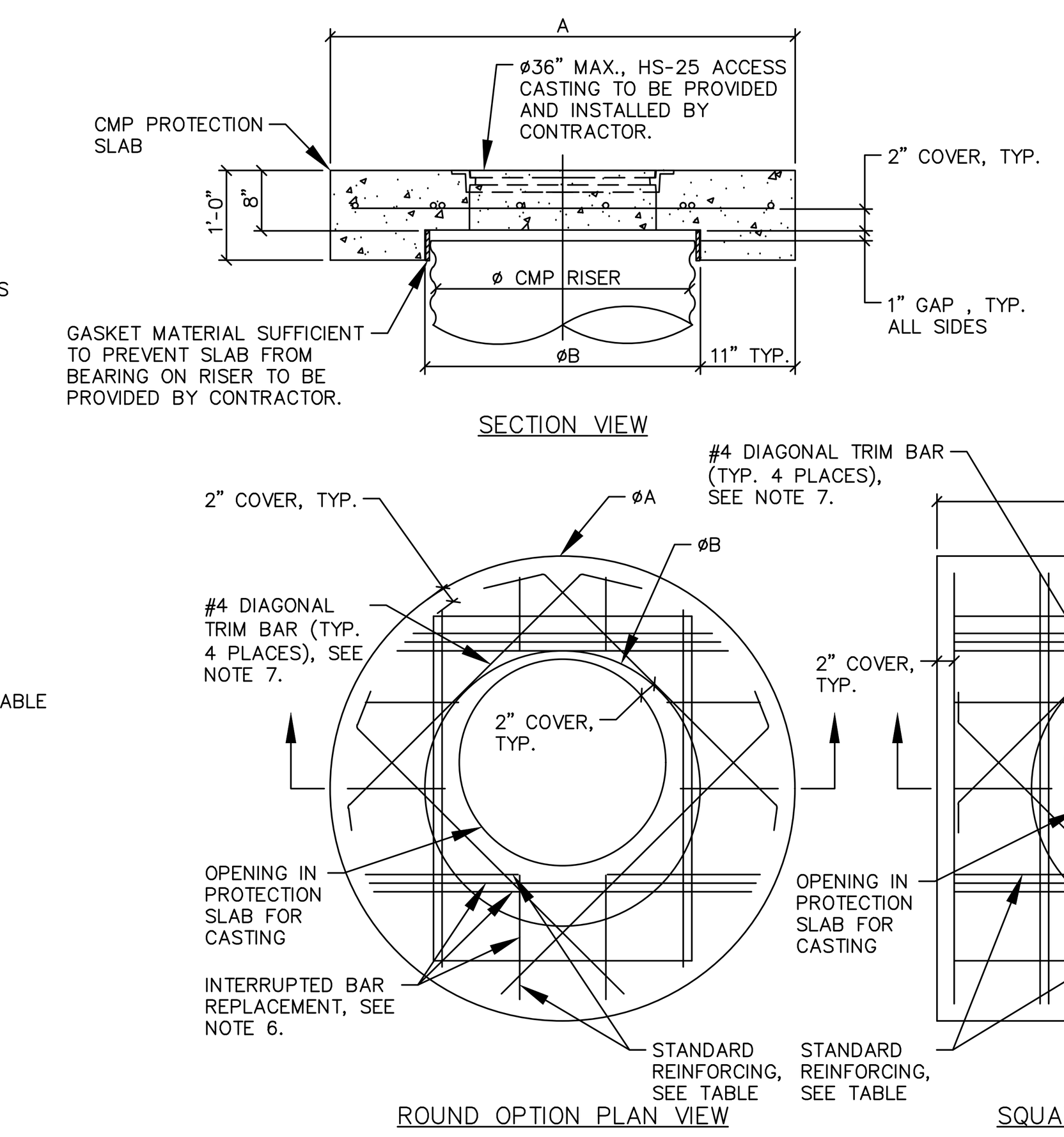
MAX RISER ø THAT DOES NOT REQUIRE CONCRETE REINFORCEMENT FOR COVER HEIGHTS OF ≤10'	
MAINLINE DIAMETER	RISER (MAX ø)
42"	42"
48" TO 120"	36"

FOR MORE DETAILED INFORMATION CONSULT FITTING STUB REINFORCEMENT TABLE ON DETAIL #300. IF REINFORCEMENT IS REQUIRED, USE RISER DETAIL #400.



NOTES:
1) RECOMMENDED 30" DIAMETER MIN. RISER.

STANDARD RISER INSTALLATION DETAIL
NOT TO SCALE



REINFORCING TABLE				
Ø CMP RISER	A	Ø B	REINFORCING	**BEARING PRESSURE (PSF)
24"	Ø 4' 4'x4'	26"	#5 @ 10" OCEW #5 @ 10" OCEW	2,540 1,900
30"	Ø 4'-6" 4'-6" x 4'-6"	32"	#5 @ 10" OCEW #5 @ 9" OCEW	2,260 1,670
36"	Ø 5' 5' x 5'	38"	#5 @ 9" OCEW #5 @ 8" OCEW	2,060 1,500
42"	Ø 5'-6" 5'-6" x 5'-6"	44"	#5 @ 8" OCEW #5 @ 8" OCEW	1,490 1,370
48"	Ø 6' 6' x 6'	50"	#5 @ 7" OCEW #5 @ 7" OCEW	1,210 1,270

** ASSUMED SOIL BEARING CAPACITY

NOTES:
1. DESIGN IN ACCORDANCE WITH AASHTO, 17th EDITION AND ACI 350.
2. DESIGN LOAD HS25.
3. EARTH COVER = 1' MAX.
4. CONCRETE STRENGTH = 4,000 psi
5. REINFORCING STEEL = ASTM A615, GRADE 60.
6. PROVIDE ADDITIONAL REINFORCING AROUND OPENINGS EQUAL TO THE BARS INTERRUPTED, HALF EACH SIDE. ADDITIONAL BARS TO BE IN THE SAME PLANE.
7. TRIM OPENING WITH DIAGONAL #4 BARS, EXTEND BARS A MINIMUM OF 12" BEYOND OPENING, BEND BARS AS REQUIRED TO MAINTAIN BAR COVER.
8. PROTECTION SLAB AND ALL MATERIALS TO BE PROVIDED AND INSTALLED BY CONTRACTOR.
9. DETAIL DESIGN BY DELTA ENGINEERS, ARCHITECTS AND LAND SURVEYORS, ENDWELL, NY.

MANHOLE CAP DETAIL
NOT TO SCALE

CITY OF PORTLAND
APPROVED SITE PLAN
Subject to Conditions of Approval and Standard Conditions
DATE of APPROVAL 6-26-2018
PLANNER Jean Fraser
PROJECT NO. #2017-053

Reviewed for Code Compliance
Permitting and Inspections Department
Approved with Conditions
01/22/2019

RICHARD L. MEEK, PE 10668 9-28-18
WILLIAM T. CONWAY, RLA 108 9-28-18

DESIGNED	CHECKED
WTC	RLM

REV:	BY:	DATE:	STATUS:
F	WTC	09-28-18	FINAL PLAN SET FOR BUILDING PERMIT
E	WTC	09-04-18	ISSUED FOR BUILDING PERMIT
D	WTC	09-25-18	BUILDING PERMIT SET
C	WTC	07-21-18	RESUBMIT FOR CITY REVIEW

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd. Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

DETAILS
OF:
383 COMMERCIAL STREET
PORTLAND, MAINE
FOR:
DEERING PROPERTY DEVELOPMENT, LLC
2730 TRANSIT ROAD
WEST SENECA, NEW YORK 14224

PROJECT NO.	SCALE
16324	N.T.S.

SHEET 24 OF 24

YORK STREET
PAVED–PUBLIC–VARIABLE WIDTH

TRUE

PLAN SCHEDULE:

KEY	BOTANICAL NAME / COMMON NAME	SIZE / REMARKS
AF	ABIES FRASERI / FRASER FIR	14 FT. HEIGHT
NS	NYSSA SYLVATICA / TUPELO	4" CALIPER
AR	ACER R. 'AUTUMN BLAZE' / RED MAPLE	3" CALIPER
PX	PRUNUS X. 'ACCOLADE' / ACCOLADE CHERRY	3" CALIPER
MY	MAGNOLIA X. 'YELLOW BIRD' / YELLOW MAGNOLIA	3" CALIPER
CB	CARPINUS B. 'FASTIAGATA' / UPRIGHT HORNBEAM	3" CALIPER
GT	GLEDITSIA T. 'STREETKEEPER' / HONEY LOCUST	3" CALIPER
AE	AZALEA E. 'KNAPHILL RED' / AZALEA	NO. 7 CONTAINER
KN	KALMIA L. 'NATHAN HALE' MOUNTAIN LAUREL	NO. 7 CONTAINER
RW	RHODODENDRON 'WINDBEAM' / RHODODENDRON	NO. 7 CONTAINER
HA	HYDRANGEA A. 'ANNABELLE' / HYDRANGEA	NO. 7 CONTAINER
JS	JUNIPERUS VAR. 'SARGENT' / SARGENT JUNIPER	NO. 5 CONTAINER
MS	MISCANTHUS S. 'PURPURASCENS' / FLAME GRASS	NO. 2 CONTAINER
HP	HOSTA 'PATRIOT' / HOSTA	NO. 2 CONTAINER @ 36" O.C.
SN	SALVIA 'MAY NIGHT' / MAY NIGHT SALVIA	NO. 2 CONTAINER @ 24" O.C.
PA	PEROVSKIA A. 'LITTLE SPIRE' / RUSSIAN SAGE	NO. 2 CONTAINER @ 30" O.C.
PT	PACHYSANDRA TERMINALIS / JAPANESES SPURGE	FLATS @ 12" O. C.
SK	SEDUM KAMTSCHATICUM / GREEN SEDUM	3" POTS @ 18" O.C.
ST	SEDUM T. 'AUTUMN JOY' / RED SEDUM	3" POTS @ 18" O.C.
LN	LYSIMACHIA N. 'AUREA' / MONEYWORT	3" POTS @ 18" O. C.
NR	NAROISSUS 'ROSE OF MARY' / WHITE DAFFODIL	BULBS @ 18" O.C.

LN
2 CB
LN
12 MS
5 KN
5 RW
1 AF
9 HA
7 MS
11 JS
5 RW
8 KN
1 MY
HP
PT AND NR
SN
1 NS
1 AE
PT AND NR
2 PX AND PT
1 GT AND SN
7 JS
SN
1 PX
7 JS
SN
1 PX
1 GT AND SN
ID SN
1 GT AND SN

MAPLE STREET
PAVED–PUBLIC 49.5' WIDE

COMMERCIAL STREET
PAVED–PUBLIC–VARIABLE WIDTH

SEE NOTES SITE PLAN REGARDING EXISTING COBBLES IN MAPLE STREET

FINAL LOCATIONS AND SPECS FOR THE STREET LAMPS/POLES AND STREET TREE LOCATIONS AND TREE WELLS ALONG COMMERCIAL STREET TO BE AGREED IN WRITING WITH THE PLANNING AUTHORITY PRIOR TO ORDERING MATERIALS

CITY OF PORTLAND
APPROVED SITE PLAN
Subject to Conditions of Approval and Standard Conditions
DATE of APPROVAL 6-26-2018
PLANNER Jean Fraser
PROJECT NO. #2017-053

All work in the ROW shall meet city's Technical Standards unless otherwise agreed with city.

GRAPHIC SCALE
(IN FEET)
1 INCH = 10 FT.

Reviewed for Code Compliance
Permitting and Inspections Department
Approved with Conditions
01/22/2019

WILLIAM T. CONWAY, RLA 108
REGISTERED LANDSCAPE ARCHITECT
WILLIAM T. CONWAY
108
STATE OF MAINE
9-28-18

DESIGNED	CHECKED
WTC	RLM

REV.	BY:	DATE:	STATUS:
J	WTC	09-28-18	FINAL PLAN SET FOR BUILDING PERMIT
I	WTC	09-26-18	ADDED CURB AT MAPLE STREET
H	WTC	09-04-18	ISSUED FOR BUILDING PERMIT
G	WTC	08-29-18	RESUBMIT FOR CITY REVIEW
F	WTC	07-12-18	SHIFT COLUMN AT WOONERF
E	WTC	06-21-18	MODIFY 2 BUMPOUTS @ COMMERCIAL STREET
D	WTC	06-21-18	MODIFY 2 BUMPOUTS @ COMMERCIAL STREET

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SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel: 207-200-2100

LANDSCAPE PLAN-1 LOWER LEVEL
OF:
383 COMMERCIAL STREET
383 COMMERCIAL STREET
PORTLAND, MAINE
FOR:
DEERING PROPERTY DEVELOPMENT, LLC
2730 TRANSIT ROAD
WEST SENECA, NEW YORK 14224

PROJECT NO.	SCALE
16324	1"=10'

SHEET 16 OF 24

16324L-LL-dwg, TAB:L-1

PLAN SCHEDULE:

KEY	BOTANICAL NAME / COMMON NAME	SIZE / REMARKS
AF	ABIES FRASERI / FRASER FIR	14 FT. HEIGHT
NS	NYSSA SYLVATICA / TUPELO	4" CALIPER
AR	ACER R. 'AUTUMN BLAZE' / RED MAPLE	3" CALIPER
AA	ACER R. 'ARMSTRONG' / ARMSTRONG MAPLE	3" CALIPER
PX	PRUNUS X. 'ACCOLADE' / ACCOLADE CHERRY	3" CALIPER
MY	MAGNOLIA X. 'YELLOW BIRD' / YELLOW MAGNOLIA	3" CALIPER
CB	CARPINUS B. 'FASTIAGATA' / UPRIGHT HORNBEAM	3" CALIPER
GT	GLEDITSIA T. 'STREETKEEPER' / HONEY LOCUST	3" CALIPER
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KN	KALMIA L. 'NATHAN HALE' MOUNTAIN LAUREL	NO. 7 CONTAINER
RW	RHODODENDRON 'WNDBEAM' / RHODODENDRON	NO. 7 CONTAINER
HA	HYDRANGEA A. 'ANNABELLE' / HYDRANGEA	NO. 7 CONTAINER
JS	JUNIPERUS VAR. 'SARGENT' / SARGENT JUNIPER	NO. 5 CONTAINER
MS	MISCANTHUS S. 'PURPURASCENS' / FLAME GRASS	NO. 2 CONTAINER
HP	HOSTA 'PATRIOT' / HOSTA	NO. 2 CONTAINER @ 36" O.C.
SN	SALVIA 'MAY NIGHT' / MAY NIGHT SALVIA	NO. 2 CONTAINER @ 24" O.C.
PA	PEROVSKIA A. 'LITTLE SPIRE' / RUSSIAN SAGE	NO. 2 CONTAINER @ 30" O.C.
PT	PACHYSANDRA TERMINALIS / JAPANESES SPURGE	FLATS @ 12" O. C.
SK	SEDUM KAMTSCHATICUM / GREEN SEDUM	3" POTS @ 18" O.C.
ST	SEDUM T. 'AUTUMN JOY' / RED SEDUM	3" POTS @ 18" O.C.
LN	LYSIMACHIA N. 'AUREA' / MONEYWORT	3" POTS @ 18" O. C.
NR	NARCISSUS 'ROSE OF MARY' / WHITE DAFFODIL	BULBS @ 18" O.C.

TRUE

YORK STREET
PAVED–PUBLIC–VARIABLE WIDTH

HIGH STREET
PAVED–PUBLIC–66' WIDE

COMMERCIAL STREET
PAVED–PUBLIC–VARIABLE WIDTH

LOAM & SEED

1 AA

2 AA

7 RW
1 AR
12 RW
MULCH LINE

1 GT AND SN

GRAPHIC SCALE
10 0 5 10 20
(IN FEET)
1 INCH = 10 FT.

CITY OF PORTLAND
APPROVED SITE PLAN
Subject to Conditions of Approval and Standard Conditions
DATE of APPROVAL 6-26-2018
PLANNER Jean Fraser
PROJECT NO. #2017-053

See note other plans about work in ROW

SEE NOTES OTHER PLANS ABOUT LIGHTS AND TREE WELLS ETC AS THIS PLAN IS NOT FINAL

Reviewed for Code Compliance
Permitting and Inspections Department
Approved with Conditions
01/22/2019

WILLIAM T. CONWAY, RLA 108

REGISTERED LANDSCAPE ARCHITECT
WILLIAM T. CONWAY
108
STATE OF MAINE
9-28-18

DESIGNED	CHECKED
WTC	RLM

REV.	BY:	DATE:	STATUS:
G	WTC	09-28-18	FINAL PLAN SET FOR BUILDING PERMIT
F	WTC	09-04-18	BUILDING PERMIT SET
E	WTC	08-29-18	BUILDING PERMIT SET
D	WTC	07-20-18	RESUBMIT FOR CITY REVIEW
C	WTC	06-19-18	SHIFT FENCE AWAY FROM COMMERCIAL ST. SIDEWALK

THIS PLAN SHALL NOT BE MODIFIED WITHOUT WRITTEN PERMISSION FROM SEBAGO TECHNICS, INC. ANY ALTERATIONS, AUTHORIZED OR OTHERWISE, SHALL BE AT THE USER'S SOLE RISK AND WITHOUT LIABILITY TO SEBAGO TECHNICS, INC.

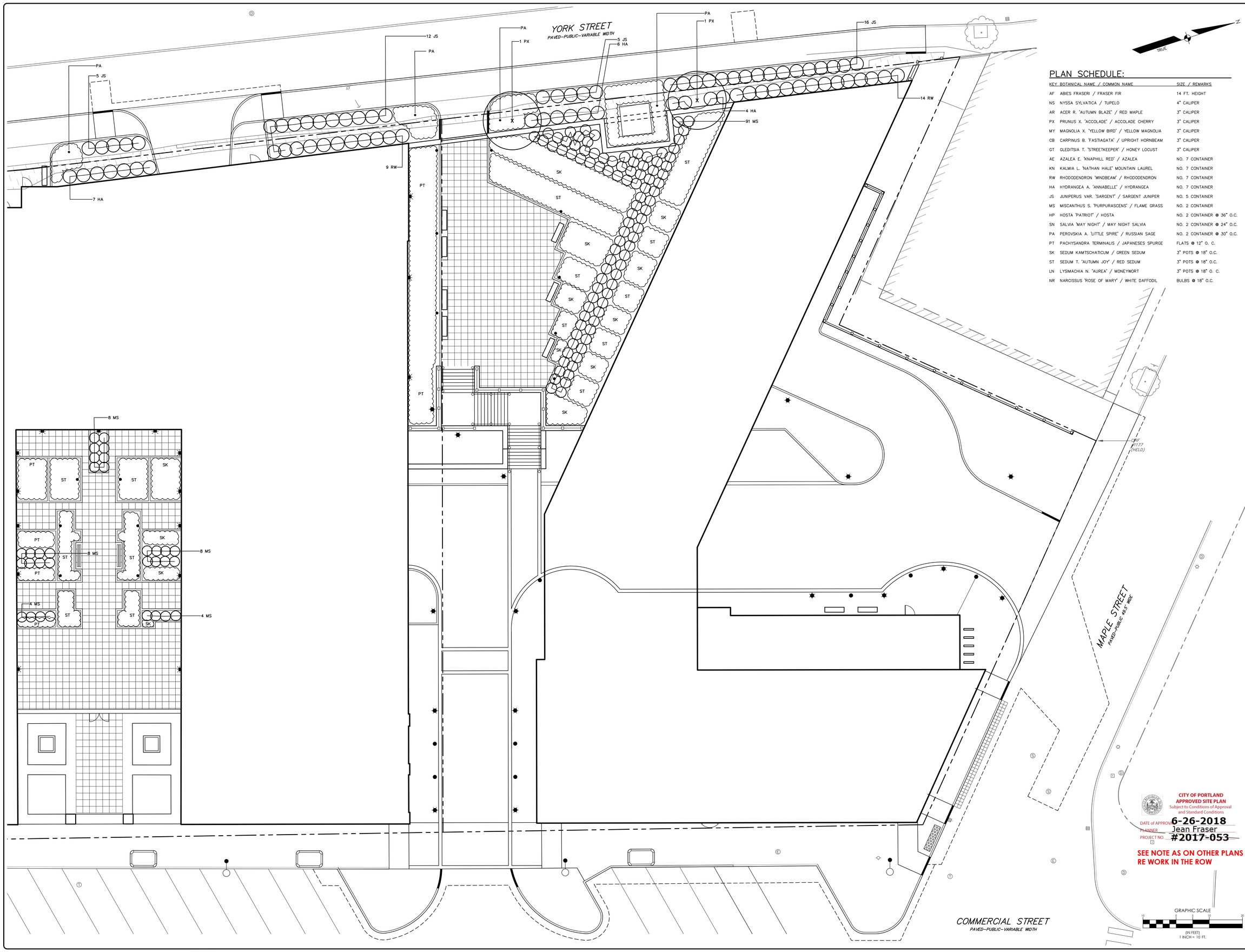
SEBAGO TECHNICS
WWW.SEBAGOTECHNICS.COM
75 John Roberts Rd.
Suite 4A
South Portland, ME 04106
Tel. 207-200-2100

LANDSCAPE PLAN-2 LOWER LEVEL
OF:
383 COMMERCIAL STREET
383 COMMERCIAL STREET
PORTLAND, MAINE
FOR:
DEERING PROPERTY DEVELOPMENT, LLC
2730 TRANSIT ROAD
WEST SENECA, NEW YORK 14224

PROJECT NO.	SCALE
16324	1"=10'

SHEET 17 OF 24

16324-LL.dwg, TAB:L-2



PLAN SCHEDULE:

KEY	BOTANICAL NAME / COMMON NAME	SIZE / REMARKS
AF	ABIES FRASERI / FRASER FIR	14 FT. HEIGHT
NS	NYSSA SYLVATICA / TUPELO	4" CALIPER
AR	ACER R. 'AUTUMN BLAZE' / RED MAPLE	3" CALIPER
PX	PRUNUS X. 'ACCOLADE' / ACCOLADE CHERRY	3" CALIPER
MY	MAGNOLIA X. 'YELLOW BIRD' / YELLOW MAGNOLIA	3" CALIPER
CB	CARPINUS B. 'FASTIGIATA' / UPRIGHT HORNBEAM	3" CALIPER
GT	GLEDITSIA T. 'STREETKEEPER' / HONEY LOCUST	3" CALIPER
AE	AZALEA E. 'KNAPHILL RED' / AZALEA	NO. 7 CONTAINER
KN	KALMIA L. 'NATHAN HALE' MOUNTAIN LAUREL	NO. 7 CONTAINER
RW	RHODODENDRON 'WINDBEAM' / RHODODENDRON	NO. 7 CONTAINER
HA	HYDRANGEA A. 'ANNABELLE' / HYDRANGEA	NO. 7 CONTAINER
JS	JUNIPERUS VAR. 'SARGENT' / SARGENT JUNIPER	NO. 5 CONTAINER
MS	MISCANTHUS S. 'PURPURASCENS' / FLAME GRASS	NO. 2 CONTAINER
HP	HOSTA 'PATRIOT' / HOSTA	NO. 2 CONTAINER @ 36" O.C.
SN	SALVIA 'MAY NIGHT' / MAY NIGHT SALVIA	NO. 2 CONTAINER @ 24" O.C.
PA	PEROVSKIA A. 'LITTLE SPIRE' / RUSSIAN SAGE	NO. 2 CONTAINER @ 30" O.C.
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Permit Recommended for Issuance
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WILLIAM T. CONWAY, RLA 108
LANDSCAPE ARCHITECT
WILLIAM T. CONWAY
108
STATE OF MAINE
9-28-18

DESIGNED	CHECKED
WTC	RLM

REV.	BY:	DATE:
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E.	WTC	09-04-18
D.	WTC	08-29-18
C.	WTC	07-20-18

STATUS:
FINAL PLAN SET FOR BUILDING PERMIT
ISSUED FOR BUILDING PERMIT
BUILDING PERMIT SET
RESUBMIT FOR CITY REVIEW

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LANDSCAPE PLAN-1 UPPER LEVEL
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PORTLAND, MAINE
FOR:
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2730 TRANSIT ROAD
WEST SENECA, NEW YORK 14224

PROJECT NO.	SCALE
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SHEET 18 OF 24

16324L-UL.dwg, TAB:L-1

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